Protocol description

Nilan CTS602 with HMI350T
Modbus version 23

52173104

Table of Contents

1. Revision history

Version	Software	Date	Description
20	1.6.21.0	25-03-2019	Breakup fra CTS602 2.38o. Denne version inkludere kun Modbus register som er implementeret i CTS602 med HMI350T. Tilføjet group DPT. Fjernet usupportedes register: IR2000..IR2011, HR2000, IR0230. Fjernet dobbelt register IR0231 da den var en kopi af IR2002 Tilføjet: IR0218: Input.T18_PresPibe IR0219: Input.pSuc IR0220: Input.pDis IR1500: Compressor.Type IR1700: HotWater.Type IR2200: DPT.InSession IR2201: DPT.AirFlow1 IR2202: DPT.AirFlow2 HR2200: DPT.DoCalibrate
21			Tilføjet: IR0004: Info.AppID IR0005: Info.HWType
22	1.6.43.27		Tilføjet: IR1701, HotWater.AnodeState HR0050, Bus.Address HR1209, AirTemp.HeatSelect HR1500, Compressor.CondTempMin HR1501, Compressor.CondTempMax HR1502, AirTemp.TempMinCpr HR1503, AirTemp.CprRestart HR1702, HotWater.Priority HR1703, HotWater.TempCprMax HR1704, HotWater.HeatType HR1705, HotWater.LegioType HR1706, HotWater.TempPri HR1801, CentralHeat.HeatSelect HR1802, CentralHeat.SupplyMin HR1803, CentralHeat.SupplyMax HR1804, CentralHeat.SupplyOffset HR1805, CentralHeat.CurveSelect HR1806, CentralHeat.CircPumpMode HR1807, CentralHeat.HeatType HR1808, CentralHeat.RegTime HR2003, User.Language HR4015, AirFlow.InletMin HR4016, AirFlow.ExhaustMin HR4017, AirFlow.ExhaustMax HR4018, AirFlow.StartDelay HR4019, AirBypass.WalkingTime

| Version	Software	Date	Description
			HR4027, Defrost.T6MinRunSec
23	3.6.58.23		Tilføjet EHD/BAH og DPT2 relaterede register: IR117, IR2221, IR2222, IR2230, IR2231, IR2232, IR2241,IR2242 HR0128, HR0206, HR2201, HR2300, HR2301, HR2302, HR2303, HR2304, HR2310, HR2311, HR2312, HR2313, HR2314, HR2315, HR2316, HR2317, HR2320, HR2321, HR2322, HR2323, HR2324, HR2325, HR2326, HR2327
23	3.6.58.0		Ingen ændringer
23	3.6.59.0		Ingen ændringer
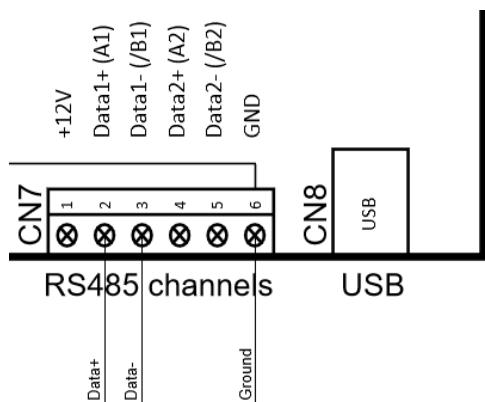
"Version" refers to the protocol data item named "Bus.Version".

2. Connection
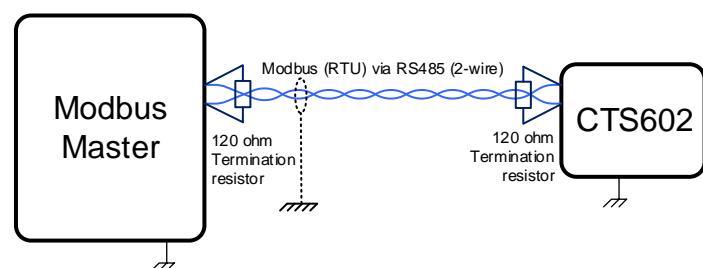
The Modbus is wired to PIN 2,3,6 on connector CN 7 located next to the USB plug on the CTS 602 board.

