Modbus TCP/IP Version 4.0 and Modbus RTU Gateway Version 2.4

Overview

ModBus can access single addresses or multiple addresses simultaneously; either reading or writing single bit values or 16-bit values.
A ModBus address contains either a 1-bit discrete value or a 16-bit integer value.

Modbus Data formats

Modbus data types are 1-bit values and 16-bit values.

Modbus Type	**Description**	**Reference**
Coil Status	Discrete Output	0x
Input Status	Discrete Input	1x
Holding Register	16 bit Output Register	4x
Input Register	16 bit Input Register	3x

Supported ModBus commands.

The Gateway module supports these ModBus commands.

Function Code	Description.
01	Read Coil Status
02	Read Input Status
03	Read Holding Registers
04	Read Input Registers
05	Force Single Coil
06	Preset Single Register
08	Diagnostics. Sub-function **00** Only - Return Query Data (loop back).
15	Force multiple coils
16	Preset Multiple Registers

Coil Status. 1 bit (R/W).

Modbus	Name	Min/Max verA	Min/Max verB
0x0001	**Highspeed operation.**	0-1	0-1
	Controls the AHU from S-CL stop or lowspeed to highspeed operation.		
0x0002	**Lowspeed operation.**	0-1	0-1
	Controls the AHU from S-CL stop to lowspeed operation.		
0x0003	**Stop.**	0-1	0-1
	Controls the AHU to stop.		
0x0004	**Switch-clock func.**	0-1	0-1
	0=Lowspeed-Highspeed.		
	VerA 1=Stop-Lowspeed.		
	VerB 1=Stop-Lowspeed-Highspeed.		
0x0005	**Outdoor temp compensation.**	0-1	0-1
	Used to enable the function.		
0x0006	**Summer night cooling.**	0-1	0-1
	Used to enable the function.		
0x0007	**Alarm reset.**	0-1	0-1
	Reset for active alarms.		
0x0008	**Reserve 1.**	0	0
	Not used in this version.		
0x0009	**Reserve 2.**	0	0
	Not used in this version.		
0x0010	**Reserve 3.**	0	0
	Not used in this version.		
0x0011	**Reserve 4.**	0	0
	Not used in this version.		
0x0012	**Reserve 5.**	0	0
	Not used in this version.		
0x0013	**Reserve 6.**	0	0
	Not used in this version.		
0x0014	**Reserve 7.**	0	0
	Not used in this version.		
0x0015	**Reserve 8.**	0	0
	Not used in this version.		
0x0016	**Reserve 9.**	0	0
	Not used in this version.		

Input status 1 bit (RO).

Modbus	Name	Min/Max verA	Min/Max verB
1x0001	**Cool energy recovery.**	0-1	0-1
	Indicates if the function is active.		
1x0002	**Summer night cooling.**	0-1	0-1
	Indicates if the function is active.		
1x0003	**Group alarm-A.**	0-1	0-1
	Indicates if the alarm relay output-A is active.		
1x0004	**Group alarm-B.**	0-1	0-1
	Indicates if the alarm relay output-B is active.		
1x0005	**Highspeed operation.**	0-1	0-1
	Indicates all operating cases.		
1x0006	**Lowspeed operation.**	0-1	0-1
	Indicates all operating cases.		
1x0007	**Stop.**	0-1	0-1
	Indicates all operating cases.		
1x0008	**Heating indication relay.**	Not used	0-1
	Indicates if the heating function is active.		
1x0009	**Cooling relay, stage 1.**	0-1	0-1
	Indicates if the cooling function stage 1 is active.		
1x0010	**Cooling relay, stage 2.**	Not used	0-1
	Indicates if the cooling function stage 2 is active.		
1x0011	**Cooling compressor 1.**	Not used	0-1
	Indicates if the compressor 1, in Cooler is active.		
1x0012	**Cooling compressor 2.**	Not used	0-1
	Indicates if the compressor 2, in Cooler is active.		
1x0013	**Reserve 1.**	0	0
	Not used in this version.		
1x0014	**Reserve 2.**	0	0
	Not used in this version.		
1x0015	**Digital In 1 (Only Ethernet).**	0-1	0-1
	Indicates if input 1, on Ethernet module is active.		
1x0016	**Digital In 2 (Only Ethernet).**	0-1	0-1
	Indicates if input 2, on Ethernet module is active.		

