

Foxtrot – How to place a wall switch on the website and later all the house

A lot of articles about Smart Houses are focusing on popularization of Home Automation and functions that may help us. Following article, on the other side, is prepared for those who are interested in tools we may use for creating such functions or who compare various systems and their possibilities. Described system Tecomat Foxtrot® has become very popular and proved by many references, universal and powerful tool in hands of installation companies, system integrators and programmers. And not only in field of Home Automation, but as well in heavy applications in industry, telemetry and transport. In many cases it became a brain and telecommunication node, which is assembled by domestic and foreign manufacturers into their products.

If you have a smartphone in your pocket, you have all the world there. Or at least the part of world, that is available on internet. Maps, images, music, video and books. Just everything. Do you have there a switch from a light you want to remotely switch off? If so, you know you need just one touch on display icon, which represents the switch, and it's done. If you still miss the comfort of the one touch control and you are interested in how simply to do it, follow the reading.

Let's begin with a classic wall switch and the light we want to control. Add the central module Foxtrot with inserted common SD memory card and small power supply of 24V DC of size one installation box. Connect the wall switch to one universal input of central module and the light to the relay contact. Via this the light will be connected to power 230V AC.

Connect Foxtrot into internet by common Ethernet wire with connectors RJ45. On the image there is as a gate into internet the ADSL router with small integrated switch and access point WiFi. By this we have created minimal let's say home network LAN/WLAN. And a set of components with price lower than brand new smartphone or tablet is ready.

For programming we connect the notebook (PC) by cable OR wireless, run Mosaic programming tool and make a program for switching on/off the light by a wall switch. In graphic editor CFC, what is a part of Mosaic tool, it means only to connect the input and output by mouse, what we may see on image 2. By the way, the series of articles about Mosaic programming learning you may read in magazine Automa.

By creating a connection of wall switch and light into Foxtrot, we have done the most important step to their availability from internet. Now we need to create own web page in Mosaic's tool WebMaker, place there an icon of wall switch and light, connect these icons with internal variables „Switch1“ and „LightA“, store the web page at SD card and that's it!

Jaromír Klaban, *Teco, a. s.*

And we get the comfortable remote control of the light. If we set the router the way it make accessible the address of Foxtrot to internet via its assigned IP address, we may promptly check, that the same control web page we may see from internet. Login dialog with name and password may be in case of connection in internal LAN eliminated in settings. The access from web page in internet is secured by name and password always.

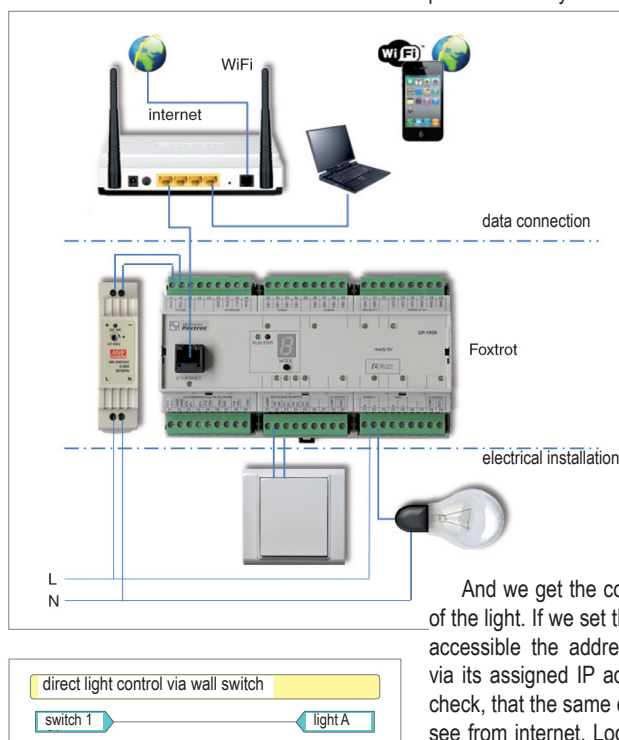


Image 2: An example of the simplest program created in graphic editor of Mosaic tool.

