

Facility Explorer

FX15 Field Controller

Description

The FX15 Field Controller (FX15 Classic) is a high performance field controller in the Facility Explorer system specifically designed for commercial Heating, Ventilating, and Air Conditioning (HVAC) and refrigeration applications such as chillers and rooftops, indoor packaged air conditioning units, Air Handling Units (AHUs), and close control units.

The FX15 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 the XT/XP expansion modules on the Local N2 Open bus.

The FX15 is fully programmable or configurable, using the FX Tools software package, for a wide range of commercial HVAC and refrigeration applications.

The FX15 controller can be fitted with an optional communication card for integration into an N2 Open or LONWORKS® compatible Building Automation System.

The FX15 also includes an onboard Real-Time Clock that supports all real-time functions, including the display of time and date on the optional user interface and the time stamping of events. The real-time clock enables the time scheduling of start and stop commands and set point changes to the equipment that is being monitored and controlled.



FX15 with Integrated Medium User Interface (MUI) Display

Features

- modular communication card options
- onboard real-time clock
- freely programmable or configurable using FX Tools software package
- software selectable analog inputs
- user interfaces, integrated or remote

Selection Charts

Standard Temperature Range Controllers Ordering Information

| Product Code Number | Description |
|---------------------|--|
| LP-FX15D10-000C | FX15: Digital Outputs (DOs): 4 Relays and 5 Triacs |
| LP-FX15D11-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs. Includes N2 Open Card. |
| LP-FX15D12-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs. Includes LONWORKS Card. |
| LP-FX15D60-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs. Includes Integrated MUI. |
| LP-FX15D61-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs. Includes N2 Open Card and Integrated MUI. |
| LP-FX15D62-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs. Includes LONWORKS Card and Integrated MUI. |
| LP-FX15D20-000C | FX15: Digital Outputs: 9 Relays |
| LP-FX15D21-000C | FX15: Digital Outputs: 9 Relays. Includes N2 Open Card. |
| LP-FX15D22-000C | FX15: Digital Outputs: 9 Relays. Includes LONWORKS Card. |
| LP-FX15D70-000C | FX15: Digital Outputs: 9 Relays. Includes Integrated MUI. |
| LP-FX15D71-000C | FX15: Digital Outputs: 9 Relays. Includes N2 Open Card and Integrated MUI. |
| LP-FX15D72-000C | FX15: Digital Outputs: 9 Relays. Includes LONWORKS Card and Integrated MUI. |

Extended Temperature Range Controllers Ordering Information

| Product Code Numbers | Description |
|----------------------|---|
| LP-FX15X10-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs |
| LP-FX15X11-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs. Includes N2 Open Card. |
| LP-FX15X12-000C | FX15: Digital Outputs: 4 Relays and 5 Triacs. Includes LONWORKS Card. |
| LP-FX15X20-000C | FX15: Digital Outputs: 9 Relays |
| LP-FX15X21-000C | FX15: Digital Outputs: 9 Relays. Includes N2 Open Card. |
| LP-FX15X22-000C | FX15: Digital Outputs: 9 Relays. Includes LONWORKS Card. |

Communications Cards Ordering Information

| Product Code Numbers | Description |
|----------------------|-----------------------------|
| LP-NET151-010C | N2 Open Communication Card |
| LP-NET152-010C | LONWORKS Communication Card |

FX15 Field Controller (Continued)

User Interfaces Ordering Information

| Product Code Numbers | Description |
|----------------------|--|
| LP-DIS65P10-0C | Large User Interface |
| LP-DIS60P10-0C | Medium User Interface (Local Mount) |
| LP-DIS60P11-0C | Medium User Interface (Remote Mount) |
| LP-DIS60U10-C | Medium User Interface (Integral Mount) |

