



## **FieldServer**

### **FS-8700-125 Stulz**

#### **Driver Manual**

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

#### **APPLICABILITY & EFFECTIVITY**

Effective for all systems manufactured after April 2017.

Driver Revision: 1.01  
Document Revision: 2.A

## Technical Support

Please call us for any technical support needs related to the FieldServer product.

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## 1 STULZ DESCRIPTION

The Stulz driver allows the transfer of data from a Stulz device using the Stulz monitoring protocol version 1.7. The FieldServer can act as a Client.

Currently, only the C6000 microcontroller is supported as the protocol only specifies read capabilities on that unit.

The Client is configurable to read all information into separate data points and supports writing to selected points as specified below.

There is support for the following formats:

- Float values
- Binary values
- Integer values

### Max Nodes Supported

| FieldServer Mode | Nodes | Comments   |
|------------------|-------|--|
| Client           | 32    | The protocol supports one Client per system, but 32 devices can be read on the system. |

## 2 DRIVER SCOPE OF SUPPLY

### 2.1 Supplied by Sierra Monitor Corporation

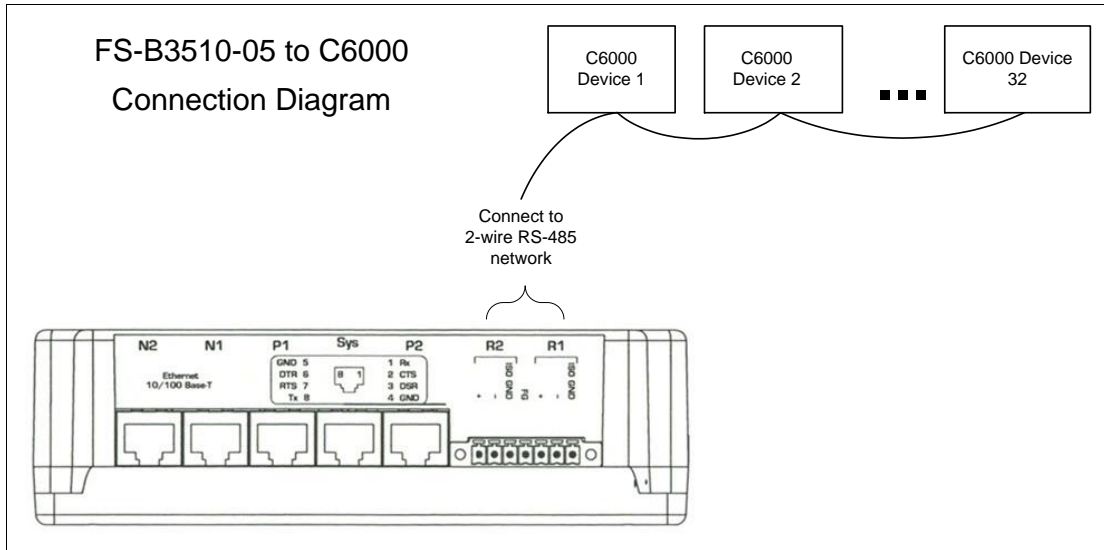
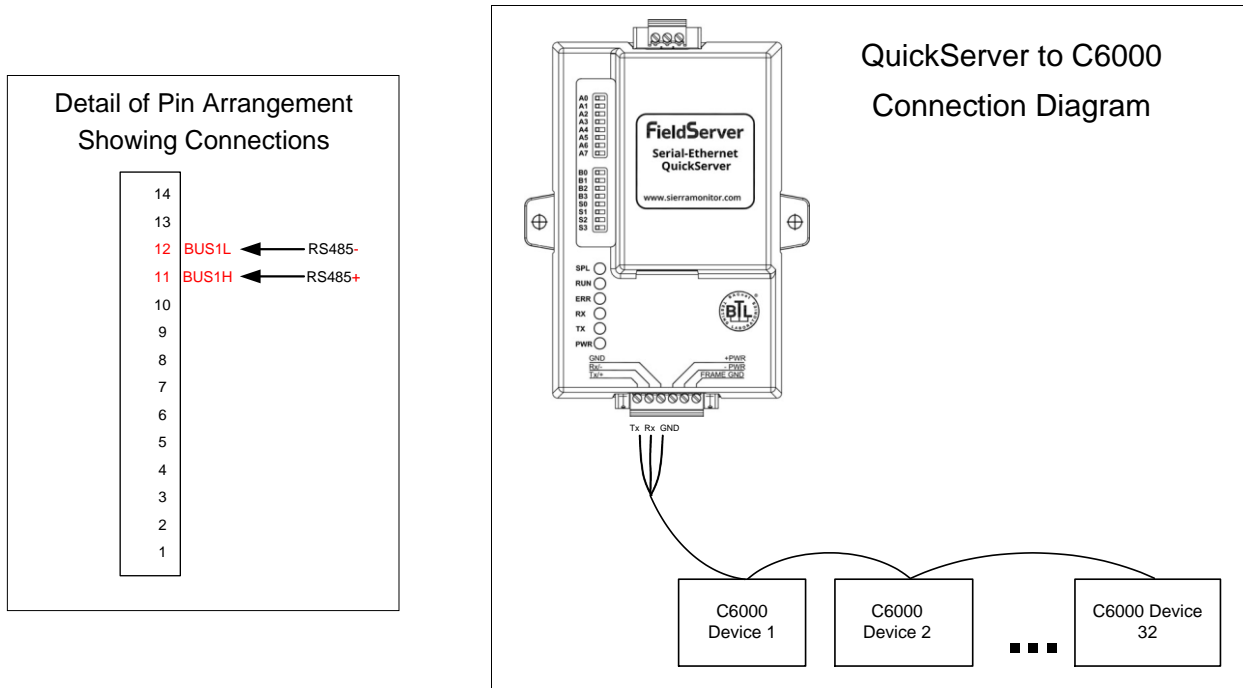
| PART #     | Description                       |
|------------|-----------------------------------|
| FS-8917-16 | RJ45 to terminal connector cable. |

**NOTE: No 3<sup>rd</sup> party hardware provided for protocol.**

### 3 HARDWARE CONNECTIONS

The FieldServer is connected to the Stulz device as shown in the connection drawings below.