Image 1: The smallest set of Foxtrot for connecting electric installation to internet

Tool WebMaker, a part of Mosaic, let us to create from basic elements like: two statuses or more statuses image, display and display with value setting, image from camera, text etc. any graphic of own webpage. Each element may be tied with relevant object connected to Foxtrot. By clicking or touching on this element in web browser we may control connected object.

In case of connection like on image 1, the only thing should be done – enter in the web browser of your smartphone the IP address of Foxtrot in local network with WiFi access point. It is a part of router.

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We may also check this remote control from more devices/browsers at once. It's clear that this technology doesn't need installation of any specialized or licensed application. To use it we need what's always a part of computer, tablet or smartphone.

By this simple procedure and simple connection we may realize remote monitoring, diagnostics and control of any technology, switchboard, machine, house or a large building. And it's clear that Foxtrot may be installed into an existing device and read and make accessible on website the required values.

And if we connect even some actuators, we may also control remotely via website and internet. The advantage is that all connected device of various types unify remote access to one platform.

But Foxtrot is not only the communication device with web server. After an initial euphoria that we may see from anywhere the values and statuses of connected sensors and devices

On one branch of the CIB bus we may connect up to 32 modules. The largest module has 13 inputs and 21 switching relays. One central module may be connected with up to 10 CIB branches. If we multiply the numbers, we may calculate number of 10,000 inputs and outputs.

Company Teco supply modules for CIB bus under line CFox®. There are available built-in modules under wall switch

In CFox line we have also interior wall switches, we call them system wall switches, and room thermostats. This part of intelligent installation is most sensitive to a human taste of investors and for some of them it is the most important criterion for choice of the control system. Foxtrot in this way holds its openness to any designs from main manufacturers. And this trend is to be more developed in form of specialized CIB modules and gateways.

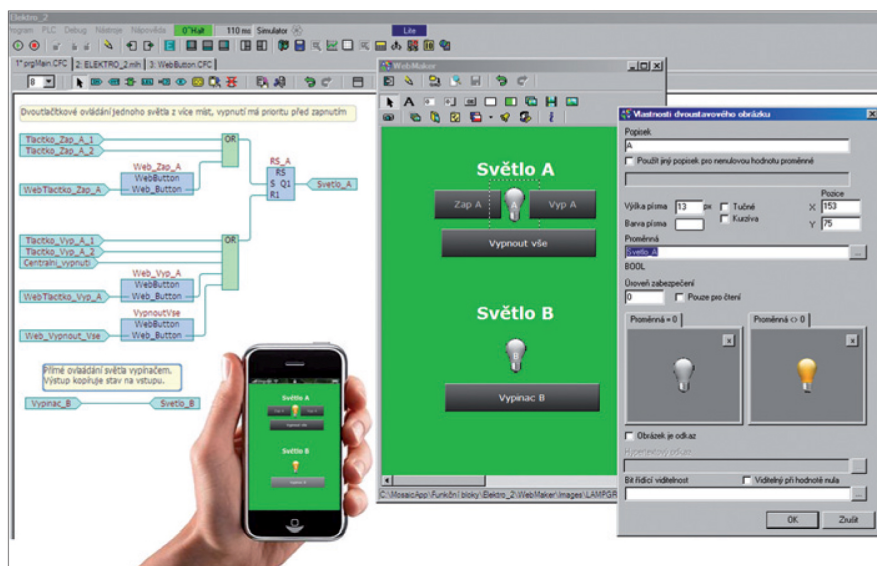


Image 3: Graphic program for button control of lights from more places, creation of simple webpage; with buttons and switches and their connection with program. The reset may be checked continuously on mobile phone.

and we may directly control the buttons of jalousies, lights, gates and doors or switch off the boiler, we may start thinking of Foxtrot as PLC, what means programmable controller. So it is a matured PLC, what may control any automation task. It is programmed according to international standards IEC, what means worldwide proved way of programming of technical devices.

A pair of inputs and outputs on central module is not enough for real applications. Foxtrot is, of course, expandable. Number of inputs and outputs (digital and analog) on central module may be expanded by more 120 fast inputs and outputs. Fast bus connects the modules both in switchboard and outside; they may be distributed up to 300m.

