

Driver Manual

FS-8704-01 SMC TCP/IP

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after March 2021.



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fieldserver

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1 Description

The SCM TCP/IP driver allows the FieldServer to transfer data to and from other FieldServers over Ethernet using SMC TCP/IP protocol. The FieldServer can emulate either a Server or Client.

The SMC TCP/IP driver can be used for inter-bridge (FieldServer to FieldServer) communications to perform tasks like mirroring data arrays between FieldServers.

Max Nodes Supported

FieldServer Mode	Nodes	Comments
Client	N/A	Inter-bridge Communications to a virtually unlimited number of FieldServers. Memory limitations may apply when a large number of Nodes are used.
Server	N/A	Inter-bridge Communications to a virtually unlimited number of FieldServers. Memory limitations may apply when a large number of Nodes are used.

1 Driver Scope of Supply

1.1 Supplied by MSA Safety

Part #	Description
FS-8915-10	UTP cable (7 foot) for Ethernet connection

1.2 Provided by the Supplier of 3rd Party Equipment

1.2.1 Required 3rd Party Hardware

Part #	Description
	Ethernet 10/100 BaseT switch ¹

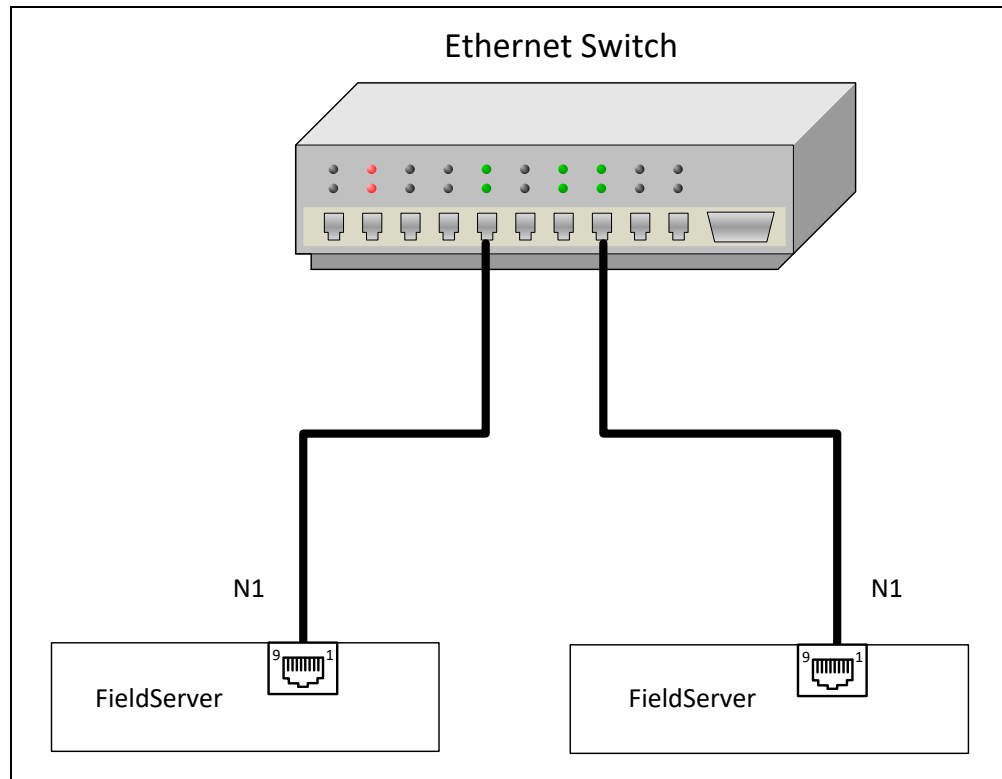
1.2.2 Required 3rd Party Configuration

Ethernet network.

¹ Not all FieldServer models support 100BaseT. Consult the appropriate instruction manual for details of the Ethernet speed supported by specific hardware.

2 Hardware Connections

The FieldServer is connected to the Ethernet network as shown in the connection drawing.



2.1 Hardware Connection Tips / Hints

- Use the appropriate category Ethernet cable (i.e. at least Cat-5 for a 100Mb/s connection).
- The driver uses logical port 1024 for communication.

