REZNOR®

SIGNAL PRO CONTROL

MODBUS MANUAL

Please read this document carefully before commencing installation, commissioning and/or servicing.
Leave it with the end user/site agent to be placed in their premises technical file after installation.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.
All work must be carried out by appropriately qualified persons.
The manufacturer does not take any responsibility in the event of non-observance of the regulations concerning the connection of the apparatus causing a dangerous operation possibly resulting in damage to the apparatus and/or environment in which the unit is installed.

Manual Part No. D301515 Issue 1

NGH
NORTEK GLOBAL HVAC

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CONFIGURATION

The Modbus hardware is configured as follows:-

- RS485 serial half-duplex interface
- 9600 baud
- 8 bits
- Even/No parity, see below
- 1 start bit
- 1 stop bit
- RTU mode
- No hand shaking protocols

Parity:

- Signal Pro DIP switch address 0 to 7 use even parity
- Signal Pro Dip switch address 8 to 15 use no parity

Connections to a computer:-

Signal	4-Pin	RJ45 Pin	Signal Description	Cable
D0	A	5	-ve terminal	White/Blue Stripe
D1	B	4	+ve terminal	Blue
Gnd	C	8	common 0V reference (screen of 2 core cable if used)	Brown
+12V	D	7	12V supply (to panel only)	-
Connection D serves only to carry power to the control panel and is not used in a computer interface Hot plugging of the interconnecting cabling is allowed				

MODBUS ADDRESS

Units will respond to their own coded address set by the bit switches as follows:-

Signal Pro Dip Switch	Modbus Address
0	16
1	17
2	18
3	19
4	20
5	21
6	22
7	23
8	24
9	25
10	26
11	27
12	28
13	29
14	30
15	31

They will also respond to broadcast write functions sent to Modbus address 0.

They will not reply to broadcast read functions.

MODBUS FUNCTION CODES SUPPORTED

Code	Description
01 and 02	Read coils / inputs
03 and 04	Read holding / input registers
05	Write single coil
06	Write single register

All other Modbus function codes will generate exception code 01, function not recognised.

Likewise if coils / register addresses which are out of range are read from or written to either the command will be ignored or an exception code will be returned.

ELECTRIC AIR CURTAIN REGISTERS

Note: the register addresses below are as they would appear as raw data on the Modbus connection.

120	PCB Temp	Read Only
Returns the PCB temp in °C, range 0 to 100 in decimal		
121	Air Curtain Output Temp	Read Only
Returns the air curtain outlet temp in °C, range 0 to 100 in decimal		
122	External / Outdoor Temp	Read Only
Returns the external sensor air temp in °C, range -20 to +60, signed hex. Examples: 0xFFF6 is -10°C, 0x0000 is 0°C, 0x000A is 10°C		
123	Heater Element Duty Cycle	Read Only
Returns the heater element duty cycle as a number in range 0 to 255		
124	Door Open Set Temp	Read / Write
Sets or returns the door open target air curtain outlet air temp in range 0 or 5 to 50, where 0 is heater off and 5 to 50 is in °C decimal.		
125	Door Open Set Temp	Read / Write
Sets or returns the door closed target air curtain outlet air temp in range 0 or 5 to 50, where 0 is heater off and 5 to 50 is in °C decimal.		
126	Hours Run	Read Only
Returns the air curtain hours run with the fan on. Range is 0 to 65535 hours.		

ELECTRIC AIR CURTAIN COILS

Note: the coil addresses below are as they would appear as raw data on the Modbus connection.