Expansion I/O Modules Ordering Information

| Product Code Numbers | Description |
|----------------------|--|
| LP-XT91D00-000C | Extension Module |
| LP-XP91D02-000C | Expansion Board: 6 Analog Inputs (AIs), 2 Analog Outputs (AOs) |
| LP-XP91D03-000C | Expansion Board: 8 DOs (triacs) |
| LP-XP91D04-000C | Expansion Board: 4 Digital (Binary) Inputs (DIs), 4 DOs (triacs) |
| LP-XP91D05-000C | Expansion Board: 8 DIs |
| LP-XP91D06-000C | Expansion Board: 4 DOs (relays) 230 VAC (Europe only) |
| LP-XP91D07-000C | Expansion Board: 4 DOs (relays) 24 VAC (North America only) |

Software Tools Ordering Information

| Product Code Numbers | Description |
|----------------------|---|
| LP-FXTPRO-0 | FX Tools Pro CD (Includes the FX Builder, FX CommPro N2, and LON Software) - New User |
| LP-FXTPRO-6 | FX Tools Pro CD (Includes the FX Builder, FX CommPro N2, and LON Software) - Upgrade |

Accessories

| Product Code Numbers | Description |
|----------------------|---|
| LP-KIT007-000C | Link Interface cable (3 m/9.8 ft) for the connection of the FX15 to the MUI/LUI user interfaces |
| LP-KIT007-020C | Bag of replacement communication wiring connectors |
| DT-9100-8902 | LUI Wall Mounting Kit |
| NP-PWR1209 | LUI Power Adapter (120 VAC/12 VDC) |
| DT-9100-8901 | LUI Power Adapter (230 VAC/12 VDC) |
| LP-KIT015-000C | Kit of Female Screw Connectors |
| LP-KIT015-001C | Kit of Female Cage Clamp Connectors |
| LP-KIT100-000C | FX Programming Key |

Technical Specifications

| I/O Details (Part 1 of 2) | | | |
|----------------------------|--|---|---|
| Terminals | Channel | Type | Remark/Application |
| Analog Input (AI) | | | |
| TB1 | AI1, AI2, AI3, AI4, AI5, AI6 | See following table. 16-bit resolution | Freely software configurable. Application: temperature, humidity, or 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 FX15 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 | The insulation from the microprocessor is achieved if a different 24 VAC power supply from the one used to power the controller is used to power the digital inputs (through Terminals 34, 35). Transition counter function maximum 500 ms on and 500 ms off (1 Hz). For quicker counter function, use the LP-XP91D05 module. |
| Digital Output (DO) | | | |
| TB3 | DO1, DO2, DO3 | SPST 8(3)A, 250 V power relays | There is double insulation between the relays, and they can be used at different voltages from one another. |
| TB4 | DO4, DO5 | SPST 5(3)A, 250 V power relays or 0.5A, 24 VAC triacs | This group is double insulated from the other relays, but they share the same common between them; therefore, they have to be connected at the same voltage. |
| TB5 | DO6, DO7, DO8 | SPST 5(3)A, 250 V power relays or 0.5A, 24 VAC triacs | This group is double insulated from the other relays, but they share the same common between them; therefore, they have to be connected at the same voltage. |
| TB6 | FAIL | SPDT 8(3)A, 250 V power relay | Fail relay for enhanced security. The relay returns to its NC position not only at power fail, but also in case the microprocessor should fail: watch-dog, brown-out, and so on. |



FX15 Field Controller (Continued)

| I/O Details (Part 2 of 2) | | | |
|---------------------------|----------|---------------------------------|---|
| Terminals | Channel | Type | Remark/Application |
| Analog Output (AO) | | | |
| TB7 | AO1, AO2 | 0...10 VDC 16 bit resolution | The insulation from the microprocessor is achieved if a different 24 VAC power supply from the one used to power the controller is used to power the analog outputs. |
| TB8 | AO3, AO4 | 0...10 VDC 16-bit resolution | The insulation from the microprocessor is achieved if a different 24 VAC power supply from the one used to power the controller is used to power the analog outputs (through Terminals 79, 80). |

