

Facility Explorer

FX Supervisory Controllers

Description

FX Supervisory Controllers are Web-based supervisory-class controllers in the Facility Explorer product family. FX Supervisory Controllers manage networks of field controllers using open communication protocols, such as BACnet®, LONWORKS®, and N2 protocols. FX Supervisory Controllers support a full set of building automation features, such as scheduling, alarming, histories, data sharing, energy management, totalization, and customized control routines, which are specifically designed for commercial facilities.

Each FX Supervisory Controller includes a graphical system user interface and configuration tool that you can access with a Web browser. Remote access is easily achieved from an Internet, intranet, or dial-up connection. Multiple users can concurrently connect to the FX Supervisory Controller. You can manage security and presentation preferences through user profiles, logon IDs, and passwords.

FX Supervisory Controllers are a family of controllers similar in function and overall capabilities. The FX20, FX60, and FX70 are compact DIN rail mountable controllers with the capability for external input and output points.

In addition, the FX Supervisory Controllers' hardware and software design is modular, so you can add accessories, such as communications cards, input and output modules, and software options, if needed. This design allows you to select the controller most appropriate for the size of your facility and those options best needed to control it.

Refer to the *FX Supervisory Controller Product Bulletin (LIT-12011406)* for important product application information.

Repair Information

If the FX Supervisory Controller fails to operate within its specifications, replace the unit. For a replacement controller, contact the nearest Johnson Controls® representative.



FX Supervisory Controllers

Features

- Web-based user interface (UI)
- adoption of industry standard communication protocols
- embedded configuration tool
- modular design
- small, compact design
- FX Workbench

Selection Charts

FX Supervisory Controller Ordering Information

Product Code Number	Description
LP-FX2011N-1	FX20: Includes 128 MB RAM/64 MB Flash, 2 10/100 Mbps Ethernet ports, 1 non-isolated RS-485 port, 1 RS-232 port, 1 Niagara Direct Input/Output (NDIO) port, 2 communication card option slots, embedded FX Workbench, Web User Interface, Niagara driver, oBIX driver, and N2 driver.
LP-FX2021N-1	FX20 with BACnet MS/TP Protocol: Includes 128 MB RAM/64 MB Flash, 2 10/100 Mbps Ethernet ports, 1 non-isolated RS-485 port, 1 RS-232 port, 1 NDIO port, 2 communication card option slots, embedded FX Workbench, Web User Interface, Niagara driver, oBIX driver, N2 driver, and BACnet MS/TP driver.
LP-FX6011N-1	FX60: Includes 128 MB RAM/128 MB Flash, 2 10/100 Mbps Ethernet ports, 1 RS-485 port, 1 RS-232 port, 1 NDIO port, 2 communication card option slots, embedded FX Workbench, Web User Interface, Niagara driver, oBIX driver, and N2 driver.
LP-FX6021N-1	FX60 with BACnet MS/TP Protocol: Includes 128 MB RAM/128 MB Flash, 2 10/100 Mbps Ethernet ports, 1 RS-485 port, 1 RS-232 port, 1 NDIO port, 2 communication card option slots, embedded FX Workbench, Web User Interface, Niagara driver, oBIX driver, N2 driver, and BACnet MS/TP driver.
LP-FX7011N-0	FX70: Includes 1 GB RAM/1 GB Flash, 1 RS-232 port, 1 RS-485 port, 2 1 Gbps Ethernet ports, 1 NRIO port, 2 communication card option slots, embedded Niagara driver, oBIX driver, N2 driver, FX Workbench, and Web User Interface.
LP-FX7021N-0	FX70 with BACnet MS/TP Protocol: Includes 1 GB RAM/1 GB Flash, 2 1 Gbps Ethernet ports, 1 RS-485 port, 1 RS-232 port, 1 NRIO port, 2 communication card option slots, embedded FX Workbench, Web User Interface, Niagara driver, oBIX driver, N2 driver, and BACnet MS/TP driver.
LP-FX20BDEM-1	Demo version of FX20: Includes all software modules and drivers. Intended for engineering and/or demonstration purposes only (not allowed for actual project installations). You must also purchase office support and renewal fees to activate this FX20. License expires yearly on October 31 and must be renewed yearly to continue operation.
LP-FX60BDEM-1	Demo version of FX60: Includes all software modules and drivers. Intended for engineering and/or demonstration purposes only (not allowed for actual project installations). Office support and renewal fee must also be purchased to activate this FX60. License expires yearly on October 31 and must be renewed yearly to continue operation.