**NOTE: Configure the Stulz C6000 according to manufacturer’s instructions.**



#### 3.1 Hardware Connection Tips / Hints

- Connect the wire to bus 1 on the Stulz device. Make sure that bus 1 is used as bus 2 is used by the device to communicate with its IO devices.
- Use shielded twisted pair wire to make connections.
- Use terminating resistors. The Stulz device has terminating resistors which are set with a jumper.
- Make sure that line is terminated at both ends to ensure maximum communication efficiency.
- For C6000 controller information, email Stulz at [STULZTechnicalSupport@stulz-ats.com](mailto:STULZTechnicalSupport@stulz-ats.com).

## 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, Bit, Uint16, Sint16, Uint32, Sint32, 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_Array_Format , Data_Array_Length
DA_AI_01 , Uint16 , 200
DA_AO_01 , Uint16 , 200
DA_DI_01 , Bit , 200
DA_DO_01 , Bit , 200
    
```

## 5 CONFIGURING THE FIELDSEVER AS A STULZ CLIENT

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” files provided with the FieldServer).

This section documents and describes the parameters necessary for configuring the FieldServer to communicate with a Stulz microcontroller device.

The configuration file tells the FieldServer about its interfaces, and the routing of data required. In order to enable the FieldServer for Stulz 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 “Nodes” section, and the data to be provided to the Clients’ needs to be mapped in the “Map Descriptors” section. Details on how to do this can be found below.

**NOTE: In the tables below, \* 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  |
| Port          | Specify which port the device is connected to the FieldServer. | R1-R2 <sup>1</sup>  |
| Protocol      | Specify protocol used.   | Stulz   |
| Baud*         | Specify baud rate.   | <b>9600</b> – The baud rate is limited by the Stulz bus being only 9600 |
| Parity*       | Specify parity.  | <b>None</b>   |
| Data_Bits*    | Specify data bits.   | <b>8</b>  |
| Stop_Bits*    | Specify stop bits.   | <b>1</b>  |
| Poll_Delay*   | Time between internal polls.                                   | 0-32000 seconds, <b>0.05 seconds</b>                                    |

**Example**

```

// Client Side Connections

Connections
Port , Protocol , Baud , Parity , Poll_Delay
R1 , STULZ , 9600 , None ,0.100s
```

<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.

## 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       | Modbus station address of physical Server node.                | 1-32                             |
| Protocol      | Specify protocol used.   | Stulz                            |
| Connection    | Specify which port the device is connected to the FieldServer. | R1-R2 <sup>1</sup>               |

### Example

```
// Client Side Nodes

Nodes
Node_Name ,Node_ID ,Protocol ,Connection
SATS1 ,1, ,Stulz ,R1
```

## 5.3 Client Side Map Descriptor Parameters

### 5.3.1 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 <b>Section 4</b> |
| Data_Array_Offset   | Starting location in Data Array.                                  | 0 to maximum specified in <b>Section 4</b>        |
| Function            | Function of Server Map Descriptor.                                | RDBC, WRBX, WRBC, Passive_client                  |
| Scan_Interval       | Buffers Update Period.  | > 0.001s  |

### 5.3.2 Driver Specific Map Descriptor Parameters

| Column Title  | Function  | Legal Values   |
|---------------|---|--|
| Node_Name     | Name of Node.   | One of the Node names specified in <b>Section 5.2</b>  |
| Length        | Length of Map Descriptor.   | When using PASSIVE_CLIENT function, length is 1. For Active Map Descriptors use a length up to 232, depending on command |
| Stulz_Command | Specifies the command to be read from the device. In order to read data a legal LS command is needed. | Specified in the table in <b>Appendix A</b>  |



## 5.4 Map Descriptor Example

### 5.4.1 The Active Read Command

```
// Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name , Data_Array_Name , Data_Array_Offset , Function , Node_Name
Active_Read , DA_ACTIVE , 0 , RDBC , Node_A

, Stulz_Command , Length , Scan_Interval
, Is , 1 , 5
```

**Example comments:**

- Data\_Array\_Name – The Is command should point to a Data Array of type BYTE.
- Function – On the Is command, use RDBC (for continuous reading) or RDB for once-off reading.
- Stulz\_Command – In order to read any data, a Is command with a RDBC is required. Every time it is read, the data will be stored according to the passive Clients.
- Length – Use length 1 for the Is command.

### 5.4.2 Float and Integer Passive Commands

```
// Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name , Data_Array_Name , Data_Array_Offset , Function , Node_Name
A1 , DA_AI3 , 0 , Passive_Client , Node_A

, Stulz_Command , Length , Scan_Interval
, sett , 1 , 5
```

**Example comments:**

- Data\_Array\_Name – This Data Array is where the data will be stored and to which a write can be performed (if it is supported – see [Appendix A](#)).
- Function – These commands must always be passive (for read-only) or passive-Client (for read and write) or WRBX (write only). RDBC is not supported for these commands.
- Length – The length for these commands must always be 1.

### 5.4.3 Bit Array Passive Commands