Much more input and outputs we may connect to Foxtrot by installation bus CIB-Common Installation Bus®. This bus has been developed in company Teco for easy and reliable two wires connecting of inputs and outputs (sensors and actuators) in houses and buildings. Wall switches, lights, jalousies, heating and other device are usually placed in the building with relatively low density, and connect them by industrial buses in not optimal solution. Free topology of CIB bus with possibility of any branches without need of impedance adaptation of each finishing looks similar like high power distribution. By two wires are all modules connected for communication and as well they are powered by a safe voltage 24V SELV. This enables by the way perfect back-up of all installation networks by two 12V accumulators. And this is in intelligent house installations important advantage.

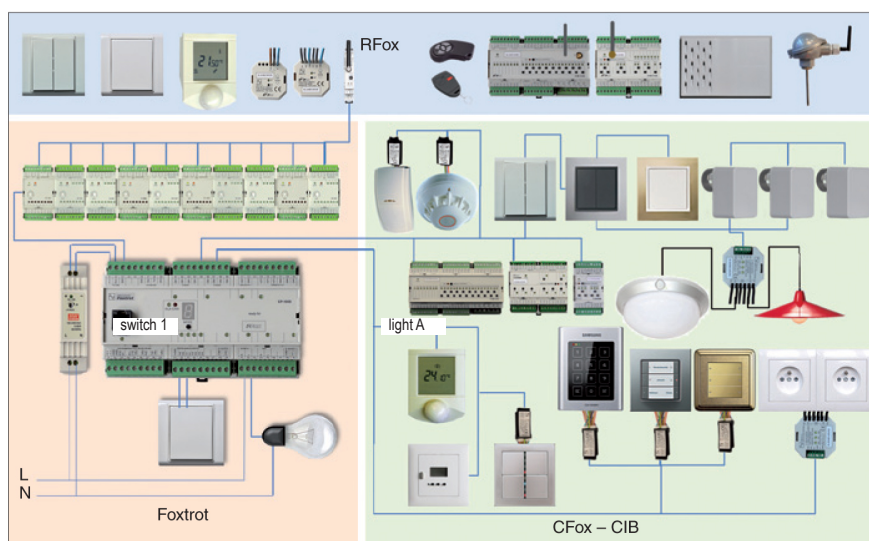


Image 4: Foxtrot may be expanded even by wireless modules

or socket or cover of other device with useful combinations for connection of contacts, temperature sensors, relay or analog outputs and for control of LED indicators. Other modules are designed for connection of locks, code keyboards and wide range of security and fire detectors. Modules for switchboards contain a lot of switching relays. Also there are available modules for continuous control of lifting and colour LED chips and LED stripes. A family of CFox modules contains also modules with IP65 protection designed for outdoor temperature sensors, humidity sensors or installation in humid and damp places like basement etc.

Foxtrot wireless

What is better – wire or wireless system? The best is the combination of both. Next communication channel, fully integrated into system Foxtrot is wireless network of type master-slave with name RFox®. It works in licence-free band 868MHz with good spreading in buildings. With one master-module may work 64 slave modules. Each one may be a router and transfer information to others, who cannot be in direct range of central point. Maximum is 4 jumps in line and this solution extend the range of wireless network and help to cover the places with bad radio covering.

In RFox line we found wide range of interior, switchboard and built-in modules. Foxtrot is really unique system on the market, which let you to create hybrid installation with any ratio of bus and wireless modules. The extreme solution is fully wireless installation with up to 256 wireless modules under one central module Foxtrot.

Next communication functions

Smart House today, it is a connection of all devices in the house and linking the mutual interaction, which brings new added value, new functions and new control possibilities. There are more system on the market with own central module and advanced specialized function. In this group we may see security systems, access systems, multimedia centres and home theatres, camera monitoring systems, energy metering systems, heat pumps, air-conditioning units and recently even home appliances.

