

1 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.

It supports the following formats:

- Float values
- Binary values
- Integer values

FieldServer Mode	Remote Nodes	Comments
Client	32	The protocol supports only one Client per bus, which can poll 32 server devices

2 FORMAL DRIVER TYPE

Serial

Client Only

3 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	No
ProtoNode	No

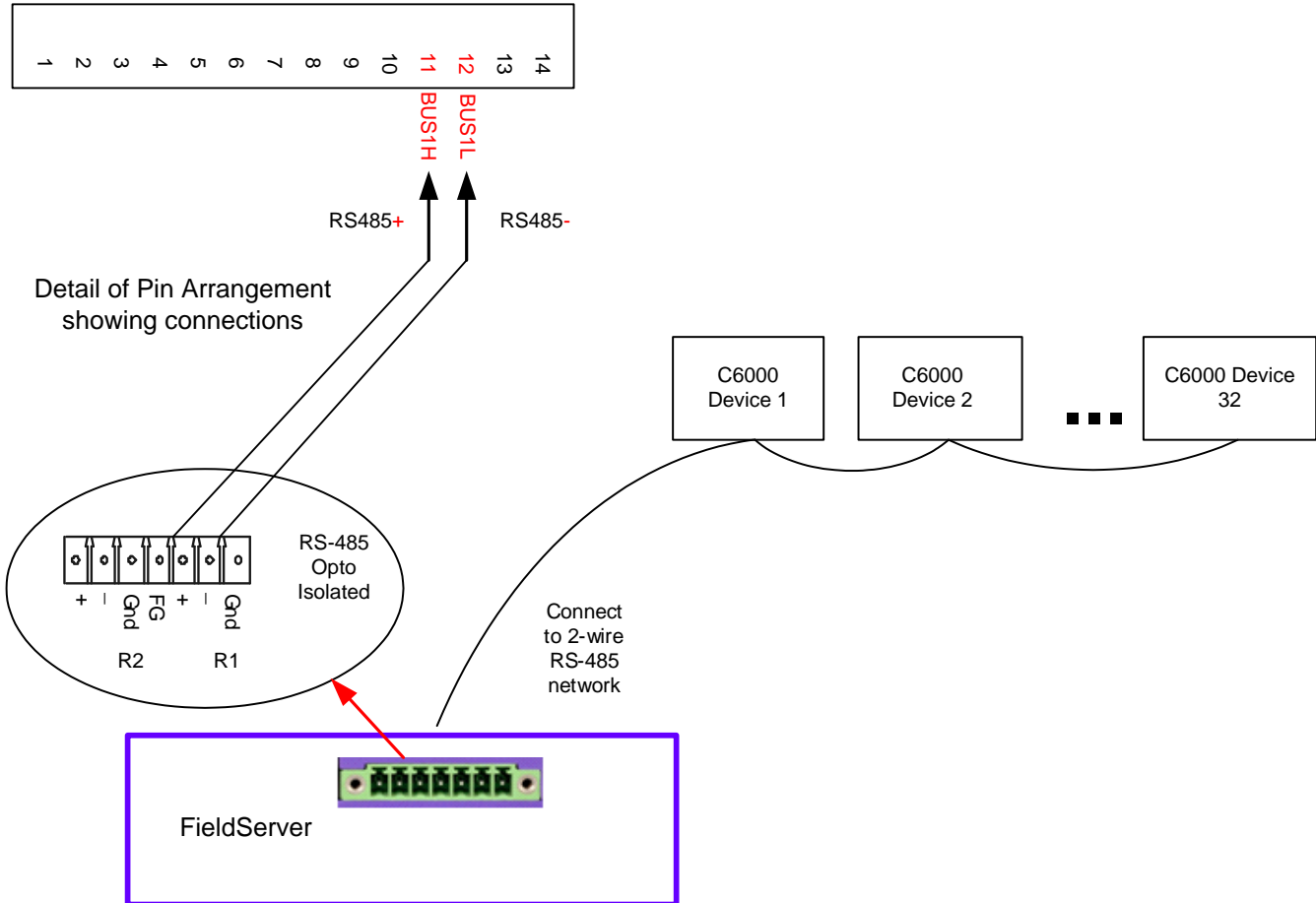
4 CONNECTION INFORMATION

Connection type: RS-485 (Two wire, Half-Duplex)
 Baud Rates: 9600 – (Vendor limitation)
 Data Bits: 8 – (Vendor limitation)
 Stop Bits: 1– (Vendor limitation)
 Parity: None– (Vendor limitation)
 Multidrop Capability Yes

5 DEVICES TESTED

Device	Tested (FACTORY, SITE)
C6000	Factory

6 CONNECTION CONFIGURATIONS



6.1 Connection Notes

Use terminating resistors to enhance communication quality.

