



**FieldServer**  
**FS-8700-153 Safe-Fire-Detection – Serial**  
**Driver Manual**  
(Supplement to the FieldServer Instruction Manual)

**APPLICABILITY & EFFECTIVITY**

Effective for all systems manufactured after September 2018

Driver Version: 1.00  
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## Technical Support

Please call us for any technical support needs related to the FieldServer product.

Sierra Monitor Corporation  
1991 Tarob Court  
Milpitas, CA 95035

Website: [www.sierramonitor.com](http://www.sierramonitor.com)

U.S. Support Information:

+1 408 964-4443

+1 800 727-4377

Email: [support@sierramonitor.com](mailto:support@sierramonitor.com)

EMEA Support Information:

+44 2033 1813 41

Email: [support.emea@sierramonitor.com](mailto:support.emea@sierramonitor.com)

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**1 SAFE-FIRE-DETECTION DESCRIPTION**

The Safe-Fire-Detection Master driver implements a data link protocol that uses the services of the RS-485/RS-232 physical layer. CirrusPro network consists of single or multiple detectors and display units. Detector or display unit is referenced as node. Each node is assigned a unique node number. FieldServer will act as master node on network so it should also be configured with a unique node number. This master driver is developed to read current data from each detector node. Data consists of fault status, Fire-Levels, Air Flow value and Particle-Level & gain setting for all 4 pipes.

The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer.

**Max Nodes Supported**

FieldServer Mode	Nodes	Comments
Client	32	
Server	N/A	

## 2 DRIVER SCOPE OF SUPPLY

### 2.1 Supplied by Sierra Monitor

PART #	Description
FS-8917-16	RJ45 to terminal connector cable

### 2.2 Provided by the Supplier of 3<sup>rd</sup> Party Equipment

#### 2.2.1 Hardware

Description
CirrusPro Series detectors on RS-485/RS-232 Network

#### 2.2.2 Optional Items

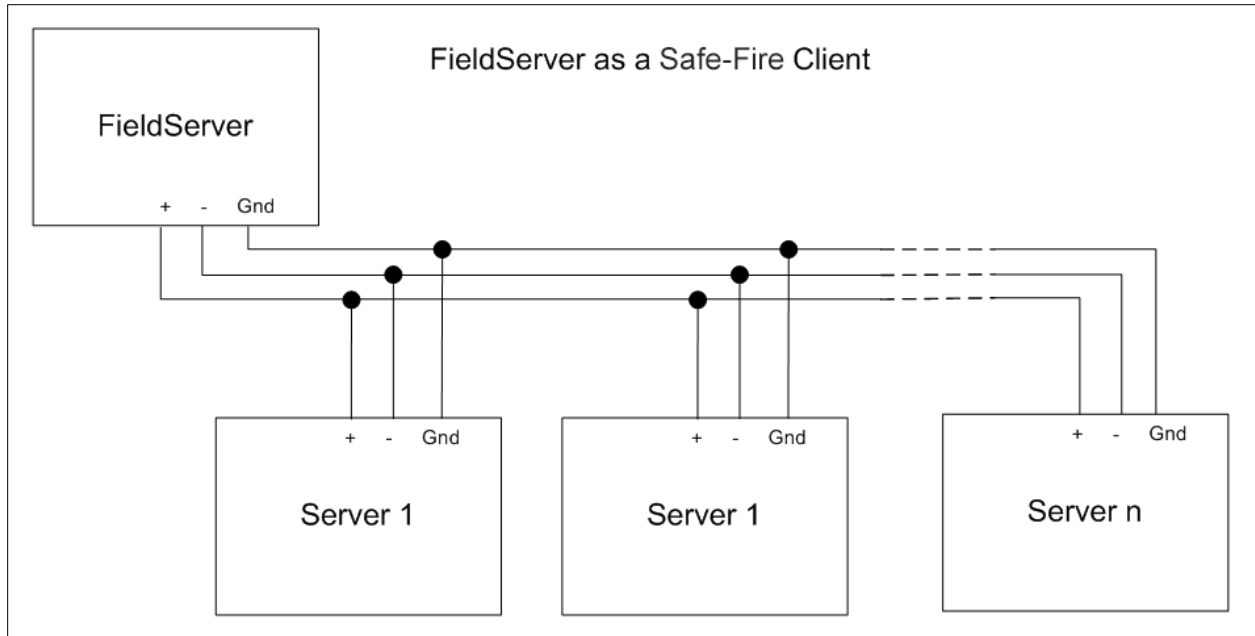
PART #	Vendor/Manufacturer	Description
FS-4301-00	FieldServer	RS-232 to RS-485 converter

**3 HARDWARE CONNECTIONS**

Configure the Safe-Fire-Detection network according to manufacturer's instructions.

