FX80 Supervisory Controller Product Bulletin

LIT-12012250

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Overview

Figure 1: FX80 Supervisory Controller



The FX80 Supervisory Controller is a web-based supervisory-class controller in the Facility Explorer® product family. The FX80 controller manages networks of field controllers using open communication protocols, such as BACnet®, LonWorks®, and the N2 Bus. The FX80 controller supports a full set of building automation features, such as scheduling, alarming, historical data collection and management, data sharing, energy management, totalization, customized control routines, tagging, templates, search, and hierarchies, which are specifically designed for commercial facilities.

Each FX80 controller includes a graphical system user interface with an HTML5 web profile, a configuration tool that you can access with the web browser, and robust security. Remote access is easily achieved using a wired or wireless connection from the Internet or intranet. Multiple users can connect to the FX80 controller concurrently. You can manage security and presentation preferences through user profiles, login IDs, and passwords.

The FX80 Supervisory Controller is a compact DIN rail mountable controller with the capability for remote external input and output points.

In addition, the FX80 controller's hardware and software design is modular, so you can plug in accessories, such as communications option modules, if needed. The device and point licensing options allow you to select the device and point capacity most appropriate for the size of your facility and those options best needed to control it. And, in many cases, future expansions do not require the replacement of hardware.

FX80 features and benefits

Fully commissioned and licensed out of the box

Allows you to power up, connect to a web browser, change default passwords, set up network parameters, and start adding your field controllers.

Web-based user interface

Provides rich, graphical displays for system operation and analysis.

Adoption of industry standard communication protocols

Allows for the integration of a wide variety of field controllers, including Facility Explorer field controllers and controllers provided by others without intermediate gateways or translators.

Embedded Configuration Tool

Requires no proprietary or desktop software to configure the FX80 controller. You only need a web browser for basic configuration and monitoring.

Modular design

Allows you to select only those components needed to meet specific project requirements.

Small, compact design

Controller is easy to install.

FX Workbench

Reduces engineering and installation time by providing you a way to easily and quickly create the FX80 database from field controller configurations offline.

Niagara® analytics

Allows you to apply a variety of analytical algorithms and diagnostics to both historical and real-time data.

North American emissions compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause

harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the users will be required to correct the interference at their own expense.

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Industry Canada Statement(s)

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage, et
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FX80 Supervisory Controller

The FX80 Supervisory Controller provides integrated control supervision and network management services for one or more local networks of field controllers, and provides direct control over inputs and outputs. The FX80 controller uses these interfaces to monitor and control HVAC, lighting, and other electrical systems, to do the following:

- Provide system-wide coordination
- Improve occupant comfort
- Annunciate off-normal and alarm conditions
- Reduce energy usage
- Optimize operating efficiencies

Each FX80 controller includes a user interface with an HTML5 web profile, a configuration tool that you can access with the web browser, and robust security. Remote access is easily achieved using a wired or wireless connection.

The FX80 controller organizes system information into displays, reports, and graphics that you can access by using a web browser.

The FX80 controller is housed in compact, DIN rail mount enclosures. Its controller capacity and performance requirements make it ideally suited for the following:

- Supervisory control of small- to large-sized facilities.
- Distributed supervisory control within larger facilities, or between facilities.

Communication Interfaces

The FX80 controller supports multiple onboard and optional communication interfaces, which enable the FX80 controller to integrate many different types of field controllers, as well as provide different methods of remote user access.

The FX80 controller includes the following onboard communication hardware interfaces:

- Wi-Fi for use as a Client or an Access Point. Non-Wi-Fi disabled version only.
  - IEEE802.11a/b/g/n
  - IEEE802.11n HT20 at 2.4GHz
  - IEEE802.11n HT20/HT40 at 5GHz
  - Configurable radio (Off, Wireless Application Protocol [WAP], or Client).
  - WPAPSK/WPA2PSK supported.
- Two 10/100 MB Ethernet ports.
- Two isolated RS-485 ports with selectable bias and termination.
- USB Type A (for backup and restore).
- Micro USB (for serial debug connection).

The FX80 controller also provides the ability for you to separately order and install optional modules to obtain additional communication hardware interfaces, including the following:

- Dual port, isolated RS-485 communication module (up to 2 maximum).
- LonWorks FTT-10A communication module (up to 4 maximum).
- RS-232 communication module (up to 4 maximum).

Figure 2: Optional Communication Module Positions

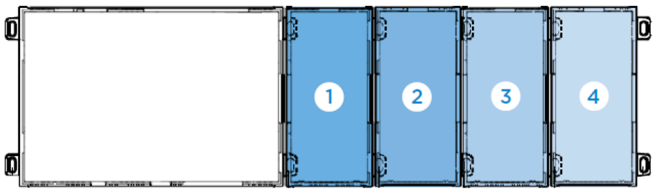


Table 1: Maximum Combinations of Optional Communication Modules

Optional Communication Module Position				
Maximum Configuration Option	**1**	**2**	**3**	**4**
A	RS-232 or LonWorks protocol	RS-232 or LonWorks protocol	RS-232 or LonWorks protocol	RS-232 or LonWorks protocol

Table 1: Maximum Combinations of Optional Communication Modules

Optional Communication Module Position				
B	Dual port RS-485	RS-232 or LonWorks protocol	RS-232 or LonWorks protocol	RS-232 or LonWorks protocol
C	Dual port RS-485	Dual port RS-485	RS-232 or LonWorks protocol	NA
D	Dual port RS-485	Dual port RS-485	NA	NA

Support Networking Protocols

The FX80 controller can use network protocol driver software to obtain and model external device data. The FX80 controller licenses include the following network driver features enabled as standard:

- Johnson Controls® N2 (exclusive to FX80)
- BACnet MS/TP
- BACnet IP Client and Server
- Modbus® Remote Terminal Unit (RTU) Client and Server
- Modbus Transmission Control Protocol (TCP) Client and Server
- LonWorks FTT-10A (requires LonWorks communication module)
- LonWorks over IP
- M-Bus
- EIB/KNX
- Simple Network Management Protocol (SNMP)

You can purchase the optional Carrier® CCN network protocol driver feature and add it to the FX80 controller license.

