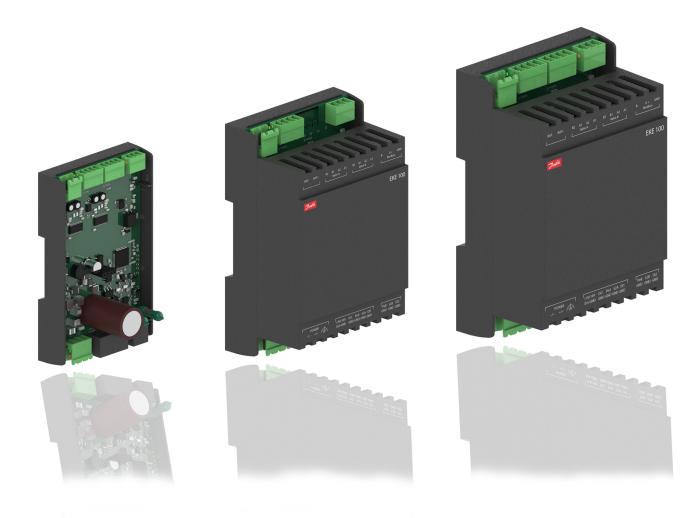
ENGINEERING TOMORROW

Danfoss

**User Guide** 

# Superheat controller and stepper valve driver Type **EKE 100** (PV03)

For air conditioning, commercial and industrial heat pumps, commercial refrigeration and food retail applications





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## **1** Introduction

The flexible pre-programmed EKE 100 superheat controller and stepper valve driver from Danfoss provides ultimate software control, allowing you to tailor the performance of your system to your exact requirements. EKE 100 is ideal for controlling a wide range of air conditioning, heat pumps, commercial refrigeration and food retail applications, such control helps you to achieve the highest efficiency in the system. EKE 100 is generally used where there is a requirement for accurate control of superheat or as stepper valve driver. The superheat is regulated to the lowest possible value within a short period of time. It regulates the superheat of the evaporator by charging optimally even when there are great variations of load resulting in reduction of energy consumption and operational cost.

### **Typical applications**

- Chillers
- Processing plant / Cabinet cooling
- A/C plant / Air conditioning
- Commercial and Industrial heat pumps
- Transport cooling
- Close control systems
- Stepper Motor Driver



## 2 Portfolio overview

#### Table 1: EKE 100 1V variant (1 valve output)

Hardware Features		EKE 100 1V		
Code number	080G5050	080G5051	080G5052	
Power Supply				
Power supply	24 V AC/DC <sup>(1)</sup> , 50/60 Hz, SELV <sup>(2)</sup>	24 V AC/DC <sup>(1)</sup> , 50/60 Hz, SELV <sup>(2)</sup>	24 V AC/DC <sup>(1)</sup> , 50/60 Hz, SELV <sup>(2)</sup>	
Battery backup support Yes		Yes	Yes	
Battery backup Input (Danfoss recom- mends EKE 2U)	24 V DC	24 V DC	24 V DC	
Valve Support				
Number of valve outputs	1 stepper motor valve	1 stepper motor valve	1 stepper motor valve	
Valve type	Bipolar	Bipolar	Bipolar	
Data Communication				
Modbus RS485 RTU	Yes	Yes	Yes	
Baud rate (default setting)	19200	19200	19200	
Mode (default setting)	8E1	8E1	8E1	
Node (default setting)	1	1	1	
Sensor support for SH control				
No of temperature sensors	1	1	1	
Type of temperature sensors	PT 1000/NTC 10K	PT 1000/NTC 10K	PT 1000/NTC 10K	
List of temperature sensors	PT1000, NTC 10K 3435, EKS 221, ACCPBT NTC10K, MBT 153 10K, 112CP, AKS, NTC10K G	PT1000, NTC 10K 3435, EKS 221, ACCPBT NTC10K, MBT 153 10K, 112CP, AKS, NTC10K G	PT1000, NTC 10K 3435, EKS 221, ACCPBT NTC10K, MBT 153 10K, 112CP, AKS, NTC10K G	
No of Pressure transmitter <sup>(3)</sup> 1		1	1	
Type of pressure transmitter <sup>(3)</sup>	Ratiometric 0.5 - 4.5 V DC , 0-10 V DC, Current 4-20 mA	Ratiometric 0.5 - 4.5 V DC , 0-10 V DC, Current 4-20 mA	Ratiometric 0.5 - 4.5 V DC , 0-10 V DC, Current 4-20 mA	
List of pressure transmitter <sup>(3)</sup>	P310 current, AKS 32R, AKS 32 1-5 V,	DST P110 standard, DST P310 Ratio, DST P310 current, AKS 32R, AKS 32 1-5 V, AKS 32 1-6 V, AKS 32 0-10 V, AKS 33, AKS 3000, ACCPBP Ratio, ACCPBP current, 112CP, NSK, XSK, OEM ratio, OEM volt- age, OEM current	P310 current, AKS 32R, AKS 32 1-5 V,	
Digital Input				
No of digital inputs	1	1	1	
Use of digital input (1 function per in- put)	Start/Stop regulation, Heat/Cool mode, Battery backup health signal (SOH)	Start/Stop regulation, Heat/Cool mode, Battery backup health signal (SOH)	Start/Stop regulation, Heat/Cool mode, Battery backup health signal (SOH)	
Digital outputs				
Number of digital outputs (Open Col- lector, max sink current 10mA)	1	1	1	
User interface				
Display	No	No	Integrated	
PC suite	KoolProg	KoolProg	KoolProg	
Gateway to PC suite	EKA 200 + EKE 100 service cable	EKA 200 + EKE 100 service cable	EKA 200 + EKE 100 service cable	
Installation and IP				
IP rating	00	20	20	
Mounting	35 mm DIN rail	35 mm DIN rail	35 mm DIN rail	
Environmental Conditions				
Storage temperature	-30 – 80 °C / -22 – 176 °F	-30 – 80 °C / -22 – 176 °F	-30 – 80 °C / -22 – 176 °F	
Operating temperature -20 – 70 °C / -4 – 158 °F		-20 – 70 ℃ / -4 – 158 °F	-20 – 70 °C / -22 – 158 °F	
Humidity <90% RH, non-condensing		<90% RH, non-condensing	<90% RH, non-condensing	

<sup>(1)</sup> The unit is suitable for use on a circuit capable of delivering not more than 50A RMS (symmetrical Amperes)

<sup>(2)</sup> For US and Canada, use class 2 power supply

(3) By default the power supply for pressure transmitter is set for 0V. Supply will change to 5V if pressure transmitter is selected as ratiometric and 18V if selected as current type. Supply can be changed manual by selecting it in parameter P014 in advanced I/O configuration. When using 2 valve model both terminals will always supply the same voltage.



#### Table 2: EKE 100 2V variant (2 valve output)

Table 2. LKL 100 2V Valiant (2 V	aive output)			
Hardware Features		EKE 100 2V		
Code number	080G5055	080G5056	080G5057	
Power Supply				
Power supply	24 V AC/DC <sup>(4)</sup> , 50/60 Hz, SELV <sup>(5)</sup>	24 V AC/DC <sup>(4)</sup> , 50/60 Hz, SELV <sup>(5)</sup>	24 V AC/DC <sup>(4)</sup> , 50/60 Hz, SELV <sup>(5)</sup>	
Battery backup support Yes		Yes	Yes	
Battery backup Input (Danfoss recom- mends EKE 2U)	24 V DC	24 V DC	24 V DC	
Valve Support				
Number of valve outputs	2 stepper motor valves	2 stepper motor valves	2 stepper motor valves	
Valve type	Bipolar	Bipolar	Bipolar	
Data Communication				
Modbus RS485 RTU	Yes	Yes	Yes	
Baud rate (default setting)	19200	19200	19200	
Mode (default setting)	8E1	8E1	8E1	
Node (default setting)	1	1	1	
Sensor support for SH control				
No of temperature sensors	2	2	2	
Type of temperature sensors	PT 1000/NTC 10K	PT 1000/NTC 10K	PT 1000/NTC 10K	
List of temperature sensors	PT1000, NTC 10K 3435, EKS 221, ACCPBT NTC10K, MBT 153 10K, 112CP, AKS, NTC10K G	PT1000, NTC 10K 3435, EKS 221, ACCPBT NTC10K, MBT 153 10K, 112CP, AKS, NTC10K G		
No of Pressure transmitter <sup>(6)</sup> 2		2	2	
Type of pressure transmitter <sup>(6)</sup>	Ratiometric 0.5 - 4.5 V DC , 0-10 V DC, Current 4-20 mA	Ratiometric 0.5 - 4.5 V DC , 0-10 V DC, Current 4-20 mA	Ratiometric 0.5 - 4.5 V DC , 0-10 V DC, Current 4-20 mA	
List of pressure transmitter <sup>(6)</sup>	P310 current, AKS 32R, AKS 32 1-5 V,	DST P110 standard, DST P310 Ratio, DST P310 current, AKS 32R, AKS 32 1-5 V, AKS 32 1-6 V, AKS 32 0-10 V, AKS 33, AKS 3000, ACCPBP Ratio, ACCPBP current, 112CP, NSK, XSK, OEM ratio, OEM volt- age, OEM current	P310 current, AKS 32R, AKS 32 1-5 V,	
Digital Input				
No of digital inputs	2	2	2	
Use of digital input (1 function per in- put)	Start/Stop regulation, Heat/Cool mode, Battery backup health signal (SOH)	Start/Stop regulation, Heat/Cool mode, Battery backup health signal (SOH)	Start/Stop regulation, Heat/Cool mode Battery backup health signal (SOH)	
Digital outputs				
Number of digital outputs (Open Col- lector, max sink current 10mA)	1	1	1	
User interface				
Display	No	No	Integrated	
PC suite	KoolProg	KoolProg	KoolProg	
Gateway to PC suite	EKA 200 + EKE 100 service cable	EKA 200 + EKE 100 service cable	EKA 200 + EKE 100 service cable	
Installation and IP				
IP rating	00	20	20	
Mounting	35 mm DIN rail	35 mm DIN rail	35 mm DIN rail	
Environmental Conditions				
Storage temperature	-30 – 80 °C / -22 – 176 °F	-30 – 80 °C / -22 – 176 °F	-30 – 80 °C / -22 – 176 °F	
Operating temperature	-20 – 70 °C / -4 – 158 °F	-20 – 70 °C / -4 – 158 °F	-20 – 70 °C / -22 – 158 °F	
Humidity	<90% RH, non-condensing	<90% RH, non-condensing	<90% RH, non-condensing	

<sup>(4)</sup> The unit is suitable for use on a circuit capable of delivering not more than 50A RMS (symmetrical Amperes)

<sup>(5)</sup> For US and Canada, use class 2 power supply

<sup>(6)</sup> By default the power supply for pressure transmitter is set for 0V. Supply will change to 5V if pressure transmitter is selected as ratiometric and 18V if selected as current type. Supply can be changed manual by selecting it in parameter P014 in advanced I/O configuration. When using 2 valve model both terminals will always supply the same voltage.

Table 3: Software Features for EKE100 1V and EKE100	) 2V
---	------

Software Features	EKE 100 1V	EKE 100 2V
SH control		
Minimum stable Superheat (MSS)	Yes	Yes
Load AP	Yes	Yes
Delta T	Yes	Yes
Fixed Superheat	Yes	Yes

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#### Superheat Controller, Type EKE 100 (PV02)

Software Features	EKE 100 1V	EKE 100 2V
Startup Mode		
Proportional control	Yes	Yes
Fixed opening degree with Proportional control	Yes	Yes
Fixed opening degree without Proportional control	Yes	Yes
Thermostatic Mode		
Cut in/ Cut off	Yes <sup>(1)</sup>	Yes <sup>(2)</sup>
MTR	Yes <sup>(1)</sup>	Yes <sup>(2)</sup>
Limiter function and other modes		
Heating/Cooling Mode	Yes	Yes
Defrost function	Yes	Yes
SH Close function	Yes	Yes
MOP	Yes	Yes
LOP	Yes	Yes
External refence offset	Yes <sup>(1)</sup>	Yes <sup>(2)</sup>
Alarm Management		
Battery Alarm	Yes	Yes
Low Superheat alarm	Yes	Yes
High Superheat alarm	Yes	Yes
Open Circuit detection	Yes <sup>(3)</sup>	Yes <sup>(3)</sup>
Minimum S4 limitation	Yes <sup>(2)</sup>	Yes <sup>(2)</sup>

<sup>(1)</sup> Sensor value is avialable to be read via Modbus

<sup>(2)</sup> The input value for second temprerature/Pressure sensor is avialable to be read via modbus or use the EKE 100 2V variant ulitizing the second set of temperature/pressure ports with only 1 valve output
 <sup>(3)</sup> Turn OFF open cirucit detection when using with ETS 6 valves



## **3 Application**

EKE 100 can be used for the below modes:

- Superheat controller
- Valve driver
- Modbus controlled I/O

When using EKE 100 2V, it can be used in a combination of superheat controller and valve driver.

## **3.1 Superheat controller**

In this mode EKE 100 acts as a superheat controller with minimum 1 Pressure and 1 temperature input per valve output.

There are multiple configurations possible in superheat mode:

- Superheat mode with DI start/stop
- Superheat mode with Modbus
- Superheat mode with Thermostat

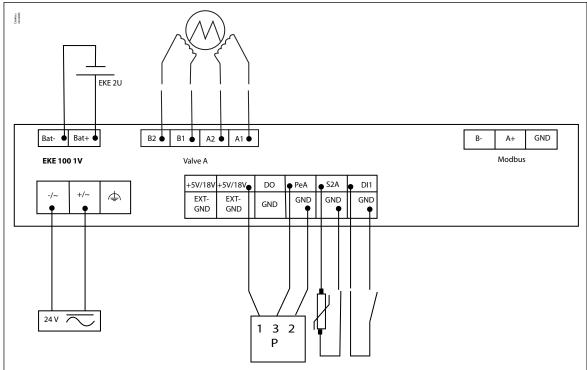
#### Superheat controller with DI start/stop

In this mode EKE 100 will control the superheat based on minimum 1 temperature and pressure sensor. The input for start/stop of EKE 100 will be given through the DI input.

#### Table 4: Shows connections ports

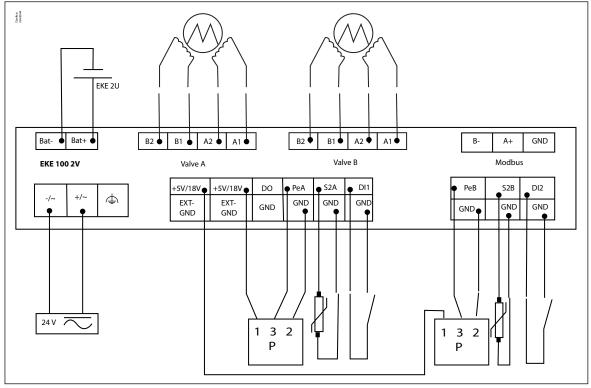
Product Variant	Pressure sensor	Temperature sensor	Start/Stop		
EKE 100 1V	PeA	S2A	DI1		
EKE 100 2V	PeA and PeB	S2A and S2B	DI1 and DI2		

#### Figure 1: See below example for EKE 100 1V





#### Figure 2: See below example for EKE 100 2V



#### **O** NOTE:

DI is software configurable, by default it is start/stop function. This can be changed to Heat/Cool mode, Signal of health of Battery backup etc. Then in such cases it is important to use Modbus to communicate start/stop function to EKE 100.

