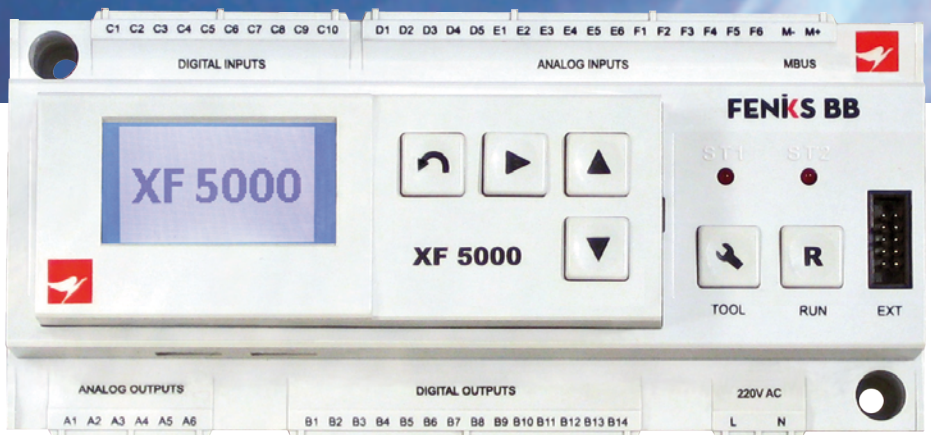
MICROPROCESSOR CONTROLLER

XF 5000



SMART TECHNOLOGIES

XF 5000 MICROPROCESSOR CONTROLLER was developed on the platform of the latest technologies in electronics and informatics, and based on our own knowledge and years of experience in the field of automated regulations. It is designed for automatization and management of thermo-technical, thermoenergetical and technological systems as a freely programmable logic controller.

XF 5000 comes with a set of pre-programmed applications for heating, cooling, ventilation and air-conditioning systems. User can also take advantage of the user- friendly software tools and develop a regulating program for specific needs and save it in controller's internal memory.

Controller can be used in its basic form or with additional modules, which increase the number and type of digital input/output signals, analogue inputs and outputs and available communication protocols.

Functional keyboard and graphic LCD screen enable an overview of the current measured values, input of set-point values and "manual" control of electric actuators. Information is organized on two sets of screens.

INPUT-OUTPUT CONNECTIONS:

- 4 analogue inputs (4–20 mA / 0–5 V / 0–10 V)
- 4 analogue NTC 2k2 inputs
- 5 analogue Pt 1000 inputs
- 8 digital inputs (24 V DC, optically isolated)
- 4 analogue outputs (0–10 V)
- 8 digital outputs (3 relay + 5 SSR)
- MBUS master communication port
- RS232/RS485 or Ethernet communication port
- USB communication port for connecting to a PC

The first set consists of the INFO screens which show system information (measured and set values, input and output, statuses, alarms, etc.). INFO screen layout and contents can vary in accordance with the currently active application. During the compilation of user-created programs, the user himself creates corresponding INFO screens.

The second set consists of standard MENY screens where user can see and change set values, input and output status, date and time, communication parameters, currently active application, user interface language, etc.

Two levels of password protection (**user** - change of set values and manual control and **system** - change of currently active application and language) prevent unauthorized access.

Set values are permanently stored in controller's internal memory.

Time-dependent applications (heat reduction, closed time-interval and time-sequence applications, scheduled change of set values) are enabled by built-in real time clock.

MBUS master communication port enables direct connection with max. 4 devices equipped with MBUS slave port (heat meters, circulating pumps and similar "smart" devices).