3 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, Byte, UInt16, UInt32, Sint16, Sint32
Data_Array_Length	Number of Data Objects. Must be larger than the data storage area required by the Map Descriptors for the data being placed in this array.	1-10000

Example

```
// Data Arrays
Data_Arrays
Data_Array_Name , Data_Format , Data_Array_Length
DA_AI_01        , UInt16        , 200
DA_AO_01        , UInt16        , 200
DA_DI_01        , Bit           , 200
DA_DO_01        , Bit           , 200
```

4 Client Side Configuration

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 SMC TCP/IP Server.

NOTE: In the tables below, * indicates an optional parameter, with the bold legal value as default.

4.1 Client Side Connection Parameters

Section Title		
Connections		
Column Title	Function	Legal Values
Adapter	Adapter Name.	N1-N2, WLAN ²
Protocol	Specify protocol used.	SMT

Example

```
// Client Side Connections
Connections
Adapter , Protocol
N1 , SMT
```

4.2 Client Side Node Descriptors

Section Title		
Nodes		
Column Title	Function	Legal Values
Node_Name	Provide name for node.	Up to 32 alphanumeric characters
Node_ID	Station address of physical server node.	1-65535
Protocol	Specify protocol used.	SMT
Adapter	Adapter Name.	N1 N1-N2, WLAN ²
IP_Address	IP Address of SMT Server.	IP address e.g. 192.168.2.70

Example

```
// Client Side Nodes
Nodes
Node_Name , Node_ID , Protocol , Adapter , IP_Address
Node_1 , 1 , SMT , N1 , 192.168.2.70
```

4.3 Client Side Map Descriptor Parameters

4.3.1 FieldServer Specific Map Descriptor Parameters

Column Title	Function	Legal Values
Map_Descriptor_Name	Name of this Map Descriptor.	Up to 32 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 “Data Array” section above
Data_Array_Offset	Starting location in Data Array.	0 to maximum specified in “Data Array” section above
Function	Function of Client Map Descriptor.	RDBC, WRBC, WRBX

² Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

4.3.2 Driver Related Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node to fetch data from.	One of the node names specified in "Client Node Descriptor" above
Data_Type	Data type.	Register, Coil, AI, DI
Target_DA_Name	Data array on remote FieldServer.	Up to 15 alphanumeric characters
Target_DA_Offset	Data array on remote FieldServer.	Up to 15 alphanumeric characters

4.3.3 Timing Parameters

Section Title		
Map Descriptor		
Column Title	Function	Legal Values
Scan_Interval	Rate at which data is polled.	≥0.001s

4.4 Map Descriptor Example

```
// Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name , Data_Array_Name , Data_Array_Offset , Function , Node_name
CMD_01 , DA_AI_01 , 0 , RDBC , Node_1

, Data_Type , Target_DA_Name , Target_DA_Offset , Length
, Register , Reg_Values , 0 , 100
```

In the above example:

- Target_DA_Name – The name of the Data Array in the remote FieldServer from which data is to be read.

5 Server Side Configuration

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 SMC TCP/IP Client.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for SMC TCP/IP communications, the driver independent FieldServer buffers need to be declared in the “Data Arrays” section, the FieldServer virtual node(s) needs to be declared in the “Server Side Nodes” section, and the data to be provided to the clients needs to be mapped in the “Server Side Map Descriptors” section. Details on how to do this can be found below.

NOTE: In the tables below, * indicates an optional parameter and a bold legal value is default.

5.1 Server Side Connection Descriptors

Section Title		
Connections		
Column Title	Function	Legal Values
Adapter	Adapter Name	N1-N2, WLAN ³
Protocol	Specify protocol used.	SMT

Example

```
//Server Side Connections
Connections
Adapter          , Protocol
N1               , SMT
```

5.2 Server Side Node Descriptors

Section Title		
Nodes		
Column Title	Function	Legal Values
Node_Name	Provide name for node.	Up to 32 alphanumeric characters
Node_ID	Modbus station address of physical server node.	1-65535
Protocol	Specify protocol used.	SMT
Server_Hold_Timeout*	Specifies time FieldServer will reserve server side connection while waiting for the Client side to update data in Data_Array (if necessary).	>1.0s

Example

```
// Server Side Nodes
Nodes
Node_Name        , Node_ID        , Protocol4
Node_1           , 1                , SMT
```

NOTE: There are no Server map descriptors for this driver since the targets are Data Arrays. Make sure the target Data Arrays exist on the target FieldServer.

³ Not all ports shown are necessarily supported by the hardware. Consult the appropriate Instruction manual for details of the ports available on specific hardware.

⁴ No connection information is necessary on Server side.