Inputs/Outputs (I/O)

In addition to obtaining data from field devices using network communication services, the FX80 controller also supports obtaining information, using remote inputs and outputs.

Remote I/O (XIOR16 & XIOR34)

All FX Supervisory Controllers support the optional Remote I/O module. The XIOR communicates to the FX Supervisory Controller through RS-485 and contains the following I/O:

XIOR16

- 8 universal inputs
- 4 relay outputs
- 4 analog outputs

XIOR34

- 16 universal inputs
- 10 relay outputs
- 8 analog outputs

Building Automation Control Features

The FX80 Supervisory Controllers transform data obtained from network device integrations and direct I/O into a common set of data types, allowing you to apply the FX80 controller's full set of building automation control features (including scheduling, alarming, histories, energy management, totalization, and custom control logic) consistently to all data points, regardless of their source.

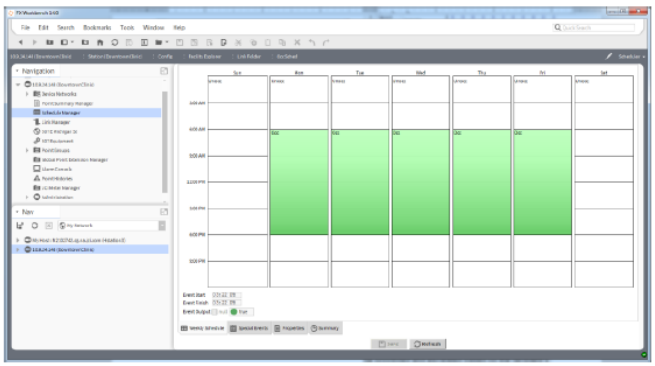
Scheduling

You can configure the FX80 controller to automate various functions within a facility based on a time schedule. Some examples include the following:

- Determining the expected occupancy periods
- Starting or stopping HVAC equipment
- Turning lights on and off

You can link any writable point in the FX80 controller system database to a schedule. The scheduler interface provides a visually intuitive method for you to configure the daily, weekly, and exception (holiday) schedules.

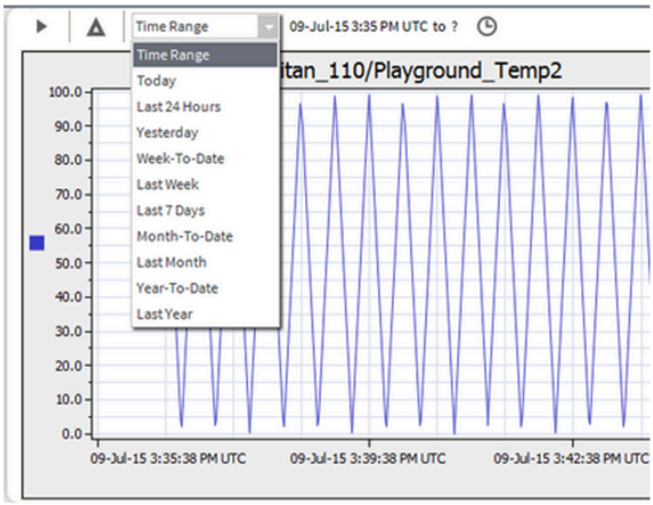
Figure 3: Scheduler



Histories

The Histories feature collects, stores, and displays pertinent system data for analysis, such as control performance indication, energy consumption, and system troubleshooting. You can configure the FX80 controller to create a history on any data point in its system database. Histories are presented either graphically or in a sortable table, and you can export the data in a TXT, PDF, or CSV format.

Figure 4: Histories



Alarming

The Alarming feature initiates, routes, and manages alarms and events according to user-defined criteria. You can configure the FX80 controller to generate alarms on any data point in its system database. Each alarm record contains valuable information, including the alarm and return to-normal time and date, time duration in current state, text description, and alarm class.

You can create alarm classifications so that alarms with similar characteristics are routed to common recipients. You can also create multiple alarm classes to provide a variety of alarm routing options, such as to the browser-based Alarm Console or to an email address. Alarm recipients have a variety of options to manage alarms, including sorting, acknowledging, silencing, and tagging.

You can route alarms to the people who need them based on schedules and on-call lists. These lists can be prioritized and escalated based on the recipient's actions. These actions include delivery and acknowledgment through email and SMS.

Energy management

The FX80 controller features several energy management functions, which you can enable and configure, including the following:

- Electrical demand limiting/load shedding
- Optimized start/stop
- Free cooling determination

Totalization

The Totalization feature enables the FX Supervisory Controller to accumulate data over a period of time.

You can add a totalization extension to any data point in the FX Supervisory Controller system database to summarize runtime, accumulate change of state counts, or summarize dynamic analog data. Totalized data is presented in a sortable table, and you can export it in a TXT, PDF, or CSV file format.

Tagging and templating

Metadata tagging provides ways for you to find data, through search and navigation hierarchies, as well as providing ways to narrow results by filtering the data. Similarly, creating templates using pre-tagged devices results in built-in reusability, which translates to shorter integration time.