```
// Client Side Map Descriptors

Map_Descriptors
Map_Descriptor_Name , Data_Array_Name , Data_Array_Offset , Function , Node_Name
B1 , DA_BI3 , 0 , Passive_Client , Node_A

, Stulz_Command , Length , Scan_Interval
, gst1 , 1 , 5
```

**Example comments:**

- Data\_Array\_Name – The bit array commands should always point to Packed\_Bit Data Array for easiest use.
- Data\_Array\_Offset – The offset should point to the first bit of a byte i.e. 0, 8, 16, 24, etc. These commands use 8 bit spaces in this array.
- Function – These commands must always be passive (for read-only) or passive-Client (for read and write) or WRBX (write only). RDBC is not supported for these commands.
- Length – The length for these commands must always be 1.

**APPENDIX A. STULZ COMMANDS**

| FieldServer as a Client        |                                    |            |        |                                    |       |       |
|--------------------------------|------------------------------------|------------|--------|------------------------------------|-------|-------|
| Command                        | Description                        | Data Type  | Signed | Range                              | Units | C6000 |
| <b>Active Commands</b>         |                                    |            |        |                                    |       |       |
| ls                             | Long state request                 | Byte       | N      | -                                  |       | r     |
| m1fss                          | Module 1 fan speed setpoint        | Integer    | N      | 0..100                             | %     | r/w   |
| m2fss                          | Module 2 fan speed setpoint        | Integer    | N      | 0..100                             | %     | r/w   |
| m3fss                          | Module 3 fan speed setpoint        | Integer    | N      | 0..100                             | %     | r/w   |
| m4fss                          | Module 4 fan speed setpoint        | Integer    | N      | 0..100                             | %     | r/w   |
| m5fss                          | Module 5 fan speed setpoint        | Integer    | N      | 0..100                             | %     | r/w   |
| m6fss                          | Module 6 fan speed setpoint        | Integer    | N      | 0..100                             | %     | r/w   |
| m1dcsst                        | Module 1 drycooler summer start    | Integer    | N      | 0..50                              | C     | r/w   |
| m1dcwst                        | Module 1 drycooler winter start    | Integer    | N      | 0..30                              | C     | r/w   |
| m2dcsst                        | Module 2 drycooler summer start    | Integer    | N      | 0..50                              | C     | r/w   |
| m2dcwst                        | Module 2 drycooler winter start    | Integer    | N      | 0..30                              | C     | r/w   |
| m3dcsst                        | Module 3 drycooler summer start    | Integer    | N      | 0..50                              | C     | r/w   |
| m3dcwst                        | Module 3 drycooler winter start    | Integer    | N      | 0..30                              | C     | r/w   |
| m4dcsst                        | Module 4 drycooler summer start    | Integer    | N      | 0..50                              | C     | r/w   |
| m4dcwst                        | Module 4 drycooler winter start    | Integer    | N      | 0..30                              | C     | r/w   |
| m5dcsst                        | Module 5 drycooler summer start    | Integer    | N      | 0..50                              | C     | r/w   |
| m5dcwst                        | Module 5 drycooler winter start    | Integer    | N      | 0..30                              | C     | r/w   |
| m6dcsst                        | Module 6 drycooler summer start    | Integer    | N      | 0..50                              | C     | r/w   |
| m6dcwst                        | Module 6 drycooler winter start    | Integer    | N      | 0..30                              | C     | r/w   |
| ssat                           | Setpoint Supply Air Temperature    | Float      | N      | 10..35                             | C     | r/w   |
| ssah                           | Setpoint Supply Air Humidity       | Integer    | N      | 0..100                             | %     | r/w   |
| ssrt                           | Setpoint Room Temperature          | Float      | N      | 10..35                             | C     | r/w   |
| ssrt                           | Setpoint Room Humidity             | Integer    | N      | 0..100                             | %     | r/w   |
| hpdsc                          | HP DSC Function                    | Integer    | N      | 0 – DSCwFS<br>1 – Stulz<br>2 - DSC | -     | r/w   |
| gcwmode                        | G/CW mode                          | Byte       |        | 0..1                               | -     | r/w   |
| cwsel                          | Remote CW selector                 | Byte       |        | 0..1                               | -     | r/w   |
| rfs1                           | Read Fan Speed 1                   | Float      | N      | 0..100                             | %     | r/w   |
| rfs2                           | Read Fan Speed 2                   | Float      | N      | 0..100                             | %     | r/w   |
| rfs3                           | Read Fan Speed 3                   | Float      | N      | 0..100                             | %     | r/w   |
| <b>Passive Client Commands</b> |                                    |            |        |                                    |       |       |
| wt                             | Water temperature                  | Float      | Y      | -50..50                            | C     | r     |
| rat                            | Return air temperature             | Float      | N      | 0..100                             | C     | r     |
| sat                            | Supply air temperature             | Float      | N      | 0..100                             | C     | r     |
| rah                            | Return air humidity                | Float      | N      | 0..100                             | %     | r     |
| sah                            | Supply air humidity                | Float      | N      | 0..100                             | %     | r     |
| oat                            | Outside air temperature            | Float      | Y      | -50..50                            | C     | r     |
| oah                            | Outside air humidity               | Float      | N      | 0..100                             | %     | r     |
| tss                            | Temperature set point shift        | Float      | Y      | -12.7..12.7                        | C     | r     |
