![FieldServer Technologies logo]

A Sierra Monitor Company

FieldServer X-20 Start-Up Guide

APPLICABILITY & EFFECTIVITY

This manual provides instructions for the FS-B20XX-00 Models.

Effective for all systems manufactured after May 2013

Kernel Version:	6.10
Document Revision:	1

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1   EQUIPMENT SET-UP

1.1   Supplied equipment

FS-X20 Series FieldServer loaded with

Modbus RTU driver, SMT Ethernet driver and any other drivers ordered. A default configuration file has already been loaded onto the FieldServer. Check the Driver Manual and the FieldServer Configuration Manual for further information on this file.

USB Flash Drive loaded with:
FS-X20 Series Start-up Guide
FieldServer Configuration Manual
FieldServer Utilities Manual
All FieldServer Driver Manuals
Support Utilities
Any additional folders related to special files configured for a specific FieldServer
Additional components as required - See Driver Manual Supplement for details
Accessories:
DB9F/RJ45 Connection Adapter. (Part # FS-8917-02)
RS-485 connector (Part Number FS-SPA59137)
Set of four different connectors DB9M, DB9F, DB25M, DB25F (Part # FS-8915-11) See Figure 7
Power Supply (Part # 69020)
Connector for power (SPA59136)
Self-Adhesive feet (Part # 69178)

1.2   Mounting

The following mounting options are available:
Wall or panel
Free standing or table
DIN rail (Part # FS-8915-28). Not included.
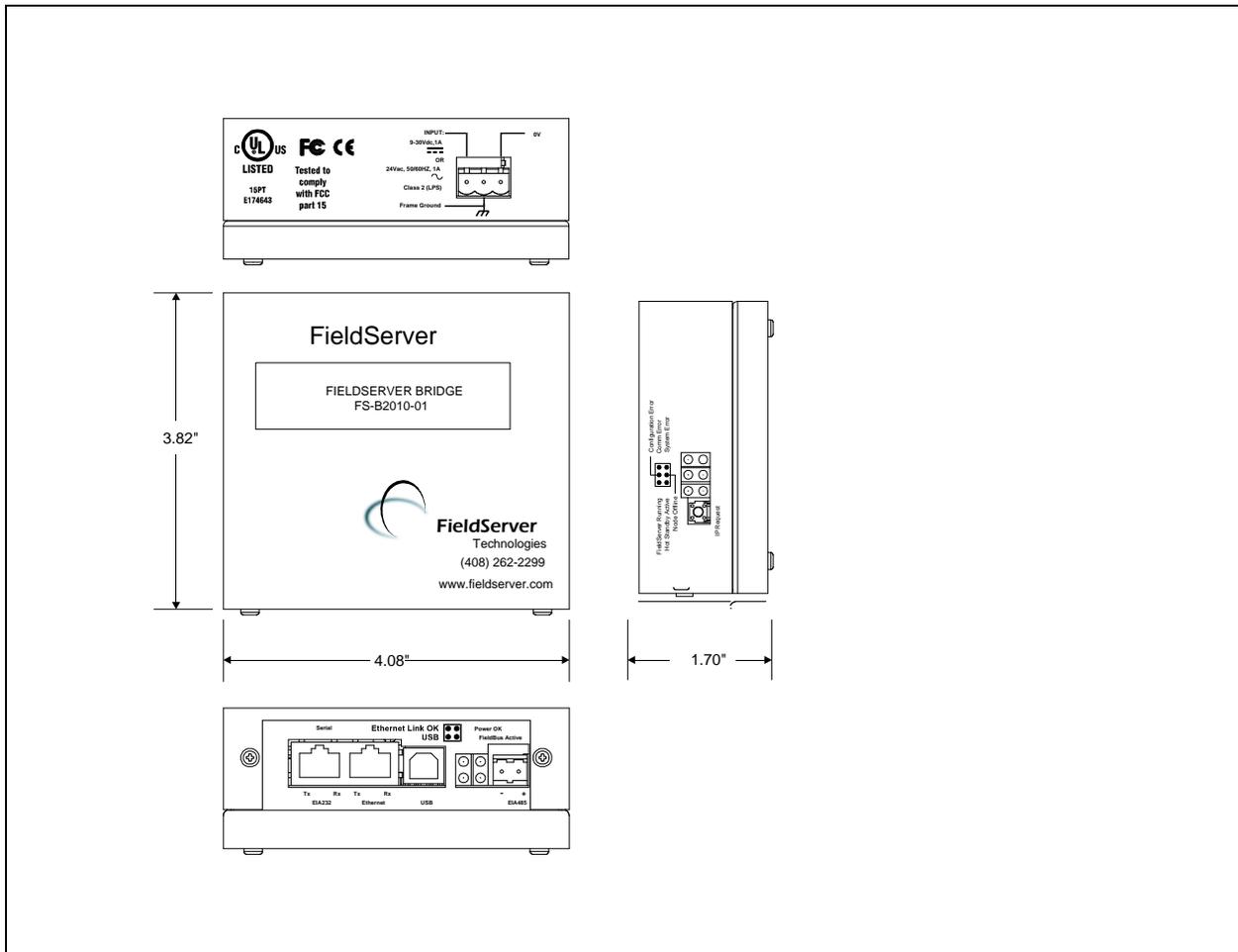
1.3   Dimensions