Pin 1	12 VDC output
Pin 2	**COM1 - RS 485 Data+ (A) - Modbus**
Pin 3	**COM1 - RS 485 Data- (/B) - Modbus**
Pin 4	COM2 - RS 485 Data+ (A) - User panel
Pin 5	COM2 - RS 485 Data- (/B) - User panel
Pin 6	**Ground**

CTS 602 Modbus connector: **Point to point bus wiring:**

Linear bus wiring:

Cable specification:
Tinned twisted-pair, with foil or braided shield, connected to ground only on the master side.
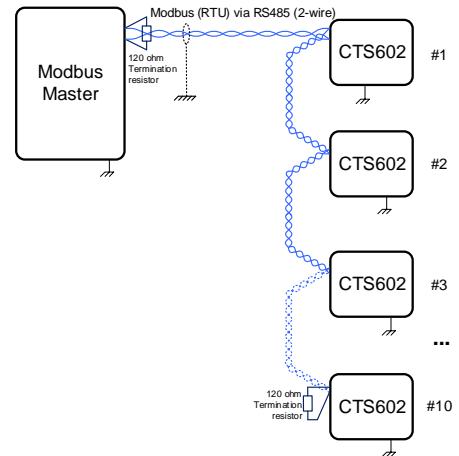
Max 200 m cable length.
Characteristic impedance 100 - 130 Ohm.
Shunt capacitance < 100 pF/m.
AWG 24 / 0,25 mm^2.

Suggested types: Belden 941/942 or
Multicable LIYCY-P 2*2*0,25 mm^2.

Common ground:
All network nodes must share a common ground connection as the bus signals shall refer to the same voltage potential.

There is no opto-isolation on the CTS602.

Network termination:
120 Ohm resistors shall be connected between the two RS485 signal wires at each end-point of the bus wire.

The resistor value shall match the characteristic impedance of the cable.

Receiver impedance >= 12 kOhm.

3. Setup

Protocol	Modbus (RTU mode), see http://www.modbus.org/specs.php
Node address	Default 30, Address is selectable between 1 and 247
Device type	CTS 602 is a Modbus slave
Baud rate	19.200
Databits	8
Stopbits	1
Parity	Even
Packet size	Max. 255 bytes

Communication speed and parameters cannot be changed, except for the node address.
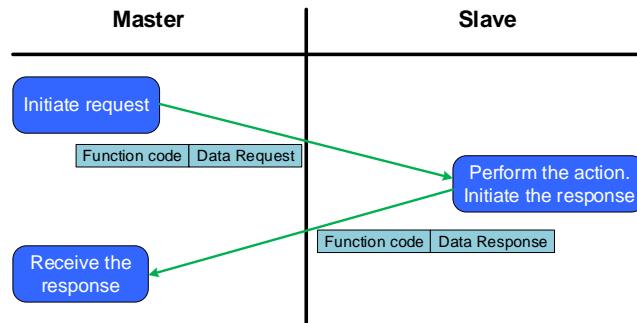
4. Supported functions

Input and holding registers are supported.
Unless otherwise specified, all registers are 16 bit size.

The controller will respond to the below listed Modbus message functions only.
Please note that no other function codes are supported.

Function	Name	Description
03	Read Holding Registers	Read one or more holding registers
04	Read Input Registers	Read one or more input registers
16	Preset Multiple Registers	Write one or more holding registers

5. Register layout

Register addresses are given in decimal notation.
Input registers are located in the range 30001..39999.
Holding registers are located in the range 40001..49999.

NOTE:
In the tables below we list the register addresses as used in Modbus messages without the global offset.
That means if you read input regsiter 100 with function code 04, you get the global address 30101.

NOTE:
All input registers can also be read as type holding register with function code 03 by adding the offset value 10000
to the register address. No writes will be accepted in this range.

5.1 Input registers

Name	Address	Scale	Unit	Description
Bus.Version	000			Protocol version number
App.VersionMajor	001	text		Software version - major (2 character ascii text)
App.VersionMinor	002	text		Software version - minor (2 character ascii text)
App.VersionRelease	003	text		Software version - release (2 character ascii text)
Info.AppID	004			Application Id
Info.HWType	005			Application hardware Id
Input.UserFunc	100			User function
Input.AirFilter	101			Air filter alarm
Input.DoorOpen	102			Door contact
Input.Smoke	103			Smoke alarm
Input.MotorThermo	104			Motor thermo fuse
Input.Frost_Overht	105			Heating surface frost / overheat
Input.AirFlow	106			Airflow monitor
Input.P_HI	107			High pressure switch

