



FieldServer
FS-8700-22 DeviceNet Slave Adapter Driver
Driver Manual
(Supplement to the FieldServer Instruction Manual)

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after November 2015

Kernel Version: 1.02
Document Revision: 0

Contact Information:

Thank you for purchasing the FieldServer.

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TABLE OF CONTENTS

- 1 DeviceNet Slave Description 4**
- 2 Driver Scope of Supply 4**
 - 2.1 Supplied by FieldServer Technologies for this driver 4
 - 2.2 Provided by the Supplier of 3rd Party Equipment..... 4
 - 2.2.1 *Required 3rd Party Software* 4
 - 2.2.2 *Required 3rd Party Configuration*..... 4
 - 2.2.3 *Optional Items* 4
- 3 Hardware Connections..... 5**
 - 3.1 Hardware Connection Tips / Hints..... 5
- 4 Configuring the FieldServer as a DeviceNet Slave 6**
 - 4.1 DeviceNet Settings 6
 - 4.2 Server Side Connection Descriptors 7
 - 4.3 Server Side Node Descriptors 7
 - 4.4 Server Side Map Descriptors..... 8
 - 4.4.1 *FieldServer Specific Map Descriptor Parameters* 8
 - 4.4.2 *Driver Specific Map Descriptor Parameters* 8
 - 4.4.3 *Map Descriptor Example*..... 9
- Appendix A. Advanced Topics 10**
 - Appendix A.1. DeviceNet X30 LED indicators 10
 - Appendix A.2. Using RSNetWorx..... 10
 - Appendix A.3. Using RSLogix 5000 10
- Appendix B. Troubleshooting..... 11**
- Appendix C. Driver Notes 11**
 - Appendix C.1. Setting the FieldServer’s DeviceNet MAC ID and Baud rate 11

LIST OF FIGURES

- Figure 1 - Generic Connection Diagram.....5

1 DEVICENET SLAVE DESCRIPTION

The DeviceNet Slave Adapter driver can be used to emulate a single slave station on a DeviceNet network. The FieldServer DeviceNet adapter is implemented as an ODVA profile 12 communications adapter and acts as a group 2 only server on the DeviceNet network. Standard DeviceNet baudrates of 125k, 250k and 500kbit/s are supported. DeviceNet masters/scanners can open an IO connection of up to 512 Bytes in each direction to the FieldServer.

Max Nodes Supported

FieldServer Mode	Nodes	Comments
Server	1	The FieldServer can only emulate one DeviceNet Slave station

2 DRIVER SCOPE OF SUPPLY

2.1 Supplied by FieldServer Technologies for this driver

Sierra Monitor Corporation PART #	Description
DeviceNet-Slave	Anybus-S DeviceNet Card

2.2 Provided by the Supplier of 3rd Party Equipment

2.2.1 Required 3rd Party Software

RSNetWorx, RSLogix or another Network Scheduling Tool.

2.2.2 Required 3rd Party Configuration

Connection to a properly terminated DeviceNet network.

2.2.3 Optional Items

PART #	Vendor/Manufacturer	Description
-	HMS-Networks	Anybus-S DeviceNet eds file

