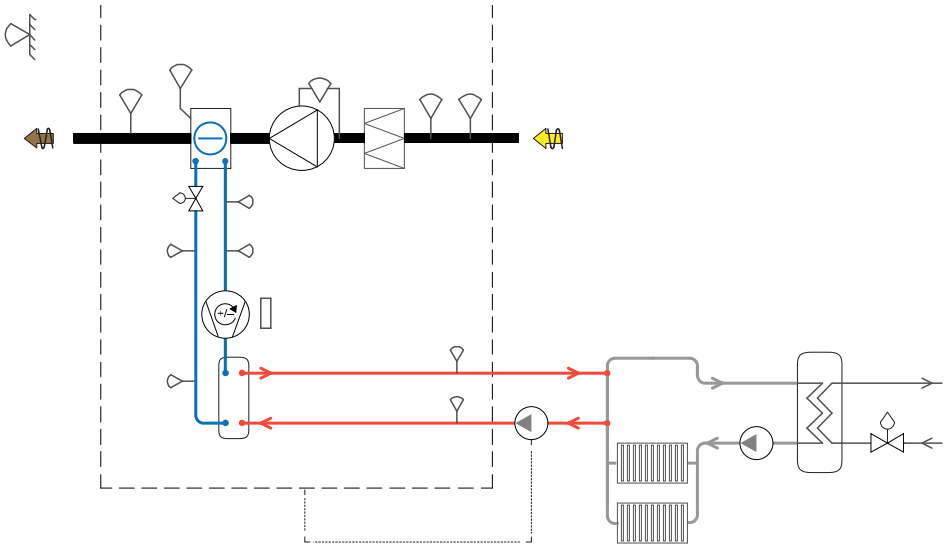
Air handling with focus on LCC



Climatix™
Modbus communication, slave mode
Reference addresses for standard IV Produkt EHP application v3.24.xx

Air handling with the focus on LCC

Table of contents

1 About this document

1.1 Revision history

Version	Date	Changes
.01	2013-06-19	First edition
.02	2015-05-19	Addresses for Use of internal Modbus added. Text revision of existing addresses.
.03	2017-10-24	Addresses for Use of internal Modbus added. Text revision of existing addresses. Examples of useful addresses added.
.04	2018-08-15	Addresses for Use of internal Modbus added. Text revision of existing addresses.

1.2 Before you start

Validity

This document applies to the following product:

Name	Type (ASN)	Version
IVP EHP application	POL63x.00	v0.91.xx-v3.24.xx

This document is a supplement to the general integration guide for Climatix Modbus communication, slave mode.
That document must be read first and all general information such as document conventions, important information on safety, trademarks, copyright etc. are valid for this document as well.

This document only contains the uniqe information for the product mentioned above. All general engineering information such as mounting modules, communication settings etc. are described in the integration guide.

Prerequisite

User has read the general Modbus integration guide for Climatix, CB1J3960en.

1.3 Reference documents

Further information

The following documents contain additional information on the products described in this manual:

Document	Order no.
Data sheet “Communication module Modbus”	CB1Q3934en
Basic documentation “Modbus communication module”	CB1P3934en
Integration Guide “Modbus communication, slave mode”	CB1J3960en

2 Application

2.1 General information

What are standard applications?

Standard applications for Climatix comprise predefined monitoring and control functions for a particular plant type.
Features:

- OEM customers receive standard applications as a set of loadable files. They can be loaded in the controller via SD card.
- An HMI operator unit allows for assigning inputs and outputs to the respective plant as well as select, configure and parameterize the required functions.

Standard application EHP v3.02.xx

Standard application EHP v3.02.xx is available at this time. It contains all common functions to control and monitor air conditioning units (**E**xtract **H**eat **P**ump).
The following diagram provides an overview of selectable measured values and control equipment:

Modbus registers

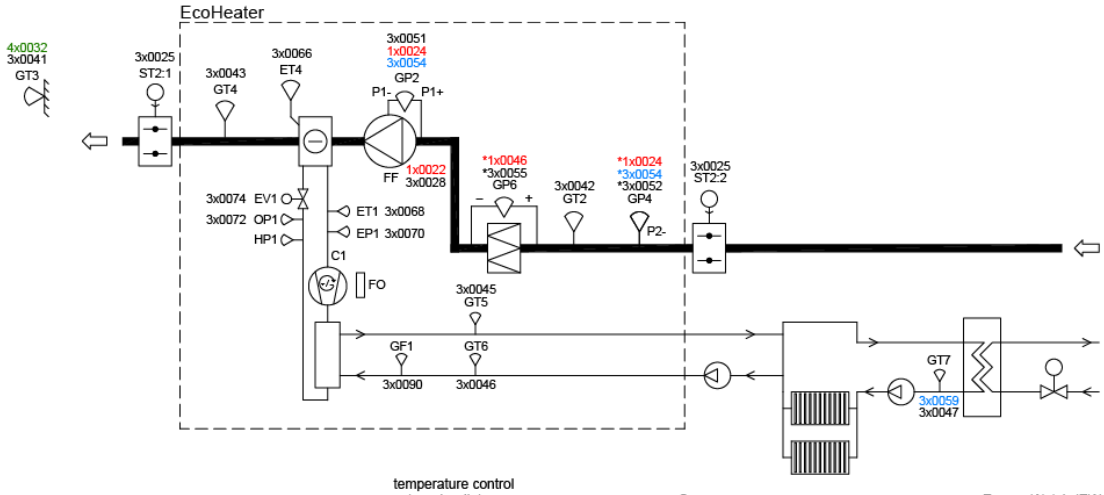
The set of loadable files mentioned above also includes a mapping file for integration in a higher building automation and control system via communications module. The Climatix controller automatically assumes the Modbus registers required for integration as per the plant data points and functions configured and parameterized previously.

The following tables list the predefined Modbus registers supporting standard application EHP v3.02.xx to ensure standardized and simple integration.

Examples of useful Modbus addresses

Click on the image title (link) for a full size pdf or see IV Produkt homepage. The pdf can be downloaded, then it possible to copy Modbus addresses etc.

Modbus addresses for EHP in general, examples



EcoHeater

4x0005	BMS control (overide time switch program)	(1=Av, 3=steg2)
4x0025	Exhaust fan step 1 (low) FF	(Pa, l/s)
4x0026	Exhaust fan step 2 (normal) FF	(Pa, l/s)
4x0027	Exhaust fan step 3 (high) FF	(Pa, l/s)
0x0001	Alarm reset	
0x0015	Fire Alarm	
4x0061	Heatpump block compressor	
3x0017	Actual operation mode	
3x0018	Actual fan step	
3x0019	Manual operation (Service)	
3x0022	Actual Opmode External control	
1x0029	Fire alarm	
1x0030	Exhaust temperature fire alarm	
1x0001	Alarm class Danger alarm (A) status	
1x0002	Alarm class Critical alarm (A) status	
1x0003	Alarm class Low alarm (B) status	
1x0004	Alarm class Warning alarm (C) status	

temperature control external radiator curve

3x0048	Heatpump ext. control signal
4x0039	Heatpump ext. control signal

temperature control internal radiator curve

4x0010	Heatpump OutT. setpoint X2
4x0011	Heatpump SupplyT. setpoint Y2
4x0012	Heatpump OutT. setpoint X3
4x0013	Heatpump SupplyT. setpoint Y3
4x0014	Heatpump OutT. setpoint X4
4x0015	Heatpump SupplyT. setpoint Y4
4x0016	Heatpump OutT. setpoint X5
4x0017	Heatpump SupplyT. setpoint Y5
4x0018	Heatpump OutT. setpoint X6
4x0019	Heatpump SupplyT. setpoint Y6

Compressor

3x0065	Heatpump Heating demand input
3x0067	Heatpump Inverter signal output
3x0069	Heatpump Evaporation temp
3x0075	Heatpump Condensing temperature
3x0091	Heatpump compressor run time
3x0095	Heatpump compressor command
1x0027	Heatpump alarm

Black	Value/Status
Green	Setpoints/Command
Red	Alarm
Blue	Actual setpoint-value

Energy Watch (EWA-02)

3x0150	COP
3x0152	HP Capacity kW
3x0154	HP out Day kWh
3x0156	Hp out Month kWh
3x0158	Hp out Year MWh
3x0160	HP out Last Year MWh
3x0162	HP out Trip MWh
3x0164	HP in Power kW
3x0166	Hp in Day kWh
3x0168	Hp in Month kWh
3x0170	HP in Year MWh
3x0172	HP in Last Year MWh
3x0174	HP in Trip MWh
3x0176	Fan in Power kW
3x0178	Fan Day kWh
3x0180	Fan Month kWh
3x0182	Fan Year MWh
3x0184	Fan Last Year MWh
3x0186	Fan Trip MWh
3x0188	SFP

3 Reference Modbus addresses

3.1 General

Purpose

This section describes the reference addresses used in the specific application, see chapter 1.2 "Before you start".

