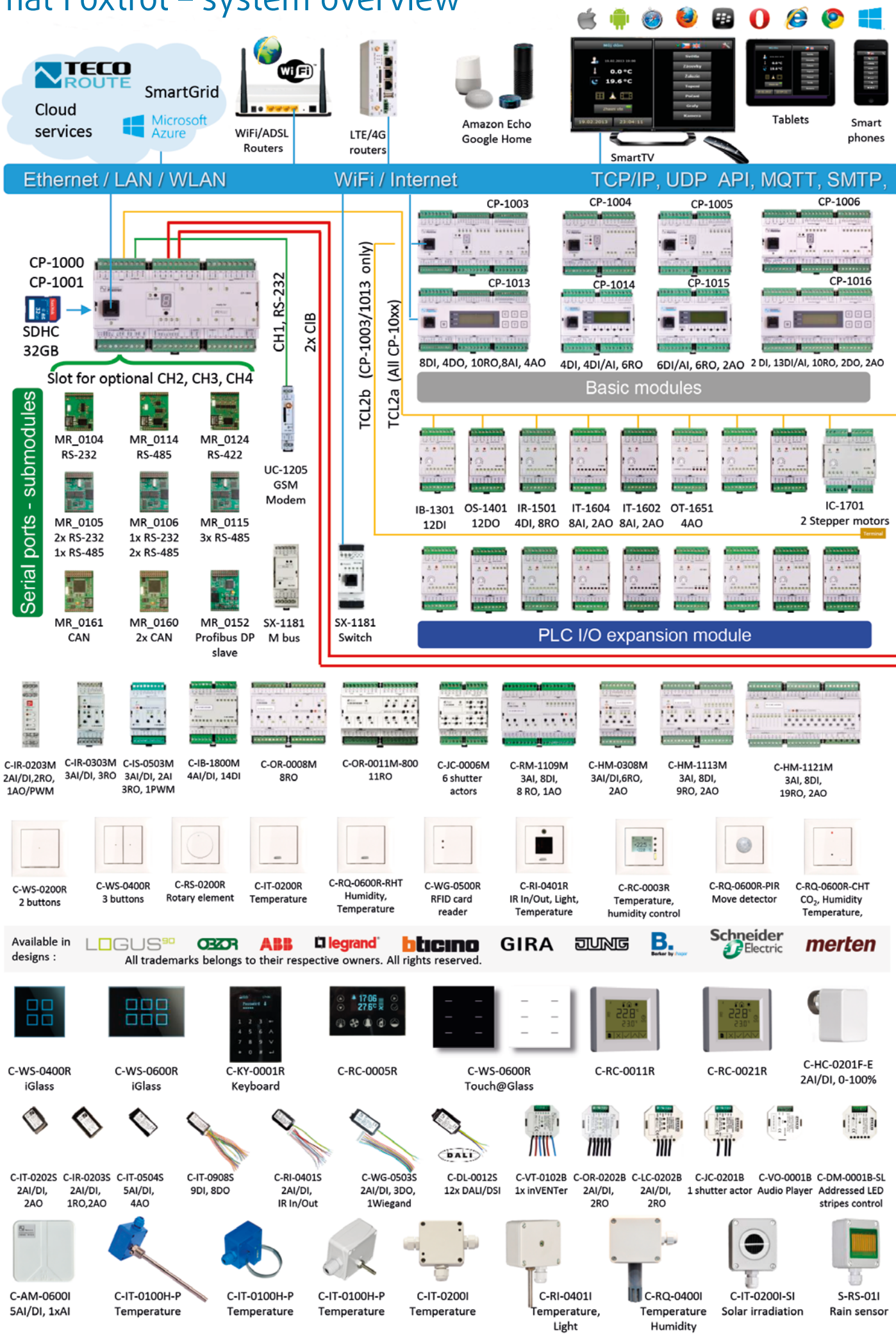
Product Catalog

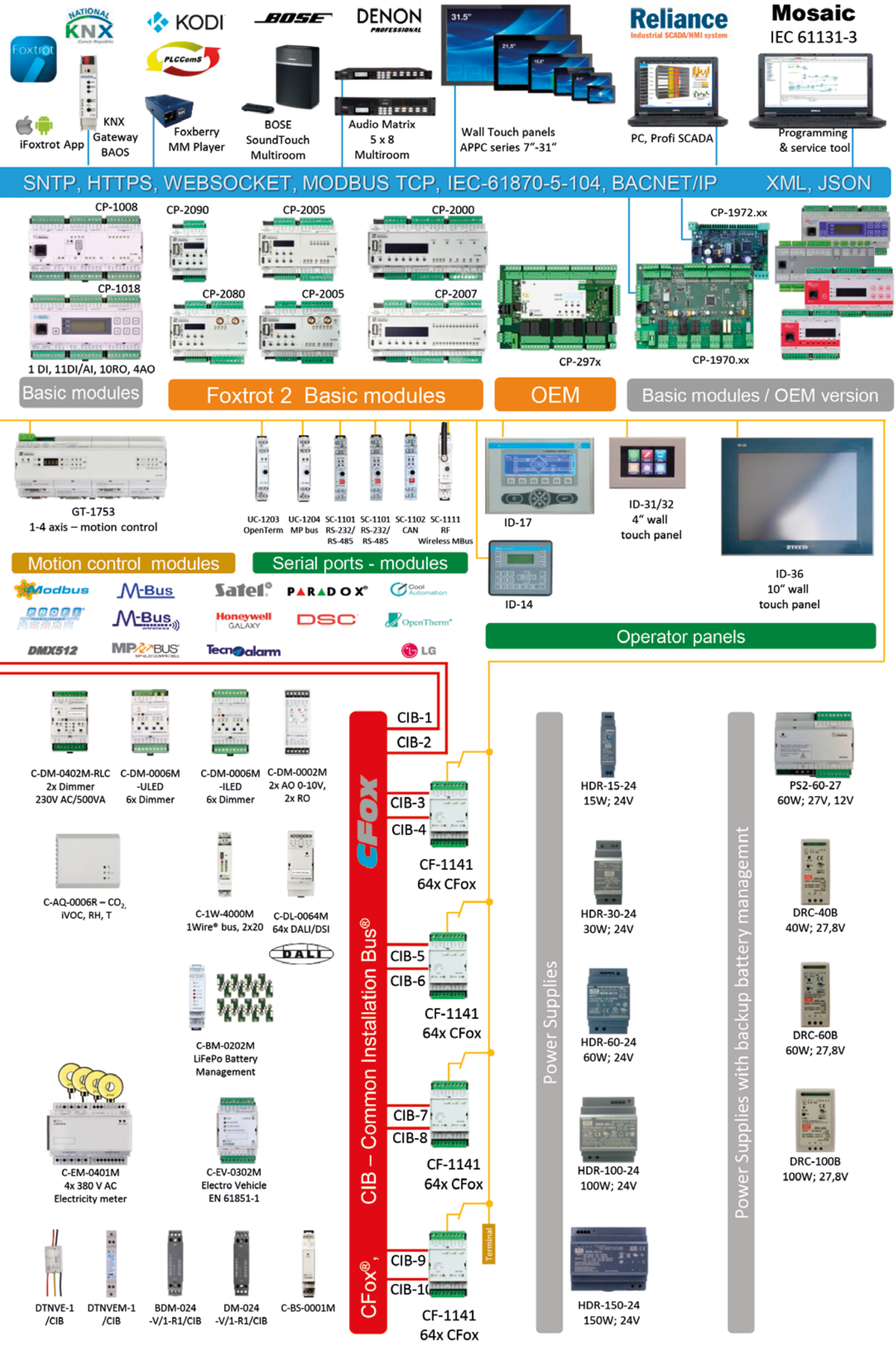
Tecomat Foxtrot | CFox | RFox

September 2020

TECO
Advanced Automation

Tecomat Foxtrot – system overview




iFoxtrot App
KNX Gateway BAOS
Foxberry MM Player
BOSE SoundTouch Multiroom
Audio Matrix 5 x 8 Multiroom
Wall Touch panels APPC series 7"-31"
PC, Profi SCADA
Programming & service tool
SNTP, HTTPS, WEBSOCKET, MODBUS TCP, IEC-61870-5-104, BACNET/IP
XML, JSON
CP-1008
CP-1018
1 DI, 11DI/AI, 10RO, 4AO
CP-2090
CP-2080
CP-2005
CP-2005
CP-2000
CP-2007
CP-297x
CP-1972.xx
CP-1970.xx
Basic modules
Foxtrot 2 Basic modules
OEM
Basic modules / OEM version
GT-1753
1-4 axis – motion control
UC-1203 OpenTerm
UC-1204 MP bus
SC-1101 RS-232/ RS-485
SC-1101 RS-232/ RS-485
SC-1102 CAN
SC-1111 RF Wireless MBus
ID-17
ID-31/32 4" wall touch panel
ID-14
ID-36 10" wall touch panel
Motion control modules
Serial ports - modules
Operator panels
C-DM-0402M-RLC 2x Dimmer 230V AC/500VA
C-DM-0006M -ULED 6x Dimmer
C-DM-0006M -ILED 6x Dimmer
C-DM-0002M 2x AO 0-10V, 2x RO
C-AQ-0006R – CO2, iVOC, RH, T
C-1W-4000M 1Wire® bus, 2x20
C-DL-0064M 64x DALI/DSI
C-BM-0202M LiFePo Battery Management
C-EM-0401M 4x 380 V AC Electricity meter
C-EV-0302M Electro Vehicle EN 61851-1
DTNVE-1 /CIB
DTNVEM-1 /CIB
BDM-024 -V/1-R1/CIB
DM-024 -V/1-R1/CIB
C-BS-0001M
CIB – Common Installation Bus®
CFox®
CIB-1
CIB-2
CIB-3
CIB-4
CF-1141 64x CFox
CIB-5
CIB-6
CF-1141 64x CFox
CIB-7
CIB-8
CF-1141 64x CFox
CIB-9
CIB-10
CF-1141 64x CFox
Terminal
Power Supplies
HDR-15-24 15W; 24V
HDR-30-24 30W; 24V
HDR-60-24 60W; 24V
HDR-100-24 100W; 24V
HDR-150-24 150W; 24V
Power Supplies with backup battery managemnt
PS2-60-27 60W; 27V, 12V
DRC-40B 40W; 27,8V
DRC-60B 60W; 27,8V
DRC-100B 100W; 27,8V

Foxtrot 2
PLC Basic modules

Foxtrot
PLC Basic modules

Foxtrot
PLC Expansion modules

Foxtrot
Communication modules

Displays
Operator panels

CFox
Sensors and actuators for CIB
Common Installation Bus

Power supplies

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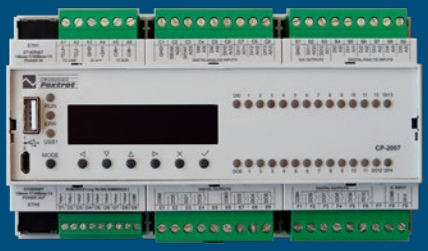
Basic modules

CP-2000
11NDNN

CP-2000
11NDLN

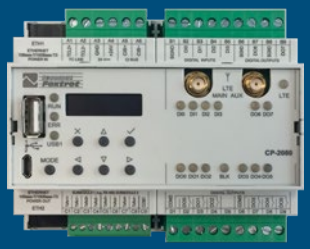
CP-2005
11NSNN

CP-2005
11NSLN



CP-2007
11NDNN

CP-2080
11NSNN

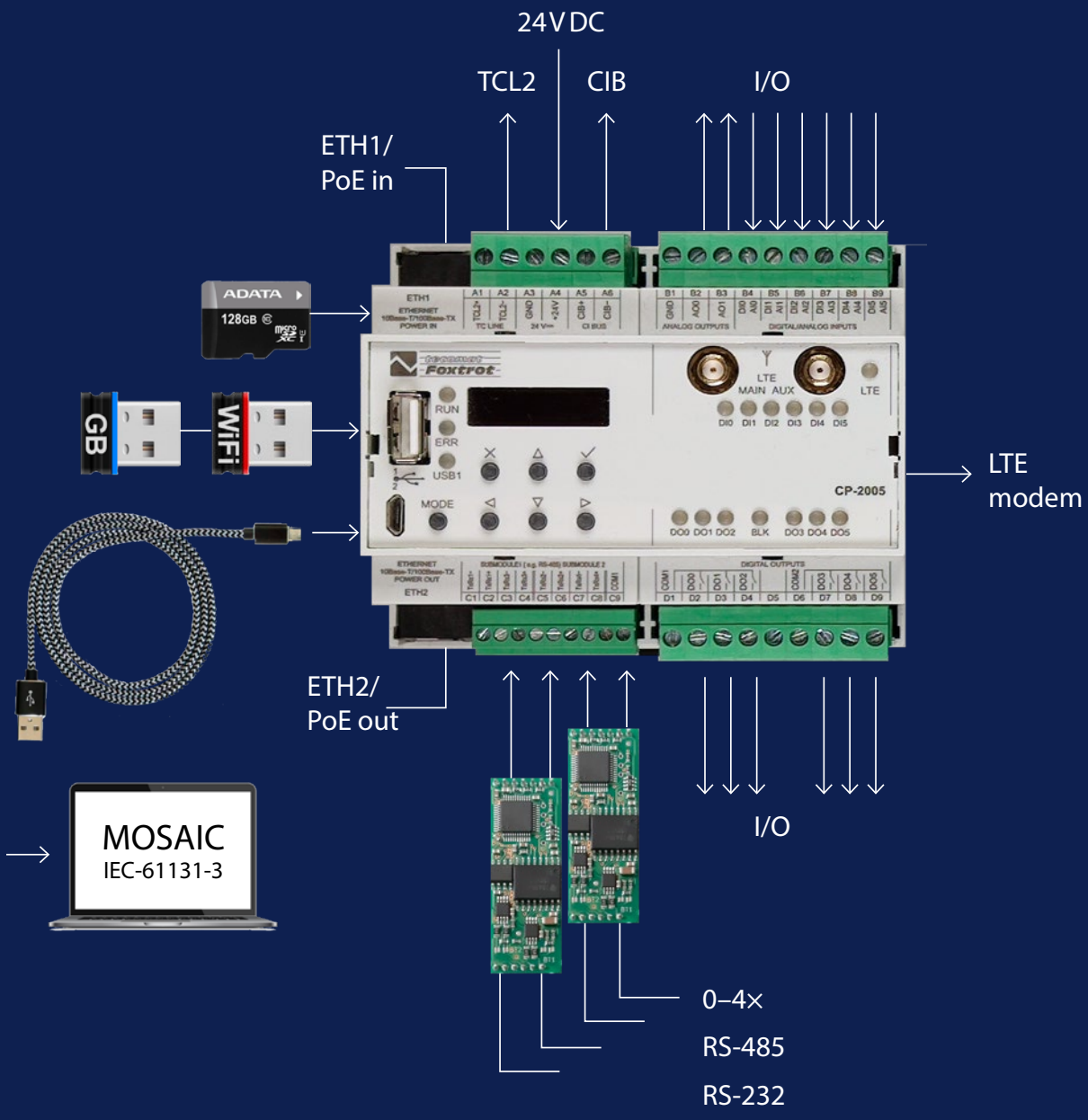


CP-2080
11NSLN

CP-2090
11NSNN

PLC Foxtrot 2

Basic module communication lines schema



Modules connected to the system are mentioned in other parts of the catalog.

Foxtrot 2 – Basic modules and accessories

Type	DI	DO	AI	AO	Comm
CP-2000	4× DI/AI 3× DI (230 V AC)	2× RO	4× DI/AI, see DI		2× ETH 10/100 1× RS-232 4× Serial channel (2× free slot) 1× USB device 1× USB host 1× TCL2 master 2× CIB master

CP-2000.11NDNN

CP-2000.11NDLN

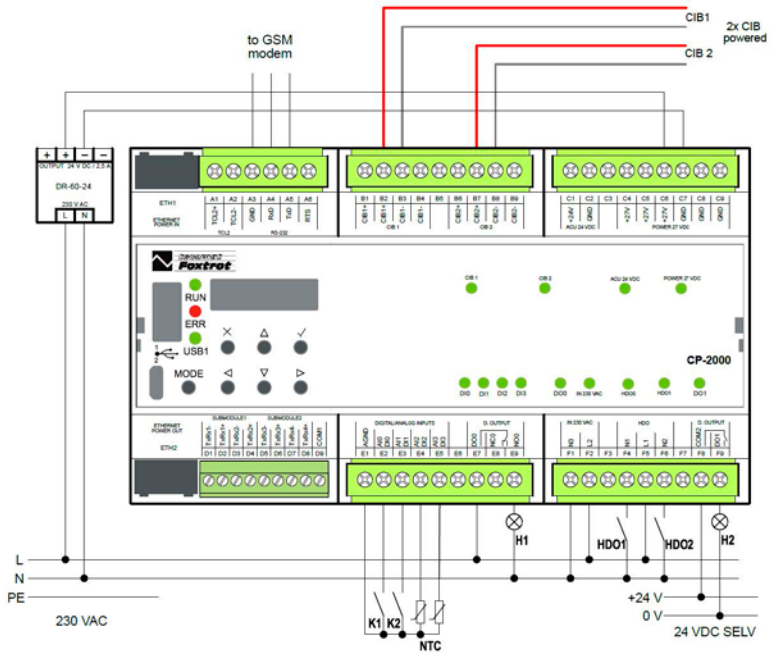
Basic features

- Programmable logic controller (PLC) according to the harmonized standard ČSN EN IEC 61131
- Communication compatible with IT, Internet, IoT, Smart technologies
- Powerful central unit with 9 integrated inputs and outputs an 11 communication and system channels
- High computing power of 0.04 ms/1k instructions
- Real time clock with calendar, non-volatile
- Each of the 4 universal inputs can alternatively be used as an analog or binary input.
- The type of analog measurement (U, I, RTD) and measuring range are set in the user configuration.
- Possibility to connect a large number of other peripheral modules via TCL2 and CIB system buses
- Programming in ST, IL, LD, FBD, SFC and CFC according to IEC 61131-3
- User program memory 1 MB
- On-line programming
- Integrated MOSAIC development environment, basic module can be programmed in free version Lite
- Freely programmable website for convenient local and remote visualization and control
- File system in integrated 128 MB non-volatile flash memory with journaling support, microSD slot for file system memory expansion
- Integrated Databox 128 kB, optionally with double size 256 kB, fast non-volatile memory
- Integrated Datalogger for user-defined collections of archived data
- Rich communication possibilities – 2× Ethernet, 4 serial port slots, USB Host, USB device
- Communication in IP networks TCP/IP, Http/Https, MQTT, Modbus TCP master/slave, WebSocket, SNMP, SNTP
- Data transfer in XML and JSON formats, automatic parsing
- Other communication: KNX, Modbus RTU master/slave,
- Options: Fixed IP address/DHCP/Secure remote access without the need for public IP via TecoRoute service
- TCL2 system buses for fast I/Os on expansion I/O modules (up to 10)
- CIB system installation bus for two-wire connection of input/output (I/O) modules spread across the building outside the switchboard
- Multiple Tecomat PLCs can be networked in LAN Ethernet
- Integrated 4-line OLED display and 7-key front-panel keypad

Use

- System installation management in homes and buildings,
- Suitable for individual and repeated projects
- Allows to create a custom web server with individual web pages for any connected managed object
- Beside control it can be used as a programmable converter of communication protocols at the same time
- It can be used as an independent programmable datalogger for any measured or internal data with time stamp
- Compact dimensions suitable for standardized electrical switchboards, DIN rail mounting

Connection example



Product variants

Order number	DataBox	Display	LTE
TXN 120 00.11NDNN	128 kB	4×20 characters, 55×13 mm	–
TXN 120 00.11NDLN	128 kB	4×20 characters, 55×13 mm	Yes

Connection

Power supply and system communication	screw-type connector 9× 2.5 mm^2
I / O - inputs / outputs	screw-type connector 9× 2.5 mm^2
Ethernet	RJ-45
Serial channels	screw-type connector 9× 1.5 mm^2
USB device	type micro B
USB host	type A

System parameters of the central unit

User program memory	1 MB
Memory for user variables/ including RETAIN variables	320 kB/48 kB
Backup of program source code in PLC	Yes, optional in Mosaic
On-line program change in PLC	Yes, including I/O configuration change
DataBox – additional internal data memory:	128/256 kB, optional
File system – Internal Flash disk	128 MB, journaling file system
File system – RAM disk PLC	16 MB
File System – USB Flash disk	Supported
File system – Micro SD card	Supported (except for variants with WLAN1)
Optional memory card slot	Yes, for microSD card
Cycle time per 1k of logic instructions	0,036 ms
Development environment	Mosaic
Programming languages	ST, IL, LD, FBD, SFC, CFC
RTC – Real time circuit	Yes
RTC – Backup time	Typ. 500 hours
Integrated Web server	Yes
Integrated Datalogger	Yes
Access to PLC variables via web API	Yes

COM – Communication – IP/Ethernet

Ethernet 10/100 Mb (ETHx)	2
WLAN1 (internal, optional)	1
WLAN2 (external via USB host, optional)	1
LTE interface (LTEx, optional)	1
Available system modes on ETH	UNI, PLCx, PLD
Available system modes on LTE and WLAN	UNI
TCP/IP protocol	Yes
UDP protocol	Yes
HTTPS protocol	Yes
HTTP protocol	Yes
Protocol MODBUS/TCP	Yes
SMTP protocol	Yes
IEC 60870-5-104 protocol	Yes
REST API	Yes

COM – Communications – Serial Ports

CH1-4: max. number of internal Serial Channels (MR-013x to slots in basic module)	4[1)]
CH5-10: max. number of serial expansion channels (SC-11xx on TCL2)	6[1)]
Number of slots for optional submodules with interface (MR-013x)	2
Available system modes on CH1-4	UNI
Available system modes on CH5-10	UNI, CSJ (CAN)
Number of fixed built-in RS-232 ports	1[1)]
Modbus protocol RTU/ASCII slave	Yes
Modbus RTU / ASCII master protocol	Yes

[1)] Maximální celkový počet sériových kanálů je vždy 10.

COM – Communication – USB

USB device interface	1
USB host interface	1
Available system modes on USB	PC

COM – System expansion buses

Expansion I/O Bus (TCL2)	1× TCL2 master
Range of each TCL2 line	10 I/O modules + 4 operator panels
Installation I/O Bus (CIB)	2× CIB master (2× 1 A)
Range of each CIB line	32 CFox I/O modules

DI – Features of digital DC inputs

Total number of digital inputs	4
Number of groups of inputs	1
Organization of binary inputs into groups	4× (AI0/DI0-AI3/DI3)
Common wire	AGND – module ground
Input type	potential-free contact
Galvanic isolation of internal circuits	No
Input voltage for log. 1	+1 V DC max.
Input current at log. 1 (typ.)	–1,7 mA
The minimum width of the captured pulse:	1 ms

DI – Parameters of binary AC inputs

Number of inputs	3
Number of groups of inputs	2
Organization of binary inputs into groups	1×(IN230 V), 2×(HDO0, HDO1)
Common wire	L
Input type	230 V AC
Galvanic isolation of internal circuits	Yes
Input voltage for log. 1	230 V AC typ., 200 V AC min., 250 V AC max.
Input current at log. 1 (typ.)	5 mA typ.

RO – Parameters of binary relay outputs

Number of outputs	2
Number of output groups	2
Organization of relay outputs into groups	1×(DO0), 1×(DO1)
Output type	electromechanical relay, unprotected output
Contact type	normally open
Galvanic separation from internal circuits	yes (even groups to each other)

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RO / Type 1 – Parameters of binary relay outputs

Parameters valid for the terminals	DO0 (NO/NC), DO1 (NO)
Switching current	NO max. 16 A, NC max. 10 A; min. 100 mA.
Switching voltage	min. 5 V; max. 250 V
Short-circuit protection	No
Short-term output overload	max. 80 A (max. 20 ms)
Contact closing time	typ. 15 ms
Contact opening time	typ. 5 ms
Limit values of switched resistive load	max. 16 A at 30 V DC or 230 V AC
Mechanical life	min. 20 000 000 cycles
Electrical life at maximum resistive load	min. 100,000 cycles
Treatment of inductive load	External RC element, varistor (AC), diode (DC)
Insulation voltage between outputs and internal circuits	3750 V AC
Insulation voltage between groups of outputs to each other	3750 V AC

AI – Analog input parameters

Number of inputs	4
Number of inputs per group	1
Organization of inputs in groups	4× (AI0/DI0-AI3/DI3)
Common wire	minus
Input type	with common terminal
Galvanic separation from internal circuits	No
Digital resolution	12 bit
External power supply	No
Converter type	Approximation
Conversion time	20 µs
Operating modes	periodic input sensing
Insulation potential	500 V DC between input and internal circuits

AI – Ranges of analog inputs

Passive sensors	Pt1000, W100 = 1,385 (–90 to +400 °C)
Passive sensors	Pt1000, W100 = 1,391 (–90 to +400 °C)
Passive sensors	Ni1000, W100 = 1,500 (–60 to +200 °C)
Passive sensors	Ni1000, W100 = 1.617 (–60 to +200 °C)
Passive sensors	resistance sensor 0 – 2 k
Passive sensors	resistance sensor 0 – 200 k
Passive sensors	PTC thermistor KTY81-121 (–55 to + 125 °C)
Passive sensors	NTC Thermistor 5 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 10 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 12k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 15k/25 °C (–40 to + 125 °C)
Passive sensors:	NTC Thermistor 20k/25 °C (–40 to + 125 °C)
Input impedance in signal range RTD	>4 kOhm
Resistance measurement error – maximum error at 25 °C	± 0.5% of full scale
Detection of disconnected sensor	yes, in status word, range overflow

Operating conditions, product standards

Product standard	ČSN EN 61131-2:2008 (idt IEC 61131-2:2007) - Programmable control units
Protection class of electrical object	II according to ČSN EN 61140 ed.3: 2016 (idt IEC 61140:2016)
IP rating (Ingress Protection)	IP20 according to ČSN EN 60529:1993 (idt IEC 529: 1989)
Operating areas	Normal, acc. ČSN 33 2000-1 ed.2: 2009 (mod IEC 60354-1:2005)
Degree of pollution	1, according to ČSN EN 60664-1 ed. 2:2008 (idt IEC 60664-1:2007)
Overvoltage category installation	II, according to EN 60664-1 ed_2: 2008 (idt IEC 60641-1:2007)
Type of device	Built-in
Integrated DIN rail holder	Yes
Working position	Vertical
Type of operation (operating frequency)	permanent-term
Ambient temperature operating range	–20 .. +55 °C
Storage temperature range	–25 °C to +70 °C

Electromagnetic compatibility, Mechanical resistance

Electromagnetic compatibility /Emission:	According to EN 55032 ed. 2: 2017 (idt CISPR 32: 2015)
Electromagnetic compatibility /Immunity:	min. as required by EN 61131-2: 2007
Sinusoidal vibration endurance	10 Hz to 57 Hz, amplitude 0,075 mm, 57 Hz to 150 Hz, acceleration 1 G (Fc test according to EN 60068-2-6: 1997 (idt IEC 68-2-6: 1995), 10 cycles per axis.)

Power supply

Power supply voltage	24 V DC, +25%, –15%, SELV
Supply voltage with battery backup	27 V DC, +10%, –15%, SELV
Maximum power input	75 W
Internal protection	PTC reversible fuse
CIB branch power supply parameters from the built-in master	2× 1 A/24 – 27 V DC
Module power supply via ETH, passive PoE – input	ETH1/Power In
Power supply of other equipment via ETH, passive PoE – output	ETH2/Power out, jumper configuration
Passive PoE injector parameters	24 V DC, 1 A
Power backup of the basic module and CIB	Yes, with a lead-acid battery
Battery parameters	24 V (2× 12V), max. 18 Ah

Dimensions and weight

Product dimensions (width × height × depth)	158 × 90 × 62 mm
Module width in multiples of M (17.5 mm):	9 M
Weight approx.:	300 g

Objednací čísla

TXN 120 00.11NDLN	CP-2000, CPU/1core, 2× ETH100/10,---, 128 kB databox, LCD 20 mm, 1× RS232, CH1-4, 4× AI/DI, 3× DI/230 V AC, 2× RO, 2× CIB
TXN 120 00.11NDNN	CP-2000, CPU/1core, 2× ETH100/10, LTE, 128 kB databox, LCD 20 mm, 1× RS232, CH1-4, 4× AI/DI, 3× DI/230 V AC, 2× RO, 2× CIB

Foxtrot 2 – Basic modules and accessories

Type	DI	RO	AI	AO	Comm
CP-2005	3× DI/AI 3× DI/AI/HSC	6× RO	6× AI/DI see DI	2× AO 0–10V	2× ETH 10/100 4× Serial channel (2× free slot) 1× USB device 1× USB host 1× TCL2 master 1× CIB master

CP-2005.11NSNN

CP-2005.11NSLN

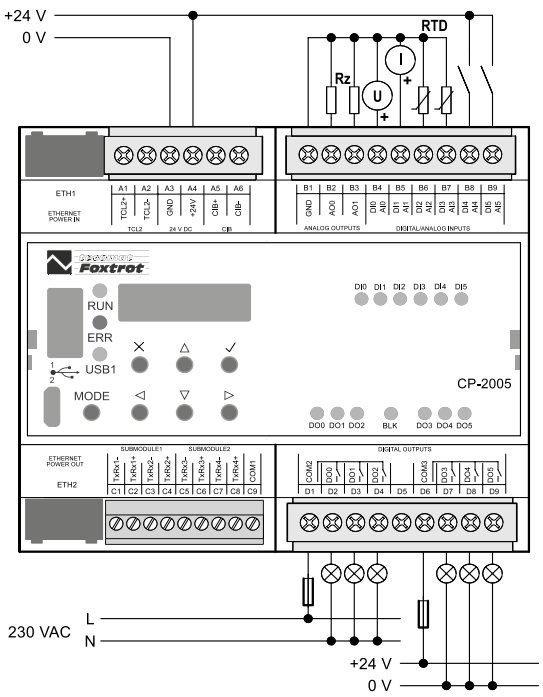
Basic features

- Programmable logic controller (PLC) according to the harmonized standard ČSN EN IEC 61131
- Communication compatible with IT, Internet, IoT, Smart technologies
- Powerful central unit with a total of 14 integrated I/O and 10 communication and system channels
- High computing power of 0.04 ms/1 k instructions
- Real time clock with calendar, non-volatile
- Each of the 6 universal inputs can alternatively be used as an analog or binary input.
- The type of analog measurement (U, I, RTD) and measuring range are set in the user configuration.
- 3 of the universal inputs can also be used as a counter (HSC - High Speed Counter)
- Possibility to connect a large number of other peripheral modules via TCL2 and CIB system buses
- Programming in ST, IL, LD, FBD, SFC and CFC according to EN IEC 61131-3
- User program memory 1 MB
- On-line programming
- Integrated MOSAIC development environment, basic module can be programmed in free version Lite
- Freely programmable website for convenient local and remote visualization and control
- File system in integrated 128 MB non-volatile flash memory with journaling support, microSD slot for file system memory expansion
- Integrated Databox 128 kB, optionally with double size 256 kB, fast non-volatile memory
- Integrated Datalogger for user-defined collections of archived data
- Rich communication ports –2× Ethernet, 4 serial port slots, USB Host, USB device
- Communication in IP networks TCP/IP, Http/Https, MQTT, Modbus TCP master/slave, WebSocket support, SNMP, SNTP
- Data transfer in XML and JSON formats, automatic parsing
- Other communication: KNX, Modbus RTU master/slave,
- Options: Fixed IP address/DHCP/Secure remote access without the need for public IP via TecoRoute
- TCL2 system buses for fast I/O on expansion (up to 10) I/O modules
- CIB system installation bus for two-wire connection of input/output (I/O) modules spread across the building outside the switchboard
- Multiple Tecomat PLCs can be networked in LAN Ethernet
- Integrated 4-line OLED display and 7-key front-panel keypad

Use

- Control of machines, thermal equipment, industrial lines, transport or energy systems, houses or buildings etc.
- Suitable for individual and repeated projects as well as for small and large-scale production
- Suitable as embedded control system for OEMs (Original Equipment Manufacturer)
- Allows you to create a custom web server with individual web pages for any connected managed object
- Can be used as IoT hub and gateway for internet/cloud connection
- Can be used as a programmable converter of communication protocols
- It can be used as an independent programmable datalogger for any measured or internal quantities with time stamp
- Compact dimensions suitable for standardized electrical switchboards, DIN rail mounting

Connection example



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Product variants

Order number	DataBox	Display	LTE
TXN 120 05.11NSNN	128 kB	4×20 characters, 26×7 mm	–
TXN 120 05.11NSLN	128 kB	4×20 characters, 26×7 mm	Yes

Connection

Power supply and system communication	screw-type connector 9× 2.5 mm²
I / O - inputs / outputs	screw-type connector 9× 2.5 mm²
Ethernet	RJ-45
Serial channels	screw-type connector 9× 1.5 mm²
USB device	type micro B
USB host	type A

COM – Communication – IP/Ethernet

Ethernet 10/100 Mb (ETHx)	2
WLAN1 (internal, optional)	1
WLAN2 (external via USB host, optional)	1
LTE interface (LTEx, optional)	1
Available system modes on ETH	UNI, PLCx,, PLD
Available system modes on LTE and WLAN	UNI
TCP/IP protocol	Yes
UDP protocol	Yes
HTTPS protocol	Yes
HTTP protocol	Yes
Protocol MODBUS/TCP	Yes
SMTP protocol	Yes
IEC 60870-5-104 protocol	Yes
REST API	Yes

COM – Communications – Serial Ports

CH1-4: max. number of internal Serial Channels (MR-013x to slots in basic module)	4
CH5-10: max. number of serial expansion channels (SC-11xx on TCL2)	6
Number of slots for optional submodules with interface (MR-013x)	2
Available system modes on CH1-4	UNI
Available system modes on CH5-10	UNI, CSJ (CAN)
Modbus protocol RTU/ASCII slave	Yes
Modbus RTU / ASCII master protocol	Yes

COM – Communication – USB

USB devices interface	1
USB host interface	1
Available system modes on USB	PC

COM – System expansion buses

Expansion I/O Bus (TCL2)	1× TCL2 master
Range of each TCL2 line	10 I/O modules + 4 operator panels
Installation I/O Bus (CIB)	1× CIB master (100 mA)
Range of each CIB line	32 CFox I/O modules

DI – Features of digital DC inputs

Total number of digital inputs	6
Number of groups of inputs	1
Number and organization of DI/AI	3× (DI0/AI0- DI2/AI2)
Common wire	minus
Input type	Type 1
Galvanic isolation of internal circuits	No
Input voltage for log. 1	+24 V DC; +15 V DC min.; +30 V DC max.
Input current at log. 1 (typ.)	typ. 5 mA
The minimum width of the captured pulse	500 µs

HSC – Special functions of binary inputs/counters

Unidirectional counter (UP)	3× (DI3); (DI4); (DI5)

HSC – Counter input parameters

Counter: Input frequency/ resolution	1 kHz
Pulse width	min. 500 µs
Delay from log. 0 per log. 1	500 µs
Delay from log. 1 per log. 0	500 µs
Range of registers	up to 32 bits, 0 to 4 294 967 296

System parameters of the central unit

User program memory	1 MB
Memory for user variables/ including RETAIN variables	320 kB/48 kB
Backup of program source code in PLC	Yes, optional in Mosaic
On-line program change in PLC	Yes, including I/O configuration change
DataBox – additional internal data memory	128/256 kB, optional
File system – Internal Flash disk	128 MB, journaling file system
File system – RAM disk PLC	16 MB
File System – USB Flash disk	supported
File system – Micro SD card:	supported (except for variants with WLAN1)
Optional memory card slot	Yes, for microSDHC/SDXC card
Cycle time per 1k of logic instructions	0,036 ms
Development environment	Mosaic
Programming languages	ST, IL, LD, FBD, SFC, CFC
RTC – Real time circuit	Yes
RTC – Backup time	typ. 500 hours
Integrated Web server	Yes
Integrated Datalogger	Yes
Access to PLC variables via web API	Yes

RO – Parameters of binary relay outputs

Number of outputs	6
Number of output groups	2
Organization of relay outputs into groups	3× (DO0-DO2) +3× (DO3-DO5)
Output type	electromechanical relay, unprotected output
Contact type	normally open
Galvanic separation from internal circuits	yes (even groups to each other)

AI – Analog input parameters

Number of inputs	6
Number of groups	1
Common wire	minus
Organization of inputs into groups	6× (DI0/AI0 - DI5/AI5)
Input type	with common terminal
Galvanic separation from internal circuits	No
Digital resolution	12 bit
External power supply	No
Converter type	Approximation
Conversion time	20 µs
Operating modes	periodic input sensing
Insulation potential	500 V DC between input and internal circuits

RO / Type 1 – Parameters of binary relay outputs

Parameters valid for the terminals	DO0–DO5
Switching current	3 A max., 100 mA min.
Switching voltage	min. 5 V; max. 250 V
Short-circuit protection	No
Short-term output overload	max. 4 A
Current through common terminal	max. 10 A
Contact closing time	typ. 10 ms
Contact opening time	typ. 4 ms
Limit values of switched resistive load	max. 3 A at 30 V DC or 230 V AC
Switching inductive load limits DC13	max. 3 A at 30 V DC
Switching inductive load limits AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switching /min.
Switching frequency with rated load	max. 20 switching /min.
Mechanical life	min. 5,000,000 cycles
Electrical life at maximum resistive load	min. 100,000 cycles
Electrical life at maximum load inductive AC15	min. 100,000 cycles
Treatment of inductive load	External RC element, varistor (AC), diode (DC)
Insulation voltage between outputs and internal circuits	3750 V AC
Insulation voltage between groups of outputs to each other	3750 V AC

Operating conditions, product standards

Product standard	ČSN EN 61131-2:2008 (idt IEC 61131-2:2007) – Programmable control units
Protection class of electrical object	II according to ČSN EN 61140 ed.3: 2016 (idt IEC 61140:2016)
IP rating (Ingress Protection)	IP20 according to ČSN EN 60529:1993 (idt IEC 529: 1989)
Operating areas	Normal, acc. ČSN 33 2000-1 ed.2: 2009 (mod IEC 60354-1:2005)
Degree of pollution	1, according to ČSN EN 60664-1 ed.2:2008 (idt IEC 60664-1:2007)
Overvoltage category installation	II, according to EN 60664-1 ed_2: 2008 (idt IEC 60641-1: 2007)
Type of device	Built-in
Integrated DIN rail holder	Yes
Working position	Vertical
Type of operation (operating frequency)	permanent-term
Ambient temperature operating range	–20 °C to + 55 °C
Storage temperature range	–25 °C to +70 °C

Electromagnetic compatibility, Mechanical resistance

Electromagnetic compatibility / Emission	A, according to EN 55032 ed. 2: 2017 (idt CISPR 32: 2015)
Electromagnetic compatibility / Immunity	min. as required by EN 61131-2: 2007
Sinusoidal vibration resistance	10 Hz to 57 Hz, amplitude 0,075 mm, 57 Hz to 150 Hz, acceleration 1 G

AI – Ranges of analog inputs

Voltage	0 to 2 V/805.9 µV
Voltage	0 to 10 V/2,579 mV
Input impedance in the voltage signal range	> 20 kΩ
Voltage input error – maximum error at 25 ° C:	± 0.4% of full scale
Current	0 to 20 mA/8,059 µA
Current	4 to 20 mA
Input impedance in the current signal range	100 Ω
Current input error – maximum error at 25 ° C:	± 0.4% of full scale
Open input detection	Yes, in status word (underrange – only 4 – 20 mA range)
Passive sensors	Pt1000, W100 = 1,385 (–90 to +400 °C)
Passive sensors	Pt1000, W100 = 1,391 (–90 to +400 °C)
Passive sensors	Ni1000, W100 = 1,500 (–60 to +200 °C)
Passive sensors	Ni1000, W100 = 1.617 (–60 to +200 °C)
Passive sensors	resistance sensor 0 – 2 kΩ
Passive sensors	resistance sensor 0 – 200 kΩ
Passive sensors	PTC thermistor KTY81-121 (–55 to + 125 °C)
Passive sensors	NTC Thermistor 5 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 10 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 12 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 15 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 20 k/25 °C (–40 to + 125 °C)
Input impedance in signal range RTD	>20 kΩ
Resistance measurement error – maximum error at 25 °C	± 0.5% of full scale
Detection of disconnected sensor	yes, in status word, range overflow

Analog output parameters

Number of outputs and their organization into groups	2× (AO0-AO1)
Common wire of group	minus
Galvanic isolation from internal circuits	No
Output type	active voltage output
Converter resolution	12 bit
Output voltage/resolution 1 LSB	0–10,5 V/2,589 mV
Maximum output current	10 mA

Power supply

Power supply voltage	24 V DC, +25%, –15%, SELV
Maximum power input	10 W
Internal protection	PTC reversible fuse
CIB branch power supply parameters from the built-in master	1× 100 mA/24 V DC
Module power supply via ETH, passive PoE – input	ETH1/Power In
Power supply of other equipment via ETH, passive PoE – output	ETH2/Power out, jumper configuration
Passive PoE injector parameters	24 V DC, 1 A

Dimensions and weight

Dimensions	105 × 90 × 62 mm
Module width in multiples of M (17.5 mm)	6M
Weight approx.	200 g

Order number

TXN 120 05.11NSNN	CP-2005, CPU/1core, 2× ETH100/10, ---, 128 kB databox, LCD – 7 mm, CH1-4, 6× AI/DI, 6× RO, 2× AO, 1× CIB
TXN 120 05.11NSLN	CP-2005, CPU/1core, 2× ETH100/10, LTE, 128 kB databox, LCD – 7 mm, CH1-4, 6× AI/DI, 6× RO, 2× AO, 1× CIB

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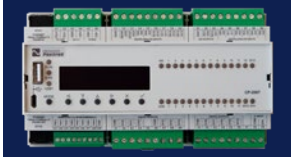
Foxtrot 2 – Basic modules and accessories

Type	DI	DO	AI	AO	Comm
CP-2007	8× DI/AI 2× DI/AI/AO 2× DI/AI/HSC 2× DI/AI/HSC/PWM 1× DI (230V AC)	11× RO, 2× DO/AO	14× DI/AI, see DI	2× AO 2× DI/AI/AO see DO	2× ETH 10/100 4× Serial channel (2× free slot) 1× USB device 1× USB host 1× TCL2 master 1× CIB master



CP-2007.11NDNN

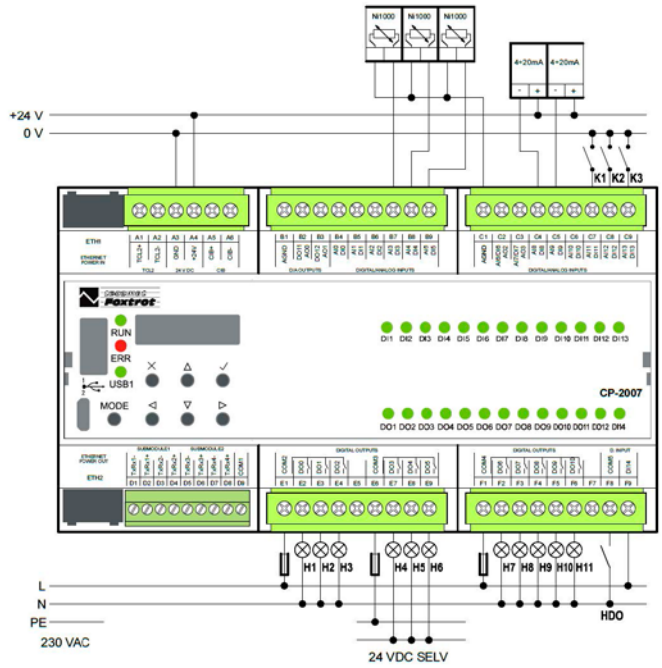
Basic feature

- Programmable logic controller (PLC) according to the harmonized standard ČSN EN IEC 61131
- Communication compatible with IT, Internet, IoT, Smart technologies
- Powerful central unit with 30 integrated I/O and 10 communication and system channels
- High computing power of 0.04 ms/1 k instructions
- Real time clock with calendar, non-volatile
- Each of the 14 universal inputs can alternatively be used as an analog or binary input.
- The type of analog measurement (U, I, RTD) and measuring range are set in the user configuration.
- Possibility to connect a large number of other peripheral modules via TCL2 and CIB system buses
- Programming in ST, IL, LD, FBD, SFC and CFC according to EN IEC 61131-3
- User program memory 1 MB
- On-line programming
- Integrated MOSAIC development environment, basic module can be programmed in free version Lite
- Freely programmable website for convenient local and remote visualization and control
- File system in integrated 128 MB non-volatile flash memory with journaling support microSD slot for file system memory expansion
- Integrated Databox 128 kB, optionally with double size 256 kB, fast non-volatile memory
- Integrated Datalogger for user-defined collections of archived data
- Rich communication ports – 2× Ethernet, 4 serial port slots, USB Host, USB device
- Available with internal WiFi
- Communication in IP networks TCP/IP, Http/Https, MQTT, WebSocket Support, SNMP, SNTP
- Data transfer in XML and JSON formats, automatic parsing
- Other communication: KNX, Modbus RTU master/slave,
- Options: Fixed IP address/DHCP/Secure remote access without the need for public IP via TecoRoute
- TCL2 system bus for fast I/O on expansion (up to 10) I/O modules
- CIB system installation bus for two-wire connection of input/output (I/O) modules spread across the building outside the switchboard
- Multiple Tecomat PLCs can be networked in LAN Ethernet
- Integrated 4-line OLED display and 7-key front-panel keypad

Use

- Control of any machine, thermal equipment, industrial line, transport or energy system, house or building
- Suitable for individual and repeated projects as well as for small and large-scale production
- Suitable as embedded control system for OEMs (Original Equipment Manufacturer)
- It allows you to create your own web server and individual web pages for any connected managed object, technology
- Can be used as a programmable converter of communication protocols
- It can be used as an independent programmable datalogger for any measured or internal quantities with time stamp
- Compact dimensions suitable for standardized electrical switchboards, DIN rail mounting

Connection example



Basic connection of CP-2007 module

Product variants

Order number	DataBox	Display	LTE
TXN 120 07.11NDNN	128 kB	4×20 characters, 55×13 mm	–
TXN 120 07.11NDLN	128 kB	4×20 characters, 55×13 mm	Yes

Connection

Power supply and system communication	screw-type connector 9× 2.5 mm²
I/O – inputs/outputs	screw-type connector 9× 2.5 mm²
Ethernet	RJ-45
Serial channels	screw-type connector 9× 1.5 mm²
USB device	type micro B
USB host	type A

System parameters of the central unit

User program memory	1 MB
Memory for user variables/ including RETAIN variables	320 kB/48 kB
Backup of program source code in PLC	Yes, optional in Mosaic
On-line program change in PLC	Yes, including I/O configuration change
DataBox – additional internal data memory	128/256 kB, optional
File system – Internal flash disk	128 MB, journaling file system
File system – RAM disk PLC	16 MB
File System – USB Flash disk	Supported
File system – Micro SD card	supported (except for variants with WLAN1)
Optional memory card slot	Yes, for microSDHC/SDXC card
Cycle time per 1k of logic instructions	0,036 ms
Development environment	Mosaic
Programming languages	ST, IL, LD, FBD, SFC, CFC
RTC – Real time circuit	No
RTC – Backup time	typ. 500 hours
Integrated Web server	Yes
Integrated Datalogger	Yes
Access to PLC variables via web API	Yes

COM – Communication – IP/Ethernet

Ethernet 10/100 Mb (ETHx)	2
WLAN1 (internal, optional)	1
WLAN2 (external via USB host, optional)	1
LTE interface (LTEx, optional)	1
Available system modes on ETH	UNI, PLCx, PLD
Available system modes on LTE and WLAN	UNI
TCP/IP protocol	Yes
UDP protocol	Yes
HTTPS protocol	Yes
HTTP protocol	Yes
Protocol MODBUS/TCP	Yes
SMTP protocol	Yes
IEC 60870-5-104 protocol	Yes
REST API	Yes

COM – Communication – Serial Ports

CH1-4: max. number of internal Serial Channels (MR-013x to slots in basic module)	4
CH5-10: max. number of serial expansion channels (SC-11xx on TCL2)	6
Number of slots for optional submodules with interface (MR-013x)	2
Available system modes on CH1-4	UNI
Available system modes on CH5-10	UNI, CSJ (CAN)
Modbus protocol RTU/ASCII slave	Yes
Modbus RTU/ASCII master protocol	Yes

COM – Communication – USB

USB devices interface	1
USB host interface	1
Available system modes on USB	PC

COM – System expansion buses

Expansion I/O Bus (TCL2)	1× TCL2 master
Range of each TCL2 line	10 I/O modules + 4 operator panels
Installation I/O Bus (CIB)	1× CIB master (100 mA)
Range of each CIB line	32 CFox I/O modules

DI – Features of digital inputs

Total number of digital inputs	14
Number of groups of inputs	1
Number and organization of DI/AI	12 (DI0/AI0-DI5/DI6) (DI8/AI8-DI13/AI13)
Number and organization of DI/AI/AO	2 (DI6/AI6/AO2-DI7/AI7/AO3)
Common wire	minus
Input type	Type 1
Galvanic isolation of internal circuits	No
Input voltage for log. 1	+24 V DC; +15 V DC min.; +30 V DC max.
Input current at log. 1 (typ.)	typ. 5 mA
The minimum width of the captured pulse	500 µs

DI – Parameters of binary AC inputs

Number of inputs	1
Number of groups of inputs	1
Organization of binary inputs into groups	1× (DI14)
Input type	conventional switch
Galvanic isolation of internal circuits	Yes
Input voltage for log. 1	230 V AC typ., 200 V AC min., 250 V AC max.
Input current at log. 1 (typ.)	5 mA typ.