3 HARDWARE CONNECTIONS

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

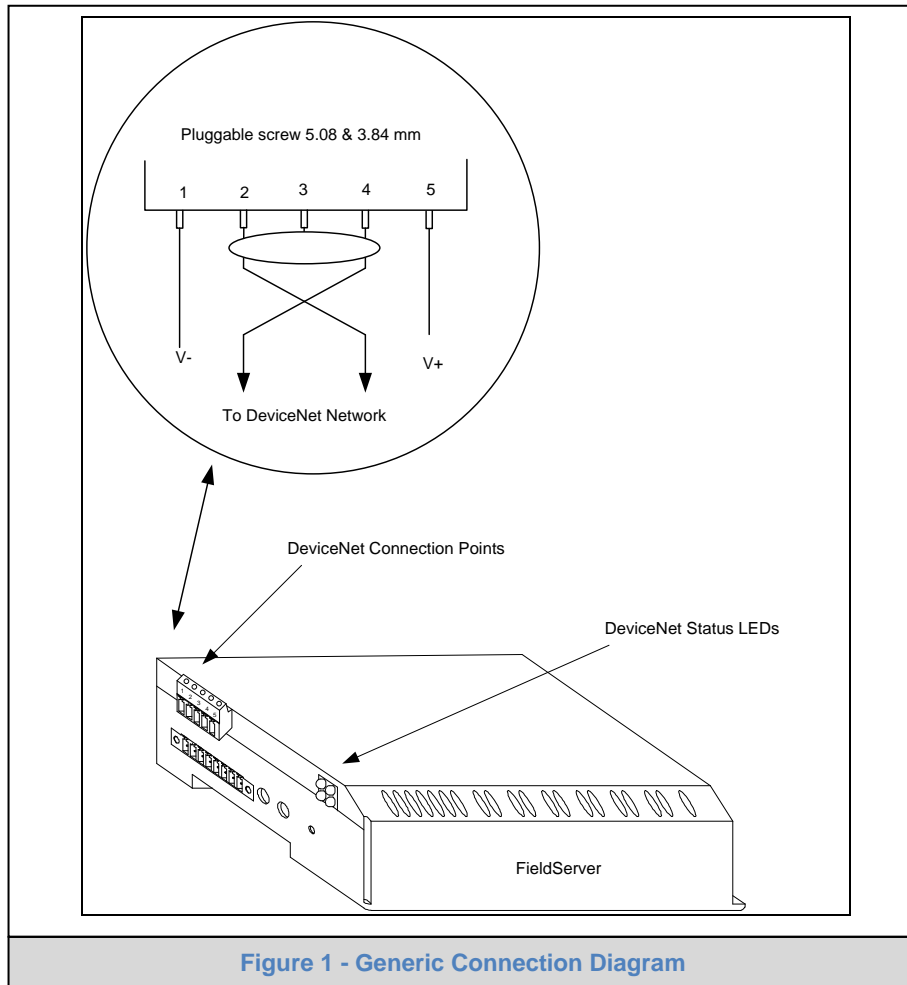


Figure 1 - Generic Connection Diagram

Connector Pinouts

Pin	Signal	Description	Wire color
1	V-	Negative supply voltage	black
2	CAN_L	CAN_L Bus line	blue
3	SHIELD	Cable Shield	(bare)
4	CAN_H	CAN_H Bus line	white
5	V+	Positive Supply Voltage	red

3.1 Hardware Connection Tips / Hints

- Use the recommended network cable and terminators as specified by the DeviceNet network organization and/or the manufacturer of your network equipment.
- Terminate each end of the DeviceNet network with a 121 Ω resistor
- The bus interface shall be supplied with 24DC ± 10% on the Fieldbus connector
- The DeviceNet Slave Card's network current consumption is maximum 30mA = 0.03 Amps

4 CONFIGURING THE FIELDSEVER AS A DEVICENET SLAVE

For a detailed discussion on FieldServer configuration, please 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” files provided with the FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a DeviceNet Master/Scanner.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for DeviceNet 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 that in the tables, * indicates an optional parameter, with the bold legal value being the default.

4.1 DeviceNet Settings

Section Title		
FieldServer		
Column Title	Function	Legal Values
System_Station_Address*	DeviceNet MAC ID of the FieldServer	0-63

Note:

The DeviceNet MAC ID can also be set via the DIP switches on the side of the FieldServer but then the system station address parameter must be removed from the configuration file. Refer to Appendix B.1 for more information.