0	Fan 1 (Slow) On	Read only
1	Fan 2 (Medium) On	Read only
2	Fan 3 (Fast) On	Read only
Returns fan status , 0 - Fan Off or 1 - Fan On		
3	Timer Input Open Circuit	Read only
Returns timer status, 0 - Input Closed or 1 - Input Open Circuit		
5	Stat Input Open Circuit	Read only
Returns heater over temperature thermostat input status 0 - Input Closed or 1 - Input Open Circuit		
6	Door Input Open Circuit	Read only
Returns door input status 0 - Input Closed (Door Open) or 1 - Input Open Circuit (Door Closed)		
7	Heat ON Status	Read only
Returns heater on status, 0 - Heater Off or 1 - Heater On This is not the element status which depends on other inputs and settings		
8	Control Temperature Sensor Fault	Read only
Returns control temperature sensor fault status, 0 - No Fault or 1 - Fault This shows that the sensor is outside its normal range, either open circuit, shorted or bad.		
9	PCB Temperature Sensor Fault	Read Only
Returns PCB temperature sensor fault status, 0 – No Fault or 1 – Fault This shows that the sensor is outside its normal range, either missing, shorted or bad.		
10	External Temperature Sensor Fault	Read Only
Returns external temperature sensor fault status, 0 – No Fault Or 1 – Fault This shows that the sensor is outside its normal range, either missing, shorted or bad. If the sensor has never been fitted this flag should be clear.		
11	External Temperature Sensor Not Fitted	Read Only
Returns external temperature sensor fitted status, 0 – Fitted Or 1 – Not Fitted		

12	Set Door Open Fan Speed 1 (Slow)	Read / Write
13	Set Door Open Fan Speed 2 (Medium)	Read / Write
14	Set Door Open Fan Speed 3 (Fast)	Read / Write
Sets or returns door open fan speeds, 0 – fan set off or 1 – fan set on Note: door open fan speed is set by the last write to any of coils 12, 13 or 14. Therefore if 'write fan speed 1 set on' is followed by 'write fan speed 2 set off' then the result will be fan speed is none.		
15	Set Heat On	Read / Write
Sets or returns heat on, 0 – heat set off or 1 – heat set on		
16	Set Timer Interlock On	Read / Write
Sets or returns timer interlock, 0 – set interlock off or 1 – set interlock on When timer interlock is set on the control works as if the Timer input is open, no air curtain operation.		
18	Set Stat Interlock On	Read / Write
Sets or returns heater over temp thermostat interlock, 0 – set interlock off or 1 – set interlock on When stat interlock is set on the control works as if the heater over temp thermostat input is open, no heating fan forced to speed 3.		
19	Set Door Interlock On	Read / Write
Sets or returns door interlock, 0 – set interlock off or 1 – set interlock on When door interlock is set on the control works as if the door input is open, i.e. as if door is closed.		
20	Set Door Closed Fan Speed 1 (Slow)	Read / Write
21	Set Door Closed Fan Speed 2 (Medium)	Read / Write
22	Set Door Closed Fan Speed 3 (Fast)	Read / Write
Sets or returns door closed fan speeds, 0 – fan set off or 1 – fan set on Note: door closed fan speed is set by the last write to any of coils 20, 21 or 22. Therefore if 'write fan speed 1 set on' is followed by 'write fan speed 2 set off' then the result will be fan speed is none.		
23	Air Curtain Reset	Write Only
A write of any value to this coil will cause a microprocessor reset of the air curtain. There will be no response message.		

LPHW AIR CURTAIN REGISTERS

Note: the register addresses below are as they would appear as raw data on the Modbus connection.

119	Return Pipe Temp	Read Only
Returns the return pipe temp in °C, range 0 to 100 in decimal		
121	Flow Pipe Temp	Read Only
Returns the flow pipe temp in °C, range 0 to 100 in decimal		
122	External / Outdoor Temp	Read Only
Returns the external sensor air temp in °C, range -20 to +60, signed hex. Examples: 0xFFF6 is -10°C, 0x0000 is 0°C, 0x000A is 10°C		
123	Heat Output	Read Only
Returns the valve status as a number in range 0 for closed, 255 for open		
124	Set Flow Temp	Read / Write
Sets or returns the target flow pipe temp in range 0 to 100 in °C decimal.		
125	Set Return Temp	Read / Write
Sets or returns the target return pipe temp in range 0 to 100 in °C decimal		
126	Hours Run	Read Only
Returns the air curtain hours run with the fan on. Range is 0 to 65535 hours.		