HSC – Special functions of binary inputs/counters

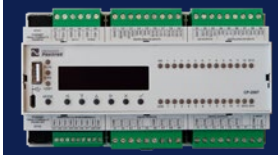
Unidirectional counter (UP)	4× (DI4); (DI5); (DI8); (DI9)
PWM input (PWM)	2× (DI4, DI5)
Overview of individual signal abbreviations	UP, UPB – pulse input for counter increment, counter B DOWN, DOWNB – pulse input for counter decrement, counter B CLK, CLKB – pulse input for counter, counters B DIR, DIRB – counter direction, counters B CLR – resetting the counter CAP – capture the counter value V – IRC's first track G – IRC second track NI – IRC zero pulse MD – measuring contact

HSC – Counter input parameters

Counter: Input frequency/ resolution	1 kHz
Pulse width	min. 500 µs
Delay from log. 0 per log. 1	500 µs
Delay from log. 1 per log. 0	500 µs
Range of registers	up to 32 bits, 0 to 4 294 967 296

DO – Parameters of binary transistor outputs

Number of outputs	2
Number of output groups	1
Organization of transistor outputs into groups	2 (DO11/AO0-DO12/AO1)
Common group conductor	minus
Output type	MOSFET (low side switch)
Galvanic separation from internal circuits	No
Switching voltage	min. 5 V, max. 30 V
Switching current	max. 0,5 A
Output resistance	typ. 0,16 Ω, max. 0,4 Ω
Switching time	typ. 9 µs
Opening time	typ. 13 µs
Internal protection	overvoltage, short circuit and overheating protection



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RO – Parameters of binary relay outputs

Number of outputs	11
Number of output groups	3
Organization of relay outputs into groups	3 (DO0-DO2) +3 (DO3-DO5) +5 (DO6-DO10)
Output type	electromechanical relay, unprotected output
Contact type	normally open
Galvanic separation from internal circuits	yes (even groups to each other)

RO/Type 1 – Parameters of binary relay outputs

Parameters valid for the terminals	DO0–DO5, DO7–DO10
Switching current	3 A max., 100 mA min.
Switching voltage	min. 5 V; max. 250 V
Short-circuit protection	No
Short-term output overload	max. 4 A
Current through common terminal	max. 10 A
Contact closing time	typ. 10 ms
Contact opening time	typ. 4 ms
Limit values of switched resistive load	max. 3 A at 30 V DC or 230 V AC
Switching inductive load limits DC13	max. 3 A at 30 V DC
Switching inductive load limits AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switching/min.
Switching frequency with rated load	max. 20 switching/min.
Mechanical life	min. 5,000,000 cycles
Electrical life at maximum resistive load	min. 100,000 cycles
Electrical life at maximum load inductive DC13	min. 100,000 cycles
Electrical life at maximum load inductive AC15	min. 100,000 cycles
Treatment of inductive load	External RC element, varistor (AC), diode (DC)
Insulation voltage between outputs and internal circuits	3750 V AC
Insulation voltage between groups of outputs to each other	3750 V AC

RO/Type 2 – Parameters of binary relay outputs

Parameters valid for the terminals	DO6
Switching current	10 A max., 100 mA min.
Switching voltage	min. 5 V; max. 250 V
Short-circuit protection	No
Short-term output overload	max. 10 A
Current through common terminal	max. 10 A
Contact closing time	typ. 10 ms
Contact opening time	typ. 4 ms
Limit values of switched resistive load	max. 10 A at 30 V DC or 230 V AC
Switching inductive load limits DC13	max. 10 A at 30 V
Switching inductive load limits AC15	max. 10 A at 230 V AC
Switching frequency without load	max. 300 switching/min.
Switching frequency with rated load	max. 6 switching/min.
Mechanical life	min. 5,000,000 cycles
Electrical life at maximum resistive load	min. 100,000 cycles
Electrical life at maximum load inductive DC13	min. 100,000 cycles
Electrical life at maximum load inductive AC15	min. 100,000 cycles
Treatment of inductive load	External RC element, varistor (AC), diode (DC)
Insulation voltage between outputs and internal circuits	3750 V AC
Insulation voltage between groups of outputs to each other	3750 V AC

AI – Ranges of analog inputs

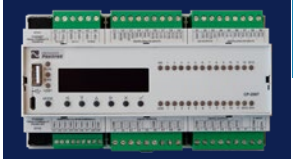
Voltage	0 to 2 V/805.9 µV
Voltage	0 to 10 V/2,579 mV
Input impedance in the voltage signal range	> 20 kΩ
Voltage input error – maximum error at 25 °C	± 0.4% of full scale
Current	0 to 20 mA/8,059 µA
Current	4 to 20 mA
Input impedance in the current signal range	100 Ω
Current input error – maximum error at 25 °C	± 0.4% of full scale
Open input detection	Yes, in status word (underrange – only 4 – 20 mA range)
Passive sensors	Pt1000, W100 = 1,385 (–90 to +400 °C)
Passive sensors	Pt1000, W100 = 1,391 (–90 to +400 °C)
Passive sensors	Ni1000, W100 = 1,500 (–60 to +200 °C)
Passive sensors	Ni1000, W100 = 1.617 (–60 to +200 °C)
Passive sensors	resistance sensor 0 – 2 kΩ
Passive sensors	resistance sensor 0 – 200 kΩ
Passive sensors	PTC thermistor KTY81-121 (–55 to + 125°C)
Passive sensors	NTC Thermistor 5 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 10 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 12 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 15 k/25 °C (–40 to + 125 °C)
Passive sensors	NTC Thermistor 20 k/25 °C (–40 to + 125 °C)
Input impedance in signal range RTD	>20 kΩ
Resistance measurement error – maximum error at 25 °C	± 0.5% of full scale
Detection of disconnected sensor	yes, in status word, range overflow

AI – Analog input parameters

Number of inputs	14
Number of groups	1
Organization of groups	12 (DI0/AI0-DI5/AI5) (DI8/AI8-DI13/AI13) + 2 (DI6/AI6/AO2-DI7/AI7/AO3)
Common wire	minus
Input type	with common terminal
Galvanic separation from internal circuits	No
Digital resolution	12 bit
External power supply	No
Converter type	Approximation
Conversion time	20 µs
Operating modes	periodic input sensing
Insulation potential	500 V DC between input and internal circuits

AO – Analog output parameters

Number of analog outputs	4
Organization of outputs in groups	2 (DO11/AO0-DO12/AO1) + 2 (DI6/AI6/AO2-DI7/AI7/AO3)
Common wire of group	minus
Galvanic isolation from internal circuits	No
Output type	active voltage output
Converter resolution	12 bit
Output voltage/resolution 1 LSB	0 – 10,5 V/2,589 mV
Maximum output current	10 mA



Operating conditions

Product standard	ČSN EN 61131-2:2008 (idt IEC 61131-2:2007) - Programmable control units
Protection class of electrical object	II according to ČSN EN 61140 ed.3: 2016 (idt IEC 61140:2016)
IP rating (Ingress Protection)	IP20 according to ČSN EN 60529:1993 (idt IEC 529: 1989)
Operating areas	Normal, acc. ČSN 33 2000-1 ed.2: 2009 (mod IEC 60354-1:2005)
Degree of pollution	1, according to ČSN EN 60664-1:2008 (idt IEC 60664-1:2007)
Overvoltage category installation	II, according to EN 60664-1 ed_2: 2008 (idt IEC 60641-1: 2007)
Type of device	Built-in
Integrated DIN rail holder	Yes
Working position	Vertical
Type of operation	permanent-term
Ambient temperature operating range	–20 .. +55 °C
Storage temperature range	–25 .. +70 °C

Electromagnetic compatibility, Mechanical resistance

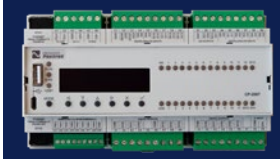
Electromagnetic compatibility /Emission:	B according to EN 55032 ed. 2: 2017 (idt CISPR 32: 2015)
Electromagnetic compatibility /Immunity:	min. as required by EN 61131-2: 2007
Sinusoidal vibration resistance	10 Hz to 57 Hz, amplitude 0,075 mm, 57 Hz to 150 Hz, acceleration 1 G

Power supply

Power supply voltage	24 V DC, +25%, –15%, SELV
Maximum power input	10 W
Internal protection	PTC reversible fuse
Module power supply via ETH, passive PoE – input	ETH1/Power In
Power supply of other equipment via ETH, passive PoE – output	ETH2/Power out, jumper configuration
Passive PoE injector parameters	24 V DC, 1 A

Dimensions and weight

Dimension (width × height × vdepth)	158 × 90 × 62 mm
Module width in multiples of M (17.5 mm)	9M
Weight approx.	300 g



Order number

TXN 120 07.11NDNN	CP-2007, CPU/1core, 2× ETH100/10, ---, 128 kB databox, LCD-20 mm, CH1-4, 12× AI/DI, 2× AI/AO, 1× DI/230VAC, 10× RO, 2× AO/PWM, 1× CIB
TXN 120 07.11NDLN	CP-2007, CPU/1core, 2× ETH100/10, LTE, 128 kB databox, LCD-20× mm, CH1-4, 12× AI/DI, 2× AI/AO, 1× DI/230 V AC, 10× RO, 2× AO/PWM, 1× CIB

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Foxtrot 2 – Basic modules and accessories

Type	DI	RO	AI	AO	Comm
CP-2080	4× DI/HSC	2× DO 6× RO			2× ETH 10/100 4× Serial channel (2× free slot) 1× USB Device 1× USB Host 1× TCL2 master 1× CIB master

CP-2080.11NDNN

CP-2080.11NDLN

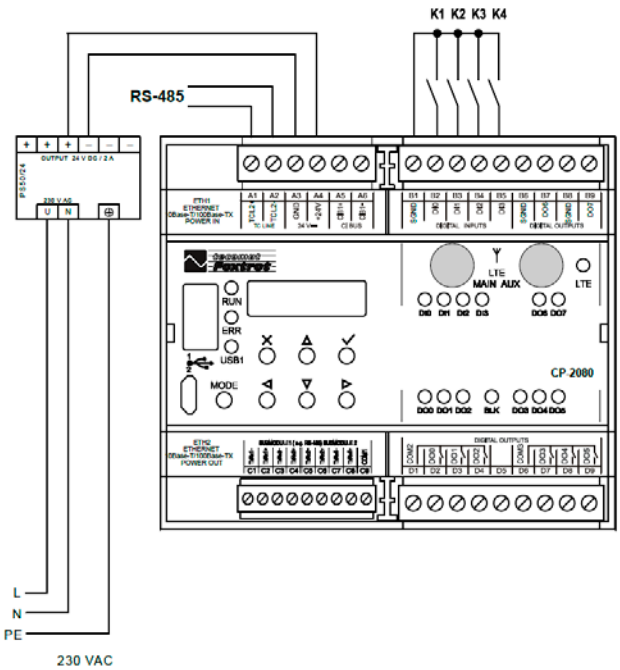
Basic features

- Programmable logic controller (PLC) according to the harmonized standard ČSN EN IEC 61131
- Communication compatible with IT, Internet, IoT, Smart technologies
- Powerful central unit with 12 integrated I/O and 10 communication and system channels
- High computing power of 0.04 ms/1k instructions
- Real time clock with calendar, non-volatile
- Possibility to connect a large number of other peripheral modules via TCL2 and CIB system buses
- Programming in ST, IL, LD, FBD, SFC and CFC according to EN IEC 61131-3
- User program memory 1 MB
- On-line programming
- Integrated MOSAIC development environment, basic module can be programmed in free version Lite
- Freely programmable website for convenient local and remote visualization and control
- File system in integrated 128 MB non-volatile flash memory with journaling support, microSD slot for file system memory expansion
- Integrated Databox 128 kB, optionally with double size 256 kB, fast non-volatile memory
- Integrated Datalogger for user-defined collections of archived data
- Rich communication ports - 2x Ethernet, 4 serial port slots, USB Host, USB device
- Available with internal WiFi
- Communication in IP networks TCP/IP, Http/Https, MQTT, MODBUS/TCP master/slave, WebSocket support, SNMP, SNTP
- Data transfer in XML and JSON formats, automatic parsing
- Other communication: KNX, BacNet, Modbus RTU master/slave
- Options: Fixed IP address/DHCP/Secure remote access without the need for public IP via TecoRoute
- TCL2 system bus for fast I/O on expansion (up to 10) I/O modules
- CIB system installation bus for two-wire connection of input / output (I/O) modules spread across the building outside the switchboard
- Multiple Tecomat PLCs can be networked in LAN Ethernet
- Integrated 4-line OLED display and 7-key front-panel keypad

Use

- Control of any machine, heat engineering equipment, industrial line, transport or energy system
- Suitable for individual and repeated projects as well as for small and large-scale production
- Suitable as embedded control system for OEMs (Original Equipment Manufacturer)
- It allows you to create your own web server and individual web pages for any connected managed object, technology
- Can be used as a programmable converter of communication protocols
- It can be used as an independent programmable datalogger for any measured or internal quantities with time stamp
- Compact dimensions suitable for standardized electrical switchboards, DIN rail mounting

Connection example



Product variants

Order number	DataBox	Display	LTE
TXN 120 80.11NSNN	128 kB	4×20 characters, 26×7 mm	–
TXN 120 80.11NSLN	128 kB	4×20 characters, 26×7 mm	Yes

Connection

Power supply and system communication	screw-type connector 9× 2.5 mm²
I/O – inputs/outputs	screw-type connector 9× 2.5 mm²
Ethernet	RJ-45
Serial channel	screw-type connector 9× 1.5 mm²
USB device	type micro B
USB host	type A

System parameters of the central unit

User program memory	1 MB
Memory for user variables/ including RETAIN variables	320 kB/48 kB
Backup of program source code in PLC	Yes, optional in Mosaic
On-line program change in PLC	Yes, including I/O configuration change
DataBox –additional internal data memory	128/256 kB, optional
File system – internal flash disk	128 MB, journalling file system
File system – PLC RAM disk	16 MB
File system – USB flash disk	Supported
File system – Micro SD card	supported (except for variants with WLAN1)
Optional memory card slot	Yes, for microSDHC/SDXC card
Cycle time per 1k of logic instructions	0,036 ms
Development environment	Mosaic
Programming languages	ST, IL, LD, FBD, SFC, CFC
RTC – Real time circuit	Yes
RTC – Backup time	typ. 500 hours
Integrated Web server	Yes
Integrated Datalogger	Yes
Access to PLC variables via web API	Yes

COM – Communication – IP/Ethernet

Ethernet 10/100 Mb (ETHx)	2
WLAN1 (internal, optional)	1
WLAN2 (external via USB host, optional)	1
LTE interface (LTEx, optional)	1
Available system modes on ETH	UNI, PLCx, PLD
Available system modes on LTE and WLAN	UNI
TCP/IP protocol	Yes
UDP protocol	Yes
HTTPS protocol	Yes
HTTP protocol	Yes
Protocol MODBUS/TCP	Yes
SMTP protocol	Yes
IEC 60870-5-104 protocol	Yes
REST API	Yes

COM – Communication – Serial Ports

CH1-4: max. number of internal Serial Channels (MR-013x to slots in basic module)	4
CH5-10: max. number of serial expansion channels (SC-11xx on TCL2)	6
Number of slots for optional submodules with interface (MR-013x)	2
Available system modes on CH1-4	UNI
Available system modes on CH5-10	UNI, CSJ (CAN)
Modbus protocol RTU/ASCII slave	Yes
Modbus RTU / ASCII master protocol	Yes

COM – Communication – USB

USB devices interface	1
USB host interface	1
Available system modes on USB	PC

COM – System expansion buses

Expansion I/O Bus (TCL2)	1× TCL2 master
Range of each TCL2 line	10 I/O modules + 4 operator panels
Installation I/O Bus (CIB)	1× CIB master (100 mA)
Range of each CIB line	32 CFox I/O modules

DI – Features of digital DC inputs

Total number of digital inputs	4
Number of groups of inputs	1
Number and organization of DI/HSC	4× DI (DI0-DI3)
Common wire	minus
Input type	potential-free contact
Galvanic isolation of internal circuits	Yes
Input voltage for log. 1	+1 V DC max.
Input current at log. 1 (typ.)	–1 mA
The minimum width of the captured pulse	500 µs

HSC – Special functions of binary inputs/counters

Unidirectional counter (UP)	4× (DI0); (DI1); (DI2); (DI3)

HSC – Counter input parameters

Counter: Input frequency/ resolution	1 kHz
Pulse width	min. 500 µs
Delay from log. 0 per log. 1	500 µs
Delay from log. 1 per log. 0	500 µs
Range of registers	up to 32 bits, 0 to 4 294 967 296

DO – Parameters of binary transistor outputs

Number of outputs	2
Number of output groups	1
Organization of transistor outputs into groups	2× (DO6-DO7)
Common group conductor	minus
Output type	MOSFET (low side switch)
Galvanic separation from internal circuits	Yes
Switching voltage	min. 5 V, max. 30 V
Switching current	max. 0,5 A
Output resistance	typ. 0,16 Ω, max. 0,4 Ω
Switching time	typ. 9 µs
Opening time	typ. 13 µs
Internal protection	overvoltage, short circuit and overheating protection

RO/Type 1 – Parameters of binary relay outputs

Parameters valid for the terminals	DO0-DO5
Switching current	3 A max., 100 mA min.
Switching voltage	min. 5 V; max. 250 V
Short-circuit protection	No
Short-term output overload	max. 4 A
Current through common terminal	max. 10 A
Contact closing time	typ. 10 ms
Contact opening time	typ. 4 ms
Limit values of switched resistive load	max. 3 A at 30 V DC or 230 V AC
Switching inductive load limits DC13	max. 3 A at 30 V DC
Switching inductive load limits AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switching /min.
Switching frequency with rated load	max. 20 switching /min.
Mechanical life	min. 5,000,000 cycles
Electrical life at maximum resistive load	min. 100,000 cycles
Electrical life at maximum load inductive DC13	min. 100,000 cycles
Electrical life at maximum load inductive AC15	min. 100,000 cycles
Treatment of inductive load	External RC element, varistor (AC), diode (DC)
Insulation voltage between outputs and internal circuits	3750 V AC
Insulation voltage between groups of outputs to each other	3750 V AC

CP-2080.11NDNN

CP-2080.11NDLN

RO – Parameters of binary relay outputs

Number of outputs	6
Number of output groups	2
Organization of relay outputs into groups	3 (DO0-DO2) + 3 (DO3-DO5))
Output type	electromechanical relay, unprotected output
Contact type	normally open
Galvanic separation from internal circuits	yes (even groups to each other)

Operating conditions, product standards

Product standard	ČSN EN 61131-2:2008 (idt IEC 61131-2:2007) - Programmable control units
Protection class of electrical object	II according to ČSN EN 61140 ed.3: 2016 (idt IEC 61140:2016)
IP rating (Ingress Protection)	IP20 according to ČSN EN 60529:1993 (idt IEC 529: 1989)
Operating areas	Normal, acc. ČSN 33 2000-1 ed.2: 2009 (mod IEC 60354-1:2005)
Degree of pollution	1, according to ČSN EN 60664-1:2008 (idt IEC 60664-1:2007)
Overvoltage category installation	II, according to EN 60664-1 ed_2: 2008 (idt IEC 60641-1: 2007)
Type of device	Built-in
Integrated DIN rail holder	Yes
Working position	Vertical
Type of operation (operating frequency)	permanent-term
Ambient temperature operating range	–20 .. +55 °C
Storage temperature range	–25 .. +70 °C

Electromagnetic compatibility, Mechanical resistance

Electromagnetic compatibility /Emission:	A, according to EN 55032 ed. 2: 2017 (idt CISPR 32:2015)
Electromagnetic compatibility /Immunity:	min. as required by EN 61131-2: 2007
Sinusoidal vibration endurance	10 Hz to 57 Hz, amplitude 0,075 mm, 57 Hz to 150 Hz, acceleration 1 G

Power supply

Power supply voltage	24 V DC, +25%, –15%, SELV
Maximum power input	10 W
Internal protection	PTC reversible fuse
CIB branch power supply parameters from the built-in master	1× 100 mA/24 V DC
Module power supply via ETH, passive PoE – input	ETH1/Power In
Power supply of other equipment via ETH, passive PoE – output	ETH2/Power out, jumper configuration
Passive PoE injector parameters	24 V DC, 1 A

Dimensions and weight

Dimensions	105 × 90 × 62 mm
Module width in multiples of M (17.5 mm)	6M
Weight approx.	200 g

CP-2080.11NDNN

CP-2080.11NDLN

Order number

TXN 120 80.11NSNN	CP-2080, CPU/1core, 2×ETH100/10, ---, 128 kB databox, LCD-7 mm, CH1-4, 4× D I(GO), 6× RO, 2× DO, 1×CIB
TXN 120 80.11NSLN	CP-2080, CPU/1core, 2×ETH100/10, LTE, 128 kB databox, LCD-7 mm, CH1-4, 4× DI, 6× RO, 2× DO, 1×CIB

Foxtrot 2 – Basic modules and accessories

Type	DI	DO	AI	AO	Comm
CP-2090					2× ETH 10/100 4× Serial channel (2× free slot) 1× USB device 1× USB host 1× TCL2 master 1× CIB master

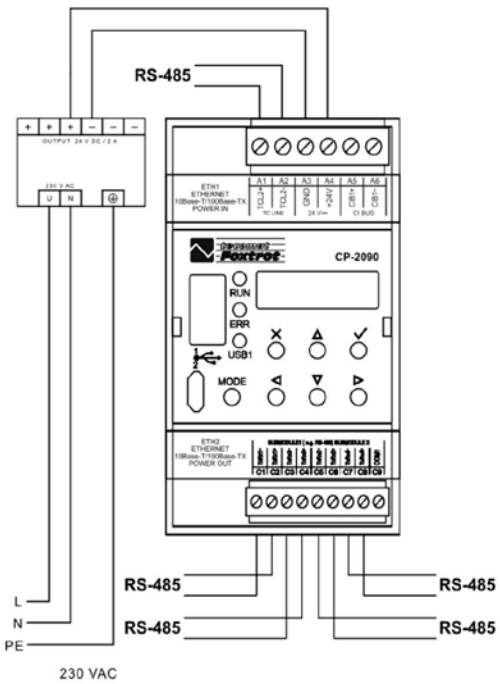
CP-2090.11NSNN

- Programmable logic controller (PLC) according to the harmonized standard ČSN EN IEC 61131
- Communication compatible with IT, Internet, IoT, Smart technologies
- Powerful central unit with 10 communication and system channels
- High computing power of 0.04 ms/1 k instructions
- Real time clock with calendar, non-volatile
- The CP-2090 is a dimensionally minimalist version of the basic module without integrated inputs and outputs.
- Possibility to connect a large number of other peripheral modules via TCL2 and CIB system buses
- Programming in ST, IL, LD, FBD, SFC and CFC according to EN IEC 61131-3
- User program memory 1 MB
- On-line programming
- Integrated MOSAIC development environment, basic module can be programmed in free version Lite
- Freely programmable website for convenient local and remote visualization and control
- File system in integrated 128 MB non-volatile flash memory with journaling support, microSD slot for file system memory expansion
- Integrated Databox 128 kB, optionally with double size 256 kB, fast non-volatile memory
- Integrated Datalogger for user-defined collections of archived data
- Rich communication ports – 2× Ethernet, 4 serial port slots, USB Host, USB device
- Available with internal WiFi
- Communication in IP networks TCP/IP, Http/Https, MQTT, MODBUS TCP master/slave WebSocket support, SNMP, SNTP
- Data transfer in XML and JSON formats, automatic parsing
- Other communication: KNX, Modbus RTU master/slave,
- Options: Fixed IP address/DHCP/Secure remote access without the need for public IP via TecoRoute
- TCL2 system bus for fast I/O on expansion (up to 10) I/O modules
- CIB system installation bus for two-wire connection of input/output (I/O) modules spread across the building outside the switchboard
- Multiple Tecomat PLCs can be networked in LAN Ethernet
- Integrated 4-line OLED display and 7-key front-panel keypad

Use

- Control of any machine, thermal equipment, industrial line, transport or energy system, house or instrumentation building
- Suitable for individual and repeated projects as well as for small and large-scale production
- Suitable as embedded control system for OEMs (Original Equipment Manufacturer)
- It allows you to create your own web server and individual web pages for any connected managed object, technology
- Can be used as a programmable converter of communication protocols
- It can be used as an independent programmable datalogger for any measured or internal quantities with time stamp
- Compact dimensions suitable for standardized electrical switchboards, DIN rail mounting

Connection example



TECO Advanced Automation

Connection

Power supply and system communication	screw-type connector 9× 2.5 mm²
Ethernet	RJ-45
Serial channels	screw-type connector 9× 1.5 mm²
USB device	type micro B
USB host	type A

System parameters of the central unit

User program memory	1 MB
Memory for user variables/ including RETAIN variables	320 kB/48 kB
Backup of program source code in PLC	Yes, optional in Mosaic
On-line program change in PLC	Yes, including I/O configuration change
DataBox – additional internal data memory	128/256 kB, optional
File system – Internal flash disk	128 MB, journaling file system
File system – RAM disk PLC	16 MB
File System – USB Flash disk	Supported
File system – Micro SD card	supported (except for variants with WLAN1)
Optional memory card slot	Yes, for microSD card
Cycle time per 1k of logic instructions	0,036 ms
Development environment	Mosaic
Programming languages	ST, IL, LD, FBD, SFC, CFC
RTC – Real time circuit	Yes
RTC – Backup time	typ. 500 hours
Integrated Web server	Yes
Integrated Datalogger	Yes
Access to PLC variables via web API	Yes

COM – Communication – IP/Ethernet

Ethernet 10/100 Mb (ETHx)	2
WLAN2 (external via USB host, optional)	1
Available system modes on ETH	UNI, PLCx, PLD
TCP/IP protocol	Yes
UDP protocol	Yes
HTTPS protocol	Yes
HTTP protocol	Yes
WebSocket protocol	Yes
Protocol MODBUS/TCP	Yes
SMTP protocol	Yes
IEC 60870-5-104 protocol	Yes
REST API	Yes

COM – Communication – Serial Ports

CH1-4: max. number of internal Serial Channels (MR-013x to slots in basic module)	4
CH5-10: max. number of serial expansion channels (SC-11xx on TCL2)	6
Number of slots for optional submodules with interface (MR-013x)	2
Available system modes on CH1-4	UNI
Available system modes on CH5-10	UNI, CSJ (CAN)
Modbus protocol RTU/ASCII slave	Yes
Modbus RTU/ASCII master protocol	Yes

COM – Communication – USB

USB devices interface	1
USB host interface	1
Available system modes on USB	PC

COM – System expansion buses

Expansion I/O Bus (TCL2)	1× TCL2 master
Range of each TCL2 line	10 I/O modules + 4 operator panels
Installation I/O Bus (CIB)	1× CIB master (100 mA)
Range of each CIB line	32 CFox I/O modules

Operating conditions, product standards

Product standard	ČSN EN 61131-2:2008 (idt IEC 61131-2:2007) – Programmable control units
Protection class of electrical object	II according to ČSN EN 61140 ed.3: 2016 (idt IEC 61140:2016)
IP rating (Ingress Protection)	IP20 according to ČSN EN 60529:1993 (idt IEC 529: 1989)
Operating areas	Normal, acc. ČSN 33 2000-1 ed.2: 2009 (mod IEC 60354-1:2005)
Degree of pollution	1, according to ČSN EN 60664-1 ed.2:2008 (idt IEC 60664-1:2007)
Overvoltage category installation	II, according to EN 60664-1 ed_2: 2008 (idt IEC 60641-1: 2007)
Type of device	Built-in
Integrated DIN rail holder	Yes
Working position	Vertical
Type of operation (operating frequency)	permanent-term
Ambient temperature operating range	–20 °C to +55 °C
Storage temperature range	–25 °C to +70 °C

Electromagnetic compatibility, Mechanical resistance

Electromagnetic compatibility /Emission:	A according to EN 55032 ed. 2: 2017 (idt CISPR 32: 2015)
Electromagnetic compatibility /Immunity:	min. as required by EN 61131-2: 2007
Sinusoidal vibration resistance	10 Hz to 57 Hz, amplitude 0,075 mm, 57 Hz to 150 Hz, acceleration 1 G

Power supply

Power supply voltage	+24 V DC, +25%, –15%, SELV
Maximum power input	10 W
Internal protection	PTC reversible fuse
Module power supply via ETH, passive PoE – input	ETH1/Power In
Passive PoE injector parameters	24 V DC, 1 A
Power supply of other equipment via ETH, passive PoE – output	ETH2/Power out, jumper configuration

Rozměry a hmotnost

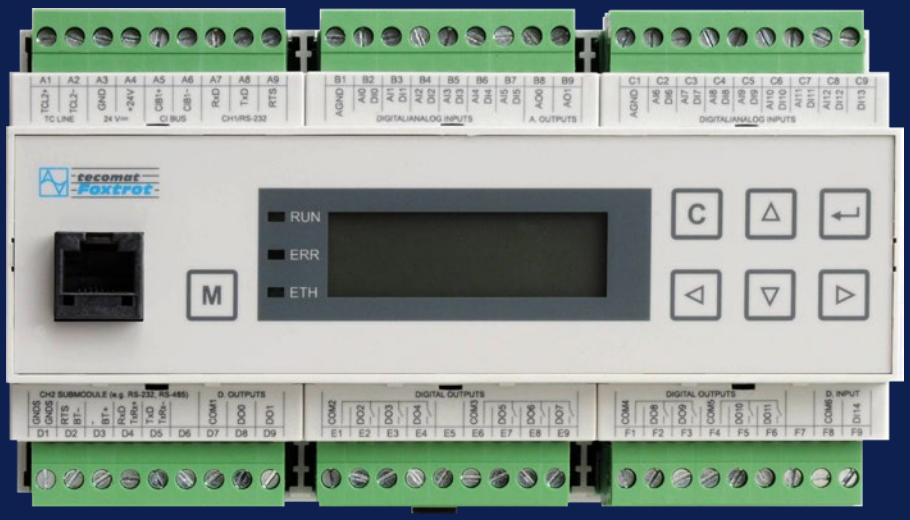
Rozměry produktu (šířka × výška × hloubka)	52 × 90 × 62 mm
Šířka modulu v násobcích M (17,5 mm)	3M
Hmotnost cca.	100 g

Order number

TXN 120 90.11NSNN	CP-2090, CPU/1core, 2× ETH100/10, ---, 128 kB databox, LCD-7 mm, CH1-4, 1× CIB, 1× TCL2

PLC Foxtrot

Basic module communication lines schema



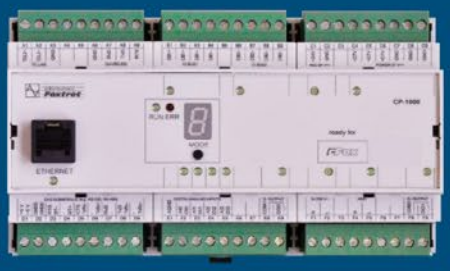
Mass storage
SD/SDHC

Optional interfaces

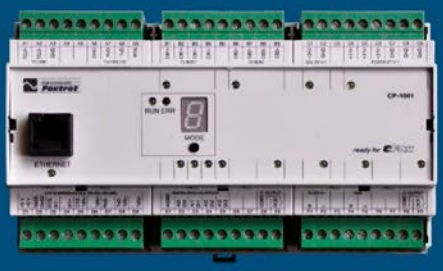
- RS-232
- RS-422
- RS-485
- RS-485/Profibus
- 2× DMX512
- CAN
- Parallel I/O

Modules connected to the system are mentioned in other parts of the catalog.

Basic modules



CP-1000



CP-1001

CP-1003

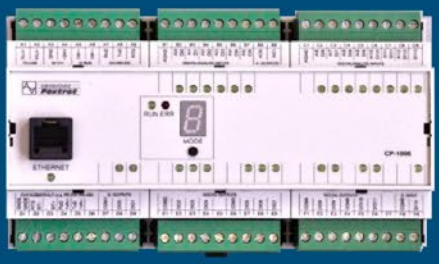
CP-1013

CP-1004

CP-1014

CP-1005

CP-1015

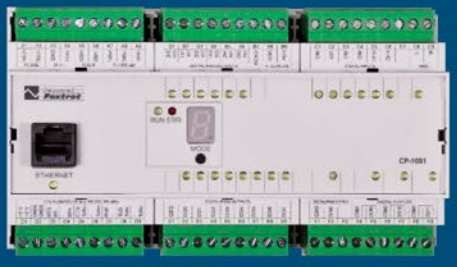


CP-1006

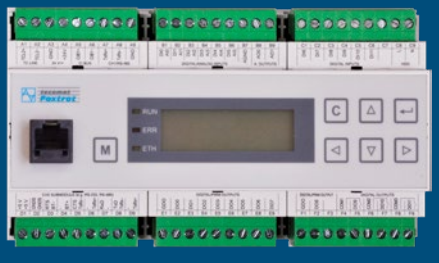
CP-1016

CP-1008

CP-1018



CP-1091



CP-1096

PLC Tecomat Foxtrot – basic modules

Basic module for CFox and RFox

Type	DI	RO	AI	AO	Comm
CP-1000 **CP-1001**	2× DI/230 VAC	2× RO	4×AI/DI		2× CIB, 1× Ethernet 10/100, 1× RS-232, 1× optional, TCL2

Basic features

- The central unit designated for installations with CFox and RFox peripheral systems.
- CP-1001 differs from CP-1000 by bigger memory for the user program (up to 384 kB).
- The central module is equipped with 4 universal inputs, 2 inputs 230 V AC and 2 relay outputs.
- Universal inputs can be configured either as an analog inputs for RTD sensors Pt1000, Ni1000 or NTC thermistors 12 kΩ or potential-free inputs (dry contacts)
- Binary inputs 230 V AC are used for connection of load management signal and main monitoring
- Standard relay outputs 250 V AC/3 A
- I/O number can be extended by the connection of up to 10 peripheral modules via TCL2 serial bus (345 kbit/s).
- Memory can be expanded by SD/SDHC cards up to 32 GB (FAT32 file system).
- Built-in clocks and calendar (RTC)
- The central unit contains 2 CIB bus masters. It allows to connect up to 64 input and output CFox modules in any combination of I/O and mechanical construction.
- CIB ensures power supply for these peripheral modules too.
- Number of CIB branches is extendable up to 10 using CF-1141 communication modules (connected to TCL2 bus). It means maximum number of 320 peripheral modules per CPU.
- Optionally 4 RFox communication masters RF-1131 can be connected instead of CF-1141. RFox represents wireless peripheral system (868 MHz).
- The external masters CF-1141 (CFox) and RF-1131 (RFox) can be combined up to total amount of 4 modules per CPU.
- The serial channel RS-232 is a standard part of equipment and it is used for direct communication with GSM modems and SMS notifications.
- Other channel CH2 allows to insert an optional communication interface or I/O sub-module.
- Programming and communication (LAN, WiFi, WAN, internet) via Ethernet port. IP address can be either static or assigned from DHCP.
- Support of standard protocols like Modbus RTU/TCP (master and/or slave), BACnet (slave only) a many others.
- Built-in web server, free creation of user web pages, uses file system on SD/SDHC card (XML technology)
- It allows to create a web site of any controlled object.
- It is possible to use as an programmable converter of communication protocols.
- It is possible to use as an datalogger for any measured value or internal parameter with a time stamp.
- A compact form-factor design suitable for the installation into electrical switchgears/cabinets. Module is mounted on DIN rail.
- The central module is powered from 24 V DC. While using a 27.2 V power supply it is possible to use lead acumulators in order to keep the whole system supplied whereas the time depends on a capacity of the acumulators used.
- It is dedicated for both common and specific control tasks in home and building automation and for the integration with other system via communication interfaces.
- The module can be programmed in Mosaic development environment.

CP-1000

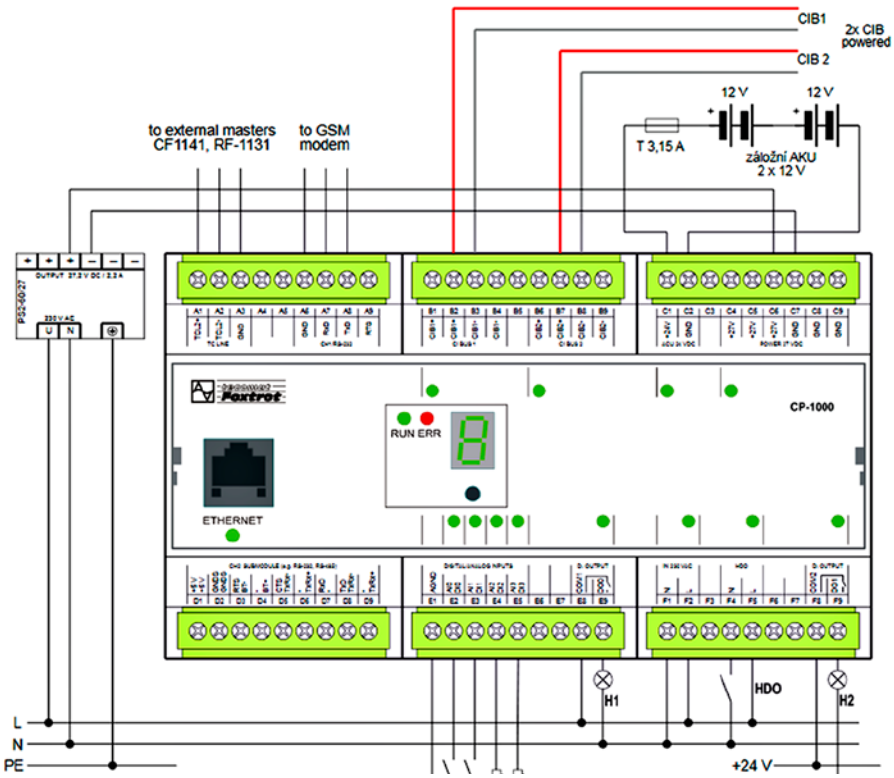
CP-1001

Related products

Submodules with inputs/outputs PX-7811, PX-7812

Communication submodules MR-01xx

Connection example



TECO Advanced Automation

Communication

Ethernet; Supported protocols	1× 100/10 Mbit/s; TCP/IP, UDP, HTTP; SMTP ; MODBUS/TCP, BACnet, IEC 60870-5-104
Serial ports	1× RS232;1× free slot for optional interface (see submodules MR-0xxx)
System I/O bus	1× TCL2 (RS485, 345 kbit/s)
Communication over expansion module at TCL2	CIB, RFox, MPbus, Opentherm
Installation bus	2× CIB (19.2 kbit/s) (CIB – Common installation bus)

Features of CPU

CPU	32 bit RISC processor
PLC instruction cycle	0.2 ms/1 k instructions
Real Time Clock (RTC) Yes	Yes
Backup period of RAM and RTC	500 h without battery, 20 000 h with battery
User program memory + table memory	CP-1000: 192 kB+64 kB CP-1001: 384 kB+64 kB
Program memory backup	Yes
Internal data memory (DataBox)	0.5 MB
Archive memory for the project resource files	2 MB
Memory card slot	Yes, SD, SDHC
Memory for variables	64 kB/32 kB remanent

Universal inputs (DI0/AI0-DI3/AI3)

No. of inputs	4
Optional function of input	resistance measurement at digital input see separate table
Common wire	minus (AGND)
Galvanic isolation	No

Analog inputs (AI0–AI3)

Resolution	12 bit
Conversion time	typ. 50 µs/1 input
Sample repetition period	typ. 650 µs
Protection type, overvoltage	integrated, overvoltage

Measurement ranges

Resistance thermometers	
input resistance	> 4 kΩ
Measuring range	Pt1000 1.385 (–90 up to +270°C) Pt1000 1.391 (–90 up to +270°C) Ni1000 1.617 (–60 up to +155°C) Ni1000 1.500 (–60 up to +155°C) NTC 12 k (–40 up to +125°C) KTY81-121 (–55 up to 125°C) Resistance range from 0 up to 2000 Ω Resistance range from 0 up to 200 kΩ
Max. error at 25 °C	±0.5 % of full range ±10% for range from 0 up to 200 kΩ
Permissible permanent overload	–20 up to +35 V (between AI and AGND)
Sensor disconnection detection	Yes, in status word

Operating conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according to EN 60950
IP Degree of protection IEC 529	IP 20
Overvoltage category	II
Degree of pollution IEC EN 606641:2004	1
Working position	vertical
Installation	on DIN rail
Connection	Screw terminals
Conductors cross-section	max. 2.5 mm²

Binary inputs (DI0-DI3)

Input voltage for log. 0 (UL)	min. 2.3 V, max. 12 V
Input voltage for log. 1 (UH)	min. 0 V, max. 1 V
Input current for log. 1 (IH)	typ. – 1.7 mA
Delay 0 –> 1/1 –> 0	1 ms/1 ms

Binary inputs 230 V AC (HDO, IN 230 VAC)

Galvanic isolation	Yes, 4 kV
Input voltage for log. 0 (UL)	max. 120 V AC
Input voltage for log. 1 (UH)	min. 200 V AC
Input current for log. 1 (IH)	typ. 5 mA
Delay 0 –> 1/1 –> 0	10 ms/10 ms

Relay outputs (DO0-DO1)

No. of outputs × groups	2 (1+1)
Galvanic isolation	Yes (even outputs to one another)
Type of contact/type of output	Electromechanical relay, non-protected output
Switched voltage	min. 5 V; max. 250 V
Switched current	min. 10 mA; max. 3 A
Short-term output overload	max. 4 A
Time to close/open the contact	typ. 10 ms/ 4 ms
Threshold limits of switched loads for resistive load	max. 3 A at 30 V DC or 230 V AC
for inductive load DC13	max. 1 A at 30 V DC
for inductive load AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switches/min.
Switching frequency with rated load	max. 20 switches/min.
Mechanical/Electrical lifetime at max. load	min. 5 mil./100 000 cycles
Short-circuit protection	No
Spike suppressor of inductive load	External RC, varistor or diode snubber
Insulation voltage	3750 V AC (for more detailed info see documentation TXV 004 11)

Dimensions and weight

Dimensions	158 × 92 × 63 mm
Weight	250 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % + 25 % (20.4 .. 30 V DC)
Max. power consumption	75 W
Galvanic isolation	No, only relay outputs, HDO, IN 230 VAC and CH2
Program memory backup	Built in Li-Ion accumulator (500 hours); Holder for CR2032 lithium battery (for 20 000 hours)

CP-1000

CP-1001

Order data

TXN 110 00	CP-1000, CPU, ETH100/10, 2×CIB, 1×RS232, 1×SCH, 4×AI/DI, 2×DI 230 VAC, 2×RO, prg. Mosaic/IDM

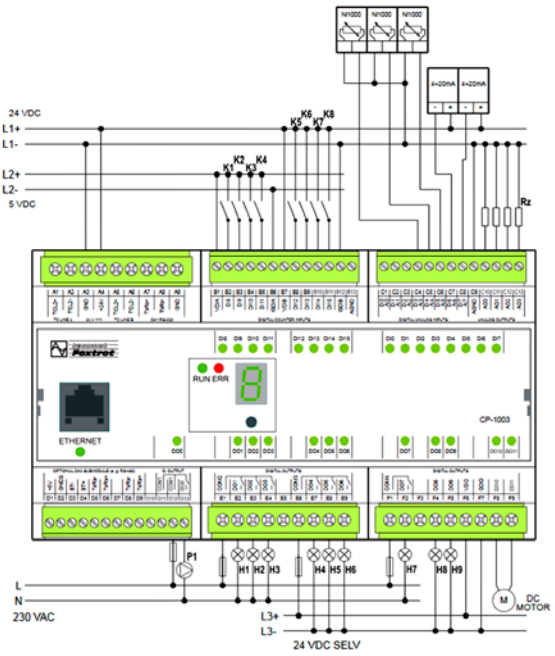
PLC Tecomat Foxtrot – basic modules

Type	DI	RO	AI	AO	Comm
CP-1003 **CP-1013**	8× DI/HSC	7× RO/3 A 1× RO/10 A 4× DO/PWM	8× DI/AI	4× AO	Ethernet 10/100, 2× TCL2, 1× RS485

Basic features

- Programmable controller (PLC) according to IEC EN 61131 standard with 32 I/O on a basic module and up to 272 I/O by utilizing all of the 20 possible expanding modules.
- Inbuilt Ethernet port (100 Mbps) and serial RS-485 port with possible increase by another 3 serial ports directly in the basic module.
- Efficient central module with practical configuration of 32 integrated inputs and outputs.
- 2× 4 digital inputs with selectable voltage level and alternative function of fast counters with speed up to 100 kHz.
- 8 universal inputs selectable as analog or digital. Selectable voltage, current and resistivity ranges.
- 4 analog outputs with voltage range of ±10 V and 12 bit distinction.
- 4 really fast semiconductor digital outputs with selectable function of frequency output, pulse width modulation (PWM), direct control of DC engines or direct control of stepper motors with frequency up to 100 kHz.
- 8 relay outputs, 1 with option of switching 10 A/230 V AC. other 7 outputs switch up to 3 A.
- Expandable memory SD/SDHC cards, inbuilt file system FAT32.
- Inbuilt clocks and calendar.
- Can increase the number of I/O by up to 20 expanding modules on 2 serial buses TCL2 (345 kbps).
- Possibility of creating network with multiple PLC Tecomat in LAN Ethernet network or on RS-485 bus.
- Freely programmable according to IEC EN 61131-3 standard.
- On-line programming during operation.
- Programming and communicating via Ethernet (100 Mbps), selectable static IP address, or DHCP.
- Up to 4 serial ports, one RS-485 in basic version, other 3 with optional interface out of MR-01xx series (up to 345 kbps), configurable UART.
- Inbuilt PROFIBUS DP Master up to 180 kbps.
- Built-in web server, free creation of user internal web site stored on memory card (XML technology).
- Enables to create web page of any connected controlled object.
- May be used as programmable converter of communication protocols.
- May be used as independent programmable datalogger for any measured or internal values.
- Compact form-factor for DIN rail mounting and suited for standard switchboards.

Connection example



Příklad zapojení modulu CP-1003

Features of CPU

CPU	32 bit RISC processor
PLC instruction cycle	0.2 ms/1 k Instructions
Real Time Clock (RTC)	Yes
Backup period of RAM and RTC	500 h/20 000 h without /with battery
User program memory + table memory	384 + 64 kB
Program memory backup	Yes
Internal data memory (DataBox)	0.5 MB
Archive memory for the project resource files	2 MB
Memory card slot	Yes, SDHC/SD
Memory for variables	192 kB/32 kB remanent
No. of IEC timers/counters	4096/8192

Binary/Counter inputs DI8-DI11, DI12-DI15

No. of inputs × groups	4 × 2
Optional function of inputs	4× counter or 2× IRC (encoder) do 100 kHz
Common wire	minus (GNDA, GNDB)
Galvanic isolation	Yes (also among groups)
Input decision level	Yes, 5 – 24 V. Adjustable by reference voltage on input
Input voltage for log. 0	Max. 0.25 UDI
Input voltage for log. 1	Min. 0.6 UDI
Input resistance for log. 1	Typ. 4.5 kΩ
Delay 0 –> 1/1 –> 0	2 µs/2 µs

Communication

Ethernet	1× 10/100Base T
Supported protocols	TCP/IP, UDP, http, SMTP, Modbus TCP, BACnet
Serial ports	1× RS-485 (CH1) a 1× free slot CH2 for submodules (See MR-01xx)
System I/O bus	2× TCL2 (RS-485, 345 kbit/s)
Communication over expansion module at TCL2	CIB, RFox, MP-BUS, OpenTherm
Installation bus	Only with external master CF-1141

Analog/Binary inputs DI0/AI0-DI7/AI7

No. of inputs × groups	8 × 1
Optional function of inputs	• Binary input • U ranges: 0 – 2 V, 0 – 10 V • I ranges: 0 – 20 mA , 4 – 20 mA • R ranges: 0 – 2 kΩ, 0 – 200 kΩ NTC, 12k, KTY81-121, Ni1000, Pt1000
Common wire	Minus (AGND)
Galvanic isolation	Yes, from rest of the module, AI is connected with AO only
Resolution/Range	12 bit
Conversion time	80 µs/1 input
Measurement repetition	480 µs
Protection type	Integrated, overvoltage

CP-1003

CP-1013

Related products

Submodules with inputs/outputs PX-7811, PX-7812

Submoduly komunikační MR-01xx

TECO Advanced Automation

Binary transistor outputs DO8-DO11

No. of outputs	4
Galvanic isolation	Yes, transistor is isolated from the rest of the module
Type of output	Push-Pull – Pair of transistors that switch VCC and GND. Can be grouped in two and create 2× full bridge
Optional function of outputs	Frequency output, PWM output, DC motor control. When motor is connected as bridge circuit between 2 outputs then both speed and direction of rotation can be controlled
Common terminal	minus (GND)
Switched voltage	10 – 32 V DC
Switching current constant/pulse	Max. 2.7 A/4 A
Residual current at switch-off	12 mA
Time to close/open the contact	1.6 µs/0.6 µs
Switching rate	Max. 100 kHz

Binary relay outputs DO0-DO7

No. of outputs	7×3 A (DO0-DO6), 1×10 A (DO7) divided into 4 groups
Galvanic isolation	Yes (also among groups)
Typ kontaktu/výstupu	Switching relay, unprotected output
Switched voltage	Min. 5 V, max. 250 V AC
Switched current	Min. 10 mA; max. 3 A (DO7 – 10 A)
Short-term output overload	Max. 4 A (DO7 – 10 A)
Current through joint terminal	Max. 15 A
Time to close/open the contact	Typ. 10 ms/4 ms
Switching frequency without load	Max. 300 switches/min, 60 switches/min (DO7)
Switching frequency with rated load	Max. 20 switches/min, 6 switches/min (DO7)
Mechanical/Electrical lifetime at max. load	Min. 5 mil./100 000 cycles
Short-circuit protection	None
Spike suppressor of inductive load	External (RC element, varistor, diode)
Insulation voltage	3750 V AC

Operating conditions CP-1003

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according to EN 60950
IP Degree of protection (IEC 529)	IP20
Overvoltage category	II
Degree of pollution IEC EN 606641:2004	1
Working position	Vertical
Installation	on DIN rail
Connection	Screw terminals
Conductors cross-section	DI, AI, AO, DO0, CH2 – 1.5 mm², Other max. 2.5 mm²

Analog outputs AO0-AO3

No. of outputs	4
Galvanic isolation	Yes, connected only with AI
Common wire	Minus AGND
Resolution/Range	12bit
Range/current	±10 V/max. 10 mA
Conversion time	10 µs

Dimensions and weight CP-1003

Dimensions	158 × 92 × 63 mm (9M)
Weight	250 g

Power supply CP-1003

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ..+25 %; 20.4..30 V DC,
Max. power consumption	10 W
Internal protection	Yes
Galvanic isolation	Inputs and outputs are isolated, while communication is not
Program memory backup	Built-in Li-Ion accumulator (500 hours) Lithium battery CR2032 holder (20 000 hours)

CP-1003

CP-1013

Order data

TXN 110 03	CP-1003; CPU, ETH100/10, 1× RS485, 1× SCH, 8× AI/DI, 8× DI/HSC, 4× AO, 8× RO, 4× DO, 2× TCL2

PLC Tecomat Foxtrot – basic modules

Basic module with 14 I/O (max. 21 I/O) with counter inputs

Type	DI	RO	AI	AO	Comm
CP-1004 **CP-1014**	8×DI of which 4×DI/AI, and 4×DI/HSC	6× RO			Ethernet 10/100, RS-232, 1×optional interface, 1×TCL2, 1×CIB, RFox optional

Basic features

- Programmable controller (PLC) according to IEC EN 61131 standard.
- Outstanding integration of control system with latest IT and telecommunication technologies.
- Powerfull central module with integrated mostly binary inputs and relay outputs (I/O).
- Type CP-1014 with built-in display 4×20 characters and 6 user keys, other features the same with CP-1004.
- Available code pages: CP1250 (Central European), CP1251 (Cyrillic), CP1252 (Western European), CP1253 (Greek). CP 1255 (Hebrew).
- 4 inputs may be configured as High speed counters (HSC) and 4 as voltage analog inputs.
- Optional slot can be inserted by additional 7×DI or 4×DI/3×DO on submodules PX-781x.
- Memory expandable by SD/SDHC/MMC cards, built-in file system compatible with FAT32.
- Built-in clocks and calendar.
- No. of I/O is expandable up to 134 I/O, resp. up to 10 modules on high speed internal serial bus TCL2 (345 kbps).
- Other I/O can be expanded also by 2 wire installation bus CIB (19.2 kbps). Bus with power supply on terminals CIB+ and CIB- (when current consumption is less than 100 mA, it is not possible to use bus separation module C-BS-0001M).
- More PLC Tecomat can be networked by Ethernet LAN or by RS-485 bus.
- Free programmable PLC according IEC EN 61131-3.
- On-line programming during operation.
- Programming and data communication (in LAN, WiFi, WAN, Internet) is available on Ethernet port (100 Mbps) with fixed IP address or DHCP.
- Up to 4 serial ports: one RS-232, other 3 with optional interface (up to 345 kbps), configurable UART.
- Built-in PROFIBUS DP Master, Modbus RTU/TCP slave, IEC 60870-5-104 as payed application profile.
- Built-in BACnet slave on Ethernet port.
- Built-in web server, free creation of user internal web site stored on memory card (XML technology).
- Enables to create web page of any connected controlled object.
- May be used as programmable converter of communication protocols.
- May be used as independent programmable datalogger for any measured or internal values.
- Compact form-factor for DIN rail mounting (6 modules width) for standard circuit breaker cabinets.
- Removable connectors instead of fixed terminals.

CP-1004

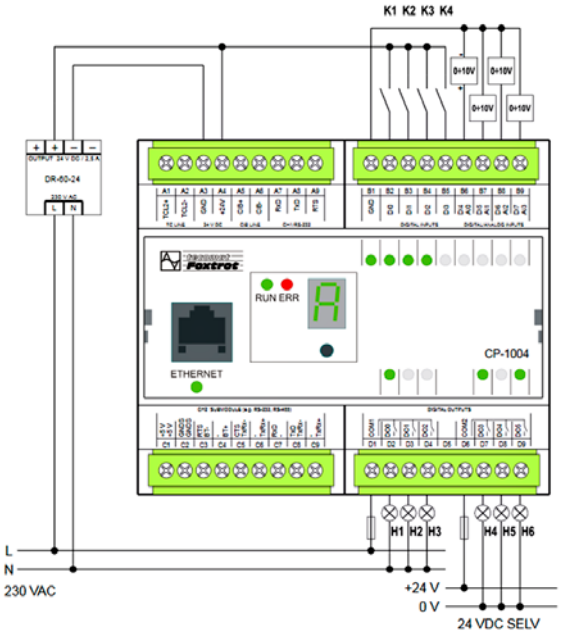
CP-1014

Related products

Submodules with inputs/outputs PX-7811, PX-7812

Communication submodules MR-01xx

Connection example



Příklad zapojení analogových vstupů modulu CP-1004

Features of CPU

CPU	32 bit RISC processor
PLC Instruction cycle	0.2 ms/1 k instructions
Real Time Clock (RTC)	Yes
Backup period of RAM and RTC	500 h without battery, 20 000 h with battery
User program memory	192+64 kB
Program memory backup	Yes
Internal data memory (DataBox)	0.5 MB
Archive memory for the project resource files	2 MB
Memory card slot	Yes, MMC/SD, SDHC
Memory for variables	64 kB/32 kB Remanent
No. of IEC timers/counters	4096/8192

Digital inputs (DI0–DI7)

No. of inputs×groups	8×1
Option: High speed counter	4 (DI0–DI3)
Option: Analog inputs	4 (DI4–DI7)
Common wire	minus (GND)
Galvanic isolation	No
Input voltage for log. 0 (U_L)	0 V DC; (–5 ÷ +5 V DC)
Input voltage for log. 1 (U_H)	+24 V DC; (+15 ÷ +30 V DC)
Input current for log. 1 (I_H)	typ. 5 mA
Delay 0 –> 1/1 –> 0:	5 µs/5 µs (DI0–DI3) 5 ms/5 ms (DI4–DI7)

High speed counters (DI0–DI3)

No. of counting inputs	4
Input Frequency/	5 kHz/20 000 edges/sec
Pulse width	min. 50 µs
Delay 0 –> 1/1 –> 0	5 µs
Range	max. 32 bit; 0 ÷ 4 294 967 295
Modes	One, two way counter, encoder, pulse and period measuring

TECO Advanced Automation

Relay outputs	(DO0–DO5)
No. of outputs × groups	3 × 2
Galvanic isolation	Yes (also among groups)
Type of contact/type of output	Electromechanical relay, non-protected output
Switched voltage	min. 5 V; max. 250 V AC
Switched current	min. 100 mA; max. 3 A
Short-term output overload	max. 4 A
Current through joint terminal	max. 10 A
Time of close/open the contact	typ. 10 ms/4 ms
Threshold limits of switched loads	
for resistive load	max. 3 A at 30 V DC or 230 V AC
for inductive load DC13	max. 3 A at 30 V DC
for inductive load AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switches/minute
Switching frequency with rated load	max. 20 switches/minute
Mechanical/Electrical lifetime at max. load	min. 5 mil./100 000 cycles
Short-circuit protection	None
Spike suppressor of inductive load	External RC, varistor or diode snubber
Insulation voltage	3750 V AC

Operating conditions	
Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	According EN 60950
IP Degree of protectionČSN EN 60529, IEC 529	IP 20
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	Vertical
Installation	On DIN rail
Connections	Screw terminals
Conductors cross-section	max. 2.5 mm^2

Analog inputs	(DI4–DI7)
Number of inputs	4
Common wire	minus (GND)
Galvanic isolation	No
Resolution/Range	10 bit/0 – 10 V
Conversion time	20 µs/1 input
Max. error at 25 °C	± 3 % of full range

Communication	
Ethernet; supported protocols	1 × 10/100 BaseT; TCP/IP, UDP, HTTP; SMTP; MODBUS TCP, BACnet, IEC 60870-5-104
Serial ports	1 × RS-232;1 × free slot for optional interface (see submodules MR-0xxx)
System I/O bus	1 × TCL2 (RS-485, 345 kbit/s)
Communication over expansion module at TCL2	CIB, RFox, MP-Bus, OpenTherm
Installation bus	1 × CIB (Common installation bus 19.2 kbit/s)

Dimensions and weight	
Dimensions	105 × 92 × 63 mm
Weight	250 g

Power supply	
Power supply voltage (SELV)	+24 V DC
Allowed range	–15% +25% (20.4 ÷ 30 V DC)
Max. power consumption	10 W
Galvanic isolation	No
Memory backup	Built in Li-Ion accumulator (500 hours); Holder for CR2032 lithium battery (for 20 000 hours)

CP-1004

CP-1014

Order number

TXN 110 04	CP-1004, CPU, ETH100/10, 1 × RS-232, 1 × SCH, 4 × DI/AI, 4 × DI/HSC, 6 × RO 230 V/3 A,1 × CIB, SW Mosaic
TXN 110 14	CP-1014, CPU+LCD 4 × 20, ETH100/10, 1 × RS-232, 1 × SCH, 4 × DI/AI, 4 × DI/HSC, 6 × RO 230 V/3 A, 1 × CIB, SW Mosaic

PLC Tecomat Foxtrot – basic modules

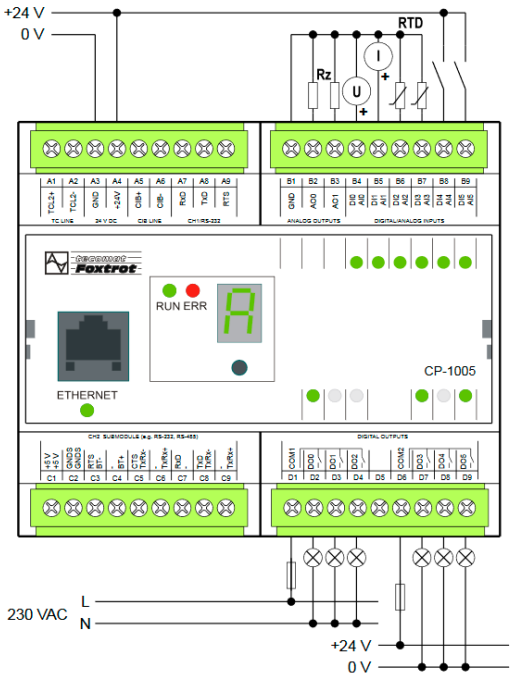
Basic module with 14 I/O (max. 21 I/O) for use in measurement and regulation

Type	DI	RO	AI	AO	Comm
CP-1005 **CP-1015**		6× RO	6× AI/DI	2× AO	Ethernet 10/100, RS-232, 1×optional interface, 1×TCL2, 1×CIB

Basic features

- Programmable controller (PLC) according to IEC EN 61131 standard.
- Outstanding integration of control system with latest IT and telecommunication technologies.
- Powerfull central module with integrated mostly analog inputs and analog outputs plus relay outputs (I/O).
- Type CP-1015 is expanded with built-in display 4×20 characters and 6 keys. Available code pages: ASCII, CP 1250 (Central European), CP 1251 (Cyrillic), CP 1252 (Western European), CP 1253 (Greek), CP1255 (Hebrew). Other features are the same with CP-1005.
- Optional slot can be inserted by additional 7×DI or 4×DI/3×DO on submodules PX-781x.
- Each of 6 universal inputs may be alternatively used as analog or digital input.
- The type of analog input (U, I, RTD) and range of measurement are set in user configuration.
- Memory expandable by SD/SDHC/MMC cards, built-in file system compatible with FAT32.
- Built-in clocks and calendar.
- No. of I/O is expandable up to 134 I/O, resp. up to 10 modules on high speed internal serial bus TCL2 (345 kbps).
- Other I/O can be expanded also by 2 wire installation bus CIB (19.2 kbps).
- More PLC Tecomat can be networked by Ethernet LAN or by RS-485 bus.
- Free programmable PLC according IEC EN 61131-3.
- On-line programming during operation.
- Programming and data communication (in LAN, WiFi, WAN, Internet) is available on Ethernet port (100 Mbps) with fixed IP address or DHCP.
- Up to 4 serial ports, one RS-232, the others with optional interface from line MR 01xx (up to 345 kbps), configurable UART.
- Built-in PROFIBUS DP Master, Modbus RTU/TCP slave, BACnet slave on Ethernet port, IEC 60870-5-104 as payed application profile.
- Built-in web server, free creation of user internal web site stored on memory card (XML technology).
- Enables to create web page of any connected controlled object.
- May be used as programmable converter of communication protocols.
- May be used as independent programmable datalogger for any measured or internal values.
- Compact form-factor for DIN rail mounting (6 modules width) for standard circuit breaker cabinets.

