FEDERAL SIGNAL
Safety and Security Systems

Cellular Kit for FC and FCT Controllers

Models: Q-FSCELLKIT-FC and Q-FSCELLKIT-FCT

Description, Installation, and Program Manual

Limited Warranty

This product is subject to and covered by a limited warranty,
a copy of which can be found at www.fedsig.com/SSG-Warranty.
A copy of this limited warranty can also be obtained by written
request to Federal Signal Corporation, 2645 Federal Signal Drive,
University Park, IL 60484, email to info@fedsig.com or
call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or
implied, contractual or statutory, including, but not limited to the
warranty of merchantability, warranty of fitness for a particular
purpose and any warranty against failure of its essential purpose.

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⚠ WARNING

It is important to follow all instructions shipped with this product. This device is to be installed by trained personnel who are thoroughly familiar with the country's electric codes and will follow these guidelines as well as local codes and ordinances, including any state or local noise-control ordinances. Listed below are important safety instructions and precautions you should follow.

Important Notice

Federal Signal reserves the right to make changes to devices and specifications detailed in the manual at any time to improve reliability, function, or design. The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for any inaccuracies.

Publications

Federal Signal recommends the following publications from the Federal Emergency Management Agency for assistance with planning an outdoor warning system:

- The "Outdoor Warning Guide" (CPG 1-17)

- "Civil Preparedness, Principles of Warning" (CPG 1-14)

- FEMA-REP-1, Appendix 3 (Nuclear Plant Guideline)

- FEMA-REP-10 (Nuclear Plant Guideline).

Planning

- If suitable warning equipment is not selected, the installation site for the siren is not selected properly, or the siren is not installed properly, it may not produce the intended optimum audible warning. Follow Federal Emergency Management Agency (FEMA) recommendations.

- If sirens are not activated promptly when an emergency condition exists, they cannot provide the intended audible warning. It is imperative that knowledgeable people, who are provided with the necessary information, be available at all times to authorize the activation of the sirens.

- When sirens are used out of doors, people indoors may not be able to hear the warning signals. Separate warning devices or procedures may be needed to warn people indoors effectively.

- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near sirens. Review and comply with any local or state noise control ordinances and OSHA noise exposure standards, regulations, and guidelines.

- Activating the sirens may not result in people taking the desired actions if those to be warned are not properly trained about the meaning of warning sounds. Users should follow FEMA recommendations and instruct those to be warned of corrective actions to be taken.

- After installation, service, or maintenance, test the siren system to confirm that it operates properly. Test the system regularly to confirm that it will be operational in an emergency.

- If future service and operating personnel do not have these instructions to refer to and are not properly trained, the system may not provide the intended audible warning, and service personnel may be exposed to hazards that could result in death, permanent hearing loss, or other bodily injuries. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to recruits and trainees.

Installation and Service

- Electrocution or severe personal injury can occur when performing various installation and service functions such as making electrical connections, drilling holes, or lifting equipment. Therefore, only experienced and qualified electricians should install this product in compliance with national, state, and any other applicable codes, ordinances, and regulations. Perform all work under the direction of the installation or service crew safety foreman.

- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near the sirens. Sirens may be operated from remote control points. Whenever possible, disconnect all siren power, including batteries, before working near the siren. Review and comply with any local or state noise control ordinances and OSHA noise exposure regulations and guidelines.

- After installation or service, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.

- If future service personnel do not have these instructions to refer to and are not properly trained, the system may not provide the intended audible warning, and service personnel may be exposed to hazards that could result in death, permanent hearing loss, or other bodily injuries. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to recruits and trainees. Give a copy to anyone who is going to service or repair the sirens.

Operation

Failure to understand the capabilities and limitations of your siren system could result in permanent hearing loss, other serious injuries, or death to persons too close to the sirens when you activate them or to those you need to warn. Carefully read and thoroughly understand all safety notices in this manual and all operations-related items in all instruction manuals shipped with the equipment. Thoroughly discuss all contingency plans with those responsible for warning people in your community, company, or jurisdiction. A well-written contingency plan document is recommended.

Hazard Classification

Federal Signal uses signal words to identify the following:

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Read and understand the information contained in this manual before attempting to install or service the siren.