If DI is not used, then it has to be configured in software as not used or short circuited physically.

#### Superheat controller with modbus

In this mode EKE 100 will control the superheat based on modbus inputs.

#### Table 5: Shows connections ports

Product Variant	Pressure sensor	Temperature sensor	Start/Stop	
EKE 100 1V	PeA or Remote	S2A or Remote	DI1 or Remote	
EKE 100 2V	PeA and PeB or Remote	S2A and S2B or Remote	DI1 and DI2 or Remote	



#### Figure 3: See below example for EKE 100 1V

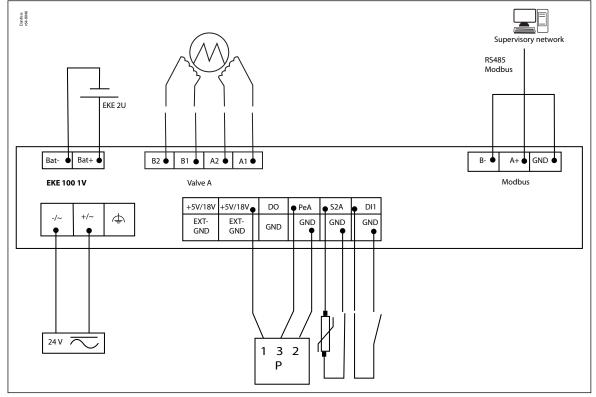
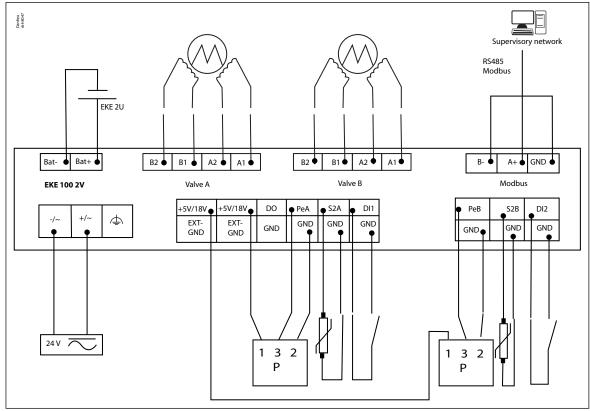


Figure 4: See below example for EKE 100 2V



#### **O** NOTE:

EKE 100 must be configured as inputs to remote in software if not using physical signal.



#### Superheat mode with Thermostat

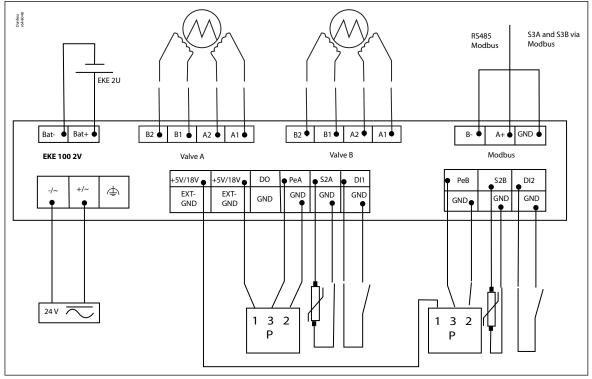
In this mode EKE 100 will control injection to evaporator based on cut-in/cut-off or Modulating thermostat regulation.

#### Table 6: Shows connections ports

Product Variant	Pressure sensor	Temperature sensor	Temperature sensor (S3 or S4)	Start/Stop
EKE 100 1V	PeA	S2A	Remote	DI 1 or remote
EKE 100 2V	PeA and PeB	S2A and S2B	Remote	DI 1 or remote
EKE 100 2V(*)	PeA	S2A	S2B	DI 1 or remote

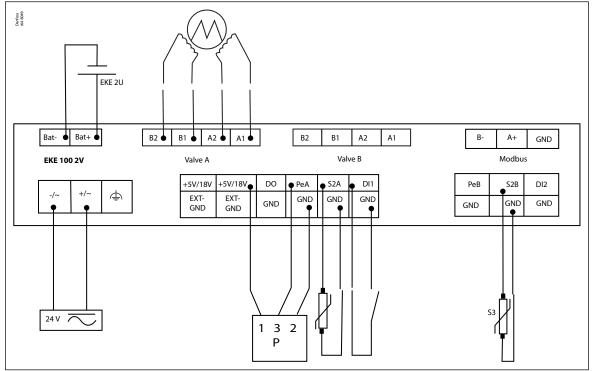
(\*) Only 1 valve output is available in this configuration.

#### Figure 5: See below example for EKE 100 2V with 2 valve output as thermostat









### 3.2 Valve driver

In this mode EKE 100 acts as a valve driver based on external input (Analog or Modbus) from master controller

There are multiple configurations possible in driver mode:

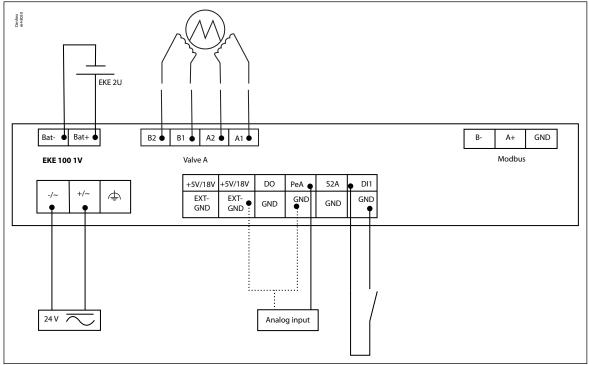
- Driver mode with analog input
- Driver mode with Modbus

#### Driver mode with analog input

EKE 100 will drive the valve based on analog input from master controller. The analog input can be 0-10V or 0-20mA range.

Driver Input	Terminal to use - signal Input A	Terminal to use - signal Input B
Voltage A / Voltage B	Ext-GND + PeA	Ext-GND + PeB
Current A / Current B	GND + PeA	GND + PeB
Voltage A / Current B	GND + PeA	GND + PeB
Current A / Voltage B	GND + PeA	GND + PeB



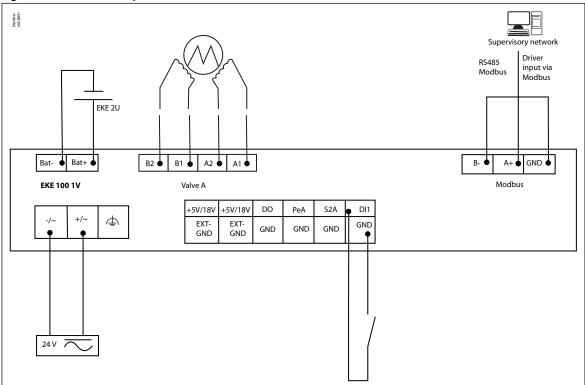


#### Figure 7: See below example for EKE 100 1V as driver with analog input

#### **Driver mode with Modbus**

EKE 100 will drive the valve based on input via Modbus from master controller. The opening degree of valve can be fed to EKE 100 using Modbus.

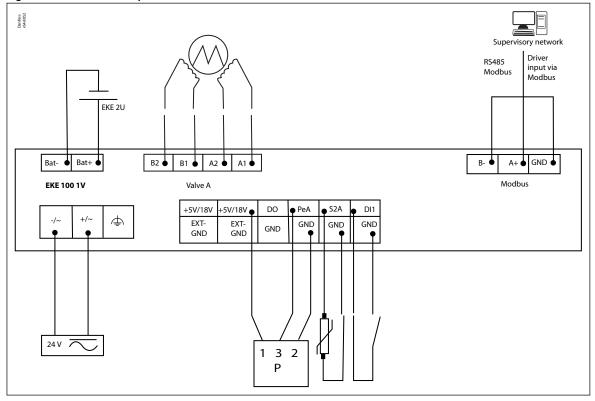






## 3.3 Driver mode with Modbus and sensor (Modbus controlled I/O)

EKE 100 will act as valve driver, driving the valve based on input via Modbus from master controller. Pressure and temperature sensors can be connected to EKE 100. Master controller can read the pressure and temperature readings from EKE 100 via Modbus.



#### Figure 9: See below example for EKE 100 1V as Modbus controlled I/O



## **4 Configuration**

AEKE 100 can be configured in below methods:

#### Offline programming

Tools required: KoolProg PC tool, KoolKey(EKA 200), EKE 100 service cable

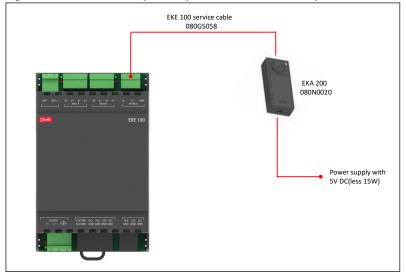
User can create configuration file using KoolProg PC tool. The configuration file can then be saved from PC to KoolKey(EKA 200) and then uploaded to EKE 100 via EKE 100 service cable. A mobile power bank or power source with 5V(<15W) is required as power input for KoolKey(EKA 200)

To configure or program the EKE 100, a 24V power supply is required.

#### **A** WARNING:

User must check the software version of EKE 100 and create configuration file in Koolprog for that version. Configuration made with the wrong software version should not be copied to the controller.

#### Figure 10: See below example for upload function of KoolKey



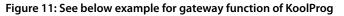
## Online programming

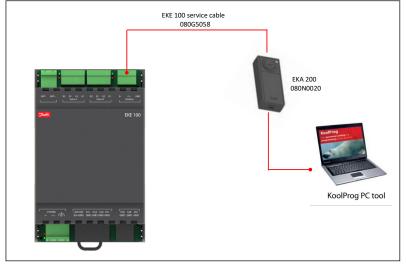
Tools required: KoolProg PC tool, KoolKey(EKA 200), EKE 100 service cable

User can edit configuration of EKE 100 using KoolProg PC tool connected to EKE 100 with KoolKey(EKA 200) and EKE 100 service cable. The configuration can also be saved for future in PC. Help texts are available in KoolProg PC tool to help user in creating configurations.

To configure or program the EKE 100, a 24V power supply is required.



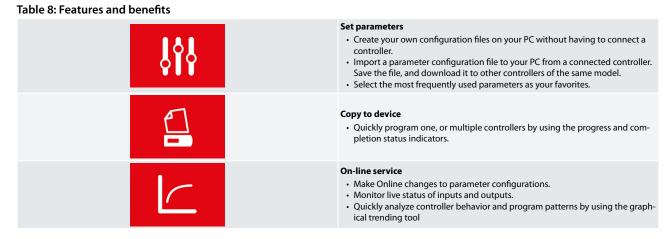




This method of programming can also be used to read real time errors and warnings in the product and help in troubleshooting.

#### Using KoolProg PC tool

KoolProg is a software tool that can configure the EKE Controllers in fast and easy way. Detailed explanation of parameters and help text is provided while using KoolProg. Explanation on alarms and possible troubleshooting is also available for users. The main features of the KoolProg are listed as follows:



#### Programming of EKE 100 in KoolProg is divided into 3 main sections:

- 1. Basic settings
  - This section allows the user to create quick configuration. Most common used settings are available in this section.
- 2. Advanced settings
  - This section allows the user to create advanced settings. More configuration options and features are available while using this section.
- 3. Service
  - This section allows manual control of valve and factory reset. While using KoolProg in Online mode this section will allow readouts of EKE 100.

#### **A** WARNING:

While connecting to KoolProg it is mandatory to define the Modbus address and port details in KoolProg PC tool. This can be done by selecting the top right setting icon in KoolProg PC tool.



#### Figure 12: See below example for Modbus setting in KoolPorg

					-		D	$\times$
					8		olProg ck.here	g®
						?	*	User
					33	3	aller h	100
Preferences								Х
Language:	Englis	h (United States	s) <b>–</b> Sa odbus Sett	ave Files on: iing		C:\Kool	Prog\Configurations	Browse
Unit:		Ad	ddress :		1		Auto 👻	
Select Controller:	ERC11x	Ba	omport : aud Rate : ata Bit :	COM5 19200 8	_	tion		

Select All	<ul> <li>□ ERC11x</li> <li>□ ETC1Hx</li> <li>□ EKF</li> <li>□ AK-CC55</li> <li>☑ EKE-100</li> </ul>	EET     ERC2 <sup>-</sup> EKE1x     EIM     EKC22	Data Bit : Parity Bit : Stop Bit : Save	8 T			
					Save	Cancel	

The check box next to EKE 100 should be clicked inorder to access the pop up window for modbus settings.

#### **A** WARNING:

It is important to know the modbus address of EKE 100 especially during service. If the address is not known the below procedure can be done to factory reset EKE 100 to address 1

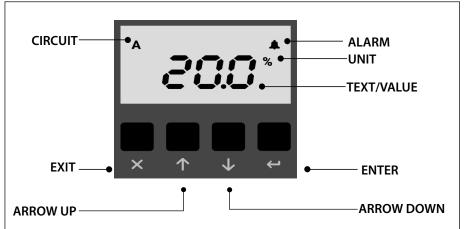
- 1. Ensure pressure transmitter settings is set to ratiometric type transmitter in configuration.
- 2. Remove Supply power from EKE 100
- 3. Connect terminal BAT+ to +5 V / 18 V (Important to make sure step 1 is observed)
- 4. Connect EKE 100 to power
- 5. Now Modbus communication options are reset to factory default (Address 1, 19200 baud, mode 8E1)

#### Programming using Display



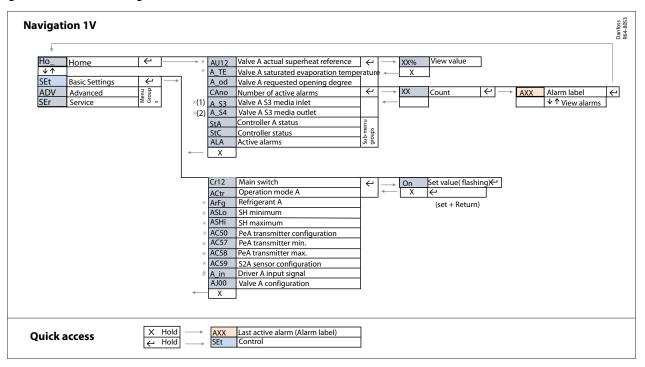
For users using EKE 100 with display the first setting of the controller can be done via display. The label data is available along with the modbus list.

#### Figure 13: Display interface



The below images shows the navigational structure of display based on variants.