Connection example



Příklad zapojení analogových vstupů a výstupů základního modulu CP-1005

Digital inputs (DI0-DI5) Alternative function

No. of inputs×groups	6×1
Option: Analog inputs	See Analog inputs
Common wire	minus (GND)
Galvanic isolation	No
Input voltage for log. 0 (U_L)	0 V DC; (–5÷ +5 V DC)
Input voltage for log.1 (U_H)	+24 V DC; (+15÷ +30 V DC)
Input current for log.1 (I_H)	typ. 5 mA
Delay 0 –> 1/1 –> 0:	1ms/1ms

Features of CPU

CPU	32 bit RISC processor
PLC Instruction cycle	0.2 ms/1k instructions
Real Time Clock (RTC)	Yes
Backup period of RAM and RTC	500 hours without battery 20 000 hours with battery
User program memory	192+64 kB
Program memory backup	Yes
Internal data memory (DataBox)	0.5 MB
Archive memory for the project resource files	2 MB
Memory card slot	Yes, SD, SDHC
Memory for variables	64 kB/32 kB remanent
No. of IEC timers/counters	4096/8192

Analog inputs (AI0-AI5)

No. of inputs×groups	6×1
Configurable inputs	Voltage/Current/RTD measurement Binary input See other tables
Common wire	minus (GND)
Galvanic isolation	No
Resolution	12 bit
Conversion time	80 µs per input
Sample repetition period	480 µs
Protection type	Overvoltage, integrated

Analog outputs

No. of outputs×groups	2×1
Common wire	minus (GND)
Galvanic isolation	No
Resolution	12 bit
Conversion time	10 µs per output
Max. output current	10 mA
Output range	0 ÷ 10 V
Max. error at 25 °C	±2 % of full range
Protection type	Overvoltage, integrated
Permissible overvoltage	±20 V (between AI and GND)

CP-1005

CP-1015

Related products

Submodules with inputs/outputs PX-7811, PX-7812

Communication submodules MR-01xx

TECO Advanced Automation

Relay outputs (DO0-DO5)

No. of outputs × groups	3 × 2 = 6
Galvanic isolation	Yes (also among groups)
Type of contact/type of output	Electromechanical relay, non-protected output
Switched voltage	min. 5 V; max. 250 V AC
Switched current	min. 10 mA; max. 3 A
Short-term output overload	max. 4 A
Current through joint terminal	max. 10 A
Time of close/open the contact	typ. 10 ms/4 ms
Threshold limits of switched loads	
for resistive load	max. 3 A at 30 V DC or at 230 V AC
for inductive load DC13	max. 3 A at 30 V DC
for inductive load AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switches/minute
Switching frequency with rated load	max. 20 switches/minute
Mechanical/Electrical lifetime at max. load	min. 5 mil./100 000 cycles
Short-circuit protection	None
Spike suppressor of inductive load	External RC, varistor or diode snubber
Insulation voltage	3750 V AC

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	According EN 60950
IP Degree of protectionIEC 529	IP 20
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	Vertical
Installation	On DIN rail
Connections	Screw terminals
Conductors cross-section	max. 2.5 mm²

Communication

Ethernet; supported protocols	1 × 10/100 BaseT; TCP/IP, UDP, HTTP; SMTP; MODBUS/TCP, BACnet, IEC 60870-5-104
Serial ports	1 × RS-232;1 × free slot for optional interface (see submodules MR-0xxx)
System I/O bus	1 × TCL2 (RS-485, 345 kbit/s)
Communication over expansion module at TCL2	CIB, RFox, MP-Bus, OpenTherm
Installation bus	1 × CIB (Common installation bus 19.2 kbit/s)

Measurement ranges

Voltage	
Input impedance	> 20 kΩ
Input range	0 ÷ +10 V 0 ÷ +5 V 0 ÷ +2 V 0 ÷ +1 V 0 ÷ 0.5 V
Max. error at 25 °C	±0.3 % of full range
Allowed overload	–20 ÷ 30 V (between AI and AGND)
Current	
Input impedance	100Ω
Input range	0 ÷ 20 mA 4 ÷ 20 mA
Max. error at 25 °C	± 0.4 % of full range
Allowed overload	± 5 V/ +50 mA (between AI and GND)
Detection of open input circuit	yes, in status word
Resistance temperature detectors	
Input impedance	> 50 kΩ
Input range	Pt100 1.385 (–90 ÷ +400 °C) Pt100 1.391 (–90 ÷ +400 °C) Pt1000 1.385 (–90 ÷ +400 °C) Pt1000 1.391 (–90 ÷ +400 °C) Ni1000 1.617 (–60 ÷ +200 °C) Ni1000 1.500 (–60 ÷ +200 °C) OV1000 (0 ÷ 1000 Ω)
Max. error at 25 °C	± 0.5 % of full range
Allowed overload	±35 V (between AI and GND)
Sensor disconnection detection	Yes, in status word

Dimensions and weight

Dimensions	105 × 92 × 63 mm
Weight	250 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. power consumption	10 W
Galvanic isolation	No
Memory backup	Built-in Li-Ion accumulator (500 hours) Holder for CR2032 lithium battery (20 000 hours)

CP-1005

CP-1015

Order number

TXN 110 05	CP-1005, CPU, ETH100/10, 1 × RS-232, 1 × SCH, 6 × AI/DI, 2 × AO, 6 × RO 230 V/3 A, 1 × CIB, prg. Mosaic
TXN 110 15	CP-1015, CPU+LCD4 × 20, ETH100/10, 1 × RS-232, 1 × SCH, 6 × AI/DI, 2 × AO, 6 × RO 230 V/3 A,1 × CIB, prg. Mosaic

Basic modules with 29 I/O for use in HVAC

Type	DI	RO	AI	AO	Comm
CP-1006 **CP-1016**	1× DI/HSC 1× DI/230 VAC	2× SSR 10× RO	13× AI/DI	2× AO	Ethernet 10/100, RS-232, 1 × optional interface, TCL2, CIB, optionally RFox

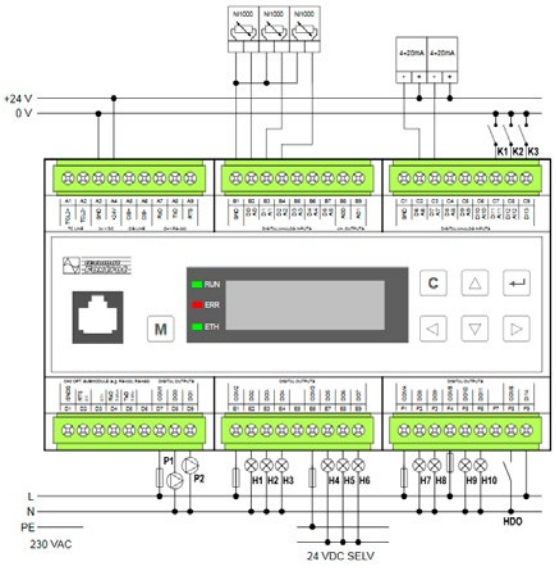
CP-1006

CP-1016

Basic features

- Programmable controller (PLC) according to IEC EN 61131 standard.
- Outstanding integration of control system with latest IT and telecommunication technologies.
- Type CP-1016 is expanded with built-in display 4 × 20 characters and 6 keys. Available code pages: ASCII, CP 1250 (Central European), CP 1251 (Cyrillic), CP 1252 (Western European), CP 1253 (Greek), CP 1255 (Hebrew).
- Powerfull central module with integrated universal inputs and with analog, triac and relay outputs.
- Each of 13 universal inputs may be alternatively used as an analog or digital input of potential free contact.
- Several inputs (AI6 – AI12) may be used as current inputs 4(0)÷20 mA, the range is set by jumper. Other inputs may be configured for one of ranges Ni1000, Pt1000, OV1000. The range of measurement is set as user configuration.
- 2 SSR (Solid State Relay) outputs usable for PWM (Pulse Width Modulation).
- Memory expandable by SD/SDHC/MMC cards, built-in file system compatible with FAT32.
- Built-in clocks and calendar.
- No. of I/O is expandable up to 149 I/O, resp. up to 10 modules on high speed system serial bus TCL2 (345 kbps).
- Other I/O can be expanded also by 2 wire electrical installation bus CIB (19.2 kbps). Maximum total number of CIB branches is 9.
- On terminals CIB+ and CIB– is powered bus (max. current 100 mA).
- Optional connection of up to 4 RFox masters RF-1131 via TCL2. Radio channel 868.35 MHz.
- More PLC Tecomat can be networked by Ethernet LAN or by RS-485 bus.
- Free programmable PLC according IEC EN 61131-3.
- On-line programming during operation.
- Programming and data communication (in LAN, WiFi, WAN, Internet) is available on Ethernet port (100 Mbps) with fixed IP address or DHCP.
- 2 serial interfaces, one RS-232 and other one with optional interface out of MR-01xx series (up to 345 kbit/s), adjustable UART.• Built-in PROFIBUS DP Master, Modbus RTU/TCP slave, BACnet slave on Ethernet port.
- Built-in web server, free creation of user internal web site stored on memory card (XML technology).
- Enables to create web page of any connected controlled object.
- Enables to create web page of any connected controlled object.
- May be used as a programmable converter of communication protocols.
- May be used as an independant programmable data logger for any measured or interior variable with time index.
- Compact sizes suitable for standardised switchboard wiring, mountable on DIN ledge.

Connection example



Obr.2.7.8.1 Základní příklad zapojení základního modulu CP-1016

Features of CPU

CPU	32 bit RISC processor
PLC Instruction cycle	0.2 ms/1k instructions
Real Time Clock (RTC)	Yes
Backup period of RAM and RTC	500 hours without battery 20 000 hours with battery
User program memory	192+64 kB
Program memory backup	Yes
Internal data memory (DataBox)	0.5 MB
Archive memory for the project resource files	2 MB
Memory card slot	Yes, MMC/SD, SDHC
Memory for variables	64 kB/32 kB remanent
No. of IEC timers/counters	4096/8192

Communication

Ethernet; supported protocols	1 × 10/100BaseT; TCP/IP, UDP, HTTP; SMTP; MODBUS/TCP, BACnet, IEC 60870-5-104
Serial ports	1 × RS-232; 1 × free slot for optional interface (see submodules MR-0xxx)
System I/O bus	1 × TCL2 (RS-485, 345 kbit/s)
Communication over expansion module na TCL2	CIB, RFox, MP-Bus, OpenTherm
Installation bus	1 × CIB (Common installation bus 19.2 kbit/s)

Related products

Communication submodules MR-01xx

TECO Advanced Automation

Universal inputs (DI0/AI0–DI12/AI12)

No. of inputs	13
Configurable inputs	Resistance measurement/Current measurement at digital input (see separate table)
Common wire	minus (GND)
Galvanic isolation	No

Function Analog inputs (AI0–AI12)

Resolution	12 bit
Conversion time	50 µs/1 input
Sample repetition period	650 µs
Protection type	integrated, overvoltage
Current	
Input impedance	100 Ω
Input range	0 ÷ 20 mA (AI6–AI12) 4 ÷ 20 mA (AI6–AI12)
Max. error at 25 °C	± 0.4 % of full range
Permissible overvoltage	+50 mA (between AI and GND)
Detection of open input circuit	Yes, in status word
Resistance Temperature Detectors (RTD)	
Input impedance	> 4 kΩ
Input range	Pt1000 1.385 (–90 ÷ +270 °C) Pt1000 1.391 (–90 ÷ +270 °C) Ni1000 1.617 (–60 ÷ +155 °C) Ni1000 1.500 (–60 ÷ +155 °C) KTY81-121 (–55 ÷ 125 °C) OV1000 (0 ÷ 1000 Ω)
Max. error at 25 °C	± 0.5 % of full range
Allowed overload	±35 V (between AI and GND)
Sensor disconnection detection	Yes, in status word

Digital input type (DI0–DI12)

Type of binary input	potential free contact (do not connect 24 V DC!!!)
Input voltage for log. 0 (UL)	min. 2.3 V, max. 12 V
Input Voltage for log. 1 (UH)	min. 0 V, max. 1 V
Input current for log. 1 (IH)	typ. –1.7 mA
Delay 0 –> 1/1 –> 0	1 ms/1 ms

High speed counter DI13

No. of counting inputs	1
Input Frequency/	5 kHz
Pulse width	min. 50 µs
Delay 0 –> 1/1 –> 0	10 µs/10 µs
Range	max. 32 bit; 0 ÷ 4 294 967 295
Modes	counter, pulse lenght measurement

Digital input 230 V AC, (DI14)

Galvanic isolation	Yes, 4 kV
Input voltage for log. 0 (UL)	max. 120 V AC
Input voltage for log.1 (UH)	min. 200 V AC;
Input current for log.1 (IH)	typ. 5 mA
Delay 0 –> 1/1 –> 0	10 ms/10 ms

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protection IEC 529	IP 20
Overvoltage category	II
Degree of pollution IEC EN 60664–1:2004	1
Working position	vertical
Installation	on DIN rail
Connections	Screw terminals
Conductors cross-section	max. 2.5 mm^2

SSR outputs (Solid State Relay) (DO0–DO1)

No. of outputs	2
Galvanic isolation	Yes
Type of output	Semiconductor switch, controlled, switch in 0
Switched voltage	min. 20 V AC, max. 260 V AC
Switched current	min. 5 mA; max. 1 A
Short-term output overload	max. 1 A
Current through joint terminal	max. 2 A
Time switching on/off contact	typ. 1 µs
Switching frequency without load	max. 400 switching/min.

Relay outputs (DO2–DO11)

No. of outputs	3+3+2+ 2 = 10
Galvanic isolation	Yes (even groups each other)
Type of contact/type of output	Switching relay, protection free output
Switched voltage	min. 5 V; max. 250 V AC
Switched current	min. 10 mA; max. 3 A
Short-term output overload	max. 4 A
Current through common wire	max. 10 A
Time of close/open the contact	typ. 10 ms/4 ms
Threshold limits of switched loads	
for resistive load	max. 3 A at 30 V DC or 230 V AC
for inductive load DC13	max. 3 A at 30 V DC
for inductive load AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switching/min.
Switching frequency with rated load	max. 20 switching/min.
Mechanical/Electrical lifetime at max. load	min. 5 mil./100 000 cycles
Short-circuit protection	No
Spike suppressor of inductive load	External. (RC, varistor, diode)
Insulation voltage	3750 V AC

Analog outputs (AO0–AO1)

No. of outputs	2
Type of output	Active voltage output
Common wire	minus (GND)
Galvanic isolation	No
Resolution	10 bit
Conversion time	10 µs/output
Max. output Current	10 mA
Output range	0 ÷ +10 V
Max. error at 25 °C	±2 % of full range
Protection type	integrated overvoltage
Permissible overvoltage	±20 V (AI against GND)

Dimensions and weight

Dimensions	158×92×63 mm
Weight	250 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. power consumption	10 W
Galvanic isolation	No, only relay output and CH2
Memory backup	Built-in Li-Ion accumulator (500 hours) Lithium battery CR2032 holder (20 000 hours)

CP-1006

CP-1016

Order number

TXN 110 06	CP-1006, CPU, ETH100/10, 1×RS232, 1×SCH, 13×AI/DI, 1×DI/230 V, 1×HSC, 2×AO, 10×RO, 2×SSR, 1×CIB, prg. Mosaic
TXN 110 16	CP-1016, CPU+LCD4×20, ETH100/10, 1×RS232, 1×SCH, 13×AI/DI, 1×DI/230 V, 1×HSC, 2×AO, 10×RO, 2×SSR, 1×CIB, prg. Mosaic

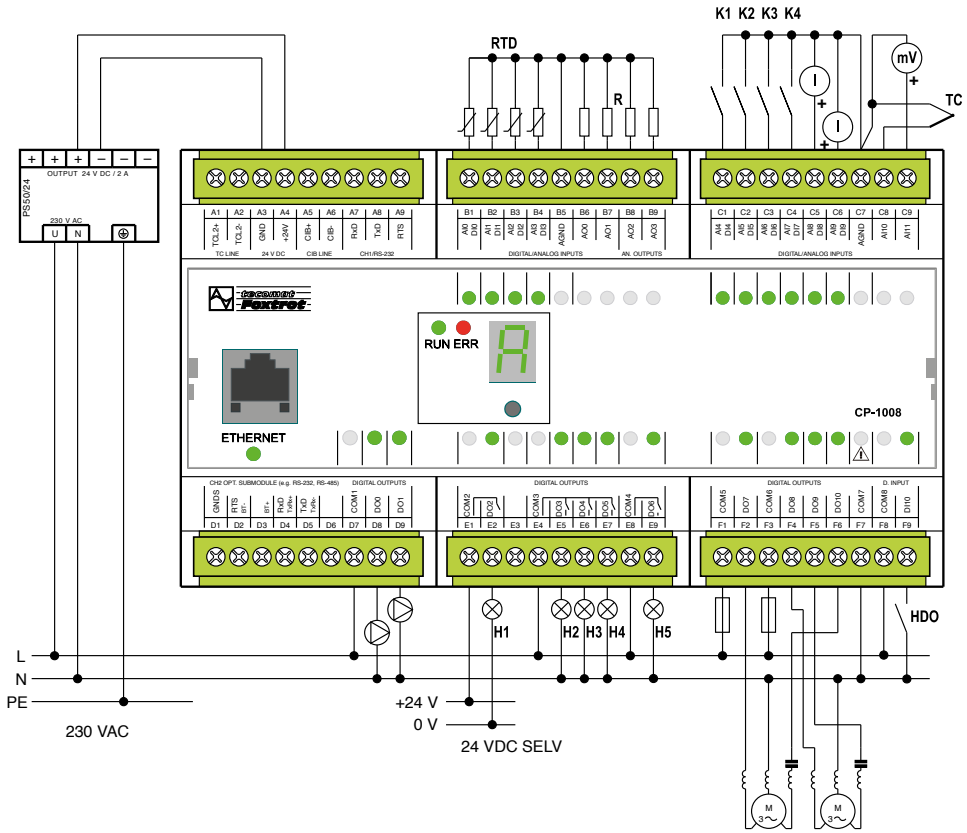
Basic module with 28 I/O for use in HVAC

Type	DI	DO/RO	AI	AO	Comm
CP-1008 **CP-1018**	1× DI/230 VAC	4× SSR 7× RO	10× AI/DI 2× AI	4× AO	Ethernet 10/100, RS232, 1 × optional interface, TCL2, CIB, optionally RFox

Basic features

- Programmable controller (PLC) according to IEC EN 61131 standard.
- Outstanding integration of control system with latest IT and telecommunication technologies.
- Powerfull central module with integrated mostly universal inputs (digital or analog) and with analog, relay and SSR outputs.
- Type CP-1018 is expanded with built-in display 4 × 20 characters and 6 keys. Available code pages: ASCII, CP 1250 (Central European), CP 1251 (Cyrillic), CP 1252 (Western European), CP 1253 (Greek), CP 1255 (Hebrew)..
- Each of 10 universal inputs may be alternatively used as analog or digital input (potential free contact).
- 4 of 10 universal inputs may be used as current inputs 4(0)÷20 mA, the range is set by jumper. Other inputs may be configured on one of ranges Ni1000, Pt1000, OV1000. The range of measurement is set as user configuration.
- Other 2 analog inputs may be used for connecting of thermocouples, or for voltage measurement in range 0 – 2 V.
- 6 standard 3 A relay outputs and 1 10 A output.
- 4 SSR (Solid State Relay) outputs for use of pulse control (PWM).
- Memory expandable by SD/SDHC cards, built-in file system compatible with FAT32.
- Built-in clocks and calendar.
- No. of I/O is expandable up to 148 I/O, resp. up to 10 modules on high speed internal serial bus TCL2 (345 kbps).
- Other I/O can be expanded also by 2 wire installation bus CIB (19.2 kbps). Maximum number of CIB branches is 9.
- On terminals CIB+ and CIB- is powered bus when current consumption is less than 100 mA, there is not need to use module C-BS-0001M).
- More PLC Tecomat can be networked by Ethernet LAN or by RS-485 bus.
- Free programmable PLC according IEC EN 61131-3.
- On-line programming during operation.
- Programming and data communication (in LAN, WiFi, WAN, Internet) is available on Ethernet port (100 Mbps) with fixed IP address or DHCP.
- 2 serial interfaces, one RS-232 and other one with optional interface out of MR-01xx series (up to 345 kbit/s), adjustable UART.
- Optional connection of RFox master RF-1131 via TCL2. Radio channel 868.35 MHz (max. 4 ×), may be combined with masters of CIB bus CF-1141.
- Built-in PROFIBUS DP Master, Modbus RTU/TCP slave, BACnet slave on Ethernet port, IEC 60870-5-104 as payed application profile.
- Built-in web server, free creation of user internal web site stored on memory card (XML technology).
- Enables to create web page of any connected controlled object.
- May be used as a programmable converter of communication protocols.
- May be used as independent programmable datalogger for any measured or internal values.
- Compact form-factor for DIN rail mounting (9 modules width) for standard circuit breaker cabinets.

Connection example



CP-1008

CP-1018

Related products

Communication submodules MR-01xx

Features of CPU

CPU	32 bit RISC processor
PLC Instruction cycle	0.2 ms/1k instructions
Real Time Clock (RTC)	Yes
Backup period of RAM and RTC	500 hours without batteries 20 000 hours with batteries
User program memory	192+64 kB
Program memory backup	Yes
Internal data memory (DataBox)	0.5 MB
Archive memory for the project resource files	2 MB
Memory card slot	Yes, SD, SDHC
Memory for variables	64 kB/32 kB remanent

Measurement ranges

Current	
Input impedance	100 Ω
Input range	0 to 20 mA (AI4-AI9) 4 to 20 mA (AI4-AI9)
Max. error at 25 °C	±0.4 % of full range
Permissible overload	+50 mA (between AI and AGND)
Detection of open input circuit	Yes in status word
Resistance temperature detectors	
Input impedance	> 4 kΩ
Input range	Pt1000 1.385 (–90 až +270°C) Pt1000 1.391 (–90 až +270°C) Ni1000 1.617 (–60 až +155°C) Ni1000 1.500 (–60 až +155°C) KTY81-121 (–55 až +125°C) NTC 12k (–40 to +125°C) (only AI4-AI9) 0 to 2000 Ω 0 to 200 kΩ (only AI4-AI9)
Max. error at 25 °C	±0.5 % of full range
Permissible overvoltage	–20 to +30 V (between AI and AGND)
Sensor disconnection detection	Yes, in status word

Function analog inputs (AI10-AI11)

Resolution	12 bit
Conversion time	50 µs/1 input
Period of measurement	650 µs
Protection type	integrated, overvoltage

Measurement ranges

Voltage	
Input impedance	> 1 GΩ
Input range	0 .. +2 V 0 .. +1 V –20 .. +100 mV –20 .. +50 mV
Thermocouples	J –210 to +1200 °C K –200 to +1372 °C R – 50 to +1768 °C S – 50 to +1768 °C T –200 to + 400 °C B +250 to +1820 °C N –200 to +1300 °C lambda sensor 2.85 to 21.21 %
Max. error at 25 °C	±0.4 % of full range
Allowed overload	–20 to + 30 V (between AI and AGND)

Function Digital inputs (DI0-DI9)

Input voltage for log. 0 (U_L)	min. 2.3 V, max. 12 V
Input voltage for log. 1 (U_H)	min. 0 V, max. 1 V
Input current for log. 1 (I_H)	typ. –1.7 mA
Delay0 –> 1/1 –> 0	1 ms/1 ms

Digital input 230 V AC (DI10)

Galvanic isolation	Yes, 4 kV
Input voltage for log. 0 (U_L):	max. 120 V AC
Input voltage for log.1 (U_H):	min. 200 V AC
Input current for log.1 (I_H):	typ. 5 mA
Delay 0 –> 1/1 –> 0:	10 ms/10 ms

Universal inputs (DI0/AI0-DI9/AI9)

No. of inputs	4 + 6
Configurable inputs	Voltage measurement/ resistance measurement/current measurement at digital input see separate table
Common wire	minus (AGND)
Galvanic isolation	No

Communication

Ethernet; supported protocols	1 × 100/10 Mbit/s; TCP/IP, UDP, HTTP; SMTP; MODBUS/TCP, BACnet, IEC 60870-5-104
Serial ports	1 × RS232;1 × free slot, optional interface (see submodules MR-0xxx).
System I/O bus	1 × TCL2 (RS485, 345 kbit/s)
Communication over expansion module	8 × CIB, 4 × RFox, MPbus, Opentherm, GSM/SMS, GPRS
Installation bus	1 × CIB (19.2 kbit/s) (Common installation bus)

SSR outputs (Solid State Relay) (DO0–DO1)

No. of outputs	2
Galvanic isolation	Yes (also among groups)
Type of output	Semiconductor switch, controlled, switching in 0
Switched voltage	max. 260 V AC
Switched current	min. 5 mA; max. 0.7 A
Current through common wire	max. 2 A
Time of close/open the contact	typ. 1 µs

Relay outputs (DO2-DO5)

No. of outputs/groups	4/2 (1+3)
Galvanic isolation	Yes (even groups each other)
Type of contact/type of output	Switching relay, protection free output
Switched voltage	min. 5 V; max. 250 V
Switched current	min. 10 mA; max. 3 A
Short-term output overload	max. 4 A
Current through common wire	max. 10 A
Time of close/open the contact	typ. 10 ms/4 ms
Threshold limits of switched loads	
for resistive load	max. 3 A at 30 V DC or 230 V AC
for inductive load DC13	max. 3 A at 30 V DC
for inductive load AC15	max. 3 A at 230 V AC
Switching frequency without load	max. 300 switching/min.
Switching frequency with load	max. 20 switching/min.
Mechanic/electric service life at maximum load	min. 5 mil./100 000 cycles
Short-circuit protection	No
Spike suppressor of inductive load	External. (RC unit, varistor, diode)
Insulation voltage	3750 V AC (for details see documentation TXV 004 11)

Relay output (DO6)

Galvanic isolation	Yes
Type of contact/type of output	Switching relay, protection free output
Switched voltage	min. 5 V; max. 250 V
Switched current	min. 10 mA; max. 10 A
Short-term output overload	max. 15 A
Time of close/open the contact	typ. 10 ms/4 ms
Switching frequency without load	max. 60 switching/min.
Switching frequency with load	max. 6 switching/min.
Mechanic/electric service life at maximum load	min. 5 mil./100 000 cycles
Short-circuit protection	No
Spike suppressor of inductive load	External. (RC unit, varistor, diode)
Insulation voltage	3750 V AC (for details see documentation TXV 004 11)

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SSR outputs (Solid State Relay) (DO7, DO8)

No. of outputs	2
Galvanic isolation	Yes (for details see documentation of TXV 004 11)
Type of output	Semiconductor switch, controlled, switching in 0)
Switched voltage	max. 260 V AC
Switched current	min. 50 mA; max. 4 A
Time of close/open the contact	typ. 1 µs

Relay outputs (DO9, DO10)

No. of outputs	1+1 (switching)
Galvanic isolation	Yes (for details see documentation of TXV 004 11)
Type of contact/type of output	Switching relay, unprotected output
Switched voltage	min. 5 V; max. 250 V
Switched current	min. 10 mA; max. 3 A
Short-term output overload	max. 4 A
Time of close/open the contact	typ. 10 ms/4 ms
Switching frequency without load	max. 300 switching/min.
Switching frequency with load	max. 20 switching/min.
Mechanic/Electric service life with maximum load	min. 5 mil./100 000 cycles
Short-circuit protection	No
Spike suppressor of inductive load	External (RC, varistor, diode)

Operating conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according EN 60950
IP Degree of protectionIEC 529:	IP 20
Overvoltage category	II
Pollution degree IEC EN 60664-1:2004	1
Working position	vertical
Installation	on DIN rail
Connections	Screw connectors
Conductors cross-section	max. 2.5 mm^2

Analog outputs (AO0-AO3)

No. of outputs	4
Common wire	minus (AGND)
Galvanic isolation	No
Resolution	8 bit
Conversion time	10 µs/output
Max. output current	10 mA
Output range	0 to +10 V
Max. error at 25 °C	±2 % of full range
Protection type	integrated overvoltage
Permissible overvoltage	±20 V (AI against AGND)

Dimensions and weight

Dimensions	158×92×63 mm
Weight	250 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15% +25% (20.4 .. 30 V DC)
Max. power consumption	10 W
Galvanic isolation	No, only relay outputs, DI10 and CH2
Memory backup	Built-in Li-Ion accumulator (500 hours). Lithium battery CR2032 holder (20 000 hours)

CP-1008

CP-1018

Order number

TXN 110 08	CP-1008, CPU, ETH100/10, 1×RS232, 1×SCH, 10×AI/DI, 2×AI, 1×DI, 4×AO, 7×RO, 4×SSR, 1×CIB, prg. Mosaic
TXN 110 18	CP-1018, CPU+LCD4×20, ETH100/10, 1×RS232, 1×SCH, 10×AI/DI, 2×AI, 1×DI, 4×AO, 7×RO, 4×SSR, 1×CIB, prg. Mosaic

TECO Advanced Automation

PLC Tecomat Foxtrot – basic modules

Basic module for local power management and buildings

Type	DI	DO	AI	AO	Comm
CP-1091 **CP-1096**	7	9+3 (8+1+3)	6 (AI/DI)	2	CIB/TCL2

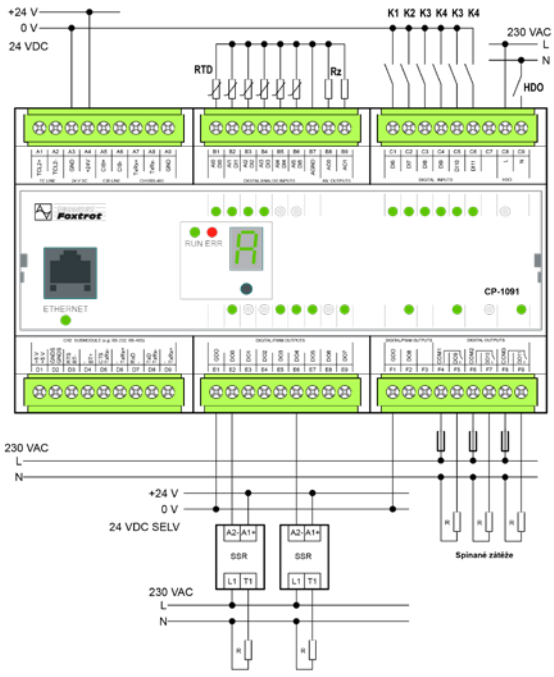
CP-1091

CP-1096

Basic features

- Programmable controller (PLC) according to IEC EN 61131 standard
- Basic module of the L series is designated as a central unit for CFox and RFox system modules.
- Outstanding integration of control system with latest IT and telecommunication technologies.
- Each of 6 universal inputs may be alternatively used as digital input (potential free contact) or analog
- CP-1096 modification is equipped with an integrated OLED display 4×20 characters.
- 6 binary inputs 24 V DC usable as counter inputs.
- 1 binary input 230 V AC
- 9 transistor outputs 24 V DC/0.5 A usable as PWM outputs.
- 3 relay outputs 250 V
- 2 analog outputs 0 – 10 V (12 bits)
- 2 serial channels (CH1-RS-232, CH2 – optional interface)
- 1 ethernet interface 10/100 Mb
- 1 TCL2 bus for connecting of peripheral modules.
- 1 CIB bus for connecting of peripheral modules.
- Memory card slot SDHC/SD
- Can use submodules to increase the number of binary I/O.
- Can use submodules to increase the number of serial channels by 2.
- No. of I/O is expandable up to 147 I/O, resp. up to 10 modules on high speed internal serial bus TCL2 (345 kbps).
- Memory expandable by SD/SDHC cards, built-in file system compatible with FAT32.
- Built-in clocks and calendar.
- On terminals CIB+ and CIB– is internally powered CIB bus
- Maximum number of CIB branches is 10, achievable by using the CF-1141 masters on TCL2, maximum number of CFox modules is 320.
- Optional connection of RFox master RF-1131 via TCL2. Radio channel 868.35 MHz (max. 4×),
- External masters of CIB bus and RFox system (CF-1141, RF-1131) may be combined up to a number of 4 masters per one basic module.
- Further, RS-485 serial channel is built in to connect directly some inverters or other devices.
- Another CH2 channel allows connecting of optional submodule for communication interface or more I/O if needed.
- Programming and data communication (in LAN, WiFi, WAN, Internet) is available on Ethernet port (100 Mbps) with fixed IP address or DHCP.
- Supports standard protocols Modbus RTU/TCP (master and slave) and BACnet (slave).
- Built-in web server, free creation of user internal web site stored on memory card (XML technology).
- Enables to create web page of any connected controlled object.
- May be used as independent programmable datalogger for any measured or internal values.
- Compact form-factor for DIN rail mounting and suited for standard switchboard.
- Central unit is supplied by 24 V DC power supply. While using a 27.2 V power supply it is possible to use lead acumulators in order to keep the whole system supplied whereas the time depends on a capacity of the acumulators used.
- For managing automation in buildings and residential objects, for common and even a trickier tasks with need of integration with different systems especially via communication interface.
- Dielectric strength among the contact groups COM1/ DO9, COM2 / DO10 and COM3 / DO11 doesn´t meet the requirements for double insulation. If there is one group used for line voltage then other groups mustn´t be used as SELV or PELV voltage circuits.

Connection example



Features of CPU

Product standard	IEC 61131-2:2007
IP Degree of protection IEC 61140:2001	II
Device type	Built-in
Degree of protection IEC 529:1989	IP20
Lifetime	10 years
Dimensions of module	158×92×63 mm
Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +85 °C
Working position	Vertical
Type of operation	Continuous
Installation	Into the switchboard
Connection	Screw terminals, wire max. 5mm²
Power supply and communication	24 V (27 V) DC
Max. power input	10 W

Inputs

Number	13
Of which are binary/counter	6
of which are analog	6
of which run on 230V	1
Diagnostics	LED on the casing
DI0 – DI5	
Galvanic isolation from internal circuits	No, only input 230V (HDO, C8/C9) is GO
Type of binary input	Potential free contact – type 1
Input voltage for log. 0	+2.3 up to +8.5V DC
Input voltage for log. 1	max. +1V DC
Input current at log. 1	typ. -1.7 mA
Delay from log. 0 to log. 1	1 ms
Delay from log. 0 to log. 1	1 ms
DI6 – DI11 + HDO	
Galvanic isolation from internal circuits	No, only input 230V (HDO, C8/C9) is galv. isolated
Type of binary input	+24V DC (230V AC input HDO)
Input voltage for log. 0	Max +10V DC (max 120V AC input HDO)
Input voltage for log. 1	+12 up to 30V DC (200 up to 260V AC input HDO)
Input current for log. 1	typ. 5 mA
Delay from log. 0 to log. 1	4 µs (10 ms input HDO)
Delay from log. 1 to log. 0	4 µs (10 ms input HDO)
Minimum pulse width	20 µs

Analog inputs (AI0 – AI5)

No. of inputs	6 (Variant input functions DI0 – DI5)
No. of inputs in the group	6 (along with outputs AO0 a AO1)
Galvanic isolation from internal circuits	No
Diagnostics	Overload signalization in status word
Common wire	Minus
External power supply	No
Type of converter	Approximate
Digital resolution	12 bits
Protection type	Integrated, overvoltage
Filtration	low pass
Internal calibration	No
Measuring range Passive temperature sensors	Pt1000 1.385 (–90 up to +270 °C) Pt1000 1.391 (–90 up to +270 °C) Ni1000 1.617 (–60 up to +155 °C) Ni1000 1.500 (–60 up to +155 °C) KTY81-121 (–55 up to +125°C)
Resistance ranges	0 up to 2 kΩ
Voltage ranges	0 up to 2.5V (internal voltage on A/D converter)
Input impedance in signal range	> 4 kΩ
Reference voltage	8.34 V
Analog input error	
max. error at 25 °C	± 0.5 % of full range
Temperature coefficient	± 0.05 % of full range/K
Non-linearity	± 0.09 % of full range
Repeatability under steady conditions	0.07 % of full range
Maximum permissible overload (without damage)	–20 ÷ +30V (every terminal AI against AGND)
Total time of system input move	typ. 80 µs
Sample repetition period	typ. 480 µs
Overload indication	Yes, in status word
Detection of open input circuit	None
Sensor disconnection detection	Yes, in status word (range exceedance)

Relay outputs (DO9 – DO11)

No. of outputs	3
No. of outputs in the group	1, 1, 1
Designation	DO9, DO10, DO11
Galvanic isolation from internal circuits	Yes
Diagnostics	LED on the casing
Type of outputs	Electromechanical relay
Type of contact	Normally closed
Switched voltage	max. 250V, min. 5V
Switched current	max. 16A, min. 100mA/5V
Short-term output overload	max. 80A/20ms
Time to switch on	typ. 15ms
Time to switch off	typ. 5ms
Limit values of switching load	
for resistive load	16A at 30V DC/250V AC
for inductive load DC13	max. 1A at 30V DC
for inductive load AC15	max. 3.5 A at 230V AC
Switching frequency without load	max. 300 switches/min.
Switching frequency with rated load	max. 20 switches/min.
Mechanical lifetime	min. 20 000 000 cycles
Electrical lifetime at max. load	
for resistive load	min. 50 000 cycles
for inductive load DC13, AC15	min. 25 000 cycles
for light sources UL TV-5	min. 25 000 cycles
Short-circuit protection	None
Spike suppressor of inductive load	External
Insulation voltage	
among outputs and internal circuits	3750V AC
Among the output groups	Working insulation 500V AC

Transistor outputs (DO0 – DO8)

Number	9
No. of outputs in the group	8 + 1
Galvanic isolation from internal circuits	No
Diagnostics	LED on the casing
Type of outputs	Power MOSFET
Switched voltage	12 – 30V DC
Switched current	0.5A
Zbytkový proud	max. 10µA
Current through joint terminal GDO	max. 4.5A
Short-circuit protection	Current limitation (no signalization)
Protection	ESD, overvoltage, temperature, reverse polarity
Spike suppressor of inductive load	External – RC element, varistor

Analog outputs AO0 – AO1

No. of outputs	2
No. of outputs in the group	2
Type of output	Active voltage output
Galvanic isolation from internal circuits	No
Common wire	minus
External power supply	No
Conversion time	10µs
Digital resolution	12 bits
Protection type	Integrated, overvoltage
Output range/resolution (1 LSB)	0 až +10V/10.546mV
Maximum output value	105 % of output range
Maximum permissible overload (without damage)	±20V (AO against AGND)
Max. output current	10mA
Analog output error	
Max. error at 25 °C	±2 % of full range
Temperature coefficient	±0.3 % of full range/K
Linearity	±0.7 % of full range
Repeatability under steady conditions	0.5 % of full range

CP-1091

CP-1096

Order data

TXN 110 91	CP-1091, CPU, ETH100/10, 1× RS-485, 1× opt. SCH, 6× AI/DI, 6× DI, 1× DI 230VDC, 9× DO 24VDC, 3× RO, 2× AO, 1× CIB, SW Mosaic
TXN 110 96	CP-1096, CPU+LCD 4×20, ETH100/10, 1× RS232, 1× SCH, 6× AI/DI, 6× DI, 1× DI/230VAC; 9× DO; 3× RO; 4× AO 1× CIB

PLC Tecomat Foxtrot – basic modules

Basic modules in OEM design – open frame modules

Type	DI	DO	AI	AO	Comm
CP-1970	optional	optional	optional	optional	optional
CP-1972	4	13	2	2	TCL2, CIB, ETH

CP-1970.06

CP-1972

Basic characteristics

- Central Foxtrot modules in customer (OEM) version without it´s own casing.
- CP-1970 is available in many versions which differ in number of I/O. See the chart.
- CP-1972 is a smaller size and is available in just one configuration.
- Modules are fitted with central unit (CPU) of the L series, which is designated for aplications with power requirements. Contains backup memory CMOS RAM for user programs, data, tables, user registers and DataBox, Flash memory for user program backup, slot for memory card SD/SDHC and real time circuit (RTC).

Connecting

- Module is mounted on pillar bolts into a place, where it´s protected and cased within the machine or other device.
- Cabels are connected using a screw type connectors.

Usage

- For machines and devices, where special and minimised combination of inputs, outputs, communication channels, buses and fitted power supply levels.

Objednací číslo:		TXN 119 70.01	TXN 119 70.02	TXN 119 70.03	TXN 119 70.04	TXN 119 70.05	TXN 119 70.06	TXN 119 70.07	TXN 119 70.08	TXN 119 70.09	TXN 119 70.11	TXN 119 70.12	TXN 119 70.13	TXN 119 70.14	TXN 119 70.15	TXN 119 72
I/O	**Total**	25	29	33	29	47	37	36	27	32	19	31	25	38	40	21
AI	**Total**	12	8	17	9	20	13	17	12	8	5	8	13	18	12	2
AO	**0–10V**	2	2		2	6	4	3	2	3		2	3	4	4	2
DI	**Total**	5	10	0	6	1	6	3	7	5	4	13	2	2	8	4
DO	**Total**	6	9	16	12	20	14	13	6	16	10	8	7	14	16	13
AI	**0–10V**	6					2		6	1						
AI	**0–12V**											1				
AI	**0–5V**	2				2			1					2		
AI	**0–2V**					1									1	
AI	**0–20mA**						1			1			1	3		2
AI	**Pt100**											2				
AI	**Pt1000**	4				17	4	17		3		5				
AI	**Ni1000**		8	17	9								12	13		
AI	**NTC 12k**						2								11	
AI	**NTC 10k**								5		5					
AI	**0–2.4k**									3						
AI	**0–10k**						4									
AO	**0–10V**	2	2		2	6	4	3	2	3		2	3	4	4	2
DI	**24V**	3	8		4		5	2	7	3	3	11			4	4
DI	**24V pulse**	2					1								2	
DI	**5V pulse**		1		1					1		1	1	1	1	
DI	**230V AC**		1		1	1		1		1	1	1	1	1	1	
RO	**5A**		8	16	12	16		10		14	10	5	4	10	16	
RO	**16A**		1				6	3		1		3	3	2		
RO	**SSR**						2							2		
DO	**transistor**	6				4	6		6	1						13
CH1	**RS-485**		1	1	1	1	1	1		1		1				1
CH2			1	1	1	1		1		1	1	1	1	1	1	
TCL2			1	1	1	1	1					1		1		1
CIB		1		1		1	1	1	1	1	1	1	1	1	1	1
ETH		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
???	**230V AC**		1		1	1		1		1	1					
???	**24V DC**	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
???	**5V DC**	1	1		1	1			1	1					1	

Expansion modules

IB-1301

12x DI

OS-1401

12x DO

IR-1501

4x DI
8x RO

IT-1604

8x AI
1x AO

IT-1605

8x AI
termocouples
1x AO

OT-1651

4x AO

IC-1701

step
motor

GT-1751

1 controlled
axis

GT-1752

2 controlled
axes

GT-1753

4 controlled
axes

Expansion module with binary inputs

Type	DI	RO	AI	AO	Comm
IB-1301	12×DI(4×HSC)				TCL2

IB-1301

Basic features

- Module with binary (digital) inputs designated to increase the number of I/O of the basic Foxtrot PLC modules.
- Designated to connect the 24 V DC input signals to common terminal.
- All inputs are individually configurable.
- 4 inputs (DI0–DI3) are high-speed with the low pass filter 5 µs and can be configured for special functions identical with high speed inputs on basic module CP-1004.
- Special functions are: one or two way counters, counters with control, position incremental encoder, period and phase shift measurement up to 5 kHz and the latch for short spikes min. 50 µs.
- Inputs are galvanically isolated from internal circuits of the PLC.
- Status of the inputs is indicated by LED on the front panel.

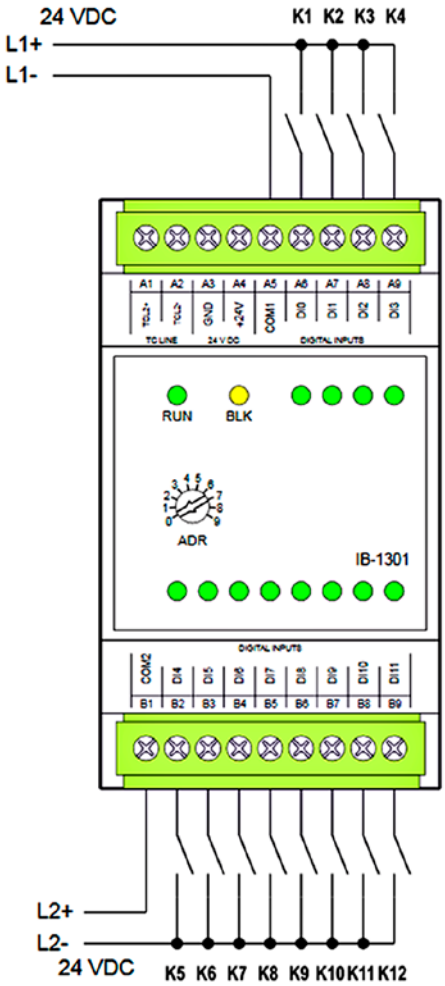
Connecting

- Module is designated to be mounted on a DIN ledge in a switchboard.
- Module can be connected to the central module directly on the distance up to 400 m by shielded twisted pair (TCL2). Using the converter KB-0552 the distance can be enlarged by fibre optic up to 1.7 km!
- Unique address of the module on TCL2 expansion bus must be set manually by the rotary switch on the front panel.
- Power supply, TCL2 and I/O are connected by removable screw connector.

Use

- For connecting two state sensors and switches with output signal being 24 V DC.
- For sensing high speed impulses up to 5 kHz.
- For sensing position incremental encoder can be connected to the module.

Connection example



Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25÷70 °C
Electric strength	according EN 60950
IP Degree of protectionIEC 529	IP 10B
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	vertical
Installation	on DIN rail
Connections	screw terminals
Conductors cross-section	max. 2.5 mm²

Digital inputs (DI0-DI11)

No. of inputs in groups	8 and 4
Option: High speed counter	4 (DI0–DI3)
Common wire	minus and plus
Galvanic isolation	Yes
Input voltage for log. 0 (UL)	0 V DC; (–5 ÷ +5 V DC)
Input voltage for log. 1 (UH)	+24 V DC; (+15 ÷ +30 V DC)
Input current for log. 1 (IH)	typ. 10 mA (DI0-DI3), typ. 5 mA
Delay 0 –> 1/1 –> 0	5 µs/5 µs (DI0–DI3) 5 ms/5 ms (DI4–DI11)

High speed counters (DI0-DI3)

No. of counting inputs	4
Input frequency/Pulse width	5 kHz/min. 50 µs
Delay 0 –> 1/1 –> 0	5 µs/5 µs
Range	max. 32 bit; 0 ÷ 4 294 967 295
Modes	One, two way counter, encoder, pulse and period measuring

Communication

System I/O bus	1×TCL2 (RS-485, 345 kbit/s)

Dimensions and weight

Dimensions	52×92×63 mm
Weight	105 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	2.5 W
Galvanic isolation	No

Order number

TXN 113 01	IB-1301, 12×DI 24 VAC/DC, galvanic isolation

Expansion module with binary outputs

Type	DI	DO	AI	AO	Comm
OS-1401		12×DO			TCL2

OS-1401

Basic features

- Module with binary (digital) inputs designated to increase the number of I/O of the basic Foxtrot PLC modules.
- Module is used for connecting loads at 24 V DC.
- Switching current is 4×2 A per output and 8×0.5 A per output.
- Galvanic isolation of outputs.
- Status of the outputs is indicated by LED on the front panel.

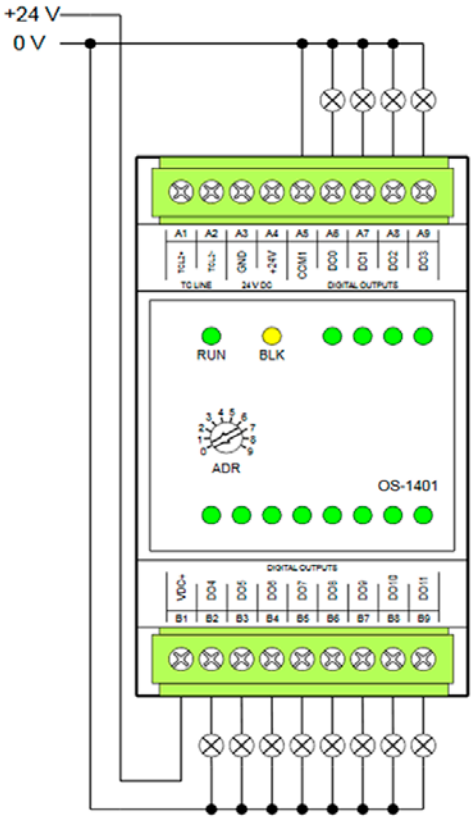
Connecting

- Module is designated to be mounted on a DIN ledge in a switchboard.
- Module can be connected to the basic module directly on the distance up to 400 m by shielded twisted pair (TCL2). Using the converter KB-0552 the distance can be enlarged by fibre optic up to 1.7 km!
- Unique address of module on TCL2 expansion bus must be set manually by the rotary switch on the front panel.
- Power supply, TCL2 and I/O are connected by removable screw connector.

Use

- As local I/O as well as remote I/O of Tecomat Foxtrot PLC.
- For switching loads by semiconductor at 24 V DC level.

Connection example



Základní schéma zapojení modulu OS-1401

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protectionIEC 529	IP 10B
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	vertical
Installation	on DIN rail
Connections	screw terminals
Conductors cross-section	max. 2.5 mm²

Binary outputs	**(DO0–DO11)**
No. of outputs	12
Galvanic isolation	Yes
Type of output	Transistor
Common wire	Plus
Switched voltage	9.6 – 28.8 V DC
Switched current	max. 2 A ((DO0–DO3)) max. 0.5 A (DO4–DO11)
Current through joint terminal	max. 9 A (DO0–DO11) max. 4.4 A (DO0–DO3)
Cut-off current	<300 µA
Time of close/open the contact	400 µs/400 µs
Short-circuit protection/Short circuit current limitation	Yes/<4 A
Reversing of polarity protection	Yes
Spike suppressor of inductive load	External RC, varistor or diode snubber

Communication

System I/O bus	1×TCL2 (RS-485, 345 kbit/s)

Dimensions and weight

Dimensions	52×92×63 mm
Weight	100 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	2.5 W
Galvanic isolation	No

Order number

TXN 114 01	OS-1401, 12×DO 24 VDC, 8×0.5 A, 4×2 A, galvanic isolation

TECO Advanced Automation

Expansion module with binary inputs and relay outputs

Type	DI	RO	AI	AO	Comm
IR-1501	4×DI	8×RO			TCL2

IR-1501

Basic features

- Expansion module with 4 binary inputs and 8 relay outputs.
- Inputs are independently configurable.
- 4 inputs (DI0-DI3) are high-speed with the low pass filter 5 µs and can be configured for special functions identical with high speed inputs on the basic module CP-1004.
- Special functions are: one or two way counters, counters with control, position incremental encoders, period and phase shift measurement up to 5 kHz and latch for short spikes min. 50 µs.
- Galvanic isolation of inputs and outputs.
- Status of the inputs and outputs is indicated by LED on the front panel.

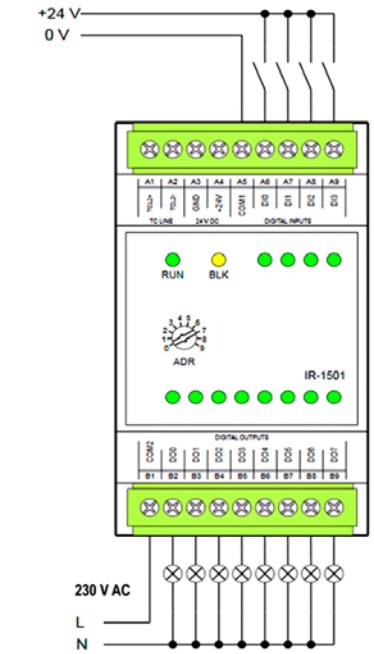
Connecting

- Module is designated to be mounted on a DIN ledge in a switchboard.
- Module can be connected to the central module directly on the distance up to 400 m by shielded twisted pair (TCL2). Using the converter the distance can be enlarged by fibre optic up to 1.7 km!
- Module address on TCL2 expansion bus must be set manually by the rotary switch on the front panel.
- Power supply, TCL2 and I/O are connected by removable screw connector.

Use

- Designated to increase the number of I/O of the basic Foxtrot PLC modules.
- For connecting 24V DC input signals to common terminal and for switching of loads with voltage from 24V DC up to 230V AC.
- For sensing high speed impulses up to 5 kHz.
- For sensing position incremental encoders.

Connection example



Základní schéma zapojení modulu IR-1501

High speed counters	(DI0–DI3)
No. of counting inputs	4
Input Frequency/Pulse width	5 kHz/min. 50 µs
Delay 0 –> 1/1 –> 0	5 µs
Range	max. 32 bit; 0 ÷ 4 294 967 295
Modes	One, two way counter, encoder, pulse and period measuring

Relay outputs	(DO0-DO7)
No. of outputs×groups	8×1
Galvanic isolation	Yes
Type of contact/type of output	Electromechanical relay, non-protected output
Switched voltage	min. 5 V; max. 250 V
Switched current	min. 100 mA; max. 3 A
Short-term output overload	max. 4 A
Current through joint terminal	max. 10 A
Time of close/open the contact	typ. 10 ms/4 ms
Threshold limits of switched loads	
for resistive load	max. 3 A /30 V DC nebo 230 V AC
for inductive load DC13	max. 3 A /30 V DC
for inductive load AC15	max. 3 A /230 V AC
Switching frequency without load	max. 300×/min.
Switching frequency with rated load	max. 20×/min.
Mechanical/Electrical lifetime at max. load	min. 5 mil./100 thous. cycles
Short-circuit protection	None
Spike suppressor of inductive load	External RC, varistor or diode snubber
Insulation voltage	3750 V AC/3750 V AC

Digital inputs	(DI0–DI03)
No. of inputs×groups	4×1
Option: High speed counter	4 (DI0–DI3)
Common wire	minus/plus
Galvanic isolation	Yes
Input voltage for log. 0 (UL)	0 V DC; (–5 ÷ +5 V DC)
Input voltage for log. 1 (UH)	+24 V DC; (+15÷ +30 V DC)
Input current for log. 1 (IH)	typ. 10 mA
Delay 0 –> 1/1 –> 0:	5 µs/5 µs (DI0–DI3)

Communication

System I/O bus	1×TCL2 (RS-485, 345 kbit/s)

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protectionIEC 529	IP 10B
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	2
Working position	vertical
Installation	on DIN rail
Connections	screw terminals
Conductors cross-section	max. 2.5 mm²

Dimensions and weight

Dimensions	52×92×63 mm
Weight	150 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15% +25% (20.4 ÷ 30 V DC)
Max. input power	3 W
Galvanic isolation	No

Order number

TXN 115 01	IR-1501, 4×DI 24 V AC/DC, 8×RO, common wire, 230 V/2 A, galvanic isolation

Expansion modules with analog inputs and outputs

Type	DI	DO	AI	AO	Comm
IT-1604			8×AI	2×AO	TCL2

IT-1604

Basic features

- Modules with combination of analog galvanic isolated inputs and outputs (AI/AO).
- IT-1604 is designed for 16 bit current, voltage and resistance /RTD measurement. Built-in reference voltage supply.
- Inputs are independent configurable.
- Type and range of measurement is set in user configuration.
- Built-in temperature sensor linearisation and correction of cold end thermocouple correction.
- Analog voltage outputs, 10 bit
- Output value provided in binary code, in % of range or directly in volts.
- Overload or disconnecting on input (only for 4 – 20 mA range) is indicated on front panel.

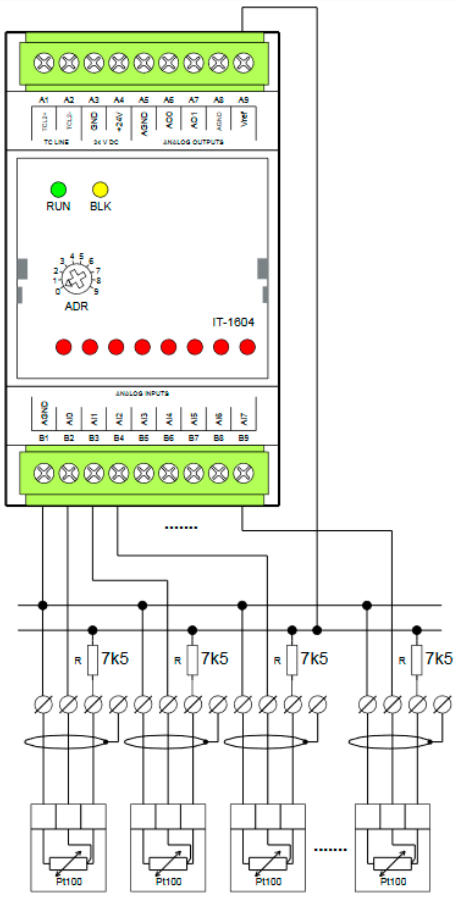
Connection

- Module designed for DIN rail mounting for standard circuit breaker cabinets.
- Module can be connected to the central module directly on the distance up to 400 m by shielded twisted pair (TCL2). Using the converter KB-0552 the distance can be enlarged by fibre optic up to 1.7 km!
- Unique module address on TCL2 expansion bus must be set manually by the rotary switch on the front panel.
- Power supply, TCL2 and I/O are connected by removable screw connector.

Use

- For expand the number of Tecomat Foxtrot basic module I/O.
- For precise measurement of voltage and current signals and for direct measurement of resistance sensors and thermocouples.