FX Workbench Ordering Information (Part 1 of 2)

Product Code Number	Description
LP-FXWB-COPY	FX Supervisory Controller family software, delivered on DVD. Includes latest installation images for FX Server, FX Workbench, and FX Alarm Portal Client. Licenses not included—order licenses separately.
LP-FXWBDEM-0	Engineering/demo license for FX Workbench client software. Enables all features needed to engineer and demonstrate FX Supervisory Controllers and FX Server stations. Intended for installing contractors. Requires annual support fee. Expires yearly.
LP-FXWBE-0	End user license for FX Workbench client software. Enables those features needed to operate and reconfigure FX Supervisory Controllers and FX Server stations only via an online connection (cannot create new stations off line). Intended for end users (operators). Never expires.

FX Supervisory Controllers (Continued)

FX Workbench Ordering Information (Part 2 of 2)

Product Code Number	Description
LP-FXWBALM-0	FX Alarm Portal Client license. Enables only FX Alarm Portal and Alarm Console features. Intended for end users. Never expires.
LP-FXSWUPG-0	License file enabling a one-time software upgrade for one copy of FX Workbench or FX Alarm Portal Client. Software not included (order LP-FXWB-COPY to obtain latest copy of software).

Accessories

FX Supervisory Controller Hardware Accessories Ordering Information

Product Code Number	Description
LP-FXNDIO16-0	16 channel input/output module for the FX20/FX60 Supervisory Controllers: Includes 8 universal inputs, 4 relay outputs, and 4 0-10 V analog outputs, maximum of 4 per FX20/FX60 Supervisory Controller, or 2 if combined with NDIO34.
LP-FXNDIO34-0	34 channel input/output module for the FX20/FX60 Supervisory Controllers: Includes 16 universal inputs, 10 relay outputs, and 8 0-10 V analog outputs, maximum of 1 per FX20/FX60/FX70 Supervisory Controller. Also provides power to the FX20/FX60/FX70 Supervisory Controller using externally connected 24 VAC transformer or 24 VDC power supply.
LP-FXRIO16-0	Remote input/output module for the FX Supervisory Controllers. Includes 8 universal inputs, 4 relay outputs, and four 0-10 V analog outputs.
LP-FXLONFTT-1	LONWORKS communication card for the FX Supervisory Controllers: 78 kbps, FTT-10A, 2-position removable screw-terminal connector plug. Order LONWORKS driver separately.(LP-FXLON-0).
LP-FXRS485-0	Dual port RS-485 communication card for the FX Supervisory Controllers: electrically isolated, two 3-position removable screw-terminal connector plugs.
LP-FXWTC-0	Wireless TEC Option Card includes option card, mounting bracket, and direct-mount antenna.
TEC20-A-1	Replacement antenna for Wireless TEC Option Card.
TEC20-RA-1	Remote antenna for Wireless TEC Option Card when it is installed inside a metal cabinet or when remote antenna mounting is required by physical installation. Includes 0.53 m (1.75 ft) cable.
LP-FXRS232-0	Single port RS-232 communication card for the FX Supervisory Controller: 115,200 max baud rate, DB-9M connector.
LP-FXMDM-0	56 kbps, auto-dial/auto-answer modem for the FX Supervisory Controllers: RJ-11 connector, disables onboard RS-232 port, maximum of one per FX Supervisory Controller.
LP-FXPMUS-0	Power module for FX Supervisory Controller: 90-240 VAC, 50/60 Hz, U.S. wall adapter.
LP-FXPMEU-0	Power module for FX Supervisory Controller: 90-240 VAC, 50/60 Hz, European wall adapter.
LP-FXPMUK-0	Power module for FX Supervisory Controller: 90-240 VAC, 50/60 Hz, U.K. wall adapter.
LP-FXPM24-0	Power module for FX Supervisory Controller: 24 VAC/DC, DIN rail mountable.
LP-FXPM263-0	Power module for FX Supervisory Controller: 90-263 VAC/DC, 50/60 Hz DIN rail mountable.
LP-KITFX2BAT-0	NiMH replacement backup battery assembly for FX20 and FX60.
LP-KITFX7BAT-0	FX70 replacement backup battery assembly.
LP-KITFX7HW-0	Hardware Bag for FX70, containing screw terminal connector plugs (two 6-position, one 2-position, earth grounding wire).
LP-KITGPRSA-0	Replacement right-angle GSM/GPRS quad-band SMA coax-mounted stub antenna.
LP-KITSEDAT-0	Replacement adjustable-angle 2.4 GHz RP-SMA coax-mounted stub antenna.
LP-KITSED3T-0	3-terminal wiring plug for RS-485.
LP-KIT7MEM-0	1 GB DDR-2 333 MHz Small Outline Dual In-line Memory Module (SODIMM) memory module (standard replacement for FX70).
LP-FXGPRSW-0	GPRS Modem option card for FX20, FX60, FX70 with Wyleless SIM card.
LP-FXGPRSE-0	External mounting for GPRS modem antenna. Included is a 6.56 ft. (2m) SMA-type coax extension cable and steel bracket for wall or panel mounting.
LP-FXGPRSS-0	GPRS Modem SIM card replacement provisioned by Wyleless.
LP-FXSED-0	Sedona Framework option card with both wireless 6LoWPAN and wired RS-485 port, based on the Jennic JN5139 wireless microcontroller. Includes stub antenna.
LP-FXSEDEXT-0	External mounting for Sedona Framework antenna. Includes a 6.56 ft (2m) RP-SMA type, coax extension cable and mounting bracket.
LP-FXSRAM-0	Static RAM option card for battery-less FX supervisory controllers.
LP-FX70WIFI-0	Mini PCI 802.11 Wi-Fi adapter card for an FX70.