| hss                            | Humidity set point shift           | Float      | Y      | -12.7..12.7                        | %     | r     |
| swv                            | Software version                   |            |        |                                    |       | r     |
| m1o1                           | Module 1 digital out status byte 1 | Packed_Bit |        |                                    |       | r     |
| 0                              | Reheat 1                           | Bit        |        |                                    |       | r     |
| 1                              | Compressor 1                       | Bit        |        |                                    |       | r     |
| 2                              | Humidification 1                   | Bit        |        |                                    |       | r     |
| 3                              | Dehumidification 1                 | Bit        |        |                                    |       | r     |
| 4                              | Fan 1                              | Bit        |        |                                    |       | r     |
| 5                              | Dry cooler                         | Bit        |        |                                    |       | r     |
| 6                              | Alarm relays 1 (1= no alarm)       | Bit        |        |                                    |       | r     |
| 7                              | PWW                                | Bit        |        |                                    |       | r     |
| m1o2                           | Module 1 digital out status byte 2 | Packed_Bit |        |                                    |       | r     |
| 0                              | Reheat 2                           | Bit        |        |                                    |       | r     |
| 1                              | Glycol pump                        | Bit        |        |                                    |       | r     |
| 2                              | Louver (0=closed, 1=open)          | Bit        |        |                                    |       | r     |
| 3                              | Alarm relays 2 (1= no alarm)       | Bit        |        |                                    |       | r     |
| 4                              | Alarm relays 3 (1= no alarm)       | Bit        |        |                                    |       | r     |
| 5                              | Alarm relays 4 (1= no alarm)       | Bit        |        |                                    |       | r     |

| FieldServer as a Client |                                    |            |        |        |       |       |
|-------------------------|------------------------------------|------------|--------|--------|-------|-------|
| Command                 | Description                        | Data Type  | Signed | Range  | Units | C6000 |
| 6                       | Alarm relays 5 (1= no alarm)       | Bit        |        |        |       | r     |
| 7                       | Glycol pump 1/2 select             | Bit        |        |        |       | r     |
| m2o1 <sup>2</sup>       | Module 2 digital out status byte 1 | Packed_Bit |        |        |       | r     |
| m2o2 <sup>3</sup>       | Module 2 digital out status byte 2 | Packed_Bit |        |        |       | r     |
| m3o1 <sup>2</sup>       | Module 3 digital out status byte 1 | Packed_Bit |        |        |       | r     |
| m3o2 <sup>3</sup>       | Module 3 digital out status byte 2 | Packed_Bit |        |        |       | r     |
| m4o1 <sup>2</sup>       | Module 4 digital out status byte 1 | Packed_Bit |        |        |       | r     |
| m4o2 <sup>3</sup>       | Module 4 digital out status byte 2 | Packed_Bit |        |        |       | r     |
| m5o1 <sup>2</sup>       | Module 5 digital out status byte 1 | Packed_Bit |        |        |       | r     |
| m5o2 <sup>3</sup>       | Module 5 digital out status byte 2 | Packed_Bit |        |        |       | r     |
| m6o1 <sup>2</sup>       | Module 6 digital out status byte 1 | Packed_Bit |        |        |       | r     |
| m6o2 <sup>3</sup>       | Module 6 digital out status byte 2 | Packed_Bit |        |        |       | r     |
| m1i1                    | Module 1 digital in status byte 1  | Packed_Bit |        |        |       | r     |
| 0                       | Compressor low pressure            | Bit        |        |        |       | r     |
| 1                       | Compressor high pressure           | Bit        |        |        |       | r     |
| 2                       | Reheat 1 failure                   | Bit        |        |        |       | r     |
| 3                       | Humidification failure             | Bit        |        |        |       | r     |
| 4                       | Air flow failure                   | Bit        |        |        |       | r     |
| 5                       | Filter clogged                     | Bit        |        |        |       | r     |
| 6                       | Aux alarm 1                        | Bit        |        |        |       | r     |
| 7                       | Reheat 2 alarm                     | Bit        |        |        |       | r     |
| m1i2                    | Module 1 digital in status byte 2  | Packed_Bit |        |        |       | r     |
| 0                       | Conductivity too high              | Bit        |        |        |       | r     |
| 1                       | Ultrasonic failure                 | Bit        |        |        |       | r     |
| 2                       | Glycol pump 1 failure              | Bit        |        |        |       | r     |
| 3                       | Glycol pump 2 failure              | Bit        |        |        |       | r     |
| 4                       | Drycooler failure                  | Bit        |        |        |       | r     |
| 5                       | Water detector                     | Bit        |        |        |       | r     |
| 6                       | Aux alarm 2                        | Bit        |        |        |       | r     |
| 7                       | Aux alarm 3                        | Bit        |        |        |       | r     |
| m2i1 <sup>4</sup>       | Module 2 digital in status byte 1  | Packed_Bit |        |        |       | r     |
| m2i2 <sup>5</sup>       | Module 2 digital in status byte 2  | Packed_Bit |        |        |       | r     |
| m3i1 <sup>4</sup>       | Module 3 digital in status byte 1  | Packed_Bit |        |        |       | r     |
| m3i2 <sup>5</sup>       | Module 3 digital in status byte 2  | Packed_Bit |        |        |       | r     |
| m4i1 <sup>4</sup>       | Module 4 digital in status byte 1  | Packed_Bit |        |        |       | r     |