#### Figure 14: EKE 100 1V Navigation structure



#### **O** NOTE:

Parameters are shown when relevant to the current configuration

\* Only when operation mode for the valve section is set to Superheat (ACtr=0)

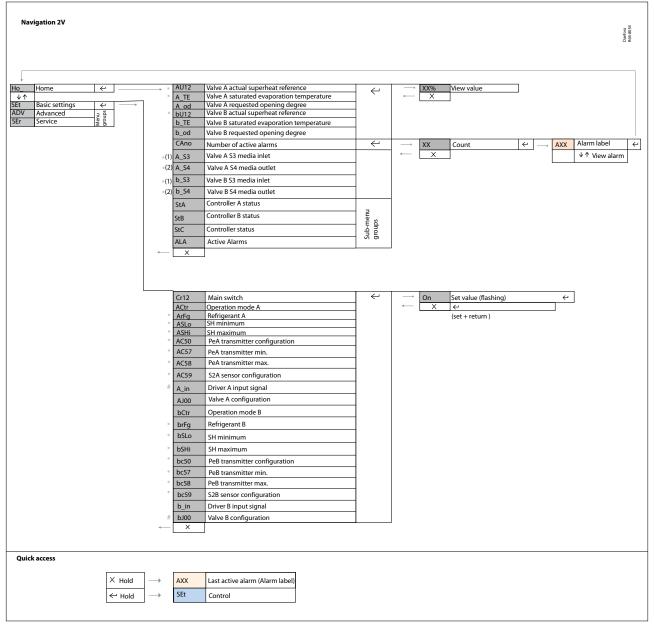
(1) Reference mode is set to delta temperature (ArEF=3) and either thermostatic mode is enabled (Ar11>0) or no thermostatic sensor has been assigned (ArSn=0)

(2) Thermostatic mode is enabled (Ar11>0) and thermostatic sensor is set to S4 (ArSn=1)

# Only when operation mode for the valve section is set to Driver (ACtr=1) or Modbus controlled IO (Actr=2)



#### Figure 15: EKE 100 2V Navigation structure



#### **O** NOTE:

Parameters are shown when relevant to the current configuration

\* Only when operation mode for the valve section is set to Superheat (ACtr=0) (bCtr=0)

(1) Reference mode is set to delta temperature (ArEF=3) (brEF=3) and either thermostatic mode is enabled (Ar11>0) (br11>0) or no thermostatic sensor has been assigned (ArSn=0) (brSn=0)

(2) Thermostatic mode is enabled (Ar11>0) (br11>0) and thermostatic sensor is set to S4 (ArSn=1) (brSn=1)

# Only when operation mode for the valve section is set to Driver (ACtr=1) (bCtr=1) or Modbus controlled IO (Actr=2) (bCtr=2)

#### **O** NOTE:

For instructions on installation procedures, product usage warnings and cabling requirements check Installation guide

For detailed information on parameter names, check modbus list section in this document.



## **5** Operation

## 5.1 Superheat control

In this section some important parameters for SH control mode and other sub modes are described.

For basic superheat control, one temperature sensor S2, and one pressure sensor Pe are needed. The actual superheat is calculated based on these two sensor readings, and the controller will adjust the OD of the valve to bring the superheat to the desired reference. If superheat is too low the flow in the expansion valve is decreased and superheat will be higher and vice versa

## 5.2 Thermostat control

EKE 100 has 2 methods of controlling the superheat while considering a second temperature sensor(Incoming media temperature).

The 2 methods are:

- ON/OFF thermostat
- Modulating thermostat (MTR)

These modes require one extra temperature sensor S3 or S4, the user can select only one sensor not both.

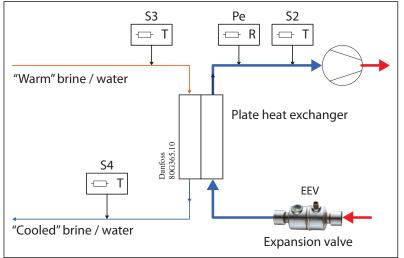
#### **O** NOTE:

Check application section to see how to use this function.

#### **On/Off thermostat**

In this mode, if temperature is above the set point + differential cooling is started with maximum cooling capacity. In maximum capacity superheat is controlled to be on superheat set point. Cooling is active until the temperature is below set point. In a startup, cooling will be active if temperature is above temperature set point.

#### Figure 16: ON/OFF thermostat

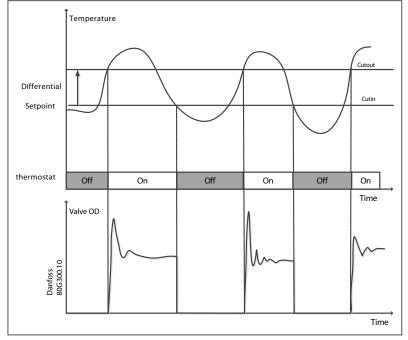


**A** WARNING:

Need for Defrosting During cooling is not considered. If defrosting is needed another system must ensure defrosting is done when needed.



#### Figure 17: ON/OFF thermostat



#### Modulating thermostat (MTR)

When the temperature is well above the MTR set point (The MTR reference is defined by temperature set point + <sup>1</sup>/<sub>2</sub> differential) cooling capacity is at maximum and superheat is controlled to be on superheat reference. When temperature is getting close to the MTR reference the cooling capacity gradually reduce so that the temperature can be stable on the MTR reference and the superheat will be floating.

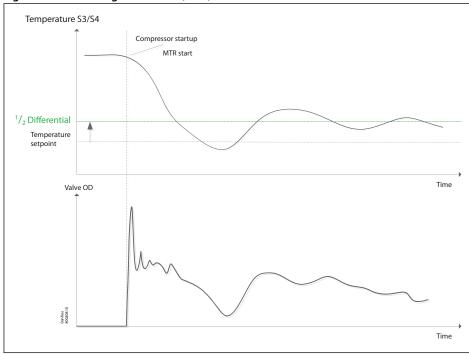


Figure 18: Modulating thermostat (MTR)

Offsetting Superheat, Opening degree and temperature via External signal



Table 9: The below table shows the various offsetting options available in EKE 100
--

Value	Signal	Description
SH	0-10V, 0/4-20mA Bus	Displacement of superheat reference with external signal
Max OD	0-10V, 0/4-20mA Bus	Maximum OD with external signal
Temp	0-10V, 0/4-20mA Bus	Displacement of temperature reference with external signal[AM1]

#### **A** WARNING:

Offset can be done in positive and negative direction. Extra care must be taken while doing this setting.

SH reference is not allowed to offset the signal below SH min.

#### **Compressor feed forward function**

When a compressor speed changes, system dynamics change correspondingly. Hence, Compressor speed feed forward function changes the PI parameter values according to the actual compressor speed, which means the reactivity of the controller is changed.

For example, when the speed of the compressor is low, this feature increases the integration time which leads to a slower response of the PI controller.

To use this feature bus communication is needed and the master controller must send a feed-back about the compressor speed to the EKE controller

#### **A** WARNING:

This function is basically used in one-to-one systems and requires a Modbus.

#### Startup modes

A Startup mode allows the valve to open faster on start-up to avoid any unwanted low-pressure situation. EKE controllers implements 3 different modes for startup, and one sequence for startup.

#### **P-Control**

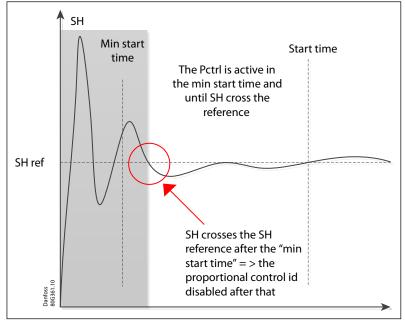
The controller is programmed for auto proportional control that will quickly change the opening degree based on the superheat of the system. The proportional control is active during the Minimum start time set by the user, and until the Super heat crosses the reference.

#### **A** WARNING:

If SH didn't cross the Superheat reference after the **minimum stop time**(N104), the Proportional control will stop after the **start time**(N105), set by the user.



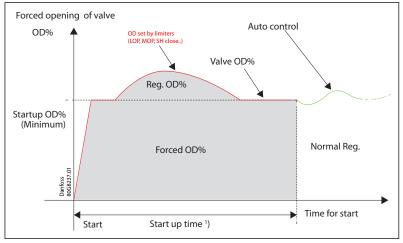
#### Figure 19: proportional control startup mode



#### Start OD with protection

This function will provide a start opening degree during a fixed start time. If the limiters such as LOP has been activated, the valve will do the auto adjustment-based set limitations.

#### Figure 20: Fixed OD with protection

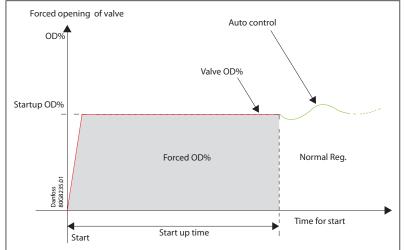


#### Start OD without protection

This function will provide a start opening degree during a set time. This function is not affected by the limiters such as LOP.



#### Figure 21: Start OD without protection

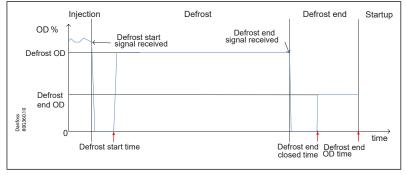


#### **Defrost sequence**

Defrost Sequence must be initiated by the master controller via DI or modbus. In a standalone configuration, the defrost mode is not possible.

To initiate defrost, the system mode is changed from Heat pump to A/C, hereby the outdoor unit will act as a condenser and the hot discharge gas from the compressor will defrost the coil. In some system electrical heaters are used instead of reversible system but defrost sequence can still be used.

#### Figure 22: Defrost sequence



#### Fail safe operation

When one or more signal fail, users can select a corresponding action based on their knowledge and experience on the applications



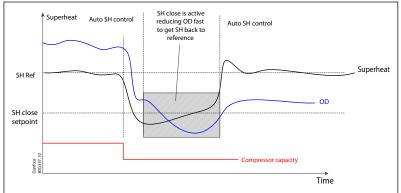
## Table 10: When signals are faulting, user have options of different actions. The user must via [Operation status] be informed on fail

Configuration	Suggestions
<ul> <li>SH control signal fails. SH control needs Pe and S2 signal, so if one of these signals fails, SH control based on the actual superheat is not possible</li> <li>Stop:valve forced closed (default)</li> <li>Fixed OD: valve at fixed position (Fail safe OD).</li> <li>Use average: <ol> <li>No thermostat and MTR: valve at 70% of average OD</li> <li>ON/OFF thermostat: valve at</li> <li>50% of average OD (thermostat function is not affected)</li> </ol> </li> <li>If both Pe and S2 fails, then overrule above and stop SH control.</li> </ul>	User can via parameter [SH control sensor error action] configure the relevant op- tion
<ul> <li>Thermostatic sensor error. Thermostatic operation needs the signal selected in [R015 Sensor select] to operate the thermostat function, if this signal fails opera- tion based on actual temperature is not possible <ul> <li>Stop:valve forced closed (default)</li> <li>Fixed OD: valve at fixed position (Fail safe OD).</li> <li>Use Average: <ul> <li>MTR: valve at 70% of average OD</li> <li>ON/OFF thermostat: average on and off time control cutin and cutout, Sh control run normally</li> </ul> </li> </ul></li></ul>	User can via parameter [Thermostatic sensor error action] configure the relevant option
Thermostatic sensor and SH control sensor error, combination of the 2 above Stop: • Valve forced closed (default)	User has no option to change this

## 5.3 Superheat close

SH close ensures that superheat is on or above 'SH close set point to avoid liquid getting back to the compressor. If the media inlet temperature drops or if compressor goes down in capacity, the superheat may drop below the SH close setpoint, then the flow in the expansion valve is reduced to bring superheat up to SH close setpoint as shown in the figure below.

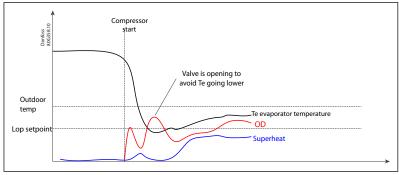




## 5.4 LOP (Low operating pressure)

Lowest Operating Pressure (LOP) will make sure that the evaporating pressure (Pe) is kept above LOP set point, this will prevent the compressor from stopping due to low suction pressure. If the pressure comes below this limit the controller will quickly open the valve.

#### Figure 24: Lowest Operating



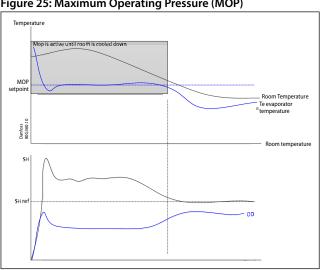


#### **O** NOTE:

If the pressure is low and at the same time the superheat is low. LOP control would like to open the valve to raise the pressure. but SH close will decrease the flow to regain a safe superheat. In this case the LOP demand is overruled by SH close. So, in the end if the conflict still is active the mechanical low-pressure switch will need stop the compressor

## 5.5 MOP (Maximum operating pressure)

Maximum Operating Pressure (MOP) will make sure that the evaporating pressure (PO) is kept below the MOP setpoint set by the user. This is achieved by lowering the flow in the expansion valve. When this mode is active this Super heat reference will be higher, the controller will switch back to superheat control once the pressure Po is kept on the MOP setpoint. This feature is helpful especially during startup During startup and pulldown to avoid overload of the compressor.



#### Figure 25: Maximum Operating Pressure (MOP)

#### 5.6 Min S4(minimum S4 temperature)

This protection modes keeps the temperature of leaving media out of the evaporator (given by temperature sensor S4) on or above of minimum temperature set by the user. This is achieved by lowering the flow in the expansion valve. When this mode is active this Super heat reference will be higher, the controller will switch back to superheat control once the Temperature of leaving media goes above S4 min

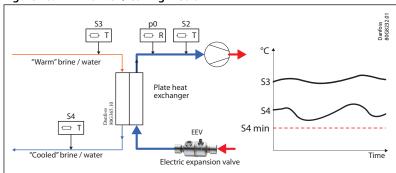


Figure 26: Minimum S4/leaving media

#### Manual mode

- This mode is used for service purpose. The user can toggle the alarm and valve opening degree to confirm right operation.
- The alarm can be turned On and Off.
- If manual mode is set to On then user can define a period till which the service mode should be active and the user defined position for the valve.



#### • NOTE:

If manual mode timeout is set to 0, controller will not exit this mode and start normal operation

## 5.7 Overdrive

EKE 100 will overdrive valves to calibrate the valve position to 0% opening degree. This will make sure that no step loss is present

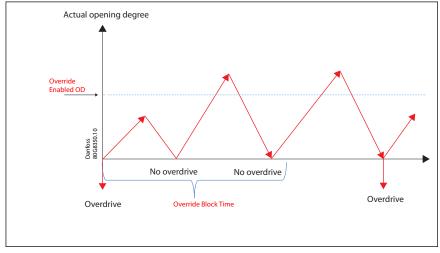
There are 2 modes of overdrive available in EKE:

- 1. Normal overdrive
- 2. Forced overdrive

#### Normal overdrive:

This overdrive checks if the valve has crossed a threshold opening degree (overdrive enabled OD), time period between consecutive overdrives (overdrive block time) and real-time position close to 0%. If the three criteria are met the valve will overdrive.