Modbus data formats

Modbus type	Description	Reference	Datatype
Coil status	Read/Write Discrete output	0x	1bit
Input states	Read Discrete input	1x	1bit
Input register	Read Input register	3x	16bit signed or unsigned word
Holding register	Read/Write Output register	4x	16bit signed or unsigned word

Addresses used

All reference addresses from 0001-0125 for on-board and -1000 for module are generated and can be accessed even if not listed. As a result, multiple coils/registers can be forced/reset even if there is a gap between two reference addresses.

⚠ Do not read/write any addresses above 0125/1000. Doing so causes an exception and communication fails.

All address types starts with 1, and due to that some Master devices starts with 0 it's in that case necessary to subtract all addresses in this document with 1.

Presentation

Values and states are presented as follows:

- 16 bit real values are presented in their actual value/unit. E.g. °C, %, Pa, l/s (Normally Signed Word).
- 16 bit states are presented as a number, see the reference address description (Unsigned Word). Texts for each state are represented in the last column separated with * *(Example Off*On = 0=Off and 1=On)*
- 1 bit status are presented as 0=Off and 1=On.
- 1 bit alarms are presented as 0=Normal and 1=Alarm.

Alarms and status are presented both as input states and as input registers.

Examples

A real value is 215, and presented by a 16 bit register binary as:
MSB 11010111 LSB.

The 16 bit register "BMS override time program" is used and set binary to state 6:
MSB 00000110 LSB.

Decimals

When Modbus uses a 16 bit register to handle real values, a factor is needed for decimals. E.g. factor 10 for 1 decimal, factor 100 for 2 decimals, etc.

Example 1: Present values

The present supply air temperature is 20.6 °C and is multiplied by 10 in the Climatix controller. It is presented as 206 at Modbus and must be divided by 10 in the master device to return to 20.6 °C.

Example 2: Setpoints

To set the temperature setpoint 21.5°C at the master device, multiply it by 10 to present it as 215 at Modbus. The Climatix controller then divides by 10 to return to 21.5 °C.

Override I/Os

Inputs that are possible to override via Modbus is marked with (I/O), theese must first be setup to be overridden via communication, see Integration guide.

3.2 Coil status

Table of coil states

Adress	Description	Values /Units	Remarks	Release
	Present value			
0x0001	Alarm acknowledge	0-1	Off*On	
0x0002	Enable communicationtest	0-1	No*Yes	
0x0003	Communicationtest puls	0-1	0*1	
0x0004	Fire damper test	0-1	Passive*Active	
0x0007	Energymeter reset partial	0-1	Passive*Active	
	Tracking value			
0x0011	Emergency stop input	0-1	Off*On, (I/O)	
0x0012	External control input 1	0-1	Off*On, (I/O)	
0x0013	External control input 2	0-1	Off*On, (I/O)	
0x0014	Summer/Winter changeover input	0-1	Winter*Summer, (I/O)	
0x0015	Fire alarm input	0-1	OK*Alarm, (I/O)	

3.3 Input states

Table of input states

Address	Description	Values /Units	Remarks	Release
	Present value			
1x0001	Alarm class Danger alarm (A) status	0-1	Normal*Alarm	
1x0002	Alarm class Critical alarm (A) status	0-1	Normal*Alarm	
1x0003	Alarm class Low alarm (B) status	0-1	Normal*Alarm	
1x0004	Alarm class Warning alarm (C) status	0-1	Normal*Alarm	
1x0005	Manual mode	0-1	Auto*Manual	
1x0006	Communicationtest puls	0-1	0*1	
1x0011	Emergency stop input	0-1	Off*On	
1x0012	External control input 1	0-1	Off*On	
1x0013	External control input 2	0-1	Off*On	
1x0014	Summer/Winter changeover input	0-1	Winter*Summer	
1x0015	Auxiliary input	0-1	Off*On	
	Alarm value			
1x0016	Outside air damper feedback	0-1	OK*Alarm	
1x0017	Extract air damper feedback	0-1	OK*Alarm	
1x0018	Fire damper closed	0-1	OK*Alarm	
1x0019	Fire damper opened	0-1	OK*Alarm	
1x0020	Fire damper no move	0-1	OK*Alarm	
1x0022	Exhaust fan alarm	0-1	OK*Alarm	
1x0023	Exhaust fan feedback	0-1	OK*Alarm	
1x0024	Exhaust fan deviation alarm	0-1	OK*Alarm	

Input states, *continued*

Table of input states, *cont.*

Address	Description	Values /Units	Remarks	Release
1x0025	Fan operating hours alarm	0-1	OK*Alarm	
1x0026	Fire fan feedback	0-1	OK*Alarm	
1x0027	Heatpump alarm	0-1	OK*Alarm	
1x0028	Heatpump feedback	0-1	OK*Alarm	
1x0029	Fire alarm	0-1	OK*Alarm	
1x0030	Exhaust temperature fire alarm	0-1	OK*Alarm	
1x0031	Auxiliary alarm	0-1	OK*Alarm	
1x0032	Manual mode	0-1	OK*Alarm	
1x0033	Modbus comm alarm	0-1	OK*Alarm	
1x0034	Processbus comm alarm	0-1	OK*Alarm	
1x0035	Outside air temperature	0-1	OK*Alarm	
1x0036	Exhaust air temperature	0-1	OK*Alarm	
1x0037	Extract air temperature	0-1	OK*Alarm	
1x0038	Heatpump water outgoing temperature	0-1	OK*Alarm	
1x0039	Heatpump water return temperature	0-1	OK*Alarm	
1x0040	Heatpump water supply temperature	0-1	OK*Alarm	
1x0041	Heatpump external control signal	0-1	OK*Alarm	
1x0042	Heatpump Block compressor	0-1	OK*Alarm	
1x0043	Auxiliary temperature	0-1	OK*Alarm	
1x0044	Exhaust air flow	0-1	OK*Alarm	
1x0045	Exhaust air pressure	0-1	OK*Alarm	
1x0046	Exhaust filter alarm	0-1	OK*Alarm	
1x0047	External setpoint	0-1	OK*Alarm	
1x0048	Auxiliary temperature 1	0-1	OK*Alarm	
1x0049	Auxiliary alarm 1	0-1	OK*Alarm	
1x0050	Auxiliary alarm 2	0-1	OK*Alarm	
1x0051	Auxiliary alarm 3	0-1	OK*Alarm	
1x0052	Auxiliary alarm 4	0-1	OK*Alarm	
1x0053	Auxiliary alarm 5	0-1	OK*Alarm	
1x0054	Aux Active Signal	0-1	OK*Alarm	
1x0055	Aux Temp control alarm	0-1	OK*Alarm	
1x0056	Exhaust Filter fire alarm	0-1	OK*Alarm	
1x0057	Waterflow	0-1	OK*Alarm	
1x0058	Waterflow Alarm	0-1	OK*Alarm	
1x0059	Extract air temp Block Heatpump	0-1	OK*Alarm	v3.22.xx
1x0060	Heatpump Compressor	0-1	OK*Alarm	v3.22.xx
1x0061	Heatpump Evaporation coil Temperature	0-1	OK*Alarm	v3.22.xx
1x0062	Heatpump Communication Offline EVD	0-1	OK*Alarm	v3.22.xx
1x0063	Heatpump Low pressure	0-1	OK*Alarm	v3.22.xx
1x0064	Heatpump Low temp of evaporation	0-1	OK*Alarm	v3.22.xx
1x0065	Heatpump Suction Temperature	0-1	OK*Alarm	v3.22.xx
1x0066	Heatpump MOP	0-1	OK*Alarm	v3.22.xx
1x0067	Heatpump High pressure	0-1	OK*Alarm	v3.22.xx
1x0068	Heatpump Motor expansion valve	0-1	OK*Alarm	v3.22.xx
1x0069	Heatpump Low super heat	0-1	OK*Alarm	v3.22.xx
1x0070	Heatpump Low suction Temperature	0-1	OK*Alarm	v3.22.xx
1x0071	Modbus sensor communication	0-1	OK*Alarm	v3.22.xx
1x0072	Modbus Energy meter communication	0-1	OK*Alarm	v3.22.xx