Niagara Analytics

Niagara Analytics is a data analytics extension to the Niagara Framework® available on FX Supervisory Software. Niagara Analytics gives FX80 users the ability to apply a variety of analytic algorithms and diagnostics to both historical and real-time data available. At FX Supervisory Software Release 14.2 and later, every FX80 is licensed for 25 analytic objects.

Algorithm Library

The algorithm library has a group of predefined algorithms that you can customize and extend to meet the specific needs of the site. Also provided are more than 40 functional and mathematical blocks to help you design and create your own custom algorithms. Use your algorithm to evaluate a single piece of equipment or all pieces of equipment in your enterprise, then save your entire analytics operation as a template and redeploy as often as needed.

Intuitive Programming

You can drag and drop algorithms onto the wiresheet from the Analytics palette.

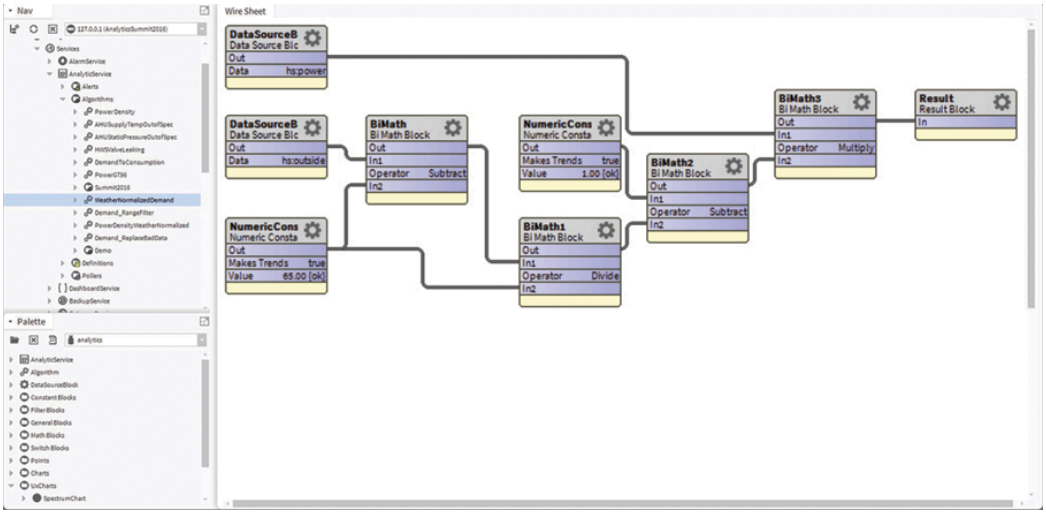
Real-time, On-Premise Analytics Control

You can run on-site analytics directly on the FX80 Supervisory Controller to identify a situation and make a change in real time, which enables you to make faster decisions while conserving computing power. Results can then be pushed up to the server to make changes across the enterprise.

Automated-Control Strategies

Advanced alarming can collect data from multiple real-time data sources, and can make intelligent decisions based on custom algorithms and therefore provide a more sophisticated analysis. This process eliminates many end-user nuisance alarms.

Figure 5: Analytics



Customized control logic

The FX80 controller includes a library of control logic modules that you can enable, configure, and link together to create your own customized control routines. Some examples of the available control logic modules include the following:

- Boolean logic (AND, OR, XOR, NOT)
- Comparative (greater than, less than, equal, not equal)
- Mathematical (add, subtract, multiply, divide, average, negative)
- Sequencers
- Proportional-Integral-Derivative (PID) control
- On or Off control

Web-based user interface

The FX Supervisory Controller's web-based user interface (Web UI) provides system-wide monitoring and control capability using a web browser. The Web UI capability is embedded in every FX Supervisory Controller, allowing users to access the system using a web browser over an Ethernet, LAN, or Internet connection.

When you create your Web UI pages, you can choose from a full library of colorful, graphical symbols including the following:

- HVAC equipment
- Duct work
- Coils
- Piping
- Control devices, for example, dampers or valves
- Widgets, for example, buttons, tables, or hyperlinks

In addition, you can import your own digital images, for example, a floorplan JPEG, and incorporate them into your Web UI.

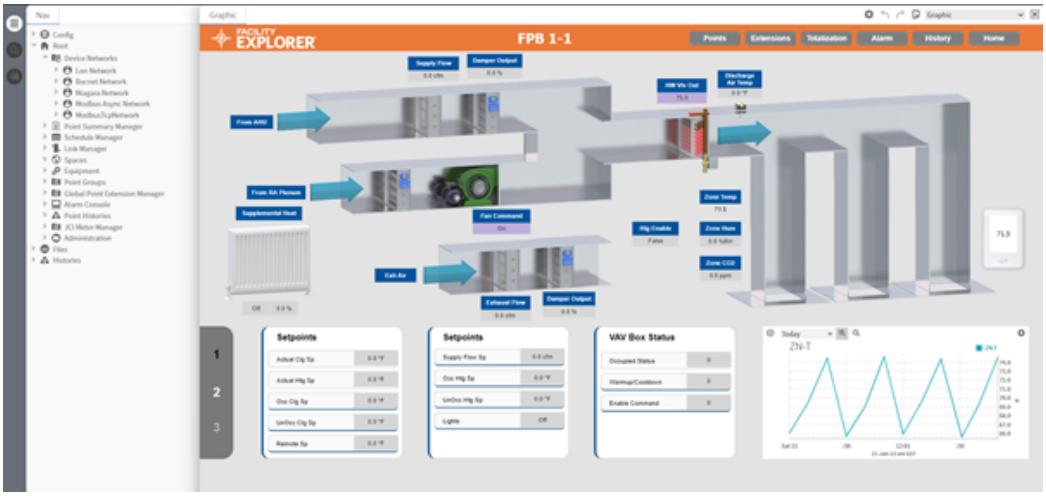
FX Workbench provides you with two sets of factory designed, standard application graphics to include in your Web UI. One set is designed for viewing with a full-sized computer screen, and the other set is optimized for viewing with a smartphone-sized device like an iPhone®, iPad®, or other similarly sized handheld devices. When you import a controller with a standard application, both sets of graphics can be automatically generated.

