



A Sierra Monitor Company

Driver Manual
(Supplement to the FieldServer Instruction Manual)

FS-8704-22 Point Six Wireless

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after April 2011

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1 POINT SIX WIRELESS DESCRIPTION

The Point Six Wireless Driver allows the FieldServer to record data from Point Six wireless sensors over Ethernet using protocol as per “ExtendedPointSensorPacketSpec.pdf” (1/19/2010) and “PointSensorPacketSpecs.doc”.

The Driver acts as a Passive Client. This means that the driver will not send any polls or requests for information. It will listen for UDP packets addressed to itself at a configurable port (default port is 6767). Point Six Wireless sensors should be configured to send data messages to the FieldServer’s IP address and port.

The Driver supports command2 (data) packets of 75 bytes from Point Six wireless sensors. Sensor Types supported are listed in Appendix C.1.2.

The Driver acknowledges diagnostic command5 packets of 75 bytes from the Point Sensor Utility, but does not process them further to decode or store any data.

Max Nodes Supported

FieldServer Mode	Nodes	Comments
Client	Multiple	The FieldServer can communicate with multiple Point6 wireless devices.
Server	-	The FieldServer cannot emulate a Point6 Wireless Sensor. The Server side is implemented only to test the Client side of the Driver.

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 Ethernet connection

2.2 Provided by the Supplier of 3rd Party Equipment

2.2.1 Required 3rd Party Hardware

Part #	Description
	Ethernet 10/100 BaseT hub*
	Wireless Switch/Router

2.2.2 Required 3rd Party Software

Point Six Sensor Point Utility Software to configure and program Point Six wireless sensors.

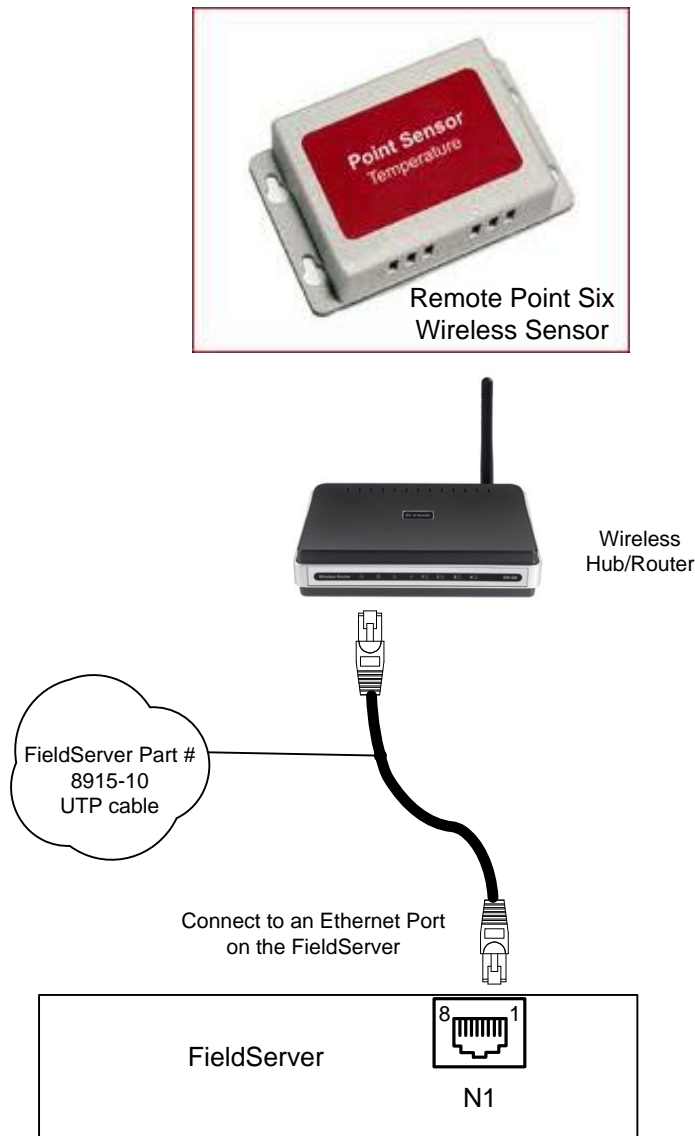
2.2.3 Required 3rd Party Configuration

- Point Six Wireless sensors must be configured to send data to FieldServer’ IP and port.
- Point Six sensors are wireless, therefore a wireless-to-wired Ethernet connection to the FieldServer needs to be set up. Refer to Appendix B.2 for further information.

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

3 HARDWARE CONNECTIONS

The FieldServer is connected to the generic Router/Switch as shown in the connection drawing.