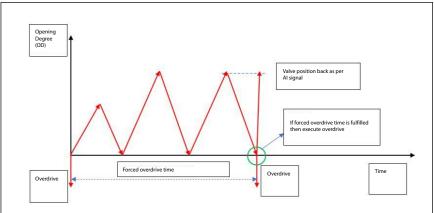
#### Figure 27: Normal overdrive



#### Forced overdrive

This overdrive is timer based. It will overdrive the valve based on a time interval and return the valve back to system required position. This mode is Off by default and the user can activate if required in advanced settings.

#### Figure 28: Forced overdrive





## 5.8 Valve selection

Danfoss valve is available as a preselection for user. If a Danfoss valve name is not present kindly ask a Danfoss representative for the setting value. If a third-party Bipolar valve is used, use user defined valve (User\_def\_)in the valve selection and define the parameters for the valve as per the valve technical details.

## 5.9 Refrigerant selection

Most of the common refrigerants are available as preselection in the controller. If a refrigerant is not found then select the value R-user and the refrigerant can be defined using the Antoine constants A1, A2 and A3.

## 5.10 Power sharing and using EKE 2U

EKE 2U can supply backup power to EKE 100 only for upto maximum 2 valves.

The below images shows possible configurations of EKE 100 with EKE 2U.

When Main supply is 24V AC.

#### Figure 29: EKE 100 1V with EKE 2U AC power source

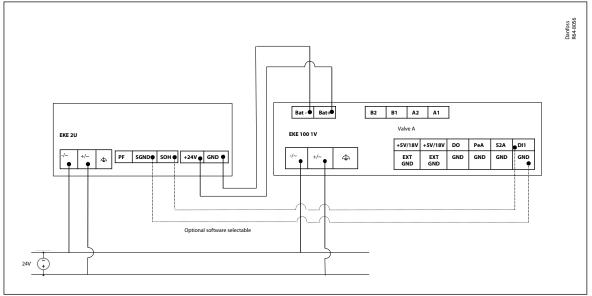
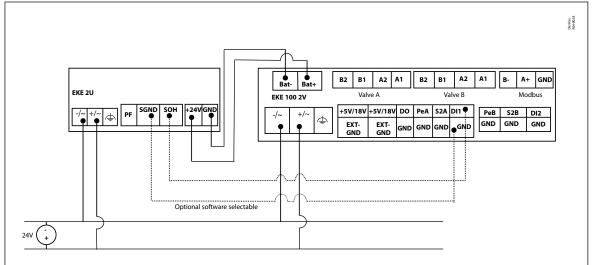


Figure 30: EKE 100 2V with EKE 2U AC power source



When Main supply is 24V DC.



#### Figure 31: EKE 100 1V with EKE 2U DC power source

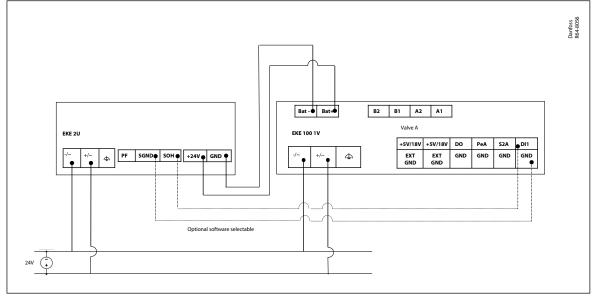
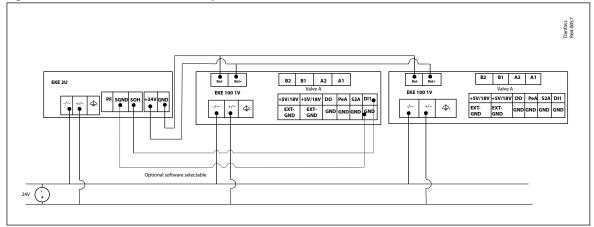
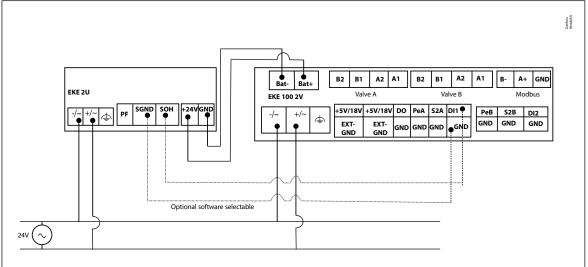


Figure 32: 2 EKE 100 1V with EKE 2U DC power source







## 5.11 Using Digital Output

EKE 100 has 1 digital output and helps user to have physical identification of alarm occurrence. This can be connected to PLC or similar open collector solution.



#### Table 11: Technical specification of Digital output

Parameter	Condition
Output type	Similar to NPN, open collector solution
Load type	Resistive only
Maximum allowed current	10mA
Leakeage current, max	10uA
Maximum voltage (at open)	28V (allow 24Vdc + 15%)
Condition at alarm	No current at alarm (Alarm - <b>NO</b> ) Current at alarm (Alarm - <b>NC</b> )

For users that require a relay module an external relay module can be installed either by utilizing the build in supply of the PLC or by having a dedicated DC supply to the relay.



### **6 Alarms and Troubleshooting**

The below table shows different alarms available in EKE 100. Parameter cAno (no of active alarms) can be used to identify through Modbus or display to find how many alarms are present in EKE 100. For users using KoolProg detailed explanation of the alarms and possible troubleshooting options are present. The digital output DO) in EKE 100 will also trigger when the alarm turns On.

#### Table 12: Alarms CODI DESCRIPTION (E 100 Tyj ADU A00 Standby mode 1V/2V 1901.08 A01 Replace PWR backup module 1V/2V 1901.09 A02 PWR backup module failure 1V/2V 1901.10 A03 Al configuration conflict 1V/2V 1901.11 DI configuration conflict 1V/2V 1901.12 A04 1V/2V A05 Low Input Voltage 1901.13 A06 Overload on 5V supply 1V/2V 1901.14 A07 Degraded hardware 1V/2V 1901.15 1V A10 Manual control A A 1901.00 No valve configured A 1V A 1901.01 A11 A12 No refrigerant selected A 1V A 1901.02 No transmitter configured for A13 1V A 1901.03 Pe A 1V A14 No sensor configured for S2 A A 1901.04 A15 No sensor configured for S3 A 1V A 1901.05 A16 No sensor configured for S4 A 1V A 1901.06 Pe evaporator transmitter error A17 1V A 1901.07 A18 S2 suction pipe sensor error A 1V A 1902.08 S3 media inlet sensor error A A19 1V A 1902.09 No external reference config-1V A 1902.10 A20 ured A A21 External reference error A 1V А 1902.11 High evaporation pressure A22 1V A 1902.12 (MOP) A Low evaporation pressure (LOP) A23 1V A 1902.13 Α High superheat A 1V A24 A 1902.14 Low superheat A 1V А A25 1902.15 A26 Lack of valve capacity A 1V A 1902.00 A27 SH control signal missing A 1V А 1902.01 A28 High temperature A 1V А 1902 .02 A29 Low temperature A 1V А 1902.03 Low S4 media outlet tempera-1V A 1902 .04 A30 ture A SH reference too close to SH 1V A34 А 1903.08 close setpoint A LOP setpoint too close to MOP A35 1V A 1903.09 setpoint A A36 S4 media outlet sensor error A 1V А 1903.10 Shared signal timeout A 1V A 1903.11 A37 Thermostatic control signal A38 1V A 1903.12 missing A Open coil valve A 1V A39 A 1903.13 1V A40 Valve A error A 1903.14 A41 Dutycycle alarm valve A 1V A 1903.15 Manual control B 1V/2V В A50 1903.00 No valve configured B 1V/2V В A51 1903 .01 No refrigerant selected B 1V/2V В 1903 .02 A52 No transmitter configured for A53 1V/2V В 1903 .03 Pe B A54 No sensor configured for S2 B 1V/2V B 1903.04

1V/2V

No sensor configured for S3 B

A55

1903.05

В



CODE	DESCRIPTION	EKE 100 Type	Valve	ADU
A56	No sensor configured for S4 B	1V/2V	B	1903.06
ADO		10/20	D	1905.00
A57	Pe evaporator transmitter error B	1V/2V	В	1903 .07
A58	S2 suction pipe sensor error B	1V/2V	В	1904.08
A59	S3 media inlet sensor error B	1V/2V	В	1904.09
A60	No external reference config- ured B	1V/2V	В	1904.10
A61	External reference error B	1V/2V	В	1904.11
A62	High evaporation pressure (MOP) B	1V/2V	В	1904.12
A63	Low evaporation pressure (LOP) B	1V/2V	В	1904.13
A64	High superheat B	1V/2V	В	1904.14
A65	Low superheat B	1V/2V	В	1904.15
A66	Lack of valve capacity B	1V/2V	В	1904 .00
A67	SH control signal missing B	1V/2V	В	1904 .01
A68	High temperature B	1V/2V	В	1904 .02
A69	Low temperature B	1V/2V	В	1904 .03
A70	Low S4 media outlet tempera- ture B	1V/2V	В	1904 .04
A74	SH reference too close to SH close setpoint B	1V/2V	В	1905 .08
A75	LOP setpoint too close to MOP setpoint B	1V/2V	В	1905 .09
A76	S4 media outlet sensor error B	1V/2V	В	1905 .10
A77	Shared signal timeout B	1V/2V	В	1905 .11
A78	Thermostatic control signal missing B	1V/2V	В	1905.12
A79	Open coil valve B	1V/2V	В	1905.13
A80	Valve B error	1V/2V	В	1905.14
A81	Dutycycle alarm valve B	1V/2V	В	1905.15

#### Table 13: The below table shows explanations on alarms and possible troubleshooting options.

CODE	DESCRIPTION	ADU	Explanation
A00	Standby mode	1901 .08	Main switch is set off. Troubleshoot: Turn on (Cr12) when appropriate.
A01	Replace PWR backup module	1901.09	EKE-2U reports time for replacement. Troubleshoot: Replace the EKE-2U.
A02	PWR backup module failure	1901 .10	EKE-2Ufailure or battery failure. Trouble- shoot: Replace backup unit.
A03	Al configuration conflict	1901 .11	Analog input configuration problem. Troubleshoot: Check analog input con- figuration. Same input has been used more than once.
A04	DI configuration conflict	1901 .12	Digital input configuration problem. Troubleshoot: Check digital input con- figuration. Same input has been used more than once.
A05	Low Input Voltage	1901 .13	Too low supply voltage. Troubleshoot: Reestablish supply voltage with ade- quate power.
A06	Overload on 5V supply	1901 .14	5V output is shorted. Troubleshoot: Check 5V load.
A07	Degraded hardware	1901 .15	EEPROM read error. Troubleshoot: Re- place hardware
A10	Manual control A	1901.00	Controller section in manual mode. Troubleshoot: Move to Manual mode A to off when appropriate. Setpoint: (AU01)
A11	No valve configured A	1901 .01	Valve configuration not made. Trouble- shoot: Configure valve A Setpoint: (AJ00)
A12	No refrigerant selected A	1901.02	No refrigerant is selected, configure the correct refrigerant. Troubleshoot: Make a refrigerant A selection. Setpoint: (Arfg)



CODE	DESCRIPTION	ADU	Explanation
A13	No transmitter configured for Pe A	1901 .03	Selection of pressure transmitter type is needed. Troubleshoot: Select Pressure input and transmitter type and measur- ing. range. Setpoints: (AC00, AC50)
A14	No sensor configured for S2 A	1901 .04	A temperature sensor type selection is missing. Troubleshoot: Select correct temperature sensor input and type. Set- points: (AC01, AC59)
A15	No sensor configured for S3 A	1901 .05	A temperature sensor type selection is missing. Troubleshoot: Select correct temperature sensor input and type. Set- points: (AC02, AC60)
A16	No sensor configured for S4 A	1901 .06	A temperature sensor type selection is missing. Troubleshoot: Select correct temperature sensor input and type (AC03, AC61).
A17	Pe evaporator transmitter error A	1901.07	Evaporator pressure transmitter signal is faulty or exceeds measuring range. Troubleshoot: Check transmitter.
A18	S2 suction pipe sensor error A	1902.08	Temperature sensor have shorted or open wires. Troubleshoot: Correct the cabling.
A19	S3 media inlet sensor error A	1902.09	Temperature sensor have shorted or open wires. Troubleshoot: Correct the cabling.
A20	No external reference configured A	1902.10	Missing configuration for external refer- ence. Troubleshoot: Setup input for ex- ternal reference. Setpoints: (AC06, AC71).
A21	External reference error A	1902 .11	Driver signal out of range Troubleshoot: Ensure analog input signal is in range
A22	High evaporation pressure (MOP) A	1902.12	Pe / Te is higher than alarm limit and alarm delay has expired. Injection active and MOP active and Te higher than MOP set point + MOP alarm differential and MOP alarm delay expired. Trouble- shoot: Injection not active or MOP disa- bled or Te below MOP set point + MOP alarm differential. Setpoints: (Au10, Au11) Alarm: (AA00, AA01)
A23	Low evaporation pressure (LOP) A	1902.13	Pe / Te is lower than alarm limit and alarm delay has expired. Injection active and LOP active and Te lower than LOP set point - LOP alarm differential. Trou- bleshoot: Options to considder: - Lack of refrigerant - Injection not active - LOP disabled Te above LOP set point + LOP alarm differential. Pe / Te is lower than alarm limit and alarm delay has expired. Setpoints: (Au12, Au13, Au14, Au15) Alarm: (AA02, AA03)
A24	High superheat A	1902 .14	Superheat is higher than alarm limit and alarm delay has expired. Troubleshoot: Options to considder: - Lack of refriger- ant - Injection not active - SH below SH reference +High SH alarm differential. Setpoint: (ASHI) Alarm: (AA04, AA05)
A25	Low superheat A	1902 .15	Superheat is below alarm limit and alarm delay has expired. Troubleshoot: Injection not active or SH above SH ref- erence - low SH alarm differential. Set- point: (ASLo) Alarm: (AA06, AA07)
A26	Lack of valve capacity A	1902 .00	Valve is running close to full capacity for long time. Injection active and OD high- er than max OD - 5% for more than 90 % of Lack of capacity alarm delay time. Troubleshoot: Injection not active or OD higher OD - 5% in less than 88 % or Lack of refrigerant capacity alarm delay time. Alarm: (AA08)
A27	SH control signal missing A	1902 .01	Pe or S2 signal missing. Troubleshoot: Get valid signal on both Pe and S2.
			J