You can view devices, points, schedules, alarms, and graphics with the convenience of a wireless handheld device. You can also acknowledge alarms, command points, and modify schedules. The user interface updates dynamically, so that when changes are made to the FX Supervisor configuration, these changes automatically appear. An automated configuration assistant is available to help set the correct screen size for many handheld devices.

Figure 6: Mobile device Web UI



Figure 7: Full-sized Web UI



FX Workbench

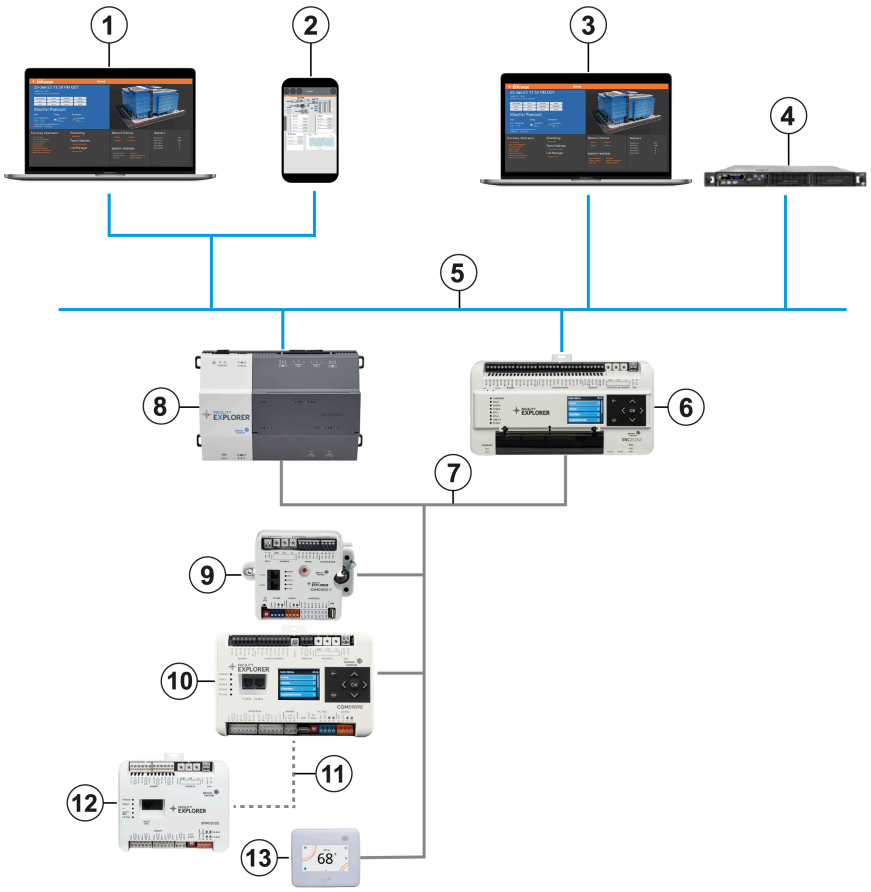
FX Workbench is a software application that allows users to configure the FX80 controller. FX Workbench is embedded in every FX80 controller and is served up to web browsers of authorized users. In addition, you can purchase FX Workbench as a separate software application residing on a computer.

Users can configure the FX80 controller online while directly or remotely connected with FX Workbench.

FX Workbench includes many labor-saving configuration features:

- Importing of FX-PC Series configuration files to create the point database, graphics, point and alarm summaries, Histories, and Trend graphs
- Online discovery of LonWorks and BACnet devices and points
- Online discovery of N2 devices with assisted importing of N2 points
- A check box method to enable and disable points and create point extensions, such as alarms, histories, and totalizations
- Intuitive managers for grouping points, creating master schedules, and linking points
- A library of predefined systems, with associated graphics, points list, and default features
- Automated graphic page creation

Figure 8: Example of a Facility Explorer configuration



Callout	Component
1	Browser
2	Mobile device
3	FX Workbench
4	FX Server
5	Ethernet, TCP/IP, HTTP, BACnet
6	F4-SNC Supervisory Controller
7	MS/TP Bus
8	FX80 Supervisory Controller
9	F4-CVM Equipment Controller
10	F4-CGM Equipment Controller
11	SA Bus
12	F4-XPM Expansion Module
13	TEC3000 Color Series Thermostat

Ordering information

FX80 Supervisory Controller ordering information

Table 2: FX80 Supervisory Controller ordering information

Region	Product code number	Description
APAC	FX-SC8BDWIFI-0	FX80 Supervisory Controller and micro Secure Digital (SD) card, licensing required and purchased separately, disabled WLAN
EMEA	FX-SC8BDWIFI-0E	
United States	FX-SC8BASE-0	FX80 Supervisory Controller and micro Secure Digital (SD) card, licensing required and purchased separately
EMEA	FX-SC8BASE-0E	
United States	FX-SC8BASE-700	Replacement FX80 Supervisory Controller, no micro SD card, no licenses