Figure 1: Diagram of FS-X20 Showing External Dimensions

1.4 Wiring

The 110VAC to 9VDC or 24VDC/ power supply received with the unit needs to be plugged into a power source. The power socket mates with a pluggable terminal block, connector, that is supplied separately (SPA59136). The terminal block is manufactured by Phoenix Contact, model MSTB, (PN 1754465), No.30-12 AWG, 5-7 in/lbs torque. The X20 power supply (P/N 69155) is designed to temporarily provide the power required by the FieldServer during testing and start-up.

Permanent power must be provided for continuous operation. Select an external power supply certified for safety, for the correct destination country and an output rating, which is considered a NEC Class 2 circuit or is a SELV Limited power source.

1.5 Product Specifications

X20 Power requirements (power supply is external)	
Input voltage: 9-30VDC, 8W or 24VAC A voltage variation of ±10% tolerated. USE COPPER CONDUCTORS ONLY	
Surge Suppression	
EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT	
Physical Dimensions(excluding the external power supply)	
(WxDxH):	3.82 x 4.08 x 1.7 inches (9.70 x 10.36 x 4.31 cm)
Weight:	0.8 lbs. (0.36 Kg)
Available Ports	
1 x RJ45 / RS-232 serial connector 1 x RJ45 10-BaseT Ethernet connector 1x FTT10 LonWorks port	
Baud Rates Supported	
BACnet/MSTP: All Baud Rates up to 38400 All other protocols: The platform supports standard baud rates up to 115200 (with the exception of 76800). Note however that not all protocols and vendor devices support the full range of baud rates. See the specific driver manual for further details.	
Environment:	
Operating Temperature:	0 – 60°C (32 – 140°F)
Humidity:	10 - 90% RH (non-condensing)
Approvals:	UL 916 ULC 916 FCC Tested to comply with FCC part 15 CE Marked
(Specifications subject to change without notice)	

2   CONNECTION TO DEVICE

The FS-X20 Series FieldServer is shipped as either a FS-X20XX-01 in which case the RS-232 port is activated, or as a FS-X20XX-02 in which case the RS-485 port is activated. It is possible to change between RS-232 and RS-485 connection, by modifying jumpers on the internal board. Refer to Enote 0017 on the USB drive under the Library folder.

2.1   Serial Connection:

If using an RS-232 RJ45 Serial connection then use one of the RJ45 cables (A) to connect from the serial port on the FieldServer to the connection adapter provided with the FieldServer or the Driver Kit. Then plug the connection adapter to the node. Note: FS-X20 Series RS-232 numbering convention is reverse to the 10BaseT numbering convention