Example

```
// FieldServer

FieldServer
Title           , System_Station_Address
DeviceNet_Test  , 5
```

4.2 Server Side Connection Descriptors

Section Title		
Connections		
Column Title	Function	Legal Values
Adapter	Adapter Name	DNet
Protocol	Protocol name	X30_DNet_Slave
DNet_Slave_Baudrate	Baud Rate	125K , 250K , 500K

Example

```
// Server Side Connections

Connections
Adapter      , Protocol      , DNet_Slave_Baudrate
DNet        , X30_DNet_Slave  , 500K
```

4.3 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	MAC ID	0 - 63 (same as system_station_address)
Protocol	Specify protocol used	X30_DNet_Slave

Example

```
// Server Side Nodes

Nodes
Node_Name    , Node_ID    , Protocol
DN5         , 01         , X30_DNet_Slave
```

4.4 Server Side Map Descriptors

4.4.1 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 Server Map Descriptor	RDBC -Reads data from the local input buffer WRBC -Writes data to the local output buffer
Scan_Interval	Buffers Update Period	> 0.001s

4.4.2 Driver Specific Map Descriptor Parameters

Column Title	Function	Legal Values
Node_Name	Name of Node	One of the node names specified in "Server Node Descriptor" above
DeviceNet_Data_Type	Data Type of local buffer	BYTE, WORD, DWORD, FLOAT, BOOL
Address	Byte offset into local buffer	RDBC: 0 – 511 WRBC: 0 – 511
Length	Number of DeviceNet_Data_Type items in local buffer	BYTE: 1 – 512 WORD: 1 – 256 DWORD: 1 – 128 FLOAT: 1 –128 BOOL: 1 – 4096

4.4.3 Map Descriptor Example.

```
// Client side Map Descriptors

Map_Descriptors
Map_Descriptor_Name ,Data_Array_Name ,Data_Array_Offset ,Function ,Node_Name ,DeviceNet_Data_Type ,Address ,Length ,Scan_Interval
Get_Data ,Input_Data ,0 ,RDBC ,CN5 ,WORD ,0 ,10 ,1s
Put_Data ,Output_Data ,0 ,WRBC ,CN5 ,WORD ,0 ,10 ,1s
```

Read function map descriptor gets data from the DeviceNet network and stores it in the Input_Data data array.

Write function map descriptor puts data from the Output_Data data array onto the DeviceNet network.

Note that each address refers to an individual local input and output buffer. Each buffer can contain up to 512 bytes.

Appendix A. ADVANCED TOPICS
Appendix A.1. DeviceNet X30 LED indicators

LED 1 – Reserved
LED 2 – Network Status

Color	Frequency	Description
-	Off	Not powered / Not online
Green	On	Link OK, online, connected
Green	Flashing	Online, not connected
Red	On	Critical link failure
Red	Flashing	Connection timeout

LED 3 – Module Status

Color	Frequency	Description
-	Off	Not powered
Green	On	Device operational
Green	Flashing	Data size bigger than configured
Red	On	Unrecoverable fault
Red	Flashing	Minor fault

LED 4 – Reserved
Appendix A.2. Using RSNetWorx

Please refer to the following document on the HMS website, www.anybus.com

APPLICATION NOTE: Establishing I/O communication between AnyBus-S DeviceNet using RsNetWorx for DeviceNet

Appendix A.3. Using RSLogix 5000

Please refer to the following document on the HMS website, www.anybus.com

APPLICATION NOTE: Reading/writing data from AnyBus-S DeviceNet using ControlLogix5000 MSG instruction

Appendix B. TROUBLESHOOTING

If there is no 24VDC supply on the DeviceNet Network or if the power supply current is not enough to support the entire network, then the FieldServer will report that any device configured in the config file is not in the master scan list, regardless if it is in the scan list or not.

Appendix C. DRIVER NOTES

Appendix C.1. Setting the FieldServer's DeviceNet MAC ID and Baud rate

The MAC ID and Baud Rate can be set in the FieldServer's CSV file using the `System_Station_Address` and `DNet_Slave_Baudrate` parameters or it can be set with the DIP switches. Note that the `System_Station_Address` parameter must be removed from the config file if the DIP switch settings are to be used.