A28High temperature A1902.02Thermostat temperature exceed per limit, alarn delay has expir bleshoot: Options to considder tive compressor - Lack of refrig Other issues Solve the control is adjust the temperature setpoin upper temperature alarn setpo Alarn delay has expirA29Low temperature A1902.03Thermostat temperature exceed ower limit, alarn delay has expir temperature exceed lower limit, alarn delay has expir troubleshoot: Solve the control is adjust the temperature setpoin upper temperat	ed. Trou- : - Defec- erant - ssue or it or the bint. djusted. d the bint. d the bint. l issue or it or the bint. djusted. issue or it or the bint. djusted. l issue or it or the bint. l issue or it or the bint. l issue or it or the bint. l issue or it or the bint. l issue or it or the bint.
A29Low temperature A1902.03lower limit, alarm delay has exp Troubleshoot: Solve the control adjust the temperature setpoin upper temperature alarm setpo Alarm delay might as well be ad Setpoints: (AtSP, AA10, AA11)A30Low 54 media outlet temperature A1902.04If 54 value is less than Min setpo duration of time alarm will be a Troubleshoot: Solve the control adjust the temperature setpoin upper temperature alarm setpo Alarm delay might as well be ad Setpoints: (AtSP, AA10, AA11)	bired. I issue or at or the bint. djusted. oint for a activated. I issue or at or the bint.
A30 Low S4 media outlet temperature A 1902.04 adjust the temperature setpoin upper temperature alarm setpo Alarm delay might as well be ac Setpoints: (AtSP, AA10, AA11)	ictivated. I issue or it or the pint.
SH close is used and SH close se	
A34 SH reference too close to SH close set- point A SH reference too close to SH close set- point A SH reference too close to SH close set- point A SH close or correct the actual SI ence / reference minimum to he difference to SH close set point. points: (Au00, Au01)	reference Disable H refer- ave 0.5K
A35 LOP setpoint too close to MOP setpoint A (Au11, Au13)	ooint. func- Trouble- DP-LOP,
A36 S4 media outlet sensor error A 1903 .10 Temperature sensor have short open wires. Troubleshoot: Avoir cation usage of S4 or get the low sor inside signal range.	d appli-
A37 Shared signal timeout A 1903 .11 One or more signals (S2, S3, S4, not updated within defined mir update time. Troubleshoot: Sign must be updated within defined interval defined by "Bus sharing mum update interval". Setpoint	nimum nals d update g mini-
A38 Thermostatic control signal missing A 1903.12 Error on thermostat sensor sign bleshoot: Check the thermostat	
A39 Open coil valve A 1903 .13 open coil detected. Troublesho coils. Check valve wiring connections	r motor
Valve driver thermal overload. T       A40     Valve A error     1903.14     shoot: Valve driver chip overloa       Check valve and wiring connect	ided.
A41 Dutycycle alarm valve A 1903 .15 Alarm autoresets after 60 Troubleshoot: Minimize control ity.	) sec.
A50 Manual control B 1903 .00 Controller section in manual me to off when appropriate. Setpoi (bU01)	mode A
A51 No valve configured B 1903.01 Valve configure valve A. Setpo (bJ00)	
A52 No refrigerant selected B 1903.02 Correct refrigerant. Troubleshoe a refrigerant A selection. Setpoi	ot: Make int: (brfg)
A53 No transmitter configured for Pe B 1903.03 Selection of pressure transmitter type and ing range. Setpoints: (bC00, bC2)	ressure measur-



CODE	DESCRIPTION	ADU	Explanation
A54	No sensor configured for S2 B	1903 .04	A temperature sensor type selection is missing. Troubleshoot: Select correct temperature sensor input and type. Set- points: (bC01, bC59)
A55	No sensor configured for S3 B	1903 .05	A temperature sensor type selection is missing. Troubleshoot: Select correct temperature sensor input and type. Set- points: (bC02, bC60)
A56	No sensor configured for S4 B	1903 .06	A temperature sensor type selection is missing. Troubleshoot: Select correct temperature sensor input and type (bC03,bC61)
A57	Pe evaporator transmitter error B	1903 .07	Evaporator pressure transmitter signal is faulty or exceeds measuring range. Troubleshoot: Check transmitter.
A58	S2 suction pipe sensor error B	1904 .08	Temperature sensor have shorted or open wires. Troubleshoot: Correct the cabling.
A59	S3 media inlet sensor error B	1904.09	Temperature sensor have shorted or open wires. Troubleshoot: Correct the cabling.
A60	No external reference configured B	1904 .10	Missing configuration for external refer- ence. Troubleshoot: Setup input for ex- ternal reference Setpoints: (bC06, bC71).
A61	External reference error B	1904 .11	Driver signal out of range Troubleshoot: Ensure analog input signal is in range
A62	High evaporation pressure (MOP) B	1904.12	Pe / Te is higher than alarm limit and alarm delay has expired. Injection active and MOP active and Te higher than MOP set point + MOP alarm differential and MOP alarm delay expired. Trouble- shoot: Injection not active or MOP disa- bled or Te below MOP set point + MOP alarm differential. Setpoints: (bu10, bu11) Alarm: (bA00, bA01)
A63	Low evaporation pressure (LOP) B	1904.13	Pe / Te is lower than alarm limit and alarm delay has expired. Injection active and LOP active and Te lower than LOP set point. Troubleshoot: Options to con- sidder: - Lack of refrigerant - Injection not active - LOP disabled Te above LOP set point + LOP alarm differential. Pe / Te is lower than alarm limit and alarm delay has expired. Setpoints: (Au12, Au13, Au14, Au15) Alarm: (AA02, AA03)
A64	High superheat B	1904.14	Superheat is higher than alarm limit and alarm delay has expired. Troubleshoot: Options to considder: - Lack of refriger- ant - Injection not active - SH below SH reference +High SH alarm differential. Setpoint: (ASHI) Alarm: (AA04, AA05)
A65	Low superheat B	1904.15	Superheat is below alarm limit and alarm delay has expired. Troubleshoot: Injection not active or SH above SH ref- erence - low SH alarm differential. Set- point: (bSLo) Alarm: (bA06, bA07)
A66	Lack of valve capacity B	1904.00	Valve is running close to full capacity for long time. Injection active and OD high- er than max OD - 5% for more than 90 % of Lack of capacity alarm delay time. Troubleshoot: Injection not active or OD higher OD - 5% in less than 88 % or Lack of refrigerant capacity alarm delay time. Alarm: (AA08)
A67	SH control signal missing B	1904 .01	Pe or S2 signal missing. Troubleshoot: Get valid signal on both Pe and S2.
A68	High temperature B	1904.02	Thermostat temperature exceed the up- per limit, alarm delay has expired. Trou- bleshoot: Options to considder: - Defec- tive compressor - Lack of refrigerant - Other issues Solve the control issue or adjust the temperature setpoint or the upper temperature alarm setpoint. Alarm delay might as well be adjusted. Setpoints: (AtSP, AA09, AA11)

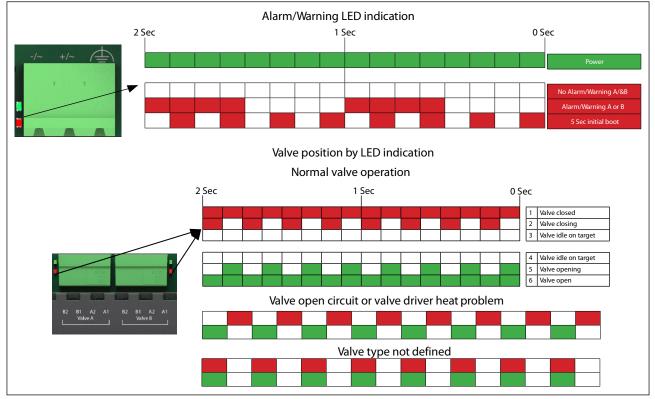


CODE	DESCRIPTION	ADU	Explanation
A69	Low temperature B	1904 .03	Thermostat temperature exceed the lower limit, alarm delay has expired. Troubleshoot: Solve the control issue or adjust the temperature setpoint or the upper temperature alarm setpoint. Alarm delay might as well be adjusted. Setpoints: (btSP, bA10, bA11)
A70	Low S4 media outlet temperature B	1904 .04	If S4 value is less than Min setpoint for a duration of time alarm will be activated. Troubleshoot: Solve the control issue or adjust the temperature setpoint or the upper temperature alarm setpoint. Alarm delay might as well be adjusted. Setpoints: (btSP, bA10, bA11)
A74	SH reference too close to SH close set- point B	1905 .08	SH close is used and SH close set pint is too close the actual reference/ reference minimum. Troubleshoot: Disable SH close or correct the actual SH reference / reference minimum to have 0.5K differ- ence to SH close set point. Setpoints: (bu00, bu01)
A75	LOP setpoint too close to MOP setpoint B	1905 .09	If MOP or LOP is used, MOP set point must > 5K bigger than LOB setpoint. The set point for the 2 pressure func- tions LOP and MOP is to close. Trouble- shoot: Adjust the difference MOP-LOP, must be: MOP-LOPt >= 5K. Setpoints: (bu11, bu13)
A76	S4 media outlet sensor error B	1905 .10	Temperature sensor have shorted or open wires. Troubleshoot: Avoid appli- cation usage of S4 or get the local sen- sor inside signal range.
A77	Shared signal timeout B	1905 .11	One or more signals (S2, S3, S4, Po) are not updated within defined minimum update time. Troubleshoot: Signals must be updated within defined update interval defined by "Bus sharing mini- mum update interval". Setpoint: (C002)
A78	Thermostatic control signal missing B	1905 .12	Error on thermostat sensor signal. Trou- bleshoot: Check the thermostat sensor.
A79	Open coil valve B	1905 .13	open coil detected. Troubleshoot: Valve have an open circuit on stepper motor coils. Check valve wiring connection.
A80	Valve B error	1905 .14	Valve driver thermal overload. Trouble- shoot: Valve driver chip overloaded. Check valve and wiring connection.
A81	Dutycycle alarm valve B	1905 .15	Actual valve duty cycle exceeds defined limits. Alarm autoresets after 60 sec. Troubleshoot: Minimize control instabil- ity.

The below shown table describes the different LED indication the controller provides to user. User can identify the status of the controller using the LED blinking and comparing it with the table below.



#### Figure 34: LED Alarm and Warning





# 7 Modbus list

The below table contains information on Modbus parameter list for EKE 100. A scaling factor should be applied where ever necessary, the number of decimals after , decides the scaling factor, if the number of decimal is 1 then scaling factor is 10. Eg: 100,0 has a scaling factor of 10 and 100,00 has a scaling factor of 100. if text in Value shows Enum then check the enumeration table to find the different options available

## 7.1 Modbus lists

LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
	PARAMETERS & STATUS VARIA- BLES							
Ho_	Setup & service > Home							
AU12	Actual SH refer- ence	1V/2V	0,0	100,0	0.0	К	Read	3701
A_TE	Te saturated evaporation temperature	1V/2V	-100,0	200,0	0.0	°C	Read	3702
A_od	Valve A request OD	1V/2V	0,0	100,0	0.0	%	Read	3703
bU12	Actual SH refer- ence	2V	0,0	100,0	0.0	К	Read	3704
b_TE	Te saturated evaporation temperature	2V	-100,0	200,0	0.0	°C	Read	3705
b_od	Valve B request OD	2V	0,0	100,0	0.0	%	Read	3706
CAno	Number of ac- tive alarms	1V/2V	0	32767	0		Read	3707
A_\$3	S3 media inlet	1V/2V	-100,0	200,0	0.0	°C	Read	3708
A_S4	S4 media outlet	1V/2V	-100,0	200,0	0.0	°C	Read	3709
b_S3	S3 media inlet	2V	-100,0	200,0	0.0	°C	Read	3710
b_S4	S4 media outlet	2V	-100,0	200,0	0.0	°C	Read	3711
StA	Home > Con- troller A status							
AU00	Operation status	1V/2V	0	20	0 - Power_up	Enum 27	Read	3712
AU12	Actual SH refer- ence	1V/2V	0,0	100,0	0.0	К	Read	3701
AU13	Actual superheat	1V/2V	0,0	100,0	0.0	К	Read	3713
AU24	Actual tempera- ture reference	1V/2V	0,0	100,0	0.0	°C	Read	3714
A_od	Valve A request OD	1V/2V	0,0	100,0	0.0	%	Read	3703
A_PE	Pe evaporator	1V/2V	-1,00	200,00	0.00	barg	Read	3715
A_TE	Te saturated evaporation temperature	1V/2V	-100,0	200,0	0.0	°C	Read	3702
A_\$2	S2 suction pipe	1V/2V	-100,0	200,0	0.0	°C	Read	3716
A_\$3	S3 media inlet	1V/2V	-100,0	200,0	0.0	°C	Read	3708
A_S4	S4 media outlet	1V/2V	-100,0	200,0	0.0	°C	Read	3709
AU17	DI Enable A sec- tion	1V/2V	0	1	0 - Off	Enum 1	Read	3719
AU18	DI Heat	1V/2V	0	1	0 - Off	Enum 1	Read	3720
AU19	DI Preset OD	1V/2V	0	1	0 - Off	Enum 1	Read	3721
AU20	DI defrost start	1V/2V	0	1	0 - Off	Enum 1	Read	3722
AU26	Al Valve driver A	1V/2V	0,0	100,0	0.0	%	Read	3723
Stb	Home > Con- troller B status							
bU00	Operation status	2V	0	20	0 - Power_up	Enum 27	Read	3724
bU12	Actual SH refer- ence	2V	0,0	100,0	0.0	К	Read	3704
bU13	Actual superheat	2V	0,0	100,0	0.0	К	Read	3725



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
bU24	Actual tempera- ture reference	2V	0,0	100,0	0.0	°C	Read	3726
b_od	Valve B request OD	2V	0,0	100,0	0.0	%	Read	3706
b_PE	Pe evaporator	2V	-1,00	200,00	0.00	barg	Read	3727
b_TE	Te saturated evaporation temperature	2V	-100,0	200,0	0.0	°C	Read	3705
b_S2	S2 suction pipe	2V	-100,0	200,0	0.0	°C	Read	3728
b_\$3	S3 media inlet	2V	-100,0	200,0	0.0	°C	Read	3710
b_S4	S4 media outlet	2V	-100,0	200,0	0.0	°C	Read	3711
bU17	DI Enable B sec- tion	2V	0	1	0 - Off	Enum 1	Read	3731
bU18	DI Heat	2V	0	1	0 - Off	Enum 1	Read	3732
bU19	DI Preset OD	2V	0	1	0 - Off	Enum 1	Read	3733
bU20	DI defrost start	2V	0	1	0 - Off	Enum 1	Read	3734
bU26	AI Valve driver B	2V	0,0	100,0	0.0	%	Read	3735
StC	Home > Com- mon controller status							
CbtV	Actual battery voltage	1V/2V	0,0	30,0	0.0	V	Read	3736
CU02	Battery state	1V/2V	0	3	0 - Ready	Enum 48	Read	3737
CinV	Input Voltage	1V/2V	0,0	100,0	0.0	V	Read	3738
CU03	Alarm status	1V/2V	0	1	0 - Off	Enum 1	Read	3739
ALA	Home > Active Alarms							
1000	Active status	1V/2V	0	1	0 - No	Enum 5	Read	3740
CAno	Number of ac- tive alarms	1V/2V	0	32767	0		Read	3707
SEt	Setup & service > Basic settings							
Cr12	Main switch	1V/2V	0	1	0 - Off	Enum 1	RW	3001
ACtr	Operation mode A	1V/2V	0	2	0 - SH_control	Enum 14	RW	3002
ArFg	Refrigerant	1V/2V	0	53	0 - Undef	Enum 16	RW	3003
ASLo	SH minimum	1V/2V	2,0	ASHI	4.0	К	RW	3004
ASHI	SH maximum	1V/2V	ASLo	40,0	9.0	К	RW	3005
AC50	PeA transmitter configuration	1V/2V	0	18	0 - Not_defined	Enum 41	RW	3006
AC51	PeA voltage low	1V/2V	0,0	AC52	0.0	V	RW	3007
AC52	PeA voltage high	1V/2V	AC51	10,0	10.0	V	RW	3008
AC53	PeA current low	1V/2V	0,0	AC54	4.0	mA	RW	3009
AC54	PeA current high	1V/2V	AC53	20,0	20.0	mA	RW	3010
AC55	PeA ratio low	1V/2V	3	AC56	10	%	RW	3011
AC56	PeA ratio high	1V/2V	AC55	97	90	%	RW	3012
AC57	PeA transmitter min.	1V/2V	-1,0	AC58	-1.0	barg	RW	3013
AC58	PeA transmitter max.	1V/2V	AC57	200,0	12.0	barg	RW	3014
AC59	S2A sensor con- figuration	1V/2V	0	25	0 - Not_defined	Enum 42	RW	3015
A_in	Driver A input signal	1V/2V	0	5	00_10_V	Enum 52	RW	3016
AJ00	Valve configura- tion	1V/2V	0	51	0 - Select_type	Enum 8	RW	3017
bCtr	Operation mode B	2V	0	9	9 - Not_used	Enum 15	RW	3018
brFg	Refrigerant	2V	0	53	0 - Common	Enum 18	RW	3019
bSLo	SH minimum	2V	2,0	bSHI	4.0	К	RW	3020
bSHI	SH maximum	2V	bSLo	40,0	9.0	К	RW	3021
bC50	PeB transmitter configuration	2V	0	18	0 - Not_defined	Enum 41	RW	3022
bC51	PeB voltage low	2V	0,0	bC52	0.0	V	RW	3023
bC52	PeB voltage high	2V	bC51	10,0	10.0	V	RW	3024