1x0017	**Alarm no. 1.**	0-1	0-1
1x0018	**Alarm no. 2.**	0-1	0-1
1x0019	**Alarm no. 3.**	0-1	0-1
1x0020	**Alarm no. 4.**	0-1	0-1
1x0021	**Alarm no. 5.**	0-1	0-1
1x0022	**Alarm no. 6.**	0-1	0-1
1x0023	**Alarm no. 7.**	0-1	0-1
1x0024	**Alarm no. 8.**	0-1	0-1
1x0025	**Alarm no. 9.**	0-1	0-1
1x0026	**Alarm no. 10.**	0-1	0-1
1x0027	**Alarm no. 11.**	0-1	0-1
1x0028	**Alarm no. 12.**	0-1	0-1
1x0029	**Alarm no. 13.**	0-1	0-1
1x0030	**Alarm no. 14.**	0-1	0-1
1x0031	**Alarm no. 15.**	0-1	0-1
1x0032	**Alarm no. 16.**	0-1	0-1
1x0033	**Alarm no. 17.**	0-1	0-1
1x0034	**Alarm no. 18.**	0-1	0-1
1x0035	**Alarm no. 19.**	0-1	0-1
1x0036	**Alarm no. 20.**	0-1	0-1

1x0037	**Alarm no. 21.**	0-1	0-1
1x0038	**Alarm no. 22.**	0-1	0-1
1x0039	**Alarm no. 23.**	0-1	0-1
1x0040	**Alarm no. 24.**	0-1	0-1
1x0041	**Alarm no. 25.**	0-1	0-1
1x0042	**Alarm no. 26.**	0-1	0-1
1x0043	**Alarm no. 27.**	0-1	0-1
1x0044	**Alarm no. 28.**	0-1	0-1
1x0045	**Alarm no. 29.**	0-1	0-1
1x0046	**Alarm no. 30.**	0-1	0-1
1x0047	**Alarm no. 31.**	0-1	0-1
1x0048	**Alarm no. 32.**	0-1	0-1
1x0049	**Alarm no. 33.**	0-1	0-1
1x0050	**Alarm no. 34.**	0-1	0-1
1x0051	**Alarm no. 35.**	0-1	0-1
1x0052	**Alarm no. 36.**	0-1	0-1
1x0053	**Alarm no. 37.**	0-1	0-1
1x0054	**Alarm no. 38.**	0-1	0-1
1x0055	**Alarm no. 39.**	0-1	0-1
1x0056	**Alarm no. 40.**	0-1	0-1
1x0057	**Alarm no. 41.**	0-1	0-1

1x0058	**Alarm no. 42.**	0-1	0-1
1x0059	**Alarm no. 43.**	0-1	0-1
1x0060	**Alarm no. 44.**	0-1	0-1
1x0061	**Alarm no. 45.**	0-1	0-1
1x0062	**Alarm no. 46.**	0-1	0-1
1x0063	**Alarm no. 47.**	0-1	0-1
1x0064	**Alarm no. 48.**	0-1	0-1
1x0065	**Alarm no. 49.**	Not used	0-1
1x0066	**Alarm no. 50.**	Not used	0-1
1x0067	**Alarm no. 51.**	Not used	0-1
1x0068	**Alarm no. 52.**	Not used	0-1
1x0069	**Alarm no. 53.**	Not used	0-1
1x0070	**Alarm no. 54.**	Not used	0-1
1x0071	**Alarm no. 55.**	Not used	0-1
1x0072	**Alarm no. 56.**	Not used	0-1
1x0073	**Alarm no. 57.**	Not used	0-1
1x0074	**Alarm no. 58.**	Not used	0-1
1x0075	**Alarm no. 59.**	Not used	0-1
1x0076	**Alarm no. 60.**	Not used	0-1
1x0077	**Alarm no. 61.**	Not used	0-1

Input Registers. 16-bit integer value (RO).