Input states, *continued*

Table of input states, *cont.*

Address	Description	Values /Units	Remarks	Release
1x0073	Modbus Heatpump communication	0-1	OK*Alarm	v3.22.xx
1x0074	Modbus Ebm Fan communication	0-1	OK*Alarm	v3.22.xx
1x0075	Heatpump Operating hours	0-1	OK*Alarm	v3.22.xx
1x0076	Pump Heating Alarm	0-1	OK*Alarm	v3.22.xx
1x0077	Pump Heating Feedback	0-1	OK*Alarm	v3.22.xx
1x0078	Pump Extra Heating Alarm	0-1	OK*Alarm	v3.22.xx
1x0079	Pump Extra Heating Feedback	0-1	OK*Alarm	v3.22.xx
1x0080	Heatpump Inverter Drive Overload (28)	0-1	Normal*Alarm	v3.24.xx
1x0081	Heatpump BMS Offline	0-1	Normal*Alarm	v3.24.xx
1x0082	Heatpump Inverter Alarm Reserved (29)	0-1	Normal*Alarm	v3.24.xx
1x0083	Heatpump High Condensing Temperature (58)	0-1	Normal*Alarm	v3.24.xx
1x0084	Heatpump Inverter Unexpected Stop (99)	0-1	Normal*Alarm	v3.24.xx
1x0085	Heatpump Low Condensing Temperature (59)	0-1	Normal*Alarm	v3.24.xx
1x0086	Heatpump Inverter Offline	0-1	Normal*Alarm	v3.24.xx
1x0087	Heatpump High Evaporation Temperature (60)	0-1	Normal*Alarm	v3.24.xx
1x0088	Alarm Liquid Probe Temperature (53)	0-1	Normal*Alarm	v3.24.xx
1x0089	Heatpump Low Evaporation Temperature (61)	0-1	Normal*Alarm	v3.24.xx
1x0090	Alarm Auxiliary Probe A	0-1	Normal*Alarm	v3.24.xx
1x0091	Heatpump Drive Brake Check (62)	0-1	Normal*Alarm	v3.24.xx
1x0092	Alarm Auxiliary Probe B	0-1	Normal*Alarm	v3.24.xx
1x0093	Heatpump Drive Power Card Temperature (63)	0-1	Normal*Alarm	v3.24.xx
1x0094	Alarm Auxiliary Probe C	0-1	Normal*Alarm	v3.24.xx
1x0095	Heatpump Drive Earth Fault (64)	0-1	Normal*Alarm	v3.24.xx
1x0096	EEV Alarm - Emergency Closing (1)	0-1	Normal*Alarm	v3.24.xx
1x0097	EEV Alarm - Setting Out Of Bound (9)	0-1	Normal*Alarm	v3.24.xx
1x0098	EEV Alarm - Low Super Heat (2)	0-1	Normal*Alarm	v3.24.xx
1x0099	Error In The Number Of Retain Memory Writings (10)	0-1	Normal*Alarm	v3.24.xx
1x0100	EEV Alarm – LOP (3)	0-1	Normal*Alarm	v3.24.xx
1x0101	Error In Retain Memory Writings	0-1	Normal*Alarm	v3.24.xx
1x0102	EEV Alarm – MOP (4)	0-1	Normal*Alarm	v3.24.xx
1x0103	Alarm Discharge Probe Pressure (12)	0-1	Normal*Alarm	v3.24.xx
1x0104	EEV Alarm - Motor Error (5)	0-1	Normal*Alarm	v3.24.xx
1x0105	Alarm Suction Probe Pressure (13)	0-1	Normal*Alarm	v3.24.xx
1x0106	EEV Alarm - Low Suction Temperature (6)	0-1	Normal*Alarm	v3.24.xx
1x0107	Alarm Discharge Probe Temperature (14)	0-1	Normal*Alarm	v3.24.xx
1x0108	EEV Alarm - High Condensing Temperature (7)	0-1	Normal*Alarm	v3.24.xx
1x0109	Alarm Suction Probe Temperature (15)	0-1	Normal*Alarm	v3.24.xx
1x0110	EEV Alarm - Settings Range Error (8)	0-1	Normal*Alarm	v3.24.xx
1x0111	Alarm Heatpump Reference Speed	0-1	Normal*Alarm	v3.24.xx
1x0112	Heatpump Drive Control Card Temperature (65)	0-1	Normal*Alarm	v3.24.xx
1x0113	Heatpump Drive DC Over Volt (73)	0-1	Normal*Alarm	v3.24.xx

Input states, *continued*

Table of input states, *cont.*

1x0114	Heatpump Drive Control Word TO (66)	0-1	Normal*Alarm	v3.24.xx
1x0115	Heatpump Drive Short Circuit (74)	0-1	Normal*Alarm	v3.24.xx
1x0116	Heatpump Drive Over Current (67)	0-1	Normal*Alarm	v3.24.xx
1x0117	Heatpump Drive Inrush Fault (75)	0-1	Normal*Alarm	v3.24.xx
1x0118	Heatpump Drive Torque Limit (68)	0-1	Normal*Alarm	v3.24.xx
1x0119	Heatpump Drive Mains Phase Loss (76)	0-1	Normal*Alarm	v3.24.xx
1x0120	Heatpump Drive Motor Thermistor Over (NOT USED) (69)	0-1	Normal*Alarm	v3.24.xx
1x0121	Heatpump Drive Automatic Motor Adaption Not OK (77)	0-1	Normal*Alarm	v3.24.xx
1x0122	Heatpump Drive Motor ETR Over (70)	0-1	Normal*Alarm	v3.24.xx
1x0123	Heatpump Drive Live Zero Error (78)	0-1	Normal*Alarm	v3.24.xx
1x0124	Heatpump Drive Inverter Overload (71)	0-1	Normal*Alarm	v3.24.xx
1x0125	Heatpump Drive Internal Fault (79)	0-1	Normal*Alarm	v3.24.xx
1x0126	Heatpump Drive DC Under Volt (72)	0-1	Normal*Alarm	v3.24.xx
1x0127	Heatpump Drive Brake Overload (80)	0-1	Normal*Alarm	v3.24.xx
1x0128	Heatpump Delta P > Allowable At Startup	0-1	Normal*Alarm	v3.24.xx
1x0129	Heatpump Inverter DC Bus Under Voltage (4)	0-1	Normal*Alarm	v3.24.xx
1x0130	Heatpump Out Of Envelope	0-1	Normal*Alarm	v3.24.xx
1x0131	Heatpump Inverter Drive Over Temperature (5)	0-1	Normal*Alarm	v3.24.xx
1x0132	Heatpump Starting Failure	0-1	Normal*Alarm	v3.24.xx
1x0133	Heatpump Inverter Drive Under Temperature (6)	0-1	Normal*Alarm	v3.24.xx
1x0134	Heatpump Low Pressure Difference	0-1	Normal*Alarm	v3.24.xx
1x0135	Heatpump Inverter Over Current HW (7)	0-1	Normal*Alarm	v3.24.xx
1x0136	High Discharge Temperature	0-1	Normal*Alarm	v3.24.xx
1x0137	Heatpump Inverter Motor Over Temperature (8)	0-1	Normal*Alarm	v3.24.xx
1x0138	Heatpump Inverter Over Current (1)	0-1	Normal*Alarm	v3.24.xx
1x0139	Heatpump Inverter IGBT Module Error (9)	0-1	Normal*Alarm	v3.24.xx
1x0140	Heatpump Inverter Motor Overload (2)	0-1	Normal*Alarm	v3.24.xx
1x0141	Heatpump Inverter CPU Error (10)	0-1	Normal*Alarm	v3.24.xx
1x0142	Heatpump Inverter DC Bus Over Voltage (3)	0-1	Normal*Alarm	v3.24.xx
1x0143	Heatpump Inverter Parameter Default (11)	0-1	Normal*Alarm	v3.24.xx
1x0144	Heatpump Drive Current Limit (113)	0-1	Normal*Alarm	v3.24.xx
1x0145	Heatpump High Pressure Switch (117)	0-1	Normal*Alarm	v3.24.xx
1x0146	Heatpump Drive Encoder Loss (NOT USED) (114)	0-1	Normal*Alarm	v3.24.xx
1x0147	Heatpump Drive Key Pad Not Auto On (122)	0-1	Normal*Alarm	v3.24.xx
1x0148	Heatpump Drive PTC Thermistor (115)	0-1	Normal*Alarm	v3.24.xx
1x0149	Heatpump Pressure Not Equalized (123)	0-1	Normal*Alarm	v3.24.xx
1x0150	Heatpump Drive Dangerous Failure (116)	0-1	Normal*Alarm	v3.24.xx
1x0151	Low Super Heat A EVD 2 (NOT USED) (124)	0-1	Normal*Alarm	v3.24.xx
1x0152	Heatpump High Pressure Switch Drive (117)	0-1	Normal*Alarm	v3.24.xx