FX80 bundle ordering information

Table 3: EMEA

Product code number	Description
FX-SC8D100M1-0E	FX80 Disabled Wifi, 100 points core license, Initial 18 months software maintenance for up to 499 points
FX-SC8D250M1-0E	FX80 Disabled Wifi, 250 points core license, Initial 18 months software maintenance for up to 499 points
FX-SC8D500M1-0E	FX-SC8D500M1-0E FX80 Disabled Wifi, 500 points core license, Initial 18 months software maintenance for up to 1249 points
FX-SC8D01KM1-0E	FX80 Disabled Wifi, 1250 points core license, Initial 18 months software maintenance for up to 4999 points
FX-SC8D05KM1-0E	FX80 Disabled Wifi, 5000 points core license, Initial 18 months software maintenance for up to 9999 points
FX-SC8D10KM1-0E	FX80 Disabled Wifi, 10000 points core license, Initial 18 months software maintenance for 10000 points
FX-SC8W100M1-0E	FX80 Wifi, 100 points core license, Initial 18 months software maintenance for up to 499 points
FX-SC8W250M1-0E	FX80 Wifi, 250 points core license, Initial 18 months software maintenance for up to 499 points
FX-SC8W500M1-0E	FX80 Wifi, 500 points core license, Initial 18 months software maintenance for up to 1249 points
FX-SC8W01KM1-0E	FX80 Wifi, 1250 points core license, Initial 18 months software maintenance for up to 4999 points
FX-SC8W05KM1-0E	FX80 Wifi, 5000 points core license, Initial 18 months software maintenance for up to 9999 points
FX-SC8W10KM1-0E	FX80 Wifi, 10000 points core license, Initial 18 months software maintenance for 10000 points

FX80 core device licenses ordering information

Note: You can purchase the following parts in multiples.

Table 4: North America

Product code number	Description
FX-SC8CL005-0	FX80 Supervisory Controller core device license, 5 field devices, 250 points
FX-SC8CL010-0	FX80 Supervisory Controller core device license, 10 field devices, 500 points
FX-SC8CL025-0	FX80 Supervisory Controller core device license, 25 field devices, 1,250 points
FX-SC8CL100-0	FX80 Supervisory Controller core device license, 100 field devices, 5,000 points

Table 4: North America

Product code number	Description
FX-SC8CL200-0	FX80 Supervisory Controller core device license, 200 field devices, 10,000 points
FX-SC8CLDEMO-0	FX80 Supervisory Controller demo license, 500 field devices, 25,000 points. 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.

Table 5: EMEA

Product code number	Description
FX-SC8CL100-0E	FX80 Supervisory Controller core device license, 100 points
FX-SC8CL250-0E	FX80 Supervisory Controller core device license, 250 points
FX-SC8CL500-0E	FX80 Supervisory Controller core device license, 500 points
FX-SC8CL01K-0E	FX80 Supervisory Controller core device license, 1,250 points
FX-SC8CL05K-0E	FX80 Supervisory Controller core device license, 5,000 points
FX-SC8CL10K-0E	FX80 Supervisory Controller core device license, 10,000 points
FX-SC8CLDEMO-0E	FX80 Supervisory Controller demo license, 25,000 points. 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.

- Each FX80 controller requires the purchase of a single core device license.
- Device licenses are also dependent on point (proxy) counts. For each device that is licensed, 50 points are licensed. A 5-device core license also licenses 250 points. This could satisfy five devices with 25 points each or three devices with 80 points each. For three devices with 90 points each, you need to purchase the 10-device core license.

Initial purchase FX80 Controller software maintenance ordering information

Table 6: North America

Product code number	Description
FX-SC8D005M1-0	Initial 1 year software maintenance for FX80 Supervisory Controller with 5–9 field device capacity
FX-SC8D005M3-0	Initial 3 year software maintenance for FX80 Supervisory Controller with 5–9 field device capacity
FX-SC8D005M5-0	Initial 5 year software maintenance for FX80 Supervisory Controller with 5–9 field device capacity
FX-SC8D010M1-0	Initial 1 year software maintenance for FX80 Supervisory Controller with 10–24 field device capacity
FX-SC8D010M3-0	Initial 3 year software maintenance for FX80 Supervisory Controller with 10–24 field device capacity
FX-SC8D010M5-0	Initial 5 year software maintenance for FX80 Supervisory Controller with 10–24 field device capacity
FX-SC8D025M1-0	Initial 1 year software maintenance for FX80 Supervisory Controller with 25–99 field device capacity
FX-SC8D025M3-0	Initial 3 year software maintenance for FX80 Supervisory Controller with 25–99 field device capacity
FX-SC8D025M5-0	Initial 5 year software maintenance for FX80 Supervisory Controller with 25–99 field device capacity
FX-SC8D100M1-0	Initial 1 year software maintenance for FX80 Supervisory Controller with 100–199 field device capacity
FX-SC8D100M3-0	Initial 3 year software maintenance for FX80 Supervisory Controller with 100–199 field device capacity

Table 6: North America

Product code number	Description
FX-SC8D100M5-0	Initial 5 year software maintenance for FX80 Supervisory Controller with 100–199 field device capacity
FX-SC8D200M1-0	Initial 1 year software maintenance for FX80 Supervisory Controller with 200 and up field device capacity
FX-SC8D200M3-0	Initial 3 year software maintenance for FX80 Supervisory Controller with 200 and up field device capacity
FX-SC8D200M5-0	Initial 5 year software maintenance for FX80 Supervisory Controller with 200 and up field device capacity