Modbus	Name	Min/Max verA	Min/Max verB
3x0001	**Operation mode.**	1-200	0-255
	VerA indicates the AHU handterminal menu. VerB operationstatus for the AHU. 00=Stop alarm, 01=Manual stop, 02=Ext.stop, 03=RS232 stop, 04=S-CL stop, 10=Manual LS, 11=S-CL LS, 12=Ext.LS, 13=RS232 LS, 14=Prolonged LS, 20=Manual HS, 21=Ext.HS, 22=RS232 HS, 23=S-CL HS, 24=Prolonged HS, 30=SN-Cool, 31=Reecooling, 40=Manual test OP, 41=Duct airflow adj, 42=Filtercalibration.		
3x0002	**Delayed ext. HS_min.**	0-59	0-59
	Remaining time for prolonged highspeed.		
3x0003	**Delayed ext. HS_hour.**	0-23	0-23
	Remaining time for prolonged highspeed.		
3x0004	**Delayed ext. LS_min.**	Not used	0-59
	Remaining time for prolonged lowspeed.		
3x0005	**Delayed ext. LS_hour.**	Not used	0-23
	Remaining time for prolonged lowspeed.		
3x0006	**SF flow.**	0-4000l/s	0-8000l/s
	Current supply air fan flow.		
3x0007	**EF flow.**	0-4000l/s	0-8000l/s
	Current exhaust air fan flow.		
3x0008	**SF VAV level.**	0-100.0%	0-100.0%
	Current level of the supply air input signal for the VAV/Forcing function .		
3x0009	**EF VAV level.**	0-100.0%	0-100.0%
	Current level of the exhaust air input signal for the VAV/Forcing function .		
3x0010	**SF level.**	0-100.0%	0-100.0%
	Current running level for the supply air fan.		
3x0011	**EF level.**	0-100.0%	0-100.0%
	Current running level for the exhaust air fan.		
3x0012	**Heat exch. Level.**	0-100.0%	0-100.0%
	Current level for the heat exchanger.		

3x0013	**SA temp.**	0-40.00°C	-55.00-125.00°C
	Current supply air temperature.		
3x0014	**OUT-D temp.**	-20.00-40.00°C	-55.00-125.00°C
	Current outdoor air temperature.		
3x0015	**EA temp.**	0-40.00°C	-55.00-125.00°C
	Current exhaust air temperature.		
3x0016	**SA temp regulation.**	0-40.00°C	-55.00-125.00°C
	Current supply air regulator temperature setpoint.		
3x0017	**FP temp.**	0-40.00°C	-55.00-125.00°C
	Current frost protection temperature.		
3x0018	**Reheat level.**	0-100.0%	0-100.0%
	Current level for the reheater coil.		
3x0019	**Cooling level.**	0-100.0%	0-100.0%
	Current level for cooling.		
3x0020	**SA filter level.**	0-100.0%	0-2000Pa
	Current level for the supply air filter.		
3x0021	**EA filter level.**	0-100.0%	0-2000Pa
	Current level for the exhaust air filter.		
3x0022	**SF filter alarm level.**	Not used	0-2000Pa
	Current alarm level for the supply air filter.		
3x0023	**EF filter alarm level.**	Not used	0-2000Pa
	Current alarm level for the exhaust air filter.		
3x0024	**Alarm No.**	0-48	0-49
	Active alarm No.		
3x0025	**Air handling unit.**	0-1	0,2
	0=No communication.		
	1=Version 4 or A.		
	2=Version B.		