Input states, *continued*

Table of input states, *cont.*

Address	Description	Values /Units	Remarks	Release
1x0153	Low Super Heat B EVD 2 (NOT USED) (125)	0-1	Normal*Alarm	v3.24.xx
1x0154	Heatpump Low Evaporaton Pressure (118)	0-1	Normal*Alarm	v3.24.xx
1x0155	LOP A EVD 2 (126)	0-1	Normal*Alarm	v3.24.xx
1x0156	Heatpump High Discharge Temperature (119)	0-1	Normal*Alarm	v3.24.xx
1x0157	LOP B EVD 2 (NOT USED) (127)	0-1	Normal*Alarm	v3.24.xx
1x0158	Heatpump Low Pressure Difference (120)	0-1	Normal*Alarm	v3.24.xx
1x0159	MOP A EVD 2 (128)	0-1	Normal*Alarm	v3.24.xx
1x0160	Heatpump Drive U Phase Loss (81)	0-1	Normal*Alarm	v3.24.xx
1x0161	Heatpump Drive Brake IGBT (89)	0-1	Normal*Alarm	v3.24.xx
1x0162	Heatpump Drive V Phase Loss (82)	0-1	Normal*Alarm	v3.24.xx
1x0163	Heatpump Drive Option Change (90)	0-1	Normal*Alarm	v3.24.xx
1x0164	Heatpump Drive W Phase Loss (83)	0-1	Normal*Alarm	v3.24.xx
1x0165	Heatpump Drive Initialized (91)	0-1	Normal*Alarm	v3.24.xx
1x0166	Heatpump Drive Fieldbus Fault (84)	0-1	Normal*Alarm	v3.24.xx
1x0167	Heatpump Drive Safety Stop (92)	0-1	Normal*Alarm	v3.24.xx
1x0168	Heatpump Drive 24V Supply Low (85)	0-1	Normal*Alarm	v3.24.xx
1x0169	Heatpump Drive Mech Brake Low (93)	0-1	Normal*Alarm	v3.24.xx
1x0170	Heatpump Drive Mains Failure (86)	0-1	Normal*Alarm	v3.24.xx
1x0171	Heatpump Drive Offline (94)	0-1	Normal*Alarm	v3.24.xx
1x0172	Heatpump Drive 1.8V Supply Low (87)	0-1	Normal*Alarm	v3.24.xx
1x0173	Heatpump Drive Service Trip Read Write (95)	0-1	Normal*Alarm	v3.24.xx
1x0174	Heatpump Drive Brake Resistor (NOT USED) (88)	0-1	Normal*Alarm	v3.24.xx
1x0175	Heatpump Drive Service Trip Reserved (96)	0-1	Normal*Alarm	v3.24.xx
1x0176	Heatpump circuit 3 Low Evaporaton Pressure (NOT USED) (176)	0-1	Normal*Alarm	v3.24.xx
1x0177	Heatpump circuit 3 4way Rev Valve (NOT USED) (185)	0-1	Normal*Alarm	v3.24.xx
1x0178	Heatpump circuit 2 High Dischage Temperature (NOT USED)	0-1	Normal*Alarm	v3.24.xx
1x0179	Heatpump Liquid Heat Probe Temperature (53)	0-1	Normal*Alarm	v3.24.xx
1x0180	Heatpump circuit 3 High Dischage (NOT USED)	0-1	Normal*Alarm	v3.24.xx
1x0181	Heatpump circuit 2 Liquid Heat Probe Temperature (NOT USED) (150)	0-1	Normal*Alarm	v3.24.xx
1x0182	Heatpump High Pressure Switch (180)	0-1	Normal*Alarm	v3.24.xx
1x0183	Heatpump circuit 2 Low Pressure Difference (NOT USED) (188)	0-1	Normal*Alarm	v3.24.xx
1x0184	Sump Temperature Sensor (181)	0-1	Normal*Alarm	v3.24.xx
1x0185	Heatpump circuit 2 Drive Phase Rotation Order (NOT USED) (189)	0-1	Normal*Alarm	v3.24.xx
1x0186	Heatpump High Condensing Temperature (7)	0-1	Normal*Alarm	v3.24.xx

Input states, *continued*

Table of input states, *cont.*

Address	Description	Values /Units	Remarks	Release
1x0187	Low Evaporaton Frost Protection (190)	0-1	Normal*Alarm	v3.24.xx
1x0188	Heatpump 4way Rev Valve (183)	0-1	Normal*Alarm	v3.24.xx
1x0189	Heatpump circuit 2 High Condensing Temperature (NOT USED)	0-1	Normal*Alarm	v3.24.xx
1x0190	Heatpump circuit 2 4way Rev Valve (NOT USED)	0-1	Normal*Alarm	v3.24.xx
1x0191	Heatpump Drive TripLock Alarm	0-1	Normal*Alarm	v3.24.xx
1x0192	Heatpump Drive ServiceTrip Typecode SparePart (97)	0-1	Normal*Alarm	v3.24.xx
1x0193	Heatpump Drive Start Failed (105)	0-1	Normal*Alarm	v3.24.xx
1x0194	Heatpump circuit 2 Drive ServiceTrip Reserved 2 (NOT USED)	0-1	Normal*Alarm	v3.24.xx
1x0195	Heatpump Drive Speed Limit (106)	0-1	Normal*Alarm	v3.24.xx
1x0196	Heatpump circuit 3 Drive ServiceTrip Reserved 3 (NOT USED)	0-1	Normal*Alarm	v3.24.xx
1x0197	Heatpump Drive External Interlock (107)	0-1	Normal*Alarm	v3.24.xx
1x0198	Heatpump Drive No Flow (100)	0-1	Normal*Alarm	v3.24.xx
1x0199	Heatpump Drive lligal Option Combi (108)	0-1	Normal*Alarm	v3.24.xx
1x0200	Heatpump Drive Dry Pump (101)	0-1	Normal*Alarm	v3.24.xx
1x0201	Heatpump Drive No Safety Option (109)	0-1	Normal*Alarm	v3.24.xx
1x0202	Heatpump Drive End Of Curve (102)	0-1	Normal*Alarm	v3.24.xx
1x0203	Heatpump Drive KTY Error (110)	0-1	Normal*Alarm	v3.24.xx
1x0204	Heatpump Drive Broken Belt (103)	0-1	Normal*Alarm	v3.24.xx
1x0205	Heatpump Drive Fans Error (111)	0-1	Normal*Alarm	v3.24.xx
1x0206	Heatpump Drive Discharge High (104)	0-1	Normal*Alarm	v3.24.xx
1x0207	Heatpump Drive ECP Error (112)	0-1	Normal*Alarm	v3.24.xx
1x0208	Heatpump Drive Tripped Alarm	0-1	Normal*Alarm	v3.24.xx