Connection example



Příklad 3-vodičového připojení čidel Pt100 k modulu IT-1604

Analog inputs	(AI0–AI7)
No. of inputs × groups	8×1
Configurable inputs	Measuring voltage/ measuring resistivity/ measuring curren.
Common wire	minus (AGND)
Galvanic isolation	Yes
Resolution	16 bit
Conversion time	65 ms/(IT-1604)
Sample repetition period	500 ms (IT-1604)
Protection type	integrated, overvoltage

Analog outputs	
No. of outputs × groups	2×1
Common wire	minus (AGND)
Galvanic isolation	Yes
Resolution	10 bit
Conversion time	10 µs/output
Max. output current	10 mA
Output range	0 ÷ +10 V (IT-1604)
Max. error at 25 °C	±2 % of full range
Protection type	integrated, overvoltage
Allowed overload	±20 V (AI against AGND)

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protectionIEC 529	IP 10B
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	vertical
Installation	on DIN rail
Connections	connector/screw terminals
Conductors cross-section	max. 2.5 mm²

Measurement ranges IT-1604

Voltage	
Input impedance	> 100 kΩ (0.5 V, 1 V; 2 V) > 50 kΩ (5 V; 10 V)
Input range	0 ÷ +10 V; 0 ÷ +5 V 0 ÷ +2 V ; 0 ÷ +1 V, 0÷0.5 V
Max. error at 25 °C	±0.3 % of full range
Permissible overvoltage	±30 V (between AI and AGND)
Current	
Input impedance	100 Ω
Input range	0 ÷ 20 mA; 4 ÷ 20 mA; 0 ÷ 5 mA
Max. error at 25 °C	±0.4 % of full range
Allowed overload	+30 mA (between AI and AGND)
Detection of open input circuit	Yes, in status word and by LED
Resistance Temperature Detectors (RTD) (RTD)	
Input impedance	7.5 kΩ
Input range	Pt100 1.385 (–90 ÷ +400 °C) Pt100 1.391 (–90 ÷ +400 °C) Pt1000 1.385 (–90 ÷ +400 °C) Pt1000 1.391 (–90 ÷ +400 °C) Ni1000 1.617 (–60 ÷ +200 °C) Ni1000 1.500 (–60 ÷ +200 °C) OV1000 (0 ÷ 1000 Ω), OV100 (0 ÷ 100 Ω), 0÷2 kΩ, 0 ÷200 kΩ, NTC 12k, KTY81-121
Max. error at 25 °C	± 0.5 % of full range
Permissible permanent overload	± 30 V (between AI a AGND)
Sensor disconnection detection	Yes, in status word

Měřené rozsahy IT-1602

Napětí	
Vstupní odpor	> 1 MΩ
Měřicí rozsah	–1 ÷ +1 V; –0,1 ÷ +0,1 V
Maximální chyba při 25 °C	±0,3 % plného rozsahu
Termočlánky	
Vstupní odpor	>1 MΩ
Měřicí rozsah	J, K, R, S, B, N, T
Maximální chyba při 25 °C	±0,5 % plného rozsahu
Dovolené trvalé přetížení	±20 V(mezi AI a AGND)
Detekce odpojeného čidla	ne

Communication

System I/O bus	1 × TCL2 (RS-485, 345 kbit/s)

Dimensions and weight

Dimensions	52 × 92 × 63 mm
Weight	120 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	IT-1604 2.5 W; IT-1602 2.5 W
Galvanic isolation	No

Order number

TXN 116 04	IT-1604, 8 × AI 16 bit,/20 mA/10 V/RTD, 2 × AO 10 bit/0÷10 V, galvanic isolation

Expansion module with analog inputs for the connection of thermocouples

Type	DI	RO	AI	AO	Comm
IT-1605			8×AI	2×AO	TCL2

Basic characteristic

- Expansion module IT-1605 has 8 analog difference inputs designated mostly for measuring thermocouples, low currents and 2 analog inputs with common terminals.
- Inputs are independent configurable.
- Resolution of input is 16 bits, module ensures processing of measured value, transfering to engineering units and linerization of characteristic temperature – voltage.
- Analog outputs use voltage –10V up to +10V with a 10 bit resolution.
- Analog inputs and outputs are galvanic isolated from input voltage and communication TCL2.
- Status of every input is indicated by LED on module panel.
- Module is connected by withdrawable screw terminals.

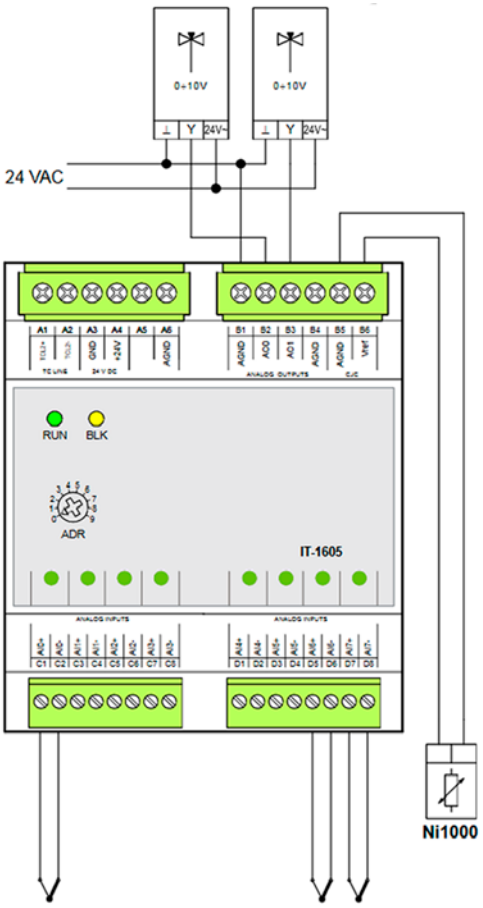
Connection

- Module designed for DIN rail mounting for standard circuit breaker cabinets.
- Module can be connected to the central module directly on the distance up to 400 m by shielded twisted pair (TCL2).
- Unique module address on TCL2 expansion bus must be set manually by the rotary switch on the front panel.
- Analog inputs and outputs have a common terminals AGND.
- For connecting analog inputs with outputs it is recommended to use shielded wires.
- Sensor measuring the cold end needs to be placed into the point of connecting the cold end of thermocouples.

Usage

- For precise measurement of low voltages and temperature using thermocouples.

Connection example



Analog inputs (AI0–AI7)

No. of inputs	8×
Common wire	AGND
Galvanic isolation from internal circuits	Yes, whole group
Resolution/Range	16 bits
Resolution/Range, accuracy	0.1 °C/10 Ω, 0.5 % of range
Vstupní impendance	>1 MΩ
One channel measurement time	100 ms
Each channel value restoration time	400 ms
Cold-end temperature sensor	Ni1000, W100 = 1.617

Type of sensor	Rozsah	Basic accuracy
voltage range	±1 V	±0.1 V
Type J	–210 .. 1200 °C	0.5 %
Type K	–200 .. 1370 °C	0.5 %
Type R	–50 .. 1768v°C	0.5 %
Type S	–50 .. 1768 °C	0.5 %
Type B	–250 .. 1820 °C	0.5 %
Type N	–200 .. 1300 °C	0.5 %
Type T	–200 .. 400 °C	0.5 %

Analog outputs

No. of outputs	2×
Common wire	Active, voltage
Galvanic isolation	Yes
Resolution/Range	8 bit
Conversion time	10 µs
Max. output current	10 mA
Max. output range	-10.5 ..10.5V
Max. error at 25 °C	±2 % of full range
Temperature coefficient	±0.3 % of full range
Linearity	±0.7 % of full range
Repeatability under steady conditions	±0.7 % of full range

Operating conditions

Operating temperature	–10 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according to EN 60730
IP Degree of protection IEC 529	IP 10B
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1:2008	1
Working position	Vertical
Installation	on DIN rail
Connection CIB, power supply, relay outputs	Screw terminal, max. 2.5 mm²

Dimensions and weight

Dimensions (š×h×v)	70×90×58 mm
Weight	142 g

Power supply

Power supply and communication	24 V DC ± 15%
Max. current drain	110 mA
Maximální příkon	2.5 W
Internal protection	PTC reversible fuse
Galvanic isolation	No

Order data

TXN 116 05	IT-1605, 8× AI diferenciální: Thermocouples, 2× AO: 10 bit/0÷10V, GO

TECO Advanced Automation

Module with analog outputs

Type	DI	RO	AI	AO	Comm
OT-1651				4× AO (U/I)	TCL2

OT-1651

Basic features

- Module with 4 independent output analog channels, galvanic isolated.
- Each channel has an outlet both for voltage and at neighboring terminal for current output too.
- Input voltage distinction is 10 bit and 1 bit presents 9.76 mV or 19.5 µA.
- Each channel is independently addressed and controlled in range 0 – 100% of current range.
- Type and output range is set in user configuration.
- Status is indicated by LED on module.

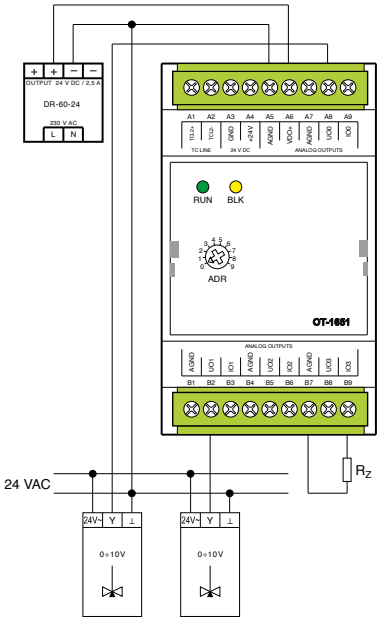
Connection

- Module is designed for DIN rail mounting for standard circuit breaker cabinets.
- Module can be connected to the central module directly on the distance up to 400 m by shielded twisted pair (TCL2).
- Unique module address on TCL2 expansion bus must be set manually by the rotary switch on the front panel.
- Module is power supplied like other modules from 24 V DC power supply, connected to removable screw connector.

Use

- Module is designed for connecting devices controlled by DC voltage or current like frequency drives, proportional valves or light dimmers.

Connection example



Analog outputs (AO0U-AO3U), (AO0I-AO3I)

No. of outputs	4
Output type	Active voltage/current output
Common wire	Minus (AGND)
Galvanic isolation	Yes
Resolution	12 bit
Conversion time	10 µs/output
Input voltage	$+V_{AO}$ 24 V DC
Max. output current	10 mA
Output voltage range	0 – 10 V
Output current range	0 – 20 mA
Max. error at 25°C	± 0.3 % of full range
Protection type	–1 V to (V_{AO} + 1) V

Operating conditions

Operating temperature	–20 .. +55 °C
Storage and transport temperature	–25 .. +70 °C
Electric strength	according EN 60950
IP Degree of protection(IEC 529)	IP10B
Overvoltage category	II
Pollution degree IEC EN 60664-1:2004	2
Working position	vertical
Installation	on DIN rail
Connection	removable screw type connector, max. 2.5 mm²

Communication

System bus	1 × TCL2 (RS-485, 345 kbit/s)

Dimensions and weight

Dimensions	52 × 92 × 63 mm
Weight	120 g

Power supply

Power supply	24 V DC
Allowed range	–15 % +25 % (20.4 – 30 V DC)
Max. input power	0.3 W
Max. power loss of the module	4.4 W
Galvanic isolation	Yes

Order number

TXN 116 51	OT-1651, 4 × AO 12 bit, 0 – 10 V,0 – 20 mA, galvanic isolation

Module with fast inputs and outputs

Type	DI	RO	AI	AO	Comm
IC-1701	8× DI	4× DO	0	0	CIB

IC-1701

Basic characteristics

- Expansion module IC-1701 has 8 fast binary inputs with configurable decision making level and 4 fast transistor outputs usable as PWM outputs or for operating up to 2 stepper motors.
- All inputs, outputs andindividual groups are galvanic isolated from input voltage and TCL2 communication.
- Status of every input is indicated by LED on module panel.
- Module is connected by withdrawable screw terminals.

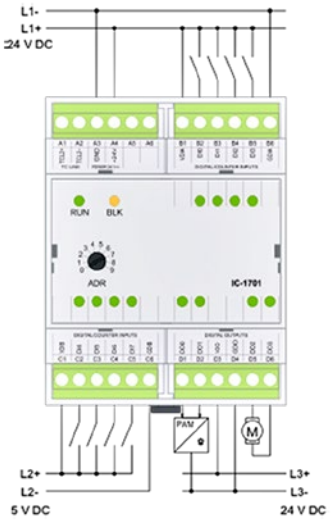
Connection

- Module gets two-wire connected to TCL2 bus, which ensures the communication between module and basic unit.
- Module designed for DIN rail mounting for standard circuit breaker cabinets.
- All inputs and outputs, TCL2 bus and power supply are connected to a module by 2 withdrawable connectors with screw terminals.

Usage

- Module is combination of inputs and outputs for centralised installation into switchboards of single-purpose machine.
- When projecting it is important to reckon with maximal load of contact and their protection against different types of loads.

Connection example



Binary outputs

No. of outputs	4
No. of outputs in the group	4
Galvanic isolation	Yes
Switched voltage	10 – 32 V DC
Switched current at 25°C	IDO0+IDO1+IDO2+IDO3 < 6 A
Switched current at 50°C	IDO0+IDO1+IDO2+IDO3 < 4 A
Switched current	Every output permanent 2.7 A, pulse 4 A
Residual current (block outputs)	max. 2 mA
Output resistance	typ. 0.3 Ω max. 0.6 Ω
Short-circuit protection	Yes
Insulation voltage among outputs and internal circuits	500 V DC
Insulation voltage among groups of inputs and outputs	500 V DC
Time to close/open the contact	Typ. 1.6/0.6 µs

Binary inputs (DI0-DI7)

No. of inputs	8
No. of inputs in the group	4
Galvanic isolation from internal circuits	Yes, among the groups
Common wire	minus
Insulation voltage	500 V
Input voltage for log. 0	(UL Max. 0.25 * VDI
Input voltage for log. 1	(UH) Min. 0.6 * VDI
Input current for log. 1	5 mA at 24 V
Switching on/off delay	2 µs
Minimal pulse width	5 µs
Input current for log. 1 (IH)	typ. 10 mA

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
IP Degree of protection (IEC 529)	IP20B
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1:2008	1
Working position	Vertical
Installation	on DIN rail
Connection, power supply, relay outputs	Screw terminal 2.5 mm²

Dimensions and weight

Dimensions (w × d × h)	105 × 90 × 58 mm
Weight	280 g

Power supply

Power supply and communication	24 V ±15%
Max. current drain	100 mA
Typical/max. power consumption	2.5 W
Internal protection	No

Order data

TXN 117 01	IC-1701; Module with high speed inputs and outputs for PWM or stepper motor

TECO Advanced Automation

PLC Tecomat Foxtrot – expansion modules

Motion control modules

Type	DI	RO	AI	AO	Comm
GT-1751	REF, LIM+, LIM-, TP	2		1 axis motion control	TCL2
GT-1752	REF, LIM+, LIM-, TP	2		2 axis motion control	TCL2
GT-1753	REF, LIM+, LIM-, TP	2		4 axis motion control	TCL2


GT-1751

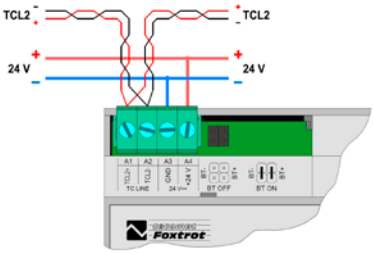

GT-1752

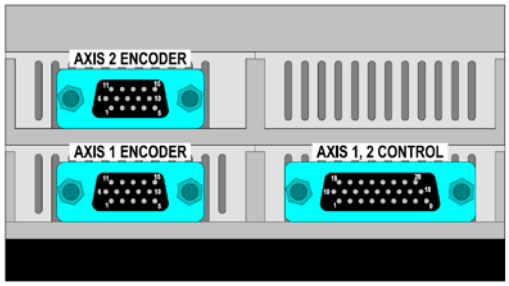

GT-1753

Basic characteristics

- Motion control modules serve for controling the position of machinery using servomotors.
- Modules are designated for simultaneous control of 1 up to 4 axes in different modes of interaction of movements.
- Control of every axis contains regulation circuit with PID regulator, where is information about actual position gathered using incremental encoder (IRC) or encoder with serial interface (SSI)
- Output of regulator is ±10V DC analog signal for servomotor.
- For entirety of controlling the axis, every axis has it´s own 24V DC binary inputs for connection of referential switch, two HW limit switches, switch of touch measuring probe and relay output for servomotor brake controlling.
- Individual axes can work as fully independent or with varied types of mutuality of axes movements.
- Up to any 3 axes can work in common linear interpolation while remaining axes can once again mutually work in linear interpolation, eventually in other mutual bond
- For circular interpolation it is possible to use any 2 axes (circular interpolation in one of 3 planes).
- Different types of axes dependance can be combined within one module
- Programming is supported by function block library MotionControlLib according to IEC 61 131-3 standard according to Motion Control specification defined by PLC open association.

Connection example GT-175x





Inputs/encoder outputs on AXIS ENCODER connector

Encoder power voltage	5V or 24V DC
Max. current drain of interface	0.9W
Galvanic isolation	Min. 1.5kV
Incremental encoder Signals V, G, NI, ERR	
Signal level	5V (RS-422)
Symmetric signal frequency	Max. 500kHz
SSI Encoder SDAT and SCLK signals	
Signal level	5V (RS-422)
Symmetric signal frequency	Max.1000kHz
SET signal to encoder	
Signal level	24V DC (open collector, pull down)

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according to EN 60950
IP Degree of protection IEC 529	IP 20
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1;2000	2
Working position	Vertical
Installation	on DIN rail
Connection	Screw terminals
Conductors cross-section	max. 2.5mm²

Dimensions and weight	**GT-1751/2**	**GT-1753**
Dimensions	90×105×58mm (6M)	90×210×58mm (12M)
Weight	250/300g	550g

Inputs/outputs on AXIS CONTROL connector

Power voltage	24V DC
Max. current drain of interface	
Inputs of REF, LIM+, LIM- and TP signals	
Input type	1
Common wire	minus
Input voltage for log. 0	Min. –5V max. +5V DC
Input voltage for log. 1	Min. +15V max. +30V DC
Input current for log. 1	Typ. 5mA
Signal frequency	Max. 100kHz
Galvanic isolation	Yes, min. 1.5kV
Minimal pulse width	Min. 1ms
Analog outputs	
No. of analog outputs	2 (for 2 axes)
Common wire	GND
D/A converter resolution	13bits
Galvanic isolation of outputs from internal circuits	Min. 1.5kV
Galvanic isolation of outputs from other signals	Min. 60V
Brake control output	
No. of outputs	2 (for 2 axes)
Output type	Relay switching contact
Switched voltage	max. 60V DC/AC
Switched current	1A
Switched load	max. 60W/120VA

Power supply modulu

Power supply voltage (SELV))	+24V DC
Allowed range	–15% ..+25%; 20.4,..30V DC
Max. current drain	GT-1751: 280mA GT-1752: 210mA GT-1753: 350mA
Internal protection	Yes
Galvanic isolation	Yes

Order data

TXN 117 51	GT-1751, 1axis positioning module for Foxtrot
TXN 117 52	GT-1752, 2axes positioning module for Foxtrot
TXN 117 53	GT-1753, 4axes positioning module for Foxtrot

Submodules with binary inputs and outputs

Type	DI	DO	AI	AO	Comm
PX-7811	7× DI				
PX-7812	4× DI	3× DO			

Basic characteristics

- Submodules of MR-01xx and PX-781x series are designed for mounting into the position of an optional channel CH2.
- One of available submodules can be inserted into this empty slot.If the slot is not used for an extension of serial channel number, it can be fitted with IO submodule PX-781x.
- By inserting of PX-781x, the amount of inputs or outputs can be enlarged by 7 inputs or a combination of 4 inputs and 3 semiconductor outputs.
- The submodules can be inserted into all Foxtrot basic modules excepting CP-10×6 and CP-10×8.

Connection

- The slot for inserting the submodule is accessible after dismantling the basic module. The submodule is plugged into the pins on the board.
- The meaning of individual terminals C1-C9 on the connector changes according to inserted submodule. The connection scheme is shown in the submodule manual.

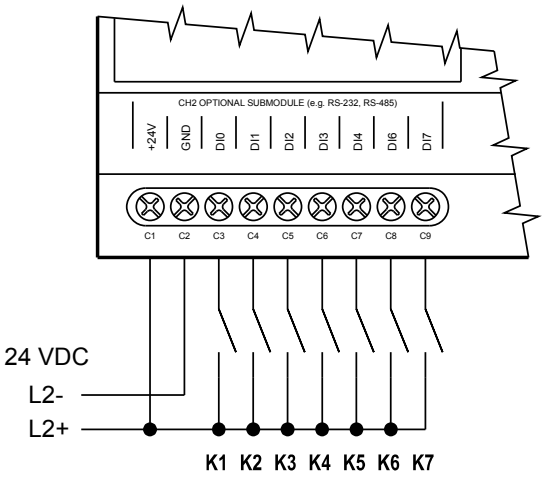
Use

Submodules PX-781x are suitable when it is necessary to increase number of I/Os. At the same time, using of serial interface is excluded.

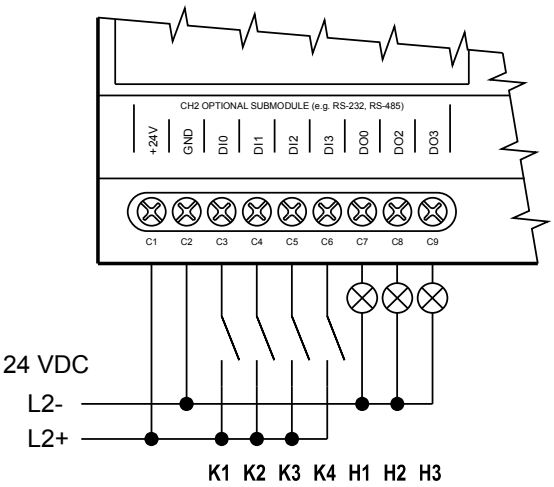
PX-7811

PX-7812

Connection example PX-7811



Connection example PX-7812



Binary inputs	PX-7811	PX-7812
No. of inputs	8[1)]	4
Common wire	minus (GND)	minus (GND)
Galvanic isolation	Yes	Yes
Input voltage for log. 0 (UL)	0 V DC; (–15 ÷ +5 V DC)	0 V DC; (–15 ÷ +5 V DC)
Input voltage for log. 1 (UH)	+24 V DC; (+11 ÷ +30 V DC)	+24 V DC; (+11 ÷ +30 V DC)
Input current for log. 1 (IH)	typ. 3 mA	typ. 3 mA
Delay 0 –> 1/1 –> 0	5 ms/ 5 ms	5 ms/ 5 ms

[1)] for Foxtrot available 7

Binární výstupy		PX-7812
No. of outputs		4 [2)]
Galvanic isolation		Yes
Type of output		Transistor, protected output
Common wire		Minus (GND)
Switched voltage		11 – 30 V DC
Switched current		max. 0.5 A
Current through joint terminal		max. 2 A
Residual current at switch-off		max. 300µA
Time to close/open the contact		400 µs/ 400 µs
Short-circuit protection/ /Short-circuit current limitation		Yes, internal/ <1.1 A
Reverse polarity protection		Yes
Spike suppressor of inductive load		External (RC element, varistor, diode)

[2)] for Foxtrot available 3

Order data

TXN 178 11	PX-7811, 8×DI (7×DI for Foxtrot), 24 V DC, galv. isolation, with identification
TXN 178 12	PX-7812, 4×DI, 4× DO (3× DO for Foxtrot) 24 V DC/0.5 A, galv. isolation, with identification

Communication modules

SC-1101

TCL2/
RS-485,
RS-232

SC-1102

TCL2/
CAN

CF-1141

TCL2/
2x CIB

UC-1204

TCL2/
MPbus

UC-1203

TCL2/
OpenTherm

KB-0552

TCL2/
MM fiber

SC-1112-T

TCL2/
Wireless
Mbus

SC-1111-A

TCL2/
RFox A

BAOS-774

LAN/
KNX

SX-1162

LAN/
5 ports
switch

SX-1181

RS-232/
M-bus

UC-1205

RS-232/
SMS

Komunikační submoduly vestavné do základního modulu Foxtrot

MR-0104	MR-0114	MR-0124	MR-0105	MR-0106	MR-0115	MR-0152	MR-0160	MR-0161
RS-232	RS-485	RS-422	2x RS-232 1x RS-485	1x RS-232 2x RS-485	3x RS-385	Profibus DP	2x CAN	CAN

Communication submodules

Serial interface submodule for Foxtrot 2

Type	DI	DO	AI	AO	Comm
MR-0130					1× RS-232
MR-0131					1× RS-485
MR-0133					2× RS-485
MR-0134					2×RS-232

Basic features

- MR-013x submodules are intended for basic expansion of Foxtrot 2 modules (CP-20xx) for serial communication
- By installing the submodule, the physical interface is selected, the communication parameters are set in the Mosaic environment

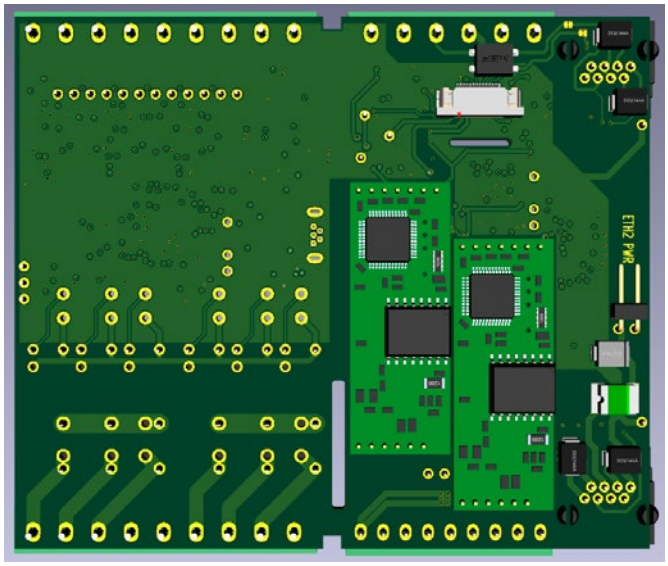
Connection

- Depending on the selected submodule, the meaning of the terminals on the connector of the basic module changes. The specific connection is given in the documentation of the submodules, resp. basic Foxtrot 2 series modules.
- The submodules are inserted into the positions in the peripheral board of the base module after removing the cover of the rear part of the module.

Use

- Submodules are used in cases where it is necessary to connect the Foxtrot 2 system with another device via a serial line.
- A suitable communication library is used in the PLC program depending on which protocol is to be used to communicate with the device.

Assembling example



Specification	MR-0130	MR-0131	MR-0133	MR-0134
Interface	1× RS-232	1× RS-485	2× RS-485	2× RS-232
Galvanic isolation	Interfaces separated from internal circuits, not each other	Interfaces separated from internal circuits, not each other	Interfaces separated from internal circuits, not each other	Interfaces separated from internal circuits, not each other
Insulation voltage	1000 V DC	1000 V DC	1000 V DC	1000 V DC
Max. comm. rate	200 kBd	1 MBd	1 MBd	200 kBd
Receiver's input resistance	Min. 7 kΩ	–	–	Min. 7 kΩ
Receiver sensitivity		min. ±200 mV	min. ±200 mV	
Transmitter output level	typ. ±8 V	typ. 3 V	typ. 3 V	typ. ±8 V
Max. distance of wiring	15 m	up to 1200 m	up to 1200 m	15 m

Order number

TXN 101 30	MR-0130, 1× RS-232 with galvanic isolation
TXN 101 31	MR-0131, 1× RS-485 with galvanic isolation
TXN 101 33	MR-0133, 2× RS-485 with galvanic isolation
TXN 101 34	MR-0134, 2× RS-232 with galvanic isolation

Communication submodules

Submodules with communication interface

Type	DI	DO	AI	AO	Comm
MR-0104					RS-232
MR-0114					RS-485
MR-0124					RS-422
MR-0105					2×RS-232, 1×RS-485
MR-0106					1×RS-232, 2×RS-485
MR-0115					3×RS-485
MR-0152					Profibus DP Slave
MR-0160					2× CAN
MR-0161					1× CAN

Basic features

- Submodules of MR series are made to be plugged into a free Foxtrot slot labelled as CH2.
- By Plugging in a MR series submodule a physical interface is selected, to which a communication mode can be assigned in a configuration.

Connecting

- Submodules are inserted into the slot inside of the basic module. The slot is accessible after the module disassembling. Submodules are plugged in pin headers.
- The meaning of individual terminals on the interface connector is changed according to inserted submodule. The connection of the submodule is shown in the manual of relevant basic module.

Use

- In all cases where Foxtrot has to be adapted to communicate with other device or with other Foxtrot.

MR-0104, RS-232
MR-0114, RS-485
MR-0124, RS-422

Specification	MR-0104	MR-0105	MR-0106	MR-0115	MR-0114	MR-0124
Interface	RS-232	2×RS-232, 1×RS-485	1×RS-232, 2×RS-485	3×RS-485	RS-485	RS-422
Galvanic isolation (GO)	Yes	Yes	Yes	Yes	Yes	Yes
Insulation voltage GO	1000 V DC	1000 V DC	1000 V DC	1000 V DC	1000 V DC	1000 V DC
Max. comm. rate	200 kBd	200 kBd	200 kBd	2 MBd	2 MBd	2 MBd
Receiver input impedance	Min. 7 kΩ	Min. 7 kΩ	Min. 7 kΩ	Sensitivity ±200 mV	Sensitivity ±200 mV	Sensitivity ±200 mV
Transmitter output level	±8 V	±8 V	±8 V	Type 3.7 V	Type 3.7 V	Type 3.7 V
Max. distance of wiring	15 m	15 m	15 m	1200 m	1200 m	1200 m

MR-0161, 1× CAN

Specification	MR-0152	MR-0160/0161
Interface	Profibus DP Slave	2×CAN/ 1×CAN
Galvanic isolation (GO)	Yes	Yes
Insulation voltage GO	1000 V DC	1000 V DC
Max. comm. rate	12 MBit/s	0.5 Mbit/s
Receiver input impedance	Sensitivity ±200 mV	+200 mV
Transmitter output level	Type 3.7 V	Type 5 V
Max. distance of wiring	1200 m (<187 kbit/s)	100 m

MR-0152, Profibus

Order number	
TXN 101 04	MR-0104, RS-232 with galvanic isolation and with power supply
TXN 101 14	MR-0114, RS-485 with galvanic isolation and with power supply
TXN 101 24	MR-0124, RS-422 with galvanic isolation and with power supply
TXN 101 05	MR-0105 2×RS-232, 1×RS-485 with galvanic isolation and with power supply
TXN 101 06	MR-0106 1×RS-232, 2×RS-485 with galvanic isolation and with power supply
TXN 101 15	MR-0115 3×RS-485 with galvanic isolation and with power supply
TXN 101 52	MR-0152, PROFIBUS DP Slave with galvanic isolation and with power supply
TXN 101 60	MR-0160, 2×CAN (SJA1000, Philips) with galvanic isolation and with power supply
TXN 101 61	MR-0161, 1×CAN (SJA1000, Philips) with galvanic isolation and with power supply

Communication modules RS-232/485 and CAN

Type	DI	DO	AI	AO	Comm
SC-1101	5				TCL2, UART
SC-1102	4				TCL2, CAN

Basic characteristics

- Module SC-1101 is system communication module allowing an expansion of central unit for another serial channel with RS-232 or RS-485 bus, supporting UNI and PC mode.
- Module SC-1102 is system communication module allowing an expansion of central unit for another serial channel with CAN bus, supporting CSJ mode.
- More detailed description of serial communications and their use is listed in a separate manual Serial communication programmable controller TECOMAT (TXV 004 03.01).
- Parameters of communication are set in Mosaic (development environment) in HW configuration section.
- Central units TECOMAT FOXTROT allow connection of up to 6 system communication modules SC-1101 and SC-1102, which occupy channels from CH5 to CH10.
- Module SC-1101 includes 1 serial channel led out collaterally through RS-232 bus as well as RS-485 bus. It is possible to use only one of those. Simultaneous connection with both buses is not possible.

Connection

- With modulue SC-1101 the termination of RS-485 bus is done by switching ON (right) both BT switches on front panel of the module.
- Module SC-1101 on RS-232 bus supports operating of communication with RTS signals.
- With SC-1102 module it is necessary to terminate the CAN bus next to a device, which has to be situated at both ends of the bus.
- When device is connected in the middle of bus, termination is not an option. In this case both BT switches will be set to the left.
- Module requires connection of voltage supply 24V DC

Usage

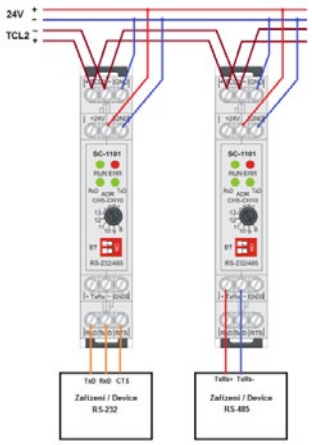
- Considering the transmission capacity of TCL2 bus designated primarily to control I/O modules, these serial channels are suited only for unassuming data and time communication.

SC-1101

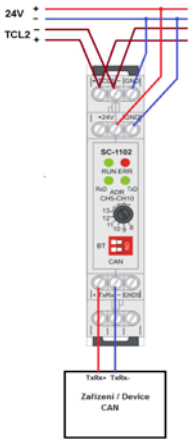
SC-1102

Connection example

SC 1101



SC 1102



Communication	SC-1101		SC-1102
No. of channels	1		1
System I/O bus	1× TCL2 (RS-485, 345 kbit/s) up to distance 400 m, without branches, impedance termination 120 Ω		1× TCL2 (RS-485, 345 kbit/s) up to distance 400 m, without branches, impedance termination 120 Ω
Communication	UART		CAN
Interface	RS-232	RS-485	CAN
Max. distance of wiring	15 m	1200 m max.120 kbit/s	
Transmitter output level	Typ. ± 8V	Typ. 3.7V	
Input impedancen	Min. 7 kΩ		
Receiver sensitivity		± 200 mV	

Operating conditions

Operating temperature	0 .. +70 °C
Storage temperature	–25 .. +85° C
Electric strength	according to EN 60950
IP Degree of protection ČSN EN 60529:1993 (IEC 529)	IP 10B
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1:2008	1
Working position	Any
Installation	on DIN rail
Connection	Screw terminals
Conductors cross-section	Max 2.5 mm²

Dimensions and weight

Dimensions	95 × 18 × 58 mm
Weight	75 g

Power supply

Power supply voltage	24V DC
Allowed range	–15% .. 25%
Max. power consumption	0.8W
Internal protection	Yes
Galvanic isolation/Insulation voltage	Yes/1000V AC

Order data

TXN 111 01	SC-1101; 1× RS-232/RS-485 interface
TXN 111 02	SC-1102; 1× CAN interface

TECO Advanced Automation

Wireless communication modules

Type	DI	DO	AI	AO	Comm
SC-1111.A **SC-1112.T**					TCL2, RF modem TCL2, Wireless M-Bus

Basic characteristics

- Module SC-1111.A is a system communication module which allows connection of wireless network modules of RFox2 type A or mutual wireless communication of several PLC. Operating of the module is realised by RFox2Lib library in development environment Mosaic.
- Module SC-1112.T is a system communication module which allows expansion of central unit for receiving and transmitting RF packets via Wireless M-Bus protocol in modes „T" and „S". Operating of this module is realised by library WMBusLib in development environment Mosaic.
- Central units TECOMAT FOXTROT allow us to connect up to 6 system communication modules SC-11xx, which occupy channels CH5 – CH10.

Connection

- Module connection diagram is displayed in the picture.
- If module is connected at the end of TCL2 bus, then it is needed to connect a termination element KB-0290. Address of a module on TCL2 bus is set by rotary switch.
- Every type designated for 868 MHz range and termination by SMA connector can be used as antenna.

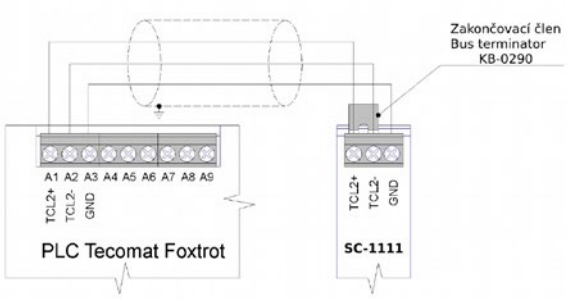
Usage

- Considering the transmission capacity of TCL2 bus designated primarily to control I/O modules, these serial channels are suited only for unassuming data and time communication.

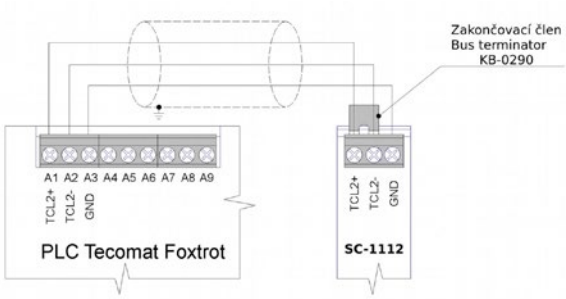
SC-1111.A

SC-1112.T

Connection example SC 1111.A



Connection example SC 1112.T



Communication SC-1111.A

No. of channels	1
System I/O bus	1× TCL2 (RS-485, 345 kbit/s) up to distance 400 m, without branches, impedance termination 120 Ω
Frequency band	868.1 MHz
Max. power	+14 dBm
Input sensitivity	–108 dBm
Communication rate/ type of modulation	50 kbps/2-GFSK

Communication SC-1112.T

No. of channels	1
System I/O bus	1× TCL2 (RS-485, 345 kbit/s) up to distance 400 m, without branches, impedance termination 120 Ω
Frequency band	Mode T: 868.95 MHz Mode S: 868.3 MHz
Max. power	+14 dBm
Input sensitivity	Mode T: -105 dBm Mode S: -109 dBm
Communication rate/ type of modulation	Mode T: 100 kbps/2-FSK Mode S: 32.768 kbps/2-FSK

Operating conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +85 °C
Electric strength	according to EN 60950
IP Degree of protection ČSN EN 60529:1993 (IEC 529)	IP 10 B
Overvoltage category	II
Degree of pollution	
ČSN EN60664-1:2008	1
Working position	Any
Installation	on DIN rail
Connection	Screw terminals
Conductors cross-section	Max. 2.5 mm²

Dimensions and weight

Dimensions	95 × 18 × 58 mm
Weight	75 g

Power supply

Power supply voltage (SELV)	24 V AC
Allowed range	–15% .. 25%
Max. power consumption	0.8 W
Internal protection	Yes

Order data

TXN 111 11	SC-1111.A; RF Interface for RFox2, radio type „A"
TXN 111 12	SC-1112.T; RF Interface for Wireless M-BUS, mode T

MP-Bus and OpenTherm communication

Type	DI	DO	AI	AO	Comm
UC-1203					TCL2, MP-Bus
UC-1204					TCL2, OpenTherm

Basic features

- The module **UC-1203** is designed for the Tecomat Foxtrot basic module as communication channels expansion by Belimo's company MP-Bus that is used for valve drives and air-condition shutters control.
- MP-Bus is supplied from 24 V DC/AC.
- Up to 8 Belimo MFT drives can be driven by one bus.
- UC-1203 can read 1 temperature sensor (RTD Ni1000, Pt1000, resistance transmitter 1000 Ω) or contact connected to each drive.
- Measured temperature (or contact status) is transferred to the system and it is available as standard analog (binary) input.
- The module **UC-1204** is designed for the Tecomat Foxtrot basic module for bidirectional communication with boilers equipped with OpenTherm interface/protocol.
- **Supported protocol**
  both OT/+ (OpenTherm/plus) and OT/– (OpenTherm/Lite).

Connection

- Designed for the installation on DIN rail.
- Modules are realized as TCL2 bus communication expansion modules.
- **UC-1203 MP-Bus module installation:** for recommended cables and lengths see MP-Bus specification (Belimo company manuals)
- **UC-1204 OpenTherm module installation:** 2-wire cable, not twisted, 50 m at max., cable resistance 2×5 Ω, any polarity.

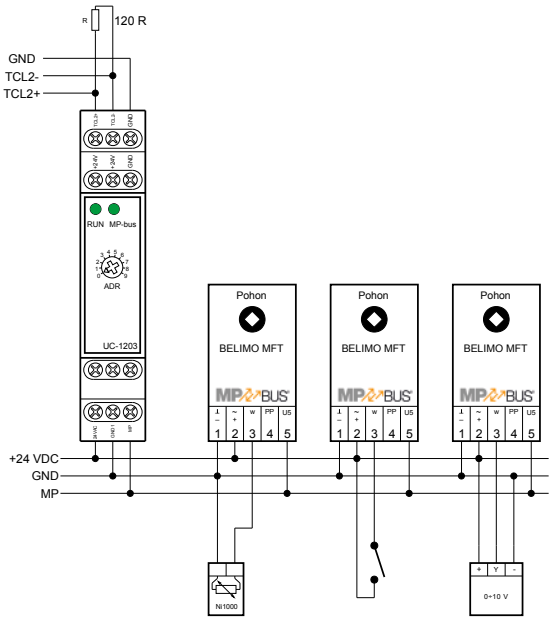
Use

- It can be used in measuring and control tasks and in building management systems (HVAC).

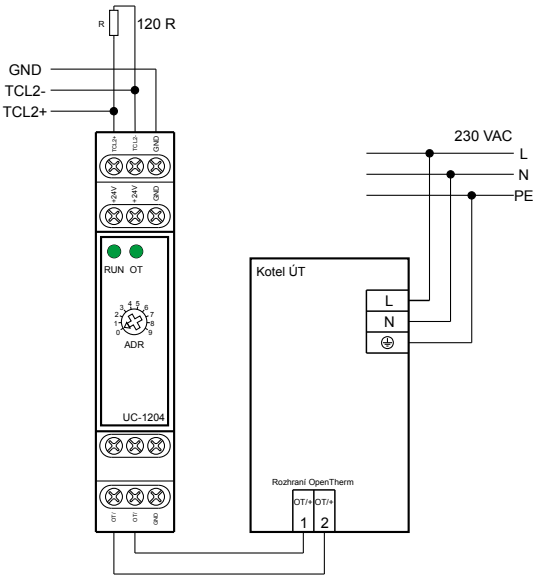
UC-1203

UC-1204

Connection example UC-1203 (MP-Bus)



Connection example UC-1204 (OpenTherm)



Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protection IEC 529	IP 20
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	vertical
Installation	On DIN rail
Connection	Screw terminals
Conductors cross-section	max. 2.5 mm²

Communication

	UC-1203	UC-1204
System I/O bus	1×TCL2 (RS-485, 345 kbit/s) up to distance 400 m, without branches, impedance termination 120 Ω	
Installation bus/protocol	MP Bus	OpenTherm

Dimensions and weight

Dimensions	90×18×65 mm
Weight	75 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	2.5 W, (UC-1203), 0.4 W (UC-1204)
Galvanic isolation	Yes

Order number

TXN 112 03	UC-1203, MP-Bus – Communication module for Belimo's servodrive connection
TXN 112 04	UC-1204, OpenTherm – Communication module for boilers connection

TECO Advanced Automation

GSM gateway for SMS communication

Type	DI	RO	AI	AO	Comm
UC-1205					RS232/ GSM(SMS)

UC-1205

Basic features

- GSM gateway - Quad-band – operates in bands 800/900 and 1800/1900MHz
- Designated for monitoring and commanding of system Tecomat Foxtrot via SMS messages from a mobile phone.
- Fixing on DIN rail with permanent connection by screw terminals.

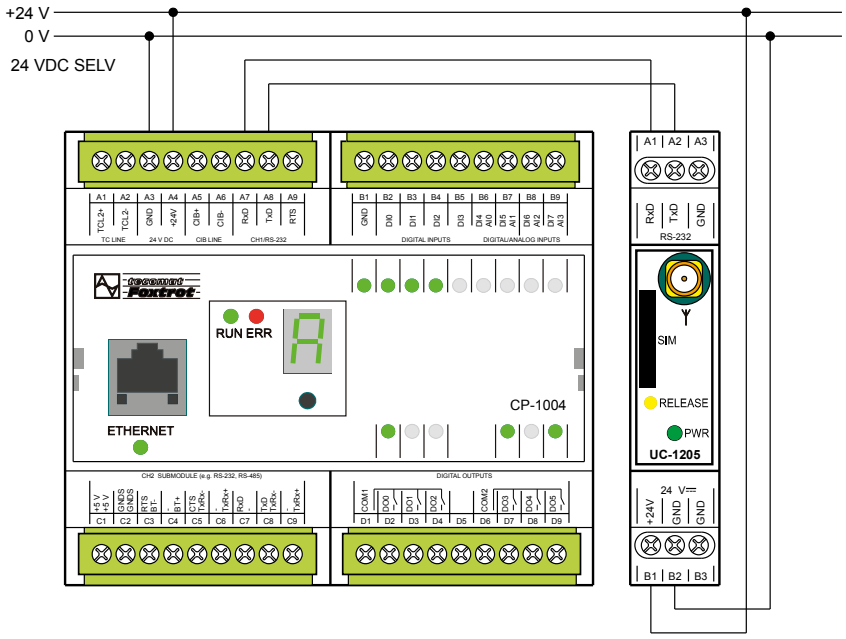
Use

- Module is designated as both direction communication gateway of system Tecomat Foxtrot to GSM networks.
- There is available library function for sending and receiving SMS messages that can be used in programming software Mosaic.
- In Mosaic software we may use module as data modem controlled by AT commands.

Connection

- Power supply is connected by screw terminals.
- Serial channel RS-232 is connected by screw terminals.
- SIM card has to be inserted to a slot placed at the front side.
- External antenna can be connected via SMA connector either to directly module or via cable to an optimal place, e.g. outside the switching cabinet.
- Antenna is not a part of the module and has to be ordered separately.

Connection example



Communication

Connection to basic module serial channel	1× RS232
GSM network	Quad Band EGSM 800/900 MHz, GSM 1800/1900 MHz

Dimensions and weight

Dimensions	95 × 65 × 17.7 mm
Weight	70 g

Power supply

Power supply and communication	24 V DC
Input power during transmitting	6 W
Internal protection	No

Operating conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according EN 60730
IP Degree of protection IEC 529	IP20
Overvoltage category	II
Degree of pollution ČSN EN60664-1:2008	1
Working position	Vertical
Installation	On DIN rail
Power supply and RS-232 connection	Screw terminals, diameter of wire max. 4mm².

Order number

TXN 112 05	UC-1205, GSM gateway – bands 800/900, 1800/1900 MHz (quad-band)

TCL2 bus optical interconnection module

Type	DI	DO	AI	AO	Comm
KB-0552					TCL2 MM Optic Fibre

KB-0552

Basic features

- The module is designed for TCL2 bus protocol conversion from metallic wires – RS-485 to the multimode optical fibre and it is conform with the bus transfer speed 345 kbps.
- Using more converters on one TCL2 bus allows to create star topology which lines are created by optical fibres.

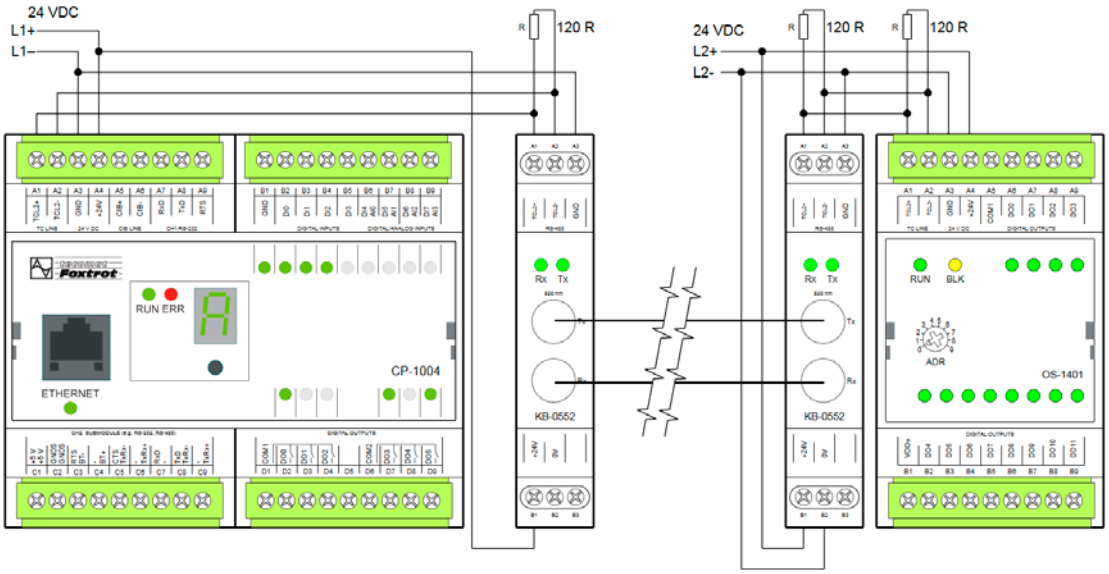
Connection

- The module is connected to the power supply and TCL2 bus by screw-type terminals.
- A pair of optical fibres MM (multimode) is connected by ST connectors. The length of the optical cable is up to 1750 m.

Use

- A pair of KB-0552 modules allows to connect Foxtrot system bus by optical fibres with ST connectors.
- The module is designed for installations where it is necessary to use galvanically separated connection that eliminates electromagnetic disturbance influence, it means mainly for outside installations, industrial plants etc.

Connection example



Communication

System I/O bus	1 × TCL2 (RS-485, 345 kbit/s)
Communication medium	multimode glass fibre
Optic fibre connection	ST connector
Optical radiation wave length	820 nm
Ultimate operating range of 62.5/125 mm fibre	15 dB, min. 8 dB
Transmitter optical output	–12 dBm, min. –15 dBm
Total optical output	0.355 mW
Optical power input„log 0" (0 – 70 °C)	–24.0 ÷ –10.0 dBm
Optical power input„log 0" (25 °C)	–25.4 ÷ –9.2 dBm
Optical power input„log 1"	Max. –40 dBm

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–30 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protection IEC 529	IP 20
Overvoltage category	III
Degree of pollution IEC EN 60664-1:2004	2
Working position	any
Installation	On DIN rail
Connection of optic fibre	Duplex 2 × ST
Bus connection	Screw terminals
Conductors cross-section	max. 2.5 mm²

Optical cables – other parameters

Operating temperature	–40 ÷ 80 °C
Temperature during installation	0 ÷ 70 °C
Cable attenuation per 1 km of the length	3.5 dBm
Delay given by propagation velocity	5 ns/m
Cable extrinsic diameter (2 fibres)	3 ÷ 6 mm

Dimensions and weight

Dimensions	90 × 18 × 65 mm
Weight	75 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	0.25 W
Galvanic isolation	No

Order number

TXN 105 52	KB-0552, TCL2 converter to multimode glass optic fibre

TECO Advanced Automation

Ethernet switch 10/100BaseTX

Type	DI	RO	AI	AO	Comm
SX-1162					5× 10/100 BaseTX

SX-1162

Basic features

- 5 × UTP ports 10BaseT/100BaseTX according the standard IEEE 802.3.
- Housing designed for the DIN rail installation and into standard switchboards.
- Can be connected together to create bigger LAN.
- Protocol/functions supported.
  - All protocols based on Ethernet.
  - Auto-MDIX.
  - Internal table for 2000 MAC addresses.
  - Filter for non-valid packets.
  - Security functions according 802.1x.
  - Protection against broadcast and multicast storm (Port overflow).

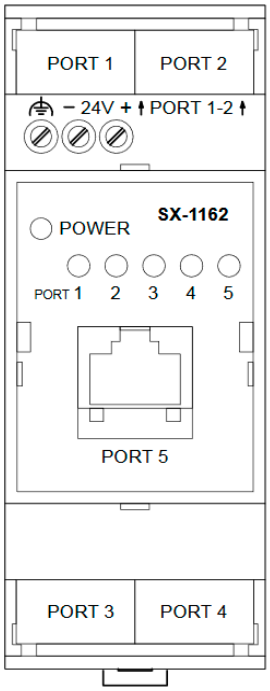
Connection

- RJ45 connector for standard UTP CAT5 cables.
- Screw terminals for 24 V DC power supply.

Use

- Switch is designed to create small LAN of devices compatible with 10/100baseTX just centralized in electrical switch board, together with Foxtrot basic modules

Connection example



Communication

Standard	10/100base TX, IEEE 802.3
Number of ports	5 × TX

Dimensions and weight

Dimensions	90 × 35 × 58 mm
Weight	75 g

Operating conditions

Operating temperature	0 ÷ +55 °C
Storage temperature	–25 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protection IEC 529	IP 20
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	any
Installation	on DIN rail
Connection	5 × RJ45 Power supply: screw terminals
Conductors cross-section	max. 2.5 mm²

Power supply

Power supply voltage (SELV)	+24 V DC/40 mA
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	1 W
Galvanic isolation	Yes, each port

Order number

TXN 111 62	SX-1162, ETH switch, 5 × 10/100base TX, IEE802.3

M-Bus communication module

Type	DI	DO	AI	AO	Comm
SX-1181			1		RS-232, M-bus

SX-1181

Basic features

- SX-1181 is module for connection of up to 64 devices equipped with interface M-Bus (IEC EN 1434) – usually heat measurement etc.
- Power supply RS-232 is 24 V DC/10 mA.
- Power supply of M-Bus part 24 V DC/30 to 150 mA is galvanic isolated with isolation voltage 3 kV. Consumption depends on number of connected devices.

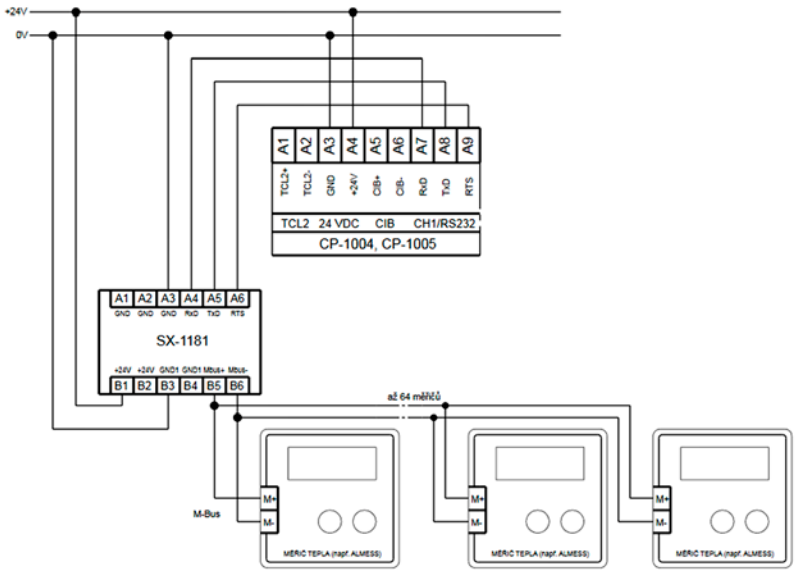
Connection

- Mechanic design suitable for DIN rail assembly.
- Modules are designed for connection to serial channel RS-232 on basic module.
- Interface M-Bus is taken out on screw terminals, see connection example.

Use

- For installations where energy meters with M-Bus interface are becoming part of the project and for collecting and transmitting data over networks M-Bus and Ethernet/Internet.
- Connection of heat meters with integrated interface M-Bus according to EN 1434 (IEC EN 1434) standard.

Connection example



Připojení modulu SX-1181 k rozhraní CH1 modulu CP-1004

Communication

Connection to central module	RS-232, Tx,Rx
Installation bus/protocol	M-Bus
Transmittion speed	Max 9.6 kBd
Transmitter:	
Output Voltage UMark	typ. 36 V (min.24 V max.40 V)
Output Voltage USpace	typ. 24 V (max. UMark –10 V)
Receiver:	
Data detection – sign	bus current < standby current +6 mA
Data detection – space	bus current > standby current +9 mA

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–30 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protection IEC 529	IP 10B
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	any
Installation	on DIN rail
Connection	screw terminals
Conductors cross-section	max. 2.5 mm²

Dimensions and weight

Dimensions	90 × 36 × 65 mm
Weight	75 g

Power supply

Power supply voltage (SELV)	+24 V DC
Allowed range	18 ÷ 30 V DC
Max. input power	4 W
Galvanic isolation	Yes

Order number

TXN 111 81	SX-1181, M-Bus – Communication module for connection of M-Bus stations.