| m4i2 <sup>5</sup>       | Module 4 digital in status byte 2  | Packed_Bit |        |        |       | r     |
| m5i1 <sup>4</sup>       | Module 5 digital in status byte 1  | Packed_Bit |        |        |       | r     |
| m5i2 <sup>5</sup>       | Module 5 digital in status byte 2  | Packed_Bit |        |        |       | r     |
| m6i1 <sup>4</sup>       | Module 6 digital in status byte 1  | Packed_Bit |        |        |       | r     |
| m6i2 <sup>5</sup>       | Module 6 digital in status byte 2  | Packed_Bit |        |        |       | r     |
| m1gecw                  | Module 1 analogue out GE/CW        | Float      | N      | 0..100 |       | r     |
| m2gecw                  | Module 2 analogue out GE/CW        | Float      | N      | 0..100 |       | r     |
| m3gecw                  | Module 3 analogue out GE/CW        | Float      | N      | 0..100 |       | r     |
| m4gecw                  | Module 4 analogue out GE/CW        | Float      | N      | 0..100 |       | r     |
| m5gecw                  | Module 5 analogue out GE/CW        | Float      | N      | 0..100 |       | r     |
| m6gecw                  | Module 6 analogue out GE/CW        | Float      | N      | 0..100 |       | r     |
| m1pww                   | Module 1 analogue out PWW          | Float      | N      | 0..100 |       | r     |
| m2pww                   | Module 2 analogue out PWW          | Float      | N      | 0..100 |       | r     |
| m3pww                   | Module 3 analogue out PWW          | Float      | N      | 0..100 |       | r     |
| m4pww                   | Module 4 analogue out PWW          | Float      | N      | 0..100 |       | r     |
| m5pww                   | Module 5 analogue out PWW          | Float      | N      | 0..100 |       | r     |
| m6pww                   | Module 6 analogue out PWW          | Float      | N      | 0..100 |       | r     |
| m1aoh                   | Module 1 analogue out humidifier   | Float      | N      | 0..100 |       | r     |
| m2aoh                   | Module 2 analogue out humidifier   | Float      | N      | 0..100 |       | r     |
| m3aoh                   | Module 3 analogue out humidifier   | Float      | N      | 0..100 |       | r     |
| m4aoh                   | Module 4 analogue out humidifier   | Float      | N      | 0..100 |       | r     |

<sup>2</sup> These commands' structure match the m1o1 structure.

<sup>3</sup> These commands' structure match the m1o2 structure.

<sup>4</sup> These commands' structure match the m1i1 structure.

<sup>5</sup> These commands' structure match the m1i2 structure.

| FieldServer as a Client |                                       |            |        |         |       |       |
|-------------------------|---------------------------------------|------------|--------|---------|-------|-------|
| Command                 | Description                           | Data Type  | Signed | Range   | Units | C6000 |
| m5aoh                   | Module 5 analogue out humidifier      | Float      | N      | 0..100  |       | r     |
| m6aoh                   | Module 6 analogue out humidifier      | Float      | N      | 0..100  |       | r     |
| m1aosv                  | Module 1 analogue out suction valve   | Float      | N      | 0..100  |       | r     |
| m2aosv                  | Module 2 analogue out suction valve   | Float      | N      | 0..100  |       | r     |
| m3aosv                  | Module 3 analogue out suction valve   | Float      | N      | 0..100  |       | r     |
| m4aosv                  | Module 4 analogue out suction valve   | Float      | N      | 0..100  |       | r     |
| m5aosv                  | Module 5 analogue out suction valve   | Float      | N      | 0..100  |       | r     |
| m6aosv                  | Module 6 analogue out suction valve   | Float      | N      | 0..100  |       | r     |
| m16doc2                 | Module 1-6 digital out compressor 2   | Packed_Bit |        |         |       | r     |
| 0                       | Module 1 compressor 2                 | Bit        |        |         |       | r     |
| 1                       | Module 2 compressor 2                 | Bit        |        |         |       | r     |
| 2                       | Module 3 compressor 2                 | Bit        |        |         |       | r     |
| 3                       | Module 4 compressor 2                 | Bit        |        |         |       | r     |
| 4                       | Module 5 compressor 2                 | Bit        |        |         |       | r     |
| 5                       | Module 6 compressor 2                 | Bit        |        |         |       | r     |
| 6                       | Not used                              | Bit        |        |         |       | r     |
| 7                       | Not used                              | Bit        |        |         |       | r     |
| m14dic2                 | Module 1-4 digital in compressor 2    | Packed_Bit |        |         |       | r     |
| 0                       | modul 1 compressor 2 low pressure     | Bit        |        |         |       | r     |
| 1                       | modul 1 compressor 2 high pressure    | Bit        |        |         |       | r     |
| 2                       | modul 2 compressor 2 low pressure     | Bit        |        |         |       | r     |
| 3                       | modul 2 compressor 2 high pressure    | Bit        |        |         |       | r     |
| 4                       | modul 3 compressor 2 low pressure     | Bit        |        |         |       | r     |
| 5                       | modul 3 compressor 2 high pressure    | Bit        |        |         |       | r     |
| 6                       | modul 4 compressor 2 low pressure     | Bit        |        |         |       | r     |
| 7                       | modul 4 compressor 2 high pressure    | Bit        |        |         |       | r     |
| m56dic2                 | Module 5-6 digital in compressor 2    | Packed_Bit |        |         |       | r     |
| 0                       | modul 5 compressor 2 low pressure     | Bit        |        |         |       | r     |
| 1                       | modul 5 compressor 2 high pressure    | Bit        |        |         |       | r     |
| 2                       | modul 6 compressor 2 low pressure     | Bit        |        |         |       | r     |
| 3                       | modul 6 compressor 2 high pressure    | Bit        |        |         |       | r     |
| 4                       | not used                              | Bit        |        |         |       | r     |
| 5                       | not used                              | Bit        |        |         |       | r     |
| 6                       | not used                              | Bit        |        |         |       | r     |