3x0026	**Copy of Input Status 1-16.**	0-65535	0-65535
	Bit 0 = 1x0001		
	Bit 1 = 1x0002		
	Bit 15 = 1x0016		
3x0027	**Copy of Input Status 17-32.**	0-65535	0-65535
	Bit 0 = 1x0017		
	Bit 1 = 1x0018		
	Bit 15 = 1x0032		
3x0028	**Copy of Input Status 33-48.**	0-65535	0-65535
	Bit 0 = 1x0033		
	Bit 1 = 1x0034		
	Bit 15 = 1x0048		
3x0029	**Copy of Input Status 49-64.**	0-65535	0-65535
	Bit 0 = 1x0049		
	Bit 1 = 1x0050		
	Bit 15 = 1x0064		
3x0030	**Copy of Input Status 65-77.**	0-65535	0-65535
	Bit 0 = 1x0065		
	Bit 1 = 1x0066		
	Bit 12 = 1x0077		
3x0031	**SF flow regulation.**	0-4000l/s	0-8000l/s
	Current supply fan regulator flow setpoint.		
3x0032	**EF flow regulation.**	0-4000l/s	0-8000l/s
	Current exhaust fan regulator flow setpoint.		
3x0033	**EA temp regulation.**	0-40.00°C	0-40.00°C
	Current exhaust air regulator temperature setpoint.		
3x0034	**SF VAV regulation.**	Not used	0-100.0%
	Current level for the supply fan VAV regulator.		
3x0035	**EF VAV regulation.**	Not used	0-100.0%
	Current level for the exhaust fan VAV regulator.		
3x0036	**Operating time.**	0-9999	0-9999
	Shows how many 24-hour days the unit operated.		
3x0037	**Program version.**	Not used	0-65535
	Program version in GOLD AHU.		
3x0038	**Coolforcing level.**	0-100.0%	0-100.0%
	Current level for coolforcing.		

Holding Registers. 16-bit integer value (R/W).

Modbus	Name	Min/Max verA	Min/Max verB
4x0001	**Second.**	0-59	0-59
	The AHU internal time.		
4x0002	**Minute.**	0-59	0-59
	The AHU internal time.		
4x0003	**Hour.**	0-23	0-23
	The AHU internal time.		
4x0004	**Date.**	0-31	0-31
	The AHU internal time.		
4x0005	**Weekday.**	1-7	1-7
	The AHU internal time.		
4x0006	**Month.**	1-12	1-12
	The AHU internal time.		
4x0007	**Year.**	2000-2099	2000-2099
	The AHU internal time.		
4x0008	**Switch clock Channel1 start-minut.**	0-59	0-59
4x0009	**Switch clock Channel1 start-hour.**	0-23	0-23
4x0010	**Switch clock Channel1 stop-minut.**	0-59	0-59
4x0011	**Switch clock Channel1 stop-hour.**	0-23	0-23
4x0012	**Switch clock Channel1 period.**	0-9	0-10,128-138
	VerA 0=Not active. 1=Monday. 2=Tuesday. 3=Wednesday. 4=Thursday. 5=Friday. 6=Saturday. 7=Sunday. 8=Monday..Friday. 9=Monday..Sunday.		
	VerB 0=HS 128=LS Not active. 1=HS 129=LS Monday. 2=HS 130=LS Tuesday. 3=HS 131=LS Wednesday. 4=HS 132=LS Thursday. 5=HS 133=LS Friday. 6=HS 134=LS Saturday. 7=HS 135=LS Sunday. 8=HS 136=LS Monday..Friday. 9=HS 137=LS Monday..Sunday. 10=HS 138=LS Saturday..Sunday.		