TECO Advanced Automation

Displays

ID-36

ID-31

ID-32

ID-14

ID-14 Tecoreg

ID-17

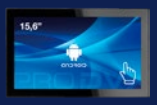
Wall mounted touch panels 7, 10, 15, 22, 32“

Type	DI	DO	AI	AO	Comm
APPC 7 DSQ					Ethernet, WiFi
APPC 10 DSQ					Ethernet, WiFi
APPC 10 DSQPL					Ethernet, WiFi
APPC 15 DSQP					Ethernet, WiFi
APPC 22 DSQ					Ethernet, WiFi
APPC 32 DSQ					Ethernet, WiFi

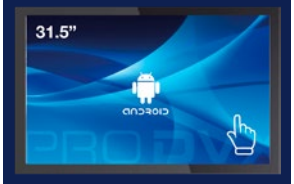

APPC 7 DSQ


APPC 10 DSQ


APPC 10 DSQPL


APPC 15 DSQP


APPC 22 DSQ


APPC 32 DSQ

Basic characteristics

- Automation control panels of APPC series with capacitive touch screen and with operating system Android in wide range of sizes from 7“ to 32“
- Low input, without cooling and warming even indoor, wide range of operating temperatures
- Installed Android 5>. WEB browser in Kiosk mode. Interprets only content of Tecomat WEB pages without any control elements and address bar.
- User screens/pages are created in development environment Mosaic with WebMaker tool.
- APPC panels are designated to be wall-mounted, wall mounts VESA 75, 100, 200.
- Black colored version, from 22“ metallic chassis

Connection

- Connection to LAN or via WiFi
- Power supply 12 V DC, 10“ and 15“ panels optionaly PoE
- Network adapter is a part of delivery
- Mounting according to VESA standards

Usage

- Designated for permanent operating 24/7
- Designated mostly for local displaying of WEB pages saved in controll systems FOXTROT, TC700 created with WEB maker tools.
- Designated into interiors as comfort Room/House manager and this applies to both offices and residental rooms.
- Can be set and used as wall-mounted tablet with Android operating system

Panel features	APPC 7 DSQ	APPC 10 DSQ	APPC 10 DSQPL
Type of display			
Diagonal/resolution/Range	7“/1024×600	10,1“/1280×800	10,1“/1280×800
Backlighting	LED	LED	LED
CPU/Memory	Quad Core, 1.6 MHz 2 GB SDRAM, 8 GB Flash	Quad Core, 1.6 MHz 2 GB SDRAM, 8 GB Flash	Quad Core, 1.6 MHz 2 GB SDRAM, 8 GB Flash
Operating system	Android 5	Android 5	Android 5
Connection	LAN (RJ45), WiFi	LAN (RJ45), WiFi	LAN (RJ45), WiFi
Mounting	VESA 75*48	VESA 75	VESA 75
Finish	Plastic, black	Plastic, black	Plastic, black
Dimensions/Weight	180×120×24 mm/440 g	262×178×24 mm/610 g	262×178×24 mm/610 g
Power supply	12V/2 A	12V/2 A	12V/2 A, PoE
Other	Speakers, SD card slot	Speakers, SD card slot	Speakers, SD card slot LED in side of the frame R, G
Speakers	Yes, 2×3 W	Yes, 2×3 W	Yes, 2×3 W
Microphone	Yes	Yes	Yes
SD card slot	Yes	Yes	Yes

Panel features	APPC 15 DSQP	APPC 22	APPC 32 DSQ
Type of display			
Diagonal/resolution/Range	15.6“/1920×1080	21.5“/1920×1080	31.5“/1920×1080
Backlighting	LED	LED	LED
CPU/Memory	Quad Core, 1.6 MHz 2 GB SDRAM, 8 GB Flash	Quad Core, 1.6 MHz 1 GB SDRAM, 4 GB Flash	Quad Core, 1.6 MHz 2 GB SDRAM, 8 GB Flash
Operating system	Android 5	Android 5	Android 5
Connection	LAN (RJ45), WiFi	LAN (RJ45), WiFi	LAN (RJ45), WiFi
Mounting	VESA 100	VESA 100	VESA 200
Finish	Plastic, black	Metal, black	Metal, black
Dimensions/Weight	88×245×27 mm/1 300 g	538×331×37 mm/3 500 g	769×471×46 mm/10 350 g
Power supply	12V/2 A, PoE	12V/3 A	12V/3 A
Other	Speakers,	Speakers, SD card slot	Speakers, SD card slot
Speakers	Yes, 2×3 W	Yes, 2×3 W	Yes, 2×3 W
Microphone	No	Yes	Yes
SD card slot	Yes	Yes	Yes

Order data

APPC 22 DSQ	88181000.922
APPC 10 DSQP	88102004.124
APPC 10 DSQPL	88102004.155
APPC 15 DSQP	88152004.355
APPC 32 DSQ	88181004.324
APPC 7 DSQ	88072004.704

TECO Advanced Automation

PLC Tecomat – displays and operator panels

Graphical displays with touchscreen 4.3”

Type	DI	DO	AI	AO	Comm
ID-31					Ethernet, RS-485, TCL2
ID-32					Ethernet, RS-485, TCL2

ID-31

ID-32

Rear view

Basic characteristics

- Graphical panels with capacitive/resistant touch screen.
- Panel ID-31/32 comes with a backlit touch TFT display 4,3” with resolution of 480×272 points. Supplied by 24 V DC external supply.
- Inbuilt USB port allows synchronization of files between PLC and FLASHDISK.
- Low input, without cooling and warming even indoor, wide range of operating temperatures
- Installed WEB mini browser. Interprets content of WEB pages in Foxtrot, TC700, if they contain a memory card.
- User screens/pages are created in development environment Mosaic with WebMaker tool and thus they are identical as the pages which are accessible through the web server.
- Panel ID-31 is designated for wall-mounting, gets fixated onto KU 68 installation box
- Panel ID-32 is designated for inbuilt mounting into switchboard door or at place which is accesible from the other side.
- Other parameters are same for both panels.
- Design of frontal frame – plastic with parameters 135×91 mm. Colors black, white, aluminium, dark grey. Other colors according to color swatch.

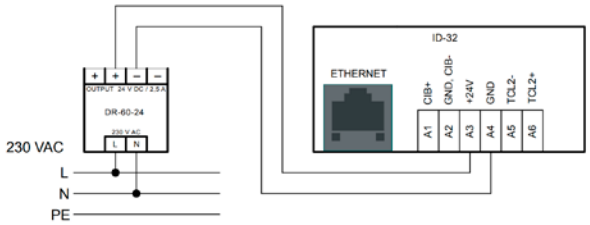
Connection

- Connects to central units TECOMAT Foxtrot or TC700 directly through Ethernet 100/10 on RJ45 or through LAN network by standard cabel UTP/RJ45. or through serial bus led out as screw-type connector.
- Communication between control system and panel ID-31/32 runs on Ethernet 100 Base-TX bus, on serial bus with RS-485 interface and EPSNET protocol or after connecting directly to TCL2 bus and even by protocol of this system bus.
- Needs 24 V DC Power supply, input up to 4 W with full backlight.

Usage

- Designated mostly for local displaying of WEB pages saved in controll systems FOXTROT, TC700 created with WEB maker tools.
- Designated into interiors as comfort Room/House manager and this applies to both offices and residental rooms.
- For machines and into switch panels.
- After agreement with manufacturer it is possible to be used as programmable display with operating system Linux.

Connection example ID-31, ID-32



Rozměrový výkres ID-31, ID-32

Display features

Type of display	Color, TFT LCD
Diagonal	4.3”
Resolution/Range	480×272
No. of colors	16.7 mil.
Backlighting Lifetime	LED Typ. 20 000 hours
Touch screen	ID-31: capacitive ID-32: resistive

Power supply

Power supply voltage	24 V DC
Allowed range	–15% .. 25%
Max. power consumption	4 W
Internal protection	No
Power supply over an ethernet cable	Voltage 24 V is connected to unused pairs 4/5 and 7/8

Operating conditions

Operating temperature	-20 .. +55 °C
Storage temperature	–30 .. +70 °C
Electric strength	according to EN 60950
IP Degree of protection ČSN EN 60529:1993 (IEC 529)	IP 20 IP-50 front panel when mounted
Overvoltage category	II
Degree of pollution ČSN EN60664-1:2008	2
Working position	Vertical
Installation	ID-31: On wall into KU 68 installation box ID-32: Into panel
Connection of power supply and communication channels	Connector with screw terminals
Conductors cross-section	Max 1.5 mm²

Dimensions and weight

Dimensions	135×91×29 mm
Weight	300 g

Order data

TXN 054 44.10	ID-31, capacitive wall-mounted touch panel, 4.3” TFT 480×272 pxl, Ethernet 10/100 Base, RS-485, only complete with a frame TXF 251 05.xx
TXN 054 45.00	ID-32, touch panel built-in, resistive 4.3” TFT 480×272 pxl, Ethernet 10/100Base, RS-485, only complete with a frame TXF 251 03.xx

Type	DI	DO	AI	AO	Comm
ID-36					Ethernet, RS-485, TCL2

ID-36

Rear view

Basic characteristics

- Graphical panel with resistant touch screen.
- Panel ID-36 comes with a backlit touch TFT display 10" with resolution of 800×600 points. Supplied by 24 V DC external supply.
- Inbuilt USB port allows synchronization of files between PLC and FLASHDISK.
- Low input, without cooling and warming even indoor, wide range of operating temperatures
- Installed WEB mini browser. Interprets content of WEB pages in Foxtrot, TC700, if they contain a memory card.
- User screens/pages are created in development environment Mosaic with WebMaker tool and thus they are identical as the pages which are accessible through the web server.
- Panel ID-36 is designed for mounting to the switchgear doors.
- Design of frontal frame – aluminium with cover plastic foil. Grey color.

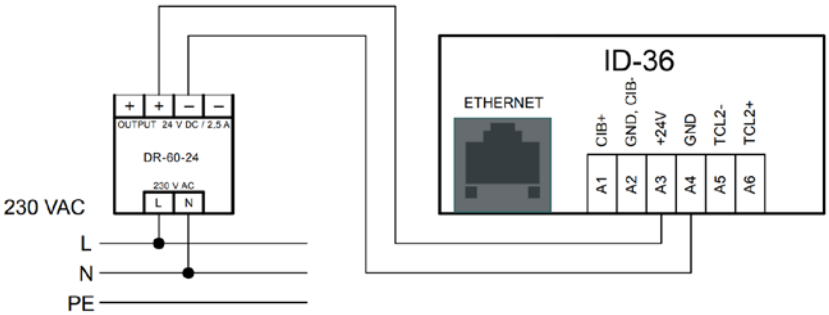
Connection

- Connects to central units TECOMAT Foxtrot or TC700 directly through Ethernet 100/10 on RJ45 or through LAN network by standard cabel UTP/RJ45. or through serial bus led out as screw-type connector.
- Communication between control system and panel ID-36 runs on Ethernet 100Base-TX bus, on serial bus with RS-485 interface and EPSNET protocol or after connecting directly to TCL2 bus and even by protocol of this system bus.
- Needs 24 V DC power supply, input up to 4 W with full backlight.

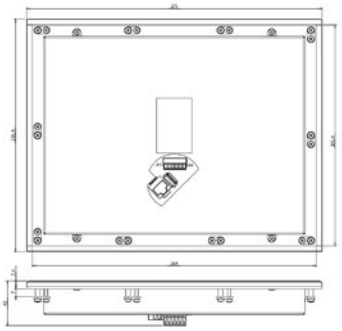
Usage

- Designated mostly for local displaying of WEB pages saved in controll systems FOXTROT, TC700 created with WEB maker tools.
- For machines and into switch panels.
- After agreement with manufacturer it is possible to be used as programmable display with operating system Linux.

Connection example ID-36



ID-36 dimensions



Operating conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–30 .. +70 °C
Electric strength	according to EN 60950
IP Degree of protection ČSN EN 60529:1993 (IEC 529)	IP 20 IP-50 front panel when mounted
Overvoltage category	II
Degree of pollution ČSN EN60664-1:2008	2
Working position	Vertical
Installation	In the control panel
Connection power supply, a komunikačních kanálů	Connector with screw terminals
Conductors cross-section	Max 1.5 mm²

Charakteristiky displeje

Type of display	Color, TFT LCD
Diagonal	10"
Resolution/Range	800×600
No. of colors	262 k
Backlighting lifetime	LED Typ. 20 000 hours
Touch panel	resistive

Dimensions and weight

Dimensions	275×216×29 mm
Weight	500 g

Power supply

Power supply voltage (SELV)	24 V AC
Allowed range	–15% .. 25%
Max. power consumption	7 W
Internal protection	No
Power supply over an ethernet cable	Voltage 24 V is connected to unused pairs 4/5 and 7/8

Order data

TXN 054 50.01	ID-36 Operator panel (resistive TFT panel 10", designed into switchgear doors)

TECO Advanced Automation

Graphic panel with keyboard

Type	DI	RO	AI	AO	Comm
ID-17	4	2			TCL2

ID-17

Basic features

- Graphic operator panel used for programmable controllers Tecomat Foxtrot and Tecomat TC700.
- It is equipped with monochromatic (blue) backlit LCD with 240×64 pixels.
- Keyboard with 12 keys, 6 of them (F1 – F6) can be used as user defined keys.
- Equipped with 4 binary inputs 24 V DC – for example for external buttons.
- Equipped with 2 relay outputs (up to 230 V AC) – for example for siren.
- Internal memory for control files 2 MB.
- Support for multilanguage objects/texts – up to 15
- Available code pages/fonts
  - CP1250, Central European
  - CP1251, Cyrillic
  - CP1252, Western European
  - CP1253, Greek
  - User fonts – defined by the user – big digits, own symbols

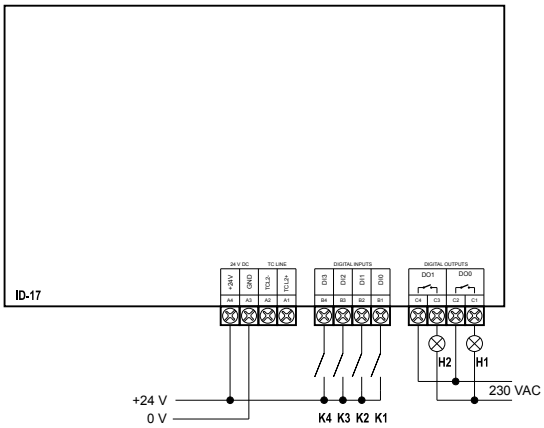
Connection

- It can be connected to central module by TCL2 bus up to 300 m via metallic cable.
- Using the fibre optic converter, it can be connected up to 1.7 km!
- Unique address on TCL2 bus can be set in the service mode using keyboard and display.

Use

- For operation of measurement and control devices, machines and technologies.
- Graphics is created with GPMaker – an integrated part of Mosaic
- Available objects:
  - Static/dynamic text
  - Static/dynamic/animated image
  - Container – multipage image
  - Display – value viewing
  - Password
- Managers:
  - Images
  - Fonts
- Multi-language texts

Connection example



Digital inputs

No. of inputs	4
Common wire	minus (GND)
Galvanic isolation	No
Input voltage for log. 0 (U_L)	0 V DC; (–5 ÷ +5 V DC)
Input voltage for log. 1 (U_H)	+24 V DC; (+15 ÷ +30 V DC)
Input current for log. 1 (I_H)	typ. 5 mA
Delay 0 –> 1/1 –> 0:	5 ms/5 ms (DI4–DI7)

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–30 ÷ +70 °C
Electric strength	according EN 60950
IP Degree of protection IEC 529	IP 10B
Overvoltage category	III
Degree of pollution IEC EN 60664-1:2004	2
Working position	any
Installation	In the control panel
Connection	Screw terminals
Conductors cross-section	max. 2.5 mm²

Relay outputs

No. of outputs	2
Galvanic isolation	Yes
Type of contact/type of output	Electromechanical relay, non-protected output
Switched voltage	min. 5 V; max. 250 V
Switched current	min. 100 mA; max. 3 A
Short-term output overload	max. 4 A
Current through common wire	max. 10 A
Time of close/open the contact	typ. 10 ms/4 ms

Display

Display size	127×33 mm
Resolution, color	240×64, white on blue background
Keyboard	Membrane
Keys number	12×: 4×cursor, 1×Clear, 1×Enter, 6×for user defined functions

Dimensions and weight

Dimensions	143×202×36 mm
Weight	1100 g

Power supply

Power supply voltage (SELV)	+24 V DC/70 mA
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	2 W
Galvanic isolation Power supply	No

Order number

TXN 054 37	ID-17, Graphic operator panel, monochrom LCD, 240×64 px, 12 keys

Alphanumeric panel with LCD and keyboard

Type	DI	DO	AI	AO	Comm
ID-14					TCL2

Basic features

- Alphanumeric operator panel for programmable controllers Tecomat Foxtrot and Tecomat TC700.
- It has monochromatic backlit LCD with 4×20 characters.
- Keyboard with 25 keys, 6 of them (F1 – F6) can be used as user defined keys.
- There can be up to 4 panels ID-14 connected on the one TCL2 bus.
- Panel enables to display characters in following code pages: CP852, CP1250, CP1251 (Cyrillic), CP1252.
- Programming is done directly in Mosaic in Panel Maker.

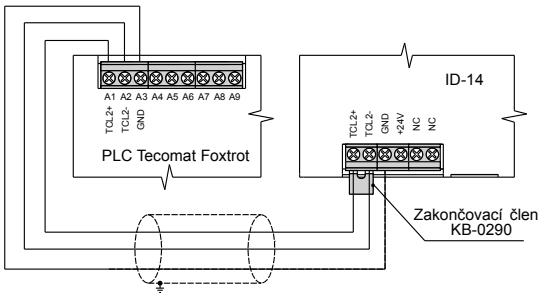
Connection

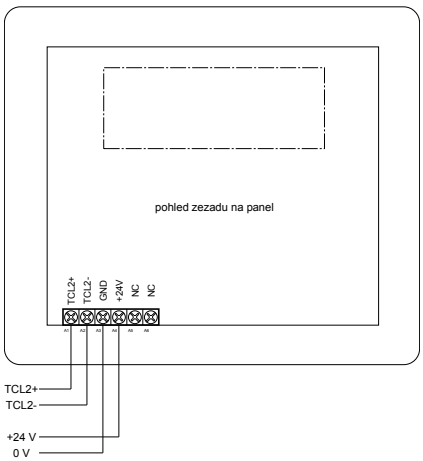
- It can be connected to central module by TCL2 bus up to 300 m via metallic cable.
- Using the fibre optic convertor, it can be connected up to 1.7 km!
- Panel ID-14 can be mechanically fixed with Foxtrot central module in one ensemble and can be placed in the door of control panel.
- The panel is connected to Foxtrot PLC directly through screw-type terminals and to the TC700 series PLC via terminal board KB-0220.
- Unique address on TCL2 bus must be set in the service mode using keyboard and display.

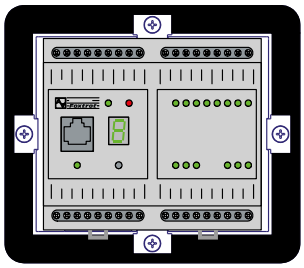
Use

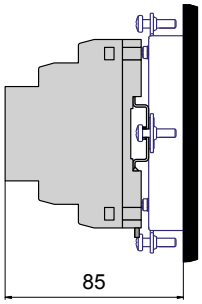
- The operator panel is used for entering commands and parameters, displaying a system status and textual user messages.

Connection example









Communication

System I/O bus	1×TCL2 (RS-485, 345 kbps) up to 300 m
Galvanic isolation of communication	No

Display and Keyboard

Character size	3.5 mm
No. of characters	4×20 characters
Keyboard	Membrane
Keys	25 keys 10×numeric 4×cursor 6×functional 5×other

Operating conditions

Operating temperature	–20 ÷ +55 °C
Storage temperature	–20 ÷ +60 °C
IP Degree of protection IEC 529	IP 54 – front panel IP 20 – whole product
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	2
Working position	any
Installation	In control panel doors On DIN rail with SM-9024
Connection	Screw terminals
Conductors cross-section	max. 2.5 mm²

Dimensions and weight

Dimensions	123×141×25 mm
Weight	560 g

Power supply

Power supply voltage (SELV)	+24 V DC/125 mA
Allowed range	–15 % ÷ +25 % (20.4 ÷ 30 V DC)
Max. input power	3 W
Galvanic isolation of power supply	No

Order number

TXN 054 33	ID-14, 25 buttons, display 4×20 characters, set for mounting onto switchgear doors
TXF 790 25	SM-9025, set for fastening of DIN rail on ID-14 panel (for completion together with Foxtrot CPU)
TXF 790 24	SM-9024 set for ID-14 panel mounting on DIN rail
TXN 102 20	KB-0220, TCL2 bus terminal block for TC700
TXN 054 33.01	ID-14, 25 buttons, display 4×20 characters, panel with size of Tecoreg TR200 series


ID-14


ID-14 + CP-1004


ID-14/Tecoreg


ID14/Tecoreg+CP-1004

TECO Advanced Automation

CIB modules mounted on DIN rail

universal

C-BS-0001M

1x oddělovač sběrnice

C-IB-1800M

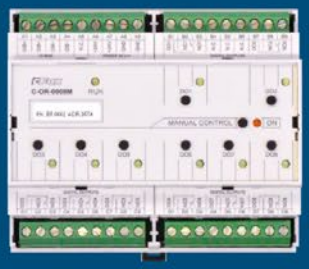
4x AI/DI, 14x DI

C-IR-0203M

1x AI/DI
2x RO, 1x AO

C-IR-0303M

3xAI/DI
3x RO



C-OR-0008M

8x RO

C-OR-0011M

1x RO

C-RM-1109M

8x DI, 3x AI
8x RO, 1x AO

C-HM-0308M

3x AI/DI
6x RO, 2x AO

C-HM-1121M

8x DI, 3x AI
19x RO, 3x AO

C-HM-1113M

8x DI, 3x AI
10x RO, 3x AO

C-JC-0006M

up – o – down

C-IS-0504M

3x AI/DI, 2x AI
4x RO, 1x PWM

C-OS-0808M

2× stepper motor

CIB modules mounted on DIN rail

special

C-DM-0006M-ILED

6 channel dimmer

LED chips

C-DM-0006M-ULED

6 channel dimmer

LED strips

C-DM-0402M-RLC

2 channel phase dimmer

230V AC

C-DM-0202L

2x RO, 2x AO

C-DL-0064M

CIB/

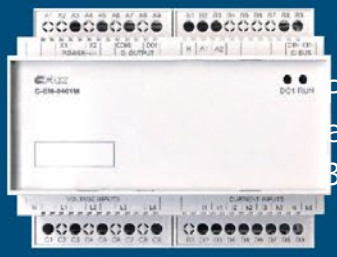
DALI, DALI2

64 devices on the bus

C-1W-4000M

CIB/

1-Wire



C-EM-0401M

Power meter analyzer

3 +1 phase

1x RO

C-EV-0302M

2x AI/DI, 1x DI

2x RO,1x DO

CP, PP

according to EN 61851-1

C-BM-0202M

Battery Management for LiFePo cells

External CIB bus master, CIB separation from power supply

Type	DI	RO	AI	AO	Comm
CF-1141					TCL2, 2× CIB
C-BS-0001M					

CF-1141

C-BS-0001M

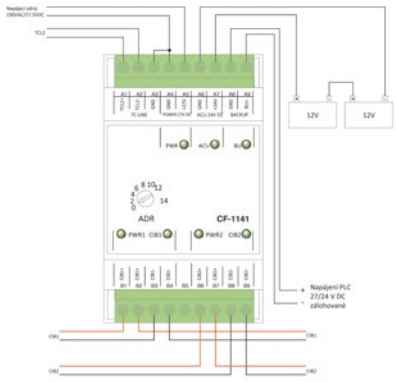
Basic features CF-1141

- Module is designed to expand the number of CIB bus branches connected to one Foxtrot basic module.
- Contains 2×CIB bus master and enables to expand number of connected modules with next 2×32 = 64 modules.
- Module provides power supply of both bus branches via built-in separators of connected power supply 24/27 V DC.
- Foxtrot basic module can be expanded with up to 4 external CF-1141, what means expansion up to 4×2×32 = 256 CIB modules.
- Status operation/error is indicated on front panel.
- Module can be connected with 2×12 V accumulators in serial connection as back-up power supply for both CIB buses and for one another load e.g. for central module.
- Capacity of accumulator has to be chosen according to demand time of back-up, module can charge accumulators with continuous current max. 3 A.

Connection

- Connection with central module Foxtrot should be via cable into TCL2 bus, maximum lenght 400 m. The unique address on TLC2 bus is set manually with rotary switch at front panel.
- Modules CF-1141 are not counted into maximal limit of 10 modules at TCL2 bus.

Connection example CF-1141



Basic features C-BS-0001M

- Module is designed for separation of CIB bus from power supply. Its impedance allows to modulate CIB communication on the power supply voltage.
- Module contains separation of one CIB bus branch.
- Power status is indicated at front panel.

Connection

- Power supply 24 or 27.2 V DC is connected to the module by 2 screw type terminals.
- Terminals marked CIB+ and CIB– has to be connected to CIB bus terminals of central module Foxtrot CP-10xx.

Use

- Module is designed especially for basic modules Foxtrot types CP-10xx with one internal CIB master without internal separator.
- Module can be used for separation of complementary power supply, if there is on CIB bus higher load (>1 A) then is allowed by separator integrated in master of basic module CP-1000 or external master CF-1141.

Connection example C-BS-0001M

Communication	C-BS-0001M	CF-1141
TCL2	–	1×;max. 4 modules at TCL2
CIB	1×passive separator of power supply	2×master with integrated separator

Operating conditions

Operating temperature	–0 ÷ +70 °C
Storage temperature	–25 ÷ +85 °C
Electric strength	according EN 61131
IP Degree of protection IEC 529	IP 10 B
Overvoltage category	II
Degree of pollution IEC EN60664-1:2008	1
Working position	vertical
Installation	On DIN rail
Connections	Screw type connectors

Dimensions and weight CF-1141

Dimensions	52×100×60 mm (3M)
Weight	120 g

Dimensions and weight C-BS-0001M

Dimensions	18×100×56 mm (1M)
Weight	75 g

Power supply	CF-1141
Input voltage – range	24 ÷ 27.2 V DC
Output voltage for CIB	2×24 ÷ 27 V DC, 1 A
Output back-up voltage	1×24 V DC e.g. for the basic module
Connected accumulators	2×12 V in serial
Maximal continuous charging current	3 A. Do not connect uncharged accumulators!
Max. input power	85 W
Internal protection	Yes

Power supply	C-BS-0001M
Input voltage – range	24 ÷ 27.2 V DC
Output voltage CIB	1×24 ÷ 27 V DC, 1 A

Order number

TXN 111 41	CF-1141; CIB 2× master CIB powered, totaly for 64 slaves
TXN 133 55	C-BS-0001M, CIB bus separator, 1A

CIB – Module of digital and combined inputs on DIN rail

Type	DI	RO	AI	AO	Comm
C-IB-1800M	14× DI		4× AI/DI		CIB

C-IB-1800M

Basic features

- Module is designated for direct connection of voltage-free contacts and resistance sensors (RTD) on CIB bus.
- Inputs AI1/DI1 to AI4/DI4 may be set as:
  - analog
  - digital
  - single or double-balanced inputs for security systems
  - counter for reading of pulses from energy meters (S0)
- Inputs DI5 to DI18 may be set as:
  - digital
  - single or double-balanced inputs for security systems
- Module firmware linearizes characteristic of selected types of RTD, optimizes accuracy of measurement and recalculates resistance to temperature in Celsius degrees, which is transferred via CIB bus into central module.
- Digital inputs may operate in normal mode with signalling 0/1 (on/off) or in balance mode with signalling of:
  1. interrupted wire 2. On 3. Off 4. Sabotage (tamper)
- Status error/run is indicated by LED on module (RUN).

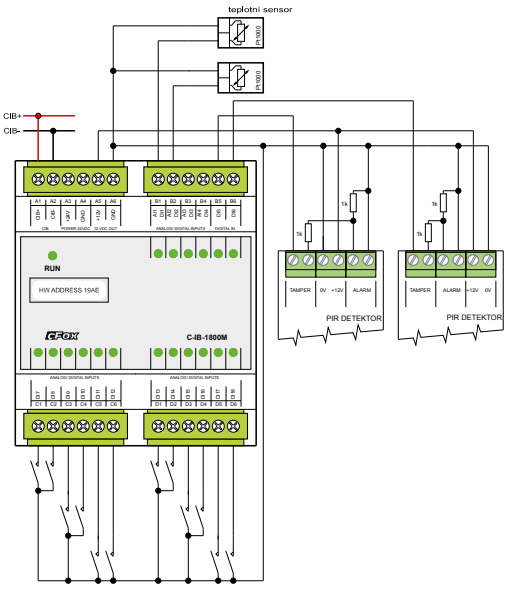
Connection

- Module is connected to CIB bus via screw terminals.
- Contact inputs and resistance sensors are connected via screw terminals.

Use

- The module is universal input module and is designated for connection of any contact and resistance inputs combination.
- Module may be used as integrated reader of up to 4 temperatures.
- Module may be used for connection of security detectors via balanced loops.
- For connection of PIR (motion detectors) and other security detectors, the module is equipped by power supply 12V DC derived from CIB bus.

Connection example



Digital inputs

Number of digital inputs	14× DI (DI5-DI18)
Number of balanced inputs	14× DI (DI5-DI18)
Galvanic isolation	No

Universal inputs (analog/digital)

Number of universal inputs	4× AI/DI (AI1/DI1-AI4/DI4)
Number of counter inputs	4× (AI1/DI1-AI4/DI4)
Counter range	16 bit
Galvanic separation	No

Sensor type	**Range**	**Basic accuracy**
Potential-free contact	0/1	0 if >1.5 kΩ 1 if < 0.5 kΩ
Balanced input	Interrupted wire /0/1/tamper	for 2× 1k1 bal. resistance
Pt1000	–90 .. 320°C	0.5%
Ni1000	–60 .. 200°C	0.5%
NTC 12k	–40 .. 125°C	0.5%
KTY81-121	–55 .. 125°C	0.5%
Resistance	0-160 kΩ	0.5%

Operating conditions

Operating temperature	0 .. +70 °C
Storage temperature	–25 .. +85 °C
Electrical strength	according EN 60730
IP Degree of protection IEC 529	IP10B
Overvoltage category	II
Degree of pollution according EN60664-1:2008	1
Operating position	Vertical
Installation	On DIN rail
Connection of inputs and CIB bus	4× screw terminals, wire diameter max. 2.5 mm²

Dimensions and weight

Dimensions	70 × 93 × 59 mm
Weight	155 g

Power supply

Power supply and communication	24 V (27V) from CIB bus
Nominal/max. load	50 mA/190 mA
Typical/Max. input power	1.2 W/3.8W
Internal protection	Yes, current circuit board reversible

Order number

TXN 133 06	C-IB-1800M, CIB, 14DI, 4DI/AI, 4M

TECO Advanced Automation

CIB – Module of transistor outputs for stepper motors

Type	DI	DO	AI	AO	Comm
C-OS-0808M	8× DI	8× DO	0	0	CIB

C-OS-0808M

Basic features

- Module with 8 binary inputs and 8 transistor outputs. Ouputs are primarily designated for direct control of up to 2 stepper motors. Transistor outputs can be optionally used as common binary outputs, PWM can be activated on up to 2 outputs.
- Connecting module to CIB bus (connecting power supply) is indicated by green RUN LED. If the module is controlled by CIB (Communicate), RUN LED regularly blinking. States of individual inputs/outputs are indicated by LED diodes. Individual outputs allow local manual control using uttons on module.

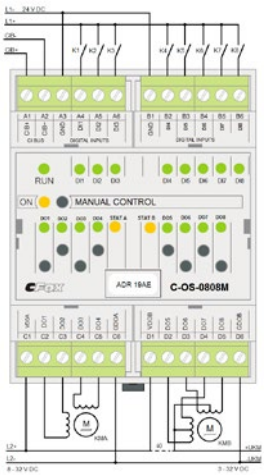
Connection

- Module needs to be connected with 2 wire CIB bus, which ensures communication of module with basic module.
- Module designed for DIN rail mounting for standard circuit breaker cabinets.
- All inputs and outputs, TCL2 bus and power supply are connected to a module by 4 withdrawable connectors with screw terminals.

Use

- Module is combination of inputs and outputs for centralised installation into switchboards of smart houses.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection example



Binary inputs

No. of inputs	8
No. of inputs in the group	3+5
Galvanic isolation from internal circuits	Yes (even among the groups)
Common wire of group	Minus
Insulation voltage	500V
Input voltage for log. 0 (UL)	–5 to +5V
Input voltage for log. 1 (UH)	+15 to +30V
Input current for log. 1	5 mA at 24V
Switching on/off delay	2 ms
Minimal pulse width	5 µs

Binary outputs

No. of outputs	8
No. of outputs in the group	4 + 4
Galvanic isolation	Yes
Switched voltage	8 – 32 V DC
Switched current of the group at 25°C	< 6 A
Switched current of the group at 50°C	< 4 A
Switched current	Every output permanently 2 A
Residual current (block outputs)	max. 2 mA
Output resistance	typ. 0.3 Ω max. 0.6 Ω
Short-circuit protection	No
Type of output	Bipolar/unipolar
Insulation voltage	Between outputs and internal circuit 500 V
Time to close/open the contact	Typ. 1.6/0.6 µs

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
IP Degree of protection (IEC 529)	IP20B
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1:2008	1
Working position	Vertical
Installation	On DIN rail
Connection of power supply, relay outputs	Screw terminal 2.5 mm²

Dimensions and weight

Dimensions	70 × 90 × 58 mm
Weight	170 g

Power supply

Power supply and communication	24 V via CIB
Max. current drain	85 mA
Typical/max. power consumption	2.1 W
Internal protection	No

Order data

TXN 133 96	C-OS-0808M; Modul s 8× DI, 8x (DO/2× řízení krokového motoru/2× PWM výstup)

CIB – Module of combined inputs/outputs on DIN rail

Type	DI	RO	AI	AO	Comm
C-IR-0203M	2× DI/AI	2× RO		1× AO/PWM	CIB

C-IR-0203R

Basic features

- Module is an actuator on CIB bus with two independent relays 16 A with NO/NC contacts.
- Each relay is independently addressed and controlled. Status of each relay is signalled at front panel.
- Module may be switched into manual mode by MC button. Then, outputs are controlled independently manually by buttons DO1 and DO2.
- Module is an actuator with one analog input 0 – 10V.
- Analog output may be switched by button at front panel to PWM mode (pulse width modulation). The amplitude and frequency of switching may be set in the program.
- Module is also a sensor on CIB bus and has two universal inputs.
- Each input may be set as digital for reading voltage-free contact or as balanced input for security sensors.
- Each input may be set as analog for resistance sensors metering, e.g. temperature.
- Module firmware linearizes characteristics of selected types of resistance sensors, optimizes accuracy of metering and recalculates the resistance to temperature in Celsius degrees, which is transferred via CIB to central module.
- Status is indicated by LED on module (RUN).

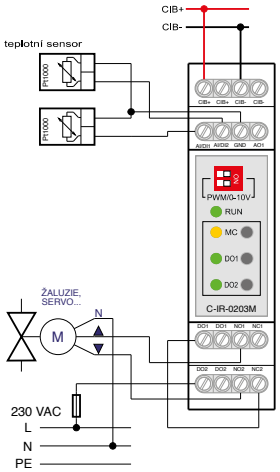
Connection

- Inputs, outputs and CIB bus are connected via screw terminals.

Use

- Module is universal and is designated for connection of various types and combinations of inputs and loads.
- By relay contacts features, the module is designated for switching of power loads, where we may expect transients with high current surge – up to 80 A.
- Module is by its PWM output designated for control of revolutions of modern circulation pumps.

Connection example



Relay outputs

Number of outputs	2× NO/NC 16 A/AC1
Galvanic isolation	yes (even outputs each other)
Switching voltage	min. 5 V DC; max. 300 V AC/DC
Switching power	4000 VA/AC1, 384 W/DC
Switching current	max.16 A (NO) max.10 A (NC), min. 100 mA
Peak current	80 A/ <20ms (switching contact)
Time to switching on/off	typ. 15 ms/ 5 ms
Frequency of switch without load	max. 1200 min^{-1}
Frequency of switching with load	max. 6 min^{-1}
Mechanical life cycle	2×10^7
Electrical life cycle	0.5×10^5
Protection against short circuit	No
Inductive load treatment	Outside. (RC element, varistor, diode)
Isolation voltage between contacts each other/groups/ outputs and CIB bus	1000 V AC/4000 V AC/4000 V AC

Operating conditions

Operating temperature	–10 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according EN 60730
Class of electric device protection according EN 61140:2003	I
IP Degree of protection IEC 529	IP10B
Overvoltage category	II
Degree of pollution acording EN60664-1:2008	1
Operating position	Vertical
Installation	On DIN rail
Connection	Terminals, wire diameter max. 4 mm^2.

Universal inputs

Number of universal inputs	2× DI/AI (DI/AI1, DI/AI2)
Galvanic isolation of CIB bus	No

Measured ranges

Sensor type	Range	Basic accuracy
Voltage-free contact	0/1	0 if>1.5 kΩ 1 if <.0.5 kΩ
Balanced input (security system)	Interrupted wire /0/1/tamper	for 2× 1k1 balanced resistance
Pt1000	–90 .. 320°C	0.5%
Ni1000	–60 .. 200°C	0.5%
NTC 12 k	–40 .. 125°C	0.5%
KTZ81-121	–55 .. 125°C	0.5%
Resistance	0 – 160 kΩ	0.5%

Analog outputs

Number of outputs	1×	
Galvanic isolation	No	
Output mode	Analog	PWM
Nominal input voltage/amplitude	10V	10 – 24V
Frequency of switching		100 – 2 000 Hz
Adjustable range of outputs	0..130% U_n	0..100%
Min. resolution/load resistance	Min. 1%/> 1 kΩ	
Output current/load capacity	Max. 3 mA/Max. 50 nF	

Dimensions and weight

Dimensions	105 × 90 × 22 mm
Weight	93 g

Power supply

Power supply and communication	24 V (27V) from CIB bus
Nominal/max. load	30 mA/60 mA
Typ./Max. input power	0.8 W/1.5 W
Internal protection	No

Order number

TXN 133 59	C-IR-0203M, CIB, 2DI/AI, 2RO NO/NC contacts 230 V AC, 1 AO/PWM

TECO Advanced Automation

CIB – Module of combined inputs/outputs on DIN rail

Type	DI	RO	AI	AO	Comm
C-IR-0303M	3× DI/AI	3× RO			CIB

Basic characteristics

- Module with combination of 3 universal inputs for dry contact or measuring resistivity and of 3 output relay (2 with common end and 1 separately led out on terminal).
- By pressing MANUAL CONTROL button, module is switched to manual control mode, in which every single relay output can be controlled separately by button on front panel.
- State of all outputs and RUN (error/run) is indicated by LED on module

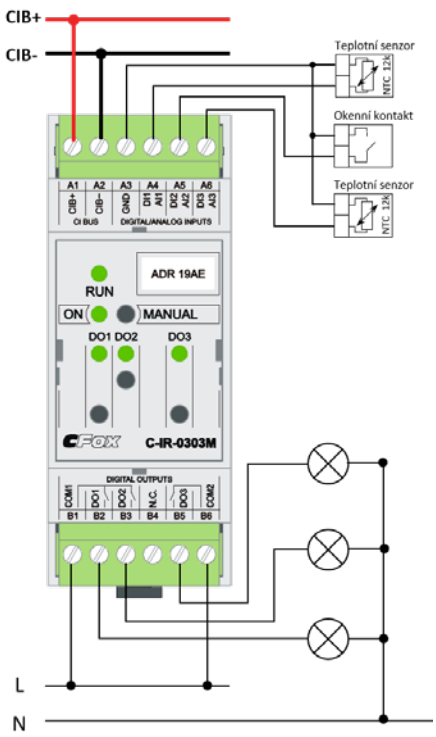
Usage

- Module is universal combination of inputs and outputs and is used, when the number of inputs and outputs must be on the dot according to project.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection

- Module needs to be connected with 2 wire CIB bus, which ensures communication of module with basic module.
- Module designed for DIN rail mounting for standard circuit breaker cabinets
- All inputs and outputs are led out on non-removable screw-type terminals
- CIB bus is led out on non-removable terminals

Connection example



Operating conditions

Operating temperature	–20 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according to EN 60730
IP Degree of protection (IEC 529)	IP10B
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1:2008	1
Working position	Vertical
Installation	On DIN rail
Connection CIB	Screw-type max. 2.5 mm²

Relay outputs

No. of outputs	2× relay, 5 A (DO1, DO2)
1× relé 16 A, (DO3)	
Galvanic isolation	Yes (even outputs one to another)
Switched voltage DO1, DO2 max.	30 V DC; 250 V AC
Switched power DO1, DO2 max.	90 W DC; 1250 VA AC
Switched current DO1, DO2 max.	3 A/30 V DC; 3 A/250 V AC
Switched voltage DO3 max.	300 V DC; max. 440 V AC
Switched power DO3 max.	384 W DC; 4000 VA AC
Switched current DO3 max.	16 A/24 V DC; 16 A/250 V AC
Time to close/open the contact	10 ms/10 ms (DO1, DO2) 15 ms/5 ms (DO3)
Mechanical life	5× 106 switches (DO1, DO2) 20× 106 switches (DO3) 20× 106 switches (DO3)
Short-circuit protection	No
Spike suppressor of inductive load	External (RC element, varistor, diode)
Insulation voltage:	
Among outputs and internal circuits	4000 V AC
Among the groups each other	4000 V AC

Universal inputs

Number of universal inputs	3× (DI1/AI1, DI2/AI2, DI3/AI3)	
Galvanic isolation od CIB	No	
Type of sensor	**Range**	**Basic accuracy**
Voltage free contact	0/1	0 when>1.5 kΩ 1 when <.0.5 kΩ
Balanced input	Disconnected cable /0/1/tamper	for 2× 1kΩ balancing resistance
Pt1000	–90 .. 320°C	2%
Ni1000	–60 .. 200°C	2%
NTC 12k	–40 .. 125°C	2%
KTY81-121	–55 .. 125°C	2%
Resistor	0 – 100 kΩ	2%

Dimensions and weight

Dimensions	89 × 58 × 35 mm
Weight	91 g

Power supply

Power supply and communication	24 V (27V) from CIB bus
Typical/max. power consumption	1.44 W
Internal protection	No

Order data

TXN 133 60	C-IR-0303M; CIB, 3× AI/DI, 2× RO–5 A, 1× RO–16 A

C-IR-0303M

CIB – Module of AC metering of resistance combined with outputs

Type	DI	RO/DO	AI	AO	Comm
C-IS-0504M	3× DI/AI	3× RO, 1× PWM	2× AI		CIB

C-IS-0504M

Basic features

- Module with combination of 3 universal AI/DI inputs, 2 analog inputs for measuring resistivity using alternating current, 3 output relay and 1 semiconductive output with Pulse Width Modulation - PWM
- By pressing MANUAL CONTROL button, module is switched to manual control mode, in which every single relay or semi-conductive output can be controlled separately by button on front panel.
- State of all outputs and RUN (error/run) is indicated by LED on module

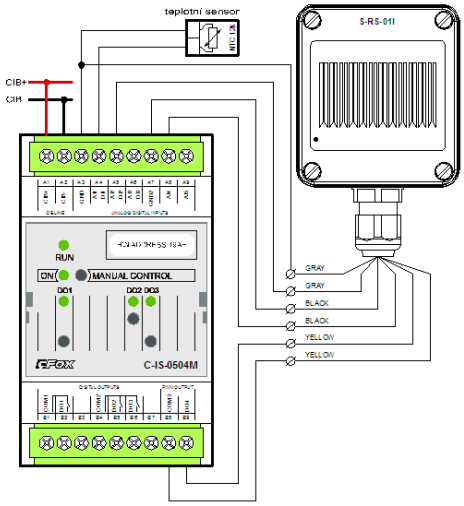
Connection

- Module needs to be connected with 2 wire CIB bus, which ensures communication of module with basic module.
- Module designed for DIN rail mounting for standard circuit breaker cabinets.
- All inputs, outputs and CIB bus are led out on removable screw-type terminals

Use

- Module is designated for resistivity measuring using AC voltage, which can be advantage when sensoring water levels or more precisely rain sensors where the water links the electrodes among themselves. Corrosion caused by passing DC current is eliminated.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection example



Relay outputs

Relay outputs	DO1	DO2, DO3
No. of outputs	**1× NO relay**	**2× NO relay**
Galvanic isolation	Yes	Yes
Switched voltage, max.	440 V AC; 300 V DC	250 V AC; 30 V DC
Switched power, max.	4000 VA/AC, 384 W/DC	1250 VA/AC, 90 W/DC
Switched current, max.	160 A/250 V AC, 16 A/24 V DC	3 A/250 V AC, 2 A/20 V DC
Short-term overload	80 A/250 V AC, 20 ms	5 A/250 V AC, 10 ms
Time to switch on/off	15 ms/5 ms	10 ms/10 ms
Mechanical life	20× 106 switches	5× 106 switches
Electrical life	1× 105 at 5 A/230 V AC	
Short-circuit protection	No	
Spike suppressor of inductive load	External (RC element, varistor, diode)	
Insulation voltage:		
among outputs and internal circuits	4000 V AC	
Among the groups	4000 V AC	
Between contacts		

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according to EN 60730
IP Degree of protection (IEC 529)	IP 10B
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1:2008	1
Working position	Vertical
Installation	On DIN rail
Connection CIB, power supply, relay outputs	Screw terminal max. 2.5 mm²

Semi-conductive output

Type of output	Semi-conductive, PWM
Galvanic isolation from CIB	No
Rated output voltage	24 V
Rated output current	83 mA
Frequency PWM	100 – 2 000 Hz
Adjustable range of outputs	0..100 %

Analog inputs

No. of outputs	2×
Galvanic isolation	No
Resistance input	0 – 1 MΩ
Basic measurement accuracy	3%

Universal inputs

Number of universal inputs	3×
Galvanic isolation od CIB	Ne

Type of sensor	Range	Basic accuracy
Free voltage input		0 when >1.5 kΩ 1 when <0.5 kΩ
Balanced resistance input	Disconnected cable /0/1/tamper	2× 1kΩ
Pt1000	–90 .. 320°C	2%
Ni1000	–60 .. 200°C	2%
NTC 12k	–40 .. 125°C	2%
KTY81-121	–55 .. 125°C	2%
Resistance	0 .. 100 kΩ	2%
Voltage input	0 .. 2 V	2%

Dimensions and weight

Dimensions	89×57×52 mm
Weight	132 g

Power supply

Power supply and communication	24 V (27 V) from CIB bus
Max. current drain	110 mA
Max. power consumption	2.5 W
Internal protection	No

Order data

TXN 133 49	C-IS-0504M; CIB, 3× AI/DI, 3× RO, 1× PWM (4W), 2× AI (AC metering of resistance)

TECO Advanced Automation

CIB – Relay outputs module

Type	DI	RO	AI	AO	Comm
C-OR-0008M		8×			CIB

C-OR-0008M

Basic features

- Module is an actuator with 8 independent relays 16 A each with both NO and NC contacts.
- Each relay has accessible all 3 contacts, they are galvanic isolated and can be connected on different potential levels.
- It is designed for switching of 8 independent devices/loads.
- Each relay is independently addressed and controlled.
- Module can be switched by button to manual mode, where each relay can be controlled manually by appropriate button.
- Status is indicated by LED on module.

Connection

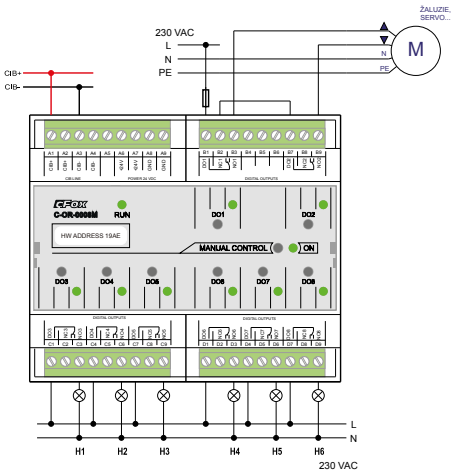
- Module is connected on two-wire bus CIB, that is responsible for communication and supplying of the module.
- To prevent the consumption from the CIB bus the C-OR-0008M module can be powered directly from an external source of 24 VDC
- Module is designed for DIN rail installation.
- Relay outputs are available on removable screw terminals.
- CIB bus is available on screw terminals.

Use

- Module is designed for switching independent loads and devices by relay contacts.
- By suitable interconnection of output contacts the module can be used to control up to four 230 V drives – such as blinds or shutters with electric blocking of the concurrent connections of voltage on both control winding.
- With suitable connection of independent contacts the module can be used for control up to 4 DC drives with reversing.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection example

Connection of motor 230 V AC and 6 bulbs (general load).



Relay outputs

No. of outputs	8 × NO/NC contact
Galvanic isolation	Yes (even outputs each other)
Switching voltage	min. 5 V DC; max. 300 V AC
Switching power	4000 VA/AC1, 384 W/DC
Switching current	max. 16 A, min. 100 mA,
Inrush current	80 A/<20 ms (NO contact)
Time to switch on/off	typ. 15 ms/5 ms
Mechanical life	2×10^7 switching
Electrical life	5×10^4 (1×10^4 at 80 A peak)

Relay outputs

Short-circuit protection	No
Spike suppressor of inductive load	External. (RC, varistor, diode)
Insulation voltage between outputs and internal circuits and between DO1 and DO2	4000 V AC
Insulation voltage among DO2-DO4-DO5 and among DO6-DO7-DO8	1000 V AC

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according EN 60730
IP Degree of protection(IEC 529)	IP 10B
Overvoltage category	II
Degree of pollution according IEC EN60664-1:2004	1
Working position	vertical
Installation	on DIN rail
Connection of CIB	Screw terminals max. 4 mm²
Conductors cross-section relay outputs	Screw terminals max. 4 mm²

Dimensions and weight

Dimensions	105 × 90 × 58 mm
Weight	310 g

Power supply

Power supply and communication	24 V (27V) from the CIB
Power supply from external power supply	24 V DC
Nominal/current consumption	160 mA (switched all relays)
Typical/consumption	3.4 W
Internal protection	No

Order number

TXN 133 03	C-OR-0008M, CIB, 8 × RO, NO/NC contacts, 230V/16 A

CIB – Module with relay outputs – lighting actuator

Type	DI	RO	AI	AO	Comm
C-OR-0011M-800		11×			CIB

C-OR-0011M-800

Basic features

- The module is actuator with 11 addressable and independently controlled relays 16 A/800 A
- Each relay has the NO contact available at the terminal. All relay contacts are galvanic isolated each other and can be connected to the different potential levels.
- Module is designed for switching up to 11 independent loads and especially lighting sources with the high inrush current.
- Module can be switched by the button to manual mode, and each relay can be controlled manually its own button.
- Manual mode and status of each relay are indicated by LED on the front panel.
- Run and error operation are indicated by LED on the front panel.

Connection

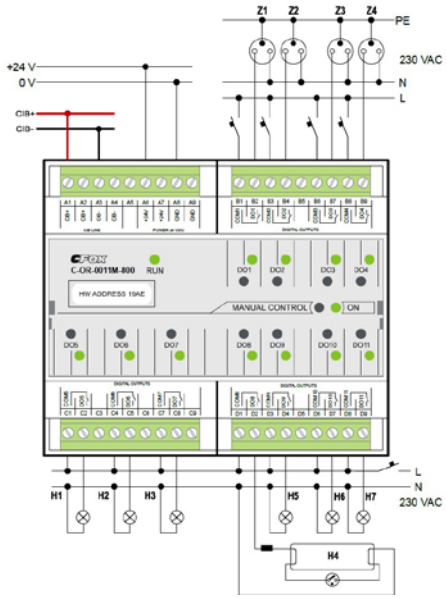
- The module has to be connected to the two-wire CIB bus, which provides communication and power supply module.
- To save power consumption from the bus module can be powered directly from an external 24 V DC power.
- The module is primarily intended for installation on the DIN rail in control cabinets.
- Due to the large switching currents relay outputs are led to a fixed terminals for wires with a maximum cross section 4 mm2.
- CIB bus and a separate power supply are also routed to fixed terminals.

Usage

- The module is designed for independent switching power loads and appliances via a normally open relay output.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection example

Connection of 11 light sources and general loads (230 V AC)



Relay outputs

No. of outputs	11× normally open (NO) contacts; AgSnO2, tungsten
Galvanic isolation	yes (outputs each other)
Switching voltage	min. 5 V DC; max. 300 V AC
Switching power	4000 VA/AC1, 384 W/DC
Switching current	max.16 A, min. 100 mA,
Inrush current	800 A/<200 µs (NO contact)
Time to switch on/off	typ. 10 ms/5 ms
Mechanical lifetime	5×10^6 switches
Electrical lifetime (230 V AC, 16 A, cos φ=1)	1×10^5 (6×10^3 at 1200W bulb, 620 Vacuum lamp)

Operating and installation conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electrical strength	according EN 60730
Degree of IP protection (IEC 529)	IP 10B
Overvoltage category	II
Degree of pollution according IEC EN60664-1:2008	1
Working position	Vertical
Installation	on DIN rail
Connection of CIB	Screw type terminals max. 4mm²
Cross section of wires for relay outputs	max. 4 mm²

Relay outputs

Short circuit protection	No
Spike suppressor of inductive load	External. (RC, varistor, diode)
Insulation voltage between outputs and internal circuits	4000 V AC
Insulation voltage between DO1-DO2, DO3-DO4,DO8-DO9, DO10-DO11	1000 V AC
Insulation voltage between DO5, DO6, DO7	4000 V AC

Dimensions and weight

Dimensions	105×90×58 mm
Weight	310 g

Power supply

Power supply communication	24 V DC (27 V DC) from the CIB
Power from external power supply	24 V DC
Nominal consumption from external power supply	Max. 200 mA (all relays closed)
Typical consumption	3.4 W
Internal protection	No

Order data

TXN 133 67	C-OR-0011M-800, CIB, 11× RO, NO contact, 230 V AC/16 A (max. 800 A)

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CIB – Module of shutter actuators

Type	DI	DO	AI	AO	Comm
C-JC-0006M		6× 2RO			CIB

C-JC-0006M

Basic features

- The module is actuator to control up to 6 independent shutter drives.
- Each actuator contains two relays switching the phase alternately to one of its outputs: up/down. Internal wiring and firmware excludes the current phase attach to both outputs even in the event of relay failure.
- It is designed to control the 6 independent motors/drives with separate windings for controlling the running direction.
- Each actuator – a pair of relays – is individually addressable and controllable.
- The module can be switched by the button to manual mode, in which each motor can be controlled separately by selecting the appropriate pair of running direction keys UP/DOWN.
- Status and error/operation is indicated by the LED on the bottom part of the module.

Connection

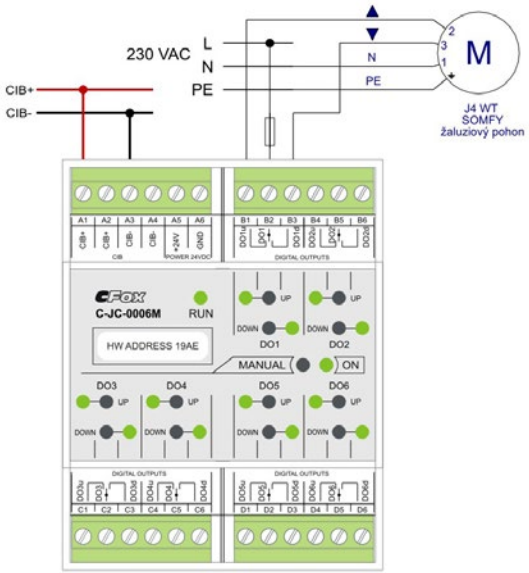
- The module is connected to the two-wire bus CIB, which provides communication and power supply for the module.
- The module is primarily intended for installation in control cabinets on the DIN rail.
- Relay outputs are connected to removable screw type connectors.
- The CIB is also connected to removable screw type connector.