7 COMMUNICATIONS FUNCTIONS - SUPPORTED FUNCTIONS AT A GLANCE:

7.1 Read Operations supported

FieldServer as a Client
Read Analog Status:
Temperatures
Humidity
Set points
GE/CW valve outputs
Humidifier outputs
Date/time
Module 1-6 data
Alarm set points
Read Binary Status:
Module 1-6 statuses
Compressor statuses
General statuses
Error states

7.2 Write (Control) Operations supported

FieldServer as a Client
Write Analog Setpoints:
Set points
Alarm set points
Module 1-6 set points
Date/time
Write Binary Commands:
Reset alarms
Stop/start
G/CW mode

7.3 Unsupported Functions and Data Types

Function	Reason
Programming messages	FieldServer is a data transfer device, and as such, programming messages are not required

7.4 Unsupported Devices or Protocol Options

Device	Details
C1001/2	The protocol does not specify any reading functions for this device
C1010	The protocol does not specify any reading functions for this device
C4000	The protocol does not specify any reading functions for this device
C5000	The protocol does not specify any reading functions for this device

7.5 Complete command table

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
Active commands						
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
Passive_Client commands						
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

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
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
6	Alarm relays 5 (1= no alarm)	Bit				r
7	Glycol pump 1/2 select	Bit				r
m2o1 ¹	Module 2 digital out status byte 1	Packed_Bit				r
m2o2 ²	Module 2 digital out status byte 2	Packed_Bit				r
m3o1 ³	Module 3 digital out status byte 1	Packed_Bit				r
m3o2 ⁴	Module 3 digital out status byte 2	Packed_Bit				r
m4o1 ³	Module 4 digital out status byte 1	Packed_Bit				r
m4o2 ⁴	Module 4 digital out status byte 2	Packed_Bit				r
m5o1 ³	Module 5 digital out status byte 1	Packed_Bit				r
m5o2 ⁴	Module 5 digital out status byte 2	Packed_Bit				r
m6o1 ³	Module 6 digital out status byte 1	Packed_Bit				r
m6o2 ⁴	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

¹ These commands' structure match the m1o1 structure

² These commands' structure match the m1o2 structure

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
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 ³	Module 2 digital in status byte 1	Packed_Bit				r
m2i2 ⁴	Module 2 digital in status byte 2	Packed_Bit				r
m3i1 ³	Module 3 digital in status byte 1	Packed_Bit				r
m3i2 ⁴	Module 3 digital in status byte 2	Packed_Bit				r
m4i1 ³	Module 4 digital in status byte 1	Packed_Bit				r
m4i2 ⁴	Module 4 digital in status byte 2	Packed_Bit				r
m5i1 ³	Module 5 digital in status byte 1	Packed_Bit				r
m5i2 ⁴	Module 5 digital in status byte 2	Packed_Bit				r
m6i1 ³	Module 6 digital in status byte 1	Packed_Bit				r
m6i2 ⁴	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
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

³ These commands' structure match the m1i1 structure

⁴ These commands' structure match the m1i2 structure

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
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

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
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
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
Module 2						
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

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
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
Module 3						
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
Module 4						
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
4svpb	Suction valve proportional ban	Float	N	0..10		r/w

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
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
Module 5						
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
Module 6						
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

FieldServer as a Client						
Command descriptions and supported status						
Command	Description	Data_type	Signed	Range	Units	C6000
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
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	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

FieldServer as a Client

Command descriptions and supported status

Command	Description	Data_type	Signed	Range	Units	C6000
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 ⁵	Alarm reset	None				w

⁵ Writing any value to this command will reset the alarms on the Stulz unit