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A Sierra Monitor Company

**Driver Manual**  
**(Supplement to the FieldServer Instruction Manual)**

**FS-8700-32 Modbus Tek-Air**

**APPLICABILITY & EFFECTIVITY**

**Effective for all systems manufactured after May 1, 2001**

<b>Driver Version:</b>	<b>1.00</b>
<b>Document Revision:</b>	<b>3</b>

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## 1. Modbus Tek-Air Description

The Tek-Air Modbus RTU driver allows the FieldServer to transfer data to and from Tek-Air devices over either RS-232 or RS-485 using the Enhanced Tek-Air Modbus RTU protocol.

Modbus\_Tekair is the same as Modbus\_RTU, except that it has the ability to concentrate the bytes of data in the packet to create floating point values. The order in which the bytes are combined and the address range used was developed specifically for the Tek-Air/Modbus interface. To accommodate this, the driver must be configured to poll using odd numbered addresses as two integer registers are used for every floating point value. If this value is stored in a floating point data array, it will be retrievable in the correct format on the Server side. Note that the Tekair "Double" data type is not supported.

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

## 2. Driver Scope of Supply

### 2.1. Supplied by FieldServer Technologies for this Driver

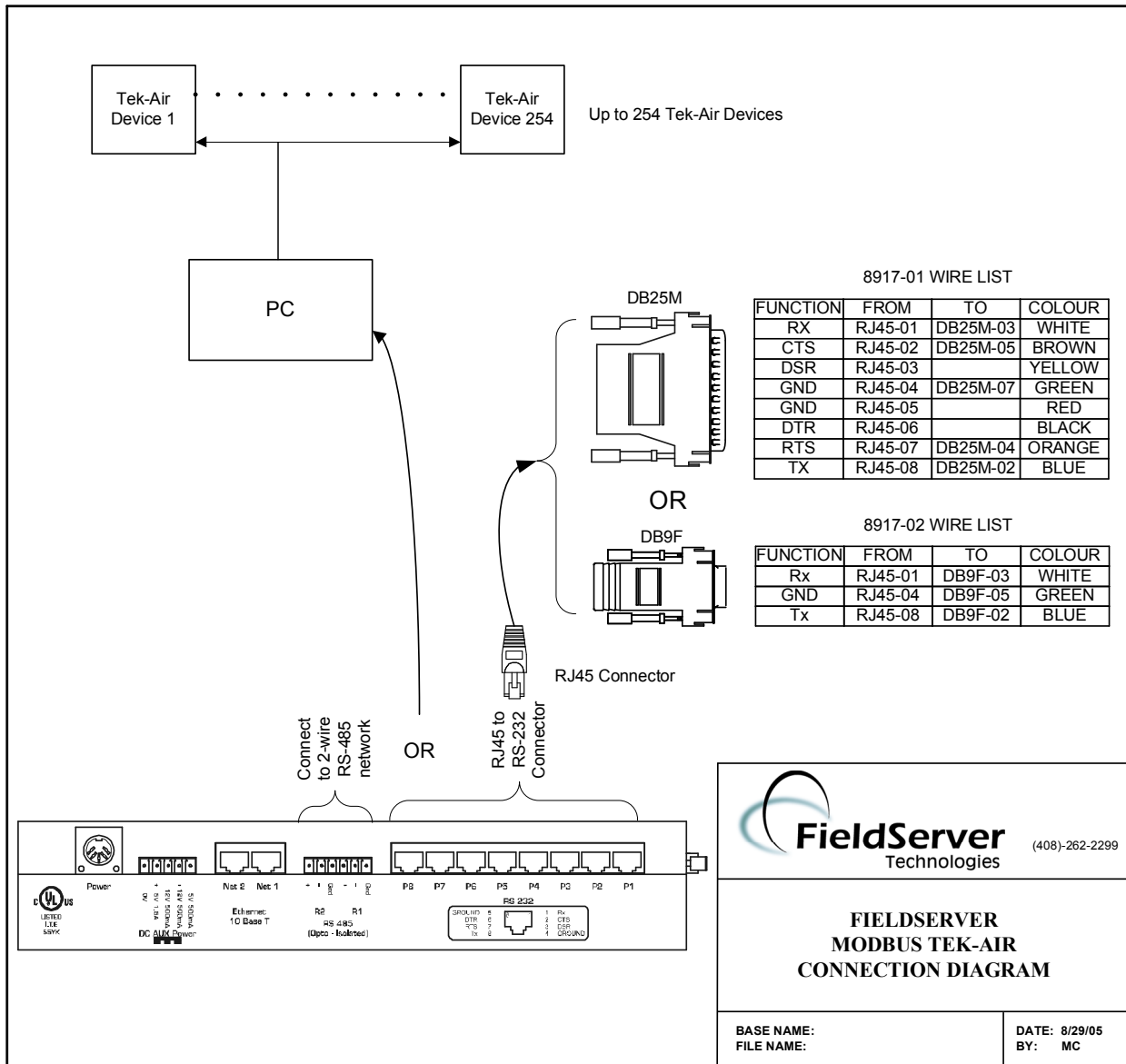
FieldServer Technologies PART #	DESCRIPTION
FS-8915-10	UTP cable (7 foot) for RS-232 use
FS-8917-02	RJ45 to DB9F connector adapter
FS-8917-01	RJ45 to DB25M connection adapter
SPA59132	RS-485 connection adapter