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
bC53	PeB current low	2V	0,0	bC54	4.0	mA	RW	3025
bC54	PeB current high	2V	bC53	20,0	20.0	mA	RW	3026
bC55	PeB ratio low	2V	3	bC56	10	%	RW	3027
bC56	PeB ratio high	2V	bC55	97	90	%	RW	3028
bC57	PeB transmitter min.	2V	-1,0	bC58	-1.0	barg	RW	3029
bC58	PeB transmitter max.	2V	bC57	200,0	12.0	barg	RW	3030
bC59	S2B sensor con- figuration	2V	0	25	0 - Not_defined	Enum 42	RW	3031
b_in	Driver B input signal	2V	0	5	00_10_V	Enum 52	RW	3032
bJ00	Valve configura- tion	2V	0	51	0 - Select_type	Enum 11	RW	3033
bCA	Control A > Ba- sic control							
AEnA	Enable A section	1V/2V	0	1	1 - On	Enum 1	RW	3034
ArFg	Refrigerant	1V/2V	0	53	0 - Undef	Enum 16	RW	3003
Ar01	Antoine con- stant A1	1V/2V	8,000	12,000	9.800		RW	3035
Ar02	Antoine con- stant A2	1V/2V	-3000,0	-1300,0	-2250.0		RW	3036
Ar03	Antoine con- stant A3	1V/2V	210,0	300,0	253.0		RW	3037
Ar04	Startup mode	1V/2V	0	2	0 - PropCtrl	Enum 17	RW	3040
Ar05	Startup time	1V/2V	1	600	90	Sec	RW	3041
Ar06	Minimum start- up time	1V/2V	1	240	15	Sec	RW	3042
AodS	Startup OD	1V/2V	0	100	32	%	RW	3043
ArEf	SH reference mode	1V/2V	0	3	2 - MSS	Enum 19	RW	3044
AFSP	SH fixed setpoint	1V/2V	2,0	40,0	7.0	К	RW	3045
ASLo	SH minimum	1V/2V	2,0	ASHI	4.0	К	RW	3004
ASHI	SH maximum	1V/2V	ASLo	40,0	9.0	К	RW	3005
AdEL	SH reference del- ta temp. factor	1V/2V	20	100	65	%	RW	3046
Ar07	SH Tn	1V/2V	20	900	90	Sec	RW	3047
Ar08	SH Kp	1V/2V	0,1	20,0	1.5		RW	3048
Ar09	SH Kp Min.	1V/2V	0,1	1,0	0.6		RW	3049
Ar10	SH KpTe	1V/2V	0,0	20,0	3.0		RW	3050
AodL	Minimum OD	1V/2V	0	AodH	0	%	RW	3051
AodH	Maximum OD	1V/2V	AodL	100	100	%	RW	3052
Ar11	Thermostatic mode	1V/2V	0	2	0 - Not_used	Enum 25	RW	3053
ArSn	Thermostatic sensor	1V/2V	0	1	0 - S3	Enum 26	RW	3054
AtSP	Temperature set- point	1V/2V	-70,0	70,0	3.0	°C	RW	3055
Atdt	Temperature dif- ferential	1V/2V	0,1	10,0	2.0	К	RW	3056
ECA	Control A > Ex- tended control							
Au00	SH close func- tion	1V/2V	0	1	1 - On	Enum 1	RW	3057
Au01	SH close setpoint	1V/2V	-5,0	20,0	2.0	К	RW	3058
Au02	SH close Tn di- vide	1V/2V	1	5	3		RW	3059
Au03	SH close Kp fac- tor	1V/2V	0,5	10,0	1.5		RW	3060
Au04	Limit Kp	1V/2V	1,0	20,0	5.0		RW	3061
Au05	Limit Tn	1V/2V	20	900	45	Sec	RW	3062
Au06	Minimum S4 mode	1V/2V	0	1	0 - Off	Enum 1	RW	3063
Au07	Minimum S4 set- point	1V/2V	-50,0	60,0	5.0	°C	RW	3064



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
Au08	MSS Stability	1V/2V	0,0	10,0	5.0		RW	3065
Au09	MSS T0 stability factor	1V/2V	0,0	1,0	0.0		RW	3066
Au10	MOP function	1V/2V	0	1	0 - Off	Enum 1	RW	3067
Au11	MOP setpoint	1V/2V	-70,0	60,0	0.0	°C	RW	3068
Au12	LOP function	1V/2V	0	1	0 - Off	Enum 1	RW	3069
Au13	LOP setpoint	1V/2V	-90,0	40,0	-40.0	°C	RW	3070
Au14	LOP priority mode	1V/2V	0	1	0 - Off	Enum 1	RW	3071
Au15	LOP maximum time	1V/2V	0	600	120	Sec	RW	3072
Au16	LOP oscillation detection	1V/2V	0	1	1 - On	Enum 1	RW	3073
Au19	Compressor speed feedfor- ward function	1V/2V	0	1	0 - Off	Enum 1	RW	3076
Au20	FF low capacity turning point	1V/2V	0,0	100,0	25.0	%	RW	3077
Au21	FF maximum fac- tor for Tn tuning	1V/2V	1	5	2		RW	3078
Au22	SH control sen- sor error action	1V/2V	0	2	0 - Stop	Enum 20	RW	3079
Au23	Thermostatic sensor error ac- tion	1V/2V	0	2	0 - Stop	Enum 20	RW	3080
Au24	Fixed OD during emergency cool- ing	1V/2V	0	100	0	%	RW	3081
Au25	MTR Tn	1V/2V	20	3600	1800	Sec	RW	3082
Au26	MTR Kp	1V/2V	0,2	20,0	3.0		RW	3083
SHA	Control A > Heat control							
AH00	Heat startup time	1V/2V	1	600	90	Sec	RW	3084
AH01	Heat minimum startup time	1V/2V	1	240	15	Sec	RW	3085
AH02	Heat startup OD	1V/2V	0	100	32	%	RW	3086
AH03	Heat SH fixed setpoint	1V/2V	2,0	40,0	7.0	К	RW	3087
AH04	Heat SH mini- mum	1V/2V	2,0	AH05	4.0	К	RW	3088
AH05	Heat SH maxi- mum	1V/2V	AH04	40,0	9.0	К	RW	3089
AH06	Heat SH ref. delta temp. factor	1V/2V	20	100	65	%	RW	3090
AH07 AH08	Heat SH Tn Heat SH Kp	1V/2V 1V/2V	20 0,1	900 20,0	90 1.5	Sec	RW RW	3091 3092
AH08 AH09	Heat SH Kp mini-	1V/2V 1V/2V	0,1	1,0	0.6		RW	3092
AH10	mum Heat SH KpTe	1V/2V	0,0	20,0	3.0		RW	3094
AH10 AH11	Heat SH close setpoint	1V/2V 1V/2V	-5,0	20,0	2.0	К	RW	3094
AH12	Heat Limit Kp	1V/2V	1,0	20,0	5.0		RW	3096
AH13	Heat Limit Tn	1V/2V	20	900	45	Sec	RW	3097
DFA	Control A > De- frost control		-					
AD00	Defrost start time	1V/2V	0	600	0	Sec	RW	3098
AD01	Defrost start low pressure limit	1V/2V	0,1	20,0	1.0	barg	RW	3099
AD02	Defrost OD	1V/2V	0,0	100,0	0.0	%	RW	3100
AD03	Defrost end closed time	1V/2V	0	600	0	Sec	RW	3101
AD04	Defrost end OD time	1V/2V	0	600	0	Sec	RW	3102
AD05	Defrost end OD	1V/2V	0,0	100,0	50.0	%	RW	3103



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
ASA	Control A > Alarm setup							
AA00	MOP alarm delay	1V/2V	0	1200	60	Sec	RW	3104
AA01	MOP alarm dif-	1V/2V	0,0	40,0	5.0	К	RW	3105
	ferential							
AA02	LOP alarm delay LOP alarm differ-	1V/2V	0	1200	60	Sec	RW	3106
AA03	ential	1V/2V	0,0	40,0	5.0	К	RW	3107
AA04	High SH alarm delay	1V/2V	0	1800	600	Sec	RW	3108
AA05	High SH alarm differential	1V/2V	0,0	40,0	5.0	К	RW	3109
AA06	Low SH alarm delay	1V/2V	0	1200	60	Sec	RW	3110
AA07	Low SH alarm differential	1V/2V	0,0	40,0	3.0	К	RW	3111
AA08	Lack of capacity alarm delay	1V/2V	0	120	0	min	RW	3112
AA09	Upper tempera- ture alarm	1V/2V	0,0	40,0	5.0	К	RW	3113
AA10	Lower tempera- ture alarm	1V/2V	0,0	40,0	3.0	К	RW	3114
AA11	Temperature alarm delay	1V/2V	0	90	30	min	RW	3115
AA12	Minimum S4 band	1V/2V	0,0	30,0	2.0	К	RW	3116
AA13	Minimum S4 de- lay	1V/2V	0	1200	60	Sec	RW	3117
SSA	Control A > Service							
AU00	Operation status	1V/2V	0	20	0 - Power_up	Enum 27	Read	3712
AU01	Manual mode A	1V/2V	0	1	0 - Off	Enum 1	RW	3741
AU02	Manual mode timeout A	1V/2V	0	3600	60	Sec	RW	3120
AU03	Manual OD A	1V/2V	0,0	100,0	0.0	%	RW	3742
AU04	Manual homeing	1V/2V	0	1	0 - Off	Enum 1	Read	3743
A_PE	Pe evaporator	1V/2V	-1,00	200,00	0.00	barg	Read	3715
A_TE	Te saturated evaporation temperature	1V/2V	-100,0	200,0	0.0	°C	Read	3702
A_S2	S2 suction pipe	1V/2V	-100,0	200,0	0.0	°C	Read	3716
A_S3	S3 media inlet	1V/2V	-100,0	200,0	0.0	°C	Read	3708
A_S4	S4 media outlet	1V/2V	-100,0	200,0	0.0	°C	Read	3709
AU12	Actual SH refer- ence	1V/2V	0,0	100,0	0.0	К	Read	3701
AU13	Actual superheat	1V/2V	0,0	100,0	0.0	К	Read	3713
AU14	Injection state	1V/2V	0	4	0 - Off	Enum 21	Read	3744
AU15	Injection details	1V/2V	0	12	0 - Off	Enum 22	Read	3745
AU16	Average OD	1V/2V	0,0	100,0	0.0	%	Read	3746
AU17	DI Enable A sec- tion	1V/2V	0	1	0 - Off	Enum 1	Read	3719
AU18	DI Heat	1V/2V	0	1	0 - Off	Enum 1	Read	3720
AU19	DI Preset OD	1V/2V	0	1	0 - Off	Enum 1	Read	3721
AU20	DI defrost start	1V/2V	0	1	0 - Off	Enum 1	Read	3722
AU21	Act. ext. ref. SH offset	1V/2V	-40,0	40,0	0.0	к	Read	3747
AU22	Act. ext. ref. tem- perature offset	1V/2V	-40,0	40,0	0.0	К	Read	3748
AU23	Act. ext. ref. max- imum OD	1V/2V	0,0	100,0	0.0	%	Read	3749
AU24	Actual tempera- ture reference	1V/2V	0,0	100,0	0.0	°C	Read	3714
AU25	Actual maximum OD	1V/2V	0,0	100,0	0.0	%	Read	3750
AU26	AI Valve driver A	1V/2V	0,0	100,0	0.0	%	Read	3723