3.4 Input register

Input register table

Address	Description	Values /Units	Remarks	Release
	Unsigned Word			
3x0001	General status (Word 1)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Alarm class danger (A)			
Bit1	- Alarm class critical (A)			
Bit2	- Alarm class low (B)			
Bit3	- Alarm class warning (C)			
Bit4	-			
Bit5	- Manual control active			
Bit6	- Summer mode			
Bit7	- Communication test puls			
Bit8	-			
Bit9	- Preheating, extra heating register			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
3x0002	General status (Word 2)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	-			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
3x0003	General status (Word 3)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	-			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
3x0004	General status (Word 4)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	-			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
3x0005	Digital inputs (Word 1)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Emergency stop			
Bit1	- External control 1			
Bit2	- External control 2			
Bit3	- Summer/winter changeover			
Bit4	- Alarm acknowledge			
Bit5	- Heatpump Block compressor			
Bit6	indication			
Bit7	-			
Bit8	-			
Bit9	- Aux input			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
	-			
3x0006	Digital inputs (Word 2)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Dampers open			
Bit1	- Fire dampers open			
Bit2	- Fire dampers closed			
Bit3	-			
Bit4	-			
Bit5	- Exhaust fan feedback			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	- Fire dampers 2 open			
Bit12	- Fire dampers 2 closed			
Bit13	-			
Bit14	-			
Bit15	-			

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
3x0007	Digital inputs (Word 3)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	-			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
3x0008	Digital inputs (Word 4)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	-			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
3x0009	Digital outputs (Word 1)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	- Extract damper			
Bit2	- Fire damper			
Bit3	- Fire damper 2			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	- Exhaust fan, running			
Bit10	- Exhaust fan, off			
Bit11	- Exhaust fan, stage 1			
Bit12	- Exhaust fan, stage 2			
Bit13	- Exhaust fan, stage 3			
Bit14	-			
Bit15	-			

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
3x0010	Digital outputs (Word 2)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Heatpump Unit status - Waiting			
Bit1	- Heatpump Unit status - UnitOn			
Bit2	- Heatpump Unit status - OFFbyALR			
Bit3	- Heatpump Unit status - OFFbyNET			
Bit4	- Heatpump Unit status - OFFbyBMS			
Bit5	- Heatpump Unit status - OFFbySCH			
Bit6	- Heatpump Unit status - OFFbyDIN			
Bit7	- Heatpump Unit status - OFFbyKey			
Bit8	- Heatpump Unit status - Manual			
Bit9	- Heatpump Unit status - -			
Bit10	- Heatpump Unit status -			
Bit11	HighcondTmp			
Bit12	- Heatpump Unit status -			
Bit13	FrostProtOpr			
Bit14	- Heatpump Unit status - Custom3			
Bit15	- Heatpump Unit status - Custom4			
	-			
	- Heatpump compressor command			
3x0011	Digital outputs (Word 3)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	-			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	-			
Bit6	- Heatpump Command			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
3x0012	Digital outputs (Word 4)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Aux TSP command			
Bit1	- Aux operation mode indication			
Bit2	- Aux operation mode indication 2			
Bit3	- Aux Temp Output			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	- Alarm output, high (and low)			
Bit9	- Alarm output, low			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
3x0013	Alarms (Word 1)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Dampers			
Bit1	- Fire dampers			
Bit2	- Fire dampers 2			
Bit3	-			
Bit4	- Exhaust fan			
Bit5	- Fan operating hours			
Bit6	- Fire fan			
Bit7	-			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
3x0014	Alarms (Word 2)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Heatpump Operating hours			
Bit1	- Heatpump Compressor			
Bit2	- Heatpump Evaporation coil temp			
Bit3	- Heatpump Low pressure			
Bit4	- Heatpump Suction Temp			
Bit5	- Heatpump High pressure			
Bit6	- Heatpump Low super heat			
Bit7	- Heatpump Low temp of			
Bit8	evaporation			
Bit9	- Heatpump MOP			
Bit10	- Heatpump Motor expansion valve			
Bit11	- Heatpump Low suction temp			
Bit12	- Heatpump Communication Offline			
Bit13	EVD			
Bit14	- Heatpump Alarm			
Bit15	- Fire alarm			
	-			
	- Filter alarm			
3x0015	Alarms (Word 3)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	- Out temperature			
Bit1	- Waterflow			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	- Extract temperature			
Bit6	- Exhaust temperature			
Bit7	-			
Bit8	-			
Bit9	- Heatpump water supply temperature			
Bit10	- Heatpump water outgoing temperature			
Bit11	- Auxiliary sensor/active signal			
Bit12	- Heatpump water return temperature			
Bit13	-			
Bit14	-			
Bit15	-			

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
3x0016	Alarms (Word 4)	0-65535	0-1 for each bit or counted binary to a decimal number	
Bit0	-			
Bit1	- Exhaust pressflow and deviation			
Bit2	-			
Bit3	-			
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	-			
Bit8	-			
Bit9	- External setpoint			
Bit10	- Auxiliary alarm			
Bit11	- Auxiliary 1-5 alarm			
Bit12	- Manual control			
Bit13	-			
Bit14	- Communication test			
Bit15	- Modbus master, Processbus			
	Present value, Unsigned Word			
3x0017	Actual operating mode 0=Off 1=On 2= 3= 4= 5= 6= 7= 8=Firedamper test 9=Fire 10=Stop 11=Overrun 12=Startup	0-12	Off*On*Na*Na*Na*Na*Na*Na*Firedampertest*Fire*Stop*Overrun*Startup	
3x0018	Actual fan step	0-3	Off*Stage1*Stage2*Stage3	
3x0019	Manual operation (Service)	0-1	Auto*Off	
3x0020	Time Schedular operation	0-3	Off*Stage1*Stage2*Stage3	
3x0021	Time Switch Program steps	0-3	Off*Stage1*Stage2*Stage3	
3x0022	Actual Opmode External control	0-4	Auto*Off*Stage 1*Stage 2*Stage 3	
3x0023	Fire damper state	0-3	NotDefined*Closed*Moving*Opened	

