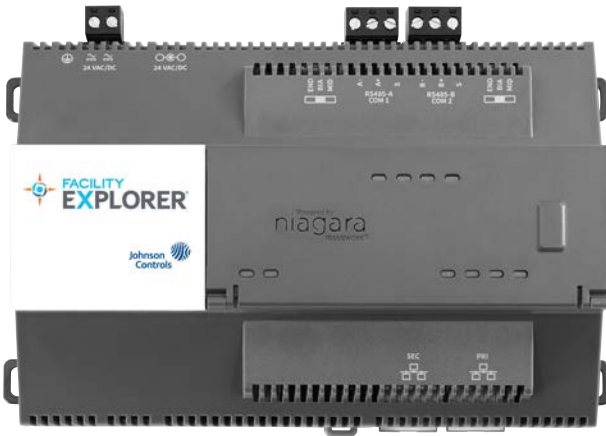


Overview

Figure 1: FX90 Supervisory Controller



The FX90 is a web-based supervisory controller in the Facility Explorer® product family, with advanced features for enhanced performance. It provides integrated control supervision and network management services for local networks of equipment controllers. The FX90 Supervisory Controller supports a full set of building automation features, such as scheduling, alarming, historical data collection and management, data sharing, 3D system graphics, energy management, totalization, customized control routines, tagging, templates, search, and hierarchies, which are specifically designed for commercial facilities.

Each FX90 Supervisory 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 FX90 Supervisory Controller concurrently. You can manage security and presentation preferences through user profiles, log on IDs, and passwords.

The FX90 Supervisory Controller is a compact DIN rail mountable controller with the capability for remote external input and output points.

In addition, the FX90 Supervisory Controller's hardware and software design is modular, so

you can plug in accessories such as optional communication modules. The device and point licensing options allow you to select the device and point capacity most appropriate for the size of your facility and the options best needed to control it.

Features and benefits

Web-based user interface

Provides rich, graphical displays for system operation and analysis.

Adoption of industry standard communication protocols

Assures compliance to standards to support interoperability with third-party equipment controllers.

Modular design

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

Small, compact design

The FX90 Supervisory Controller is easy to install.

FX Workbench

Reduces engineering and installation time by providing you a way to easily and quickly create the FX90 database from equipment controller configurations offline.

FX Appliance

The FX Appliance offers over 20 distinct productivity features built on top of the Niagara framework. It enables users to quickly build a system configuration database in minutes, with automatic tagging, auto-generated 3D graphics, and more, saving time and money from bid to operation.

Niagara® analytics

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

Options to commission and license the FX90 Supervisory Controller

At this release with 14.13.2 software, the FX90 Supervisory Controller is available in one option:

- A stock option that the customer commissions. The customer stocks the unit and chooses when to commission and start the maintenance period.

► **Important:** The stock option requires FX Workbench to commission and upgrade the unit.

The factory commissioned and licensed option will be available for the FX90 Supervisory Controller at a later release.

- ① **Note:** Update the FX release from the factory release to a currently supported release to ensure the latest fixes, cybersecurity fixes, and features.

Ordering information

For every FX90 Supervisory Controller you purchase, you will need a core device license and a software maintenance license.

- A core device license (FX-SC9CL###-0): A core device license is required for each FX90. Core device licenses come in 5, 10, 25, 100, 200, and demo sizes. Only one core license can be applied to each FX90.
 - A software maintenance license (FX-SC9D###M#-0): The software maintenance must match the total number of device licenses (core and additional). Choose from 1, 3, or 5 years.
- ① **Note:** The demo version does not require the software maintenance license. The demo license requires yearly renewal and expires on October 31st.

After the above requirements are met, additional licenses may be added to the FX90:

- Additional device licenses (FX-SC8DL##-0): These licenses extend the total device license count of an FX80 or FX90. For example, if a total of 50 device licenses are required for an FX90, you would purchase the FX-SC8DL25-0 in addition to the core device license, FX-SC9CL025-0.
- ① **Note:** To order additional device licenses, the same product code FX-SC8DL##-0 applies to the FX80 and FX90 Supervisory Controllers.

FX90 Supervisory Controller

Table 1: FX90 Supervisory Controller ordering information

Region	Product code number	Description
Americas	FX-SC9BASE-0	FX90 Supervisory Controller (non-WiFi model) and micro Secure Digital (SD) card, licensing required and purchased separately
Americas	FX-SC9BASE-700	Replacement FX90 Supervisory Controller (non-WiFi model), no micro SD card, no licenses

FX90 core device licenses

① **Note:** You can purchase the following parts in multiples.