Usage

- It is designed to control the 6 independent motors with separate windings for controlling the running direction.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection example

Connection of one of 6 shutter drives 230 V AC



Relay outputs

Number of outputs	6× 2 relay, three-point control (open – quiet – close)
Galvanic isolation	Yes, also among the groups
Switched voltage	min. 5 V DC; max. 300 V AC
Switched current	typ. 3 A, max. 5 A, min. 10 mA
Closing/Opening time	typ. 10 ms/10 ms
Mechanical lifetime	5× 106 cycles
Electrical lifetime	1×105 at 5 A/230 V AC

Relay outputs

Protection against short circuit	No
Protection against inductive load	External (RC circuit, diode, varistor)
Insulation voltage	4000 V AC between outputs and internal circuits 4000 V AC between groups

Operating and installation conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electrical strength	according to EN 60730
IP degree of protection acc. IEC 529	IP10B
Overvoltage category	II
Degree of pollution according EN EN60664-12008	1
Operating position	vertical
Installation	on DIN rail
Connection of CIB, power supply, relay outputs	Screw type connector max. 1.5mm²

Dimensions and weight

Dimensions	105 × 90 × 58 mm
Weight	310 g

Power supply

Power supply and communication	24 V (27 V) from the CIB
Power from an external source	24 V DC/78 mA
Typical/Maximum power consumption	1.8 W
Internal protection	No

Order data

TXN 133 68	C-JC-0006M, CIB, 6× jalousie actor, 6× 2RO with dependent switching, 230 V AC/5 A

CIB – Combined input/relay output module

Type	DI	RO	AI	AO	Comm
C-RM-1109M	8× DI	8× RO	3× AI	1× AO	CIB

C-RM-1109M

Basic features

- Module designated to be mounted on DIN rail, comes with combination of 3 analog inputs with common terminal and 1 analog output, then 8 binary inputs for dry contact sensing and 8 relay outputs.
- New generation of combined modules with relay outputs resistant to frequent capacitive loads. In newer projects these modules are recommended as replacement in place of C-HM-xxxxM module series.
- Analog inputs with 12 bit resolution are configurable for both measuring resistivity of sensors supplied from common terminal, and for sensing pulses from standard S0 electrical meter outputs.
- Analog output is voltage 0 – 10 V with 8 bit resolution.
- Switch contacts of 8 relays are all led out separately, and can be externally connected to a various voltage ranges or mutually connected into various combinations.
- Output relays with odd serial numbers DO1, DO3...have the best resistance on market towards short-term overload (inrush current). It is recommended to reserve these contacts for circuits, where more of such overloads are switched collaterally. Output relays with even serial number DO2, DO4... have lower constantly switched current sufficient for ordinary loads, even though they have increased resistant against inrush current as well.
- By pressing MANUAL CONTROL button, module is switched to manual control mode, in which every single contact can be controlled separately by button on front panel. Can be used in phase of installation, when the central unit isn't programmed or in case of emergency.

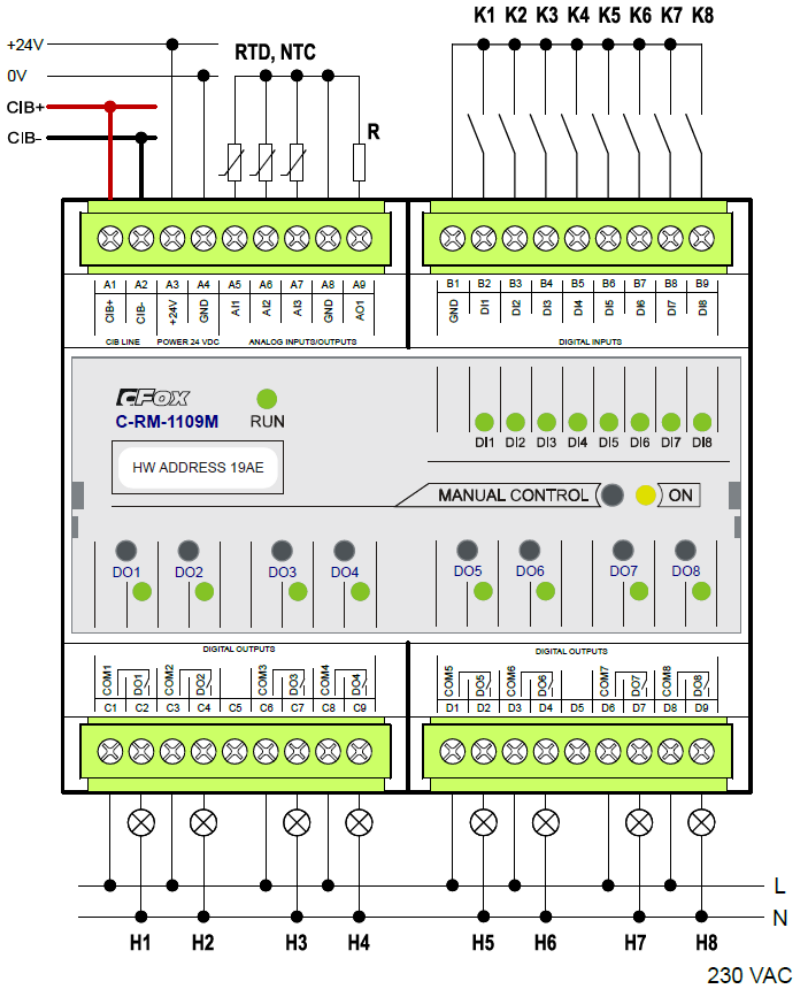
Connection

- Module needs to be connected with 2 wire CIB bus, which ensures communication of module with basic module and power supply.
- Module features special terminals for feeding from external power supply 24 V DC.
- Module designed for DIN rail mounting for standard circuit breaker cabinets.
- All inputs and outputs, TCL2 bus and power supply are connected to a module by 4 removable connectors with screw terminals.

Use

- Module is large-scale combination of inputs and outputs for extensive installation centralized in switchgear. Typically for one hotel room, one room or one floor of detached house.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection example



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Binary inputs

No. of binary inputs	8×
Galvanic isolation	No
Type of input	Active for free voltage contact scanning
Current through closed contact	1.5 mA
Max. resistance of closed contact	1 kΩ
Min. resistance of the switching contact	2 kΩ
The minimum width of the captured pulse	5 ms

Analog inputs/counters

Number of universal inputs	3×
Common wire	GND
Galvanic isolation from CIB	No
Resolution	12 bits
Accuracy	0.1 °C/ 10 Ω, 0.5 % of range
Restoration of analog inputs	5 s
Type of counter	Standard SO, IEC 61393
Pulse length	Min. 30 ms
Frequency of the pulses	Max. 20 Hz

Type of sensor	**Rozsah**	**Basic accuracy**
voltage range	0 – 2 V	0.5 %
Pt1000	–90 .. 320 °C	0.5 %
Ni1000	–60 .. 200 °C	0.5 %
NTC 12k	–40 .. 125 °C	0.5 %
KTY81-121	–55 .. 125 °C	0.5 %
Potentiometer	0 – 1000 Ω	0.5 %
Potentiometer	0 – 100 kΩ	0.5 %

Analog output

Number of universal inputs	1×
Type of output	Active, voltage
Galvanic isolation from CIB	No
Resolution/Range	8 bits
Conversion time	10 µs
Output voltage/resolution 1LSB	0 – 10.5 V/41.1 mV
Max. output current	10 mA
Max. error at 25°C	±2 % of full range
Temperature coefficient	±0.3 % of full range
Linearity	±0.7 % of full range
Repeatability under steady conditions	±0.5 % of full range

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according to EN 60730
IP Degree of protection (IEC 529)	IP10B
Overvoltage category	II
Degree of pollution dle ČSN EN60664-1:2008	1
Working position	Vertical
Installation	On DIN rail
Connection CIB, Power supply, Relay outputs	Screw terminal max. 2.5 mm²

Relay outputs

No. of outputs	4× relay, 10 A (DO2, 4, 6, 8) 4× relay 16 A, (DO1, 3, 5, 7)
Galvanic isolation	Yes (even outputs to one another)
DO1, DO3, DO5, DO7:	
Switched voltage	440 V AC
Switched power	4000 VA
Switched current	16 A
Short-term overload	165 A/20 ms 800 A/200 µs TV-8 120 V AC
Mechanical life	Min. 5 000 000 switches
Electrical lifetime at rated load	12 000 switches at 3000 W
DO2, DO4, DO6, DO8:	
Switched voltage	max. 250 V AC; max. 30 V AC, min. 5 V
Switched power	max. 2500 VA, 300 W/DC
Switched current	max. 10 A
Short-term overload	TV-5 120 V AC
Time to switch on/off	typ. 15 ms/5 ms
Max. switching frequency	20 switches/min
Mechanical life	10 000 000 switches
Electrical life	100 000 at rated load 25 000 při TV-5
Short-circuit protection	No
Spike suppressor of inductive load	Vnější RC člen, varistor, dioda(DC)
Insulation voltage among outputs and internal circuits	4000 V AC
Insulation voltage among the groups each other	4000 V AC 1000 V AC for DO1-4 and DO5-8

Dimensions and weight

Dimensions	105 × 90 × 58 mm
Weight	280 g

Power supply

Power supply and communication	24 V (27V) from CIB or external 24 V DC ±15%
Max. current drain	160 mA
Typical/max. power consumption	4 W
Internal protection	No
Galvanic isolation	No

C-RM-1109M

Order data

TXN 133 82	C-RM-1109M; CIB, 3× AI, 8X DI, 1× AO, 8× RO, externally power supplied

CIB – Combined inputs/outputs modules

Type	DI	RO	AI	AO	Comm
C-HM-0308M	See AI	6	3 AI/DI	2	CIB
C-HM-1113M	8	11	3	2	CIB
C-HM-1121M	8	19	3	2	CIB

C-HM-0308M

C-HM-1113M

C-HM-1121M

Basic features

- Modules on DIN rail with combination of analog and digital inputs and outputs.
- Each module has on CIB bus only one address. That means on each CIB bus branch we may connect up to 32 × 32 = 1024 analog and digital inputs and outputs in combination.
- 3 analog inputs for Resistance Temperature Detectors (RTD) and 2 analog outputs 0 – 10V are designed for 1 – 2 regulation loop, e.g. heating, air-conditioning or for general use.
- Analog inputs of C-HM-0308M module may be configured for high resistance measurement, e.g. condensation sensor or as voltage free contact digital inputs.
- Modules C-HM-1113M and C-HM-1121M are equipped with 8 independent inputs for voltage free contacts.
- C-HM-0308M contains two galvanic insulated groups with 3 relays. Each group may be used independently for switching 24V DC or 230V AC.
- C-HM-1113M contains 4 galvanic insulated groups of relays for 3A and 1 power relay for 16A with separate NO contact. Each group may be used independently for switching 24V DC or 230V AC in different phases.
- C-HM-1121M contains 6 galvanic insulated groups of relays with normally open (NO) contacts and with common wire for 3A load and 3 independent relays for 16A each with NO contacts available on the terminal. Each group can be used independently for switching 24V DC or 230V AC in different phases.
- Power relays for 16A have contacts with combination of wolfram/AgSnO2 for reliable switching of high loads.
- Each relay is separately addressed and controlled from program.
- After push button MANUAL CONTROL we may each relay control by appropriate button.
- Status of digital inputs, relay outputs, mode MANUAL CONTROL RUN are indicated by LEDs at front side of module.

Connection

- Modules C-HM-0308M, C-HM-1113M, C-HM-1122M are connected at two-wire bus CIB, providing power supply and communication. HW address (4 hexadecimal digits) is shown at front panel.
- Modules C-HM-0308M, C-HM-1113M are powered from CIB bus, module C-HM-1121M is powered from power supply 230V AC.
- Modules are connected with removable connectors and power connectors of C-HM-1121M module via fixed screw type terminal.

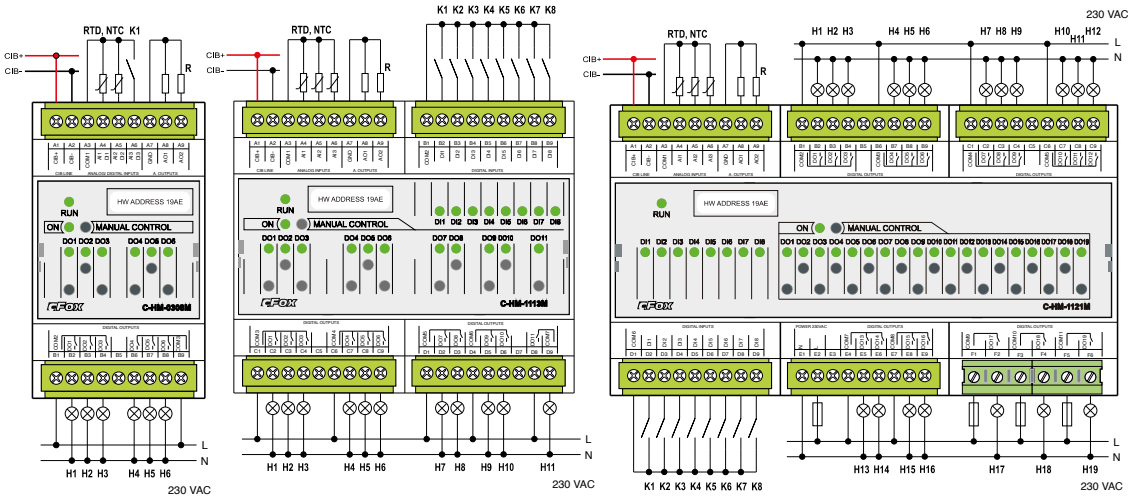
Use

- Modules are used for large installations centralised into installation cabinet. Typically for one hotel room, one room or floor of residential house.
- Switching of R, L or C loads, independent outputs are used for switching of power loads, especially inductive or capacity loads.
- Control of circuits in rooms: sockets circuits, lighting, jalousies, heating and air-conditioning.
- Regulation of solar and combined systems.
- Module C-HM-0308M is suitable for input/output module for regulation nodes – regulation of heating circuits, FanCoil control, air heating, ventilation, air quality, recuperation, etc.

Communication

Installation bus	CIB

Connection example



C-HM-0308M C-HM-1113M C-HM-1121M

Analog outputs	C-HM-0308M	C-HM-1113M	C-HM-1121M
No. of outputs	2	2	2
Common wire	Minus (GND)	Minus (GND)	Minus (GND)
Galvanic isolation	No	No	No
Resolution	8bit	8bit	8bit
Output range	0÷10V, 1÷10V	0÷10V, 1÷10V	0÷10V, 1÷10V

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Analog inputs	C-HM-0308M	C-HM-1113M	C-HM-1121M
No. of inputs	3	3	3
Common wire	Plus	Plus	Plus
Galvanic isolation	no	no	no
Resolution	12 bit	12 bit	12 bit
Measurement ranges			
RTD	Pt1000, Ni1000	Pt1000, Ni1000	Pt1000, Ni1000
NTC (termistor)	12 kΩ	12 kΩ	12 kΩ
Resistive – sensor of condensation	0 – 600 kΩ, 0 – 6 MΩ	0 – 600 kΩ, 0 – 6 MΩ	0 – 600 kΩ, 0 – 6 MΩ
Potential free contact	Yes, on each contact	–	–
Voltage ranges	50 mV, 100 mV, 1 V, 2 V	50 mV, 100 mV, 1 V, 2 V	50 mV, 100 mV, 1 V, 2 V

Digital inputs	C-HM-0308M	C-HM-1113M	C-HM-1121M
Input type	3 × potential free contact See Analog inputs	8 × potential free contact	8 × potential free contact

Relay outputs	C-HM-0308M	C-HM-1113M	C-HM-1121M
No. of outputs/groups	Total 6 2 × 3 relay 3 A	Total 11 2 × 3 relay 3 A 2 × 2 relay 3 A 1 × relay 16 A	Total 19 4 × 3 relay 3 A 2 × 2 relay 3 A 3 × 1 relay 16 A
Galvanic isolation	Yes (even groups each other)	Yes (even groups each other)	Yes (even groups each other)
Switching voltage		min. 5 V DC; 24 V DC; max. 30 V DC, max. 250 V AC	
Relay outputs groups	DO1 ÷ DO3, DO4 ÷ DO6	DO1 ÷ DO3, DO4 ÷ DO6, DO7 ÷ DO8, DO09 ÷ DO10	DO1 ÷ DO3, DO4 ÷ DO6, DO7 ÷ DO9, DO10 ÷ DO12, DO13 ÷ DO14, DO15 ÷ DO16
Switching current	Min. 100 mA; max. 3 A	Min. 100 mA; max. 3 A	Min. 100 mA; max. 3 A
Inrush current	5 A/<3 s	5 A/<3 s	5 A/<3 s
Time of close/open the contact	typ. 10 ms/4 ms	typ. 10 ms/4 ms	typ. 10 ms/4 ms
Current through common wire	10 A	10 A	10 A
Switching frequency without load	max. 120 min^{-1}	max. 120 min^{-1}	max. 120 min^{-1}
Switching frequency with nominal load	max. 30 min^{-1}	max. 30 min^{-1}	max. 30 min^{-1}
Mechanical/Electrical lifetime at maximal load	$5 \times 10^6/1 \times 10^5$	$5 \times 10^6/1 \times 10^5$	$5 \times 10^6/1 \times 10^5$
Short-circuit protection	No	No	No
Spike suppressor of inductive load	External (RC, varistor, diode)	External (RC, varistor, diode)	External (RC, varistor, diode)
Insulation voltage between each relay outputs	3750 V AC	4000 V AC	4000 V AC
Connections/Conductors cross-section	Removable conector/max. 2.5 mm^2	Removable conector/max. 2.5 mm^2	Removable conector/max. 2.5 mm^2
Relay outputs		DO11	DO17, DO18, DO19
Switching current		16 A	16 A
Inrush current		160 A/<10 ms	160 A/<10 ms
Time of close/open the contact		max. 10 ms/4 ms	max. 10 ms/4 ms
Minimal switched current		100 mA	100 mA
Switching frequency without load		max. 60 min^{-1}	max. 60 min^{-1}
Frequency of switching with nominal load		max. 6 min^{-1}	max. 6 min^{-1}
Mechanical/Electrical lifetime at maximal load		$5 \times 10^6/4 \times 10^4$	$5 \times 10^6/4 \times 10^4$
Short-circuit protection		No	No
Spike suppressor of inductive load		External	External
Insulation voltage between each relay outputs		3750 V AC	3750 V AC
Connections/Conductors cross-section			Fixed screw type terminals/max. 4 mm^2

Dimensions and weight	C-HM-0308M	C-HM-1113M	C-HM-1121M
Dimensions	90 × 58 × 53 mm	90 × 105 × 58 mm	157 × 90 × 58 mm
Weight	125 g	270 g	450 g

Power supply	C-HM-0308M	C-HM-1113M	C-HM-1121M
Input nominal voltage (SELV)/	+24 – 27.2 V DC/from bus CIB	+24 – 27.2 V DC/from bus CIB	230 V AC
Nominal load	90 mA	160 mA	35 mA

Operating conditions	
Operating temperature	–10 .. +55 °C
Storage temperature:	–25 .. +70 °C
Electric strength	according EN 60950
IP Degree of protection(IEC 529)	IP 20, IP40 with cover in switchboard
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2004	1
Working position	any
Installation	on DIN rail

Order number	
TXN 133 24	C-HM-0308M – CIB – combined module 3× AI/DI, 2× AO, 6× RO 230 V 5 A
TXN 133 10	C-HM-1113M – CIB – combined module 3× AI, 8× DI (contact), 2× AO, 10× RO 230 V 5 A, 1× RO 230 V 16 A
TXN 133 11	C-HM-1121M – CIB – combined module 3× AI, 8× DI (contact), 2× AO, 16× RO 230 V 5 A, 3× RO 230 V 16 A

C-HM-0308M

C-HM-1113M

C-HM-1121M

CIB

CIB – Module for LED strip control

Type	DI	DO	AI	AO	Comm
C-DM-0006M ULED				6× Voltage control (0 – 100 %)	CIB

C-DM-0006M ULED

Basic features

- Module is actuator with 6 independent outputs (channels) for proportional control of LED strip lighting with common anode. They are controled by voltage.
- Each channel is independently addressed and controlled in range 0 up to 100% of power supply voltage 12V or 24VDC.
- All LED strips must be for the same power supply voltage.
- Outputs have internal protection against short-circuit.
- Module can be turned to manual mode by the front button, so each channel can be switched on/off by the channel button.
- Status is indicated by LED on module.

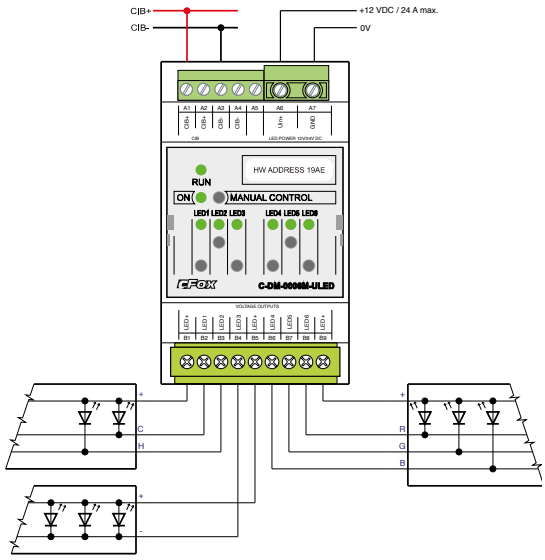
Connection

- Modul has to be connected to 2-wire bus CIB which provides both communication and power supply.
- CIB bus is connected at removable screw terminals.
- Outputs are available at removable screw connectors.
- Power voltage 12V or 24VDC for LED strips is connected at screw terminals with large cross-section.
- During designing the wiring, load of each terminal has to be taken into account.
- Module is used for assembly on DIN rail in switchboard.

Use

- Control of up to 6 single-color LED strips with max. current 6 A per channel.
- Control of up to 2 RGB LED strips with up to 6 A per each color.
- Use for low power orientation lighting in buildings etc.
- May be used for decoration and effect lighting in interiors and exteriors.

Connection example



Outputs for continuous control of LED strips

No. and type of outputs	6×, semiconductive, PWM voltage output (0 – 100%)
Load type	LED strip, RGB/monochrom
Power voltage for LED strips	12VDC/24VDC
Output current	max. 6A/channel
Maximal total current	24A
Max. length of LED strip (13 W/m)	10m
Max. length of LED strip (6.5 W/m)	20m
Max. length of LED strip (4.3 W/m)	30m
Short-circuit protection on output	Yes
Galvanic isolation of output	No

Operating conditions

Operating temperature	0 .. +45 °C
Storage and transport temperature	–25 .. +85 °C
Electric strength	according EN 60730
IP Degree of protection(IEC 529)	IP10B
Overvoltage category	II
Degree of pollution IEC EN 60664-1:2008	1
Working position	vertical
Installation	on DIN rail
CIB connection	Screw terminals max. 2.5 mm²
Power supply connection	Screw terminals max. 4 mm²
LED strip connection	Screw connector, max. 2.5 mm²

Dimensions and weight

Dimensions	53×90×58 mm
Weight	120 g

Power supply

External power supply for LED strip	12/24VDC ± 10%
Max. load current of LED	24A total, 6A per channel
Power supply of module and communication	24V (27V) from CIB bus
Typ. /max. load current from CIB	max. 15mA
Typical/Max. power from CIB	0.4W
Internal protection	Yes, recovering fuse

Order number

TXN 133 45	C-DM-0006M ULED, 6 channel dimming module for LED strips 12 – 24VDC, max. 4A/channel

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CIB – Module for direct control of LED chips 150/350/500/700 mA

Type	DI	DO	AI	AO	Comm
C-DM-0006M ILED				6× controlled current supply (0 – 100 %)	CIB

C-DM-0006M ILED

Basic features

- Module is actuator with 6 independent outputs (channels) for proportional control of power LED lights or lights with LED chips connected in serial. They are controlled by control of the current.
- Each channel is independently addressed and controlled in range 0 up to 100% of the current range.
- Module can be switched by button into manual mode, so each output can be independently switched on and off by button.
- Status and error/operation is indicated by LED on module.

Connection

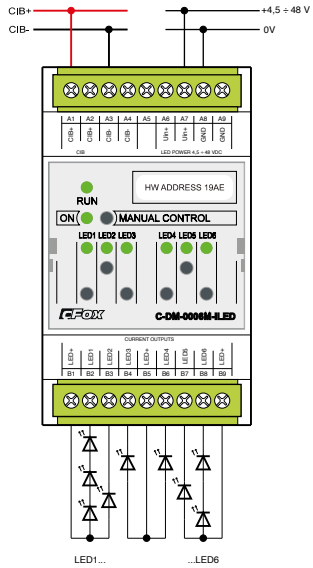
- Module has to be connected by two-wire bus CIB, that provides communication and power supply of module.
- CIB bus is connected at screw terminals.
- Outputs are connected at removable screw connector. During designing the wiring, allowed load of each terminal has to be taken into account
- Module is used for assembly on DIN rail in switchboards.

Use

- Direct control of LED lights equipped by LED chips.
- Channels may be associated by triplets for fully independent control of two RGB light sources.
- May be used for decoration and effect lighting in interiors and exteriors.

Connection example

Connection of 6 LEDs individually controlled



Proportional outputs for LED chip control

Number and type of outputs	6×, semiconductive current output, controlled PWM (0 – 100%)
Load type	LED chip, RGB/monochromatic
Power voltage for LED	4.5 – 48 V
Output current	150, 350, 500, 700 mA/channel
Max. number of white LEDs (48 V)	13 (3.5 V/1 diode)
Max. number of red LEDs (48 V)	22 (2.1 V/1 diode)
Max. number of green LEDs (48 V)	19 (2.6 V/1 diode)
Max. number of blue LEDs (48 V)	13 (3.5 V/1 diode)
Short-circuit protection on output	Yes
Galvanic isolation of output	No

Operating conditions

Operating temperature	0 .. +55 °C
Storage and transport temperature	–25 .. +70 °C
Electric strength	according EN 60730
IP Degree of protection(IEC 529)	IP10
Overvoltage category	II
Degree of pollution	1
Working position	vertical
Installation	on DIN rail
Connections CIB	screw connector, max. 2.5 mm²
Connections Power supply	screw connector, max. 2.5 mm²
Connections LED belts	screw connector, max. 2.5 mm²

Power supply LED

Power supply voltage for LED in serial	4.5 – 48 V DC
Max. load current LED	4.2 A total, 700 mA per channel

Dimensions and weight

Dimensions	53 × 90 × 58 mm
Weight	120 g

Power supply of module

Power supply of module	24 V (27 V) from CIB
Typical/max. load from CIB	15 mA
Typical/max. input power from CIB	0.4 W
Internal protection	Yes, recovering fuse

Order number

TXN 133 46	C-DM-0006M ILED, 6 channel dimming module for LED chip 150, 350, 500, 700 mA/max. 48 V DC

CIB – Universal dimming module RLC load on CIB bus 230 V/AC

Type	DI	DO	AI	AO	Comm
C-DM-0402M RLC			4× AI/DI	2× phase controlled voltage 230 V AC (0 – 100%)	CIB

C-DM-0402M RLC

Basic features

- The module is an actuator with 2 independent outputs (channels) for proportional control of light sources powered by 230 V AC.
- Dimmer is well designed for high reliability and immune to interferences in the main and interference of ripple control.
- Each channel is individually addressable and controlled via CIB bus in range 0 – 100%.
- Module may be switched to manual mode, where each inputs may be switched on/off by button.
- The right function for loads of various characters RL, LC or LED/CFL is to be chosen in SW configuration of module via CIB.
- Each channel may control load up to 500 VA.
- Channels enable parallel arrangement of both output channels for increasing of controlled load up to 1 000 VA.
- To increase controlled load, we may parallely arrange up to 4 outputs of independent modules. In such case both modules have to be on one branch CIB.
- In the case of parallel arrangement, all channels have to be control synchronal by the same commands via CIB bus. In the case of manual control, other active outputs may be overloaded.
- Outputs have internal protection against overload and overheating.
- Module contains 4 universal inputs for general purpose.
- To universal inputs we may connect voltage-free contacts, RTD temperature sensors or double-balanced circuits with security detectors.
- Status is indicated by LED on module.

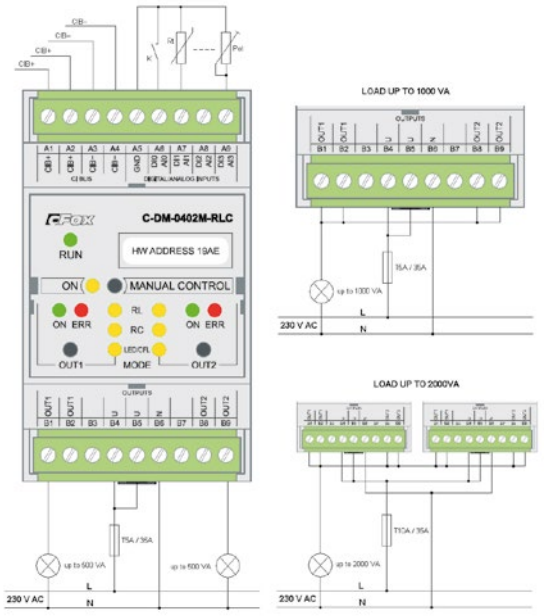
Connection

- The module is connected on two wires CIB bus, which holds communication, power supplying and control of module.
- CIB bus, inputs and outputs are connected to screw terminals.
- While designing the project, we have to calculate allowed load capacity of each connector.
- The module is designated for assembly into distribution box on DIN rail.

Use

- Resistance load control up to 500 W (resp. 1 000 up to 2 000 W with parallel arrangement).
- Inductive load (RL) control up to 250 VA on channel. Typically standard transformers, motor loads, bulbs.
- Capacity load (RC) control up to 250 VA. Typically electronic transformers, Compact Fluorescent Lamp and LEDs on 230 V AC.

Connection example



Outputs for continuous load control 230 V AC

Number and type of outputs	2× 0-100%, phase control, 2× NMOS power transistor
Load type	R, L, C, dimmable LED and CFL
Operation voltage	115/230 V AC
Output current	max. 2.2 A/channel
Switched load on channel	500 VA (1000 VA, 2000 VA at parallel arranging)
Galvanic separation of outputs from CIB bus	Yes – 3.75 kV

Measured ranges

Sensor type	Range	Basic accuracy
Voltage-free contact	0/1	0 if > 1.5 kΩ 1 if < 0.5 kΩ
Balanced output (security detectors)	Interrupted wire /0/1/tamper	for 2× 1k1 balanced resistor
Pt1000	–90 .. 320°C	0.5%
Ni1000	–60 .. 200°C	0.5%
NTC 12 k	–40 .. 125°C	0.5%
KTY81-121	–55 .. 125°C	0.5%
Resistor	0 – 160 kΩ	0.5%

Operating conditions

Operating temperature for load below 400 VA	0 .. +40 °C; without forced circulation of air
Operating temperature for load above 400 VA	0 .. +40 °C, with forced circulation of air
Storage and transport temperature	–25 .. +85 °C
Electric strength	according EN 60730
IP Degree of protection IP (IEC 529)	IP20
Overvoltage category	II
Degree of pollution	1
Working position	vertical
Installation	on DIN rail
Connection	Screw connector
Connections loads, inputs, CIB	Screw connector max. 2.5 mm²

Dimensions and weight

Dimensions	90 × 58 × 53 mm
Weight	120 g

Power supply of module

Power supply for load	230 V AC
Max. output current of load	2× 2.2 A in total
Module power supply	24 V (27V) from CIB bus
Typical load from CIB	20 mA
Typical/max. input power from CIB	0.46 W
Internal protection	Yes, recovering fuse

Order number

TXN 133 58	C-DM-0402M-RLC, CIB – 2× dimmer RLC, 230 V AC, 2× 500 VA

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Type	DI	DO	AI	AO	Comm
C-IF-6400R			8×8 = 64 temperature sensors		1× CIB slave

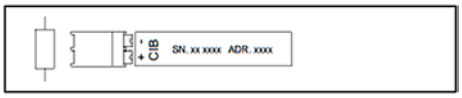
C-IF-6400R

Basic features

- The C-IF-6400R is a CIB bus module containing 64 temperature sensors (pixels) arranged in an 8×8 matrix. Subsequent rapid processing of data transmitted over the CIB allows the Foxtrot basic module to immediately evaluate and possibly display the temperature map of the entire matrix. Ability to prepare staic or even dynamic decision and recognition functions above this field brings a wide range of applications. Unlike simple temperature-sensitive sensors that only measure a single point temperature, Grid-EYE, based on MEMS technology, is able to measure temperature individually in all matrix elements. Thanks to the silicon lens, it is possible to actively monitor the angle of 60 ° and detect, for example, not only the presence, but also the movement, speed and direction of moving objects.

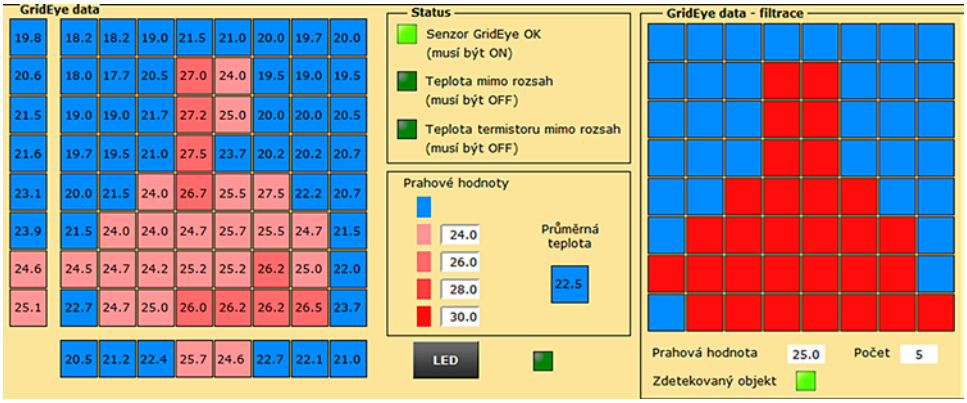
Connection

Connection via connectors:
CIB – terminal block, conductor 2× max. 1,5 mm²



Module connection diagram on CIB bus

Module operation



Commissioning

- The module is operated, set and diagnosed from the programming environment MOSAIC or other parameterization software. The module is connected to the power supply voltage and CIB bus ready for operation. HW address is stated on the label on the side.

COM – System expansion buses

Installation I/O Bus (CIB)	1× CIB slave

AI – Analog input parameters

Organization of inputs in groups	8×8 proximity temperature sensor matrix

AI – Ranges of analog inputs

Temperature sensor range	0 – 80 °C

Operating conditions, product standards

Product standard	ČSN EN 60730-1 ed.4 :2017 (EN 60730-1:2016) – Automatic electronic control device (for household and similar purposes)
Protection class of electrical object	III according to ČSN EN 61140 ed.3: 2016 (idt IEC 61140:2016)
IP rating (Ingress Protection)	IP10B according to ČSN EN 60529: 1993 (idt IEC 529: 1989)
Operating areas	Normal, acc. ČSN 33 2000-1 ed.2: 2009 (mod IEC 60354-1:2005)
Degree of pollution	1, according to ČSN EN 60664-1 ed.2:2008 (idt IEC 60664-1:2007)
Overvoltage category installation:	II, according to EN 60664-1 ed_2: 2008 (idt IEC 60641-1: 2007)
Type of device	On the wall
Working position	Any
Type of operation (operating frequency)	Continuous
Ambient temperature operating range	0 °C to + 55 °C
Storage temperature range	–25 °C to +70 °C

Electromagnetic compatibility, Mechanical endurance

Electromagnetic compatibility/ Emission	B, according to EN 55032 ed. 2: 2017 (idt CISPR 32: 2015)
Electromagnetic compatibility/ Immunity	min. according to ČSN EN 6730-1 ed.2: 2001
Sinusoidal vibration endurance	10 Hz to 57 Hz, amplitude 0,075 mm, 57 Hz to 150 Hz, acceleration 1 G (Fc test according to EN 60068-2-6: 1997 (idt IEC 68-2-6: 1995), 10 cycles per axis.)

Dimensions and weight

Dimensions	26 × 111 × 29 mm
Weight approx.	50 g

Power supply of module

Power supply voltage	24/27 V DC from CIB bus
Maximum power input	< 0,5 W
Maximum current consumption (mA)	< 20 mA
Galvanic insulation of power supply from internal circuits	No

Order number

TXN 133 87	C-IF-6400R; CIB; Module with GridEye sensor, 8x8 temperature fields

CIB – module of dimmable ballast control for LED lights

Type	DI	RO	AI	AO	Comm
C-DM-0002L-10V		2× RO		2× AO	CIB

C-DM-0002L-10V

Basic features

- Module is an actor for CIB bus, designated to control dimmable electronic ballasts controlled by an analog signal 0 – 10 V.
- Module is designated to individually control up to 2 ballasts, which can be for example used to control chromaticity temperature by controling itensity of warm and cold white LED.
- For complete disconnection of ballasts in time of their inactivity, the module features two self-controlled relays, of which one is NO and other one NO/NC.
- Status of the module is indicated by LED diode on module cover.
- Outputs can be controlled even in manual mode by buttons on front panel.

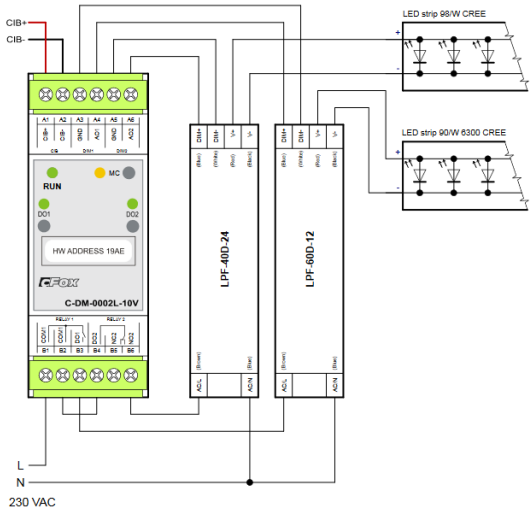
Connection

- Module needs to be connected with 2 wire CIB bus, which ensures communication and power supplying of module
- Module is designed to be mounted into standard electro installation boxes or straight into light sources, where it needs to be fixated in a proper way.
- CIB bus and all other inputs nad outputs are lead out on fixed screw-less terminals.

Use

- Module is designated to control up to 2 dimmable ballasts 0 – 10 V.

Connection example



Relay output DO1

No. of outputs	1× switching (NO)
Galvanic isolation	Yes
Switched voltage max.	400 V AC
Switched power	4000 VA
Switched current max.	16 A (NO), min. 100 m
Peak current	800 A/<20 µs
Time to switch on/off	typ. 10 ms/5 ms

Relay output DO2

No. of outputs	1× switching (NO/NC)
Galvanic isolation	Yes
Switched voltage max.	440 V AC, 300 V DC
Switched power	4000 VA, 384 W
Switched current max.	16 A/250 V AC
Peak current	80 A/<20 µs
Time to switch on/off	typ. 10 ms/5 ms

Analog outputs AO1, AO2

Number	2×
Galvanic isolation from CIB	No
Output voltage	10 V DC
Adjustable range of output voltage	0 – 125 %
Min. resolution	1 %
Load resistance	>1 kΩ

Dimensions and weight

Dimensions	35 × 92 × 32 mm
Weight	85 g

Operational and installation conditions

Working temperature	–10 .. +70 °C
Storage temperature	–25 .. +85 °C
Degree of protection IP (IEC 529)	IP20B
Overvoltage category	II
Degree of pollution according to ČSN EN60664-1:2008	1
Working position	Vertical
Installation	On DIN rail
CIB connection	Screwless max. 2.5 mm^2

Power supply

Power supply and communication	24 V (27 V) 10% from CIB bus
Max. current consumption	56 mA
Internal protection	Yes, reversible fuse
Galvanic isolation from internal circuits	No

Order number

TXN 133 78	C-DM-0002L-10V; CIB, 2× dimmer output 0 – 10 V for controlled ballasts of LED or fluorescent lamps, 2× RO

CIB – Converter to DALI bus on DIN rail

Type	DI	RO	AI	AO	Comm
C-DL-0064M					CIB, DALI

Basic features

- Module is designated for control of electronic ballasts for fluorescent lamps, LED lights and other dimmers on DALI bus according to specification NEMA Standards Publication 243-2004 Digital Addressable Lighting Interface (DALI) Control Devices Protocols PART 2-2004.
- Module may control independently up to 64 ballasts, what is max. number on one branch according to DALI.
- Module is in design to fit in switching cabinet on DIN rail.
- Run of the module is indicated by LED diode.

Connection

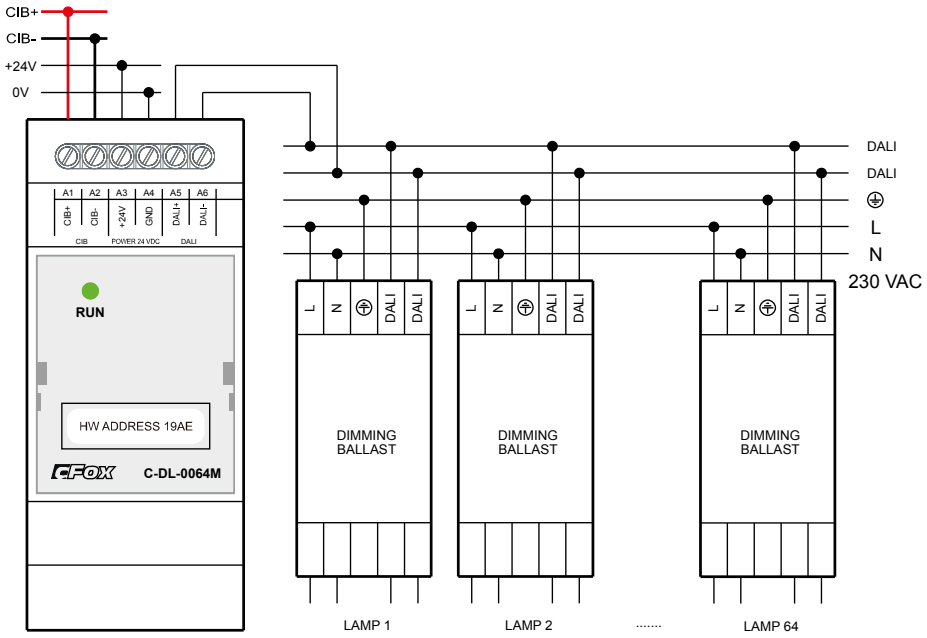
- Both DALI and CIB buses are connected to the module via screw terminals.

Use

- Control of fluorescent lamps with DALI ballasts.
- Control of bulb dimmers equipped by DALI protocol.
- Control of LED dimmers equipped by DALI protocol.
- Independent switching on/off, smooth lights dimming, light scenes creation.
- Control of the module is supported by function blocks from library DaliLib.mlb.

C-DL-0064M

Connection example



Communication

Installation bus	CIB, Power supply is provided by an external source.
Bus for ballasts control	DALI, master function for one DALI branch. Module enables to address all 64 control ballasts. DALI output is powered directly from module.

Operating conditions

Operating temperature	0 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according EN 60730
IP degree of protection IEC 529	IP10B
Overvoltage category	II
Degree of pollution according EN60664-1:2008	1
Operating position	Any
Installation	On DIN rail into switching cabinet
Connection DALI, CIB	Screw terminals, 4 mm²

Dimensions and weight

Dimensions	106 × 92 × 35 mm
Weight	65 g

Power supply

Power supply and communication	24 V (27V) from external power source
Nominal /max. load	30 mA/320 mA
Typical /max. input power	0.75 W/7.6 W
Internal protection	Yes
Load from CIB bus	0 mA

Order number

TXN 133 54	C-DL-0064M; CIB-DALI ballast, for 64 DALI ballasts

CIB – Communication master module of 1-Wire bus

Typ	DI	DO	AI	AO	Comm
C-1W-4000M					CIB, 2× 1 Wire

C-1W-4000M

Basic features

- Module is designated to connect up to 40 sensors via communication bus 1Wire on CIB bus. 1Wire is low-speed data bus designed by DALLAS company.
- Module has two 1Wire buses, each allows connection of up to 20 sensors
- RUN - Run of a module is indicated by LED diode.
- Communication on 1Wire buses, USB and error states are also indicated by LED diodes.
- Module is configurated by application on PC connected via USB port.

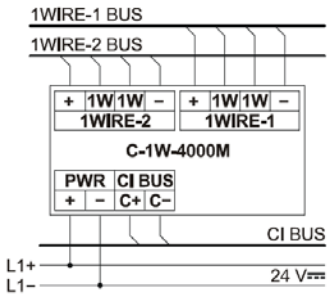
Connection

- Module designed for DIN rail mounting for standard circuit breaker cabinets.
- Module has it's own 24V Module ha it's own 24V DC power supply.
- Module wiring diagram is in the picture
- Module has it's own connection to PC via USB port on the front side.

Use

- Module is designated to be integrated into installations, where 1Wire sensors and their separated wiring are preferred.

Example of connection



Communication 1Wire

No. of lines	2
No. of sensors on 1 line, max.	20
Line length, max.	300 m
Galvanic isolation from power supply	ano
Supported 1-Wire sensors	• DS18820 (±0.5°C –10 °C to +85°C) • DS18S20 (temperature sensor) • DS2438 (sensor UNICA) • DS28E17 ((I2C to 1Wire converter)) • iButtons – identification chips • iButtons can't be combined with other temperature sensors on one 1Wire line

Dimensions and weight

Dimensions	95 × 18 × 57 mm
Weight	45 g

Power supply of the module

Power supply (PWR)	24 V DC
Overvoltage tolerance (PWR)	–15% .. 25%
Max. power consumption	1.5 W
Communication bus	CIB
Max. current drain from CIB	6 mA
Internal protection	No
Galvanic isolation from internal circuits	No

Operating and installation conditions

Working temperature	0 .. +40 °C
Storage temperature	–25 .. +85 °C
Degree of cover IP ČSN EN 60529:1993 (IEC 529)	IP20
Overvoltage category	II
Degree of pollution according to ČSN EN60664-1:2008	2
Working position	Any
Installation	On DIN rail
Connection of power supply and communication chanels	screw-type terminals
Conductor cross-section	Max 1.5mm²

Order data

TXN 133 92	C-1W-4000M; master of 1Wire bus for up to 40 sensors

CIB – power meter, converter of electrical quantities, 230 V AC

Type	DI	RO	AI	AO	Comm
C-EM-0401M		1× RO	4× U, 4× I (230 V AC)		CIB

C-EM-0401M

Basic features

- Module includes inbuilt three-phase four-quadrant electricity meter for indirect measuring using current transformer, with option of automatic deduction and registration in various tariffs.
- Separately registers active energy delivered and consumed. As for idle energy module registers the types of load, capacitive and inductive thus as so-called four-quadrant electricity meter or capacitive and inductive separately in case of separated consumption or supply of active energy as so-called six-quadrant electricity meter.
- Contains 4 independent voltage inputs measured towards neutral wire, 4 inputs to connect external split core (x='S') or solid core (x='P') current transformers with nominal current selectable in range from 5 up to 600 A.
- Contains 1 relay output controled by protective function implemented in module, which realizes function of voltage and frequency protection. Range of monitored voltage and frequency including reaction times and time of repeated restoration after subsiding, the cause of protection activation can be set trough parameters in SW Mosaic.
- Module is made in 3 basic series (z='', L' and ,S') according to level of auxiliary supply voltage.
- Particular electricity meter version is distinguished by last 2 digits in order number and by code in the name of the module. First digit determines the type of current transformers and range of ancillary supply voltage, second is for nominal current. Overview of individual versions and their labelings are represented in following table Tab. 1.

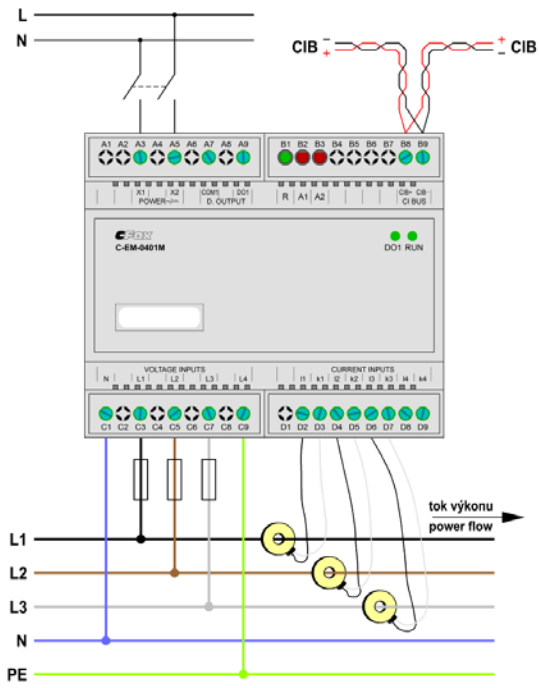
Connection

- Module needs to be connected with 2 wire CIB bus, which ensures communication of module with basic module.
- Electricity meter module is powered by ancillary voltage supply in 3 altering respectively direct optional variants.
- Module needs to be connected with 2 wire CIB bus, which ensures communication of module with basic module.
- Measuring inputs, power supply, relay output and CIB bus are led out on non-removable screw-type terminals.

Usage

- Module is designated for measuring electrical energy consumption and other electrical variables on line voltage 3× 230 V AC, respectively on 4 independant and 1 phase circuit.
- When projecting it is needed to choose the right measuring transformers based on presumed current ranges.

Connection example



Relay output

No. of outputs	1
Galvanic isolation	yes
Switched voltage	max. 250 V AC, 30 V DC
Switched current	typ. 3 A

Frequency measurement

Nominal frequency	50/60 Hz
Frequency range	42 – 57 Hz/51 – 70 Hz
Accuracy of frequency measurement	±20 mHz

Current measuring

Measuring method	Indirect, using current transformers
Nominal current I_{NOM}	According to configuration
Measuring range	0.0025÷1,2×I_{NOM}
Accuracy of current measuring	±0.05% of value ±0.02% of range
Input impedance	0.7 – 91 Ω
Permanent overload	2× I_{NOM}

Other measured quantities

Active power (W) Reactive power (VA)	Indirect, through current transformer
Accuracy of active/reactive power measurement	±0.05% z hodnoty ±0.005% z rozsahu
Energy	four-quadrant/six-quadrant range is limited by measured voltage and current ranges
Accuracy of active energy measurement	class 1 (according to EN 62053–21)
Accuracy of reactive energy measurement	class 2 (according to EN 62053–23)
Accuracy of power factor measurement	±0.005
Temperature (internal sensor)	–40 °C ÷ +80 °C

Voltage measurement

Measuring range of the phase voltage	6 – 300 V AC
Measuring range of the associated voltage	11 – 520 V AC
Voltage measuring accuracy	±0.05% of value ±0.02% of range
Input impedance	Min. 2.7 MΩ
Overload permanent/peak	1300/1950 V AC
THDU Total harmonic distortion, Range	0 – 20 %
Harmonic voltage, measuring range	10 – 100%, class 3 according to IEC 61000-4-7 ed.2
Accuracy of harmonic voltage measuring	Twice better than levels of class II according to IEC 61000-4-7 ed.2

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Operating conditions

Operating temperature	–10 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according to EN 60730
IP Degree of protection (IEC 529)	IP20
Overvoltage category	III
Degree of pollution according to EN60664-1:2008	2
Working position	Vertical
Installation	On DIN rail
Connection CIB, Power supply, Relay outputs	Screw terminals max. 2.5mm^2

Dimensions and weight

Dimensions	106.2×108×58 mm
Weight	200 g

Power supply

Communication	24 V (27 V) ze sběrnice CIB
Power supply from external source/ranges	230 V AC/ 85÷275 V AC, 80÷350 V DC
Typical/max. power consumption	3 VA, 3 W
Internal protection	No

Order data

TXN 133 22.03	C-EM-0401M-S035; CIB power meter, 4× U, 4× I, 4× split core transformer 35 A, 1× RO, Power supply 230 V AC/DC
TXN 133 22.05	C-EM-0401M-S075; CIB electrical meter, 4× U, 4× I, 4× split core transformer 75 A, 1× RO, Power supply 230 V AC/DC
TXN 133 22.07	C-EM-0401M-S150; CIB electrical meter, 4× U, 4× I, 4× split core transformer 150 A, 1× RO, Power supply 230 V AC/DC
TXN 133 22.11	C-EM-0401M-P015; CIB electrical meter, 4× U, 4× I, 4× solid core transformer 15 A, 1× RO, Power supply 230 V AC/DC
TXN 133 22.13	C-EM-0401M-P035; CIB electrical meter, 4× U, 4× I, 4× solid core transformer 35 A, 1× RO, Power supply 230 V AC/DC
TXN 133 22.15	C-EM-0401M-P075; CIB electrical meter, 4× U, 4× I, 4× solid core transformer 75 A, 1v RO, Power supply 230 V AC/DC
TXN 133 22.17	C-EM-0401M-P150; CIB electrical meter, 4× U, 4× I, 4× solid core transformer 150 A, 1× RO, Power supply 230 V AC/DC
TXN 133 22.18	C-EM-0401M-P200; CIB electrical meter, 4× U, 4× I, 4× solid core transformer 200 A, 1× RO, Power supply 230 V AC/DC

CIB – Module for electric car charging control

Type	DI	RO	AI	AO	Comm
C-EV-0302M	1× DI	1× DO 1× RO	2× AI/DI		CIB PP, CP

C-EV-0302M

Basic features

- Module is designated to control the charging process of electric car using CP and PP signals, which are a part of standard charging socket type 1 and type 2 according to IEC/EN/ČSN 61851-1
- Module also has 2 universal inputs AI/DI, 1× binary input to count the S0 electrometer pulses.
- Module has one relay contact, typically to control the contactors and further one semi-conductive output to control the signalization LED diodes
- Status of both outputs and RUN (error/run) is indicated by LED diode on module.

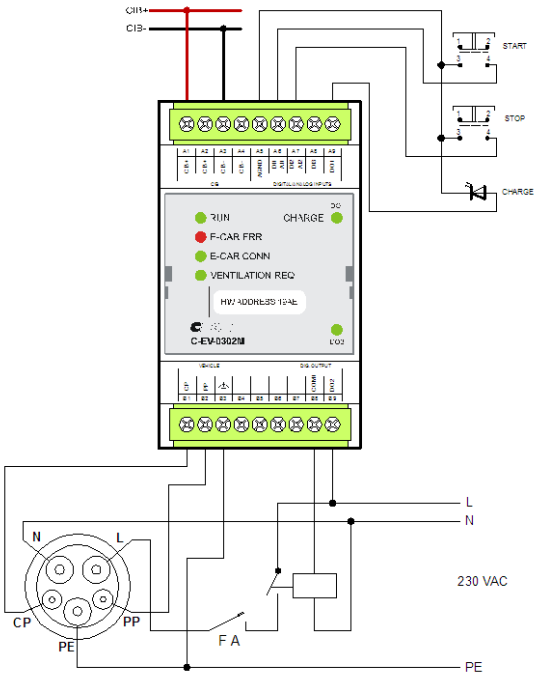
Connection

- Module is connected with 2 wire CIB bus, which ensures communication and power supplying of module
- Module is designated to be mounted into switch boards and into wallboxes on DIN rail.
- All inputs and outputs are led out on removable terminals.

Use

- Module is designated for installation into wall-mounted or floor stand charging stations or wallboxes.
- As a peripheral module of the Foxtrot system it is primarily designated for complex logical link creating for installations in houses, buildings and public parking lots where it is necessary to figure out local priorities among consumption, accumulation and production of electrical energy.

Connection example



Relay outputs

No. of relay outputs	1 (DO2)
Galvanic isolation	Yes
Switched voltage DO2 max.	30 V DC; 400 V AC
Switched power DO2 max.	150 W DC; 1500 VA AC
Switched current DO2 max.	5 A/30 V DC; 6 A/250 V AC
time to switch on/off	10 ms/5 ms
Mechanical lifetime	30×10^6 switches
Short-circuit protection	none
Inductive load protection	External. (RC element, varistor, diode)
Insulation voltage:	
between outputs and internal circuits	4000 V AC
among the groups each other	4000 V AC

Binary inputs

No. of inputs	1× (DI3)
Galvanic isolation from CIB bus	Yes
Input type	Binary, balanced, counter of S0 pulses
Binary voltage free contact	0.. >4.2 kΩ 1..<0.8 kΩ
Balanced resistance input	1× 3.3 KΩ (tamper/0/1/tamper)

Combined inputs

No. of universal inputs	2× (DI1/AI1, DI2/AI2)
Galvanic isolation from CIB	Yes
Basic measuring accuracy	2%

Type of sensor	Range	Basic accuracy
Voltage free contact	0/1	0 while>1.5 kΩ 1 when < 0.5 kΩ
Balanced input	Interrupted cable /0/1/tamper	for 2× 1 kΩ balancing resistance
Pt1000	–90 .. 320°C	2%
Ni1000	–60 .. 200°C	2%
NTC 12k	–40 .. 125°C	2%
KTY81-121	–55 .. 125°C	2%
Resistance	0 – 160 kΩ	2%

Operating and installation conditions

Working temperature	–10 .. +70 °C
Storage temperature	–25 .. +85 °C
Electrical strength	according to EN 60730
Degree of protection IP (IEC 529)	IP10B
Overvoltage category	II
Degree of pollution according to ČSN EN60664-1:2008	1
Working position	vertical
Installation	On DIN rail
CIB connection, power supply, relay outputs	Screw-type connector max. 2.5 mm²

Dimensions and weight

Dimensions	89 × 57 × 52 mm
Weight	123 g

Power supply od the module

Power supply and communication	24 V (27 V) from CIB bus
Typ./Max. power consumption	2 W
Max. current drain	85 mA
Internal protection	No

Order data

TXN 133 85	C-EV-0302M; AC power control module for electric car charging; PP, CP, 2×AI/DI, 1×DI (pro S0), 1×RO, 1×DO

TECO Advanced Automation

Type	DI	DO	AI	AO	Comm
C-BM-0202M					CIB

C-BM-0202M

Basic features

- C-BM-0202M is a CIB module that is designed as BMS (Battery Management System) master for sets of LiFePo4 battery cells.
- The master operates a communication line for data collection from measuring and balancing modules B-BM-0201X connected between poles of individual cells.
- The master reads a voltage and a temperature from B-BM-0201X and vice versa it sends commands to connect and disconnect the load in the process of an active balancing.
- It is equipped with 1 AI for sensing of a total current by Hall effect sensor and 2 relay outputs with NO contact (each one is lead on the terminal and separated from others). It is equipped with an optional emergency function of battery detachment and failure indication.
- It contains a power supply of 5 V and 24 V.

