Code No. LIT-1900407
Issued August 4, 2006

Facility Explorer

FX14 Field Controller

Description

The FX14 is a field controller in the Facility Explorer range of products. The controller is designed specifically for commercial Heating, Ventilating, Air Conditioning, and Refrigeration (HVACR) applications.

The FX14 is a high performance controller with a powerful 16-bit microprocessor and state-of-the-art software for the precise control of many types of mechanical and electrical equipment. The controller has 29 physical inputs and outputs and supports a wide range of temperature sensors and actuating devices. Active sensors for the measurement of humidity, pressure, and other variables are also supported. The FX14 also includes an onboard real-time clock to support the start-stop scheduling of equipment and real-time based control sequences.

Parameters in the control application can be displayed and modified from the optional integral Liquid Crystal Display (LCD), which has a set of graphic status icons used in the most common HVACR applications, or from a remote panel or wall mounted Medium User Interface (MUI).

The FX14 field controller is available with plug-in communication cards to enable the controller to be integrated into an N2 Open or LONWORKS® network of a Building Automation System.

For stand-alone applications, the FX14 also features communications services to transmit event notification messages via Short Messaging Service (SMS) using a modem communication card.

The FX14 field controller is fully configurable or programmable, using the FX Tools software package, for a wide range of commercial HVACR applications including multi-compressor and scroll compressors, close control units, unit ventilators, and packaged air handling units.

Refer to the *FX14 Field Controller Product Bulletin (LIT-12011163)* for important product information.

Repair Information

If the FX14 Field Controller fails to operate within its specifications, replace the unit. For a replacement controller, contact the nearest Johnson Controls® representative.

FX14 Field Controller

Features

- freely programmable or configurable using FX Tools software package
- network communication card options
- remote communication services
- choice of user interfaces, integral or remote
- onboard real-time clock
- software selectable analog input type
- analog outputs with PWM option
- many binary inputs and outputs (triacs and line voltage relay contacts) for auxiliary monitoring and control

Selection Charts

FX14 Controllers Ordering Information

Product Code Number	Description
LP-FX14D10-000C	FX14 Controller with 6 Analog Inputs (AIs), 12 Binary Inputs (BIs), 2 Analog Outputs (AOs) (0-10 V or PWM), and 9 Binary Outputs (BOs) (5 Relays + 4 Triacs)
LP-FX14D11-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (5 Relays + 4 Triacs - includes N2 Open Card)
LP-FX14D12-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (5 Relays + 4 Triacs - includes LONWORKS Card)
LP-FX14D13-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (5 Relays + 4 Triacs - includes RS232C Card)
LP-FX14D60-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (5 Relays + 4 Triacs - includes Integral User Interface)
LP-FX14D61-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (5 Relays + 4 Triacs - includes N2 Open Card and Integral User Interface)
LP-FX14D62-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (5 Relays + 4 Triacs - includes LONWORKS Card and Integral User Interface)
LP-FX14D63-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (5 Relays + 4 Triacs - includes RS232C Card and Integral User Interface)
LP-FX14D20-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays)
LP-FX14D21-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays - includes N2 Open Card)
LP-FX14D22-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays - includes LONWORKS Card)
LP-FX14D23-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays - includes RS232C Card)
LP-FX14D70-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays - includes Integral User Interface)
LP-FX14D71-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays - includes N2 Open Card and Integral User Interface)
LP-FX14D72-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays - includes LONWORKS Card and Integral User Interface)
LP-FX14D73-000C	FX14 Controller with 6 AIs, 12 BIs, 2 AOs (0-10 V or PWM), and 9 BOs (9 Relays - includes RS232C Card and Integral User Interface)

Communications Cards Ordering Information

Product Code Numbers	Description
LP-NET151-010C	N2 Open Communication Card
LP-NET142-000C	LONWORKS Communication Card
LP-NET163-000C	RS232C Communication Card

FX14 Field Controller (Continued)

User Interfaces Ordering Information

Product Code Numbers	Description
LP-DIS60P10-0C	Medium User Interface (MUI) - Panel Mount
LP-DIS60P11-0C	Medium User Interface - Wall Mount

Software Tools Ordering Information

Product Code Numbers	Description
LP-FXTPRO-0	FX Tools Pro CD (FX Builder, FX Builder Express, FX CommPro N2, FX CommPro LON)
LP-FXTEXP-0	FX Tools Express CD (FX Builder Express, FX CommPro N2)

Accessories

Product Code Numbers	Description
LP-KIT007-000C	Link cable for the connection of the FX14 to the Panel Mount MUI display - 3 m (19 ft)
LP-KIT014-000C	Kit of female screw connectors
LP-KIT100-000C	FX Programming Key
DT-9100-8901	Power Supply Adapter for Programming Key: 230 VAC/12 VDC