Configure the network devices according to manufacturer's instructions

3.1 Hardware Connection Tips / Hints

- Point Six Wireless sensors must be configured to send data to FieldServer's IP and port.
- Point Six sensors are wireless, therefore a wireless-to-wired Ethernet connection to the FieldServer needs to be set up. Refer to Appendix B.2 for further information.

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
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_Array_Format , Data_Array_Length
DA_AI_01 , Float , 20
DA_AI_02 , Float , 20
DA_AI_03 , Float , 20
```

5 CONFIGURING THE FIELDSEVER AS A POINT SIX WIRELESS 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 FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Point Six Wireless Sensor.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Point Six Wireless Sensor 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.

5.1 Client Side Connection Parameters

Section Title		
Connections		
Column Title	Function	Legal Values
Connection	Connection Name	N1, N2 ¹
Protocol	Specify Protocol used	Point6Wireless, Point6, Point_Six
IP_Port*	Specify port number at which FieldServer should start listening for messages from Point Six Wireless Sensors. Make sure this port should not be configured to use by other protocols on FieldServer.	1025-65534 6767

Example

```

// Client Side Connections

Connection
Connection          , Protocol          ,IP_Port
N1                   , Point6Wireless ,6767
```

1 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 32 alphanumeric characters
Node_ID*	Identification number for the node. Not relevant for this driver	Any Integer number
Protocol	Specify Protocol used	Point6Wireless, Point6, Point_Six
Connection	Specify through which port the device is connected to the FieldServer	N1-N2 ²
IP_Address	IP address of the Point Six Wireless Sensor	Any legal IP V4 address, 192.168.1.141
Plc_Type	Type of Point Six Wireless Sensor	Humidity2 (or Humidity/Temperature), DualAnalog (or RTD), TEMP
Retries	The Driver provides a time interval in which we can expect a message. The retries parameter is the number of time intervals that will be allowed to pass before determining the Node "Offline" The default is 3 retries (4 tries). E.g. if the time interval is 60s, a total of 4x 60s will be allowed to pass. This is determined also by the transmission frequency. Refer to Appendix A.1	0,1,2,3s

Example

```
// Client Side Nodes

Nodes
Node_Name      , Node_ID,  , Protocol  , Connection  , IP_Address   , Plc_Type
ND_DualAnalog , 11      , Point6   , N1        , 192.168.1.141 , DualAnalog
```

5.3 Client Side Map Descriptor Parameters

5.3.1 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 Section 7.
Data_Array_Offset	Starting location in Data Array	0 to (Data_Array_Length-1) as specified in Section 7.
Function	Function of Client Map Descriptor	Passive_Client

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.

5.3.2 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 Section 5.2
Length	Length of Map Descriptor	1, 2, 3 etc, 20

5.4 Map Descriptor Example.

This Map Descriptor will record data from Sensor described by node name ND_DualAnalog. For data storage detail see Appendix C.1.