LPHW AIR CURTAIN COILS

Note: the coil addresses below are as they would appear as raw data on the Modbus connection.

23	Air Curtain Reset	Write Only
A write of any value to this coil will cause a microprocessor reset of the air curtain. There will be no response message		
25	Fan 1 (Slow) On	Read only
26	Fan 2 (Medium) On	Read only
27	Fan 3 (Fast) On	Read only
Returns Fan status, 0 – fan off or 1 – fan on		
28	Heat On Status	Read Only
Returns heater on status, 0 – heater off or 1 – heater on. This is not the valve status which depends on other inputs and settings.		
30	Flow Temperature Sensor Fault	Read Only
Returns flow temperature sensor fault status, 0 – no fault or 1 – fault. This shows that the sensor is outside its normal range, either open circuit, shorted or bad.		
32	Door Input Open Circuit	Read Only
Returns door input status, 0 – input closed (door open) or 1 – input open circuit (door closed).		
33	Timer Input Open Circuit	Read Only
Returns Timer input status, 0 – input closed or 1 – input open circuit		
36	Filter Input Open Circuit	Read Only
Returns filter input status, 0 – input closed or 1 – input open circuit (fault)		
37	Ambient Air Curtain	Read Only
Returns ambient air curtain status, 0 air curtain is heated or 1 air curtain is ambient (i.e. no flow/return sensor fitted)		
38	External Temperature Sensor Fault	Read Only
Returns external temperature sensor fault status, 0 – no fault or 1 – fault. This shows that the sensor is outside its normal range, either missing, shorted or bad. If the sensor has never been fitted this flag should be clear.		

39	External Temperature Sensor Not Fitted	Read Only
Returns external temperature sensor fitted status, 0 – fitted or 1 – not fitted		
40	Return Temperature Sensor Fault	Read Only
Returns return temperature sensor fault status, 0 – no fault or 1 – fault. This shows that the sensor is outside its normal range, either open circuit, shorted or bad.		
41	Set Door Open Fan Speed 1 (Slow)	Read / Write
42	Set Door Open Fan Speed 2 (Medium)	Read / Write
43	Set Door Open Fan Speed 3 (Fast)	Read / Write
Sets or returns door open fan speeds, 0 – fan set off or 1 – fan set on. Note: door open fan speed is set by the last write to any of coils 41, 42 or 43. Therefore if 'write fan speed 1 set on' is followed by 'write fan speed 2 set off' then the result will be fan speed is none.		
44	Set Heat On	Read / Write
Sets or returns heat on, 0 – heat set off or 1 – heat set on		
48	Set Door Interlock On	Read / Write
Sets or returns door interlock, 0 – set interlock off or 1 – set interlock on. When door interlock is set on the control works as if the door input is open, ie as if door is closed.		
49	Set Timer Interlock On	Read / Write
Sets or returns timer interlock, 0 – set interlock off or 1 – set interlock on. When timer interlock is set on the control works as if the Timer input is open, no air curtain operation.		
52	Set Filter Interlock On	Read / Write
Sets or returns filter interlock, 0 – set interlock off or 1 – set interlock on. When filter interlock is set on the control works as if the filter input is open.		
53	Set Door Closed Fan Speed 1 (Slow)	Read / Write
54	Set Door Closed Fan Speed 2 (Medium)	Read / Write
55	Set Door Closed Fan Speed 3 (Fast)	Read / Write
Sets or returns door closed fan speeds, 0 – fan set off or 1 – fan set on. Note: door closed fan speed is set by the last write to any of coils 53, 54 or 55. Therefore if 'write fan speed 1 set on' is followed by 'write fan speed 2 set off' then the result will be fan speed is none.		

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