FieldServer
Technologies

Driver Manual
(Supplement to the FieldServer Instruction Manual)

FS-8700-15 Modbus Daniels

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after May 1, 2001

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1. Modbus Daniels Description

The Modbus Daniels driver allows the FieldServer to transfer data to and from devices over either RS-232 or RS-485 using Modbus Daniels protocol. The FieldServer can only emulate a Client.

Modbus Daniels is an inclusion into Modbus ASCII, allowing floats to be used. Modbus Daniels is designed to support floats in the address range 7000 to 7999. The "Double" data type is not supported. Other standard Modbus data types are supported.

Max Nodes Supported

FieldServer Mode	Nodes	Comments
Client	255	The maximum achievable number of devices on the network may be less depending on device loading and network speed characteristics. Only one client device allowed on multidrop systems.

2. Driver Scope of Supply

2.1. Supplied by FieldServer Technologies for this driver

FieldServer Technologies PART #	Description
FS-8915-10	UTP cable (7 foot) for RS_232 use
FS-8917-01	RJ45 to DB25M connection adapter
SPA59132	RS-485 connection adapter
-	Driver Manual.

2.2. Provided by the Supplier of 3rd Party Equipment

2.2.1. Required 3rd Party Configuration

The Modbus Daniels device must be set to use Modbus ASCII protocol.

3.   Hardware Connections

The FieldServer is connected to the Modbus Daniels device as shown in the connection drawing.

Configure the Modbus Daniels device according to manufacturer's instructions.

4.   Configuring the FieldServer as a Modbus Daniels Client

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" sample files provided with the FS).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Modbus Daniels Server.

4.1.   Data Arrays/Descriptors

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Modbus Daniels communications, 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 servers needs to be mapped in the "Client 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.

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, Packed_Bit, Byte, Packed_Byte, Swapped_Byte
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.	1-10,000

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
```

4.2.   Client Side Connection Descriptions

Section Title		
Connections		
Column Title	**Function**	**Legal Values**
Port	Specify which port the	FS-X40 Serves: P1-P8, R1-R2

	device is connected to the FieldServer	FS-X20 Serves: Serial Port
Protocol	Specify protocol used	Modbus_Daniels
Baud*	Specify baud rate	110 – 115200, standard baud rates only, **9600**
Parity*	Specify parity	Even, Odd, **None,** Mark, Space
Data_Bits*	Specify data bits	7, **8**
Stop_Bits*	Specify stop bits	**1**
Handshaking*	Specify hardware handshaking	RTS, RTS/CTS, **None**
Poll _Delay*	Time between internal polls	0-32000 seconds, **1 second**

Example

```
//      Client Side Connections

Connections
Port,           Protocol,            Baud,   Parity,     Handshaking,        Poll_Delay
P1,             Modbus_Daniels,      9600,   Even,       None,               0.100s
```

4.3.   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	Modbus station address of physical server node	1-255
Protocol	Specify protocol used	Modbus_Daniels
Connection	Specify which port the device is connected to the FieldServer	FS-X40 Serves: P1-P8, R1-R2 FS-X20 Serves: Serial Port

Example

```
//   Client Side Nodes

Nodes
Node_Name,              Node_ID,            Protocol,           Connection
PLC 1,                  1,                  Modbus_Daniels,     P1
```

4.4. Client Side Map Descriptors

4.4.1. FieldServer Related Map Descriptor Parameters

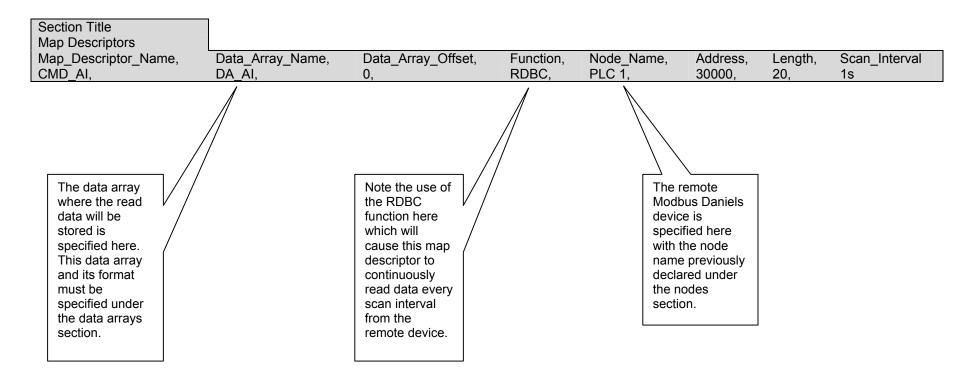| Section Title		
Map Descriptors		
Column Title	**Function**	**Legal Values**
Map_Descriptor_Name	Name of this Map Descriptor	Up to 32 alphanumeric characters
Data_Array_Name	Name of Data Array where data is to be stored in the FieldServer	One of the Data Array names from "Data Array" section above
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

4.4.2. Driver Related 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 "Client Node Descriptor" above
Data_Type*	Data type	Register, Coil, AI, DI
Length	Length of Map Descriptor	1-125 (Register, AI) 1-800 (Coil, DI)
Address	Starting address of read block	0000 – 6999 (Coil) 7000 – 7999 (Float) 10000 (DI) 30000 (AI) 40000 – 49999 (Register)
Data_Array_Low_Scale*	Scaling zero in Data Array	-32767 to 32767, **default 0**
Data_Array_High_Scale*	Scaling max in Data Array	-32767 to 32767, **default 100**
Node_Low_Scale*	Scaling zero in Connected Node	-32767 to 32767, **default 0**
Node_High_Scale*	Scaling max in Connected Node	-32767 to 32767, **default 100**

4.4.3. Timing Parameters

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

4.4.4.   Map Descriptor Example.

Section Title Map Descriptors							
Map_Descriptor_Name, CMD_AI,	Data_Array_Name, DA_AI,	Data_Array_Offset, 0,	Function, RDBC,	Node_Name, PLC 1,	Address, 30000,	Length, 20,	Scan_Interval 1s

The data array where the read data will be stored is specified here. This data array and its format must be specified under the data arrays section.

Note the use of the RDBC function here which will cause this map descriptor to continuously read data every scan interval from the remote device.

The remote Modbus Daniels device is specified here with the node name previously declared under the nodes section.

5. Advanced Topics

None.

6. Driver Notes

None.

7. Revision History

Date	Driver Version	Document Revision	Resp	Comment
10/03/03	1.00d	0	JD	Releasing
10/13/03	1.00d	1	MF	Updating formatting. Adding Description information – DUR0212
12/09/03	1.00d	2	DR	DUR0220, updated to new format, indicate address ranges and data types supported
12/23/03	1.00d	3	JD	Releasing