| Available Sensor Types | | |
|------------------------|---------------------------------|--------------------------------|
| Sensor Type | Linearization Range | Accuracy @ 20°C (68°F) Ambient |
| Ni1000 JCI | -45°C (-49°F) to 120°C (248°F) | +/- 0.5°C (+/- 1°F) |
| Ni1000 JCI Extended | 20°C (68°F) to 287°C (548.6°F) | +/- 0.5°C (+/- 1°F) |
| Ni1000 Siemens® | -50°C (-58°F) to 160°C (320°F) | +/- 0.5°C (+/- 1°F) |
| Ni1000 DIN | -60°C (-76°F) to 180°C (356°F) | +/- 0.5°C (+/- 1°F) |
| Pt1000 | -50°C (-58°F) to 605°C (1121°F) | +/- 0.5°C (+/- 1°F) |
| A99 | -50°C (-58°F) to 110°C (230°F) | +/- 0.5°C (+/- 1°F) |
| NTC 2.2K | -40°C (-40°F) to 150°C (302°F) | +/- 0.5°C (+/- 1°F) |
| 0 to 5 VDC ratiometric | 10 to 90% of supply voltage | 0.3% |
| 0 to 10 VDC | 0 to 10 Volts | 0.3% |
| 0 to 20 mA | 0 to 20 mA | 0.3% |

| FX15 Standard and Extended Range Models (Extended Range Information in Bold) | | | | | | | |
|---|--|---------------|---|---------------|---|----------------------|---|
| Product Codes | LP-FX15Dxx-000C LP-FX15Xxx-000C | | | | | | |
| Power Supply Requirements | 24 VAC ±15%, 50/60 Hz - Class 2 Power Supply – SELV in Europe | | | | | | |
| Power Consumption | 15 VA at max load | | | | | | |
| Protection Class | IP20 controller IP40 integrated MUI | | | | | | |
| Ambient Operating Conditions | STD controller: -20°C (-4°F) to +50°C (122°F), 10 to 95% RH (noncondensing) Extended range controller: -40°C (-40°F) to 60°C (140°F), 10 to 95% RH (noncondensing) | | | | | | |
| Ambient Storage Conditions | -20°C (-4°F) to 70°C (158°F), 10 to 95% RH (noncondensing) | | | | | | |
| Dimensions (H x W x D) | 142 mm (5.6 in.) x 215 mm (8.5 in.) x 49 mm (1.9 in.) | | | | | | |
| Weight (with package) | 0.74 kg (1.6 lb) | | | | | | |
| 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 Bus Connection Terminals | Screw terminals, cable size 0.2 to 1.5 mm ² , AWG24 to AWG16, included in the package. Belden® cable, 2-core twisted pair with shield ≥ 0.8 mm (AWG20) | | | | | | |
| Connection Terminals for Extension Bus and Remote Display | Screw terminals, cable size 0.2 to 1.5 mm ² , AWG24 to AWG16, included in the package. | | | | | | |
| Single Cable Lengths Digital Inputs DI1 - DI8 Analog Inputs AI1 - AI6 Triac outputs (when present) Analog Outputs AO1 - AO4 Remote Display Extension Modules Display and Extensions Cable Type | Max. 100 m (328 ft) with wire ≥ 0.6 mm (AWG22) Max. 100 m (328 ft) with wire ≥ 0.6 mm (AWG22) Max. 100 m (328 ft) with wire = 1.5 mm ² (AWG16) Max. 100 m (328 ft) with wire + 1.5 mm ² (AWG16) Max. 3 m (10 ft) if display is powered by controller. Max. 1 km (0.6 miles) if display independently powered. Max. 1 km (0.6 miles) Belden 4-core, twisted pair, shielded, ≥ 0.8 mm (AWG20) | | | | | | |
| Compliance | <table border="0"> <tr> <td>Europe</td> <td>– 2004/108/EEC, EMC Directive: EN 61000-6-3, EN 61000-6-2 – 2006/95/EEC, Low Voltage Directive: EN 60730</td> </tr> <tr> <td>Canada</td> <td>– 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</td> </tr> <tr> <td>United States</td> <td>– 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</td> </tr> </table> | Europe | – 2004/108/EEC, EMC Directive: EN 61000-6-3, EN 61000-6-2 – 2006/95/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 |
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