Name	Address	Scale	Unit	Description
Input.P_LO	108			Low pressure switch
Input.Boil	109			Hot water boiling
Input.3WayPos	110			Hot water 3-way valve position
Input.DefrostHG	111			Hotgas defrost type selection
Input.Defrost	112			Defrost thermostat
Input.UserFunc_2	113			User function 2
Input.DamperClosed	114			Air damper closed position switch
Input.DamperOpened	115			Air damper opened position switch
Input.FCorThermoAl	116			Combined FC and thermo alarm
Input.BrinePress	117			Brine pressostat
Input.T0_Controller	200	100	°C	Controller board temperature
Input.T1_Intake	201	100	°C	Fresh air intake temperature
Input.T2_Inlet	202	100	°C	Inlet temperature (before heater)
Input.T3_Exhaust	203	100	°C	Room exhaust temperature
Input.T4_Outlet	204	100	°C	Outlet temperature
Input.T5_Cond	205	100	°C	Condenser temperature
Input.T6_Evap	206	100	°C	Evaporator temperature
Input.T7_Inlet	207	100	°C	Inlet temperature (after heater)
Input.T8_Outdoor	208	100	°C	Outdoor temperature
Input.T9_Heater	209	100	°C	Heating surface temperature
Input.T10_Extern	210	100	°C	External room temperature
Input.T11_Top	211	100	°C	Hot water top temperature
Input.T12_Bottom	212	100	°C	Hot water bottom temperature
Input.T13_Return	213	100	°C	EK return temperature
Input.T14_Supply	214	100	°C	EK supply temperature
Input.T15_Room	215	100	°C	User panel room temperature
Input.T16	216	100	°C	AUX temperature (Hotwater anode)
Input.T17_PreHeat	217	100	°C	Preheater or earth tube air intake temperature
Input.T18_PresPibe	218	100	°C	Pressure pibe temperature
Input.pSuc	219		bar	Suction pressure
Input.pDis	220		bar	Dischage pressure
AirQual.RH	221	100	%	Humidity sensor value
AirQual.CO2	222		ppm	Carbon dioxide sensor value
Alarm.Status	400			Alarm state bit mask 0x80 : Active alarm(s) are present 0x0F : Total number of alarms
Alarm.List_1_ID	401			Alarm 1 - Code 0x80 : (reserved future use) 0x7F : Display code 1..99
Alarm.List_1_Date	402			Alarm 1 - Date Bit word packed in DOS date format Year 0 = 1980 15 8 7 0 YYYYYYYM MMMDDDDD
Alarm.List_1_Time	403			Alarm 1 - Time Bit word packed in DOS time format Seconds are in scale 2 (0..29 = 0..58 seconds) 15 8 7 0 HHHHHMMM MMMSSSSS
Alarm.List_2_ID	404			Alarm 2 - Code
Alarm.List_2_Date	405			Alarm 2 - Date
Alarm.List_2_Time	406			Alarm 2 - Time
Alarm.List_3_ID	407			Alarm 3 - Code
Alarm.List_3_Date	408			Alarm 3 - Date

Name	Address	Scale	Unit	Description
Alarm.List_3_Time	409			Alarm 3 - Time
Control.RunAct	1000			Actual on/off state 0 : Off 1 : On
Control.ModeAct	1001			Actual operation mode 0 : Off 1 : Heat 2 : Cool 3 : Auto 4 : Service
Control.StateDisplay	1002			Actual control state 0 : Off 9 : Hot water 1 : Shift 10 : Legionella 2 : Stop 11 : Cooling + hot water 3 : Start 12 : Central heating 4 : Standby 13 : Defrost 5 : Ventilation stop 14 : Frost sequre 6 : Ventilation 15 : Service 7 : Heating 16 : Alarm 8 : Cooling 17 : Heating + hot water
Control.SecInState	1003		Sec	Actual time in state
AirFlow.VentSet	1100		Step	Actual ventilation step set point 0 : Off 1..4 : Step number
AirFlow.InletAct	1101		Step	Actual inlet fan speed step 0 : Off 1..4 : Step number
AirFlow.ExhaustAct	1102		Step	Actual exhaust fan speed step 0 : Off 1..4 : Step number
AirFlow.SinceFiltDay	1103		Days	Days since last air filter change alarm One day is measured as 24 hours of active running time
AirFlow.ToFiltDay	1104		Days	Days to next air filter change alarm One day is measured as 24 hours of active running time
AirTemp.IsSummer	1200			Summer state 0 : Off 1 : On
AirTemp.TempInletSet	1201	100	°C	Inlet temperature request (T7 setpoint)
AirTemp.TempControl	1202	100	°C	Actual value for controlled temperature
AirTemp.TempRoom	1203	100	°C	Actual room temperature (T15 or T10)
AirTemp.EffPct	1204	100	%	Passive heat exchanger efficiency calculation
AirTemp.CapSet	1205	100	%	Requested capacity
AirTemp.CapAct	1206	100	%	Actual capacity
Compressor.Type	1500		0..2	0: None, 1: On/Off, 2: Modulated hotgas valve
HotWater.Type	1700		0..3	0: None, 1:Only hotware (VGU), 2:With ventilation (VP), 3:With central heating (VGU180)
HotWater.AnodeState	1701		0..3	0=OFF, 1=OK, 2=SERVICE, 3=ERROR
CentralHeat.HeatExtSet	1800	100	°C	Actual setpoint for external heating source
PreHeat.BlockRemain	2100		Sec	Remaining time for the pre-heater blocking function