Figure 3: Serial Connection Port

If using an RS-485 serial connection, plug the RJ-45 canle into the serial port on the FieldServer and connect to the node as depicted in the following connection diagram.
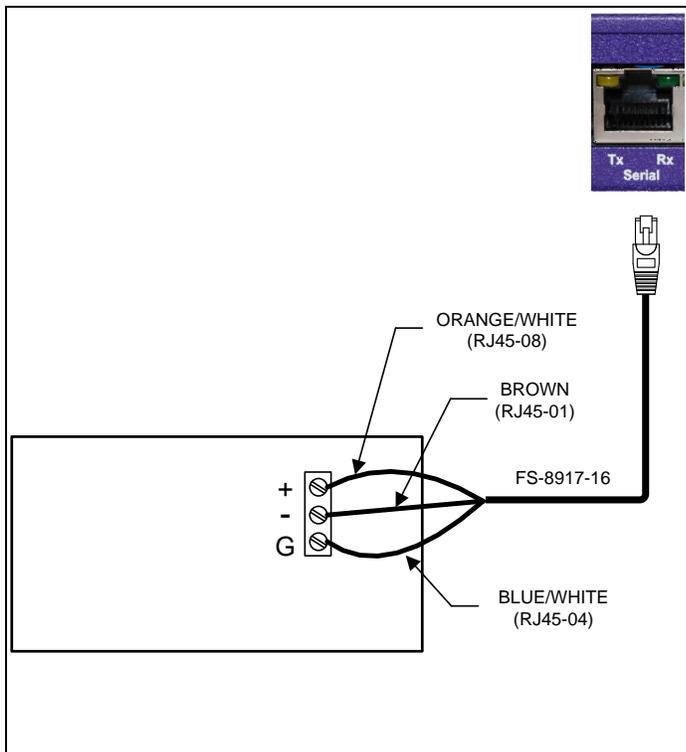
Figure 4: RS-485 Connection pinouts on the serial RJ45 port

2.2   LonWorks

For the FS-X2011 enabled modules the orange port is the TP/F-10 connection and the RS-485 or RS-232 connection needs to be made via the serial RJ-45 port.

Figure 5:LonWorks Connection Ports

2.3   Ethernet

If connecting to a hub/switch use the provided Cat5 UTP Ethernet cable (A) to connect the FieldServer to the hub. If connecting directly to the device, an Ethernet Crossover cable is required (not provided).

Figure 6:Ethernet Connection Port

Note that the USB port is <u>not</u> activated.

3   OPERATION

3.1   Power up the device

- Apply power to the device. Ensure that the power supply used complies with the specifications provided in Section 1.4

- The power light should burn a steady green when the FieldServer is powered up. Refer to Appendix B for more information on the various LED functions.

3.2   Install and Run the Utility Software

- Plug the supplied USB flash drive into the USB port on a PC/laptop. Open Index.html to get the menu of options, run the Install option and follow the installation instructions.

- Once installed, the FieldServer Utilities can be located in the Windows Start menu and as a desktop icon.

3.3   Connect the PC to the FieldServer over the Ethernet port.

- If connecting through a hub/switch, use the supplied Cat5 UTP Ethernet cable to connect between the Ethernet port of the FieldServer and the hub. Refer to Section 2.3 for more information.

- Disable any wireless Ethernet adapters on the PC/Laptop,

- It is important that the PC/Laptop is on the same subnet as the FieldServer. The default IP address on the FieldServer Ethernet port is 192.168.2.X .   Refer to the FieldServer Utilities Manual for information on how to change the FieldServer's IP address.

3.4   Using the ping utility to Identify the FieldServer on the Network

- Select Start|Programs|FieldServer Utilities, browse to the Ping Utility and select it. The display should show
FieldServer Name
IP Address (192.168.2.X)
FieldServer Version

- If necessary, refer to Appendix A for troubleshooting tips.

3.5   Connect using "Remote User Interface" (RUINET)

- All configuration file transfers and system diagnostics are executed via the RUI or "Remote User Interface" which is installed with the Utility software. Refer to the FieldServer Utilities manual for further information.

- Browse to the Remote User Interface icon in the Start menu directory and click on it.

- The RUI menu screen should appear.

- If necessary, refer to Appendix A for troubleshooting tips.

3.6   Upload the Default Configuration

The configuration of the FieldServer is provided to the FieldServer's operating system via a comma-delimited file called "CONFIG.CSV".   If ordered with the FieldServer, the custom configuration is installed; (Reference documentation FS-8790-XX). If a custom configuration is not purchased, a template config.csv is shipped on the FieldServer. Refer to the Configuration Manual and the Driver Manual(s) provided with the FieldServer for further information on configuration files.

In the main menu of the Remote User Interface screen, type "*U*" to upload the configuration. Then type "*U*" again. The Remote User Interface Utility will fetch the default configuration and put it into the Configuration File folder (Start|Programs|FieldServerUtilities|Configuration File folder).