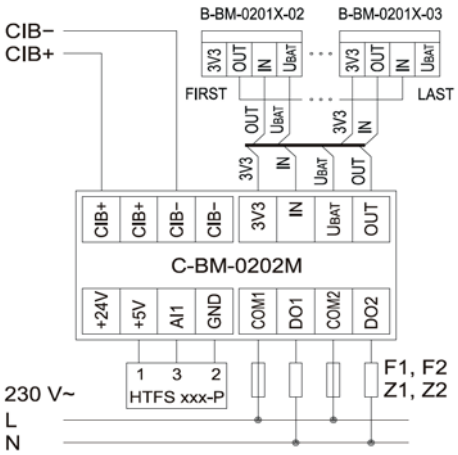
Connection

- The module is supplied from from CIB bus. The bus can have any topology and branches up to the distance of 500 m. The number of modules connected to CIB interface is 32. The max. current is limited to 1 A per one branch.
- A special bus for communication with a set of battery cells can be used only together with B-BM-0201X modules.
- Analog input is used to the total current measuring using Hall effect probe. An offset of an analog input is 2.5 V. This voltage corresponds with current 0 A. The input resolution is 20 mV/1 A.

Usage

- The module is used as Foxtrot system peripheral module that allows to control battery storage sets consisting of LiFePo4 battery cells.
- It allows a passive balancing that process is controlled by an application program (function block) in the basic module.

Connection example



Relay outputs

No. of outputs	2× switching (NO) 16 A/AC1
Galvanic isolation	Yes (even outputs one to another)
Switched voltage	max. 250 V AC
Switched power	max. 1250 VA/AC1, 90 W/DC
Switched current	max. 3 A, 250 V AC; 3 A, 30 V DC
Peak current	5 A/<10 ms
Time to switch on/off	typ. 10 ms/10 ms
Min. switched current	100 mA
Mechanical life	5× 105
Electrical life	0.2× 105
Short-circuit protection	No
Spike suppressor of inductive load	External (RC element, varistor, diode)
Insulation voltage among internal circuits and outputs / among contacts	4000 V AC/750 V AC

Analog/combined inputs

No. of inputs	1×
Galvanic isolation od CIB	No
Voltage range	0 – 5 V
Input resistor	6 kΩ
Basic measurement accuracy	5%
Common wire	No
External power supply	Yes

Special communication with modules B-BM-0201X

Voltage levels	2.5 – 4 V
Galvanic isolation od CIB	Yes
Max. Length of comn. wires	Max. 3 m/UTP
Max. Number of connected cells	16

Power supplies

Voltage levels/max. load	5 V/50 mA, 24 V/50 mA
Galvanic isolation	No
Internal protection	No

Operating conditions

Operating temperature	–10 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according to EN 60950
IP Degree of protection ČSN EN 60529:1993 (IEC 529)	IP 10 B
Overvoltage category	II
Degree of pollution ČSN EN60664-1:2008:	1
Working position	Vertical
Installation	On DIN rail
Connection of power supplies and communication channels	Screw terminals
Conductors cross-section	Max 2.5 mm²

Order data

TXN 133 80	C-BM-0202M; CIB, Cell charging protection control module LiFePo4, 2× RO

Battery management modules

Type	DI	DO	AI	AO	Comm
B-BM-0201X		Resistor connection	Temperature, voltage		Proprietary bus

Basic characteristics

- Modules B-BM-0201X are balancers and are designated for monitoring and individual balancing of $LiFePo_4$ cells individually connected in series into larger setups.
- Every module is supplied by battery, to which it is connected.
- Module measures both battery voltage and temperature, which is then transfered to module trough screw-type connection.
- Module has a special communication bus which is galvanically isolated from battery. It is led out on push-in terminal.

Connection

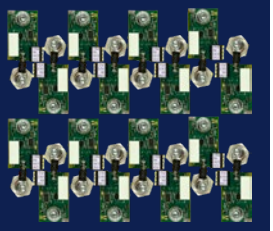
- Modules among themselves are connected into string using the terminals -Out-In,Out-In,Out-...
- Module C-BM-0202M is master of the bus and it is connected to Foxtrot basic module through CIB bus.
- Modules B-BM-0201X are differentiated as initial, end and continuous. Type is specified by the last number : -x1 for continuous, -x2 for initial, -x3 for end.
- Modules B-BM-0201X are delivered in different cabel lengths with eyelets according to battery type. Length is specified by last but one number: -.0y for 81 mm span, -.1y for 110 mm span, -.2y for 210 mm span.
- Balancers are also delivered in set for 16 LiFePo cells, thus for total voltage of 48 V DC.

Use

- B-BM-0201X are designated for module which senses voltage and temperature and for passive balancing of $LiFePo_4$ cells of individually composed batteries.

B-BM-0201X-x1

B-BM-0201X-02



An example of balancers placement and connection on the set of 16 LiFePo4 cells

Connection example

Battery temperature measurement

Range	–30°C .. +75°C
Type of sensor	
Basic measurement accuracy	4% (Type ±1%)

Battery voltage measurement

Voltage range	0 – 4 V
Input resistor	7.3 kΩ
Basic measurement accuracy	1%

Proprietary communication with B-BM-0201X

Voltage levels	2.5 – 4 V
Galvanic isolation from CIB	Ano
Max. length of wires between the cells	Max. 25 cm
Max. number of connected cells	16
Recommended wire type	0.25 mm^2

Balancing

Type	Passive, semiconductor switch of parallel resistance
Balancing current	Max 1.2 A

Operating conditions

Operating temperature	–30 .. +75 °C
Storage temperature	–40 .. +85 °C
Electric strength	according to EN 60950
IP Degree of protection ČSN EN 60529:1993 (IEC 529)	IP 00B
Overvoltage category	I
Degree of pollution ČSN EN60664-1:2008:	1
Working position	Any
Installation	On battery terminals
Connection of power supply and communication channels	On battery conductor/ screwless terminals

Dimensions and weight

Dimensions	50 × 30 × 17 mm
Weight	12 g

Power supply

Power supply voltage	2.4 – 5.5 V DC without battery cell
Max. current drain	1.3 A
Max. current drain without balancing	
Max. power consumption	4.9 W
Internal protection	Reversible fuse

Order data

TXN 134 16.01	B-BM-0201X-01; $LiFePo_4$ cell balancer - continuous, R=81 mm
TXN 134 16.02	B-BM-0201X-02; $LiFePo_4$ cell balancer - initial, R=81 mm
TXN 134 16.03	B-BM-0201X-03; $LiFePo_4$ cell balancer - end, R=81 mm
TXN 134 16.04	B-BM-0201X-01 (14×), -02 (1×), -03 (1x ×); Balancer set for cells 48V, R=81 mm
TXN 134 16.11	B-BM-0201X-11; $LiFePo_4$ cell balancer - continuous, R=106 mm
TXN 134 16.12	B-BM-0201X-12; $LiFePo_4$ cell balancer - initial, R=106 mm
TXN 134 16.13	B-BM-0201X-13; $LiFePo_4$ cell balancer - end, R=106 mm
TXN 134 16.14	B-BM-0201X-11 (14×), -12 (1×), -13 (1×); Sada balancerů pro články 48V, R=106 mm
TXN 134 16.21	B-BM-0201X-21; $LiFePo_4$ cell balancer - continuous, R=208 mm
TXN 134 16.22	B-BM-0201X-22; $LiFePo_4$ cell balancer - initial, R=208 mm
TXN 134 16.23	B-BM-0201X-23; $LiFePo_4$ cell balancer - end, R=208 mm
TXN 134 16.24	B-BM-0201X-21 (14×), -22 (1×), -23 (1×); Balancer set for cells 48V, R=208 mm

TECO Advanced Automation

CIB – Fan Coil controller with continuous regulation of fan revolutions

Type	DI	DO	AI	AO	Comm
C-FC-0024X		2× RO	1× room temperature 1× exchanger temperature 1× window contact	1×	CIB

Basic features

- Module C-FC-0024X is designated for control of few convectors equipped by 24 V DC motors, controlled by signal 0 – 10 V or PWM.
- Contains 3 AI/DI combined inputs for connection of contacts, e.g. windows contacts or temperature sensors.
- Module has two output relays and one output configurable by jumper as analog 0 – 10 V or as PWM output.

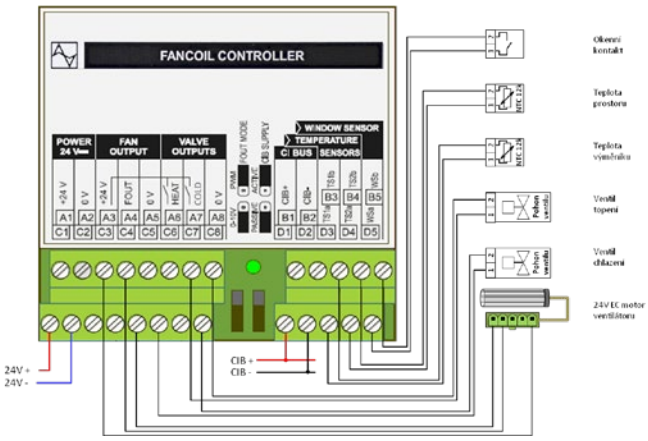
Connection

- Module is connected to two-wire CIB bus, which ensures communication and power supply of the module.
- Jumper allows to set, whether module is powered from independent power source or from CIB bus. In position ACTIVE module provides powering of CIB bus.

Use

- Module is designated as built-in model to floor convectors and fan coils.
- Module and its inputs and outputs may be used via bus as universal I/O module.

Connection example



Analog/digital inputs TS1, TS2, WS

Number of inputs	3
Galvanic isolation	No
Resolution	12bit, approximation converter
Common wire	plus
External power supply	No
Input resistance	4.7 kΩ
Interrupted input detection	No

Measured ranges:		
Sensor type	**Range**	**Basic accuracy**
Voltage-free contact	Switch on/off	
NTC 12 k	–40 .. 125 °C	<3% of range
Resistance transmitter OV	0 – 600 kΩ	

Operating conditions

Operating temperature	0 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according EN 60730-1 ed2:2001
IP Degree of protection IEC 529	IP 10
Overvoltage category	II
Degree of pollution according EN60664-1:2008	1
Operating position	vertical
Installation	Module is designated as built-in module to device
Connection CIB, AI/DI	Screw terminals, wire max 2.5 mm²

Dimensions and weight

Dimensions	55 × 26 × 20 mm
Weight	7 g

Power supply

Power supply and communication	24 V(27 V) from bus CIB
Nominal/max. load	22 mA/80 mA
Typ./Max. input power	0.5 W/1.9 W
Internal protection	Yes

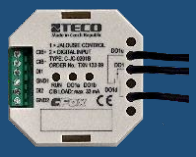
Order number

TXN 133 39.01	C-FC-0024X CIB, Fan Coil controller with 0 – 100% regulation of fan revolutions 24 V, 3× AI/DI, 2× RO

CIB built-in modules

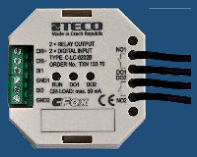
C-OR-0202B

2x AI/DI
2x RO



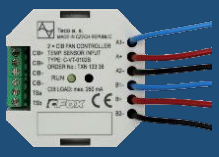
C-JC-0201B

2x DI, 1x RO
up - o - down



C-LC-0202B

2x AI/DI
2x AO



C-VT-0102B

1x InVENTer

C-IT-0202S

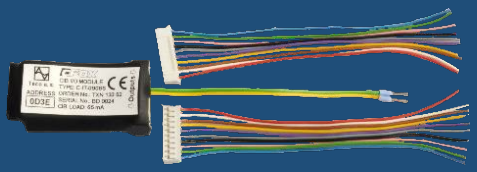
2x AI/DI
2x AO

C-IT-0203S

2x AI/DI
1x RO, 2x AO

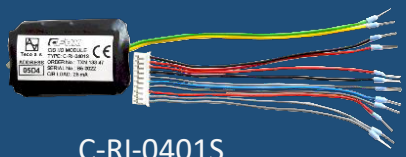
C-IT-0504S

5x AI/DI
4x AO



C-IT-0908S

9x DI
8x DO



C-RI-0401S

IR Tranceiver
2x AI/DI + 1 AI

C-WG-0503S

2x AI/DI, 3 DI
2x DO, Wiegand

C-DL-0012S

CIB/
DALI, DALI2

CIB – Built in module with combined inputs/outputs

Type	DI	DO	AI	AO	Comm
C-IT-0202S **C-IR-0203S**	2× DI/AI	1× RO		2× AO	CIB

C-IT-0202S


C-IR-0203S

Basic features

- Both modules are designated to connect two temperature sensors or two volt free contacts.
- Every input can be set as binary for volt free contact sensing or as balanced input for security sensors.
- Every input can be set as analog for resistivity sensor measuring. To measure the temperature it is possible to use sensors of Pt1000/Ni1000, NTC12k type or semi-conductor sensor KTY-121
- Both modules are actors, both with two universal analog outputs 0 – 10 V DC, e.g. for dimmable ballast controlling.
- Module C-IR-0203S though being actor it has 1 extra power relay 16 A for switching of power loads.
- State and error/run is indicated by a LED diode on module (RUN).

Connection

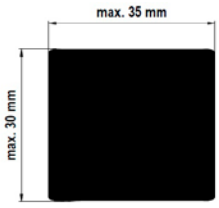
- Relay contacts are connected using screw-type terminals.
- Universal inputs, analog outputs and CIB bus are connected using screwless terminals.

Use

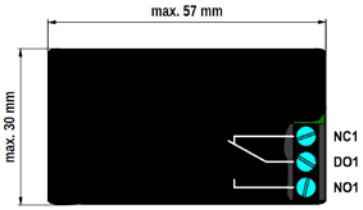
- Modules are universal and are designated to connect the widest variety of input and load combinations
- C-IR-0203S module has the same properties as relay contacts and is designated to switch the power loads with presumed transient current – up to 80 A.

Connection example

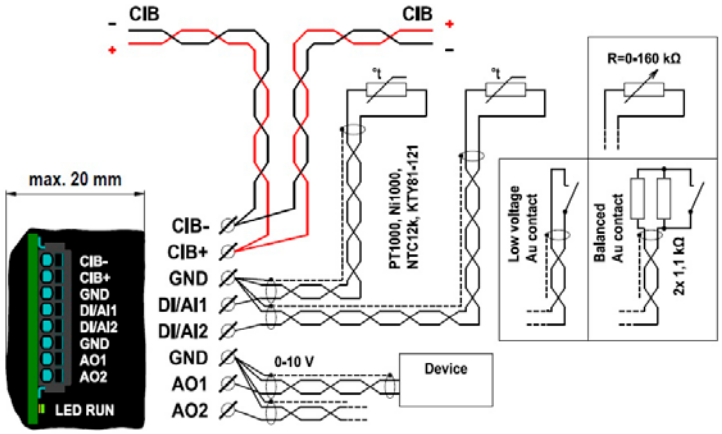
Front view of the module C-IR-0202S



Front view of the module C-IR-0203S



Connection example of C-IR-0202S and C-IR-0203S



Relay outputs C-IR-0203S

No. of outputs	1× switching 16 A/AC1
Galvanic isolation	Yes
Switched voltage	min. 5 V DC; max. 300 V AC/DC
Switched power	4000 VA/AC1, 384 W/DC
Switched current	max.16 A (NO) max.10 A (NC), min. 100 mA
Peak current	80 A/<20 ms (switch contact)
Time to switch on/off	typ. 15 ms/5 ms
Switching frequency without load	max. 1200 min^{-1}
Switching frequency with load	max. 6 min^{-1}
Mechanical life	2× 107
Electrical life	0.5× 105
Short-circuit protection	No
Spike suppressor of inductive load	External (RC element, varistor, diode)
Insulation voltage	between individual contacts, between groups, between outputs and CIB 1000 V AC/4000 V AC/4000 V AC

Universal inputs

Number of universal inputs	2× DI/AI1, DI/AI2	
Galvanic isolation od CIB	No	
Type of sensor	**Range**	**Basic accuracy**
Voltage free contact	0/1	0 when>1.5 kΩ 1 when <.0.5 kΩ
Balanced input	Disconnected cable	/0/1/tamper for 2× 1k1 balancing resistance
Pt1000	–90 .. 320°C	0.5%
Ni1000	–60 .. 200°C	0.5%
NTC 12k	–40 .. 125°C	0.5%
KTY81-121	–55 .. 125°C	0.5%
Resistor	0 – 160 kΩ	0.5%

Operating conditions

Operating temperature	–10 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according to EN 60730
Protection class of electrical object IEC 61140:2001	II
IP Degree of coverage (IEC 529)	IP10B
Overvoltage category of installation – IEC 60664-1:1992	II
Degree of pollution according to CSN EN 60664-1:2008	1
Working position	Any
Installation	into installation box, under cover
Connection DI, AI, AO, CIB	Spring-loaded terminals, conductor cross section 0.5 mm^2.
Connection, relay output	0.12 – 1.5 mm^2

Analog outputs

No. of outputs	2×
Galvanic isolation	No
Output mode	Analog
Nominal output voltage	0 – 10V
Adjustable range of outputs	0..130% Ujm
Min. load/load resistance	Min. 1% / > 1 kΩ
Output current/load capacity	Max. 3 mA/ Max. 50nF
Max. load capacity	50 nF
Minimal resolution	0.01

Dimensions and weight	**C-IR-0202S**	**C-IR-0203S**
Dimensions	30×30×20 mm	57×30×20 mm
Weight	15 g	20 g

Power supply	**C-IR-0202S**	**C-IR-0203S**
Power supply and communication	24V (27V) from CIB bus	
Typ. /Max. current drain	8 mA/10 mA	8 mA/10 mA
Typical/max. power consumption	0.2W/0.24W	0.2W/0.24W
Internal protection	Yes	

Order data

TXN 133 65	C-IR-0203S, CIB, 2DI/AI, 1RO switch contacts 230V AC, 2AO
TXN 133 25	C-IR-0202S, 2 DI/AI, 1 RO 230VAC, 1 AO

TECO Advanced Automation

CIB – Built-in module with combined inputs/outputs

Type	DI	DO	AI	AO	Comm
C-IT-0504S			5× AI/DI	4× AO	CIB

Basic features

- Module is designed for direct connection of resistive sensors, potential-free contacts and analog outputs 0 – 10 V on CIB bus.
- Universal inputs can be configured as analog or digital in two groups. First group contains 4 inputs, other one 1 input.
- Firmware of module linearizes characteristics of resistance sensor, optimizes accuracy of metering and calculates it to temperature, than it is transmitted into central unit.
- Inputs in digital mode can give the binary status 0/1 – on/off or they can work as double ballanced inputs evaluating 4 statuses broken wire/off/alarm/tamper of security detectors.
- Status is indicated by LED at module (RUN).

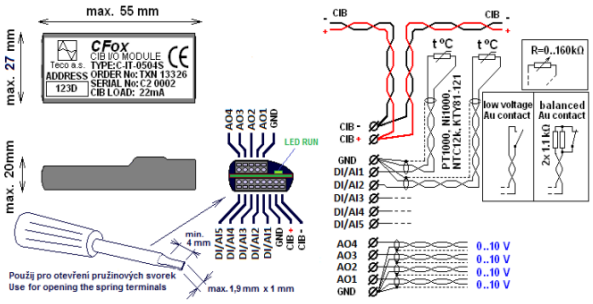
Connection

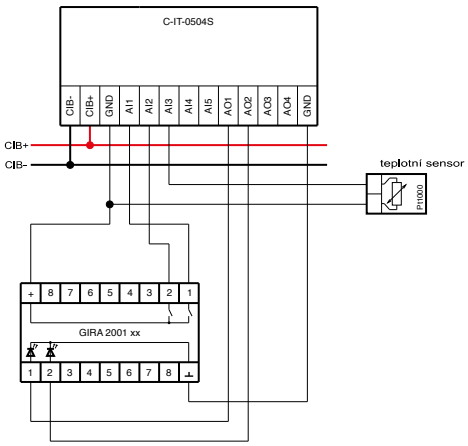
- Module is connected to two wire bus with flat cable.
- Flat cable ending with eye lets is also used to connect contact inputs, resistivity sensors and analog outputs.

Use

- Module is designed for connecting of wall switches equipped by different combinations of contact, resistance sensors and LED indicators with common cathode or other devices with analog inputs 0 – 10 V (dimmers etc.).
- Module can be used to connect low stroke wall switches of JUNG company:
  A2224, CD2224, LS2224, AL2224
  Flat design with modules 3212TSM and 3224TSM,
  and of GIRA company: 2001xx
- Module can be used as integrated sensors of up to 5 temperatures.
- Module can be used as integrated controller of up tu 4 dimmers/ballasts controlled by 0 – 10 V, resp. 1 – 10 V with connection of 4 control buttons and 1 measurement of temperature.

Connection example





Analog/universal inputs

Number of inputs	4+1
Galvanic isolation	No

Sensor type	Range	Basic accuracy
Potential free contact	0/1	0 if >1.5 kΩ 1 if <0.5 kΩ
Balanced input	interrupted wire 0/1/tamper	for 2×1k1 balanced resistor
Pt1000	–90 .. 320 °C	0.5 %
Ni1000	–60 .. 200 °C	0.5 %
NTC 12k	–40 .. 125 °C	0.5 %
KTY81-121	–55 .. 125 °C	0.5 %
Resistor	0 – 160 kΩ	0.5 %

Analog outputs

No. of outputs	4×
Galvanic isolation	No
Nominal output voltage	10 V
Adjustable range of outputs	0..130%
Min. resolution	1%
Max. output current	3 mA
Max. capacity load	250 nF

Operating conditions

Operating temperature	0 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according EN 60730
IP Degree of protection(IEC 529)	IP10B
Overvoltage category	II
Degree of pollution according IEC EN60664-1:2004	1
Working position	any
Installation	into installation box, under cover
Connections CIB and inputs/outputs	Spring-loaded terminals 0.15 to 0.5 mm²

Dimensions and weight

Dimensions	55×26×20 mm
Weight	7 g

Power supply

Power supply and communication	24 V (27 V) from CIB bus
Nominal/max. load	22 mA/80 mA
Typical/maximal input power	0.5 W/1.9 W
Internal protection	Yes

Order number

TXN 133 26	C-IT-0504S, CIB, 5×AI/DI Temperature, contact, 4×AO (0 – 10V/3 mA)

C-IT-0504S
new version
with screwless terminals

Examples of connected drivers

Drivers JUNG

Drivers GIRA

CIB

CIB – Built-in module of combined inputs/outputs

Type	DI	DO	AI	AO	Comm
C-IT-0908S	6× DI	8× LED driver	2× AI/DI, 1× AI		CIB

Basic features

- Module is designed for direct connection of potential-free contacts, resistance sensors and LED indicators to the CIB bus.
- Inputs IN1-IN6 are only digital, two inputs IN7-IN8 can be configured as analog or digital and input IN9 is only analog input.
- Firmware of module linearizes characteristics of several types resistance sensors, optimizes accuracy of measurement and recalculates resistance into temperature in Celsius degree, which is communicated via CIB bus into central module.
- Inputs in digital mode can give the binary status 0/1 – on/off or it can work as double ballanced inputs evaluating 4 statuses broken wire/off/alarm/tamper of security detectors.
- Status is indicated by LED on module (RUN).

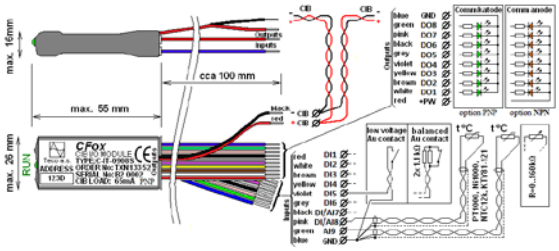
Connection

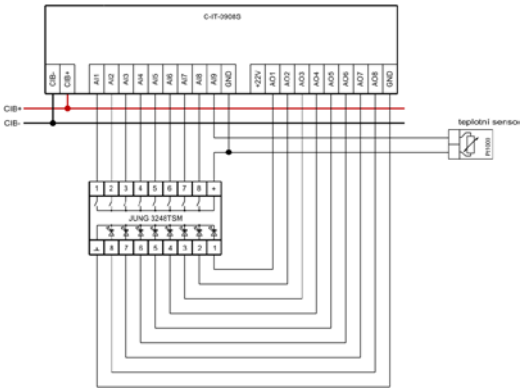
- Module is connected at CIB bus by wires grouped at two connectors, that are inserted into module.
- CIB bus, contact inputs, Resistance Temperature Detectors (RTD) and LED indicators are connected by stranded wires with sleeves. These wires are grouped at two connectors, inserted into module.

Use

- Module can be used for connecting a combinations of wall switches with different combinations of contact and resistance sensors and LED indicators with common cathode (PNP outputs) or common anode (NPN outputs).
- Module can be used to connect low stroke wall switches.
  JUNG: A2224/48, CD2224/48, LS2224/48, AL2224/48 and Flat Design with modules 3212TSM and 3224TSM, 3236TSM, 3248TSM
  GIRA: line 2001xx or 2003xx for designs System55 and E22
- Module can be used as integrated temperature sensor of up to 3 temperatures.
- Module can be used as integrated driver of up to 8 LED indicators or other loads with maximal current 3 mA.

Connection example





Connection of JUNG wall switch with 8 push-buttons and 8 LED indicators

Analog/universal inputs

Number of digital inputs	6×DI (IN1–IN6)
Number of universal inputs	2×AI/DI (IN7–IN8)
Number of analog inputs	1×AI (IN9)
Galvanic isolation	No

Sensor type	Range	Basic accuracy
Potential-free contact	0/1	0 for >1.5 kΩ 1 for <0.5 kΩ
Balanced input	Interrupted wire /0/1/tamper	for 2×1k1 balanced resistance
Pt1000	–90 .. 320 °C	0.5%
Ni1000	–60 .. 200 °C	0.5%
NTC 12k	–40 .. 125 °C	0.5%
KTY81-121	–55 .. 125 °C	0.5%
Resistance	0 – 160 kΩ	0.5%

Binary outputs for LED indicators

Number of outputs	8×PNP open colector, 8× NPN (with suffix.01)
Galvanic isolation	No
Polarity of LED connection	(PNP), common anode (NPN) common cathode (order numb. ending with .01)
Max. voltage applicable	27V
Max. output current	3 mA

Operating conditions

Operating temperature	0 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according EN 60730
IP Degree of protection (IEC 529)	IP10B
Overvoltage category	II
Degree of pollution according to IEC EN60664-1:2004	1
Working position	any
Installation	into installation box, under cover
Connection of inputs, outputs and CIB	Wires 0.5 mm² grouped on 2 connectors inserted into module

Dimensions and weight

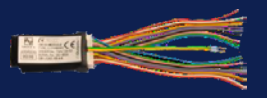
Dimensions	55×26×20 mm
Weight	7 g

Power supply

Power supply and communication	24V (27V) from CIB bus
Nominal/max. load	30 mA/65 mA
Typical/max. input power	0.8 W/1.6 W
Internal protection	No

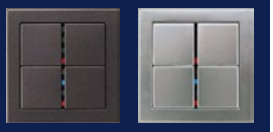
Order number

TXN 133 52	C-IT-0908S-PNP; CIB, 6× DI, 2× AI/DI, 1×AI (contact or resistance), 8×LED driver 3 mA, open collector PNP
TXN 133 52.01	C-IT-0908S-NPN; CIB, 6× DI, 2× AI/DI, 1×AI (contact or resistance), 8×LED driver 3 mA, open collector NPN



C-IT-0908S

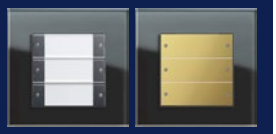
Examples of wall-switches

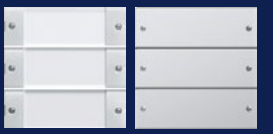


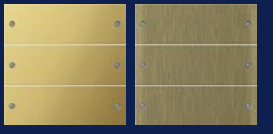
JUNG Flat Design (3248TSM)

JUNG design: LS, A

JUNG design: AL, CD





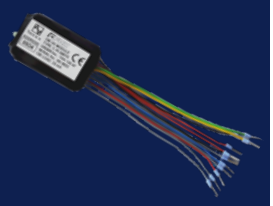


GIRA System55 and E22, (Transparent, Stainless steel, Aluminium, Brass, Bronze)

TECO Advanced Automation

CIB – Module of IR Interface, light sensor

Type	DI	DO	AI	AO	Comm
C-RI-0401S	See AI		2× AI/DI, 1× light sensor		CIB, IR



C-RI-0401S

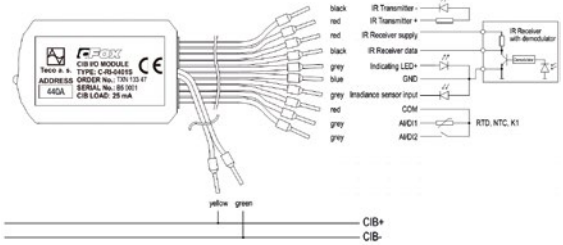
Basic features

- Module is combined module with primary function of receiver and transmitter of IR commands.
- Module can learn IR commands of remote controllers of different devices – air-conditioning unit, audio/video devices etc. and store them in module memory. Subsequently, these commands can be reproduced by module transmitter on the base of signal from system.
- This is the way how to replace manual control by Foxtrot system.
- Module contains input for the light sensor.
- Module contains 2 universal AI/DI inputs for temperature sensors or potential-free contacts.
- These inputs can operate also as double balanced inputs for connection of security sensors.
- Status is indicated by LED on module.

Connection

- Module is connected to two-wire CIB bus that provides both communication and power supply of module.

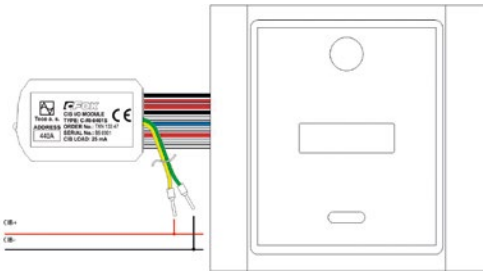
Connection example



- Module is designed mostly for assembly into standard installation boxes in the wall or under device cover.
- Inputs, outputs and CIB bus are connected by stranded wires with sleeves.
- Module can be individually customized and built-in into the covers of wall switch design under the code C-RI-0401R-Design. Standard design is Time by ABB.

Use

- Integration of infra red remote controlled devices. For example:
  - Interior air-condition units
  - audio, video
  - consumer electronics with IR control
- Measurement of light in interiors.
- Light intensity control in interiors.
- Specific sequence of actions can be defined in the system to expand the basic features of the original IR remote controller.



Variant:
C-RI-0401R-Design

IR receiver

Number of receivers	1
Galvanic isolation	No
Power supply of receiver-demodulator	3.3 V
Pilot frequency of demodulator	36 kHz

IR transmitter

Number of transmitters	1
Galvanic isolation	No
IR transmitter type	IR LED ($I_F$max =100 mA) + resistor according I_F
Power supply of transmitter	3.3 V
Short-circuit protection	No

Input for light sensor

Number of inputs	1
Galvanic isolation	No
Sensor type/range/input error	photodiode, 0 – 50 000lx/<5%

Operating conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according EN 60730
IP Degree of protection(IEC 529)	IP 10B
Overvoltage category	II
Degree of pollution IEC EN60664-1:2008	1
Working position	any
Installation	into installation box, under cover
Connection of CIB, AI/DI	Wires 0.5 mm². grouped on 2 connenctors inserted into module

Analog/digital inputs

No. of inputs	2
Galvanic isolation	No
Resolution	12 bit

Measurement ranges

Sensor type	Range
Potential-free contact	on/off
Balanced input (security system)	broken link/0/1/ tamper
Pt1000	–90 .. 320 °C
Ni1000	–60 .. 200 °C
NTC 12k	–40 .. 125 °C
KTY 81-121	–55 .. 125 °C
Resistance	0 – 160 kΩ
Analog input error	< 2 %

Dimensions and weight

Dimensions	55 × 32 × 13 mm
Weight	8 g

Power supply

Power supply and communication	24 V (27 V) from CIB bus
Typical load	25 mA
Maximal input power	0.5 W
Internal protection	No

Order number

TXN 133 47	C-RI-0401S; CIB input module for sensors 1 × IR, 1 × lighting, 2 × temperature, 1 × output for IR transmitter

CIB – converter to DALI bus

Type	DI	DO	AI	AO	Comm
C-DL-0012S					CIB, DALI

Basic features

- Module is designed to control electronic ballasts, for fluorescent tubes, LED lights and other dimmers via DALI bus according specification of NEMA Standards 243-2004: Digital Addressable Lighting Interface (DALI). Control devices protocol PART 2-2004.
- Module can control independently up to 12 ballasts.
- Module is in minimal built-in design.
- Operation of module is indicated by LED diode.

Use

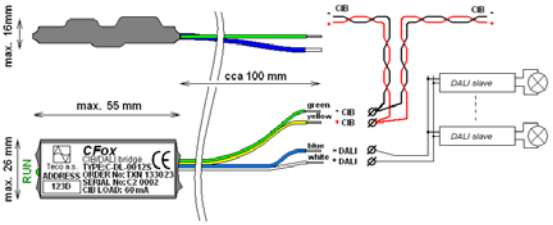
- Control of fluorescent tubes with DALI ballasts.
- Control of lamp dimmers equipped with DALI protocol.
- Control of LED dimmers equipped with DALI protocol.
- Independent switching on/off, smooth dimming of lights, scene creating.
- Control of module is supported by function blocks from library DaliLib in Mosaic.

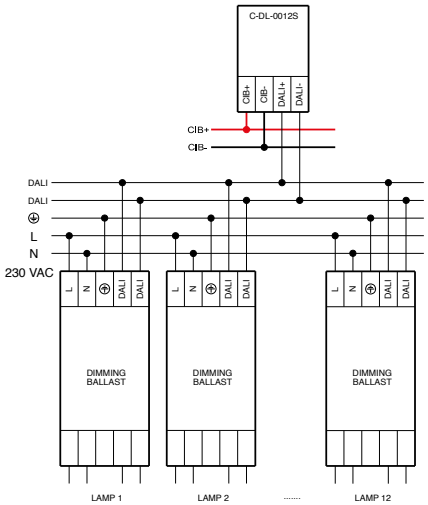
Connection

- Module is connected with two wires at CIB bus, that ensures communication and power supply of module.
- Module is connected into DALI bus via output that is led as well via two wires.

C-DL-0012S

Connection example





Communication

Installation bus	CIB
Bus for ballast control	DALI, with MASTER function for max. 12 controlled ballasts, output for output for DALI supplied from CIB bus

Operating conditions

Operating temperature	0 .. +70 °C
Storage temperature	–25 .. +85 °C
Electric strength	according EN 60730
IP Degree of protection (IEC 529)	IP10B
Overvoltage category	II
Degree of pollution IEC EN60664-1:2008	1
Working position	any
Installation	into installation box
Connection of CIB, DALI	stranded wires 0.5mm² with sleeves

Dimensions and weight

Dimensions	50×26×20 mm
Weight	7 g

Power supply

Power supply and Communication	24 V (27V) from CIB voltage
Typical load	60 mA
Typ./Max. input power	0.5 W/2 W
Internal protection	Yes

Order number

TXN 133 23	C-DL-0012S; CIB-DALI converter, for 12 ballasts

TECO Advanced Automation

CIB – module for connection of security and access detectors

Type	DI	DO	AI	AO	Comm
C-WG-0503S	3× DI (TTL)	3× DO (NPN)	2× AI/DI		Wiegand, CIB

Basic features

- Universal module with combination of inputs, outputs, Wiegand communication line and integrated 12V DC power supply. This combination is suitable for connection of security, fire and access detectors on CIB bus in projects where security system does not need be certified.
- Inputs IN1-IN3 on TTL level allows to connect connection external device via Wiegand interface to enable integrate the RFID card readers, security keyboard and similar devices via CIB.
- Inputs IN1-IN3 can be used as digital inputs on TTL level as alternative
- Module is equipped by two universal inputs IN4, IN5, that allow to connect standard security detectors with relay outputs via simply or double balanced loops.
- Module has integrated power supply 12V DC to supply detectors and other devices usually designed for that voltage.
- Module is further equipped by semiconductor outputs (NPN with open collector), which may be used as free programmable actuators according your opinion. For example for LED signaling, switch on the buzzer or opening door by external relay.
- Module is in miniature built-in design. In extreme cases may be built-in into detectors of security systems.
- Operation of module is indicated by LED diode.

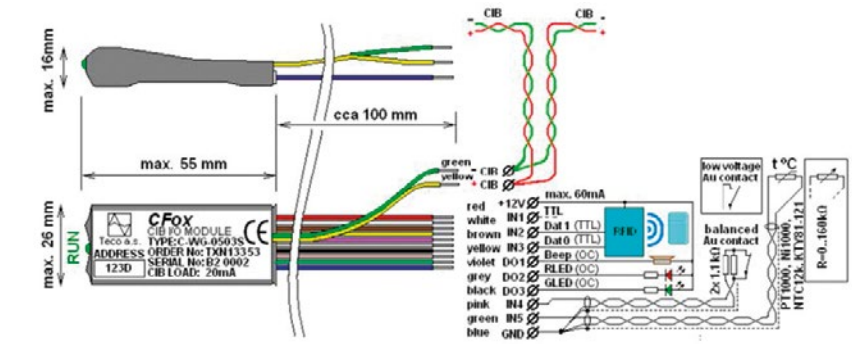
Connection

- Module is connected by two stranded wires to CIB, which provides both communication and power supply of the module.
- Detectors, readers with Wiegand interface and other devices are connected by wires available on connector, which is inserted into module.

Use

- Sensing of standard or special detectors like PIR motion detectors, detectors of smoke, glass break etc.
- Connection of device communicating via Wiegand protocol.

Connection example



Analog/combined inputs

Number of digital inputs	3×DI (IN1–IN3), TTL 5V 3.9kΩ pull up resistor
Number of universal inputs	2×AI/DI (IN4–IN5)
Galvanic isolation	No

Sensor type	Range	Basic accuracy
Potential-free contact	0/1	0 for >1.5kΩ 1 if <0.5kΩ
Balanced input	broken wire /0/1/tamper	for 2×1k1 balancing resistance
Pt1000	–90 .. 320°C	0.5%
Ni1000	–60 .. 200°C	0.5%
NTC 12k	–40 .. 125°C	0.5%
KTY81-121	–55 .. 125°C	0.5%
Resistance	0–160kΩ	0.5%

Operating conditions

Operating temperature	0 .. +70°C
Storage temperature	–25 .. +85°C
Electric strength	according EN 60730
IP Degree of protection (IEC 529)	IP10B
Overvoltage category	II
Degree of pollution IEC EN60664-1:2008	1
Working position	any
Installation	into installation box, under device cover
Connection of CIB, inputs, outputs	Wires 0.5mm². grouped on connenctor inserted into module

Binary outputs

Number of outputs	3×NPN, open collector
Galvanic isolation	No
Polarity of LED connection	Common anode
Max voltage:	30V
Max. output switched current	30mA

Communication

Installation bus	CIB
Communication with reader, keyboard	Type of protocol: Wiegand Format: 26 bits, 34 bits, 42 bits, 40 bits transparent Number of bytes: 5, 4, 3, 5

Power supply output 12 VDC

Output voltage	12V DC
Output current (max.)	60 mA

Dimensions and weight

Dimensions	55×26×16mm
Weight	7g

Power supply

Power supply	24V (27V) from CIB
Max. load	85mA
Typ./Max. input power	0.5W/2.3W
Internal protection	No

Order number

TXN 133 53	C-WG-0503S, CIB, 2×AI/DI balanced, 3×DO (NPN), 1×Wiegand/3×DI(TTL); output 12V DC, connection of security system sensors

C-WG-0503S

Example of devices connectable to module C-WG-0503S

Readers RFID Aktion: AXR-100, AXR-200, AXR-300

PIR detectors Texecom (security system)

Fire detectors Texecom Fire alam systems

CIB

CIB – Module of relay outputs

Type	DI	RO	AI	AO	Comm
C-OR-0202B	Viz AI	2×	2× AI/DI		CIB

C-OR-0202B

Basic features

- Module is an actuator with two independent relays 16 A with NO and NC contacts available.
- It is designed for switching of 2 independent power loads.
- Each relay is independently addressed and controlled.
- Module has 2 universal inputs for potential free contacts or resistive temperature sensors.
- Inputs can operate also as double balanced inputs for safety detectors. Inputs can be used to connect other resistive sensors up to 160 kΩ.
- Status of outputs and error/operation is indicated by LED on module.

Connections

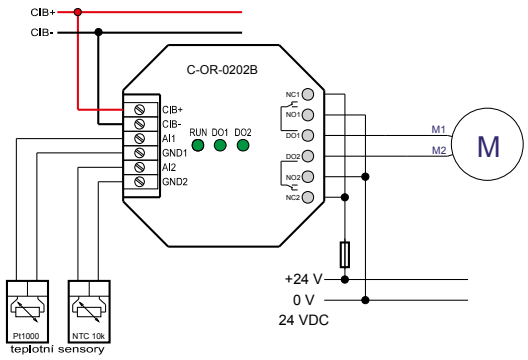
- Module is connected on two wire CIB bus, providing both communication and power supply of module.
- Module is designed for assembly into standard installation box in the wall or under device cover.
- All relay contacts are led by isolated wires of 70 mm length.
- CIB bus and universal inputs are available on screw-type terminals.

Use

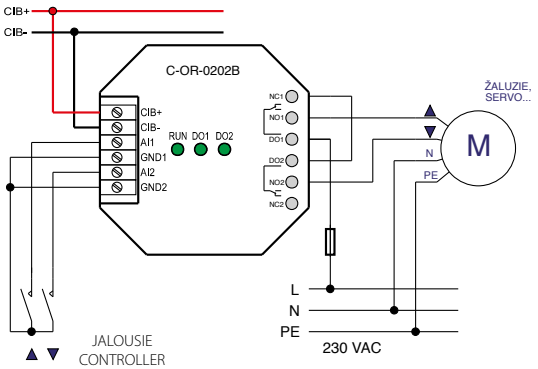
- Module is designed for switching independent power loads and other devices by relay contacts.
- With appropriate connections of contacts of both relays which avoid the simultaneous presence of voltage on both output contacts, module can be used to control drives od jalousies, shutters and blinds.
- During designing the wiring, load and protection of each output has to be taken into account.

Connection example

Connection of DC motor and 2 temperature sensors



Connection of 230 V drives of jalousies etc. and 2 push buttons.



Universal inputs

Počet vstupů binárních	3× DI (IN1-IN3), TTL 5 V 3,9 kΩ vytahovací odpor
No. of universal unputs	2× AI/DI
Galvanic isolation	No

Sensor type	Range	Basic accuracy
Potential-free contact	0/1	
Balanced inputs	broken wire/0/1/ tamper	for 2 × 1k1 balancing resistance
Pt1000	–90 .. +320 °C	0.6 °C
Ni1000	–60 .. +200 °C	0.6 °C
NTC 12 k	–40 .. +125 °C	0.6 °C
KTY81-121	–55 .. +125 °C	0.6 °C
Resistance	0 – 160 kΩ	

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according EN 60950
IP Degree of protection(IEC 529)	IP 20B
Overvoltage category	I
Degree of pollution IEC EN60664-1:2004	1
Working position	any
Installation	into installation box
Connection of CIB, AI/DI	screw terminals max. 1.5 mm²
Cross section of wire of the relay output	max. 2.5 mm²
Relay outputs wire cross-section	6 × stranded wire H05 VK, 2.5 mm²

Relay outputs

Number of outputs	2 × both NO, NC contacts 16 A/AC1
Galvanic isolation	Yes (even among outputs)
Switching voltage	min. 5 V DC; max. 300 V AC
Switching power	4000 VA/AC1, 384 W/DC
Switching current	max.16 A (NO), max.10 A (NC), min. 100 mA
Inrush current	80 A/<20 ms (NO contact)
Switch on/off time	typ. 15 ms/5 ms
Switching frequency without load	max. 1200 min^{-1}
Frequency of switching with load	max. 6 min^{-1}
Mechanical lifetime	3×10^7
Electrical lifetime	0.7×10^5
Short-circuit protection	No
Spike suppressor of inductive load	External (RC unit, varistor, diode)
Insulation voltage among each relay outputs	1000 V AC

Dimensions and weight

Dimensions	50 × 50 × 30 mm
Weight	70 g

Power supply

Power supply and communication	24 V (27 V) from CIB bus
Nominal load	50 mA (both relays closed)
Internal protection	Recovering fuse

Order number

TXN 133 02	C-OR-0202B; CIB relay module 2 × RO 230 V AC/16 A; 2 × AI/DI

TECO Advanced Automation

CIB – Module with relay outputs – lighting actor

Type	DI	DO	AI	AO	Comm
C-LC-0202B	Viz AI	2×	2× AI/DI		CIB

C-LC-0202B

Basic features

- The actuator module with two independent relays with 16 A switching (NO) contacts on terminals.
- It is designed for switching two independent power loads/ appliances, especially light sources with high inrush current up to 80 A.
- Each relay is individually addressable and controllable.
- The module has two inputs DI1 and DI2, designed to connect the contacts of the wall-buttons. In the mode without CIB communication the module automatically controls the outputs by single button control – when pressed DI1 resp. DI2 the output DO1 resp. DO2 is closed , after second press the output contact opens. It keeps manoeuvrability of lighting during the absence of a central module.
- Status and error/operation is indicated by the LED on the bottom part of the module.

Connection

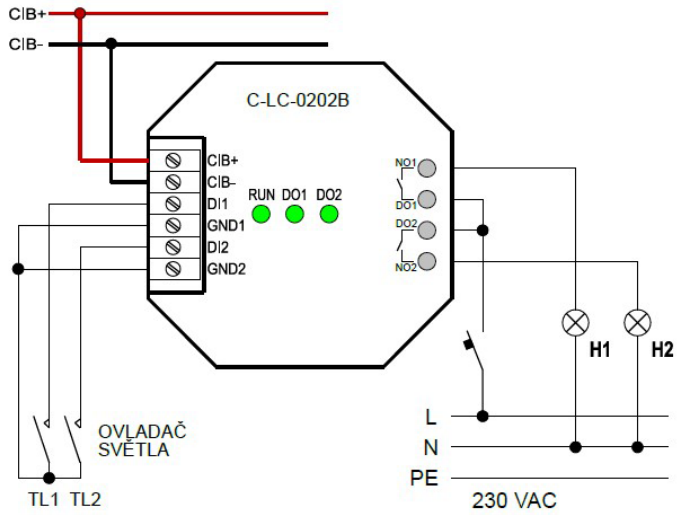
- The module has to be connected to the two-wire CIB bus, which provides communication and power supply module.
- The module is primarily intended for installation in standard flush boxes or directly under cover of appliance.
- Relay outputs are connected by insulated wire length of about 100 mm.
- CIB bus and universal inputs are connected to screw type terminals.

Application

- Module is designed for switching two independent power loads/appliances, especially light sources with high inrush current by relay output.
- When designing the rating of the contacts and their protection for various types of loads should be taken into account.

Connection example

Wiring two lights and contacts of two wall buttons



Relay outputs

	C-LC-0202B
No. of outputs	2× normally open (NO) contacts 16 A/AC1
Galvanic isolation	yes (outputs each other)
Switching voltage	min. 5 VDC; max. 300 V AC
Switching power	4000 VA/AC1, 384 W/DC
Switching current	max.16 A (NO)
Peak current	800 A/<20 ms
Time to switch on/off	typ. 15 ms/5 ms
Minimal switching current	100 mA
Switching frequency without load	max. 1200 min^{-1}
Switching frequency with load	max. 6 min^{-1}
Mechanical lifetime	$3 \times 10^7 / 0.7 \times 10^5$
Electrical lifetime	0.7×10^5
Short circuit protection	No
Spike suppressor of inductive load	External. (RC, varistor, diode)
Isolation voltage between relay outputs	1000 V AC

Binary inputs

No. of inputs	2
Type of sensor	Voltage free contact

Operating and installation conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–30 .. +70 °C
Electrical strength	according to EN 60950
IP degree of protection acc. IEC 529	IP 30
Overvoltage category	I
Degree of pollution according EN EN60664-12008	1
Working position	any
Installation	into the flush box
Connecting CIB and AI/DI	Screw type terminals, max. 1.5 mm^2
Wire cross section Relay outputs	4× wire, max. 1.5 mm^2

Dimensions and weight

Dimensions	48×48×26 mm
Weight	50 g

Power supply

Power supply and communication	24 V (27 V) from the CIB
Nominal power consumption	50 mA (all relays closed)
Internal protection	Reversible fuse

Order data

TXN 133 70	C-LC-0202B; CIB relay module 2× RO 230VAC/16 A(80 A inrush); 2× AI/DI

CIB – Module of shutter actuator

Type	DI	DO	AI	AO	Comm
C-JC-0201B	See AI	2×	2× AI/DI		CIB

C-JC-0201B

Basic features

- The module is single shutter actuator with two relays 16 A alternately switching phase input to only one of the two output contacts. Internal wiring and firmware excludes the current phase attach to both outputs even in the event of relay failure.
- The module has two inputs designed especially for contacts wall manual shutter buttons. In the mode without CIB communication the outputs follow the state of inputs . the contacts of the wall manual shutter buttons. They keep blinds and manoeuvrability during the absence of a central module.
- The module has two inputs DI1 and DI2, designed to connect the contacts of the wall-buttons. In the mode without CIB communication the module automatically controls the outputs by single button control – when pressed DI1 input the output DO1u is closed, when pressed DI2 the output DO1d is activated, after second press the output contact opens. The current closing of both outputs is blocked.
- Status and error/operation is indicated by the LED on the bottom part of the module.

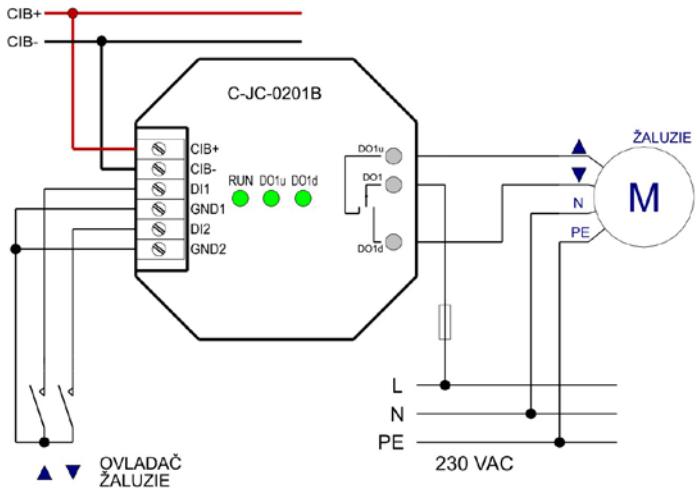
Connecting

- The module is connected to the two-wire bus CIB, which provides communication and power supply for the module.
- The module is primarily intended for installation in standard flush boxes or directly into the body of the shutters.
- Relay outputs are connected by insulated wire length of about 100 mm.
- CIB bus and universal inputs are connected to screw type terminals.

Application

- It is designed for 230 V motor control blinds, shutters, awnings to control the direction of movement (up/down) by applying the voltage to the respective windings.
- When planning the load of the contacts and their protection for various types of loads should be taken into account.

Connection example



Relay outputs

	C-JC-0201B
Number of outputs	2× alternately switching phase 16 A AC
Galvanic isolation	Yes
Switched voltage	min. 5 V DC; max. 230 V AC
Switching power	3689 W/AC1, 384 W/DC
Switched current	Type. 16 A, max.20 A, min. 100 mA
Peak current	16 A/<20 ms
Time to switch on/off	typ. 15 ms/5 ms
Mechanical lifetime	2×10^7
Electrical lifetime (16 A, 230 V AC)	1×10^5
Protection against short circuit	No
Protection against inductive load	External (RC circuit, diode, varistor)
Insulation voltage to the outside circuitry	4000 V AC

Binary inputs

Number of inputs	2
Type of input	Potential free contact

Operating and installation conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +70 °C
Electrical strength	according to EN 60950
IP degree of protection acc. IEC 529	IP 10B
Overvoltage category	II
Degree of pollution according EN EN60664-12008	1
Operating position	arbitrary
Installation	into the flush box
Connecting CIB and DI	Screw type terminals, max. 1.5 mm^2
Wire cross section Relay outputs	max. 1.5 mm^2
Power outputs	3× wire H05VK, 0.5 mm^2

Dimensions and weight

Dimensions	48×48×26 mm
Weight	50 g

Power supply

Power supply and communication	24 V (27V) from the CIB
Nominal power consumption	33 mA
Internal protection	Reversible fuse

Order data

TXN 133 69	C-JC-0201B; CIB shutter module 2× RO 230 V AC/16 A; 2× DI

TECO Advanced Automation

CIB – Modul řízení adresovatelných RGB pásků

Typ	DI	RO	AI	AO	Comm
C-DM-0001B					CIB DO, SYN

Základní charakteristiky

- Modul je aktor na sběrnici CIB, který obsahuje jeden výstup (DO) pro ovládání adresovatelných RGB LED čipů řady WS2812B, zapojitelných do série a pomocí protokolu na vstupu DI individuálně adresovatelných
- Jako pomocný výstup modul obsahuje zdroj napětí 5V/1 A pro napájení až 16 LED čipů zapojených sérii.
- Pro synchronizaci více modulů-C-DM-0001B slouží svorka SYN, která má má charakter vstupu nebo výstupu podle toho jak je nastavena v inicializaci modulu ve vývojovém prostředí Mosaic. Buď jako nadřízený nebo jako podřízený modul.
- Modul přenáší přes výstup DO nastavení každé RGB složky pro každý čip v sérii zvlášť. Data získává ze souborů uložených na MicroSD kartě. Soubory jsou generovány na externím zařízení, většinou na PC v příslušném programu dodávaného k čipům WS281B.
- Přes CIB získává informaci, který soubor se má cyklicky přehrávat na DO výstup.
- Stav modulu je indikován LED na modulu

Připojení

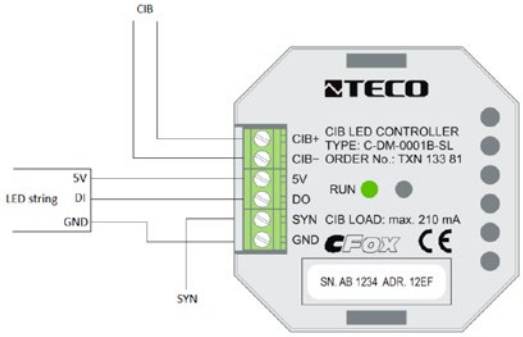
- Modul se připojuje na dvouvodičovou sběrnici CIB, která zabezpečuje komunikaci a napájení modulu.
- Modul je určen především k montáži do standardních elektroinstalačních krabic pod omítku nebo i pod kryt zařízení.
- Sběrnice CIB a všechny další vstupy a výstupy jsou vyvedeny na pevné šroubové svorky.

Použití

- Modul je určeny pro ovládání až 5000 RGB LED čipů zapojených v sérii.
- LED pásek může být organizován do matice s předem definovaným počtem sloupců a řad. V takovém případě lze při rychlém obnovování dat pro každý čip dosáhnout efektu videa s velmi hrubým rozlišením.

Příklad zapojení

Zapojení jednoho modulu na sběrnici CIB a připojení jednoho LED pásku



MicroSD karta se vkládá do modulu z boku.

Parametry výstupu DO

Počet	1
Typ výstupu	Polovodičový, nechráněný, push-pull
Galvanické oddělení od CIB	Ne
Výstupní napětí	5 V DC +-10%
Výstupní proud	max. 20 mA

Parametry napájecího výstupu 5V

Výstupní napětí	5 V DC +-10%
Výstupní proud	Max. 1 A
Galvanické oddělení od CIB	Ne
Interní jištění	Ne

Parametry synchronizačního signálu SYN

Počet	1
Typ	Binární
Galvanické oddělení od CIB	Ne

Rozměry a hmotnost

Rozměry	48 × 48 × 26 mm
Hmotnost	30 g

Provozní a instalační podmínky

Pracovní teplota	–10 .. +55 °C
Skladovací teplota	–25 .. +70 °C
Stupeň krytí IP (IEC 529)	IP20B
Kategorie přepětí	I
Stupeň znečištění dle ČSN EN60664-1:2008	1
Pracovní poloha	libovolná
Instalace	do instalační krabice
Připojení CIB	šroubové svorky max. 1,5 mm²

Napájení modulu

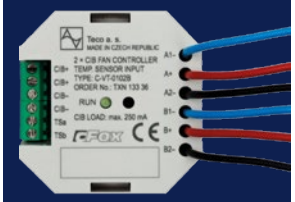
Napájení a komunikace	24 V (27 V) 10% ze sběrnice CIB
Maximální odběr	210 mA
Max. odběr bez zatížení zdroje	5V, 20 mA
Jištění interní	Ano, vratná pojistka
Galvanické oddělení od vnitřních obvodů	Ne

Objednací údaje

TXN 133 75	C-DM-0001B-SL; CIB, řízení WS2812 adresovatelných LED v pásku

CIB – Module of control inVENTer ® fans

Type	DI	DO	AI	AO	Comm
C-VT-0102B			1× temperature	2× fan	CIB



C-VT-0102B

Basic features

- Module is designed for proportional control of speed and rotation direction of two fans in heat recovery system inVENTer®
- Both fans are powered from the CIB bus.
- Module on CIB bus acts as two analog outputs 0 – 100% and one analog input for interior temperature measurement.
- Status is indicated by LED on module.