Enable BIAS and termination registers on FieldServer.

The FieldServer is connected to the Safe-Fire network as shown in connection drawing below.



### 3.1 Enable the Gateway Bias and Termination Resistors

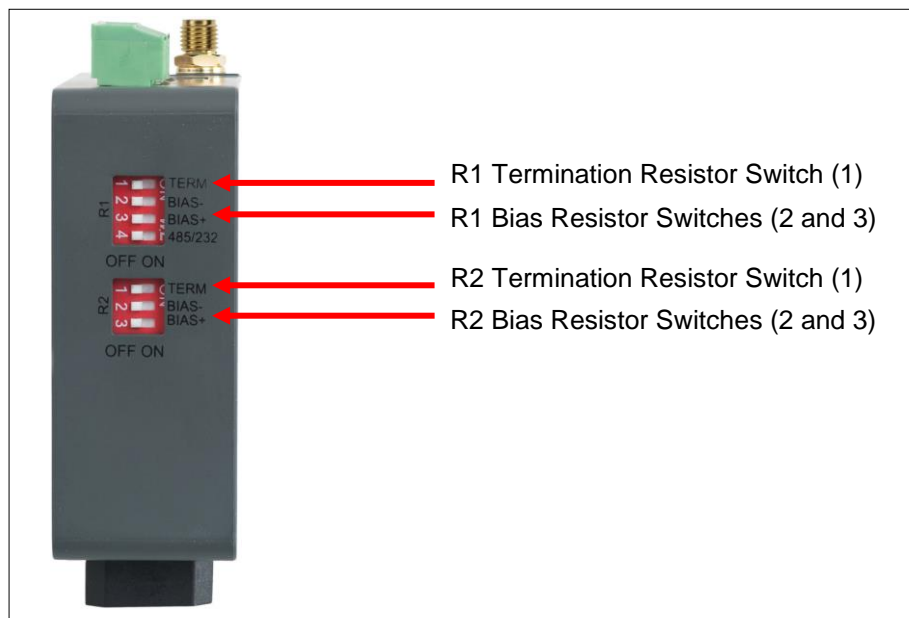
The gateway Bias and Termination Resistors must be enabled to allow the gateway to communicate with the Safe Fire panel.

#### 3.1.1 FPC-N54, FPA-W44 & FPA-C34

**NOTE:** The image below shows the FPA-W44 ProtoAir DIP switches. The FPA-C34 and FPC-N54 are the same but only have R1 port DIP switches.

See the image for the orientation of switch positions referenced below. Both BIAS- and BIAS+ must be enabled.

- The default factory setting is in the OFF position (switch is to the **left** side as shown below).
- To enable, move the switches to the ON position (switch is on the **right** side)



**NOTE:** The image shows all switches in the OFF position.

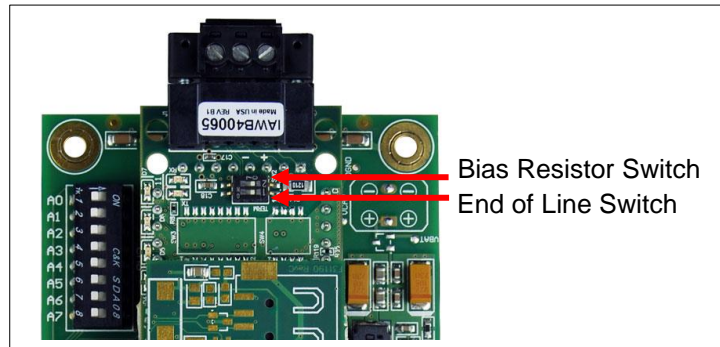
### 3.1.2 ProtoNodes, ProtoCarriers, ProtoCessors and QuickServers

**NOTE: The FPC-N54 ProtoNode follows a separate form factor. See Section 3.1.1 for instructions.**

For ProtoNodes and QuickServers, remove the grey or purple cover to expose the small DIP switches near the field port (opposite of the 6-pin port).