Pay careful attention to notices located on the equipment.

Software Safety Messages

Listed below are important safety instructions and precautions you should follow:

Programming Warning

- Precautions for PC security must be followed. Administrative rights are required.

- Program after reading this manual.

- Only personnel thoroughly familiar with Commander$_®$ operating instructions and the intended method of use should perform the programming.

- Correctly program Commander$_®$ per the user's specific application before placing it into use.

- If programmed incorrectly, Commander$_®$ may fail to operate as intended.

- Test Commander$_®$ for proper operation after programming and before placing into use.

General Description

Introduction

This manual describes how to install the FSIoT cell modem into FC, FCT, and DCFC series products. You can add the modem to an existing communications system for redundancy, or it can replace a one-way or two-way radio.

The modem is compatible with Commander® software and the SS2000+ control systems using the required FSMODEM-CELLBASE modem.

Features

The kit has the following features:

- Easily add cellular communications to existing systems

- Secure managed cloud service

- Replace legacy land mobile radio (LMR) systems or add redundancy

Ordering Information

Table 1 Ordering Information

Part Numbers	Description
Q-FSCELLKIT-FC	FC kit, includes cables and mounting hardware
Q-FSCELLKIT-FCT	FCT kit, includes cables and mounting hardware

Qualifications

Intermediate PC skills are required to install and configure this product. An individual familiar with PC hardware and software is recommended.

Required Equipment

Unpacking the Kit

Ensure that the parts listed in the following tables are included in the package for your kit. If you are missing any parts, contact Customer Support. See Getting Service.

Table 2 Q-FSCELLKIT-FC Kit Contents

Quantity	Description	Part Number
1	PC board	20000544-01
1	I²C cable (straight cable)	175783
1	RS232 cable (crossover cable)	1751168
1	Antenna cable, 10-inch pigtail SMA-NM	175902-11
1	Cellular lightning arrestor (TSX-NFF-BFN)	19902793
2	4-40 Screw	7000444-03
2	4-40 washer	7075080
1	Star washer	7075081

Table 3 Q-FSCELLKIT-FCT Kit Contents

Quantity	Description	Part Number
1	PC board	20000544-01
1	I²C cable (straight cable)	175783
1	RS232 cable (crossover cable)	1751168
1	Antenna cable, 3-foot pigtail SMA-NM	175902-13
1	Cellular lightning arrestor (TSX-NFF-BFN)	19902793
2	4-40 washer	7075080
2	4-40 washer	7075080
1	Star washer	7075081

Required Hardware

You need the following equipment:

- Phillips® flat-head screwdriver: #1 tip size

- Computer running Windows® 10 or higher

Required Software

You need the following software:

- Commander® software with the minimum version of 15.10.0.42

- Update with the minimum version of firmware FCX_5_2_0_5.hex for the FC Controller card

Installing and Configuring the PCB

The following is the procedure for installing and configuring the PCB for the FC, FCT, and DCFC products.

NOTICE

STATIC-SENSITIVE DEVICE: When installing the PC board, avoid Electrostatic Discharge (ESD) by properly grounding yourself and the board. Follow the manufacturer's instructions.

1. Installing the PCB onto the Controller Board

To install the PCB:

1. Turn off the power to the control cabinet.

2. Open the control cabinet.

3. Line the PCB with the two standoffs (or spacers).

4. Slide the PCB through the pins onto the controller board.

5. Use the provided screws and washers to secure the PCB to the controller board.
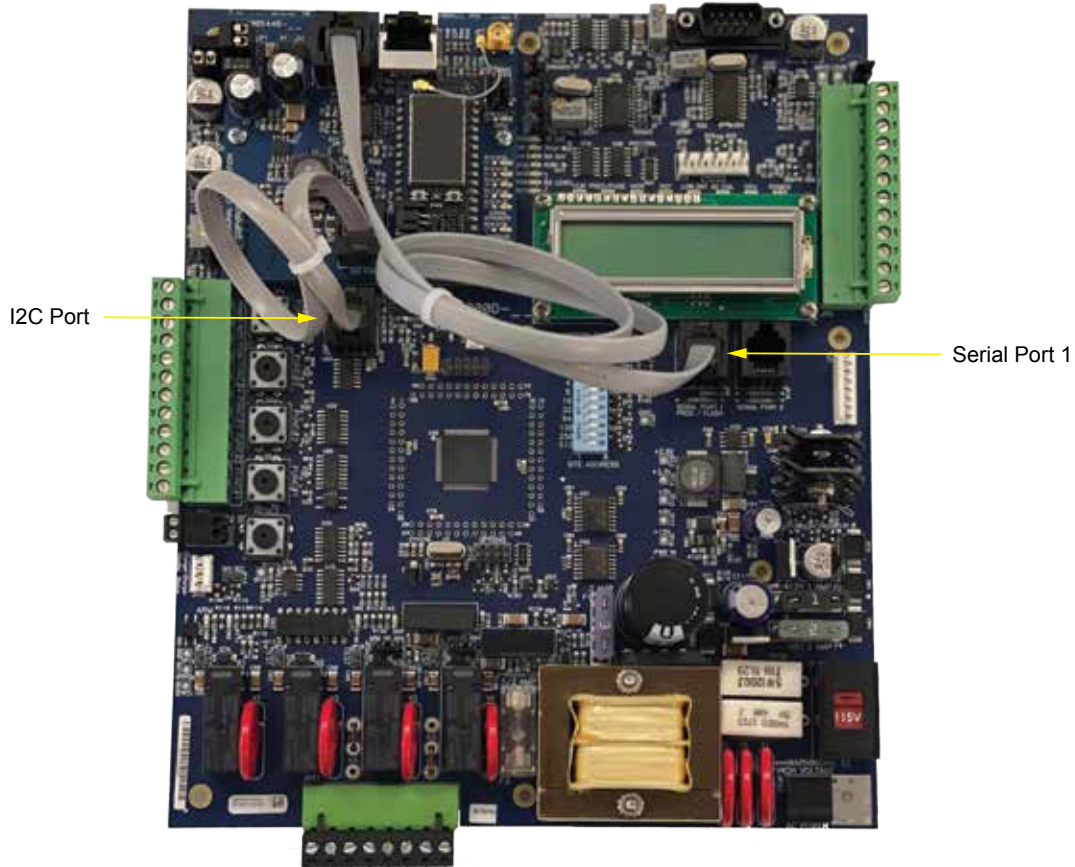
2. Making the Q-FSCELLKIT-FC Connections

If you are installing the PCB in an FCT or DCFC series controller, proceed to the next section, "2. Making the Q-FSCELLKIT-FCT Connections" on page 12.

NOTE: The crossover cable is part number 1751186B. The straight cable is part number 175783A.

6. Connect the RS232 cable (1751168) to the control board at JP8 and the other end to the Serial Port JP5 on the 20000544-01 PCB.

7. Connect the I^2C cable (175783) to the control board at JP32 (I^2C Port) and the other end to JP6 on the 20000544-01 PCB.

Figure 1 Kit Connections on the Controller Board

I2C Port

Serial Port 1

8. Add the rubber o-ring to the bulkhead lightning protector and insert it through the hole at the top of the FC cabinet. Place the star washer (7075081) and nut on the lightning protector and securely fasten them to the enclosure.

9. Connect the 10-inch antenna cable (175902-11) to the PCB and the other end to the bulkhead connector and attach to the top of the cabinet.