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
3x0025	Extract air damper command	0-1	Off*On	
3x0026	Fire damper command	0-1	Off*On	
3x0027	Exhaust fan command	0-3	Off*Stage1*Stage2*Stage3	
3x0028	Exhaust fan output signal	0 - 100%		
3x0029	Fire fan command	0-1	Off*On	
3x0030	Heatpump output signal	0 - 100%		
3x0031	Heatpump command	0-1	Off*On	
3x0032	Auxiliary operation mode output	0-1	Off*On	
3x0033	Auxiliary time switch program output	0-1	Off*On	
3x0034	Auxiliary analog output fan	0 - 100%		
3x0035	Alarm output 1	0-1	Normal*Alarm	
3x0036	Alarm output 2	0-1	Normal*Alarm	
3x0037	Aux Temp control output signal	0 - 100%		
3x0038	Auxiliary operation mode output 2	0-1	Off*On	
3x0039	Actual summer comp fan	0 - 100%		
3x0040	Actual winter comp fan	0 - 100%		
	Present value, Signed Word			
3x0041	Outside air temperature	-x.y - +x.y °C	(factor 10)	
3x0042	Extract air temperature	-x.y - +x.y °C	(factor 10)	
3x0043	Exhaust air temperature	-x.y - +x.y °C	(factor 10)	
3x0044	Aux Temp control temperature	-x.y - +x.y °C	(factor 10)	
3x0045	Heatpump water outg. temperature	-x.y - +x.y °C	(factor 10)	
3x0046	Heatpump water return temperature	-x.y - +x.y °C	(factor 10)	
3x0047	Heatpump water supply temperature	-x.y - +x.y °C	(factor 10)	
3x0048	Heatpump external control signal	-x.y - +x.y %	(factor 10)	
3x0049	Auxiliary temperature	-x.y - +x.y %	(factor 10)	
3x0050	Auxiliary temperature 1	-x.y - +x.y %	(factor 10)	
3x0051	Exhaust air flow	0 - x l/s	(factor 10)	
3x0052	Exhaust air pressure	0 - x Pa	(factor 10)	
3x0053	External setpoint	-x.y - +x.y °C	(factor 10)	
3x0054	Actual exhaust fan setpoint	0 - x	%, Pa or l/s, Unsigned	
3x0055	Exhaust filter	0 - x Pa	(factor 10)	
3x0056	Auxiliary temp output	0-1	Off*On	
3x0057	Sensible effect	-x.y - +x.y kW	(factor 10)	
3x0058	Manual switch Continuous run	0-3	Off*Stage 1*Stage 2*Stage 3	
3x0059	Act. Hetpump setpoint (Heat Curv)	-x.y - +x.y °C	(factor 10)	
	Present value, Unsigned Word			
3x0060	Energy actual power	x.y - +x.y W		
3x0061	Energy average power	x.y - +x.y W		
3x0062	Energy operating hours	x.y - +x.y h		
3x0063	Energy partial	x.y - +x.y kWh		
3x0064	Energy total	x.y - +x.y kWh		
	Present value, Signed Word			
3x0065	Heatpump Heating demand input	-x.y - +x.y %	(factor 10)	
3x0066	Heatpump Evaporation coil temp	-x.y - +x.y °C	(factor 10)	
3x0067	Heatpump Inverter signal output	-x.y - +x.y %	(factor 10)	
3x0068	Heatpump Suction temp	-x.y - +x.y °C	(factor 10)	

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
	Present value, Signed Word			
3x0069	Heatpump Evaporation temp	-x.y - +x.y °C	(factor 10)	
3x0070	Heatpump Low pressure	-x.y - +x.y bar	(factor 10)	
3x0071	Heatpump Superheat temp.	-x.y - +x.y K	(factor 10)	
3x0072	Heatpump High pressure	-x.y - +x.y bar	(factor 10)	
3x0073				
3x0074	Heatpump Expansion valve output signal	-x.y - +x.y %	(factor 10)	
3x0075	Heatpump Condensing temperature	-x.y - +x.y °C	(factor 10)	
3x0076	Heatpump Antifreeze prev. threshold	-x.y - +x.y °C	(factor 10)	
3x0077	Heatpump Coil temp. limit threshold	-x.y - +x.y °C	(factor 10)	
	Unsigned long 32bit, each address also uses following address			
3x0078	Energy actual power	x.y - +x.y W	(factor 10) 32-bit	
3x0080	Energy average power	x.y - +x.y W	(factor 10) 32-bit	
3x0082	Energy operating hours	x.y - +x.y h	(factor 10) 32-bit	
3x0084	Energy partial	x.y - +x.y kWh	(factor 10) 32-bit	
3x0086	Energy total	x.y - +x.y kWh	(factor 10) 32-bit	
	Present value, Signed Word			
3x0088	Heatpump Block compressor indication	0-1	Off*On	
3x0089	Auxiliary Active signal	-x.y - +x.y %	(factor 10)	
3x0090	Waterflow	-x.y - +x.yy l/s	(factor 100)	
3x0091	Heatpump compressor run time	0 - x h		v3.22.xx
3x0092	Heatpump Start count	0 - x		v3.22.xx
3x0093	Exhaust fan Motor run time	0 - x h		v3.22.xx
3x0094	Heatpump Unit status	0-13	Unsigned word 0=Waiting 1=Unit On 2=Off By Alarm 3=Off By Net. 4=Off By BMS. 5=Off By Schedule 6=Off By DIN 7=OFF By Key 8=Manual 9=-- 10=High condenser Temp 11=Frost Protection Operation 12=Custom 3 13=Custom 4	v3.22.xx
3x0095	Heatpump compressor command	0-1	Off*On	v3.22.xx
3x0096	Exhaust air flow m3/s	-x.y - +x.yy m3/s	(factor 100)	v3.22.xx
3x0098	Exhaust air flow m3/h	-x.y - +x.yy m3/h	32-Bit	v3.22.xx

Input register, *continued*

Input register table,
cont.

Address	Description	Values /Units	Remarks	Release
3x0100	Ebm Exhaust Fan A Alarm	0-12	Unsigned word 0=Nu 1=Mains Over Volt. 2=Mains Under Volt. 3=DC-link Under.Volt. 4=DC-link Over Volt. 5=Internal Electronics 6=Locked 7=Hall Sensor 8=Overheat 9=Com. Error 10=Power Overheat 11=Phase fail 12=Normal	v3.22.xx
3x0101	Ebm Exhaust Fan A Warning	0-11	Unsigned word 0=Nu 1= Open circuit at input 2= Actual speed less than low limit 3= Brake operation 4= Low DC-link voltage 5= High electronics temp 6= High motor temp 7= High output stage temp 8= Mesh power limitation 9= High line impedance 10= Mesh current limitation 11= Normal	v3.22.xx
		Signed word		
3x0102	Ebm Exhaust Fan A DC Link Current	-x.y - +x.y A	(factor 10)	v3.22.xx
3x0103	Ebm Exhaust Fan A DC Link Voltage	-x.y - +x.y V	(factor 10)	v3.22.xx
3x0104	Ebm Exhaust Fan A Speed	-x.y - +x.y rpm	(factor 10)	v3.22.xx
3x0105	Ebm Exhaust Fan A Max Speed	-x.y - +x.y rpm	(factor 10)	v3.22.xx
3x0106	Ebm Exhaust Fan A Power Module Temperature	-x.y - +x.y °C	(factor 10)	v3.22.xx
3x0107	Ebm Exhaust Fan A Motor Temperature	-x.y - +x.y °C	(factor 10)	v3.22.xx-v3.24.xx
3x0108	Ebm Exhaust Fan A Electronics Temperature	-x.y - +x.y °C	(factor 10)	v3.22.xx-v3.24.xx
3x0109	Ebm Exhaust Fan A Actual Power	-x.y - +x.y W	(factor 10)	v3.22.xx
3x0110	Ebm Exhaust Fan A Motor Run Time	0 - 32767 h, min	(factor 10)	v3.22.xx
3x0111	Ebm Exhaust Fan A Motor Run Time HH	0 - 32767 h	(factor 10)	v3.22.xx
3x0112	Ebm Exhaust Fan A Motor Run Time MM	0 - 32767 min	(factor 10)	v3.22.xx
3x0120	Actual exhaust Fan Setpoint	-x.y - +x.y Pa, l/s, %, 3m/s or 3m/h	32-Bit (factor 100)	v3.22.xx

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
	Unsigned long 32bit, each address also uses following address			
3x0150	Heat Pump energy COP	-x.y - +x.yy	32-bit (factor 10)	v3.22.xx
3x0152	Heat Pump Output Power	-x.y - +x.yy kW	32-bit (factor 10)	v3.22.xx
3x0154	Heat Pump Output Power Today	-x.y - +x.yy kWh	32-bit	v3.22.xx
3x0156	Heat Pump Output Power Month	-x.y - +x.yy kWh	32-bit	v3.22.xx
3x0158	Heat Pump Output Power Year	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0160	Heat Pump Output Power Last Year	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0162	Heat Pump Output Power Trip meter	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0164	Heat Pump Input Power	-x.y - +x.yy kW	32-bit (factor 10)	v3.22.xx
3x0166	Heat Pump Input Power Today	-x.y - +x.yy kWh	32-bit (factor 10)	v3.22.xx
3x0168	Heat Pump Input Power Month	-x.y - +x.yy kWh	32-bit	v3.22.xx
3x0170	Heat Pump Input Power Year	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0172	Heat Pump Input Power Last Year	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0174	Heat Pump Input Power Trip Meter	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0176	Fans Input power	-x.y - +x.yy kW	32-bit (factor 10)	v3.22.xx
3x0178	Fans Input Power Today	-x.y - +x.yy kWh	32-bit (factor 10)	v3.22.xx
3x0180	Fans Input Power Month	-x.y - +x.yy kWh	32-bit	v3.22.xx
3x0182	Fans Input Power Year	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0184	Fans Input Power Last Year	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0186	Fans Input Power Trip Meter	-x.y - +x.yy MWh	32-bit (factor 100)	v3.22.xx
3x0188	Fans SFP	-x.y - +x.yy SFP	32-bit (factor 10)	v3.22.xx