Table 7: EMEA

Product code number	Description
FX-SC8P250M1-0E	Initial 1 year software maintenance for FX80 Supervisory Controller with 100 and 250 points
FX-SC8P250M3-0E	Initial 3 year software maintenance for FX80 Supervisory Controller with 100 and 250 points
FX-SC8P250M5-0E	Initial 5 year software maintenance for FX80 Supervisory Controller with 100 and 250 points
FX-SC8P500M1-0E	Initial 1 year software maintenance for FX80 Supervisory Controller with 500 points
FX-SC8P500M3-0E	Initial 3 year software maintenance for FX80 Supervisory Controller with 500 points
FX-SC8P500M5-0E	Initial 5 year software maintenance for FX80 Supervisory Controller with 500 points
FX-SC8P01KM1-0E	Initial 1 year software maintenance for FX80 Supervisory Controller with 1,250 points
FX-SC8P01KM3-0E	Initial 3 year software maintenance for FX80 Supervisory Controller with 1,250 points
FX-SC8P01KM5-0E	Initial 5 year software maintenance for FX80 Supervisory Controller with 1,250 points
FX-SC8P05KM1-0E	Initial 1 year software maintenance for FX80 Supervisory Controller with 5,000 points
FX-SC8P05KM3-0E	Initial 3 year software maintenance for FX80 Supervisory Controller with 5,000 points
FX-SC8P05KM5-0E	Initial 5 year software maintenance for FX80 Supervisory Controller with 5,000 points
FX-SC8P10KM1-0E	Initial 1 year software maintenance for FX80 Supervisory Controller with 10,000 points
FX-SC8P10KM3-0E	Initial 3 year software maintenance for FX80 Supervisory Controller with 10,000 points
FX-SC8P10KM5-0E	Initial 5 year software maintenance for FX80 Supervisory Controller with 10,000 points

Note: Device capacity is equal to the sum of the core device license and any additional device license applied to the FX80 controller. Select the device capacity that is equal or lesser than the sum.

FX80 Controller software maintenance (post initial) ordering information

Table 8: North America

Product code number	Description
FX-SC8D005M1-6	1 year software maintenance for FX80 Supervisory Controller with 5–9 field device capacity
FX-SC8D005M3-6	3 year software maintenance for FX80 Supervisory Controller with 5–9 field device capacity
FX-SC8D005M5-6	5 year software maintenance for FX80 Supervisory Controller with 5–9 field device capacity
FX-SC8D010M1-6	1 year software maintenance for FX80 Supervisory Controller with 10–24 field device capacity
FX-SC8D010M3-6	3 year software maintenance for FX80 Supervisory Controller with 10–24 field device capacity
FX-SC8D010M5-6	5 year software maintenance for FX80 Supervisory Controller with 10–24 field device capacity
FX-SC8D025M1-6	1 year software maintenance for FX80 Supervisory Controller with 25–99 field device capacity
FX-SC8D025M3-6	3 year software maintenance for FX80 Supervisory Controller with 25–99 field device capacity
FX-SC8D025M5-6	5 year software maintenance for FX80 Supervisory Controller with 25–99 field device capacity
FX-SC8D100M1-6	1 year software maintenance for FX80 Supervisory Controller with 100–199 field device capacity

Table 8: North America

Product code number	Description
FX-SC8D100M3-6	3 year software maintenance for FX80 Supervisory Controller with 100–199 field device capacity
FX-SC8D100M5-6	5 year software maintenance for FX80 Supervisory Controller with 100–199 field device capacity
FX-SC8D200M1-6	1 year software maintenance for FX80 Supervisory Controller with 200 and up field device capacity
FX-SC8D200M3-6	3 year software maintenance for FX80 Supervisory Controller with 200 and up field device capacity
FX-SC8D200M5-6	5 year software maintenance for FX80 Supervisory Controller with 200 and up field device capacity

Table 9: EMEA

Product code number	Description
FX-SC8P250M1-6E	1 year software maintenance for FX80 Supervisory Controller with 100 & 250 points
FX-SC8P250M3-6E	3 year software maintenance for FX80 Supervisory Controller with 100 & 250 points
FX-SC8P250M5-6E	5 year software maintenance for FX80 Supervisory Controller with 100 & 250 points
FX-SC8P500M1-6E	1 year software maintenance for FX80 Supervisory Controller with 500 points
FX-SC8P500M3-6E	3 year software maintenance for FX80 Supervisory Controller with 500 points
FX-SC8P500M5-6E	5 year software maintenance for FX80 Supervisory Controller with 500 points
FX-SC8P01KM1-6E	1 year software maintenance for FX80 Supervisory Controller with 1,250 points
FX-SC8P01KM3-6E	3 year software maintenance for FX80 Supervisory Controller with 1,250 points
FX-SC8P01KM5-6E	5 year software maintenance for FX80 Supervisory Controller with 1,250 points
FX-SC8P05KM1-6E	1 year software maintenance for FX80 Supervisory Controller with 5,000 points
FX-SC8P05KM3-6E	3 year software maintenance for FX80 Supervisory Controller with 5,000 points
FX-SC8P05KM5-6E	5 year software maintenance for FX80 Supervisory Controller with 5,000 points
FX-SC8P10KM1-6E	1 year software maintenance for FX80 Supervisory Controller with 10,000 points
FX-SC8P10KM3-6E	3 year software maintenance for FX80 Supervisory Controller with 10,000 points
FX-SC8P10KM5-6E	5 year software maintenance for FX80 Supervisory Controller with 10,000 points

Note: Device capacity is equal to the sum of the core device license and any additional device license applied to the FX80 controller. Select the device capacity that is equal or lesser than the sum.