Name	Address	Scale	Unit	Description
				commanded by the HR 2100 register
DPT.InSession	2200	0 or 1		1 if DPT node is in session
DPT.AirFlow1	2201		m3/h	Calculated air flow 1
DPT.AirFlow2	2202		m3/h	Calculated air flow 2
DPT.Pressure1	2221		Pa	Calculated air pressure 1
DPT.Pressure2	2222		Pa	Calculated air pressure 2
DPT2.InSession	2230	0 or 1		1 if DPT2 node is in session
DPT2.AirFlow1	2231		m3/h	Calculated air flow 1
DPT2.AirFlow2	2232		m3/h	Calculated air flow 2
DPT2.Pressure1	2241		Pa	Calculated air pressure 1
DPT2.Pressure2	2242		Pa	Calculated air pressure 2

5.1.1 Diplay

Name	Address	Scale	Unit	Description
AirBypass.IsOpen	3000			Bypass damper 0: Closed 1: Open
Output.AirHeatCap	3001	100	%	After heating element 0.00 – 100.00%
Defrost.ExchDefrost	3002			De-icing heat exchanger 0: Off 1: On (Passive exchanger defrost is active)
AirQual.CO2_Enable	3003			CO2 sensor present in the system or not 0: Off 1: On
AirFlow.RoomReduce	3004			Stop at low room temperature 0-4
AirFlow.LastTestDay	3005			Date for last air damper self-test Runtime hours is counted and formatted to days 0 - 65535
AirFlow.SinceFiltDay	3006			Days since last air filter change One day is measured as 24 hours of active running time. 0-9999
AirFLow.WinterReduce	3007			Low fan speed at low outdoor temperature Level 0-4
AirTemp.TempSet	3008	100	°C	Actual resulting set-point for room temperature 5.00°C - 50.00°C
AirTemp.TempControl	3009	100	°C	Master sensor for the controlled temperature (room / inlet) -40.00°C – 99.00°C
Alarm.LogEventID	3050			Event log ID (alarm code) 0 – 255
Alarm.LogDate	3051	DATE_DOS		Date of actual indexed event log
Alarm.LogTime	3052	TIME_DOS		Time of actual indexed event log
Alarm.LogT1	3053		°C	Log item temperatures -127 - 127
Alarm.LogT3	3054			
Alarm.LogT4	3055			
Alarm.LogT5	3056			
Alarm.LogT6	3057			
Alarm.LogT7	3058			
Alarm.LogT8	3059			
Alarm.LogT9	3060			
Alarm.LogT10	3061			
Alarm.LogT11	3062			
Alarm.LogT12	3063			
Alarm.LogT13	3064			
Alarm.LogT14	3065			
Alarm.LogT15	3066			
Alarm.LogDI_1_8i	3067			Log item digital input 1-8: bit 0 = input 1 bit 8 = input 8
Alarm.LogDI_9_16	3068			Log item digital input 9-16: bit 0 = input 9 bit 8 = input 16
Alarm.LogDO_1_8	3069			Log item digital output 1-8: bit 0 = output 1

Name	Address	Scale	Unit	Description
				bit 8 = output 8
Alarm.LogDO_9_16	3070			Log item digital output 9-16: bit 0 = output 9 bit 8 = output 16
Alarm.LogAO_1	3071		%	Log item analoge output 1 0 - 100
Alarm.LogAO_2	3072		%	Log item analoge output 2 0 – 100
Alarm.LogAO_3	3073		%	Log item analoge output 3 0 – 100
Alarm.LogAO_4	3074		%	Log item analoge output 4 0 - 100
Alarm.LogCtrState	3075			Operation states for Control module 0: OFF 1: SHIFTING 2: STOPPING 3: STARTING 4: STANDBY 5: VENT_STOP 6: AIR_EXCH 7: AIR_HEAT 8: AIR_COOL 9: HOTWATER 10: LEGIONELLA 11: AIR_COOL_HOT_WATER 12: CENT_HEAT 13: DEFROST 14: FROST 15: SERVICE 16: ALARM_SHUTDOWN 17: AIR_HEAT_HOT_WATER
AirQual.RH_Avg	3100	100	%	Humidity average value. Range: 0..100.00
Opt9_1.BoardId	3101			If expansion I/O board is present the value must be 12.
AirFlow.VentState	3102			Ventilation state 0: OFF 1: NORMAL 2: LOW_HUMIDITY 3: HIGH_HUMIDITY 4: HIGH_CO2 5: LOW_ROOM_TEMP 6: LOW_OUTDOOR_TEMP