FX Supervisory Controller Software Accessories Ordering Information (Part 1 of 2)

Product Code Number	Description
LP-FX60EX256-0	License enabling 256 Mb memory expansion for one FX60.
LP-FXBACIPC-0	License enabling BACnet IP client (import) driver for one FX Supervisory Controller.
LP-FXBACIPS-0	License enabling BACnet IP server (export) driver for one FX Supervisory Controller.
LP-FXBACMS-0	License enabling BACnet MS/TP driver for one FX Supervisory Controller.
LP-FXLONIP-0	License enabling LONWORKS IP driver for one FX Supervisory Controller.
LP-FXLON-0	License enabling LONWORKS twisted pair driver license for one FX Supervisory Controller.
LP-FXMBUS-0	License enabling M-Bus driver for one FX Supervisory Controller.
LP-FXMDBRTU-0	License enabling MODBUS RTU client (import) driver for one FX Supervisory Controller.
LP-FXMDBRTUS-0	License enabling MODBUS RTU server (export) driver for one FX Supervisory Controller.



FX Supervisory Controllers (Continued)

FX Supervisory Controller Software Accessories Ordering Information (Part 2 of 2)

Product Code Number	Description
LP-FXFLEX-0	License enabling Flex serial Driver over RS-232 or RS-485.
LP-FXMDBTCP-0	License enabling MODBUS TCP client (import) driver for one FX Supervisory Controller.
LP-FXMDBTCP-0	License enabling MODBUS TCP server (export) driver for one FX Supervisory Controller.
LP-FXSNMP-0	License enabling Simple Network Management Protocol (SNMP) driver for one FX Supervisory Controller.
LP-FXCCN-0	License enabling Carrier® Communication/Comfort Network (CCN) driver for one FX Supervisory Controller
LP-FXMCQU-0	License enabling McQuay® OPM driver for one FX Supervisory Controller
LP-FXAINF-0	License enabling Andover™ Infinity driver for one FX Supervisory Controller
LP-FXSMS-0	License enabling Simple Messaging Service (SMS) driver for one FX Supervisory Controller.
LP-FX40UPG-0	License enabling one-time, new release software upgrade for one FX Supervisory Controller.
LP-FXAPHP-0	License enabling the American Auto-Matrix Public Host Protocol (PHP) driver for one FX Supervisory Controller.
LP-FXAPUP-0	License enabling the American Auto-Matrix Public Unitary Protocol (PUP) driver for one FX Supervisory Controller.
LP-FXAC-0	License enabling the Andover AC 256 driver for one FX Supervisory Controller.
LP-FXGLOB-0	License enabling the Global Cache driver for one FX Supervisory Controller. Enables control of IR controlled AV equipment via an RS-232 connection to a Global Cache FC module.