FX80 Controller additional field device licenses ordering information

Table 10: North America

Product code number	Description
FX-SC8DL10-0	License enabling an additional 10 field devices, 500 points for one FX80
FX-SC8DL25-0	License enabling an additional 25 field devices, 1,250 points for one FX80
FX-SC8DL50-0	License enabling an additional 50 field devices, 2,500 points for one FX80

Table 11: EMEA

Product code number	Description
FX-SC8PL500-0E	License enabling an additional 500 points for one FX80
FX-SC8PL01K-0E	License enabling an additional 1,250 points for one FX80
FX-SC8PL02K-0E	License enabling an additional 2,500 points for one FX80

Note: Additional devices are used to expand capacity from the core device license. For example, you can order the FX-SC8DL25-0 with the FX-SC8CL025-0 for a total of 50 devices, 2,500 points.

Niagara analytics licenses ordering information

Table 12: North America

Product code number	Description
FX-ASCL100-0	License enabling 100 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater
FX-ASCL250-0	License enabling 250 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater
FX-ASCL500-0	License enabling 500 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater
FX-ASCL1000-0	License enabling 1,000 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater

Table 13: EMEA

Product code number	Description
FX-ASCL100-0E	License enabling 100 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater. Only available to partners that are Niagara Analytics TCP trained.
FX-ASCL250-0E	License enabling 250 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater. Only available to partners that are Niagara Analytics TCP trained.
FX-ASCL500-0E	License enabling 500 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater. Only available to partners that are Niagara Analytics TCP trained.
FX-ASCL1000-0E	License enabling 1000 analytic points for Niagara Analytics on an FX80 Supervisory Controller at FX Supervisory Family Software Release 14.2 or greater. Only available to partners that are Niagara Analytics TCP trained.

Note: Niagara Analytics products require Niagara Analytics N4 certification. Niagara Analytics certification training requires Niagara 4 TCP Certification.

FX80 supporting software ordering information

Table 14: FX80 supporting software ordering information

Region	Product code number	Description
North America	FX-WBALM-0	License enabling Alarm Portal Client for FX Supervisory Family Software Release 14.2 or greater
EMEA	FX-WBALM-0E	

FX80 Controller software accessories ordering information

Table 15: North America

Product code number	Description
FX-SC8LCCN-0	License enabling Carrier® Communication/Comfort Network (CCN) driver for one FX80 Supervisory Controller; initial purchase
FX-SC8LCCN-6	License enabling Carrier CCN driver for one FX80; upgrade after initial purchase
FX-SC8LAC-6	License enabling AC256 over RS-232 or RS-485 driver
FX-SC8LAINF-6	License enabling Andover® Infinity driver
FX-SC8LAPHP-6	License enabling American Auto-Matrix™ PHP over RS-232 or RS-485 driver
FX-SC8LAPUP-6	License enabling American Auto-Matrix™ PUP over RS-232 or RS-485 driver

Table 15: North America

Product code number	Description
FX-SC8LFLEX-6	License enabling Flex™ driver over RS-232 or RS-485
FX-SC8LMCQ-6	License enabling McQuay® driver to OPM driver
FX-SC8LVDRT-6	License enabling Veeder-Root® RS-232 or RS-485 driver

Note: FX-SC8LAC-6 is available in Beta version only.

Note: The FX-SC8LVDRT-6 is supported at FX Supervisory Family Software Release 6.3 only. This driver is not supported at FX Supervisory Family Software Release 14.x.

Note: All 6.x license parts were discontinued on July 1, 2021 and are no longer available.

Table 16: EMEA

Product code number	Description
FX-SC8LCCN-0E	License enabling Carrier® Communication/Comfort Network (CCN) driver for one FX80 Supervisory Controller; initial purchase
FX-SC8LCCN-6E	License enabling Carrier CCN driver for one FX80; upgrade after initial purchase
FX-SC8LSLFID-0E	License enabling Micros Fidelio IP driver for FX80 and FX Server

FX80 Controller hardware accessories ordering information

Table 17: FX80 Controller hardware accessories ordering information

Region	Product code number	Description
North America	FX-SC8SD-700	FX80 micro SD replacement (micro SD only); no licenses
EMEA	FX-SC8SD-700E	
North America	FX-SC8XLON-0	LonWorks FX80 expansion module for the FX80 Supervisory Controller
EMEA	FX-SC8XLON-0E	
North America	FX-SC8XD485-0	Dual port isolated RS-485 expansion module for the FX80 Supervisory Controller
EMEA	FX-SC8XD485-0E	
North America	FX-SC8X232-0	RS-232 expansion module for the FX80 Supervisory Controller
EMEA	FX-SC8X232-0E	
North America	FX-SC8AKIT-700	FX80 accessory kit including replacement connectors
EMEA	FX-SC8AKIT-700E	FX80 accessory kit including replacement connectors
North America	FX-SC8XKIT-700	FX80 expansion module kit including one-size-fits-all replacement connector
EMEA	FX-SC8XKIT-700E	FX80 expansion module kit including one-size-fits-all replacement connector
North America	FX-SC8XPS-0	FX80 universal wall mount power supply 100–240 VAC/24 V includes United States, Europe, United Kingdom, and Australia style plugs
EMEA	FX-SC8XPS-0E	
EMEA	FX-SC8WKIT-700E	Extension cable and bracket for FX80 WLAN
North America	FX-SC8XIOR16-0	Remote input/output module for the FX Supervisory Controllers; includes 8 universal inputs, 4 relay outputs, and four 0-10 V analog outputs.
EMEA	FX-SC8XIOR16-0E	
North America	FX-SC8XIOR34-0	Remote input/output module for the FX Supervisory Controllers; includes 16 universal inputs, 10 relay outputs, and eight 0-10 V analog outputs.
EMEA	FX-SC8XIOR34-0E	