5.2 Holding registers

Name	Address	Scale	Unit	Description
Bus.Address	50			Protocol node address (default = 30)
Output.AirFlap	100			Air flap
Output.SmokeFlap	101			Smoke flap
Output.BypassOpen	102			Bypass flap open
Output.BypassClose	103			Bypass flap close
Output.AirCircPump	104			Air heat circulation pump
Output.AirHeatAllow	105			Air heating selected
Output.AirHeat_1	106			Air heater relays
Output.AirHeat_2	107			--
Output.AirHeat_3	108			--
Output.Compressor	109			Compressor
Output.Compressor_2	110			Compressor 2
Output.4WayCool	111			4-way valve
Output.HotgasHeat	112			Hotgas valve - heat
Output.HotgasCool	113			Hotgas valve - cool
Output.CondOpen	114			Air condenser active
Output.CondClose	115			Air condenser inactive
Output.WaterHeat	116			Hot water heater
Output.3WayValve	117			Hot water 3-way valve
Output.CenCircPump	118			EK circulation pump
Output.CenHeat_1	119			EK heater relays
Output.CenHeat_2	120			--
Output.CenHeat_3	121			--
Output.CenHeatExt	122			External radiator heat
Output.UserFunc	123			User function active
Output.UserFunc_2	124			--
Output.Defrosting	125			Defrost function active
Output.AlarmRelay	126			Alarm relay state
Output.PreHeat	127			Preheater or earth tube activation
Output.EHD_BAH	128			EHD or BAH active
Output.ExhaustSpeed	200	100	%	Exhaust fan speed
Output.InletSpeed	201	100	%	Inlet fan speed
Output.AirHeatCap	202	100	%	Air heater capacity
Output.CenHeatCap	203	100	%	Central heater capacity
Output.CprCap	204	100	%	Compresor capacity
Output.PreHeatCap	205	100	%	Preheater capacity or earth tube air intake fan speed
Output.RotorVeksler	206	100	%	Rotor veksler
Time.Second	300		ss	Second

Name	Address	Scale	Unit	Description
Time.Minute	301		nn	Minute
Time.Hour	302		hh	Hour
Time.Day	303		dd	Day
Time.Month	304		mm	Month
Time.Year	305		yyyy	Year
Alarm.Reset	400			Clear one specific alarm code or all 0 : No command 1..99 : (reserved internal commands) 101..199 : Clear alarm display code 1..99 255 : Clear all alarms
Program.Select	500			Week program nb. select 0 : None 1 : Program 1 2 : Program 2 3 : Program 3 4 : Erase
Program.UserFuncAct	600			User function active (See "UserFuncSet")
Program.UserFuncSet	601			User function select 0 : None 1 : Extend 2 : Inlet 3 : Exhaust 4 : External heater offset 5 : Ventilate 6 : Cooker Hood
Program.UserTimeSet	602		Min	User function period
Program.UserVentSet	603		Step	User function ventilation step select 0 : Off 1..4 : Step number
Program.UserTempSet	604		°C	User function temperature (Extend function only)
Program.UserOffsSet	605		°C	User function temperature offset (Offset function only)
Program.User2FuncAct	610			Same as user function 1 above
Program.User2FuncSet	611			--
Program.User2TimeSet	612			--
Program.User2VentSet	613			--
Program.User2TempSet	614			--
Program.User2OffsSet	615			--
Log.Interval	700		Min	Periodic data log interval select 0: Off 1..120: Time between periodic loggings

Name	Address	Scale	Unit	Description
Control.Type	1000			Machine type select (factory setting)
Control.RunSet	1001			User on / off select (equal to ON/OFF keys) 0 : Off (user input functions can still activate operation) 1 : On
Control.ModeSet	1002			User operation mode select 0 : Off 1 : Heat (no cooling active) 2 : Cool (no heating active) 3 : Auto 4 : Service (readonly - write to register 1005)
Control.VentSet	1003		Step	User ventilation step select 0 : Off 1..4 : Step number
Control.TempSet	1004	100	°C	User temperature setpoint
Control.ServiceMode	1005			Service mode select 0 : Off 1 : Defrost 2 : Flaps 3 : Inlet 4 : Exhaust 5 : Compressor 6 : Heating 7 : Hot water 8 : Central heat
Control.ServicePct	1006	100	%	Service mode capacity setpoint
Control.Preset	1007			Request preset to default settings 0 : Ready 1 : Standard (to factory defaults) 2 : Backup (to user file) 3 : Restore (from user file)
AirFlow.AirExchMode	1100			Air exchange mode 0 : Energy 1 : Comfort 2 : ComfortWater
AirFlow.CoolVent	1101		Step	Cooling high ventilation step
AirFlow.TestSelect	1102			Select a day for weekly air damper position self-test The test runs at 10 in the morning on the selected day Once enabled, the function cannot be deactivated 0: Off 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday 7: Sunday
AirFlow.LastTestDay	1103			Date of last air damper position test Bit word packed in DOS date format (see IR 402 format)
AirFlow.TestState	1104			Actual air damper position test state 0: Off 1: Standby 2: Start (Set to Start to run manual test) 3: Closing