LP-FXHELV-0	License enabling the Helvar Lighting Control driver for one FX Supervisory Controller.
LP-FXHORT-0	License enabling the European Hortsmann meter driver for one FX Supervisory Controller.
LP-FXJOS-0	License enabling the Josam Grease Trap Sensor driver for one FX Supervisory Controller.
LP-FXLANG-0	License enabling the Lang Oven (over RS-232 or RS-485) driver for one FX Supervisory Controller.
LP-FXVDRT-0	License enabling the Veeder-Root driver for one FX Supervisory Controller.
LP-FXEIB-0	License enabling the EIB/Konnex IP Driver for one FX Supervisory Controller.
LP-FXSADR-0	License enabling Simple OpenADR driver for communication between FX Supervisory Controller and Akuacom DRAS. Limited to one client connection. Includes CRYPTO license for the SSL connection.
LP-FXSADR1-0	License enabling one additional connection to OpenADR compliant DRAS.

Technical Specifications

FX Supervisory Controller (Part 1 of 2)			
	FX20	FX60	FX70
Enclosure/ Mounting	Plastic/DIN Rail		
Dimension	6.313 x 4.820 x 2.438 in. (158.75 x 101.6 x 60.325 mm)		8.5 x 6 x 2.625 in. (216 x 152 x 68 mm)
Power Supply	DIN Rail Power modules		
Battery Backup	5-minute internal		5-minute internal, optional external
Processor	IBM® PowerPC® 405EP at 250 MHz	PowerPC 440EP at 524 MHz	PowerPC 440EPx at 652 MHz
RAM Memory	128 MB RAM	128 MB RAM (upgradeable to 256 MB)	1 GB RAM DDR2
Flash Memory	64 MB Flash	128 MB Flash	1 GB Flash
Environment	Operating Temperature: 0 to 50°C (32 to 122°F), Storage Temperature: 0 to 60°C (32 to 140°F), Relative Humidity: 5 to 95%, noncondensing		
Communication Ports			
Onboard	2 Ethernet 10/100 Mbps 1 RS-485 1 RS-232 2 option slots		Ethernet 1 Gbps 1 RS-485 (Isolated) 1 RS-232 2 option slots
Optional	Two options slots (any 2 of the following, except where noted): • Dual port RS-485 • LON FT/TP-10 • Modem (maximum of one and disables onboard RS-232) • RS-232 • Wireless TEC (maximum of one and disables onboard RS-232) • RS-232 • GPRS modem (maximum of one)		
Network Drivers			
Embedded	N2, Niagara, oBIX, BACnet (on selected models)		
Optional	LONWORKS, BACnet MS/TP, BACnet IP Client, BACnet IP Server, MODBUS RTU Client, MODBUS RTU Server, MODBUS TCP Client, MODBUS TCP Server, SNMP, SMS, Flex Serial, Carrier CCN, McQuay OPM		
Direct I/O			
Onboard	None		

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2012 Johnson Controls, Inc. www.johnsoncontrols.com

FX Supervisory Controllers (Continued)