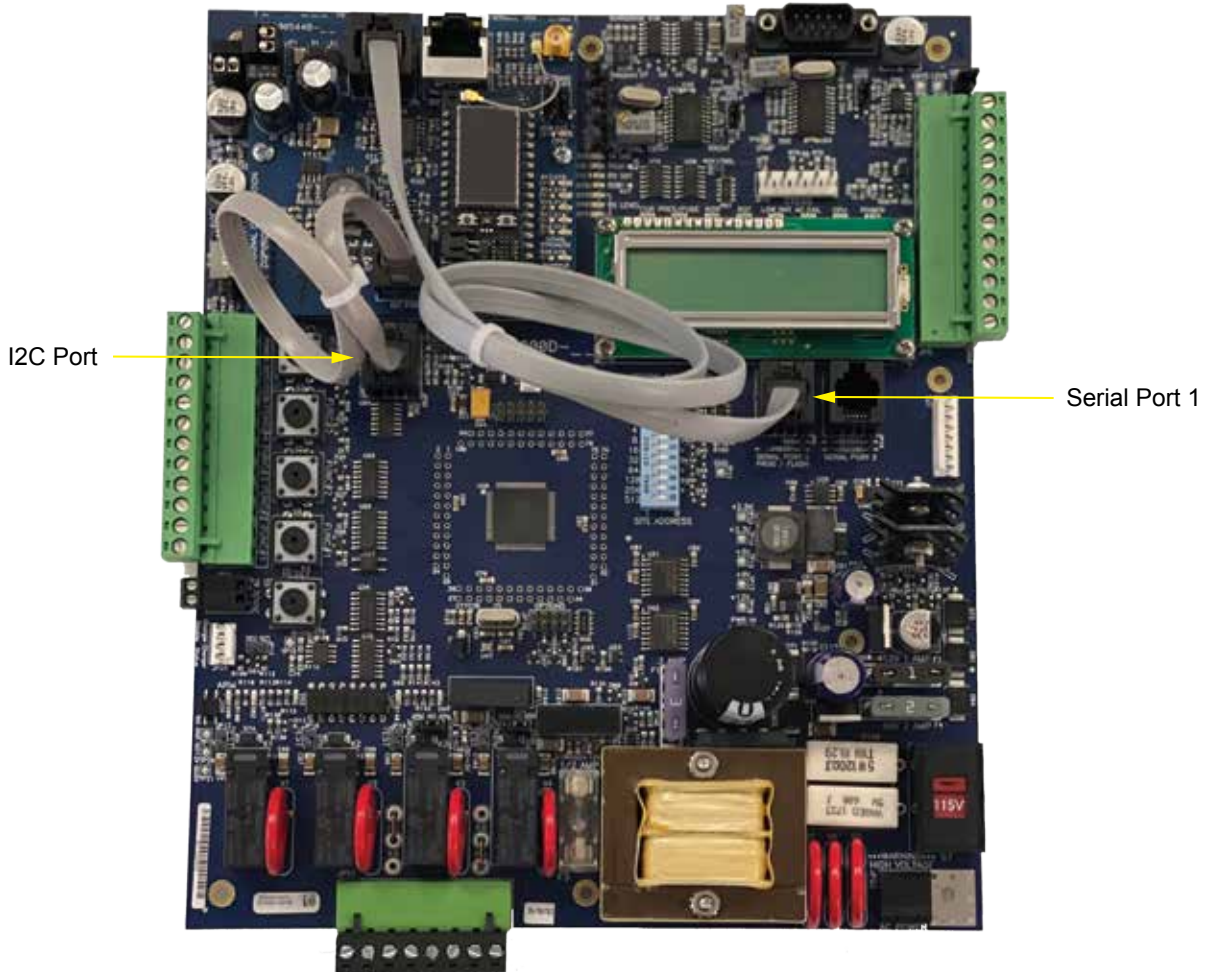**Figure 2 Antenna Connection for the Q-FSCELLKIT-FC**

Bulkhead connection

Antenna connection

2. Making the Q-FSCELLKIT-FCT Connections

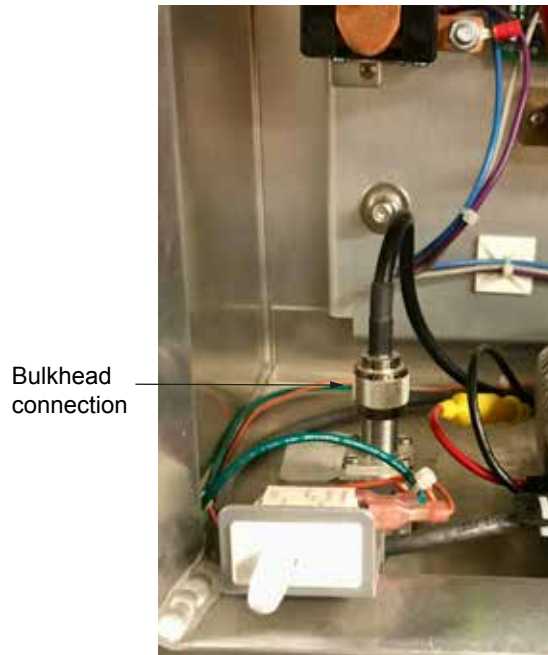**NOTE**: The crossover cable is part number 1751186B. The straight cable is part number 175783A.