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
A_od	Valve A request OD	1V/2V	0,0	100,0	0.0	%	Read	3703
AI05	Actual valve po-	1V/2V	0,0	100,0	0.0	%	Read	3777
Av20	sition A PeA Sensor	1\//2\/			0.00	V	Read	2751
Ax20 Ax20		1V/2V 1V/2V	0,00 0,00	10,00	0.00		Read	3751 3752
Ax20 Ax20	PeA Sensor PeA Sensor	1V/2V 1V/2V		20,00	0.00	A	Read	3752
			-1,00	200,00		barg		
Ax21 <b>bCb</b>	S2A Sensor Control B > Ba-	1V/2V	-100,0	200,0	0.0	°C	Read	3754
	sic control							
bEnb	Enable B section	2V	0	1	1 - On	Enum 1	RW	3121
brFg	Refrigerant	2V	0	53	0 - Common	Enum 18	RW	3019
br01	Antoine con- stant A1	2V	8,000	12,000	9.800		RW	3122
br02	Antoine con- stant A2	2V	-3000,0	-1300,0	-2250.0		RW	3123
br03	Antoine con- stant A3	2V	210,0	300,0	253.0		RW	3124
br04	Startup mode	2V	0	2	0 - PropCtrl	Enum 17	RW	3127
br05	Startup time	2V	1	600	90	Sec	RW	3128
br06	Minimum start-	2V 2V	1	240	15	Sec	RW	3129
bode	up time	21/	0	100	27	0/	DW/	2120
bodS	Startup OD	2V	0	100	32	%	RW	3130
brEF	SH reference mode	2V	0	3	2 - MSS	Enum 19	RW	3131
bFSP	SH fixed setpoint	2V	2,0	40,0	7.0	К	RW	3132
bSLo	SH minimum	2V	2,0	bSHI	4.0	К	RW	3020
bSHI	SH maximum	2V	bSLo	40,0	9.0	К	RW	3021
bdEL	SH reference del- ta temp. factor	2V	20	100	65	%	RW	3133
br07	SH Tn	2V	20	900	90	Sec	RW	3134
br08	SH Kp	2V	0,1	20,0	1.5		RW	3135
br09	SH Kp Min	2V	0,1	1,0	0.6		RW	3136
br10	SH KpTe	2V	0,0	20,0	3.0		RW	3137
bodL	Minimum OD	2V	0	bodH	0	%	RW	3138
bodH	Maximum OD	2V	bodL	100	100	%	RW	3139
br11	Thermostatic mode	2V	0	2	0 - Not_used	Enum 25	RW	3140
brSn	Thermostatic sensor	2V	0	1	0 - S3	Enum 26	RW	3141
btSP	Temperature set- point	2V	-70,0	70,0	3.0	°C	RW	3142
btdt	Temperature dif-	2V	0,1	10,0	2.0	к	RW	3143
ECb	ferential Control B > Ex-							
bu00	tended control SH close func-	2V	0	1	1 - On	Enum 1	RW	3144
	tion							
bu01 bu02	SH close setpoint SH close Tn di-	2V 2V	-5,0 1	20,0 5	2.0 3	К	RW	3145 3146
bu03	vide SH close Kp fac-	2V	0,5	10,0	1.5		RW	3147
	tor							
bu04	Limit Kp	2V	1,0	20,0	5.0		RW	3148
bu05	Limit Tn	2V	20	900	45	Sec	RW	3149
bu06	Minimum S4 mode	2V	0	1	0 - Off	Enum 1	RW	3150
bu07	Minimum S4 set- point	2V	-50,0	60,0	5.0	°C	RW	3151
bu08	MSS Stability	2V	0,0	10,0	5.0		RW	3152
bu09	MSS T0 stability factor	2V	0,0	1,0	0.0		RW	3153
bu10	MOP function	2V	0	1	0 - Off	Enum 1	RW	3154
bu11	MOP setpoint	2V	-70,0	60,0	0.0	°C	RW	3155
			0	1	0 - Off	Enum 1	RW	3156



b13CP sepoint CV2V-900460-400*CNW3157b141CP or interm and the set of the se	LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
Index <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>									
bails         time         LV         0         600         L00         L00         See         NW         3139           buils         detection         2V         0         1         1-0n         Enum1         RW         3160           buils         speed feeding         2V         0.0         100.0         25.0         %         RW         3163           build         frimazinum point         2V         0.0         100.0         25.0         %         RW         3164           build         frimazinum point         2V         1.0         5.0         %         RW         3166           build         frimazinum point         2V         0.0         2.0         9.500         Finum 20         RW         3168           build         frimazinum contrast         2V         0.0         10.0         5.00         RW         3170           build         friest orbitols         2V         0.0         300         5.00         RW         3170           build         friest orbitols         2V         0.0         300         5.00         RW         3170           build         friest orbitols         2V         1         240 <td>bu14</td> <td></td> <td>2V</td> <td>0</td> <td>1</td> <td>0 - Off</td> <td>Enum 1</td> <td>RW</td> <td>3158</td>	bu14		2V	0	1	0 - Off	Enum 1	RW	3158
outline detection speed feedfor infered factor speed feedfor infered factor infered fac	bu15		2V	0	600	120	Sec	RW	3159
bil9specified sequelited integration point2V0100.000Enum1RW3183bu20FF low capacity integration point bu212V0.0100.025.0%RW3106bu21FF maximum factor integration bu222V020500.00RW3106bu22Schoottroits integration bu232V020500.00RW3106bu24Freerowatcin integration bu252V01000%RW3106bu25Freerowatcin integration bu262V01000%RW3108bu26Freerowatcin integration2V01000%RW3108bu26MTR Fn2V030001800SecRW3108bu27Freerowatcin integration2V010090SecRW3171bu30Heat tartup top time2V160090SecRW3172bu30Heat tartup time sequencin2V120010032%RW3172bu30Heat tartup top time2V160090SecRW3172bu30Heat tartup mu2V0.010032%RW3172bu30Heat tartup mu2V0.010065RW8073176bu30Heat tartup	bu16		2V	0	1	1 - On	Enum 1	RW	3160
bulktuning pointJV0.03100,02.9.1%NM3164bulk2ftre for Thuming for for Thuming server actiont server actiont ing2V152LumRW3165bulk2server actiont server actiont ing2V020-5topEnum 20RW3166bulk2ftree dolution ing2V01000.0%RW3168bulk2ftree dolution ing2V0.02001800SecRW3168bulk2MTR N2V0.220.01800SecRW3170bulk3MTR N2V0.220.01800SecRW3171bulk4MTR N2V0.1600890SecRW3171bulk0Heat startup top time2V124015SecRW3173bulk0Heat startup top time2V124015SecRW3174bulk0Heat startup time top time2V124015SecRW3174bulk0Heat startup time top time2V0.010032%RW3174bulk0Heat startup time top time2V0.010050KRW3174bulk0Heat startup top time2V0.020015RW3184bulk0Heat startup top time2V0.020015 <td>bu19</td> <td>speed feedfor-</td> <td>2V</td> <td>0</td> <td>1</td> <td>0 - Off</td> <td>Enum 1</td> <td>RW</td> <td>3163</td>	bu19	speed feedfor-	2V	0	1	0 - Off	Enum 1	RW	3163
BL21 b122tor for The Interning ST error actionAV15AA10000 [3100] Brown 200RW3180b123Service action resource action2V020.5 stopEnum 20RW3166b124Fixed OD Jaining (ng (ng (ng (ng (ng (ng (ng)))2V020.5 stopEnum 20RW3166b124Fixed OD Jaining (ng (ng (ng))2V0.03600SecRW3196b125MTR Tr (ng (ng))2V0.220.003.00SecRW3197b126MTR Tr (ng)2V0.220.003.00SecRW3197b140Heat startup (ng)2V0.1600900SecRW3197b140Heat startup (ng)2V1600900SecRW3177b140Heat startup (ng)2V124015SecRW3177b140Heat startup time (ng)2V0.0100322%RW3173b140Heat startup time (ng)2V0.010065%RW3177b140Heat startup time (ng)2V0.010065%RW3178b140Heat St Minini (ng)2V0.020.03.0CRW3178b140Heat St Minini (ng)2V0.020.03.0CRW3178 <td>bu20</td> <td></td> <td>2V</td> <td>0,0</td> <td>100,0</td> <td>25.0</td> <td>%</td> <td>RW</td> <td>3164</td>	bu20		2V	0,0	100,0	25.0	%	RW	3164
Bd22 sore error action locationAv020 - StopEnum 20Riv3160bu33sensor error ac- ing2V020StopEnum 20Riv3167bu24Resed OD during ing2V03600800SecRiv3168bu25MRTR in ing2V0.23600800SecRiv3169bu26MRTR in ing2V0.220.03.0SecRiv3170bu50MRTR in ing2V0.220.03.0SecRiv3171bu50MRTR in ing2V160090SecRiv3172bu50Heat startup ting2V160090SecRiv3172bu50Heat startup ting2V124015SecRiv3172bu50Heat startup ting2V010032%Riv3172bu50Heat startup ting2V2.0Bu604.0KRiv3172bu50Heat startup ting2V2.0Bu606.0KRiv3172bu50Heat startup ting2V0.02.08.0KRiv3172bu50Heat startup ting2V0.02.08.0KRiv3172bu50Heat startup ting2V0.02.03.0KRiv3172bu50Heat startup ting	bu21		2V	1	5	2		RW	3165
bu23serior error arc ing2V020 - StopEnun 20RW3167bu24Fixed O Juring ing2V01000%RW3168bu25MTR N2V0.220.03.00SecRW3169bu25MTR Kp2V0.220.03.00SecRW3169bu26MTR Kp2V0.220.03.00SecRW3170bH00Feat control2V0.160090SecRW3171bH01Heat startup DD2V01003.2%RW3173bH02Heat startup DD2V01003.2%RW3173bH03Heat startup DD2V01003.2%RW3174bH04Heat Startup DD2V0.01003.2%RW3174bH03Heat Startup DD2V0.040.07.0KRW3174bH04Heat Startup DD2V0.01006.5%RW3175bH05Heat Startup DD2V0.02.0KRW3174bH04Heat Startup DD2V0.0900SecRW3176bH05Heat Startup DD2V0.02.01.5RW3176bH06Heat Startup DD2V0.02.0SecRW3176bH07Heat Startup DD2V	bu22	sor error action	2V	0	2	0 - Stop	Enum 20	RW	3166
Invariant InstructionInstruction Instruction Instruction InstructionInstruction Instruction InstructionInstruction Instruction InstructionInstruction Instruction InstructionInstruction Instruction InstructionInstruction Instruction InstructionIn	bu23	sensor error ac-	2V	0	2	0 - Stop	Enum 20	RW	3167
bu26     MTR kp     2V     0.0     20,0     3.0     NW     RW     3170       SHb     Generation I> meter control I> meter control I> (Hent startup IIII Hent startup IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	bu24	emergency cool-	2V	0	100	0	%	RW	3168
SHb Heat Source Heat Source timeZV160090SecRW3171bH00Heat startup timeZV124015SecRW3172bH01Heat minimu startup timeZV124015SecRW3172bH02Heat startup ODZV010032%RW3173bH03Heat Stiftup ODZV010032%RW3173bH04Heat Stiftup ODZV2.040.07.0KRW3174bH03Heat Stiftup ODZV2.0bH054.0KRW3175bH04Heat Stiftup ODZV2.0bH054.0KRW3175bH05Meat Stiftup TZV2.010065%RW3177bH06Heat Stiftup TZV2.090090SecRW3177bH07Heat Stiftup TZV0.12.01.5RW3178bH08Heat Stiftup TZV0.02.01.5RW3181bH09Heat Stiftup TZV0.02.01.5RW3183bH10Heat Stiftup TZV0.02.01.5RW3183bH11Heat Stiftup TZV0.02.01.5RW3183bH11Heat Stiftup TZV0.0600SecRW3184bH11Heat Stiftup TZ	bu25	MTR Tn	2V	20	3600	1800	Sec	RW	3169
SHO     Heat startup     ZV     1     600     90     Sec     RW     3171       bH00     Heat startup     ZV     1     600     90     Sec     RW     3171       bH01     Heat startup oD     ZV     0     100     32     %     RW     3172       bH02     Heat startup oD     ZV     0     100     32     %     RW     3173       bH03     Heat String im     ZV     0     40,0     7.0     K     RW     3173       bH04     Heat String im     ZV     2.0     40,0     7.0     K     RW     3174       bH05     Heat String im     ZV     2.0     bH05     4.0     K     RW     3175       bH05     Heat String im     ZV     2.0     bH05     4.0     K     RW     3175       bH06     Heat String im     ZV     2.0     9.0     5.0     K     RW     3175       bH06     Heat String im     ZV     2.0     10.0     2.0     K     RW     3175       bH07     Heat String im     ZV     0.1     1.0     0.6     RW     3180       bH10     Heat String im     ZV     0.0     2.0     S.0	bu26		2V	0,2	20,0	3.0		RW	3170
LineLineLiBodBodSecNWLinHatMeat mininum startup irro2V124015SecRW3172HH02Heat String startup irro2V010032%RW3173HH03Heat String startup irro2V010032%RW3173HH03Heat String startup irro2V2.0HH054.0KRW3174HH03Heat String rum2V2.0HH054.0KRW3175HH04Heat String rum2V2.0HH054.0KRW3175HH05Heat String rum2V2.010065%RW3177HH06Heat String remo2V2.010065%RW3177HH07Heat String2V2.010065%RW3177HH07Heat String2.V0.12.0.01.5RW3178HH07Heat String2.V0.11.00.6RW3181HH08Heat String2.V0.02.0.03.0RW3181HH11Heat String2.V0.02.0.03.0RW3182HH11Heat String2.V0.02.0.05.0RW3182HH11Heat String2.V0.0600SecRW3183HH12Heat String <td< td=""><td>SHb</td><td>Heat control</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	SHb	Heat control							
bH01         startup time $2V$ $1$ $240$ $15$ Sec $RW$ $3172$ bH02         Heat strip DD $2V$ $0$ $100$ $32$ $96$ $RW$ $3173$ bH03         Heat SH mai- setpoint $2V$ $2.0$ $40.0$ $7.0$ $K$ $RW$ $3174$ bH04         Heat SH mai- mum $2V$ $2.0$ $bH05$ $4.0$ $K$ $RW$ $3175$ bH05         Heat SH mai- mum $2V$ $bH04$ $40.0$ $9.0$ $K$ $RW$ $3177$ bH07         Heat SH ref. delta temp. factor $2V$ $0.0$ $20.0$ $9.0$ $K$ $RW$ $3177$ bH07         Heat SH for Inini- mum $2V$ $0.1$ $20.0$ $9.0$ $1.0$ $6.0$ $RW$ $3178$ bH08         Heat SH for Inini- mum $2V$ $0.1$ $20.0$ $3.0$ $RW$ $3180$ bH19         Heat SH for Inini- mum $2V$ $0.0$ $20.0$	bH00	time	2V	1	600	90	Sec	RW	3171
belo3 setpoint mumHeat SH mark mum2V2.040.07.0KRW3174bH04Heat SH mark mum2V2.0bH054.0KRW3175bH05Heat SH mark mum2VbH0440.09.0KRW3176bH06Heat SH mark mum2V2010065%RW3177bH07Heat SH fer, delta temp, factor2V2090090SecRW3178bH08Heat SH fer, delta temp, factor2V0.120.01.5RW3178bH09Heat SH Kp2V0.11.00.6RW3180bH09Heat SH Kpi2V0.020.03.0RW3181bH10Heat SH Kpi2V0.020.03.0RW3181bH11Heat Limit Tn2V0.020.05.0RW3183bH13Heat Limit Tn2V1.020.05.0RW3184bD10Defrost start reschold2V0.120.05.0RW3185bD01Defrost start low reschold2V0.120.01.0bargRW3186bD02Defrost start low reschold2V0.120.01.0bargRW3186bD03Defrost start low reschold2V0.120.01.0bargRW3188bD04Defrost end OD reschold2V <td>bH01</td> <td></td> <td>2V</td> <td>1</td> <td>240</td> <td>15</td> <td>Sec</td> <td>RW</td> <td>3172</td>	bH01		2V	1	240	15	Sec	RW	3172
bH03setpoint2V2.040.07.0KRW3174bH04Heat SH minimum2V2.0bH054.0KRW3175bH05Heat SH maximum2VbH0440,09.0KRW3176bH05Heat SH ref. delta temp, factor2V2090090SecRW3177bH07Heat SH ref. delta temp, factor2V2090090SecRW3178bH08Heat SH Kp2V0.120.01.5RW31803180bH09Heat SH Kpmini mum2V0.020.03.0RW3181bH10Heat SH Kpmini setpoint2V0.020.03.0RW3183bH11Heat SH Kpin2V0.020.03.0RW3184bH11Heat SH Kpin2V0.020.05.0RW3183bH11Heat SH Kpin2V0.020.05.0RW3184bH11Heat SH Coll2V0.00.045SecRW3185bH12Heat SH Kpin2V0.120.05.0RW3184bH13Heat SH Coll2V0.120.01.0bargRW3185bD00Defrost start low pressure limit2V0.120.01.0bargRW3186bD01Defrost end OD time2V0.06000SecRW <t< td=""><td>bH02</td><td>Heat startup OD</td><td>2V</td><td>0</td><td>100</td><td>32</td><td>%</td><td>RW</td><td>3173</td></t<>	bH02	Heat startup OD	2V	0	100	32	%	RW	3173
BH04mum $2V$ $2J$ $BH05$ $4.0$ $K$ $K$ $KW$ $3175$ $IbH05$ Heat SH maki- mum $2V$ $bH04$ $40,0$ $9.0$ $K$ $RW$ $3176$ $IbH06$ Heat SH ref. delta tem, factor $2V$ $20$ $100$ $655$ $960$ $RW$ $3177$ $bH07$ Heat SH Tn $2V$ $20$ $900$ $900$ $900$ $8KW$ $3179$ $BH07$ Heat SH Tn $2V$ $20$ $900$ $900$ $8KW$ $3179$ $bH09$ Heat SH Kp $2V$ $0,1$ $1,0$ $0.6$ $RW$ $3180$ $bH10$ Heat SH KpT $2V$ $0,0$ $20,0$ $3.0$ $K$ $RW$ $3181$ $bH10$ Heat SH KpT $2V$ $0,0$ $20,0$ $3.0$ $K$ $RW$ $3182$ $bH11$ Heat SH Close step thint $2V$ $0,0$ $20,0$ $3.0$ $K$ $RW$ $3183$ $bH13$ Heat Limit Kp $2V$ $1,0$ $20,0$ $5.0$ $K$ $RW$ $3183$ $bH13$ Heat Limit Kp $2V$ $0,0$ $600$ $0$ $Sec$ $RW$ $3186$ $bD00$ Defrost start low pressure lame $2V$ $0,0$ $100,0$ $0.0$ $Mc$ $RW$ $3187$ $bD02$ Defrost end CD closed time $2V$ $0,0$ $100,0$ $0.0$ $Mc$ $RW$ $3186$ $bD03$ Defrost end CD closed time $2V$ $0,0$ $600$ $0$ $Sec$ $RW$ <td< td=""><td>bH03</td><td>setpoint</td><td>2V</td><td>2,0</td><td>40,0</td><td>7.0</td><td>К</td><td>RW</td><td>3174</td></td<>	bH03	setpoint	2V	2,0	40,0	7.0	К	RW	3174
bHOsmum2VBHQ440,09,0KRW317bbHO6Heat SH ref. delta temp.factor2V2010065%RW3177bHO7Heat SH Tn2V2090090SecRW3178bH08Heat SH Kp2V0,120,01.5RW3179bH09Heat SH Kp2V0,11,00.6RW3180bH10Heat SH KpTe2V0,020,03.0RW3181bH11Heat SH close setpoint2V0,020,03.0RW3182bH11Heat SH close setpoint2V0,020,05.0RW3183bH13Heat Limit Tn2V1,020,05.0RW3184bD10Defrost start ressure limit2V0,06000SecRW3185bD01Defrost start low ressure limit2V0,0100,00.0%RW3185bD02Defrost start low ressure limit2V0,0100,00.0%RW3186bD03Defrost end OD ressure limit2V0,06000.0%RW3189bD04Defrost end OD ressure limit2V0,06000.0%RW3189bD05Defrost end OD ressure limit2V0,0600%%RW3189bD05Defrost end OD ressure limit2V	bH04	mum	2V	2,0	bH05	4.0	К	RW	3175
bHob $\frac{1}{2}$ with $\frac{1}$	bH05	mum	2V	bH04	40,0	9.0	К	RW	3176
bH08         Heat SH Kp $2V$ $0,1$ $20,0$ $1.5$ $RW$ $3179$ bH09         Heat SH Kp minimum $2V$ $0,1$ $1,0$ $0.6$ $RW$ $3180$ bH10         Heat SH Kp Te $2V$ $0,0$ $20,0$ $3.0$ $RW$ $3180$ bH10         Heat SH Kp Te $2V$ $0,0$ $20,0$ $3.0$ $RW$ $3180$ bH11         Heat SH Close setpoint $2V$ $0,0$ $20,0$ $3.0$ $RW$ $3182$ bH12         Heat Limit Kp $2V$ $1,0$ $20,0$ $5.0$ $RW$ $3183$ bH13         Heat Limit Tn $2V$ $20$ $900$ $45$ Sec $RW$ $3184$ bD14         Defrost start time $2V$ $0$ $600$ $0$ $Sec$ $RW$ $3185$ bD01         Defrost start time $2V$ $0,0$ $100,0$ $0.0$ $Sec$ $RW$ $3187$ bD02         Defrost end OD <t< td=""><td>bH06</td><td></td><td>2V</td><td>20</td><td>100</td><td>65</td><td>%</td><td>RW</td><td>3177</td></t<>	bH06		2V	20	100	65	%	RW	3177
Heat SH Kp mini- mum $2V$ $0,1$ $1,0$ $0.6$ RW $3180$ bH10         Heat SH KpTe $2V$ $0,0$ $20,0$ $3.0$ RW $3181$ bH11         Heat SH close setpoint $2V$ $5,0$ $20,0$ $2.0$ K         RW $3182$ bH12         Heat Limit Kp $2V$ $1,0$ $20,0$ $5.0$ RW $3183$ bH13         Heat Limit Kp $2V$ $1,0$ $20,0$ $5.0$ RW $3183$ bH3         Heat Limit Tn $2V$ $20$ $900$ $45$ Sec         RW $3184$ bD00         Defrost carbo- frost carbo- frost carbo- presure limit $2V$ $0$ $600$ $0$ Sec         RW $3186$ bD01         Defrost start low presure limit $2V$ $0,1$ $20,0$ $1.0$ barg         RW $3186$ bD02         Defrost end closed time $2V$ $0,0$ $100,0$ $0.0$ $8ec$ RW $3187$	bH07	Heat SH Tn	2V	20	900	90	Sec	RW	3178
bH09         mum         2.V         0,1         1,0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         1.0         0.03         0.03         1.0         0.03         0.03         1.0         0.03         0.03         0.00         RW         0.03         0.03         0.03         0.03         RW         0.03         <	bH08	•	2V	0,1	20,0	1.5		RW	3179
bH11Heat SH close setpoint2V-5,020,02.0KRW3182bH12Heat Limit Kp2V1,020,05.0RW3183bH13Heat Limit Tn2V2090045SecRW3183bH3Heat Limit Tn2V2090045SecRW3184bD6Control B > Def frost controlControl B > DefControl	bH09		2V	0,1	1,0	0.6		RW	3180
bH11         setpoint         2V         -5,0         20,0         20,0         20         RW         3182           bH12         Heat Limit Kp         2V         1,0         20,0         5.0         RW         3183           bH13         Heat Limit Tn         2V         20         900         45         Sec         RW         3184           DFb         Control B > De- frost control         Control B > De- frost cont oD         QV         O,0         100,0         O,0         Mon         RW         3186           bD04         Defrost end OD free         2V         0,0         600         0         Sec         RW         3189           bD05         Defrost end OD free         2V         0,0         100,0         50.0         %         RW         3190           bD05         Defrost end OD <td< td=""><td>bH10</td><td>Heat SH KpTe</td><td>2V</td><td>0,0</td><td>20,0</td><td>3.0</td><td></td><td>RW</td><td>3181</td></td<>	bH10	Heat SH KpTe	2V	0,0	20,0	3.0		RW	3181
bH13Heat Limit Tn2V2090045SecRW3184DFbControl B > De- frost controlControl B > De- frost controlRWControl B > De- frost controlControl B > De- frost control<	bH11		2V	-5,0	20,0	2.0	К	RW	3182
DFbControl B > De- frost controlImage: Second Se	bH12	Heat Limit Kp	2V	1,0	20,0	5.0		RW	3183
<b>brbfrost controlfrost control</b> <th< td=""><td>bH13</td><td>Heat Limit Tn</td><td>2V</td><td>20</td><td>900</td><td>45</td><td>Sec</td><td>RW</td><td>3184</td></th<>	bH13	Heat Limit Tn	2V	20	900	45	Sec	RW	3184
bD00time2V060000SecRW3185bD01Defrost start low pressure limit2V0,120,01.0bargRW3186bD02Defrost OD2V0,0100,00.0%RW3187bD03Defrost end closed time2V0,0100,00.0%RW3187bD04Defrost end OD closed time2V06000SecRW3188bD05Defrost end OD time2V0,0100,050.0%RW3190bD05Defrost end OD time2V0,0100,050.0%RW3190bD05Defrost end OD time2V0,01200600SecRW3191bA00MOP alarm delay2V0,040,05.0KRW3192	DFb	frost control							
bD01pressure limit2V0,120,01.0bargRW3186bD02Defrost OD2V0,0100,00.0%RW3187bD03Defrost end closed time2V06000SecRW3188bD04Defrost end OD closed time2V06000SecRW3189bD05Defrost end OD time2V0,0100,050.0%RW3190bD05Defrost end OD2V0,0100,050.0%RW3190bD05Defrost end OD2V0,01200600SecRW3191bA00MOP alarm delay2V0,040,05.0KRW3192	bD00	time	2V	0	600	0	Sec	RW	3185
bD03Defrost end closed time2V06000SecRW3188bD04Defrost end OD time2V06000SecRW3189bD05Defrost end OD2V0,0100,050.0%RW3190bD05Defrost end OD2V0,0100,050.0%RW3190ASbControl B > Alarm setup2V01200600SecRW3191bA00MOP alarm delay2V0,040,05.0KRW3192		pressure limit					-		
bD03closed time2V06000SecRW3188bD04Defrost end OD time2V06000SecRW3189bD05Defrost end OD2V0,0100,050.0%RW3190ASbControl B > Alarm setup2V0,01200600SecRW3191bA00MOP alarm delay2V0,040,05.0KRW3192	bD02		2V	0,0	100,0	0.0	%	RW	3187
bD04time2V06000SecRW3189bD05Defrost end OD2V0,0100,050.0%RW3190ASbControl B > Alarm setupControl B > 2VControl B > 0Control B > 2VControl B > 0Control B > 0 <td>bD03</td> <td>closed time</td> <td>2V</td> <td>0</td> <td>600</td> <td>0</td> <td>Sec</td> <td>RW</td> <td>3188</td>	bD03	closed time	2V	0	600	0	Sec	RW	3188
ASbControl B > Alarm setupControl B > Alarm setupControl B > MOP alarm delayControl B > Control B > Co		time							
ASbAlarm setupImage: Constraint of the setup of t	bD05		2V	0,0	100,0	50.0	%	RW	3190
bA01 MOP alarm dif- ferential 2V 0,0 40,0 5.0 K RW 3192		Alarm setup							
bA01 ferential 2V 0,0 40,0 5.0 K RW 3192	bA00		2V	0	1200	60	Sec	RW	3191
bA02 LOP alarm delay 2V 0 1200 60 Sec RW 3193		ferential							
	bA02	LOP alarm delay	2V	0	1200	60	Sec	RW	3193