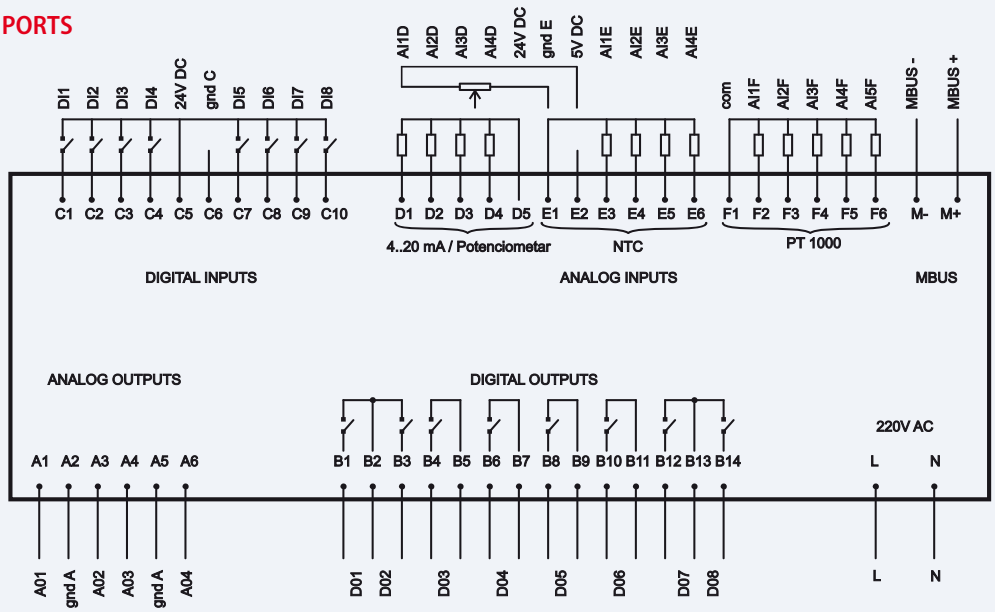
XF 5000 can be connected to the supervisory control and data acquisition systems (SCADA) using one of the available communication interfaces (RS232, RS485, Ethernet). Built-in standard communication protocols enable the controller to be integrated into any of the major SCADA systems and full compatibility with the standard software development tools.

FENIKS BB

FX 5000 is also ready for use with Feniks BB SCADA system CENUS-3000.

By adding optional communication modules, XF 5000 can be connected to BACnet, LonTalk, CAN, PROFINET, Profibus or other communication networks.

INPUT-OUTPUT PORTS

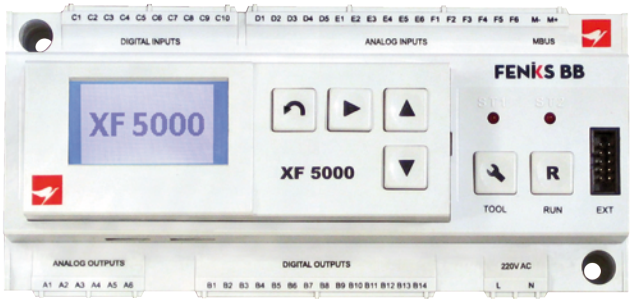


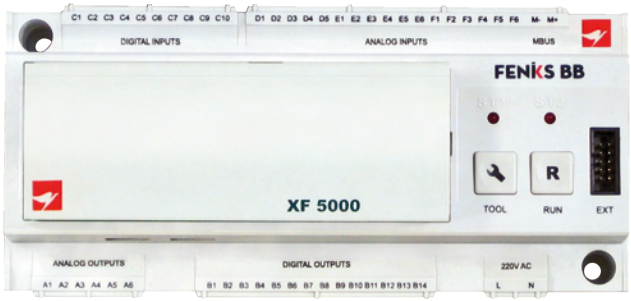
CONSOLE (KEYBOARD AND DISPLAY) Settings can be accessed by the use of the console with LCD screen and a 4-key keyboard. Navigation through built-in MENY and INFO screens is intuitive and adjusted to users of all skill levels. Console can be integrated or used as independent remote module (XF-OP1) with cable connection to the controller.

Display is backlit LCD screen, with 6 lines of text and graphic resolution of 128 x 64 pixels.

PRE-PROGRAMMED APPLICATIONS. XF 5000 comes with a set of pre-programmed applications for different HVAC&R systems:

- heat substations in direct and indirect district heating systems
- sanitary hot water preparation, with water, electric or combined heaters
- ventilation and air-conditioning chambers





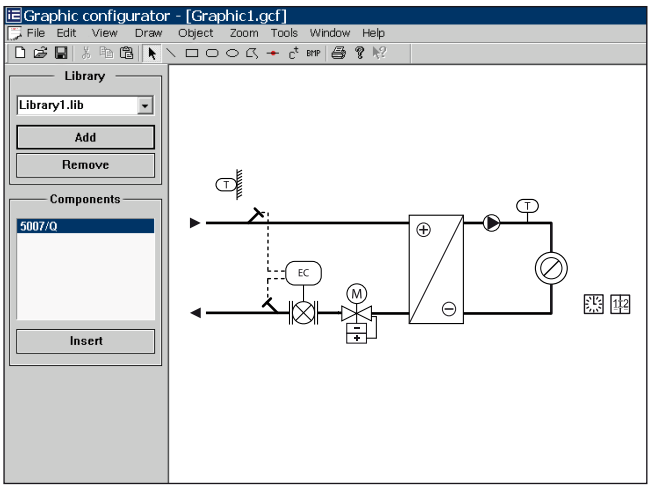
ADDITIONAL MODULES. Additional modules increase the number of the input/output signals and available communication ports.