### 2.2. Provided by Supplier of 3<sup>rd</sup> Party Technology

PART #	DESCRIPTION
	Tek-Air device

### 3. Hardware Connections

The FieldServer is connected to the Modbus\_Tekair as shown in connection drawing. Configure the Modbus\_Tekair according to manufacturer's instructions



#### 4. Configuring the FieldServer as a Tek-Air Modbus 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 Tek-Air Modbus 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 (Driver Name) 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.

Section Title		
Data_Arrays		
Column Title	Function	Legal Values
Data_Array_Name	Provide name for Data Array	Up to 15 alphanumeric characters
Data_Format	Provides data format	INT16, INT32, BIT, FLOAT
Data_Array_Length	Number of Data Objects	1-10,000

##### Example

```
// Data Arrays
Data_Arrays
Data_Array_Name,      Data_Format,      Data_Array_Length
DA_AI,                Float,            100
DA_AO,                Float,            100
DA_DI,                Bit,              100
DA_DO,                Bit,              100
```

### 4.2. Client Side Connection Descriptors

Section Title		
Connections		
Column Title	Function	Legal Values
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2 <sup>1</sup>
Baud*	Specify baud rate	300-9600-38400
Parity*	Specify parity	Even, Odd, <b>None</b>
Data_Bits*	Specify data bits	7, <b>8</b>
Protocol	Specify protocol used	Tek-Air
Poll Delay*	Time between internal polls	0-32000 seconds, <b>1 second</b>
Handshaking*	Specify hardware handshaking	RTS, RTS/CTS, <b>None</b>

#### Example

```
// Client Side Connections
//
Connections
Port, Baud, Parity, Data_Bits, Stop_Bits, Protocol, Handshaking, Poll_Delay
P1, 9600, None, 8, 1, Modbus_RTU, 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	Tek-Air
Port	Specify which port the device is connected to the FieldServer	P1-P8, R1-R2 <sup>1</sup>

#### Example

```
// Client Side Nodes
//
Nodes
Node_Name, Node_ID, Protocol, Port
Tek_01, 1, Tek-air, P1
```

<sup>1</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.

**4.4. Client Side Map Descriptors**

**4.4.1. FieldServer Related 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

**4.4.2. 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
Address	Starting address of read block	40001, 30001, etc <sup>Note 1</sup>
Length	Specifies how many register bits etc. to read	0 - 125
Data_Array_Low_Scale*	Scaling zero in Data Array	-32767 to 32767, <b>0</b>
Data_Array_High_Scale*	Scaling max in Data Array	-32767 to 32767, <b>100</b>
Node_Low_Scale*	Scaling zero in Connected Node	-32767 to 32767, <b>0</b>
Node_High_Scale*	Scaling max in Connected Node	-32767 to 32767, <b>100</b>

**4.4.3. Timing Parameters**

Column Title	Function	Legal Values
Scan_Interval	Seconds per Scan	0-32000, <b>20</b>

<sup>Note 1</sup> For the Tek-Air driver valid addresses are:  
 30001, 30003, 30005 . . .  
 40001, 40003, 40005 . . .  
 10001, 10002, 10003 . . .  
 00001, 00002, 00003 . . .

**4.4.4. Map Descriptor Example**

```
// Client Side Map Descriptors
//
Map_Descriptors
Map_Descriptor_Name,   Data_Array_Name,   Data_Array_Offset,   Function,   Node_Name,   Address,   Length,   Scan_Interval
CMD_AI_1,             DA_AI,             0,                  Rdbc,      Tek_01,      30001,    3,        20.000s
CMD_AO_1,             DA_AO,             0,                  Rdbc,      Tek_01,      40001,    3,        20.000s
CMD_DI_1,             DA_DI,             0,                  Rdbc,      Tek_01,      10001,    3,        20.000s
CMD_DO_1,             DA_DO,             0,                  Rdbc,      Tek_01,      1,        3,        20.000s
```

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