FX Supervisory Controller (Part 2 of 2)			
	FX20	FX60	FX70
Optional	Up to 66 (via NDIO modules)		Up to 256 via 16 Remote I/O Modules FXRIO16
Local (NDIO)	Up to 66 total I/O (via optional NDIO modules)		None
Remote I/O	Up to 64 I/O via 4 Remote I/O Modules (FXRIO16)		Up to 256 I/O via 16 Remote I/O Modules (FXRIO16)
Compliance	United States UL Listed, File E107041, CCN PAZX, under UL 916, Energy Management Equipment FCC compliant to CFR 47, part 15, subpart B, class A		
	Canada UL Listed, File E107041, CCN PAZX7, under CSA C22.2 No. 205, Signal Equipment Industry Canada compliant to ICES-003		
	Europe CE Mark— Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.		
	BACnet International: BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Building Controller (B-BC)		



Local Input Output Modules	
Product Codes	LP-FXNDIO34-0: 16 universal inputs, 10 relay outputs, 8 analog outputs LP-FXNDIO16-0: 8 universal inputs, 4 relay outputs, 4 analog outputs
Dimensions	NDIO34: 6.313 x 4.820 x 2.438 in. (16.04 x 12.24 x 6.19 cm) NDIO16: 3.2 x 4.828 x 2.437 in. (8.2 x 12.24 x 6.19 cm)
Universal Input Types Supported	10k ohm Type 3 thermistors. Thermistor Sensor Range: -23.3 to 115.5°C (10 to 240°F). Input accuracy is in the range of ± 1% of span. Characteristic curve is customizable. 0-10 V; accuracy is ± 2% of span, without user calibration; uses an external resistor for current input (four provided, mounted by installer on terminal connections) 4-20 mA current loop; accuracy is ±2% of span, without user calibration; self powered or board-powered sensors accepted Dry contact: V open circuit, 300- µA short-circuit current Pulsing dry contact at a rate of up to 20 Hz; 50% duty cycle
Digital Outputs	Form A relay contacts suitable for on/off control only; floating control not supported, Max voltage 30 volts AC or DC, 0.5 A max current rating
Analog Outputs	0-10 VDC, Minimum load supported per output is 2,500 ohms minimum or 4 mA drain maximum

Remote Input Output Modules	
Product Codes	LP-FXRIO16-0: 8 universal inputs, 4 relay outputs, 4 analog outputs
Dimensions	4 x 3.625 x 2.625 in. (10.16 x 9.2 x 6.7 cm)
Universal Input Types Supported	10k ohm Type 3 thermistors. Thermistor Sensor Range: -23.3 to 115.5°C (-10 to 240°F). Input accuracy is in the range of ±1% of span. Characteristic curve is customizable. 0-10 V; accuracy is ±2% of span, without user calibration; uses an external resistor for current input (four provided, mounted by installer on terminal connections) 4-20 mA current loop; accuracy is ±2% of span, without user calibration; self powered or board-powered sensors accepted Dry contact: V open circuit, 300- µA short-circuit current, Pulsing dry contact at a rate of up to 20 Hz; 50% duty cycle
Digital Outputs	Form A relay contacts suitable for on/off control only; floating control not supported, Max voltage 30 volts AC or DC, 0.5 A max current rating
Analog Outputs	0-10 VDC, Minimum load supported per output is 2,500 ohms minimum or 4 mA drain maximum

FX Workbench Requirements	
Processor	Intel® Pentium® 4, 1 GHz or higher
Operating System	Microsoft® Windows® 7, Microsoft Windows 2003 or Microsoft Windows Server® 2008 (If Microsoft IIS is disabled), Microsoft Virtual Server 2008, Microsoft Windows XP® Professional Operating System Microsoft Windows Vista™ Operating System. The Tunneling Service does not start automatically if installed on Microsoft Windows Vista operating system; however, you can manually start the Tunneling Service.
Web Browser	Microsoft Internet Explorer® Web browser Version 5.0 or later, Mozilla Firefox
Memory	512 MB minimum
Hard Disk	1 GB minimum, 5 GB recommended
Network Support	Ethernet 10/100 Mbps with RJ-45 connector