Table 2: Americas

Product code number	Description
FX-SC9CL005-0	FX90 Supervisory Controller core device license, 5 field devices or 250 points
FX-SC9CL010-0	FX90 Supervisory Controller core device license, 10 field devices or 500 points
FX-SC9CL025-0	FX90 Supervisory Controller core device license, 25 field devices or 1,250 points
FX-SC9CL100-0	FX90 Supervisory Controller core device license, 100 field devices or 5,000 points
FX-SC9CL200-0	FX90 Supervisory Controller core device license, 200 field devices or 10,000 points
FX-SC9CLDEMO-0	FX90 Supervisory Controller demo license, 500 field devices. 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.
① Note: Software Maintenance is not required for the FX-SC9CLDEMO-0. The existing annual support and renewal fee covers this.	

FX90 software maintenance licenses

Table 3: Americas

Product code number	Description
FX90 Software Maintenance Licenses: 1 Year	
FX-SC9D005M1-0	Initial purchase 1-Year Software Maintenance for FX90 with 5–9 field devices
FX-SC9D010M1-0	Initial purchase 1-Year Software Maintenance for FX90 with 10–24 field devices
FX-SC9D025M1-0	Initial purchase 1-Year Software Maintenance for FX90 with 25–99 field devices
FX-SC9D100M1-0	Initial purchase 1-Year Software Maintenance for FX90 with 100–199 field devices
FX-SC9D200M1-0	Initial purchase 1-Year Software Maintenance for FX90 with 200 and up field devices
FX-SC9D005M1-6	Additional 1-Year Software Maintenance for FX90 with 5–9 field devices
FX-SC9D010M1-6	Additional 1-Year Software Maintenance for FX90 with 10–24 field devices
FX-SC9D025M1-6	Additional 1-Year Software Maintenance for FX90 with 25–99 field devices
FX-SC9D100M1-6	Additional 1-Year Software Maintenance for FX90 with 100–199 field devices

Table 3: Americas

Product code number	Description
FX-SC9D200M1-6	Additional 1-Year Software Maintenance for FX90 with 200 and up field devices
FX90 Software Maintenance Licenses: 3 Year	
FX-SC9D005M3-0	Initial purchase or additional 3-Year Software Maintenance for FX90 with 5-9 field devices
FX-SC9D010M3-0	Initial purchase or additional 3-Year Software Maintenance for FX90 with 10-24 field devices
FX-SC9D025M3-0	Initial purchase or additional 3-Year Software Maintenance for FX90 with 25-99 field devices
FX-SC9D100M3-0	Initial purchase or additional 3-Year Software Maintenance for FX90 with 100-199 field devices
FX-SC9D200M3-0	Initial purchase or additional 3-Year Software Maintenance for FX90 with 200 and up field devices
FX90 Software Maintenance Licenses: 5 Year	
FX-SC9D005M5-0	Initial purchase or additional 5-Year Software Maintenance for FX90 with 5-9 field devices
FX-SC9D010M5-0	Initial purchase or additional 5-Year Software Maintenance for FX90 with 10-24 field devices
FX-SC9D025M5-0	Initial purchase or additional 5-Year Software Maintenance for FX90 with 25-99 field devices
FX-SC9D100M5-0	Initial purchase or additional 5-Year Software Maintenance for FX90 with 100-199 field devices
FX-SC9D200M5-0	Initial purchase or additional 5-Year Software Maintenance for FX90 with 200 and up field devices

① **Note:** When a period of time occurs between when the software maintenance license expires and the renewal license begins, you will be required to pay for this lapsed period.

FX80 and FX90 additional field device licenses

Table 4: Americas

Product code number	Description
FX-SC8DL10-0	License enabling an additional 10 field devices or 500 points for one FX80 or FX90
FX-SC8DL25-0	License enabling an additional 25 field devices or 1,250 points for one FX80 or FX90
FX-SC8DL50-0	License enabling an additional 50 field devices or 2,500 points for one FX80 or FX90

Niagara Analytics licenses

Table 5: Americas

Product code number	Description
FX-ASCL100-0	License enabling 100 analytic points for Niagara Analytics on an FX80 or FX90 Supervisory Controller
FX-ASCL250-0	License enabling 250 analytic points for Niagara Analytics on an FX80 or FX90 Supervisory Controller
FX-ASCL500-0	License enabling 500 analytic points for Niagara Analytics on an FX80 or FX90 Supervisory Controller
FX-ASCL1000-0	License enabling 1,000 analytic points for Niagara Analytics on an FX80 or FX90 Supervisory Controller

① **Note:** Niagara Analytics products require Niagara Analytics N4 certification. Niagara Analytics certification training requires Niagara 4 TCP Certification.