Name	Address	Scale	Unit	Description
				4: Opening 5: OK 6: Error
AirFlow.FiltAlmType	1105			Air filter monitoring alarm type and period select 0: Pressure guard (input) 1: 30 days 2: 90 days 3: 180 days 4: 360 days 5: 70 days and pressure guard
AirTemp.CoolSet	1200			Cooling temperature setpoint select 0 : Off (No cooling allowed) 1 : Set + 0 °C (User setpoint plus 0 degrees) 2 : Set + 1 °C 3 : Set + 2 °C 4 : Set + 3 °C 5 : Set + 4 °C 6 : Set + 5 °C 7 : Set + 7 °C 8 : Set + 10 °C
AirTemp.TempMinSum	1201	100	°C	Inlet temp. min. summer
AirTemp.TempMinWin	1202	100	°C	Inlet temp. min. winter
AirTemp.TempMaxSum	1203	100	°C	Inlet temp. max. summer
AirTemp.TempMaxWin	1204	100	°C	Inlet temp. max. winter
AirTemp.TempSummer	1205	100	°C	Summer/winter limit
AirTemp.NightDayLim	1206	100	°C	Outdoor day temperature for night cooling activation [0:Off, 20..40]
AirTemp.NightSet	1207	100	°C	Free energy night cooling room setpoint [10..30]
AirTemp.SensorSelect	1208			Control temperature sensor select 0: User panel 1: External sensor 2: Inlet channel 3: Exhaust channel
AirTemp.HeatSelect	1209	1		Valg af varmekilde: 0=No heating active, 1=Heatpump only, 2=HP+afterheat, 3=Afterheat only, 4=Afterheat+HP
Compressor.CondTempMin	1500	100		Low temperaturcurve.
Compressor.CondTempMax	1501	100		High temperaturcurve
AirTemp.TempMinCpr	1502	100		Low temperature compressor start
AirTemp.CprRestart	1503	60		Compressor stop time
HotWater.TempSet_T11	1700	100	°C	Top temperature setpoint (electric)
HotWater.TempSet_T12	1701	100	°C	Bottom temperature setpoint (compressor)
HotWater.Priority	1702	1		Priority: 0=Water, 1=Inlet
HotWater.TempCprMax	1703	100		Scald protection Temperature
HotWater.HeatType	1704	1		Use of electricity supplement: 0=OFF, 1=El
HotWater.LegioType	1705	1		Day for legionella:

Name	Address	Scale	Unit	Description
				0=OFF,1=Mandag,1=tirsdag, ..., 7=søndag
HotWater.TempPri	1706	1	°C	Bypass offset: 0=Off, 1..30°C
CentralHeat.HeatExtern	1800	100	°C	External heating offset from room temperature setpoint
CentralHeat.HeatSelect	1801	1		0=Only Pump motion and freze secure, 1=Always central heating, 2=Only central heating when room temperature low
CentralHeat.SupplyMin	1802	100	°C	Min supply temperature
CentralHeat.SupplyMax	1803	100	°C	Max supply temperature
CentralHeat.SupplyOffset	1804	100	°C	Outdoor temperature compensation
CentralHeat.CurveSelect	1805	1		Temp. compensation curve: 1-10
CentralHeat.CircPumpMode	1806	1		0=Only when heating is active, 1=Continuous operation
CentralHeat.HeatType	1807	1		0=OFF, 1=El, 2=Heatpump, 3=Both (first compressor then electric priority)
CentralHeat.RegTime	1808	1	Sec	PID regulations time: 0=2sec, 1-25(sec)
AirQual.RH_VentLo	1910		Step	Humidity low winter step select
AirQual.RH_VentHi	1911		Step	Humidity high step select
AirQual.RH_LimLo	1912	100	%	Humidity limit for low ventilation
AirQual.RH_TimeOut	1913		min	Humidity max. time on high ventilation
AirQual.CO2_VentHi	1920		Step	CO2 high step select
AirQual.CO2_LimLo	1921		ppm	CO2 limit for normal ventilation
AirQual.CO2_LimHi	1922		ppm	CO2 limit for high ventilation
User. UserMenuOpen	2002			Menu is open: 0=Closed, 1=Open, 2=No OFF key
User.Language	2003	1		HMI language: 0=English 1=German 2=French 3=Swedish 4=Danish 5=Norwegian 6=Finnish 7=Czech 8=Polish 9=Italian
PreHeat.Block	2100			COMFORT(n) only Temporarily prevent pre-heater operation (R5 output) Cannot be re-blocked before period has expired (IR 2100) 0: No command 1: Set to request heater being blocked (for 2 hours)
DPT.DoCalibrate	2200		0 or 1	Calibrate DPT. 1: Start calibration