See the image for the orientation of switch positions referenced below.

- The default factory setting is in the OFF position (switch is to the **right** side as shown below).
- To enable, move the switches to the ON position (switch is on the **left** side).



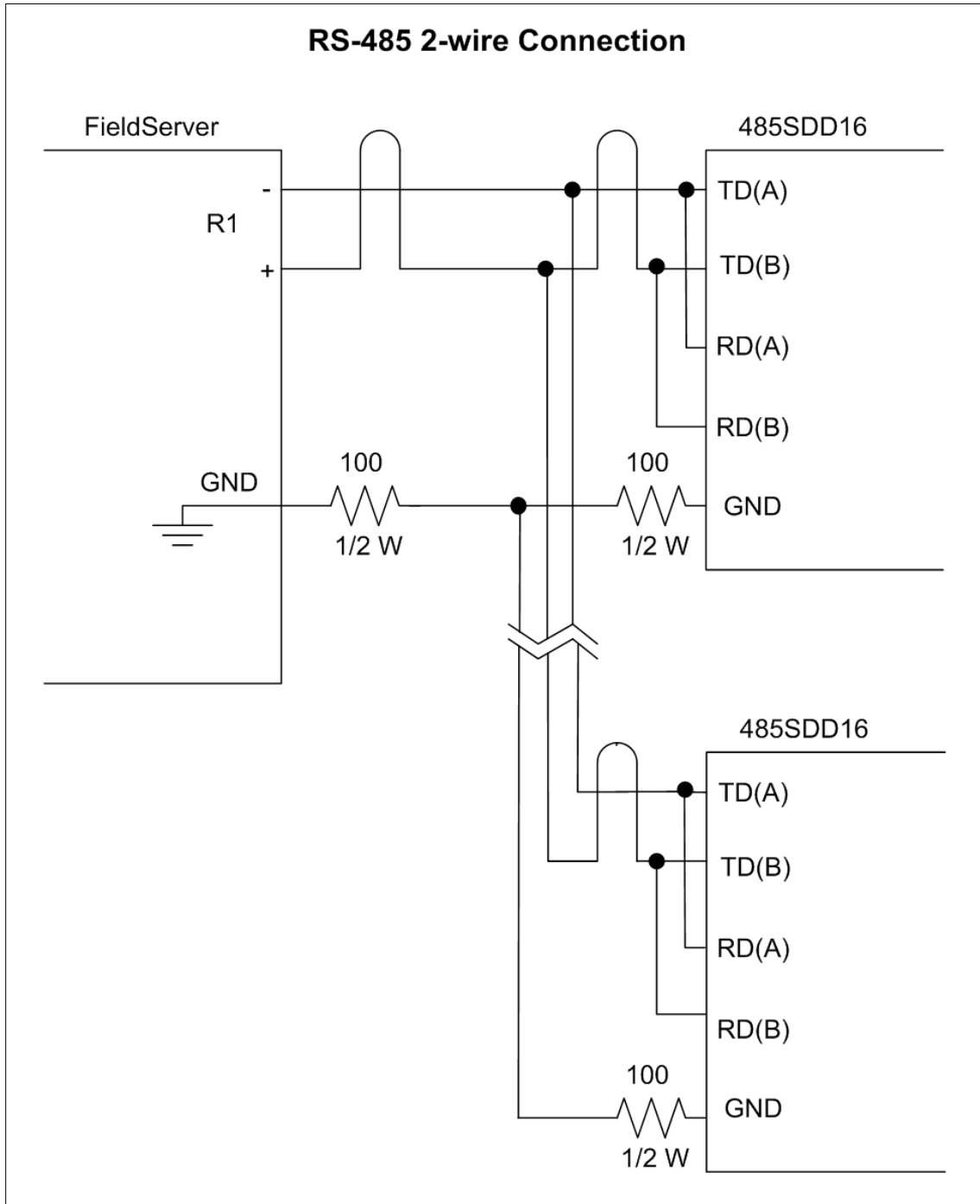
**NOTE: The image shows both switches in the OFF position.**



### 3.2 Hardware Connection Tips/Hints

Follow standard RS-485 2-wire guidelines for installation. See connection diagram below.