Usually they communicate via serial channel or Ethernet. For all of them Foxtrot has at central module one Ethernet port and up to 4 free programmable serial channels. In Mosaic we may set them on famous standard protocols like Modbus, M-bus, Profibus DP, CAN etc.

You may create the communication by yourself at anytime. By this way our customers are connecting multimedia systems of American companies AMX, AVIT OR air-conditioning SAMSUNG. In the Netherlands the customer integrates Foxtrot with GPS and use as control system of the sea yachts.

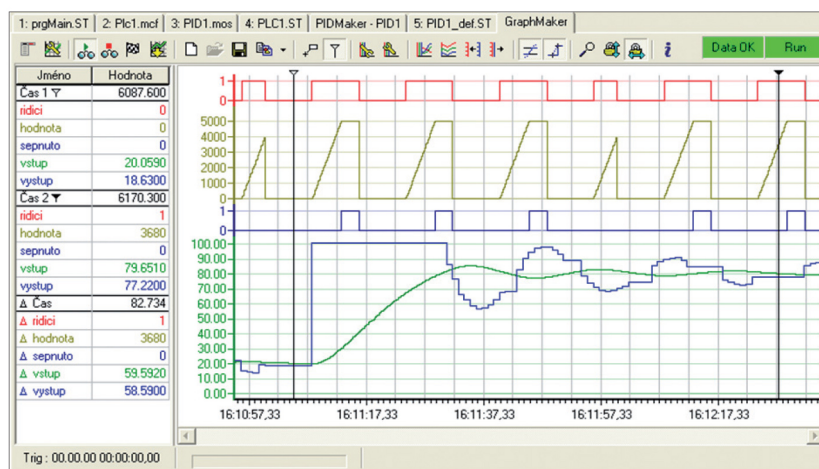


Image 5: Datalogger – Choice and setting events and signals for archiving runs in user friendly environment, again via web pages

On Ethernet port there are up to 8 free programmable connections UDP OR TCP/IP

As well here we may configure standard protocols like Modbus TCP OR BACnet. Manufacturer supports communication with the common devices on the market by system libraries, available for composing the program in Mosaic. We may mention these supported systems: security systems DSC, Paradox, Tecnoalarm a Galaxy, from multimedia systems Control4, Bang&Olufsen. From air-conditioning units: LG and communication with CoolMaster. Free programmability and configuration of communication channels let you to avoid waiting on manufacturer.

Foxtrot communicates with Foxtrot

All Tecomat systems, even Foxtrot, have integrated two-way system communication. So it is possible to create higher hierarchy and distributed systems, where each node holds full function of central module including the data reading and storing.

Integrated web server let Foxtrot communicate with other servers on internet. Foxtrot may ask weather forecast servers and then show sorted local forecast in own web pages. Its backed-up calendar and time may Foxtrot synchronize with time servers.

Datalogger – integrated even recording and archiving

Foxtrot has integrated port for SD/SDHC/MMC memory cards with capacity up to 32 GB. Foxtrot is storing here the files of user web pages and making this file oriented and energy independent memory accessible for free use by user. Foxtrot is on field of high volume data recording independent of other devices. By the way, this saves consumption of energy and installation space.

A new tool called Datalogger enables fast setting of Foxtrot as programmable data recorder, event recorder and alarm recorder and diary. We may even record the images from cameras. All events and measured values are recorded with time sign, and easy right in the place, where are executed all control and communication functions and where all data are together in any time – in central module.

It is again an advantage comparing to distributed systems, because they need a specialised recording module.

Conclusion

Foxtrot is representative of centralised concept of data processing in home automation as well as in industrial application. It holds and develops possibility to distribute all peripherals at long distance, even wireless. Strongly powered communication functions, integration of web technologies and free programming and openness of the system make it powerful tool for project designers, programmers and installation companies. All of them find with Foxtrot a solution for individual needs of their customers and users.

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Image 4: Foxtrot may be expanded even by wireless modules



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AMT měřicí technika, spol. s r. o., Leštinská 2418/11, 193 00 Praha - Horní Počernice, fax: 281 924 344, tel.: 281 925 990, tel.: 602 366 209, e-mail: info@amt.cz