Name	Address	Scale	Unit	Description
DPT2.DoCalibrate	2201			Calibrate DPT2. 1: Start calibration
Pressure.FanRelPres	2300		%	Relation mellem tilluft og fraluft 0..200; default 100 = ballance
Pressure.SupplyP_Ctrl	2301		%/°	Tilluft P control
Pressure.SupplyI_Ctrl	2302		Sek.	Tilluft I control
Pressure.ReturnP_Ctrl	2303		%/°	Fraluft P control
Pressure.ReturnI_Ctrl	2304		Sek.	Fraluft I control
Pressure.Level1InFlow	2310		m3/h	Trin 1 tilluft flow
Pressure.Level2InFlow	2311		m3/h	Trin 2 tilluft flow
Pressure.Level3InFlow	2312		m3/h	Trin 3 tilluft flow
Pressure.Level4InFlow	2313		m3/h	Trin 4 tilluft flow
Pressure.Level1OuFlow	2314		m3/h	Trin 1 fraluft flow
Pressure.Level2OuFlow	2315		m3/h	Trin 2 fraluft flow
Pressure.Level3OuFlow	2316		m3/h	Trin 3 fraluft flow
Pressure.Level4OuFlow	2317		m3/h	Trin 4 fraluft flow
Pressure.Level1InPres	2320		Pa	Trin 1 tilluft tryk
Pressure.Level2InPres	2321		Pa	Trin 2 tilluft tryk
Pressure.Level3InPres	2322		Pa	Trin 3 tilluft tryk
Pressure.Level4InPres	2323		Pa	Trin 4 tilluft tryk
Pressure.Level1OuPres	2324		Pa	Trin 1 fraluft tryk
Pressure.Level2OuPres	2325		Pa	Trin 2 fraluft tryk
Pressure.Level3OuPres	2326		Pa	Trin 3 fraluft tryk
Pressure.Level4OuPres	2327		Pa	Trin 4 fraluft tryk

5.2.1 Display

Name	Address	Scale	Unit	Description
CentralHeat.HeatExtern	4000	100	°C	Regulation deadband external room heating -5.00°C – 5.00°C
AirFlow.CoolVent	4001			High fan speed at high indoor temp (cooling demand)
AirFlow.WinterTemp	4002	1	°C	Low outdoor temperature
AirFlow.WinerVent	4003			Fan speed at low outdoor temperature 0: OFF
AirFlow.TestSelect	4004			Day for automatic test 0: OFF 1: Mo 2: Tu 3: We 4: Th 5: Fr 6: Sa
AirHeat.Type	4005			After heating type 0: No additional heat 1: Electrical

Name	Address	Scale	Unit	Description
				2: Electric on binary relays
AirHeat.Delay	4006	1	Min	Delay timer for after-heat activation
AirTemp.TempMinSum	4007	100	°C	Summer minimum supply air temperature
AirTemp.TempMaxSum	4008	100	°C	Summer maximum supply air temperature
AirTemp.TempMinWin	4009	100	°C	Winter minimum supply air temperature
AirTemp.TempMaxWin	4010	100	°C	Winter maximum supply air temperature
AirTemp.RoomNZ	4011	100		Room temperature regulation deadband
AirTemp.TempRoomLow	4012	100	°C	Low room temperature for stepwise reduced ventilation 0: OFF
AirHeat.SelectSet	4013			After heating activation: 0: Off
AirFlow.InletMin	4015	1		Min. inlet:
AirFlow.ExhaustMin	4016	1		Min exhaust:
AirFlow.ExhaustMax	4017	1		Max exhaust:
AirFlow.StartDelay	4018	60		
AirBypass.WalkingTime	4019	1	Sec	Damper walkin time:
Defrost.Fans	4020			Frost protection or de-icing - Ventilation level 0: OFF 1: USER 2: LOW
Defrost.Bypass	4021			Frost protection or de-icing - Bypass position 0: OFF
Defrost.BlockMinutes	4022	1	Min	Frost protection or de-icing - Time between activations
Defrost.TempStart	4023	100	°C	Frost protection or de-icing - Start criteria
Defrost.TempStop	4024	100	°C	Frost protection or de-icing - Stop criteria
Defrost.DurMaxCpr	4025	1	Min	Frost protection or de-icing - Max duration compressor
Defrost.DurMaxExh	4026	1	Min	Frost protection or de-icing - Max duration exchanger
Defrost.T6MinRunSec	4027	1	Sec	T6 min defrost time:
Program.EditIndex	4030			Week program
Program.EditPeriod	4031			Week program
Program.EditPeriodNx	4032			Week program