	Max. no. of modules	Number and type of signals
Digital inputs module (XF–MDU)	3	8 (24 V DC, optically isolated)
Analogue inputs module (XF–MAU)	1	5 Pt 1000 + 4 (NTC / 4–20 mA)
Digital outputs module (XF–MDI)	1	8 (relay or SSR)
Analogue outputs module (XF–MAI)	1	4 (0–10 V or 4–20 mA)
Communication module (XF–KOM)	1	RS232 / RS485 / Ethernet

The modules have a cable for connecting with the previous module or controller.

Each of the built-in programs includes controlling a large number of related thermotechnical applications. For example, program designed for heat substations control can be used in the following variants:

- with or without primary water flow limit function
- correction according to the room temperature
- application of daily and weekly reduction programs schedule
- heating pump control in accordance with various criteria
- regulation of up to four heating circuits



CONFIGURATION SOFTWARE. Software programming tools (XF 5000 - TOOL) can be installed on the standard PC configuration without any additional demands. User-friendly graphic editor enables user to design applications by dragging and dropping software objects, linking them and setting their parameters.

Software objects, available to the user while designing applications for the controller, are divided into the following libraries:

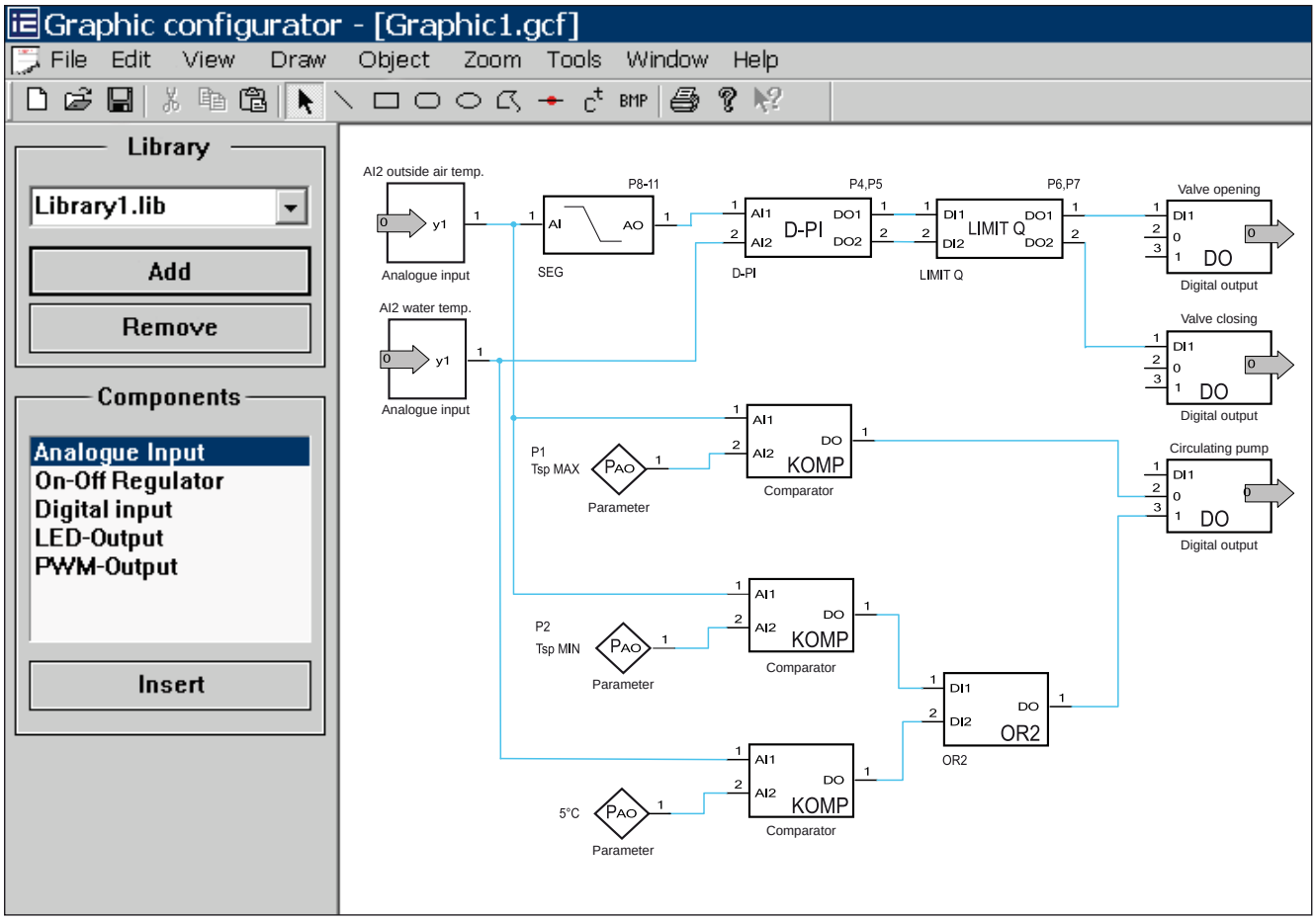
- input-output objects
- numeric objects
- logic objects
- time objects
- control objects