| 7                       | not used                              | Bit        |        |         |       | r     |
| sett                    | Setpoint temperature                  | Float      | N      | 10..35  | C     | r/w   |
| seth                    | Setpoint humidity                     | Integer    | N      | 10..90  | %     | r/w   |
| year                    | Date – Year                           | Integer    | N      | 0..99   |       | r/w   |
| month                   | Date – Month                          | Integer    | N      | 1..12   |       | r/w   |
| day                     | Date – Day                            | Integer    | N      | 1..31   |       | r/w   |
| hour                    | Time – Hour                           | Integer    | N      | 0..23   |       | r/w   |
| minute                  | Time – Minute                         | Integer    | N      | 0..59   |       | r/w   |
| ratha                   | Return air temperature too high alarm | Integer    | N      | 0..30   | C     | r/w   |
| satha                   | Supply air temperature too high alarm | Integer    | N      | 0..30   | C     | r/w   |
| ratla                   | Return air temperature too low alarm  | Integer    | N      | 0..30   | C     | r/w   |
| satla                   | Supply air temperature too low alarm  | Integer    | N      | 0..30   | C     | r/w   |
| wtha                    | Water temperature too high alarm      | Integer    | N      | 0..50   | C     | r/w   |
| wtla                    | Water temperature too low alarm       | Integer    | Y      | -50..30 | C     | r/w   |
| rahha                   | Return air humidity too high alarm    | Integer    | N      | 0..90   | %     | r/w   |
| sahha                   | Supply air humidity too high alarm    | Integer    | N      | 0..90   | %     | r/w   |
| rahla                   | Return air humidity too low alarm     | Integer    | N      | 0..90   | %     | r/w   |
| sahla                   | Supply air humidity too low alarm     | Integer    | N      | 0..90   | %     | r/w   |
| Module 1                |                                       |            |        |         |       |       |
| 1comps                  | Compressor start                      | Float      | N      | 0..10   |       | r/w   |
| 1comph                  | Compressor hysteresis                 | Float      | N      | 0..10   |       | r/w   |
| 1svst                   | Suction valve start                   | Float      | N      | 0..10   |       | r/w   |
| 1svpb                   | Suction valve proportional ban        | Float      | N      | 0..10   |       | r/w   |
| 1drycst                 | Drycooler start temperature           | Integer    | N      | 0..45   |       | r     |
| 1drycet                 | Drycooler enable temperature          | Integer    | N      | 0..45   |       | r     |
| 1gpst                   | Glycol-pump start temperature         | Integer    | N      | 0..100  |       | r/w   |
| 1gecwvo                 | GE/CW valve off temperature           | Integer    | N      | 0..35   | C     | r/w   |

| FieldServer as a Client |                                  |           |        |       |       |       |
|-------------------------|----------------------------------|-----------|--------|-------|-------|-------|
| Command                 | Description                      | Data Type | Signed | Range | Units | C6000 |
| 1gecwvs                 | GE/CW valve start temperature    | Float     | N      | 0..10 |       | r/w   |
| 1gecwvpb                | GE/CW valve proportional band    | Float     | N      | 0..10 |       | r/w   |
| 1r1st                   | Reheat 1 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 1r1h                    | Reheat 1 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 1r2st                   | Reheat 2 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 1r2h                    | Reheat 2 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 1r3st                   | Reheat 3 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 1r3h                    | Reheat 3 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 1pwwvs                  | PWW valve start temperature      | Float     | N      | 0..10 |       | r/w   |
| 1pwwvpb                 | PWW valve proportional band      | Float     | N      | 0..10 |       | r/w   |
| 1dhs                    | Dehumidification start           | Integer   | N      | 0..90 |       | r/w   |
| 1dhh                    | Dehumidification hysteresis      | Integer   | N      | 0..90 |       | r/w   |
| 1hums                   | Humidification start             | Integer   | N      | 0..90 |       | r/w   |
| 1humh                   | Humidification hysteresis        | Integer   | N      | 0..90 |       | r/w   |
| 1humsa                  | Humidification start (analogue)  | Integer   | N      | 0..90 |       | r/w   |
| 1humpba                 | Humidification proportional band | Integer   | N      | 0..90 |       | r/w   |
| 1gcph                   | Glycol-pump hysteresis           | Float     | N      | 0..10 |       | r/w   |
| <b>Module 2</b>         |                                  |           |        |       |       |       |
| 2comps                  | Compressor start                 | Float     | N      | 0..10 |       | r/w   |
| 2comph                  | Compressor hysteresis            | Float     | N      | 0..10 |       | r/w   |
| 2svst                   | Suction valve start              | Float     | N      | 0..10 |       | r/w   |
| 2svpb                   | Suction valve proportional ban   | Float     | N      | 0..10 |       | r/w   |
| 2drycst                 | Drycooler start temperature      | Integer   | N      | 0..45 | C     | r     |
| 2r1st                   | Reheat 1 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 2r1h                    | Reheat 1 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 2r2st                   | Reheat 2 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 2r2h                    | Reheat 2 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 2r3st                   | Reheat 3 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 2r3h                    | Reheat 3 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 2dhs                    | Dehumidification start           | Integer   | N      | 0..90 | %     | r/w   |
| 2dhh                    | Dehumidification hysteresis      | Integer   | N      | 0..90 | %     | r/w   |
| 2hums                   | Humidification start             | Integer   | N      | 0..90 | %     | r/w   |
| 2humh                   | Humidification hysteresis        | Integer   | N      | 0..90 | %     | r/w   |
| 2humsa                  | Humidification start (analogue)  | Integer   | N      | 0..90 | %     | r/w   |
| 2humpba                 | Humidification proportional band | Integer   | N      | 0..90 | %     | r/w   |
