

Facility Explorer Controllers Platform

FX16

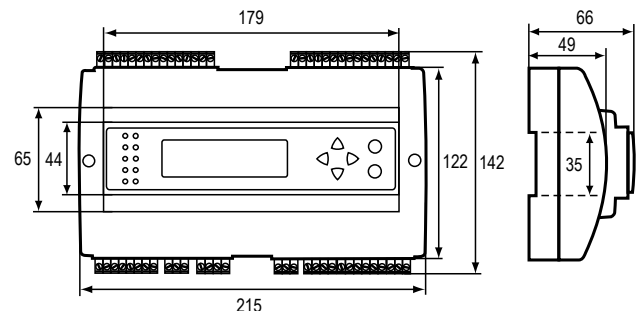
Master Controller

The FX16 Master Controller is a high performance field controller in the Facility Explorer system designed for commercial Heating, Ventilating, Air Conditioning, and Refrigeration (HVACR) applications such as chillers, rooftops, packaged air conditioning units, Air Handling Units (AHUs) and close control units. The FX16 has 27 physical inputs and outputs and supports a wide range of temperature sensors and actuating devices. Up to 64 additional physical inputs and outputs may be achieved by adding XT/XP expansion modules.

The FX16 can manage a distributed control application with up to 16 FX slave controllers (FX05 Advanced, FX06, FX07, FX14, FX15). Parameters in the distributed control application can be displayed and modified from the optional user interfaces.

The FX16 also features communications services to transmit event notification messages via Short Messaging Service (SMS) or by e-mail. With its onboard Web server, you can browse and make adjustments to parameters of the application from a remote location.

The FX16 Master Controller is fully configurable or programmable, using the FX Tools software package, for a wide range of commercial HVAC and refrigeration applications. The FX16 Master Controller is available with an optional serial communication card for integration into an N2 Open, LONWORKS® or BACnet compatible Building Automation System (BAS).



Dimensions in mm

Features

- Distributed control application
- Embedded Web server
- Communication services
- Modular communication card options
- Freely programmable or configurable using FX Tools software package
- Onboard trend and event logging
- Software selectable analog inputs
- Optional integral or remote User Interfaces (UI)

Standard Temperature Range Controllers

Ordering Codes	Description
LP-FX16D00-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, no Communication Card
LP-FX16D01-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, N2 Open Communication Card
LP-FX16D02-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, LON Communication Card
LP-FX16D03-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, RS-232 Communication Card
LP-FX16D10-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, no Communication Card
LP-FX16D11-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, N2 Open Communication Card
LP-FX16D12-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, LON Communication Card
LP-FX16D13-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, RS-232 Communication Card

FX16

Master Controller

Extended Temperature Range Controllers

Ordering Codes		Description
Without Display	With Integral Display	
LP-FX16X00-000C	LP-FX16X50-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, no Communication Card
LP-FX16X01-000C	LP-FX16X51-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, N2 Open Communication Card
LP-FX16X02-000C	LP-FX16X52-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, LON Communication Card
LP-FX16X03-000C	LP-FX16X53-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, RS-232 Communication Card
LP-FX16X04-000C	LP-FX16X54-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 9 relays, BACnet Communications Card
LP-FX16X10-000C	LP-FX16X60-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, no Communication Card
LP-FX16X11-000C	LP-FX16X61-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, N2 Communication Card
LP-FX16X12-000C	LP-FX16X62-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, LON Communication Card
LP-FX16X13-000C	LP-FX16X63-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, RS-232 Communication Card
LP-FX16X14-000C	LP-FX16X64-000C	6 Als, 8 DIs, 4 AOs, 9 DOs: 4 relays, 5 triacs, BACnet Communications Card

Communications Cards

Ordering Codes	Description
LP-NET151-010C	N2 Open Communication Card for FX15 and FX16
LP-NET161-000C	N2 Open Communication Card for FX16x Rev. A
LP-NET152-010C	LON Communication Card for FX15 and FX16
LP-NET163-000C	RS-232 Communication Card for FX16
LP-NET164-000C	BACnet Communications Card for FX16x Rev. A

User Interfaces

Ordering Codes	Description
LP-DIS60P20-0C	Remote Medium User Interface for FX16 (Panel Mount)
LP-DIS60P21-0C	Remote Medium User Interface for FX16 (Wall Mount)

Expansion I/O Modules

Ordering Codes	Description
LP-XT91D00-000C	Facility Explorer Extension Module
LP-XP91D02-000C	Facility Explorer Expansion Module 6 AI, 2 AO
LP-XP91D03-000C	Facility Explorer Expansion Module 8 DO (triacs)
LP-XP91D04-000C	Facility Explorer Expansion Module 4 DI, 4 DO (triacs)
LP-XP91D05-000C	Facility Explorer Expansion Module 8 DI
LP-XP91D06-000C	Facility Explorer Expansion Module 4 Relays, 230 VAC (Europe Only)

Software

Ordering Codes	Description
LP-FXTPRO-0	FX Tools Pro CD-Rom (FX Builder, FX Builder Express, FX CommPro N2, FX CommPro LON, FX CommPro BACnet) New User
LP-FXTPRO-6	FX Tools Pro CD-Rom (FX Builder, FX Builder Express, FX CommPro N2, FX CommPro LON, FX CommPro BACnet) Upgrade