Use

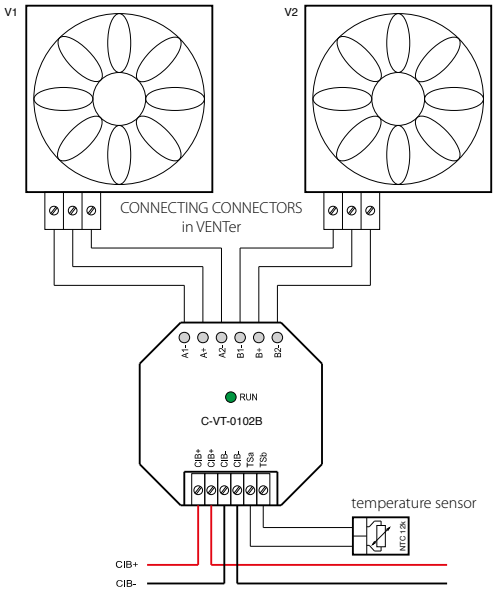
- Module is designed specifically to control fans of patented heat recovery system inVENTer. Together with these two fans, module is de facto heat recovery unit controlled and powered by CIB bus.
- Logic of both fans control in modes of heat recovery, dehumidification or charging is given by application program.

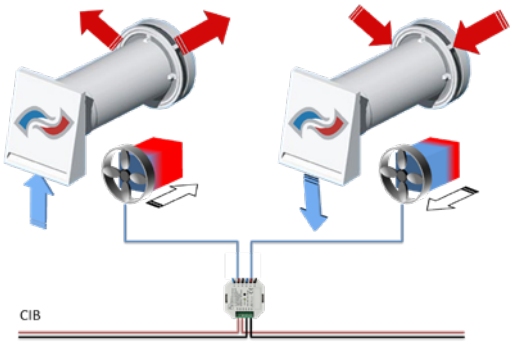
Connection

- Module is connected to CIB bus by two wires. CIB provides both communication and power supply.
- Ventilators are connected with 2 groups of 3 wires
- Two screw type terminals are used for connection of temperature sensor.

Connection example

Connection of two fans and one temperature sensor





Outputs for fans

No. of outputs	2×
Output voltage	± 7..15 VDC, ± %
Output current	Max. 200 mA

Analog input

Sensor type	Range	Basic accuracy
NTC 12k	–40 .. 90 °C	0.6 °C
Resistance	0 – 100 kΩ	

Operating conditions

Operating temperature	0 .. +70 °C
Storage temperature	–25 °C..+85 °C
Electric strength	according EN 60730
IP Degree of protection (IEC 529)	IP 10B
Overvoltage category	II
Degree of pollution IEC EN60664-1:2008	1
Working position	any
Installation	into installation box, under cover
Connection of CIB, AI	screw terminals, max. 1.5 mm²
Outputs for fans	6× wire H05 VK, 0.5 mm²

Dimensions and weight

Dimensions	50×50×27 mm
Weight	38 g

Power supply

Power supply and communication	24 V (27V) from CIB bus
Typical/max. load from CIB	250 mA
Typical/max. input power form CIB	4W/6W
Internal protection	Recovering fuse

Order number

TXN 133 36	C-VT-0102B, CIB, 2 × fan drive for inVENTer (± 15 VDC); 1 × AI for temperature sensor

TECO Advanced Automation

CIB modules – sensors

Indoor and outdoor with IP65

C-AQ-0006R – CO_2
Carbon dioxide

C-AQ-0006R-iVOC
Volatile organic compounds

C-AQ-0006R
– SMOKE

C-IT-0100H-P
Temperature

C-AQ-0006R-RHT
Temperature + humidity

C-IT-0100H-P
Temperature

C-IT-0100H-P
Temperature

C-RI-0401I
Temperature,
Light

C-HC-0201F-E
2AI/DI, 0-100%

C-RQ-0400I
Temperature
Humidity

C-AM-0600I
5AI/DI, 1xAI

C-IT-0200I
Temperature

S-RS-01I
Rain sensor

C-IT-0200I-SI
Solar irradiation

CIB – Module of universal analog inputs with protection IP65

Type	DI	DO	AI	AO	Comm
C-IT-0200I			2× AI		CIB

C-IT-0200I

Basic features

- Module is designed as universal analog input on CIB bus with high IP protection for general use.
- Module allows to measure voltage, current, resistance, RTD and thermocouples, pH and Redox probes.
- The type of sensor and measured range is selectable by jumpers.
- Firmware of module linearizes characteristics of temperature sensor, optimizes accuracy of measurement and converts it on temperature in degrees, which is then transferred into central unit.

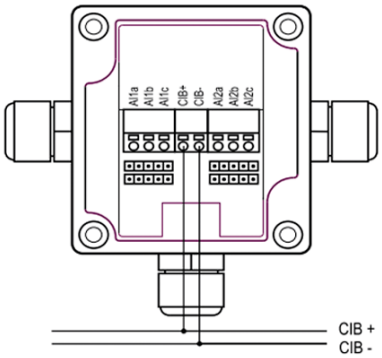
Connection

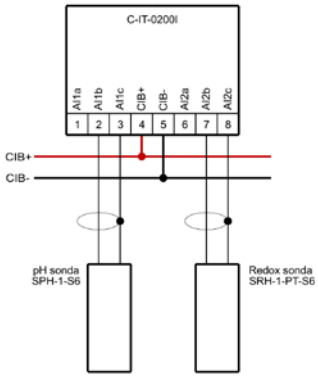
- Module is connected to CIB bus providing both communication and power supply of module by cable through glands.
- Wires are connected via screw-less terminals accessible after opening.
- Module can be fixed on the device surface or on the wall.

Use

- Module can be used as remote converter of analog signal in place of measurement and long distance transmission in digital form via installation bus CIB with use of all its advantages, e.g. transmission up to 500 m, any branches and as well power supply via CIB bus.
- For power supply of current loops there is no need of separate wires, power supply comes from CIB bus.
- High protection enables to install module very close to measured value in any environment.
- Module can be used for measurement of very low voltage, from pH and Redox probes, whose we use for example in pool technologies. The probe has to be calibrated before use.

Connection example





Example of connection pH and Redox probes

Analog inputs

No. of inputs	2×
Galvanic isolation	No
Converter type/Resolution	SigmaDelta/16 bit
Analog input error	<2% (according to used range)
Compensation of cold end of thermocouple	Yes
Input range of internal thermometer	–20.. 80 °C

Sensor type	Range	Input impedance
Voltage U	0 ÷ 10 V; 0 ÷ 5 V; –2 ÷ 2 V; –1 ÷ 1 V	54.6 kΩ
Voltage U (HI)	HI: –1 ÷ 1 V, HI: –100+ 100 mV	4 MΩ
Current I	0 ÷ 20 mA 4 ÷ 20 mA	50 Ω

Sensor type	Range	Input impedance
Thermocouple type J	–210..+1200 °C	4 MΩ
Thermocouple type K	–200..+1372 °C	4 MΩ
Thermocouple type R	–50..+1768 °C	4 MΩ
Thermocouple type S	–50..+1768 °C	4 MΩ
Thermocouple type T	200..+400 °C	4 MΩ
Thermocouple type B	250..+1820 °C	4 MΩ
Thermocouple type N	–200..+1300 °C	4 MΩ

Sensor type	Range	Input impedance
Pt1000 (W100= 1.365)	–90 .. 320 °C	4.7 kΩ
Pt 1000 (W100= 1.391)	–90 .. 320 °C	4.7 kΩ
Ni1000 (W100= 1.500)	–60 .. 200 °C	4.7 kΩ
Ni1000 (W100= 1.617)	–60 .. 200 °C	4.7 kΩ
NTC 12k	–40 .. 125 °C	4.7 kΩ
KTY81-121	–55 .. 125 °C	4.7 kΩ
Resistance	0 – 200 Ω	4.7 kΩ

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according EN 60730
IP Degree of protection (IEC 529)	IP65
Overvoltage category	II
Degree of pollution according IEC EN60664-1:2008	1
Working position	any
Installation	On wall, on surface, holder, etc.
Connection of CIB	Push-in terminals 1.5 mm²

Dimensions and weight

Dimensions	125 × 100 × 38 mm
Weight	120 g

Power supply

Power supply and communication	24 V (27 V) from CIB bus
Typical/max. load	15 mA/60 mA(at power supply of current loops)
Typical/Maximal input power	0.4 W/1.5 W
Internal protection	No

Order number

TXN 133 09	C-IT-0200I; CIB, 2 × AI, 0 – 10 V, 4 – 20 mA, RTD, TC, IP65

TECO Advanced Automation

CIB – Module for connection of impulse signals and analog inputs

Type	DI	DO	AI	AO	Comm
C-AM-0600I			5× AI/DI 2× AI pro průtokoměr AV23		CIB

C-AM-0600I

Basic features

- Modules for CIB bus.
- Input AV23 of C-AM-0600I module is designated for direct connection of flowmeter Taconova AV23.
- Universal inputs can be configurated to measure voltage, current or resistivity temperature sensor.
- Universal inputs can be configurated as pulse counters for energy meters, (electrometer, gasometer, water meter).
- Interface of flowmeter Taconova AV23 contains 2 inputs, one designated for sensing of proportional flow signals, second for sensing integrated temperature sensor of flowing medium.
- Module firmware linearizes characteristics of resistivity sensors, optimises measuring accuracy and recalculates it into real scale temperature, which is then transfered to central unit.

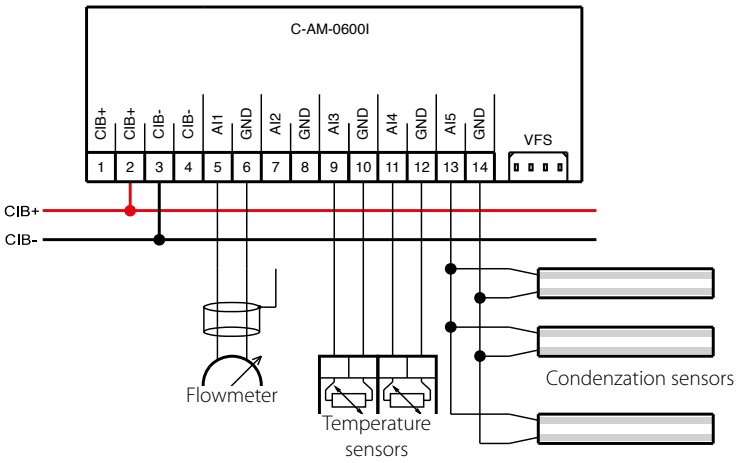
Connection

- Modules are connected with 2 wire CIB bus.
- Module C-AM-0600M with cover IP55 is connected trough push-in terminals underneath the casing.

Use

- As universal analog inputs for CIB bus.
- As universal counter inputs for CIB bus.
- As specialised module.

Connection example



Type of sensor	Range	Basic accuracy
Voltage free contact	0/1	0 when<1.5 kΩ 1 when >1.5 kΩ
Pt1000 W100=1,385/1,391	–90 .. 320 °C	0.5 %
Ni1000 W100=1,500/1,617	–60 .. 200 °C	0.5 %
NTC 12 k	–40 .. 125 °C	1 %
KTY81-121	–55 .. 125 °C	0.5 %
Resistor OV 200 k	0 – 200 kΩ	10 %
Resistor OV 400 k only for AI5	0 – 400 kΩ	10 %
Voltage	0 ÷ 10 V, 0 ÷ 2 V, 0 ÷ 1 V	0.5 %
Current	0 – 20 mA, 4 – 20 mA	

Parameters of AV23 flowmeter interface	**C-AM-0600I (AI1-AI5)**
Flowmeter power supply	5 V DC
Integrated power supply	Yes
Typ. consumption from CIB	3 mA
Flowmeter measuring range/conversion	0.5 – 3.5 V 1 – 12 l/min or 2 – 40 l/min
Error of input	0.5 %
Thermometer measuring range/conversion	0.5 – 3.5 V/0 – 100 °C
Error of input	0.5 %

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +80 °C
Electric strength	according to EN 60730
IP Degree of protection (IEC 529)	IP55
Overvoltage category	II
Degree of pollution according to ČSN EN60664-1:2008	1
Working position	Any
Installation	On wall
Connection CIB	Push-in terminals 0.14÷1.5 mm²

Dimensions and weight

Dimensions without clips	85 × 85 × 37 mm
Weight	65 g

Power supply

Power supply and communication	24 V(27 V) from CIB bus
Typical /Max. current drain	40 mA/80 mA
Typical/max. power consumption	1 W/2 W
Internal protection	No

Order data

TXN 133 50	C-AM-0600I; CIB, 5× AI/DI, 1× AI, module of analog inputs and sensing of energy meters, krytí IP65

CIB – Temperature sensors with protection IP54/65

Type	DI	DO	AI	AO	Comm
C-IT-0100H-A			1× temperature		CIB
C-IT-0100H-P			1× temperature		CIB

Basic features

- C-IT-0100H-A Temperature sensor in aluminium head with stem, IP54.
- C-IT-0100H-P Temperature sensor in plastic head with stem IP65.
- Available also as an outdoor temperature sensor, or surface contact sensor.
- Temperature is converted in sensor directly on numerical value and transmitted into central module via CIB bus.
- All units have built-in sensor of internal temperature in the head.
- The principle of processing the signal eliminates distortion resp. error of measurement by connection at long distance.

Connection

- Sensors and converters are designed as standard units at two wires CIB bus, providing both communication and power supply of all sensor.
- Save wires: Free topology and branching up to distance 400 m, up to 32 units on 1 branch CIB.
- Master of CIB bus is basic module Foxtrot or extension module CF-1141.

Use

- In applications of measurement and regulation.
- In air-conditioning, ventilation, local or centralised heating or cooling.
- Can be placed in exteriors or interiors.

Analog inputs	C-IT-0100H-A	C-IT-0100H-P
Main input/measured value	1× temperature sensor at stem	1× temperature sensor at stem
Supplement input	Temperature in converter head	Temperature in converter head
Measured temperature range	–50 °C ÷ + 250 °C	–20 °C ÷ + 200 °C
Resolution	0.1 °C	0.1 °C
Basic measurement accuracy	0.5 °C	0.5 °C
Calibration	From manufacturing	From manufacturing

Operating conditions	C-IT-0100H-A	C-IT-0100H-P
Operation temperature	–25 ÷ +70 °C	–25 ÷ +70 °C
Temperature of storage and transportation	–25 ÷ +80 °C	–25 ÷ +80 °C
Relative humidity	< 80 %	< 80 %
IP Degree of protection according IEC 529	IP54	IP65
Installation	Into the pipe, thermowell, on the wall (see optional accessories)	Into the pipe, thermowell, on the wall (see optional accessories)
Input wire assembly	1× gland	1× gland
Connection (CIB)	Firm terminals	Firm terminals
Conductors cross-section	1 mm²	1 mm²
Recommended diameter of cable	5 ÷ 7 mm	4 ÷ 8 mm

Dimensions and weight	C-IT-0100H-A	C-IT-0100H-P
Dimensions	90 × 71 × 200 mm	90 × 66 × 155 mm (without gland)
Standard length of stem	120 mm (other lengths see other variants)	115 mm (other lengths see other variants)
Weight	220 g	130 g

Power supply	C-IT-0100H-A	C-IT-0100H-P
Power supply/Voltage	From bus CIB/24(27) V DC	From bus CIB/24(27) V DC
Load from CIB bus	8 mA	8 mA

Order number

TXN 133 17	C-IT-0100H-A, CIB, temperature sensor with stem, IP54, aluminium head
TXN 133 16	C-IT-0100H-P, CIB, temperature sensor with stem, IP65, plastic head

C-IT-0100H-A

C-IT-0100H-P

C-IT-0100H-P
Surface contact

C-IT-0100H-P
outdoor temperature

TECO Advanced Automation

CIB – Outside temperature and lighting sensor module

Type	DI	RO	AI	AO	Comm
C-RI-0401I			1× lighting sensor 1× temperature sensor		CIB

C-RI-0401I

Basic features

- Combined sensor of temperature and lighting on CIB bus.
- Module is designated with IP54 protection for installation on the wall in exteriors.

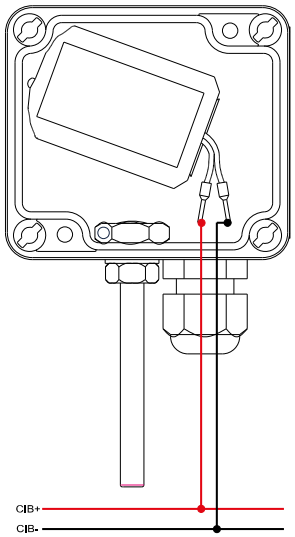
Connection

- Module is connected to two wires CIB bus, that ensures communication and power supply of module.
- CIB bus comes to module through gland by two wires cable up to diameter 7 mm.

Use

- Module is designated primarily for outside lighting metering.
- Module also measure outside temperature, because it is equipped by own temperature sensor.
- Module may be used in exterior and interior, where a high protection is needed.

Connection example



Temperature sensor

Number	1
Galvanic isolation	No
Resolution	12 bit

Lighting sensor

Number	1
Galvanic isolation	No
Resolution	12 bit

Measured ranges

Sensor type	Ranges	Accuracy
Pt1000 – W100=1.385	–90 .. 320 °C	12 bit/< 2%

Measured ranges

Sensor type	Ranges	Accuracy
Photodiode	0 – 50 000 lx	12 bit/< 5%

Operating conditions

Operating temperature	–20 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according to EN 60730
IP Degree of protection IEC 529	IP54
Overvoltage category	II
Degree of pollution according to EN60664-1:2008	1
Operating position	Vertical, gland down
Installation	In exterior by fixing on the wall by screws in installation holes
Connection	2 wires cable 4.5 – 7 mm via gland PG9

Dimensions and weight

Dimensions	74 × 125 × 39 mm
Weight	150 g

Power supply

Power supply and communication	24 V (27V) from bus CIB
Nominal load	25 mA
Max. input power	0.5 W
Internal protection	No

Order number

TXN 133 47.92	C-RI-0401I, CIB combined module for outside lighting and temperature metering

CIB – Modul čidla kvality vzduchu

Typ	DI	RO	AI	AO	Comm
C-AQ-0006R			1× CO_2 1× RH 1× iVOC 1× teplota		CIB

C-AQ-0006R

Základní charakteristiky

- CFox modul pro interiérové měření kvality vzduchu.
- Detekuje oxid uhličitý CO_2, relativní vlhkost RH, těkavé organické látky i VOC a teplotu vzduchu T.
- Vestavěné auto kalibrační funkce senzorů zaručují dlouhodobou stabilitu měření.

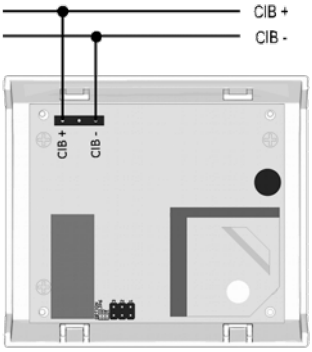
Připojení

- Čidlo je realizované jako standardní jednotka na dvouvodičovou sběrnici CIB, která zabezpečuje komunikaci a napájení celého čidla. Příklad připojení modulu je zobrazen na obrázku. Připojovací CIB svorkovnice je umístěna pod horním krytem modulu.

Použití

- Obsah CO_2 ve vzduchu má velmi dobrou vypovídací schopnost o vydýchanosti vnitřního vzduchu v uzavřených prostorách.
- Velmi dobře koresponduje s počtem lidi pohybujících se v uzavřených prostorách. Proto je vhodné pro:
- Systémy kontrolující kvalitu vzduchu.
- Řízenou ventilaci v kancelářích, kinech, hotelech, nemocnicích, tělocvičnách, školách apod.
- Řízení rekuperace mj. v nízkoenergetických stavbách.
- Skleníky, pěstírny hub, sklady ovoce.
- Chovatelské podniky, kde dochází k vysoké koncentraci zvířat.
- Monitoring a řízeni potravinářských procesů – kvašení, zrání.

Příklad zapojení



Parametry čidla oxidu uhličitého (CO_2)

Princip senzoru	NDIR
Pracovní rozsah	0 – 2 000 ppm/ 0 – 5 000 ppm
Základní přesnost měření	±35 ppm + ±5%
Rozlišení	1 ppm
Náběh čidla	Max 1 min.
Skoková odezva	80 s

Parametry čidla RH

Princip senzoru	Kapacitní polymer
Pracovní rozsah	0 – 100 % RH
Základní přesnost měření	±3,5% RH pro RH 20 – 80 % ±6% RH pro RH 0 – 100 %
Rozlišení	0,1% RH

Provozní a instalační podmínky

Pracovní teplota	0 .. +50 °C
Skladovací teplota	–25 .. +60 °C
Elektrická pevnost	dle EN 60730
Stupeň krytí IP (IEC 529)	IP22
Kategorie přepětí	II
Stupeň znečištění dle ČSN EN60664-1:2008	2
Pracovní poloha	svislá
Instalace	na stěnu
Připojení CIB	Šroubovací svorkovnice max. 1,5 mm^2

Parametry čidla iVOC

Pracovní rozsah	450 – 2 000 ppm
Rozlišení	1 ppm

Parametry teploty

Pracovní rozsah	0 – 40 °C
Základní přesnost měření	±0,4 °C
Rozlišení	0,1 °C

Rozměry a hmotnost

Rozměry	90 × 80 × 31 mm
Hmotnost	100 g

Napájení modulu

Napájení a komunikace	24 V (27 V) ze sběrnice CIB
Maximální odběr	25 mA
Typický/Maximální příkon	2 W
Jištění interní	Ne
Galvanické oddělení	Ne

Objednací údaje

TXN 133 75	C-AQ-0006R-M; CIB, čidlo koncentrace CO_2, RH, iVOC, teploty

TECO Advanced Automation

CIB – module of proportional servo drive control of valve

Type	DI	DO	AI	AO	Comm
C-HC-0201F-E			2× AI/DI	Valve position 0 – 100 %	CIB

Basic features

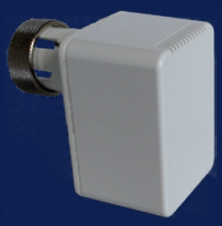
- The thermostatic head module is designed for proportional (continuous) control of radiator valves of central heating.
- Universal inputs for external sensors can be set as analog or as binary. This way both temperature sensor and window contact can be connected.
- Module firmware linearizes characteristics of resistivity sensors, optimises measuring accuracy and recalculates it into real scale temperature, which is then transfered to central unit.

Connection

- Valve head is connected by led out cable directly to 2 wire CIB bus, from which it is power supplied
- External sensors are connected using screw-type terminals.

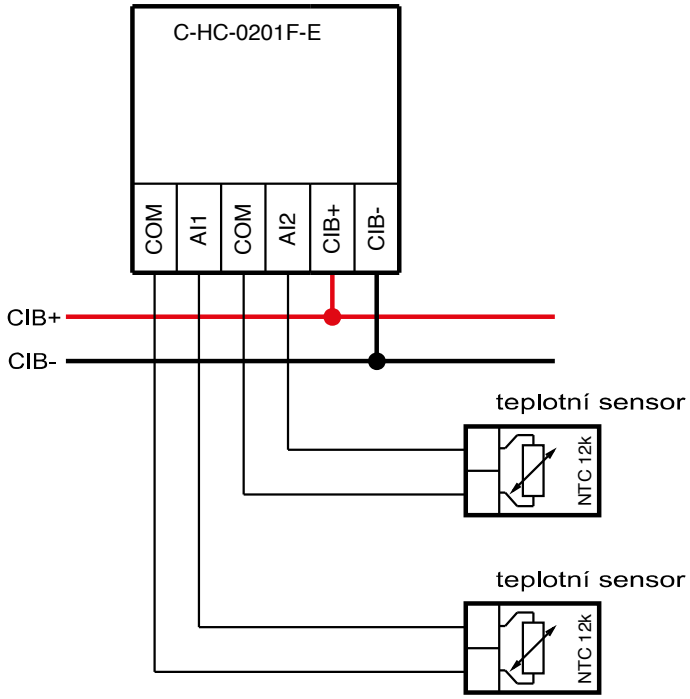
Use

- Continuous zone heating control of warm water heating in individual rooms.
- Radiator or floor panel heating.
- It is mounted directly on a radiator valve or manifold in underfloor heating systems using thread M30×1.5 or using a reduction.



C-HC-0201F-E

Connection example



Analog/combined inputs

No. of inputs	2
Type of input	NTC 12 k/Pt1000/Ni1000/ 0 – 100 kΩ
Measuring range	0..90 °C/ 0 – 100 kΩ

Valve drive

Type of drive	proportional (continuous)
Drive stroke	typ. 1.5 mm (max. 2.7 mm)
Valve head rotation time	approx 30 s
Adaptation of the drive	automatic, manual
Valve head rotation	automatic, 30 day interval

Operating conditions

Operating temperature	–10 .. +55 °C
Storage temperature	–25 .. +70 °C
Electric strength	according to EN 60730
IP Degree of protection (IEC 529)	IP20
Overvoltage category	II
Degree of pollution according to ČSN EN60664-1:2008	1
Working position	Libovolná
Installation	Mounted on valve head M30×1.5 mm, otherwise with reduction
Connection CIB	Push-in terminals 0.14 ÷ 1.5 mm²

Dimensions and weight

	C-HC-0201F-E
Dimensions	69 × 48 × 73 mm
Weight	125 g

Power supply

	C-HC-0201F-E
Power supply and communication	24 V(27 V) from CIB bus
Typical/max current drain	5 mA/80 mA
Max. power consumption	2.4 W
Internal protection	No

Order data

TXN 133 48	C-HC-0201F-E, CIB, Valve head, 2×AI/DI Temperature/contact, 1×proportional (0 – 100%) radiator valve drive
	Reduction according to used valve on demand

Power supply modules, overvoltage protections

HDR-15-24

110-230 V AC/
24 V DC, 15 W

HDR-30-24

110-230 V AC/
24 V DC, 30 W

HDR-60-24

110-230 V AC/
24 V DC, 60 W

HDR-100-24

110-230 V AC/
24 V DC, 100 W

PS2-60/27

230 V AC/
27 V DC, 60W
12 V DC, 4 W

KNX-20E-640

230 V AC/
KNX bus 30 V DC
20W

BDM-024-V/1

DM-024-V/1

Power supply with two level outputs

Type	Input voltage	Output voltage	Output current		
PS2-60/27	230 V AC	27.2 V DC 12 V DC	2.3 A 0.3 A		

PS2-60/27

Basic features

- PS2-60/27 module is switching power supply with 2 levels of fixed output voltage 27.2 V DC and 12 V DC.
- It is designed for supplying control system Foxtrot with back-up accumulators.
- The design of output circuits enables to connect the pair of backup accumulators which are charged directly from the power supply.
- The other level 12 V DC is for supplying security sensors.
- The high efficiency eliminates the need of active cooling.

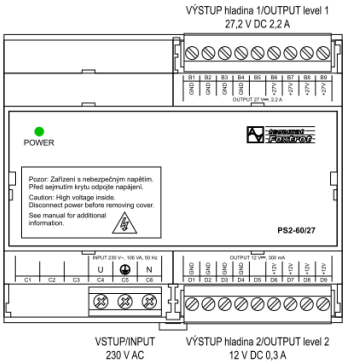
Connection

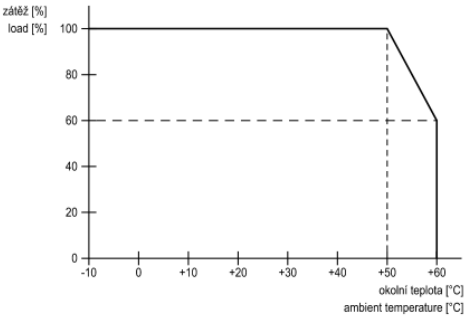
- Compact form-factor for DIN rail mounting (6 modules width) for standard circuit breaker cabinets.
- All circuits are connected by screw terminals.

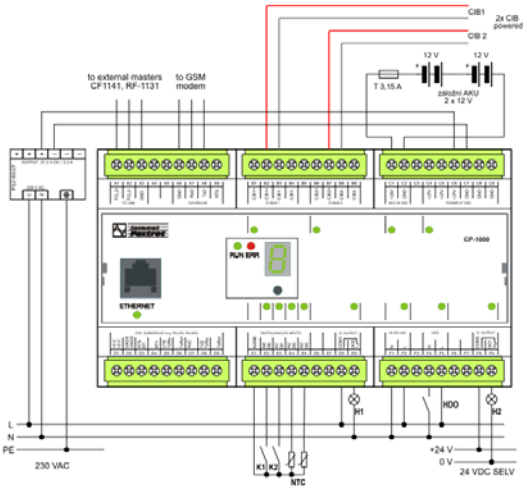
Use

- For Basic backed-up power supplying of the foxtrot system.
- For power supplying of the basic and expanding modules and I/O circuits.
- For basic power supplying of the CIB bus in synergy with central modules and a bus power separator C BS-0001M or communication masters CF-1141

Connection example







Operating conditions

Operating temperature	–10 .. +60 °C
Storage temperature	–40 .. +85 °C
Electric strength	according EN 60950
Class of electrical device protection	I according to IEC EN 61140
IP Degree of protection (IEC 529)	IP 20, IP40 covered in switchboard
Overvoltage category IEC EN 60664-1	II
Degree of pollution IEC EN60664-1:2008	1
Working position	vertical
Installation	on DIN rail
Connection	screw terminals
Conductors cross-section	Max. 2 m,5 mm^2

Dimensions and weight

Dimensions	90 × 105 × 65 mm (6M)
Weight	340 g

Power supply

Input voltage	230 V AC – 15 up to 25% ,
Min. input voltage	110 V AC/output voltage less 45 W
Input voltage frequence	47 – 63 Hz
Max. input power	106 VA
Input fuse	T2.5/250V
Output	
Current output – range	0.48 A/230 VAC
Level 1; Output voltage/current	27.2 V DC/0 – 2.2 A
Level 2; Output voltage/current	12 V DC/0 – 0.3 A
Max.total output power	60 W
Efficiency	87 %
Short-circuit protection	Electronic
Electrical resistance of isolation	3000 V AC
Galvanic isolation input/output	Yes

Order number

TXN 070 40	PS2-60/27 power supply 230 VAC/27.2 V DC, 2.2 A; 12 V DC, 0.3 A

Stabilized power supplies 24 V DC

Type	Input voltage	Output voltage	Output current		
HDR-15-24	230 V AC	24 V DC	0.63 A		
HDR-60-24	230 V AC	24 V DC	2.5 A		
HDR-100-24	230 V AC	24 V DC	3.83 A		

Basic features

- Group of 24V power supplies for DIN rail mounting.
- Input voltage in wide range 100 – 240 V AC.
- Output voltage can be set by trimmer +–10%.
- Electronic protection against short-circuit, overload and overvoltage.
- Cooled by natural air circulation.
- Certification UL, CUL, TUV, CB, CE.

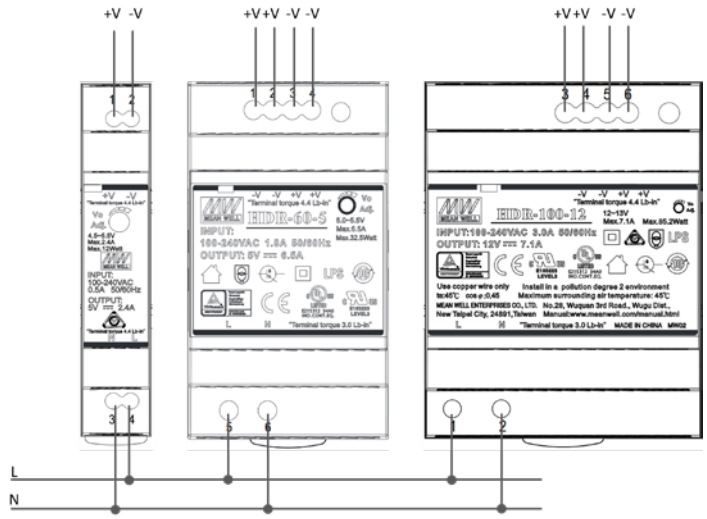
Connection

- Primary and secondary voltage is connected on screw-type terminals.

Use

- Basic (not backed up) pwer supply of FOXTROT system.
- Power supplying of basic and expansion modules.
- Basic power supply of CIB bus. In synergy with impedance matching module C-BS-0001M.

Connection example



Power supply	HDR-15-24	HDR-60-24	HDR-100-24
Input voltage - range	100 – 240 V AC, 47 – 63 Hz	100 – 230 V AC, 47 – 63 Hz	100 – 230 V AC, 47 – 63 Hz
Input current – range	0.48 A/230 V AC	1.2 A/115 V AC..0.8 A/230 V AC	3 A/115 V AC..1.6 A/230 V AC
Output voltage	24 V DC	24 V DC	24 V DC
Output voltage adjustment	+- 10%	+- 10%	+- 10%
Output current	0.63 A	2.5 A	3.83 A
Max.total output power	15.2 W	60 W	100 W
Short-circuit protection	Electronic	Electronic	Electronic
Electrical resistance of isolation	3000 V AC	3000 V AC	3000 V AC
Galvanic isolation input/output	Yes	Yes	Yes

Dimensions and weight	HDR-15-24	HDR-60-24	HDR-100-24
Dimensions	17.5 × 90 × 54.5 (1.5 M) mm	52.5 × 90 × 54.5 (4 M) mm	70 × 90 × 54.5 mm
Weight	78 g	190 g	270 g

Operating conditions

Operating temperature	–30 .. +70 °C
Storage temperature	–40 .. +85 °C
Electric strength	according to EN 60950-1
IP Degree of protection (IEC 529)	IP20 with casing in switchboard
Overvoltage category	II
Degree of pollution ČSN EN60664-1:2008	2
Working position	vertical
Installation	On DIN rail
Connection	screw terminal

Order data

HDR-15-24	HDR-15-24 Power supply 230 V AC/24 V DC, 0.63 A
HDR-60-24	HDR-60-24 Power supply 230 V AC/24 V DC, 2.5 A
HDR-100-24	HDR-100-24 Power supply 230 V AC/24 V DC, 3.83 A

HDR-15-24

HDR-60-24

HDR-100-24

TECO Advanced Automation

Overvoltage protection for CIB bus

Type	DI	DO	AI	AO	Comm
DTNVEM-1/CIB **DTNVE-1/CIB**	4	2			

DTNVEM-1/CIB

DTNVE-1/CIB

Basic features

- Overvoltage protection device is designed for protection of CIB bus against flash current and overvoltage.
- Combined overvoltage protection of power supply and data communication – corresponds to the CIB.
- It contains the base and the exchange module. The base is permanently connected with CIB installation. Manipulation with exchanged module does not interrupt the bus and its function.

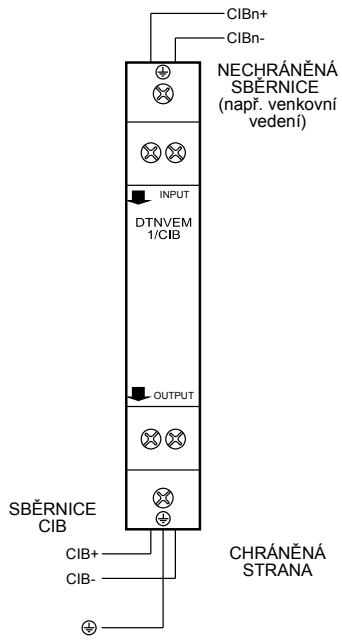
Connection

- Module is connected in serial into each protected CIB bus branch.
- The necessity of protection has to be evaluated for each CIB branch separately.
- In project it is necessary to calculate the voltage drops on overvoltage protections, which depend on consumption of modules behind the overvoltage protection.

Use

- To protect CIB bus and devices connected on CIB bus against the flash current and overvoltage.
- Place as close to supposed source of overvoltage as possible.
- It is recommended to place the protection at input from outdoor to indoor of the building and in place of parallel way of CIB with lightning rod.

Connection example



Technical features

No. of protected buses	1
Category of protection device according to IEC EN 61643-21	A2, B2, C2, C3, D1
Nominal operation voltage	24 V DC
Maximal operation voltage	36 V DC
Maximal permanent current	0.5 A
Impulse current 10/350	2.5 kA/cable
Nominal discharge current 8/20	1 kA/cable
Maximal discharge current 8/20	10 kA/cable
Voltage protection level	<75 V (between A/PE, B/PE, A/B)
Response time	<30 ns

Operating conditions

Operating temperature	–40 ÷ +80 °C
Storage temperature	–40 ÷ +80 °C
IP Degree of protection IEC 529	IP 20
Degree of pollution IEC EN 60664-1:2004	2
Working position	any
Installation	on DIN rail
Connections	screw terminal
Conductors cross-section	max. 2.5 mm²

Dimensions and weight DTNVEM 1/CIB

Dimensions	90 × 13 × 65 mm
Weight	75 g

Dimensions and weight DTNVE 1/CIB

Dimensions	45 × 30 × 7 mm
Weight	35 g

Order number

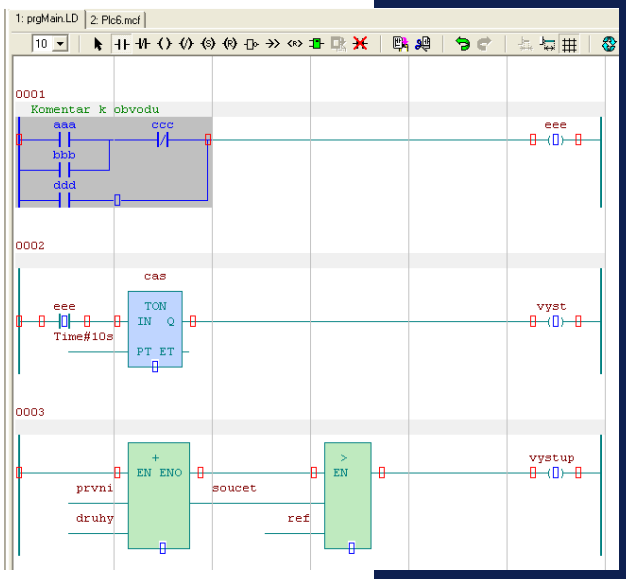
DTNVEM 1/CIB	DTNVEM 1/CIB Overvoltage protection for CIB bus DIN rail installation
DTNVE 1/CIB	DTNVE 1/CIB Overvoltage protection for CIB bus into the box

Mosaic – development software for PLC Tecomat

Type	TC700	Foxtrot	Foxtrot basic module	SoftPLC
Mosaic Lite+			CP-100x without communication module	Yes
Mosaic Compact+		Yes	Yes	Yes
Mosaic Profi+	Yes	Yes	Yes	Yes

Basic features

- Mosaic is development software for creating and debugging programs for programmable systems Tecomat. Software is developed according to international standards IEC EN 61131-3, what defines structure of programs and programming languages for PLC.
- All in one package.
- Lite version for testing and training.
- Full version protected by HW key – portable licence.
- Regular update.
- Language mutations – czech, english, deutsch, russian, polish.
- For Windows 7, Windows 8 and Windows 10 – 32 bit and 64 bit.



Programming

- Mosaic enables to program all PLC delivered by company Teco.
- Programming according to standard IEC EN 61131-3 – graphic languages LD (relay logic) and FBD (function blocks), CFC(continuous function chart) and text languages ST (structured text) and IL (instruction language).
- Basic element of program is POU (program unit) – function, function block or program.
- Graphic languages offer easy and intuitive program creation.
- IEC assistant – tool for program support in text languages.
- Possibility to combine different types of languages.
- Common declaration part for all types of languages.
- Standard and user data types including structures and fields.
- Standard and user function libraries and function blocks are available.

SimPLC – simulator PLC

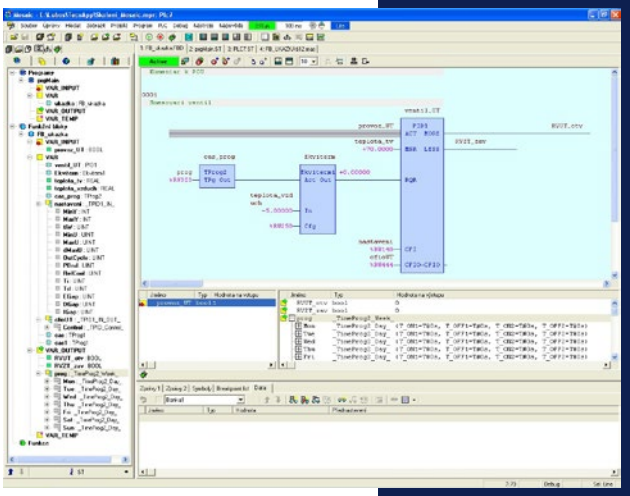
- Built-in simulator PLC – debugging without connection of real hardware.
- Possibility to simulate all PLC Tecomat.
- Mosaic can work as data server for visualization programs – support for visualization debugging.

IEC project manager

- Declaration of all program elements for PLC.
- Standard and user libraries management.
- Well-arranged visualization in structures.

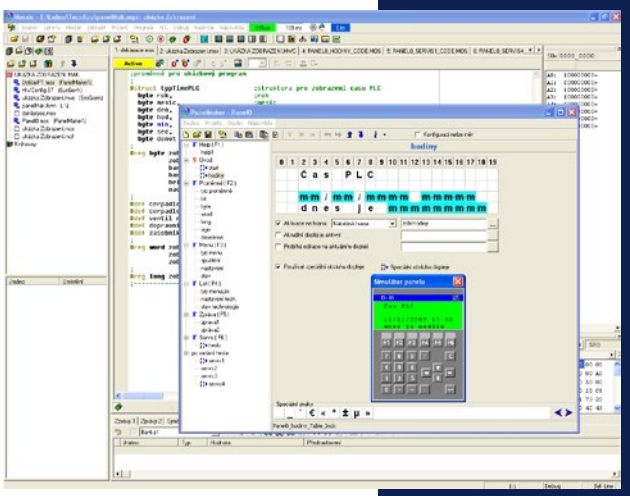
Inspector POU

- Tool for all parts PLC program debugging.
- Visualization of input and output variables POU statuses and running of program.
- Visual differentiation of logic variables in graphic languages.
- Dynamic (on-line) or static program monitoring (calculation of POU is captured in buffer).
- Debugging points, setting conditions for run tracing.



PanelMaker – tool for operator panels

- Tool for creation of dialogs for operator panels from Teco production line.
- Program for panel is created directly in Mosaic and becomes a part of program for PLC.
- Visualize and edit is possible for all global variables.



GPMaker – tool for graphic operator panels

- Screen editor of graphic panel ID-17.
- Programming of panel without exports and imports into other programs.
- Access to any variable of any type.
- Static and dynamic texts and images.
- Text manager – enables to use multi language texts and choose language for display.
- Font manager – possibility to import own fonts and symbol sets.
- User defined buttons for each screen.

PanelSim – operator panel simulator

- Dialog debugging created by PanelMaker without connection of operator panel. We may simulate alphanumeric panels from Teco production line.
- All functions of panel are simulated on PC.
- It can be used with real PLC or with simulated PLC.

On-line change of PLC program

- PLC program change without stopping the controlled technology.
- Enables to do any change in program without loss of present operated data.
- Very fast switching between old and new program.
- Minimization of data losses caused by shutdown of control system because of maintenance SW and HW of PLC.

WebMaker – tool for web pages designing for web server of PLC Tecomat

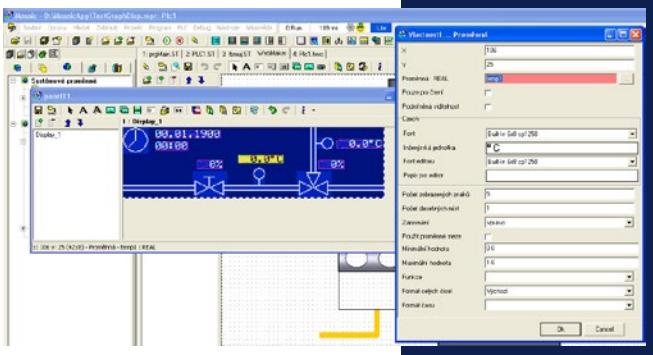
- Graphic tool for creation of web pages for systems Tecomat Foxtrot and TC700.
- Generated code in XML language is connected directly on variables in PLC.
- Web pages enables not only visualize, but also to control technology.
- We can input texts, static and dynamic images, bar graphs, images from IP cameras into web pages.
- Image manager enables to add own images
- Different levels of administrative accesses.

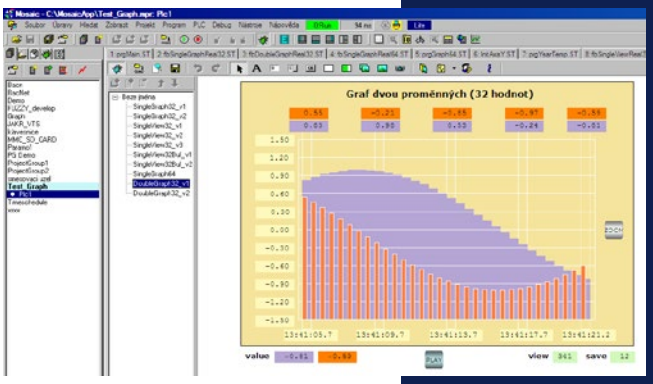
GraphMaker – tool for monitoring of process variables

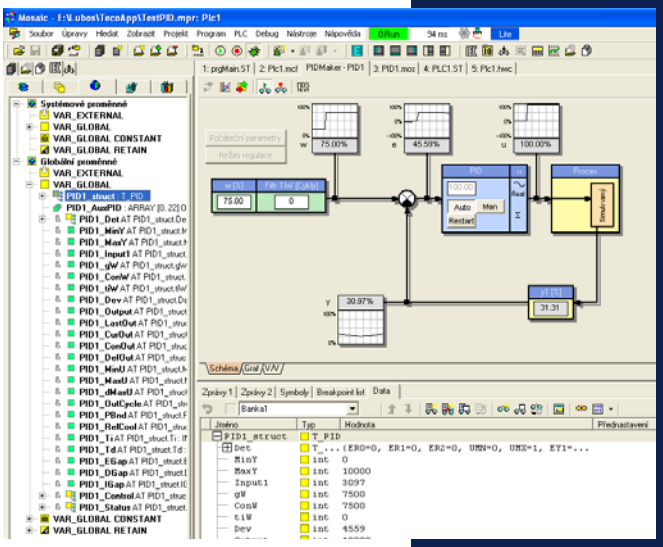
- Monitoring of process up to 16 variables of all types in real time.
- Measured data we can store at hard disc, print, export to other programs (Excel etc.) or directly analyze.
- Two cursors for reading data, zoom, different visualization of read data, setting sample period.
- Function of logic analyzer – read data are stored into buffer in CPU and after loading transferred into GraphMaker tool.
- Data storing may be conditioned by fulfilling of logic condition (function TRIG).
- Data may be stored in each calculation cycle.

PIDMaker – tool for defining and monitoring of regulation loops

- Visualization superstructure of regulation instructions PID implemented in PLC.
- Easy implementation, debugging and managing of regulation algorithms.
- Interactive view of regulation process, facilitating correct setting of regulator parameters.
- Setting and correcting of regulation parameters in real time, during the regulation. Simulation of simple technology processes on PC part (linear system of complexity up to 3rd order with possibility to simulate traffic delay). Simulation do not change user program implemented into real technology.

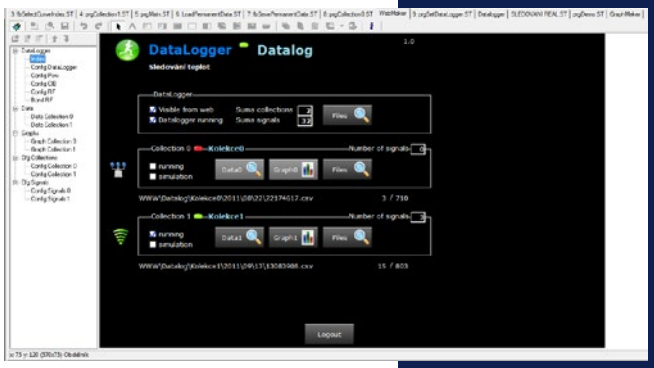






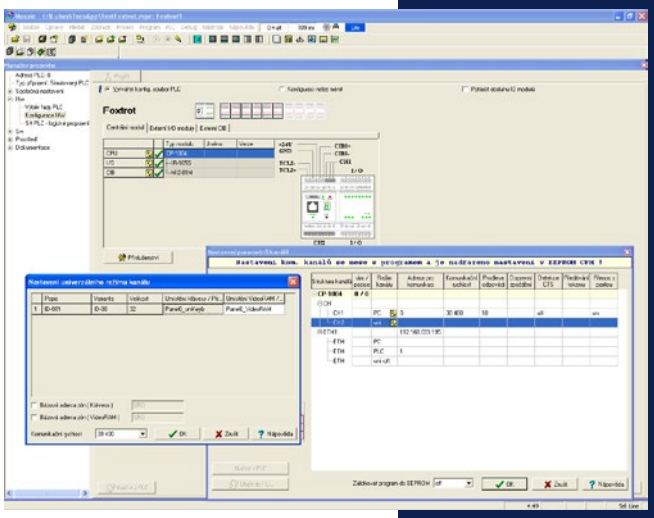
Datalogger – tool for storing data into file

- Data are stored into csv files at memory card.
- One datalogger can contain up to 4 collections per 16 signals.
- Values are stored periodically (periodical collection) or on the basis of any event (event collection).
- Third type is signal collection, where signals are stored independently on others.
- Values are stored with time sign.
- Data storing can be controlled from user program, for example from interface in web pages.
- Values from csv files can be read and visualized by GraphMaker tool.



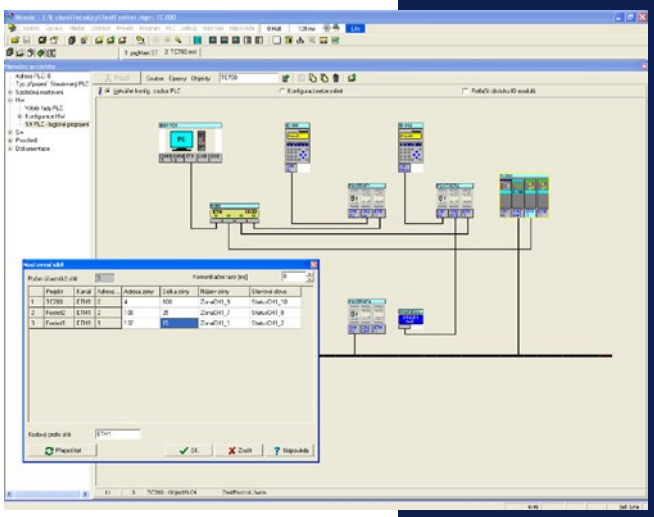
SelectPLC – hardware configuration

- Choosing of PLC type and easy defining of PLC configuration.
- Manual configuration by filling in easy table or automated reading from connected PLC.
- Each module has own form for configuration.
- Browser of present status of all variables of each modules including communication channels.
- Possibility to fix firm value of inputs and outputs independent on user program and neighborhood – simulation of inputs excitation at user program debugging and easy control of connection actuators with outpus.



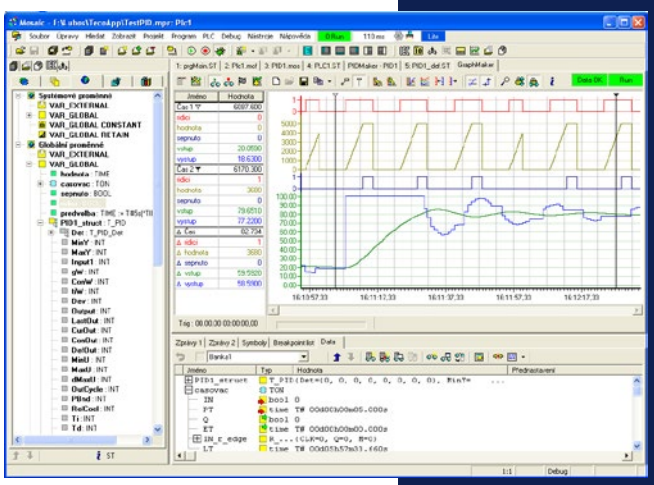
NetPLC – PLC network definition

- Easy defining of communication in PLC network, connection of operator panel at serial line or connection of external devices with standard protocols (PROFIBUS DP, Modbus, CAN).



Function blocks libraries

- FileLib – library for work with files at memory card.
- DataboxLib – work with internal memory Databox.
- FlashLib – data storing into internal flash memory.
- GSMLib – library for receiving and transmitting SMS messages.
- ComLib – receiving and transmitting of messages via ethernet and serial line.
- InternetLib – library of internet network services – SMTP, SNTP, http
- ModbusRTULib – communication by protocols Modbus RTU and Modbus TCP master
- BACnetLib – communication by protocol BACnet
- BuildingLib – library of functions for BMS
- RegoLib – library for regulation – regulators, time programs, errors history, signalling errors history.
- RexLib – library for advanced regulation.
- ModelLib – library for modelling.
- MotionControl – library for positioning.
- ToStringLib – converting of data to strings.
- CRCLib – calculation of checksum.
- SysLib – system functions.



Application profiles – licensed libraries for communication with third party systems

Basic features

- Application profiles are paid licences for selected function blocks in form of a code which is specific for every serial number, which has to be installed in basic module, so that uninterrupted operation of function block is achieved.

Use

- Function block can be turned on and tested in any application program without installed code, nevertheless only for a limited time. This time is reset when the system is reset.
- Codes are ordered with order numbers, basic module serial number has to be mentioned in order, so that the function block will be working in combination with the basic module.

Ordering data

IEC 60870	**TXF 689 01**	Application profile IEC 870-5-104-SLAVE
DSC	**TXF 689 03**	Application profile DSC PWR, Communication driver for security switchboard
Honeywell	**TXF 689 04**	Application profile Galaxy, Communication driver for security switchboard
PARADOX	**TXF 689 05**	Application profile Paradox, Communication driver for security switchboard
Cool Automation	**TXF 689 07**	Application profile CoolMaster, Communication driver Coolmaster Slave/Master
Miele	**TXF 689 08**	Application profile Miele, communication with appliances Miele@home
National KNX Czech Republic	**TXF 689 09**	Application profile KNX, Communication with KNX network through gateway BAOS 771/772
Bang & Olufsen B&O	**TXF 689 11**	Application profile Bang&Olufsen, Communication with system Masterlink B&O
STIEBEL ELTRON	**TXF 689 12**	Application profile Stiebel, communication with heat pumps Stiebel Eltron
Solar Monitor	**TXF 689 13**	Application profile SolarMonitor, Communication with frequency inverters through module SolarMonitor
JABLOTRON	**TXF 689 14**	Application profile Jablotron, Communication driver for switchboard JA-100
Atrea	**TXF 689 15**	Application profile ATREA, Communication driver for Atrea units
SAMSUNG	**TXF 689 16**	Application profile SAMSUNG, Communication driver for Air Conditioner Samsung
STUDER	**TXF 689 17**	Application profile STUDER LICENCE, Communication driver for hybrid inverter Studer Innotec
1-Wire	**TXF 689 18**	Application profile 1WIRE, Communication driver for gateway of 1 wire bus
Microsoft Azure	**TXF 689 19**	Application profile Azure, Communication with Microsoft Azure – cloud services
Tecnoalarm	**TXF 689 20**	Application profile Tecnoalarm, Communication driver for security switchboard
Fronius	**TXF 689 21**	Application profile Fronius, Communication driver for solar inverter
BOSE	**TXF 689 22**	Application profile Bose, Communication driver for SoundTouch multiroom audiosystem
KODI	**TXF 689 23**	Application profile Kodi, Communication driver for multiroom audiosystem
Satel	**TXF 689 26**	Application profile Satel, Communication driver for security switchboard
	TXF 689 99	Application profile Foxtrot CIB license, driver for modules INELS II

Notes:

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