| 2gecwvs                 | GE/CW valve start temperature    | Float     | N      | 0..10 |       | r/w   |
| 2gecwvpb                | GE/CW valve proportional band    | Float     | N      | 0..10 |       | r/w   |
| <b>Module 3</b>         |                                  |           |        |       |       |       |
| 3comps                  | Compressor start                 | Float     | N      | 0..10 |       | r/w   |
| 3comph                  | Compressor hysteresis            | Float     | N      | 0..10 |       | r/w   |
| 3svst                   | Suction valve start              | Float     | N      | 0..10 |       | r/w   |
| 3svpb                   | Suction valve proportional ban   | Float     | N      | 0..10 |       | r/w   |
| 3drycst                 | Drycooler start temperature      | Integer   | N      | 0..45 | C     | r     |
| 3r1st                   | Reheat 1 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 3r1h                    | Reheat 1 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 3r2st                   | Reheat 2 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 3r2h                    | Reheat 2 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 3r3st                   | Reheat 3 start temperature       | Float     | N      | 0..10 |       | r/w   |
| 3r3h                    | Reheat 3 hysteresis              | Float     | N      | 0..10 |       | r/w   |
| 3dhs                    | Dehumidification start           | Integer   | N      | 0..90 | %     | r/w   |
| 3dhh                    | Dehumidification hysteresis      | Integer   | N      | 0..90 | %     | r/w   |
| 3hums                   | Humidification start             | Integer   | N      | 0..90 | %     | r/w   |
| 3humh                   | Humidification hysteresis        | Integer   | N      | 0..90 | %     | r/w   |
| 3humsa                  | Humidification start (analogue)  | Integer   | N      | 0..90 | %     | r/w   |
| 3humpba                 | Humidification proportional band | Integer   | N      | 0..90 | %     | r/w   |
| 3gecwvs                 | GE/CW valve start temperature    | Float     | N      | 0..10 |       | r/w   |
| 3gecwvpb                | GE/CW valve proportional band    | Float     | N      | 0..10 |       | r/w   |
| <b>Module 4</b>         |                                  |           |        |       |       |       |
| 4comps                  | Compressor start                 | Float     | N      | 0..10 |       | r/w   |
| 4comph                  | Compressor hysteresis            | Float     | N      | 0..10 |       | r/w   |
| 4svst                   | Suction valve start              | Float     | N      | 0..10 |       | r/w   |

| FieldServer as a Client |                                       |            |        |       |       |       |
|-------------------------|---------------------------------------|------------|--------|-------|-------|-------|
| Command                 | Description                           | Data Type  | Signed | Range | Units | C6000 |
| 4svpb                   | Suction valve proportional ban        | Float      | N      | 0..10 |       | r/w   |
| 4drycst                 | Drycooler start temperature           | Integer    | N      | 0..45 | C     | r     |
| 4r1st                   | Reheat 1 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 4r1h                    | Reheat 1 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 4r2st                   | Reheat 2 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 4r2h                    | Reheat 2 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 4r3st                   | Reheat 3 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 4r3h                    | Reheat 3 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 4dhs                    | Dehumidification start                | Integer    | N      | 0..90 | %     | r/w   |
| 4dhh                    | Dehumidification hysteresis           | Integer    | N      | 0..90 | %     | r/w   |
| 4hums                   | Humidification start                  | Integer    | N      | 0..90 | %     | r/w   |
| 4humh                   | Humidification hysteresis             | Integer    | N      | 0..90 | %     | r/w   |
| 4humsa                  | Humidification start (analogue)       | Integer    | N      | 0..90 | %     | r/w   |
| 4humpba                 | Humidification proportional band      | Integer    | N      | 0..90 | %     | r/w   |
| 4gecwvs                 | GE/CW valve start temperature         | Float      | N      | 0..10 |       | r/w   |
| 4gecwvpb                | GE/CW valve proportional band         | Float      | N      | 0..10 |       | r/w   |
| <b>Module 5</b>         |                                       |            |        |       |       |       |
| 5comps                  | Compressor start                      | Float      | N      | 0..10 |       | r/w   |
| 5comph                  | Compressor hysteresis                 | Float      | N      | 0..10 |       | r/w   |
| 5svst                   | Suction valve start                   | Float      | N      | 0..10 |       | r/w   |
| 5svpb                   | Suction valve proportional ban        | Float      | N      | 0..10 |       | r/w   |
| 5drycst                 | Drycooler start temperature           | Integer    | N      | 0..45 | C     | r     |
| 5r1st                   | Reheat 1 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 5r1h                    | Reheat 1 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 5r2st                   | Reheat 2 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 5r2h                    | Reheat 2 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 5r3st                   | Reheat 3 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 5r3h                    | Reheat 3 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 5dhs                    | Dehumidification start                | Integer    | N      | 0..90 | %     | r/w   |
| 5dhh                    | Dehumidification hysteresis           | Integer    | N      | 0..90 | %     | r/w   |
| 5hums                   | Humidification start                  | Integer    | N      | 0..90 | %     | r/w   |
| 5humh                   | Humidification hysteresis             | Integer    | N      | 0..90 | %     | r/w   |
| 5humsa                  | Humidification start (analogue)       | Integer    | N      | 0..90 | %     | r/w   |
| 5humpba                 | Humidification proportional band      | Integer    | N      | 0..90 | %     | r/w   |
| 5gecwvs                 | GE/CW valve start temperature         | Float      | N      | 0..10 |       | r/w   |
| 5gecwvpb                | GE/CW valve proportional band         | Float      | N      | 0..10 |       | r/w   |