FX90 supporting software

Table 6: FX90 supporting software

Region	Product code number	Description
Americas	FX-WBALM-0	License that enables Alarm Portal Client

FX80 and FX90 Controller software accessories

Table 7: Americas

Product code number	Description
FX-SC8LCCN-0	License enabling Carrier® Communication/Comfort Network (CCN) driver for one FX80 or FX90 Supervisory Controller; initial purchase
FX-SC8LCCN-6	License enabling Carrier CCN driver for one FX80 or FX90; 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 7: Americas

Product code number	Description
FX-SC8LFLEX-6	License enabling Flex™ driver over RS-232 or RS-485
FX-SC8LMCQUAY-6	License enabling McQuay® driver to OPM driver

FX80 and FX90 Controller hardware accessories

Table 8: FX80 and FX90 Controller hardware accessories ordering information (Americas)

Product code number	Description
FX-SC9SD-700	FX90 micro SD replacement, micro SD only, no licenses
FX-SC8XLON-0	LonWorks FX80 and FX90 expansion module for the FX80 and FX90 Supervisory Controller
FX-SC8XD485-0	Dual port isolated RS-485 expansion module for the FX80 and FX90 Supervisory Controller
FX-SC8X232-0	RS-232 expansion module for the FX80 and FX90 Supervisory Controller
FX-SC8AKIT-700	FX80 and FX90 accessory kit including replacement connectors
FX-SC8XKIT-700	FX80 and FX90 expansion module kit including one-size-fits-all replacement connector
FX-SC8XPS-0	FX80 and FX90 universal wall mount power supply 100–240 VAC/24 V includes United States, Europe, United Kingdom, and Australia style plugs
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
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

FX80 and FX90 Controller - E-SIGN and FIPS 140-2 accessories (Americas only)

Table 9: FX80 and FX90 Controller - E-SIGN and FIPS 140-2 accessories (Americas 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 and FX90. Compatible with FX version 14.6 and later
FX-SC8LES250-0	License enabling e-signature application with 250 points for FX80 and FX90
FX-SC8LESUNL-0	License enabling e-signature application with unlimited points for FX80 and FX90

Table 9: FX80 and FX90 Controller - E-SIGN and FIPS 140-2 accessories (Americas only)

Product code number	Description
FX-SC8LESUP25-0	License adding 250 e-signature points for FX80 and FX90
FX-TSES-0	E-signature technical support - up to 8 hours in 90-day period following order placement

① **Note:** FX-TSES-0 is required with the first E-SIGN order.

Table 10: FX80 and FX90 Controller - JSON and HTTP Client software licenses

Product code number	Description
FX-SC8LJSON-0	License enabling JSON Toolkit for FX80 and FX90 (Valid Software Maintenance required)
FX-SC8LHTTP-0	License enabling HTTP Client to integrate webservice and RESTful API endpoints for FX80 and FX90 (Valid Software Maintenance required)

FX90 is restricted from being sold in the following countries

Table 11: Restricted countries

Country	Country code
Belarus	BY
Cuba	CU
Iran	IR
North Korea	KP
Russia	RU
Sudan	SD
South Sudan	SS
Syria	SY
Venezuela	VE

Technical specifications

Table 12: FX90 Supervisory Controller technical specifications

Specification	Description
Enclosure	Plastic
Mounting	DIN rail
Dimensions (h x w d)	179 mm x 110 mm x 61 mm (7.05 in. x 4.33 in. x 2.40 in.)
Power supply	24 VAC rated at 24 VA minimum, or 24 VDC rated at 1 A (24 W) minimum
Processor	NXP iMX8M+ Quad Core CPU
RAM memory	2GB LPDDR4 RAM
Flash memory	8 GB onboard EMMC storage 8 GB micro-SD card: backup media
Environment	Operating temperature: -20°C to 60°C (-4°F to 140°F) Storage temperature: -40°C to 85°C (-40°F to 185°F) Humidity: 5% to 95%, non-condensing
Onboard	Two Ethernet ports: 10/100/1000 MB Two isolated RS-485 ports with selectable bias and termination USB type C
Plug-in options	Two isolated RS-485 ports with selectable bias and termination
Network drivers	
Embedded	N2, BACnet, FX 14.13.2 or higher
Direct I/O	
Onboard	None
Optional	Up to 256 I/O when you use 16 remote I/O modules. The I/O module part numbers are IO-R-16 and IO-R-34
Local (NDIO)	None
Remote I/O	Up to 256 I/O when you use 16 remote I/O modules. The I/O module part numbers are IO-R-16 and IO-R-34
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

Table 12: FX90 Supervisory Controller technical specifications


Specification	Description
	Canada UL Listed, File E207782, CCN PAZX7, under CSA C22.2 No. 205, Signal Equipment Industry Canada compliant to ICES-003
	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 13: FX Workbench requirements

Requirement	Description
Processor	Intel® Pentium® Core 2 Duo, 2 GHz
Operating System	64-bit: Windows® 10 and 11 Pro or Enterprise, Windows Server 2016 or higher
Memory	8 GB minimum
Hard disk	2 GB minimum. 10 GB minimum for any supervisor
Network support	Ethernet 100 Mbit or 1 Gbit network interface card (NIC) with TCP/IP support

① **Note:** The information that relates to Processor in this table applies to the FX Supervisory Software Release 14.x.

North American Emissions Compliance

United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canada

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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://jciapat.com>

Single point of contact

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