FX80 Controller - ESIGN and FIPS 140-2 accessories (North America only)

Table 18: FX80 Controller - ESIGN and FIPS 140-2 accessories (North America only)

Product code number	Description
FX-SC8FIPS-0	Provides FIPS 140-2 Level 1 conformance that uses the integrated FIPS-certified BouncyCastle module for an FX80. Compatible with FX version 14.6 and later.
FX-SC8LES250-0	License enabling e-signature application with 250 points for FX80
FX-SC8LESUNL-0	License enabling e-signature application with unlimited points for FX80
FX-SC8LESUP25-0	License adding 250 e-signature points for FX80
FX-TSES-0	E-signature technical support - up to 8 hours in 90-day period following order placement.

ⓘ **Note:** FX-TSES-0 is required with the first ESIGN order.

Table 19: FX80 Controller - ESIGN EMEA

Product code number	Description
FX-SC8LES250-0E	License enabling e-signature application with 250 points for FX80
FX-SC8LESUNL-0E	License enabling e-signature application with unlimited points for FX80
FX-SC8LESUP2-0E	License adding 250 e-signature points for FX80
FX-TSES-0E	E-signature technical support - up to 8 hours in 90-day period following order placement
FX-ESIGNELRN-0E	FX Niagara 4 e-signature Certification (E-learning)

ⓘ **Note:** FX-TSES-0E is required with the first ESIGN order.

Table 20: FX80 Controller - JSON and HTTP Client software licenses

Product code number	Description
FX-SC8LJSON-0	License enabling JSON Toolkit for FX80 (Valid Software Maintenance required)
FX-SC8LHTTP-0	License enabling HTTP Client to integrate webservices and RESTful API endpoints for FX80 (Valid Software Maintenance required)

Table 21: FX80 Controller - JSON and HTTP Client software licenses (EMEA only)

Product code number	Description
FX-SC8LJSON-0E	License enabling JSON Toolkit for FX80 (Valid Software Maintenance required)
FX-SC8LHTTP-0E	License enabling HTTP Client to integrate webservices and RESTful API endpoints for FX80 (Valid Software Maintenance required)

FX80 is restricted from being sold in the following countries

Table 22: FX80 is restricted from being sold

Country	Country code	FX80 part number with Wi-Fi	FX80 part number with Wi-Fi disabled
Cuba	—	Restricted from Sale	Restricted from Sale
Iran	—	Restricted from Sale	Restricted from Sale
North Korea	—	Restricted from Sale	Restricted from Sale
Sudan	—	Restricted from Sale	Restricted from Sale
Syria	—	Restricted from Sale	Restricted from Sale

Technical specifications

Table 23: FX80 Supervisory Controller technical specifications

Specification	Description
Enclosure/ mounting	Plastic/DIN Rail
Dimension	179 mm x 110 mm x 61 mm (7.05 in. x 4.33 in. x 2.40 in.)
Power supply	24 VAC/DC
Processor	TI AM3352: 1000MHz ARM® Cortex™ A8
RAM memory	1 GB DDR3 SD RAM
Flash memory	Removable micro-SD card with 4 GB flash total storage, 2 GB user storage
Environment	Operating Temperature: -20ºC to 60ºC (-4ºF to 140ºF) Storage Temperature: -40ºC to 85ºC (-40ºF to 185ºF) Relative Humidity: 5% to 95%, noncondensing
Onboard	2 Ethernet 10/100 Mbps; 2 RS-485 (Isolated); 1 USB, 1 Micro USB, Fast USB Bus; Wi-Fi
Plug-in options	Dual port RS-485 (Isolated); LON FT/TP-10; RS-232
Network drivers	
Embedded	N2, BACnet, Niagara
Direct I/O	
Onboard	None
Optional	Up to 256 by using 16 Remote I/O Modules
Local (NDIO)	None
Remote I/O	Up to 256 I/O by using 16 Remote I/O Modules
Compliance	**United States** UL Listed, File E207782, CCN PAZX, under UL 916, Energy Management Equipment FCC compliant to CFR 47, part 15, subpart C, Class B
	Canada UL Listed, File E207782, CCN PAZX7, under CSA C22.2 No. 205, Signal Equipment Industry Canada compliant to ICES-003
CE	**Europe** CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.

Table 24: FX Workbench requirements

Requirement	Description
Processor	Intel® Pentium® 4, 1 GHz or higher 102 mm x 92 mm x 67 mm (4 x 3.625 x 2.625 in.)
Operating System	**32-bit**: Windows® 10 Pro or Enterprise, Windows 8 Pro or Enterprise, Windows 7 Professional, Enterprise, or Ultimate, or Windows XP® Professional **64-bit**: Windows® 10 Pro or Enterprise, Windows 8.1 Pro or Enterprise, Windows 8 Pro or Enterprise, Windows 7 Professional, Enterprise, or Ultimate, Windows Server 2012 Standard or Enterprise with SP2, or Windows Server® 2012 R2 Standard or Enterprise with SP2
Memory	1 GB minimum, 4 GB or more recommended for larger systems
Hard disk	4 GB minimum, more recommended depending on archiving requirements
Network support	Ethernet 10/100 Mbps with RJ-45 connector

ⓘ **Note:** The information relating to Processor in this table applies to both the FX Supervisory Software Release 14.x and FX Supervisory Software Release 6.x if using the AX license

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

Patents: https://jcipat.com

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