Also enable BIAS register on FieldServer.



## 4 DATA ARRAY PARAMETERS

Data Arrays are “protocol neutral” data buffers for storage of data to be passed between protocols. It is necessary to declare the data format of each of the Data Arrays to facilitate correct storage of the relevant data.

Section Title		
Data_Arrays		
Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array.	Up to 15 alphanumeric characters
Data_Array_Format	Provide data format. Each Data Array can only take on one format.	Float, Bit, Uint16, Sint16, Uint32, Sint32, Byte
Data_Array_Length	Number of Data Objects. Must be larger than the data storage area required by the Map Descriptors for the data placed in this array.	1-10, 000

**Example**

```

// Data Arrays
Data_Arrays
Data_Array_Name , Data_Array_Format , Data_Array_Length
DA_Fire_Levels , Bit , 16
DA_Fault_Status , Bit , 32
DA_Air_Flow , Uint16 , 4
DA_PLevels_Gain , Uint16 , 8
    
```

## 5 CONFIGURING THE FIELDSEVER AS A SAFE-FIRE CLIENT

For detailed information on FieldServer configuration, refer to the FieldServer Configuration Manual. The information that follows describes how to expand upon the factory defaults provided in the configuration files included with the FieldServer (see “.csv” sample files provided with the FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Safe-Fire Server.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Safe-Fire communications the following three actions must be taken. The driver independent FieldServer buffers need to be declared in the “Data Arrays” section. The destination device addresses need to be declared in the “Client Side Nodes” section. And the data required from the server(s) needs to be mapped in the “Client Side Map Descriptors” section. Details on how to perform these steps can be found in the following sections.

**NOTE: In the following tables, \* indicates an optional parameter and bold legal values are default.**

### 5.1 Client Side Connection Parameters

Section Title		
Connections		
Column Title	Function	Legal Values
Port	Specify which port the device is connected to the FieldServer.	P1-P2 <sup>1</sup> , R1-R2 <sup>2</sup>
Baud*	Specify baud rate.	<b>19200</b>
Parity*	Specify parity.	<b>None</b>
Data_Bits*	Specify data bits.	<b>8</b>
Stop_Bits*	Specify stop bits.	<b>2</b>
Protocol	Specify protocol used.	Safe-Fire
Poll Delay*	Time between internal polls.	0-65.534s, <b>0.1s</b>
Timeout*	Maximum time to wait for response from server.	0-65.534s, <b>5s</b>
Safe_Fire_Node_Number*	Assign a unique Safe-Fire node number to FieldServer.	0-255, <b>127</b>

**Example**

```

// Client Side Connections

Connections
Port      , Baud      , Parity    , Data_Bits  , Stop_Bits  , Protocol   , Poll_Delay , Timeout
R1       , 19200   , None     , 8          , 2          , Safe-Fire  , 0.100s    , 5s
    
```

<sup>1</sup> P1 to P2 may require the optional RS-485 converter (Part # 4301-00).  
<sup>2</sup> Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

## 5.2 Client Side Node Parameters

Section Title		
Nodes		
Column Title	Function	Legal Values
Node_Name	Provide name for Node.	Up to 31 alphanumeric characters
Node_ID	Specify the remote Safe-Fire node number.	1 – 255
Protocol	Specify protocol used.	Safe-Fire
Port	Specify port.	P1-P2 <sup>3</sup> , R1-R2 <sup>4</sup>

### Example

```
// Client Side Nodes

Nodes
Node_Name , Node_ID , Protocol , Port
Det_255 , 255 , Safe-Fire , R1
```

## 5.3 Client Side Map Descriptor Parameters

### 5.3.1 FieldServer Specific Map Descriptor Parameters

Section Title		
Map Descriptors		
Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor.	Up to 37 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer.	One of the Data Array names from <b>Section 4</b>
Data_Array_Offset	Starting location in Data Array.	0 to (Data_Array_Length -1) as specified in <b>Section 4</b>
Function	Function of Client Map Descriptor.	RDBC