3.7   Change the Configuration File to Meet the Application

Refer to the Configuration Manual in conjunction with the Driver supplements for information on configuring the FieldServer. FieldServer Technologies offers training on this topic as well as a configuration service to complete this portion of the work. See www.fieldserver.com for specific details.

3.8   Download the Updated Configuration File

Before attempting to send files to the FieldServer, ensure that the files are in the configuration file folder. Refer to the FieldServer Utilities manual for further information.

From the main menu, type "D" to access the "download" menu,

Type "L" (for local filename) to specify the name and extension of the file to be sent to the FieldServer. Hit <Enter> when done.

The Remote User Interface Utility will automatically select config.csv for download of csv files. On rare occasions where other files need to be downloaded to the FieldServer type "O" for other files, then type "R" to specify the remote filename needed on the FieldServer.

When satisfied that the correct file names are specified, Type "D" to download the file to the FieldServer. The Remote User Interface Utility will display a menu showing download progress.

Note: the Remote User Interface Utility will indicate when download is complete. DO NOT reset the FieldServer before this message displays, as this could corrupt the FieldServer.

Once download is complete, hit <Esc> to get back to the main menu and use the "!" option (or simply cycle power to the FieldServer) to put the new file into operation. Note that it is possible to do multiple downloads to the FieldServer before resetting it.

Firmware created by FieldServer Technologies can be downloaded from the configuration file by simply typing "F" from the download menu. Note that FieldServer usually supplies firmware upgrades as an install.zip, for which a separate procedure is used, (See ENote 037 on the USB flash drive in a folder called Library).

3.9   Test and commission the FieldServer

Connect the FieldServer to the third party devices, and test the application.

Appendix A. Troubleshooting Tips

Appendix A.1. Communicating with the FieldServer over the Network

- Confirm that the network cabling is correct.

- Confirm that the computer network card is operational and correctly configured.

- Confirm that there is an Ethernet adapter installed in the software configuration, and that it is configured to run the TCP/IP protocol.

- If using Windows XP or later, ensure that the firewall is disabled.

- Ensure that all wireless adapters are disabled.

- Check that the netmask is correct.

Go to Start|Run

Type in "ipconfig"

The account settings should be displayed.

Ensure that the IP address is 192.168.2.X and the netmask 255.255.255.0

The IP address of the FieldServer can be changed using the Remote User Interface Utility. Refer to the FieldServer Utilities manual for information.

- Refer to the FieldServer Troubleshooting Guide
  http://www.fieldserver.com/docs/pdf/FieldServer_TroubleShooting_Guide.pdf for further information.

Appendix A.2. Technical Support

Before contacting Technical support to report an issue, go to Start|Programs|FieldServer utilities|Tools and run the FST_Diag program. Take a log (See ENote0058 in the folder called Library on the USB Flash Drive). Send this log together with the configuration file to support@fieldserver.com for evaluation.

Note that while all necessary documentation is shipped with the FieldServer on the USB flash drive, these documents are constantly being updated. Newer versions may be available on the web at www.fieldserver.com.

Appendix B. LED Functions

Light	Description
Ethernet Link OK.	This light relates to the Ethernet network port provided on the FieldServer. The **Ethernet Link OK** light shows steady green when the physical connection to the network hub is healthy. The **Rx** (Receive) light flashes green when the FieldServer is receiving data from the network. The frequency of flashing is directly related to the network activity. It does not necessarily mean data is being received by the FieldServer. The **Tx** (Transmit) light flashes yellow when the FieldServer is sending data. The frequency of flashing is directly proportional to the frequency of data transmission.
Power OK	This is the power light and should show steady green at all times when the FieldServer is powered.
Fieldbus Active	This light should show steady green when the Fieldbus connection is active. This LED indicates whether LON is running.
FieldServer Running	The light should flash green once per second once the FieldServer has booted up. *Note that it may take a while from power up to booting up the FieldServer if the loaded configuration is particularly large. The light indicates that the FieldServer firmware is running*.
Configuration Error	A steady amber light will indicate a configuration error exists in the active configuration. See the Error Screen in the Remote User Interface for a description of the configuration error.
Comm Error	A steady red light will indicate the communications problem if there is a configured node connected to the FieldServer that is offline. To establish the cause of the error, go to the error screen of the RUI interface.
Hot Standby Active	Not applicable
Node Offline	An amber light will flash when a configured node on the FieldServer is detected as being offline. The flash will repeat after every unsuccessful retry.
System Error	A steady red light will indicate there is a system error on the FieldServer. If this occurs, immediately report the related "system error" shown in the error screen of the RUI interface to FieldServer Technologies for evaluation.
Serial	These lights, built into the connector, are related to the RS-232/RS-485 serial ports provided on the FieldServer. The **Rx** (Receive) light flashes green when the FieldServer is receiving data and the **Tx** (Transmit) light flashes yellow when the FieldServer is sending data. The frequency of flashing is directly proportional to the frequency of data transfer.