| <b>Module 6</b>         |                                       |            |        |       |       |       |
| 6comps                  | Compressor start                      | Float      | N      | 0..10 |       | r/w   |
| 6comph                  | Compressor hysteresis                 | Float      | N      | 0..10 |       | r/w   |
| 6svst                   | Suction valve start                   | Float      | N      | 0..10 |       | r/w   |
| 6svpb                   | Suction valve proportional ban        | Float      | N      | 0..10 |       | r/w   |
| 6drycst                 | Drycooler start temperature           | Integer    | N      | 0..45 | C     | r     |
| 6r1st                   | Reheat 1 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 6r1h                    | Reheat 1 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 6r2st                   | Reheat 2 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 6r2h                    | Reheat 2 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 6r3st                   | Reheat 3 start temperature            | Float      | N      | 0..10 |       | r/w   |
| 6r3h                    | Reheat 3 hysteresis                   | Float      | N      | 0..10 |       | r/w   |
| 6dhs                    | Dehumidification start                | Integer    | N      | 0..90 | %     | r/w   |
| 6dhh                    | Dehumidification hysteresis           | Integer    | N      | 0..90 | %     | r/w   |
| 6hums                   | Humidification start                  | Integer    | N      | 0..90 | %     | r/w   |
| 6humh                   | Humidification hysteresis             | Integer    | N      | 0..90 | %     | r/w   |
| 6humsa                  | Humidification start (analogue)       | Integer    | N      | 0..90 | %     | r/w   |
| 6humpba                 | Humidification proportional band      | Integer    | N      | 0..90 | %     | r/w   |
| 6gecwvs                 | GE/CW valve start temperature         | Float      | N      | 0..10 |       | r/w   |
| 6gecwvpb                | GE/CW valve proportional band         | Float      | N      | 0..10 |       | r/w   |
| gst1                    | General status byte 1                 | Packed_Bit |        |       |       |       |
| 0                       | 0 = PC-STOP (monitoring), 1 = on      | Bit        |        |       |       | r/w   |
| 1                       | 0 = REMOTE STOP (contact), 1 = on     | Bit        |        |       |       | r     |
| 2                       | 0 = LOCAL STOP (key), 1 = on          | Bit        |        |       |       | r     |
| 3                       | 0 = TIMER-STOP (weekly oper.), 1 = on | Bit        |        |       |       | r     |

| FieldServer as a Client |                                  |            |        |       |       |       |
|-------------------------|----------------------------------|------------|--------|-------|-------|-------|
| Command                 | Description                      | Data Type  | Signed | Range | Units | C6000 |
| 4                       | Seq. Start/Stop (0=No, 1=Yes)    | Bit        |        |       |       | r     |
| 5                       | WARM UP STOP                     | Bit        |        |       |       | r     |
| 6                       | Remote UPS 1 = UPS activ         | Bit        |        |       |       | r     |
| 7                       | Local UPS 1 = UPS activ          | Bit        |        |       |       | r     |
| gst2 <sup>6</sup>       | General status byte 2            | Packed_Bit |        |       |       |       |
| 0                       | G/CW-mode; G:1, CW:0             | Bit        |        |       |       | r/w   |
| 1                       | CW-Valve OR/AND – selector       | Bit        |        |       |       | r     |
| 2                       | not used                         |            |        |       |       |       |
| 3                       | not used                         |            |        |       |       |       |
| 4                       | not used                         |            |        |       |       |       |
| 5                       | not used                         |            |        |       |       |       |
| 6                       | not used                         |            |        |       |       |       |
| 7                       | not used                         |            |        |       |       |       |
| err1                    | Error byte 1                     | Packed_Bit |        |       |       |       |
| 0                       | return air temp. too high alarm  | Bit        |        |       |       | r     |
| 1                       | return air humid. Too high alarm | Bit        |        |       |       | r     |
| 2                       | supply air temp. too high alarm  | Bit        |        |       |       | r     |
| 3                       | supply air humid. Too high alarm | Bit        |        |       |       | r     |
| 4                       | water temp. too high alarm       | Bit        |        |       |       | r     |
| 5                       | return air temp. too low alarm   | Bit        |        |       |       | r     |
| 6                       | return air humid. Too low alarm  | Bit        |        |       |       | r     |
| 7                       | supply air temp. too low alarm   | Bit        |        |       |       | r     |
| err2                    | Error byte 2                     | Packed_Bit |        |       |       |       |
| 0                       | supply air humid. Too low alarm  | Bit        |        |       |       | r     |
| 1                       | water temp. too low alarm        | Bit        |        |       |       | r     |
| 2                       | supervisor failure               | Bit        |        |       |       | r     |
| 3                       | freeze alarm                     | Bit        |        |       |       | r     |
| 4                       | fire / smoke detector            | Bit        |        |       |       | r     |
| 5                       | sensor failure                   | Bit        |        |       |       | r     |
| 6                       | controller failure               | Bit        |        |       |       | r     |
| 7                       | IO-board transmission failure    | Bit        |        |       |       | r     |
| ar <sup>7</sup>         | Alarm reset                      | None       |        |       |       | w     |

<sup>6</sup> This command has been replaced by gcwmode and cwsel to enable write on the second bit (V2.66).

<sup>7</sup> Writing any value to this command will reset the alarms on the Stulz unit.



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## **APPENDIX B. TROUBLESHOOTING**

### Driver Limitations:

Only 9600 baud is supported by Stulz devices.