```
// Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name , Data_Array_Name , Data_Array_Offset , Function , Node_Name , Length
CMD_DualAnalog , DA_AI_01 , 0 , Passive_Client , ND_DualAnalog , 20
```

One of the Data Array specified in Section 4. This Map Descriptor will store data in this Data Array

Location in Data Array from where driver will start storing data.

Passive_Client means Driver won't poll for information, but will wait for the message to arrive from the Wireless Sensor.

One of Node Names defined 5.2. The Node describes the remote sensor from which the data will be recorded.

Number of sequential locations in Data Array reserved to store data from the specified sensor.

6 CONFIGURING THE FIELDSERVER AS A POINT SIX WIRELESS SERVER

This driver is not capable of emulating a Point Six Wireless Sensor and the very limited Server functionality has only been implemented to facilitate FieldServer's Quality Assurance program.

Appendix A. Useful Features

Appendix A.1. Node Status

On start-up the Node Status is “Startup”. When a valid message is received from the remote sensor, the status is changed to “Online”. If no valid message is received, the Node is marked as “Offline”.

On start-up the FieldServer will wait (10x (Retries+1)) seconds before marking the Node Status “Offline”.

Once the first valid message has been received by the FieldServer, the frequency of receipt of valid messages from the remote sensor is known, and the FieldServer will then wait (transmitting period x (Retries+1)) seconds for a new valid message to arrive before marking the Node status “Offline”. Node Status will be changed to “Online” again upon receiving a valid message from the remote sensor.

“Retries” is a configurable Node parameter.

Appendix B. Troubleshooting

Appendix B.1. Driver Error Messages

Message	Description	Suggested resolution
POINT6#01: Not enough space to store %u items in da %s. See Driver Manual for details.	Data array length too short.	Increase data array length
POINT6#02: MOD256 checksum failed calculated=0x%X msg=0x%X. See Driver Manual for details.	Checksum failed, probably due to noise on the communications wire.	Occasional checksum failures are not a concern. However, if the checksum fails repeatedly, check the quality of the installation with respect to termination, network load, grounding, cable route, cable distances etc.
POINT6#03: Poll Failed MD<%s>. See Driver Manual for details.	A request for information from the Point6 device did not receive a response.	If there have been no successful responses to a poll, check addressing, wiring termination, and device configuration. If the communication is successful most of the time, then occasional poll failures are not a concern. However, if the poll fails repeatedly, check the quality of the installation with respect to termination, network load, grounding, cable route, cable distances, etc.
POINT6#04: ACK Transmission Failed MD<%s>. See Driver Manual for details.	Acknowledge of message received from Point6 was unsuccessful.	Occasional ACK failures are not a concern. However, if the ACK fails repeatedly but not all of the time, check the quality of the installation with respect to termination, network load, grounding, cable route, cable distances, etc.

Appendix B.2. Establishing the Wireless Network

Since the Point Six devices are wireless devices, a 3rd party wireless network will need to be set up so that each Point Six device can communicate to the FieldServer. It is the responsibility of the integrator to create a Wireless network using a wireless access point or router. Follow the individual vendor's instructions on configuring the Wireless Router for wireless communications.

After the wireless network is created, both the FieldServer and any Point Six devices will need to have their IP addresses changed to be on the same IP subnet created by the router. The FieldServer IP address can be changed using the Remote User Interface program and the Point Six devices can be changed with their Point Six Plus software.

Appendix C. Reference

Appendix C.1. Data Storage

Appendix C.1.1. Data Storage Structure

Storage location in Data Array relative to Data_Array_Offset	Point Description
0	I/O1 data value (Note*)
1	I/O2 data value (Note*)
2	I/O1 enumerated engineering units
3	I/O2 enumerated engineering units
4	Transmissions - Number of transmissions since last battery reset. 0 if no battery support
5	Max Transmissions - Maximum number of transmissions for the power source (0 to 16777216)
6	Period - Transmit period in seconds
7	I/O 1 – low alarm
8	I/O 1 – high alarm
9	I/O 2 – low alarm
10	I/O 2 – high alarm
11	I/O 1 – low alarm reset
12	I/O 1 – high alarm reset
13	I/O 2 – low alarm reset
14	I/O 2 – high alarm reset
15	Sensor has been configured via USB Programmer cable.
16	Data Logging capability
17	Battery Low
18	Alarm in the data log.
19	Running on line power

Notes:

- The Driver stores the value after applying the correct scaling. The Driver will store I/O 2 value only if it is available from the sensor, e.g. Humidity2 provides temperature and humidity but the Temp sensor provides temperature only.
- DualAnalog is a generic single or dual channel device. The Driver will store I/O 2 including its enumerated units if the sensor is dual channel.
- Enumerated units are applicable only for DualAnalog Sensors.

Appendix C.1.2. Data Stored Per Sensor Type

Sensor Type	I/O 1	I/O 2	Units for I/O 1	Units for I/O 2
Humidity2 (Id 52/51)	temperature (DegC)	humidity (%RH)	-	-
Temp (Id 54/51)	temperature (DegC)	-	-	-
Dual Analog (Id 76/75)	Analog1	Analog2	Enumerated Eng. Units for Analog1 (0, 50, 58-63)	Enumerated Eng. Units for Analog2 (0, 50, 58-63)

Appendix C.1.3. Data Stored for all Supported Sensors

Transmissions	Alarms	Status
Max Transmissions	I/O 1 – low alarm	Sensor has been configured via USB Programmer cable.
Period - Transmit period in seconds	I/O 1 – high alarm	Data Logging capability
	I/O 2 – low alarm	Battery Low
	I/O 2 – high alarm	Alarm in the data log.
	I/O 1 – low alarm reset	Running on line power
	I/O 1 – high alarm reset	
	I/O 2 – low alarm reset	
	I/O 2 – high alarm reset	

Appendix C.2. Compatibility Matrix

FieldServer Model	Compatible with this driver
FS-x2010	Yes
FS-x2011	Yes
FSx25	No
FS-x30	Yes
FS-x40	Yes
SlotServer	No
ProtoCessor FFP-FO2	No
ProtoNode	No
ProtoCessor FFP- FD2	No
QuickServer	Yes