Graphic editor is intuitive, user-friendly and time efficient. All software object connections are verified during the design process.

Graphic editor is also used for INFO screens creation, assigning the names of the signals displayed on the MENY screens, defining the set-point ranges etc.

User designed applications are stored on the PC's hard drive and transferred to the controller via USB interface. After this, application can be activated.

Software programming tool is delivered with thorough user manual for controller programming.



ORDERING DATA

Microprocessor controller XF 5000:

XF 5000 – ☐

Console:
K with console
N without console

Example: **XF 5000-K** stands for XF 5000 controller with console.

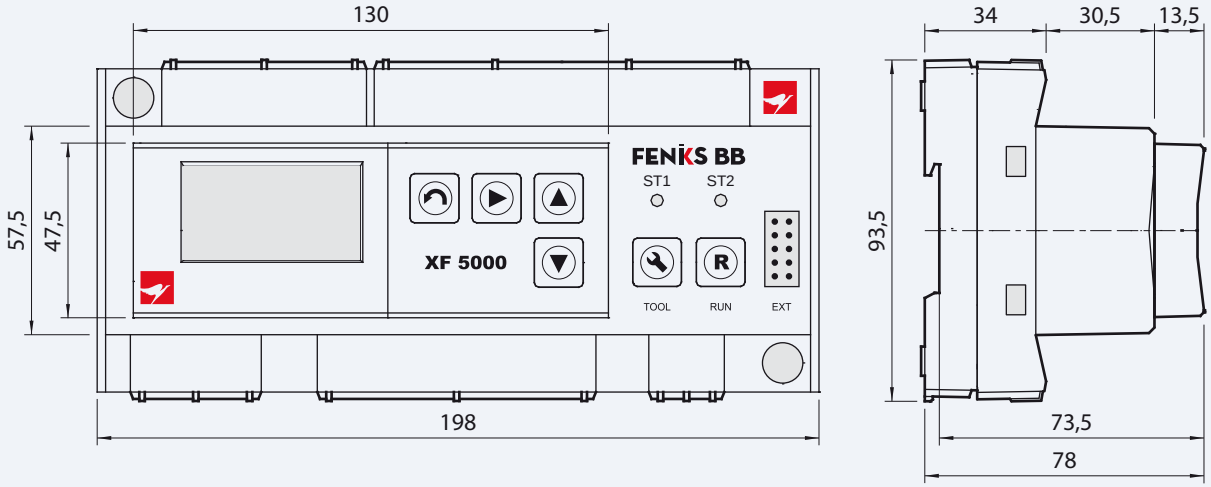
Optional:

Operator panel:
XF – OP1 . . . . . panel with keyboard and LCD screen

Additional modules:
XF – MDU . . . . . digital inputs module
XF – MAU . . . . . analogue inputs module
XF – MDI . . . . . digital outputs module
XF – MAI . . . . . analogue outputs module
XF – KOM . . . . . communication module

Software tools:
XF 5000 – TOOL

DESIGN AND INSTALLATION



Controller can be snap-mounted on DIN rail (35 mm) or screwed directly to a mounting plate using two holes on the case.

TECHNICAL DATA

power supply	230V +/- 10%, 50Hz	**RSO certificate**	SRPS IEC CISPR 14-1
power consumption	max 15W	**working temperature**	0 – 50 °C
output load	max 0.5A / 250V	**working humidity**	max 75%
display	graphical 128 × 64 pixels	**weight**	0,5 kg
protection class	IP 40	**installation**	DIN rail 35 mm

* Default available interface language packs are Serbian and English. Other language packs are available on request.

Before disposal, the controller must be dismantled into structural components and submitted to the authorized organizations for gathering and recycling, for the purpose of environmental protection.
Local legislations must be obeyed when disposing of the components.

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Feniks BB has implemented and maintains quality and environment management systems in accordance with international standards ISO 9001:2008 and ISO 14001:2004.