FX16

Master Controller

Accessories

Ordering Codes	Description
LP-KIT007-000C	Interface Cable 3 m for Medium User Interface (MUI) to FX16
LP-KIT007-001C	Interface Cable for standard modem to FX16 and Master Display
LP-KIT007-013C	Null modem cable, 3 m
LP-KIT007-014C	Null modem cable, 15 m
LP-KIT100-000C	Programming Key
LP-KIT015-000C	Kit of screw connectors for FX15 and FX16
LP-KIT007-002C	Interface Cable 1.5 m for GSM modem to FX16 and Master Display
LP-KIT090-000C	GSM 900/1800 FastTrack Modem
LP-KIT090-001C	GSM Modem Plug-In Antenna
LP-KIT090-003C	GSM Modem Magnetic Mount Antenna with 2.5 m Cable
LP-KIT090-004C	GSM Modem Panel Mount Antenna with 5 m Cable
LP-KIT090-005C	GSM Modem Power Adapter, 230 VAC/12 VDC, Wall Plug
LP-KIT015-001C	Kit of Female Cage Clamp Connectors

Technical Specifications - I/O details

Terminals (Cont.)	Channel	Type	Remark/Application
Analog Input (AI)			
TB1	AI1, AI2, AI3, AI4, AI5, AI6	See the following table. 16 bit resolution	Freely software configurable Application: temperature, humidity, pressure
3, 8	EXT-VDC	+16 V, 80 mA	0-10 V Sensors or max no. 4 0/4 - 20 mA Sensors
13	AVPS/EXT-VDC	AVPS = +5 V, 20 mA EXT-VDC = +16 V, 80 mA	To power directly from the FX16 ratiometric sensors, with AVPS or 0-10 V, 0/4 - 20 mA Sensors with EXT-VDC The selection between AVPS and EXT-VDC is done by jumpers.
Digital Input (DI)			
TB2	DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8	Potential free contacts	In order to ensure galvanic isolation, a different 24 VAC power supply must be used to power the digital inputs (through Terminals 34, 35). Transition counter function maximum 500 ms on and 500 ms off (1Hz) For quicker counter function, use the LP-XP91D05 module.
Digital Output (DO)			
TB3	DO1, DO2, DO3	SPST 8(3)A power relays	UL/CUR rating: 8A 250 VAC, 8A 30 VDC VDE rating: 8A 250 VAC Expected electrical life min. operations: 1 x 100,000 operations (360 ops x hour) Dielectric strength: coil-contacts 4000 VRMS
TB4	DO4, DO5	SPST 5(3)A power relays or 0,5A/24 VAC triacs	Rating (resistive): 5A 125 VAC, 5A 250 VAC, 5A 30 VDC Expected electrical life (min operations): 5A 125 VAC 50,000; 5A 250 VAC 50,000; 5A 30 VDC 100,000
TB5	DO6, DO7, DO8	SPST 5(3)A power relays or 0,5A/24 VAC triacs	Dielectric strength: coil-contacts 4000 VRMS for 1 min
TB6	DO9	SPDT NC 8(3)A 250V relay	Same as TB3 relays Fail relay for enhanced security. The relay will return to its NC position not only at power fail but also in case the microprocessor should fail: for example, watch-dog, brown-out.
Analog Output (AO)			
TB7	AO1, AO2	0 to 10 VDC (max 1.5 mA)	Used to drive analog actuators, frequency drives; 16 bit resolution.
TB8	AO3, AO4	0 to 10 VDC (max 1.5 mA)	Used to drive analog actuators, frequency drives; 16 bit resolution
79, 80	AO V~ Hot AO V~ Com	24 VAC	In order to assure galvanic isolation, a different 24 VAC power supply must be used to power the analog outputs.

FX16

Master Controller

Available Sensor Types

Sensor Type	Linearization Range	Accuracy @ 20 °C Ambient
Ni1000 JCI	-45 °C to 120°C	±0.5 °C
Ni1000 JCI Extended	20°C to 287°C	
Ni1000 Siemens™	-50°C to 160°C	
Ni1000 DIN	-60°C to 180°C	
Pt1000	-50°C to 160°C	
A99	-50°C to 100°C	
NTC 2.2K	-40°C to 150°C	
0 to 5 VDC ratiometric	0.5 to 4.5 VDC (10 to 90% of supply voltage)	±0.05 V
0 to 10 VDC	0 to 10 Volts	
0 to 20 mA	0 to 20 mA	±0.1 mA

FX16 Standard and Extended Range Models (Extended Range Information in Bold)

Product Codes	LP-FX16Dxx-000C LP-FX16Xxx-000C
Power Supply Requirements	24 VAC ±15%, 50/60 Hz - Class 2 Power Supply - SELV in Europe
Power Consumption	15 VA at max load
Internal Fuse	2 A, 250 V
Protection Class	IP20
Ambient Operating Conditions	STD controller: -20°C to +50°C, 10 to 95% RH (noncondensing) Extended range controller: -40°C to +60°C, 10 to 95% RH (noncondensing) Note that integral user interface does not operate below -20 °C
Ambient Storage Conditions	-20°C to +70°C, 10 to 95% RH (noncondensing)
Dimensions (H x W x D)	142 mm x 215 mm x 49 mm With display: 142 mm x 215 mm x 66 mm
Weight (with package)	0.74 kg
Connection Terminals for Signals and Power Supply	Screw terminals for max 1 x 1.5 mm ² (AWG16) wires, included in the package.
LON / N2 Open / BACnet Bus Connection Terminals	Screw terminals, cable size up to 1.5 mm ² , AWG24 to AWG16, included in the package.
Belden® cable, 2-core twisted pair with shield	
Connection Terminals for Extension Bus and Remote Display	Screw terminals, cable size up to 1.5 mm ² , AWG24 to AWG16, included in the package.
CE Compliance	2004/108/EC: EN 61000-6-2:2007, EN 61000-6-3:2007 - 2006/95/EC: EN 60730-1:2001
UL Compliance	UL916