4x0013	**Switch clock Channel2 start-minut.**	0-59	0-59
4x0014	**Switch clock Channel2 start-hour.**	0-23	0-23
4x0015	**Switch clock Channel2 stop-minut.**	0-59	0-59
4x0016	**Switch clock Channel2 stop-hour.**	0-23	0-23
4x0017	**Switch clock Channel2 period.**	0-9	0-10,128-138
4x0018	**Switch clock Channel3 start-minut.**	0-59	0-59
4x0019	**Switch clock Channel3 start-hour.**	0-23	0-23
4x0020	**Switch clock Channel3 stop-minut.**	0-59	0-59
4x0021	**Switch clock Channel3 stop-hour.**	0-23	0-23
4x0022	**Switch clock Channel3 period.**	0-9	0-10,128-138
4x0023	**Switch clock Channel4 start-minut.**	0-59	0-59
4x0024	**Switch clock Channel4 start-hour.**	0-23	0-23
4x0025	**Switch clock Channel4 stop-minut.**	0-59	0-59
4x0026	**Switch clock Channel4 stop-hour.**	0-23	0-23
4x0027	**Switch clock Channel4 period.**	0-9	0-10,128-138
4x0028	**Switch clock Channel5 start-minut.**	0-59	0-59
4x0029	**Switch clock Channel5 start-hour.**	0-23	0-23
4x0030	**Switch clock Channel5 stop-minut.**	0-59	0-59
4x0031	**Switch clock Channel5 stop-hour.**	0-23	0-23
4x0032	**Switch clock Channel5 period.**	0-9	0-10,128-138
4x0033	**Switch clock Channel6 start-minut.**	0-59	0-59
4x0034	**Switch clock Channel6 start-hour.**	0-23	0-23
4x0035	**Switch clock Channel6 stop-minut.**	0-59	0-59
4x0036	**Switch clock Channel6 stop-hour.**	0-23	0-23
4x0037	**Switch clock Channel6 period.**	0-9	0-10,128-138
4x0038	**Switch clock Channel7 start-minut.**	0-59	0-59
4x0039	**Switch clock Channel7 start-hour.**	0-23	0-23
4x0040	**Switch clock Channel7 stop-minut.**	0-59	0-59
4x0041	**Switch clock Channel7 stop-hour.**	0-23	0-23
4x0042	**Switch clock Channel7 period.**	0-9	0-10,128-138
4x0043	**Switch clock Channel8 start-minut.**	0-59	0-59
4x0044	**Switch clock Channel8 start-hour.**	0-23	0-23
4x0045	**Switch clock Channel8 stop-minut.**	0-59	0-59
4x0046	**Switch clock Channel8 stop-hour.**	0-23	0-23
4x0047	**Switch clock Channel8 period.**	0-9	0-10,128-138
4x0048	**Delayed ext. HS_hour Set.**	0-3	0-23
	Setting for prolonged highspeed.		
4x0049	**Delayed ext. HS_min Set.**	0-59	0-59
	Setting for prolonged highspeed.		
4x0050	**Delayed ext. LS_hour Set.**	Not used	0-23
	Setting for prolonged lowspeed.		

4x0051	**Delayed ext. LS_min Set.**	Not used	0-59
	Setting for prolonged lowspeed.		
4x0052	**SF lowspeed.**	0-4000 l/s	0-8000 l/s
	Air flow setpoint of the supply air fan running at lowspeed.		
4x0053	**EF lowspeed.**	0-4000 l/s	0-8000 l/s
	Air flow setpoint of the exhaust air fan running at lowspeed.		
4x0054	**SF highspeed.**	0-4000 l/s	0-8000 l/s
	Air flow setpoint of the supply air fan running at highspeed.		
4x0055	**EF highspeed.**	0-4000 l/s	0-8000 l/s
	Air flow setpoint of the exhaust air fan running at highspeed.		
4x0056	**SF maxspeed.**	0-4000 l/s	0-8000 l/s
	Air flow max. limit of the supply air fan.		
4x0057	**EF maxspeed.**	0-4000 l/s	0-8000 l/s
	Air flow max. limit of the supply air fan.		
4x0058	**SF VAV higspeed set.**	0-100.0%	0-100.0%
	Duct pressure setpoint of the supply air fan running at highspeed.		
4x0059	**EF VAV highspeed set.**	0-100.0%	0-100.0%
	Duct pressure setpoint of the exhaust air fan running at highspeed.		
4x0060	**SF VAV lowspeed set.**	Not used	0-100.0%
	Duct pressure setpoint of the supply air fan running at lowspeed.		
4x0061	**EF VAV lowspeed set.**	Not used	0-100.0%
	Duct pressure setpoint of the exhaust air fan running at lowspeed.		
4x0062	**Flow regulation.**	1-3	0-3
	VerA setting of flow/fan regulation type. 1=Flow, 2=VAV, 3=Boost/forcing. VerB setting of flow/fan regulation type. 0=Flow, 1=VAV-pressure, 2=VAV-demand 3=Boost/forcing.		
4x0063	**Reg.speed VAV SA.**	Not used	0-9
	Setting for VAV regulation speed.		
4x0064	**Reg.speed VAV EA.**	Not used	0-9
	Setting for VAV regulation speed.		