Name	Address	Scale	Unit	Description
Program.EditFunc	4033			Week program
Program.EditTimeStar	4034			Week program Start time: 0000 – 2345:
Program.EditVent	4035			Week program Fan settings: 0-4 0=Off,
Program.EditTemp	4036	1	°C	Week program
Control.RestartMode	4040			External fire alarm auto reset 0: OFF 1: HPLP 2: CONTINUE
Control.PowerSave	4041			Enable power saving features 0: OFF
Alarm.LogIndex	4050			Alarm log index
AirFlow.InletScale	4098		%	Scaling of inlet fan control voltage for max. air volume
AirFlow.ExhaustScale	4099		%	Scaling of exhaust fan control voltage for max. air volume
AirFlow.InletSpd_1	4100			Inlet step 1 speed setup
AirFlow.InletSpd_2	4101			Inlet step 2 speed setup
AirFlow.InletSpd_3	4102			Inlet step 3 speed setup
AirFlow.InletSpd_4	4103			Inlet step 4 speed setup
AirFlow.ExhaustSpd_1	4104			Exhaust step 1 speed setup
AirFlow.ExhaustSpd_2	4105			Exhaust step 2 speed setup
AirFlow.ExhaustSpd_3	4106			Exhaust step 3 speed setup
AirFlow.ExhaustSpd_4	4107			Exhaust step 4 speed setup
AirQual.Type	4108			Enable Indoor Air Quality (IAQ) control function Range: 0..2 0: OFF, 1: HUMIDITY,
Control.AnaOutType	4109			Heater output signal type (if not air channel type) Range: 0..4 0: PERIOD 1: 0-10 V 2: 0/5/10 V 3: RELAY 3

Name	Address	Scale	Unit	Description
AirTemp.RoomResponse	4110			Room temperature controller response type Select predefined or user adjustable parameters Range: 0..3 0: SLOW, 1: NORMAL, 2: FAST,
PreHeat.Defrost	4111			Nordic: Select anti frost also during evap. defrost COMFORT: Select T8 preheater allowance on R5 Range: 0..1 0: STANDARD
PreHeat.TempSet	4112			T4 start criteria when temperature controlled exchanger defrosting is selected (without no-frost) Range: 0..5 0: OFF (Disable defrost, use heater only) 1..5 If "Nordic" types with active T4 regulation only: Anti frost setpoint for min. exchanger outlet temp. 0: OFF (OFF=Disable, use passive defrost only)

6. Communication example

The sample shown below is a general Modbus communication example, and is not specific for this device.

Request: 0b041000000e75a4
Response: 0b041cffff0000095008b0e4a80014000b000108e108f1ffff000f0002fff39f8e

Request (Input register)

0x0b	Slave addr	1 byte
0x04	Function code	1 byte
0x1000	Start addr	2 bytes
0x000e	Quantity	2 bytes
0x75a4	CRC	2 bytes

Response

0x0b	Addr	1 byte
0x04	Function code	1 byte
0x1c	NB bytes of data	1 byte
0xffff	Value1	2 bytes
0x0000	Value2	2 bytes
0x0950	Value3	2 bytes
0x08b0	Value4	2 bytes
0xe4a8	Value5	2 bytes
0x0014	Value6	2 bytes
0x000b	Value7	2 bytes
0x0001	Value8	2 bytes
0x08e1	Value9	2 bytes
0x08f1	Value10	2 bytes
0xffff	Value11	2 bytes
0x000f	Value12	2 bytes
0x0002	Value13	2 bytes
0xfff3	Value14	2 bytes
0x9f8e	CRC	2 bytes

Request: 0b03200000018f60
Response: 0b030200002045

Request (Holding register)

0x0b	Slave addr	1 byte
0x03	Function code	1 byte
0x2000	Address	2 bytes
0x0001	Quantity	2 bytes
0x8f60	CRC	2 bytes

Response

0x0b	Slave addr	1 byte
0x03	Function code	1 byte
0x02	Quantity	1 byte
0x0000	Value1	2 bytes
0x2045	CRC	2 bytes