Appendix B.1. LON LED Activity:

Note that the LON LED is the Fieldbus active LED.

Explicit	Implicit – Not Commissioned	Implicit – Commissioned
Off	Flashing	Off

The following table provides more information on LED interpretation:

PWR	Run	Hot Standby	Config Error	Node Offline	Comm Error	System Error	Description
ON	FLASH					ON	System Error
ON	FLASH				ON		Comm Error
ON	FLASH			ON			Node Offline
ON	FLASH		ON				Configuration File Error
ON	FLASH	ON					Active FieldServer of Hot Standby pair
ON	FLASH						FieldServer Running
ON	OFF		FLASH				BETA version of DCC running
ON	FLASH		FLASH				Configuration good, but Demo Mode
OFF	OFF	OFF	OFF	OFF	OFF	OFF	No power OR if the lights flash every few minutes intermittently between all LED's off, then FieldServer is continuously rebooting.

Appendix C. Supplied Connector Kit (FS-8915-11)

In order to facilitate RS-232 communications on the RJ-45 RS-232 port, a connector kit is supplied containing one of each of the connectors shown in the diagram below. The tables in the diagram show the functions applied to each of the RJ-45 pins by the FieldServer to assist in determination of the required pinout configuration for connection to the third party device. Note that FS-X30 Series RS-232 numbering convention is reverse to the 10BaseT numbering
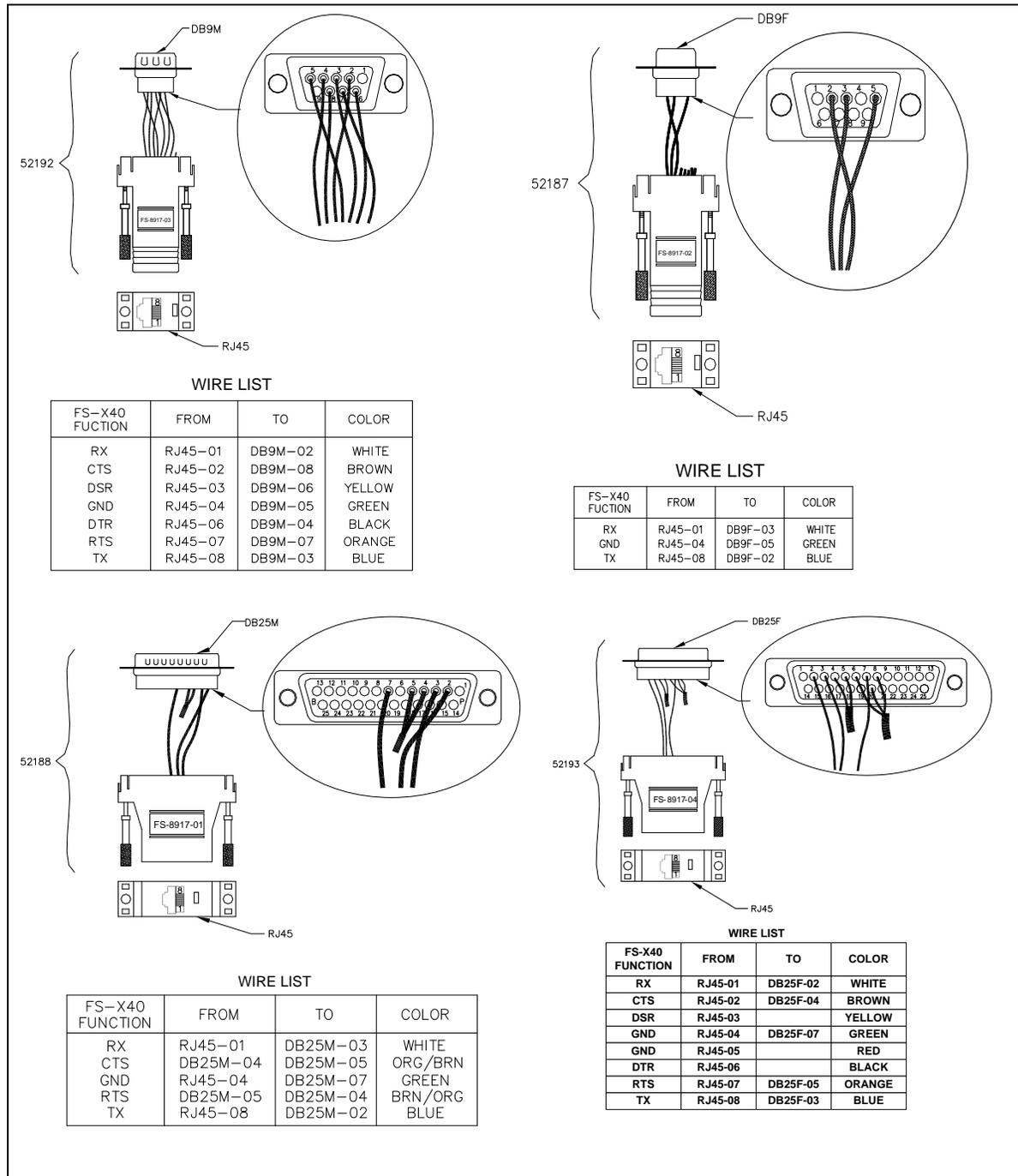