### 5.3.2 Driver Specific Map Descriptor Parameters

Section Title			
Map Descriptors			
Column Title	Function	Legal Values	
Node_Name	Name of Node to fetch data from.	One of the Node names specified in <b>Section 5.2</b>	
Safe_Fire_Request	Specify the safe-fire request type.	Safe-Fire-Levels, Fault-Status, Air-Flow, Particle-Level	
Length	Specify the number of data array locations used to store the data of the specified Safe_Fire_Request.	Safe-Fire-Request	Length
		Safe-Fire-Levels	16
		Fault-Status	32
		Air-Flow	4
		Particle-Level	8

<sup>3</sup> P1 to P2 will require the optional RS-485 converter (Part # 4301-00).

<sup>4</sup> Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

### 5.3.3 Timing Parameters

Column Title	Function	Legal Values
Scan_Interval*	Rate at which data is polled.	0-65535s, <b>2s</b>

### 5.3.4 Map Descriptor Examples

Following examples below are to read all the required data from Detector\_255.

See [Appendix A.1](#) for details on data mapping.

Map_Descriptors							
Map_Descriptor_Name	Data_Array_Name	Data_Array_Offset	Function	Node_Name	Safe_Fire_Request	Length	Scan_Interval
CMD_Fire_Levels	DA_Fire_Levels	, 0	, Rdbc	, Det_255	, Fire-Levels	, 16	, 1.000s
CMD_Fault_Status	DA_Fault_Status	, 0	, Rdbc	, Det_255	, Fault-Status	, 32	, 1.000s
CMD_Fire_Levels	DA_Fire_Levels	, 0	, Rdbc	, Det_255	, Air-Flow	, 4	, 1.000s
CMD_Fire_Levels	DA_Fire_Levels	, 0	, Rdbc	, Det_255	, Particle-Level	, 8	, 1.000s

## **6 CONFIGURING THE FIELD SERVER AS A SAFE-FIRE SERVER**

The Server side of the driver is intended to support Sierra Monitor's quality assurance program and is not intended to provide complete emulation of a Safe-Fire-Detection node and is thus not fully documented. Should you require the Server Side functionality to be documented and enhanced, contact the Sierra Monitor sales group.

**APPENDIX A USEFUL FEATURES**

Appendix A.1 Data Mapping

Appendix A.1.1 Fire-Levels

Data Array Offset	Data Description
0	Pipe1 Pre-Alarm
1	Pipe1 Fire1
2	Pipe1 Fire2
3	Pipe1 Fire3
4	Pipe2 Pre-Alarm
5	Pipe2 Fire1
6	Pipe2 Fire2
7	Pipe2 Fire3
8	Pipe3 Pre-Alarm
9	Pipe3 Fire1
10	Pipe3 Fire2
11	Pipe3 Fire3
12	Pipe4 Pre-Alarm
13	Pipe4 Fire1
14	Pipe4 Fire2
15	Pipe4 Fire3

Appendix A.1.2 Fault-Status

Data Array Offset	Data Description (0/1)
0	Processor Fault
1	EEPROM Corrupt
2	Supply Fault
3	No Water Fault
4	Chamber Seal Fault
5	Chamber Vacuum Fault
6	Chamber LED Fault
7	Water Fill Fault
8	Air Flow Fault
9	Stack Overflow Fault
10	Unit Isolated
11	Low Supply
12	High AlgoTech Background
13	Unit Too Cold
14	Unit Disabled
15	Expansion PCB Fault
16	External Fault
17	Battery Fault
18	Sample Block Fault
19	Purge Blockage Fault
20	Chamber Seal Fault
21	Pipe Scan Disabled
22-31	For Future Use

Appendix A.1.3 Air-Flow

Data Array Offset	Data Description (%)
0	Pipe1 Air Flow
1	Pipe2 Air Flow
2	Pipe3 Air Flow
3	Pipe4 Air Flow

Appendix A.1.4 Particle-Level and Gain Setting

Data Array Offset	Data Description
Particle-Level (%)	
0	Pipe1 Particle Level
1	Pipe1 Particle Level
2	Pipe1 Particle Level
3	Pipe1 Particle Level
Gain Setting (1-10)	
4	Pipe1 Gain Setting
5	Pipe2 Gain Setting
6	Pipe3 Gain Setting
7	Pipe4 Gain Setting