4x0065	**SF downreg. NZ.**	Not used	0-9.90°C
	Neutralzone before dowregulation of the supply air fan gains.		
4x0066	**Temperature regulation.**	1-3	1-3
	Setting of temperature regulation type. 1=ERS, 2= SA, 3=EA.		
4x0067	**SA temp set.**	10.00-30.00°C	10-40.00°C
	Supply air temperature setpoint.		
4x0068	**EA temp set.**	10.00-30.00°C	10.00-40.00°C
	Exhaust air temperature setpoint.		
4x0069	**Min SA temp.**	0-18.00°C	10.00-18.00°C
	Min. supply air temperature setpoint in conjunction with EA-regulation.		
4x0070	**Max SA temp.**	19.00-60.00°C	20.00-50.00°C
	Max. supply air temperature setpoint in conjunction with EA-regulation.		
4x0071	**ERS DIFF.**	0-7.00°C	1.00-10.00°C
	Differential temperature at ERS-reg.		
4x0072	**ERS Brakepoint.**	12.00-30.00°C	10.00-30.00°C
	Brakepoint temperature at ERS-reg.		
4x0073	**ERS-step.**	1-4	1-4
	Setting for step at ERS temperature regulation.		
4x0074	**Reg.speed temp SA.**	Not used	0-9
	Setting for temperature regulation speed.		
4x0075	**Reg.speed temp EA.**	Not used	0-9
	Setting for temperature regulation speed.		
4x0076	**Filtertest time hour.**	0-23	Not used
4x0077	**Filtertest time min.**	0-59	Not used
4x0078	**Alarmlimit SF filter.**	0-99.0%	0-99.0%
	Alarmlimit setpoint of the supply air filter.		
4x0079	**Alarmlimit EF filter.**	0-99.0%	0-99.0%
	Alarmlimit setpoint of the exhaust air filter.		
4x0080	**SN-COOL EA temp Start.**	17.00-27.00°C	20.00-30.00°C
	Temperature limit for the summer-night cooling function.		
4x0081	**SN-COOL EA temp Stop.**	12.00-22.00°C	10.00-18.00°C
	Temperature limit for the summer-night cooling function.		
4x0082	**SN-COOL OUT temp Start.**	5.00-15.00°C	10.00-15.00°C
	Temperature limit for the summer-night cooling function.		

4x0083	**ServicePeriod.**	0-99	0-99
	AHU setting for Service period month.		
4x0084	**Copy of Coil Status.**	0-65535	0-65535
	Bit 0 = 0x0001		
	Bit 1 = 0x0002		
	Bit 15 = 0x0016		
4x0085	**Outdoor temp comp. X1.**	Not used	-30.00-(-10.00)°C
	Indicate where the winter comp. curve ends.		
4x0086	**Outdoor temp comp. X2.**	Not used	-10.00-15.00°C
	Indicate where the winter comp. curve begins.		
4x0087	**Outdoor temp comp. X3.**	Not used	15.00-25.00°C
	Indicate where the summer comp. curve begins.		
4x0088	**Outdoor temp comp. X4.**	Not used	25.00-40.00°C
	Indicate where the summer comp. curve ends.		
4x0089	**Outdoor temp comp. Y1.**	0-10.00°C	0-10.00°C
	Indicate the maximum level of winter comp.		
4x0090	**Outdoor temp comp. Y2.**	-10.00-10.00°C	-10.00-10.00°C
	Indicate the maximum level of summer comp.		
4x0091	**Outdoor flow comp. X1.**	Not used	-30.00-(-10.00)°C
	Indicate where the winter comp. curve ends.		
4x0092	**Outdoor flow comp. X2.**	Not used	-10.00-20.00°C
	Indicate where the winter comp. curve begins.		
4x0093	**Outdoor flow comp. Y1.**	Not used	0-50.0%
	Indicate the maximum level of winter comp.		
4x0094	**Coolforcing.**	0-2	0-2
	Setting of coolforcing.		
	0=Not active.		
	1=Comfort.		
	2=Economy.		
4x0095	**Neutral zone.**	0.50-5.00°C	0.50-10.00°C
	Setting of neutral zone size.		
Min/max for Par. 67,68,69,70,71,72 are limitet from the AHU handterminal.			