10. Connect the RS232 cable (1751168) to the control board at JP8 and the other end to the Serial Port JP5 on the 20000544-01 PCB.

11. Connect the I^{2}C cable (175783) to the control board at JP32 (I^{2}C Port) and the other end to JP6 on the 20000544-01 PCB.

Figure 3 Cellular Kit Installed on Controller Board

I2C Port

Serial Port 1

12. Install the bulkhead cellular lightning arrestor (supplied) using the rubber o-ring, washer, and nut. Replace the existing RF lightning arrestor (if applicable) using the same mounting hole. If the kit is being added to an existing RF system, drill a new 3/4-inch hole near the existing lightning arrestor at the bottom left of the control cabinet. Add the o-ring to the lightning arrestor and insert lightning arrestor in to the mounting hole from the outside of the cabinet. Secure with the provided star washer and nut inside the cabinet.

13. Connect the 3-foot antenna cable (175902-13) between the 20000544-01 PCB and the cellular lightning arrestor.

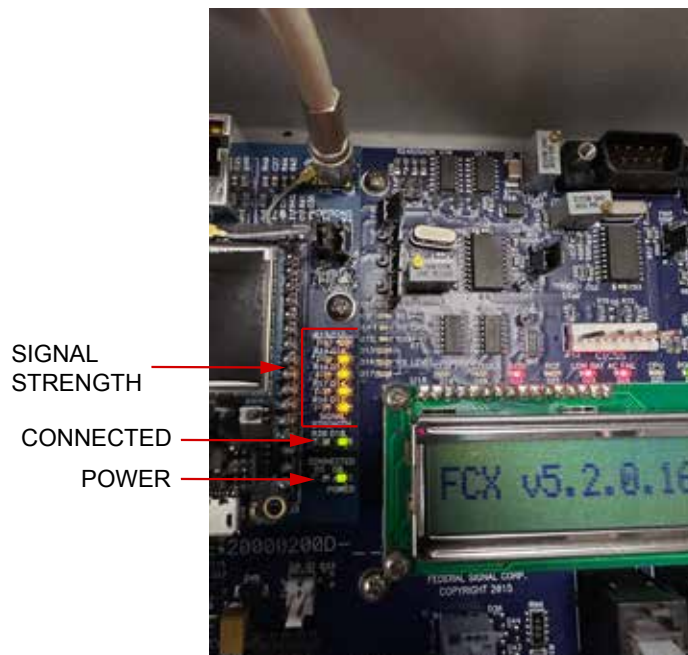**Figure 4 Antenna Connection for the Q-FSCELLKIT-FCT**

Bulkhead connection

For installation instructions on the Yagi and Omni Antennas, go to the Federal Signal's website.

3. Checking the LEDs on the 20000544-01 PCB

14. Turn on the power to the control cabinet.

15. Verify all LEDs are operating correctly on the 20000544-01 PCB:

- The green Connected Power LEDs should be on.

- The yellow signal-strength LEDs (D12-D16) should be on within one minute after the power is applied.

- A minimum of one signal-strength LED and the Connected LED are required to communicate with the cloud server. Performance may be degraded if less than three signal-strength LEDs are on.
  NOTE: See Getting Service if assistance with signal strength improvement is needed.

Figure 5 LEDs on the Controller Board

16. See the Cellular Gateway Modem (manual number 25500822) for information on configuring and testing.

17. Close and lock the control cabinet after you test and confirm the retrofit is working properly.

The FC or FCT installation and configuring is complete.

Getting Service

If you are experiencing any difficulties, contact Federal Signal Customer Support at 800-548-7229 or 708-534-3400 extension 7511 or Technical Support at 800-524-3021 or 708-534-3400 extension 7329 or e-mail at techsupport@fedsig.com. For instruction manuals and information on related products, visit http://www.fedsig.com.