Input register, *continued* Energy Watch

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
		Signed word		
3x0190	Danfoss/Ziehl Exhaust Fan A Power	-x.y - +x.y kW	(factor 10)	v3.22.xx
3x0191	Danfoss/Ziehl Exhaust Fan A Alarm	0 - x	Unsigned word	v3.22.xx
3x0192	Danfoss/Ziehl Exhaust Fan A Motor Voltage	-x.y - +x.y V	(factor 10)	v3.22.xx
3x0193	Danfoss/Ziehl Exhaust Fan A Current	-x.y - +x.y A	(factor 10)	v3.22.xx
3x0194	Ziehl Exhaust Fan A DC-Link Voltage	-x.y - +x.y V	(factor 10)	v3.22.xx
3x0195	Ziehl Exhaust Fan A Speed	-x.y - +x.y rpm	(factor 10)	v3.22.xx
3x0196	Danfoss/Ziehl Exhaust Fan A Heatsink Temperature	-x.y - +x.y °C	(factor 10)	v3.22.xx
		Unsigned word		
3x0200	Heat Pump Status	0 - 8	0= Nu 1= Return AirTemp 2= Air Flow Low 3= Water Flow Low 4= Return High 5= External Demand HP 6= No Heating Demand 7= Alarm 8= Run	v3.22.xx
3x0201	Heat Pump Command	0 - 2	0= Off 1= On 2= NULL	v3.22.xx
3x0202	Ex. Heating	0 - +x.y %		v3.22.xx
3x0203	Ex. Heating Command	0 - 2	0= Off 1= On 2= NULL	v3.22.xx
		Signed word		
3x0210	Carel Discharge Temperature	-x.y - +x.y °C	(factor 10)	v3.24.xx
3x0211	Carel Licuid Line Temperature	-x.y - +x.y °C	(factor 10)	v3.24.xx
3x0212	Carel Sub Cooling Temperature	-x.y - +x.y °C	(factor 10)	v3.24.xx
3x0213	Carel Electric Power Compressor	-x.y - +x.y kW		v3.24.xx
3x0214	Carel Power Cooling	-x.y - +x.y kW		v3.24.xx
3x0215	Carel Power Heating	-x.y - +x.y kW		v3.24.xx

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
		Unsigned word		
3x0216	Carel Alarm register 5.	0-65535	0-1 for each bit or counted binary to a decimal number	v3.24.xx
Bit0	- Alarm electric coil			
Bit1	- Alarm sump temp sensor Compressor 1			
Bit2	- Alarm discharge temp sensor Compressor 1			
Bit3	- Alarm discharge temp sensor Compressor 2			
Bit4	- Alarm discharge temp sensor Compressor 3			
Bit5	- Alarm liquid temp sensor Compressor 1			
Bit6	- Alarm liquid temp sensor Compressor 2			
Bit7	- Alarm liquid temp sensor Compressor 3			
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	-			
		Signed word		
3x0220	Danfoss Exhaust Fan A energy	-x.y - +x.y kWh	Factor (10)	v3.24.xx
3x0221	Danfoss Exhaust Fan A Operating Hours	-x.y - +x.y H	Factor (10)	v3.24.xx
3x0222	Danfoss Exhaust Fan A Output Frequency	-x.y - +x.y Hz	Factor (10)	v3.24.xx
		Unsigned word		
3x0224	Ebm Exhaust fan B Alarm	0-12	Unsigned word 0 = Nu 1 = Mains Over Volt 2 = Mains Under Volt 3 = DC-link Under Volt 4 = DC link Over Volt 5 = Internal Electronics 6 = Locked 7 = Hall Sensor 8 = Overheat 9 = Communication Error 10 = Power Overheat 11 = Phase Fail 12 = Normal	v3.24.xx

Input register, *continued*

Input register table, *cont.*

Address	Description	Values /Units	Remarks	Release
		Unsigned word		
3x0225	Ebm Exhaust fan B Warning	0-11	Unsigned word 0 = Nu 1 = Open circuit at input 2 = Actual speed less than low limit 3 = Brake operation 4 = Low DC-link voltage 5 = High electronics temp 6 = High motor temp 7 = High output stage temp 8 = Mesh power limitation 9 = High line impedance 10 = Mesh current limitation 11 = Normal	v3.24.xx
		Signed word		
3x0226	Ebm Exhaust Fan B DC Link Current	-x.y - +x.y A	(factor 10)	v3.24.xx
3x0227	Ebm Exhaust Fan B DC Link Voltage	-x.y - +x.y V	(factor 10)	v3.24.xx
3x0228	Ebm Exhaust Fan B Speed	-x.y - +x.y rpm	(factor 10)	v3.24.xx
3x0229	Ebm Exhaust Fan B Max. Speed	-x.y - +x.y rpm	(factor 10)	v3.24.xx
3x0230	Ebm Exhaust Fan B Power Module Temperature	-x.y - +x.y °C	(factor 10)	v3.24.xx
3x0231	Ebm Exhaust Fan B Actual Power	-x.y - +x.y W	(factor 10)	v3.24.xx
3x0232	Ebm Exhaust Fan B Motor Run Time	0 - 32767 h, min	(factor 10)	v3.24.xx
3x0233	Ebm Exhaust Fan B Motor Run Time HH	0 - 32767 h	(factor 10)	v3.24.xx
3x0234	Ebm Exhaust Fan B Motor Run Time MM	0 - 32767 min	(factor 10)	v3.24.xx
3x0236	Danfoss/Ziehl Exhaust Fan B Power	-x.y - +x.y kW	(factor 10)	v3.24.xx
3x0237	Danfoss/Ziehl Exhaust Fan B Alarm	0 - x	Unsigned word	v3.24.xx
3x0238	Danfoss/Ziehl Exhaust Fan B Motor Voltage	-x.y - +x.y V	(factor 10)	v3.24.xx
3x0239	Danfoss/Ziehl Exhaust Fan B Current	-x.y - +x.y A	(factor 10)	v3.24.xx
3x0240	Danfoss/Ziehl Exhaust Fan B DC-Voltage	-x.y - +x.y V	(factor 10)	v3.24.xx
3x0241	Ziehl Exhaust Fan B Speed	-x.y - +x.y rpm	(factor 10)	v3.24.xx
3x0242	Danfoss/Ziehl Exhaust Fan B Heatsink Temperature	-x.y - +x.y °C	(factor 10)	v3.24.xx
3x0243	Danfoss Exhaust Fan B Energy	-x.y - +x.y kWh	Factor (10)	v3.24.xx
3x0244	Danfoss Exhaust Fan B Operating Hours	-x.y - +x.y H	Factor (10)	v3.24.xx
3x0245	Danfoss Exhaust Fan B Output Frequency	-x.y - +x.y Hz	Factor (10)	v3.24.xx
3x0250	Tankcharging Active	0 - 2	0= Off 1= On 2= NULL	v3.24.xx