Technical Specifications

I/O Details			
Terminals	**Channel**	**Type**	**Remark/Application**
Analog Input (AI)			
TB1 (1-15)	AI1, AI2, AI3, AI4, AI5, AI6	See table below. 16-bit resolution	Freely software configurable. Application: temperature, humidity, or pressure
TB1 (3,8,13)	AI V Ref	+16 V, max. 20 mA or +5 V, max. 15 mA (jumper selection)	To power active 0-10 V sensors or potentiometers or To power ratiometric sensors or potentiometers
Digital Input (DI)			
TB2 (21-36)	DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8, DI9, DI10, DI11, DI12	Potential free contacts	Transition counter function on DI1 (TB2 [21-22], maximum 10 ms on and 10 ms off (@ 50 Hz).
Digital Output (DO)			
Relay Outputs	Dielectric test voltage on open relay contact: 1,000 VAC RMS Maximum relay switching rate at nominal load: 6 operations/min		
TB6 (41-48)	DO1, DO2, DO3	SPST 8(3) A, 250 V relays	As there is double insulation between the relays, they can be used to switch circuits with different power and voltage sources.
TB7 (51-55)	DO4, DO5	SPST 8(3) A, 250 V relays	
TB7 (57-58)	DO6	SPST 8(3) A, 250 V relays or 0.5 A, 24 VAC triacs	
TB8 (61-68)	DO7, DO8, DO9	SPST 8(3) A, 250 V relays or 0.5 A, 24 VAC triacs	
Analog Output (AO)			
TB9 (71)	AO V Ref	15 VDC, max. 10 mA	Voltage Reference signal used for PWM output.
TB9 (72-73)	AO1	0-10 VDC, max. 3 mA or PWM, 100 Hz	Used to drive motor actuator, control device, or fan speed controller. 13 bit resolution.
TB10 (74)	AO V Ref	15 VDC, max. 10 mA	Voltage Reference signal used for PWM output.
TB10 (75-76)	AO2	0-10 VDC, max, 3 mA or PWM, 100 Hz	Used to drive motor actuator, control device, or fan speed controller. 13 bit resolution.

Analog Input Types		
Sensor Type	**Linearization Range**	**Accuracy at 20°C (68°F) Ambient (Sensor Not Included)**
A99	-40 to 100°C (-40 to 212°F)	±0.5°C (1°F)
NTC 10K	-20 to 70°C (-4 to 158°F)	±0.5°C (1°F)
Pt1000	-40 to 160°C (-40 to 320°F)	±1°C (1.8°F)
Ni1000 JCI	-40 to 120°C (-40 to 248°F)	±1°C (1.8°F)
Active Voltage	0-10 VDC	±0.1 VDC
Active Ratiometric	0.5-4.5 VDC	±0.05 VDC

FX14 Field Controller (Continued)

FX14 Field Controller		
Product Codes	LP-FX14Dxx-000C	
Power Supply Requirements	24 VAC ±15%, 50/60 Hz – SELV in Europe - Class 2 North America	
Power Consumption	19.5 VA at max. load	
Housing Material	ABS + polycarbonate, self-extinguishing: UL 94-5VB flammability rating	
Protection Class	IP20	
Ambient Operating Conditions	-40°C (-40°F) to +60°C (140°F), 10 to 95% RH (noncondensing) Note: Integral user interface does not operate below -20°C (-4°F).	
Ambient Storage Conditions	-40°C (-40°F) to +70°C (158°F), 10 to 95% RH (noncondensing)	
Dimensions (H x W x D)	142 mm (5.6 in.) x 215mm (8.5 in.) x 49 mm (1.9 in.)	
Weight (with Package)	0.74 kg (1.6 lb)	
Integrated LCD Display Numeric Resolution	-999 to 999 or -99.9 to 99.9	
Connection Terminals for AIs, DOs, and Power Supply	Screw terminals for max. 2 x 1.5 mm^2 (AWG 16) wires, included in the package.	
Connection Terminals for LON/N2 Open Bus	Screw terminals for max. 1 x 1.5 mm^2 (AWG 16) wires, included in the package. Belden® cable, 2-core twisted pair with shield ≥ 0.8 mm (AWG20)	
Connection Terminals for AOs, DIs, and Remote Display	Screw terminals for max. 1 x 1.5 mm^2 (AWG 16) wires included in the package.	
Compliance	**Europe**	– 89/336/EEC, EMC Directive: EN 61000-6-3, EN 61000-6-2 – 72/23/EEC, Low Voltage Directive: EN 60730
	Canada	– UL Listed (PAZX7), CAN/CSA C22.2 No. 205, Signal Equipment – UL Recognized (XAPX8), CAN/CSA C22.2 No. 24, Temperature Indicating and Regulating Equipment – Industry Canada, ICES-003
	United States	– UL Listed (PAZX), UL 916, Energy Management Equipment – UL Recognized (XAPX2), UL 873, Temperature Indicating and Regulating Equipment – FCC compliant to CFR 47, Part 15, Subpart B, Class A