WIRE LIST

FS–X40 FUCTION	FROM	TO	COLOR
RX	RJ45–01	DB9M–02	WHITE
CTS	RJ45–02	DB9M–08	BROWN
DSR	RJ45–03	DB9M–06	YELLOW
GND	RJ45–04	DB9M–05	GREEN
DTR	RJ45–06	DB9M–04	BLACK
RTS	RJ45–07	DB9M–07	ORANGE
TX	RJ45–08	DB9M–03	BLUE

WIRE LIST

FS–X40 FUCTION	FROM	TO	COLOR
RX	RJ45–01	DB9F–03	WHITE
GND	RJ45–04	DB9F–05	GREEN
TX	RJ45–08	DB9F–02	BLUE

WIRE LIST

FS–X40 FUNCTION	FROM	TO	COLOR
RX	RJ45–01	DB25M–03	WHITE
CTS	DB25M–04	DB25M–05	ORG/BRN
GND	RJ45–04	DB25M–07	GREEN
RTS	DB25M–05	DB25M–04	BRN/ORG
TX	RJ45–08	DB25M–02	BLUE

WIRE LIST

FS-X40 FUNCTION	FROM	TO	COLOR
RX	RJ45-01	DB25F-02	WHITE
CTS	RJ45-02	DB25F-04	BROWN
DSR	RJ45-03		YELLOW
GND	RJ45-04	DB25F-07	GREEN
GND	RJ45-05		RED
DTR	RJ45-06		BLACK
RTS	RJ45-07	DB25F-05	ORANGE
TX	RJ45-08	DB25F-03	BLUE

Figure 7: FieldServer Connector Reference

Appendix D. Limited Warranty

FieldServer Technologies warrants its products to be free from defects in workmanship or material under normal use and service for two years after date of shipment. FieldServer Technologies will repair or replace without charge any equipment found to be defective during the warranty period. Final determination of the nature and responsibility for defective or damaged equipment will be made by FieldServer Technologies personnel.

All warranties hereunder are contingent upon proper use in the application for which the product was intended and do not cover products which have been modified or repaired without FieldServer Technologies approval or which have been subjected to accident, improper maintenance, installation or application, or on which original identification marks have been removed or altered. This Limited Warranty also will not apply to interconnecting cables or wires, consumables or to any damage resulting from battery leakage.

In all cases FieldServer Technology's responsibility and liability under this warranty shall be limited to the cost of the equipment. The purchaser must obtain shipping instructions for the prepaid return of any item under this warranty provision and compliance with such instruction shall be a condition of this warranty.

Except for the express warranty stated above, FieldServer Technologies disclaims all warranties with regard to the products sold hereunder including all implied warranties of merchantability and fitness and the express warranties stated herein are in lieu of all obligations or liabilities on the part of FieldServer Technologies for damages including, but not limited to, consequential damages arising out of/or in connection with the use or performance of the product.