3.5 Holding register

Holding register table

Address	Description	Values /Units	Remarks	Release
	Unsigned Word			
4x0001	Control bits	0-65535		
Bit0	- Emergency stop input		I/O	
Bit1	- External control input 1		I/O	
Bit2	- External control input 2		I/O	
Bit3	- Su/Wi changeover input		I/O	
Bit4	-			
Bit5	-			
Bit6	-			
Bit7	- Fire alarm input		I/O	
Bit8	-			
Bit9	-			
Bit10	-			
Bit11	-			
Bit12	-			
Bit13	-			
Bit14	-			
Bit15	- Communicationtest puls			
	Present value, Unsigned Word			
4x0005	BMS control/overide time switch program (steps)	0-4	Auto*Off*Stage 1*Stage 2*Stage 3	
4x0006	Auxiliary BMS TSP output	0-2	Auto*Off*On	
4x0007	Manual operation (Service)	0-1	Auto*Off	
4x0008	External control, off delay	0 - x h		
4x0009	External control, fan step	0-4	Auto*Off*1Step*2Step*3Step	
4x0046	Manual switch Continuous run	0-3	Off*Stage 1*Stage 2*Stage 3	
	Present value, Signed Word			
4x0010	Heatpump OutT. setpoint X2	-x.y - +x.y °C	(factor 10)	
4x0011	Heatpump SupplyT. setpoint Y2	-x.y - +x.y °C	(factor 10)	
4x0012	Heatpump OutT. setpoint X3	-x.y - +x.y °C	(factor 10)	
4x0013	Heatpump SupplyT. setpoint Y3	-x.y - +x.y °C	(factor 10)	
4x0014	Heatpump OutT. setpoint X4	-x.y - +x.y °C	(factor 10)	
4x0015	Heatpump SupplyT. setpoint Y4	-x.y - +x.y °C	(factor 10)	
4x0016	Heatpump OutT. setpoint X5	-x.y - +x.y °C	(factor 10)	
4x0017	Heatpump SupplyT. setpoint Y5	-x.y - +x.y °C	(factor 10)	
4x0018	Heatpump OutT. setpoint X6	-x.y - +x.y °C	(factor 10)	
4x0019	Heatpump SupplyT. setpoint Y6	-x.y - +x.y °C	(factor 10)	
4x0023	Aux. temp setpoint 1	-x.y - +x.y °C	(factor 10)	
4x0024	Aux. temp setpoint 2	-x.y - +x.y °C	(factor 10)	

Holding register, *continued*

Holding register table, *cont.*

Address	Description	Values /Units	Remarks	Release
	Present value, Unsigned Word			
4x0025	Exhaust fan step 1 setpoint	0 - x	%, Pa or l/s depending on configuration	
4x0026	Exhaust fan step 2 setpoint	0 - x	%, Pa or l/s	
4x0027	Exhaust fan step 3 setpoint	0 - x	%, Pa or l/s	
4x0028	Exhaust fan max force setpoint	0 - x	%, Pa or l/s	
	Present value, Signed Word			
4x0029	Blocking High speed outT. (Fan)	-x.y - +x.y °C	(factor 10)	
	Present value, Unsigned Word			
4x0030	Exhaust fan setpoint, Firemode	0 - x	%, Pa or l/s depending on configuration	
	Tracking value, Signed Word			
4x0032	Outside air temperature	-x.y - +x.y °C	(factor 10)	
4x0033	Extract air temperature	-x.y - +x.y °C	(factor 10)	
4x0034	Exhaust air temperature	-x.y - +x.y °C	(factor 10)	
4x0036	Heatpump water outg. Temp.	-x.y - +x.y °C	(factor 10)	
4x0037	Heatpump water return temp.	-x.y - +x.y °C	(factor 10)	
4x0038	Heatpump water supply temp.	-x.y - +x.y °C	(factor 10)	
4x0039	Heatpump ext. control signal	-x.y - +x.y %	(factor 10)	
4x0040	Auxiliary temperature	-x.y - +x.y °C	(factor 10)	
4x0041	Auxiliary temperature 1	-x.y - +x.y °C	(factor 10)	
4x0042	Exhaust air flow	0 - x l/s	(factor 10)	
4x0043	Exhaust air pressure	0 - x Pa	(factor 10)	
4x0044	Aux Temp Control	-x.y - +x.y °C	(factor 10)	
4x0045	Exhaust filter pressure	0 - x Pa	(factor 10)	
4x0046	See page above			
4x0047	ReturnTemp. setpoint, Firemode	-x.y - +x.y °C	(factor 10)	
4x0048	Summer Comp. Exhaust Fan Delta	-x.y - +x.y %	(factor 10)	
4x0049	Summer Comp. Exhaust Fan Start Temp.	-x.y - +x.y °C	(factor 10)	
4x0050	Summer Comp. Exhaust Fan End Temp.	-x.y - +x.y °C	(factor 10)	
4x0051	Winter Comp. Exhaust Fan Delta	-x.y - +x.y %	(factor 10)	
4x0052	Winter Comp. Exhaust Fan Start Temp.	-x.y - +x.y °C	(factor 10)	
4x0053	Winter Comp. Exhaust Fan End Temp.	-x.y - +x.y °C	(factor 10)	
4x0054	Max deviation Exhaust fan	0 - x	%, Pa or l/s	

Holding register, *continued*

Holding register table, *cont.*

Address	Description	Values /Units	Remarks	Release
Loop and cascade controller settings				
	X Controller Gain	-x.yy - +x.yy	(factor 100), Signed Word	
	X Controller Integral	0 - x sec	Unsigned Word	
	X Controller Differential	0 - x sec	Unsigned Word	
4x0055	Exhaust fan	-x.yy - +x.yy	Gain	
4x0056	Exhaust fan	0 - x sec	Integral	
4x0057	Exhaust fan	0 - x sec	Differential	
4x0058	Heating 2	-x.yy - +x.yy	Gain	
4x0059	Heating 2	0 - x sec	Integral	
4x0060	Heating 2	0 - x sec	Differential	
Tracking value, Signed Word				
4x0061	Heatpump Block compressor	0 -1	Off-On	
4x0062	Aux Active Signal	-x.y - +x.y	(factor 10)	
4x0063	Aux Temp Control Setpoint	-x.y - +x.y	(factor 10)	
4x0064	Exhaust filter setpoint, Firemode	-x.y - +x.y °C	(factor 10)	
4x0065	Waterflow limit	-x.y - +x.yy l/s	(factor 100)	
4x0066	Extract air temp Block Heatpump	-x.y - +x.y °C	(factor 10)	v3.22.xx
Unsigned long				
4x0070	Exhaust Fan step 1 setpoint	0 - +x.yy	Pa, l/s, %, 3m/s or 3m/h (factor 100) depending on configuration	v3.22.xx
4x0072	Exhaust Fan step 2 setpoint	0 - +x.yy	Pa, l/s, %, 3m/s or 3m/h (factor 100) depending on configuration	v3.22.xx
4x0074	Exhaust Fan step 3 setpoint	0 - +x.yy	Pa, l/s, %, 3m/s or 3m/h (factor 100) depending on configuration	v3.22.xx
4x0076	Exhaust Fan Max Force	0 - +x.yy	Pa, l/s, %, 3m/s or 3m/h (factor 100) depending on configuration	v3.22.xx
Signed word				
4x0080	Pump Heating start temp	-x.y - +x.y °C	(factor 10)	v3.22.xx
4x0081	Pump Extra Heating start temp	-x.y - +x.y °C	(factor 10)	v3.22.xx

Holding register, *continued*

Holding register table, *cont.*

Address	Description	Values /Units	Remarks	Release
Loop and cascade controller settings				
	X Controller Gain	-x.yy - +x.yy	(factor 100), Signed Word	v3.22.xx
	X Controller Integral	0 - x sec	Unsigned Word	v3.22.xx
	X Controller Differential	0 - x sec	Unsigned Word	v3.22.xx
				v3.22.xx
4x0082	Heating control	-x.yy - +x.yy	Gain	v3.22.xx
4x0083	Heating control	0 - x sec	Integral	v3.22.xx
4x0084	Heating control	0 - x sec	Differential	v3.22.xx
Signed word				
4x0090	Stop tankcharging	-x.y - +x.y °C	(factor 10)	v3.24.xx
4x0091	Start/Stop Difference	-x.y - +x.y °C	(factor 10)	v3.24.xx

Index

Air handling with the focus on LCC

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