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
bA03	LOP alarm differ- ential	2V	0,0	40,0	5.0	К	RW	3194
bA04	High SH alarm delay	2V	0	1800	600	Sec	RW	3195
bA05	High SH alarm differential	2V	0,0	40,0	5.0	К	RW	3196
bA06	Low SH alarm delay	2V	0	1200	60	Sec	RW	3197
bA07	Low SH alarm differential	2V	0,0	40,0	3.0	К	RW	3198
bA08	Lack of capacity alarm delay	2V	0	120	0	min	RW	3199
bA09	Upper tempera- ture alarm	2V	0,0	40,0	5.0	К	RW	3200
bA10	Lower tempera- ture alarm	2V	0,0	40,0	3.0	К	RW	3201
bA11	Temperature alarm delay	2V	0	90	30	min	RW	3202
bA14	Minimum S4 band	2V	0,0	30,0	2.0	К	RW	3203
bA15	Minimum S4 de- lay	2V	0	1200	60	Sec	RW	3204
SSb	Control B > Service							
bU00	Operation status	2V	0	20	0 - Power_up	Enum 27	Read	3724
bU01	Manual mode B	2V	0	1	0 - Off	Enum 1	RW	3755
bU02	Manual mode timeout B	2V	0	3600	60	Sec	RW	3207
bU03	Manual OD B	2V	0,0	100,0	0.0	%	RW	3756
bU04	Manual homeing	2V	0	1	0 - Off	Enum 1	Read	3757
b_PE	Pe evaporator	2V	-1,00	200,00	0.00	barg	Read	3727
b_TE	Te saturated evaporation temperature	2V	-100,0	200,0	0.0	°C	Read	3705
b_S2	S2 suction pipe	2V	-100,0	200,0	0.0	°C	Read	3728
b_\$3	S3 media inlet	2V	-100,0	200,0	0.0	°C	Read	3710
b_S4	S4 media outlet	2V	-100,0	200,0	0.0	°C	Read	3711
bU12	Actual SH refer- ence	2V	0,0	100,0	0.0	К	Read	3704
bU13	Actual superheat	2V	0,0	100,0	0.0	К	Read	3725
bU14	Injection state	2V	0	4	0 - Off	Enum 21	Read	3758
bU15	Injection details	2V	0	12	0 - Off	Enum 22	Read	3759
bU16	Average OD	2V	0,0	100,0	0.0	%	Read	3760
bU17	DI Enable B sec- tion	2V	0	1	0 - Off	Enum 1	Read	3731
bU18	DI Heat	2V	0	1	0 - Off	Enum 1	Read	3732
bU19	DI Preset OD	2V	0	1	0 - Off	Enum 1	Read	3733
bU20	DI defrost start	2V	0	1	0 - Off	Enum 1	Read	3734
bU21	Act. ext. ref. SH offset	2V	-40,0	40,0	0.0	К	Read	3761
bU22	Act. ext. ref. tem- perature offset	2V	-40,0	40,0	0.0	К	Read	3762
bU23	Act. ext. ref. max- imum OD	2V	0,0	100,0	0.0	%	Read	3763
bU24	Actual tempera- ture reference	2V	0,0	100,0	0.0	°C	Read	3726
bU25	Actual maximum OD	2V	0,0	100,0	0.0	%	Read	3764
bU26	AI Valve driver B	2V	0,0	100,0	0.0	%	Read	3735
b_od	Valve B request OD	2V	0,0	100,0	0.0	%	Read	3706
bl05	Actual valve po- sition B	2V	0,0	100,0	0.0	%	%	3778
bx18	PeB Sensor	2V	0,00	10,00	0.00	V	Read	3765
bx19	PeB Sensor	2V	0,00	20,00	0.00	А	Read	3766
	PeB Sensor	2V	-1,00	200,00	0.00	barg	Read	3767



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
bx21	S2B sensor	2V	-100,0	200,0	0.0	°C	Read	3768
АРР	Configuration > Application config.							
ACtr	Operation mode A	2V	0	2	0 - SH_control	Enum 14	RW	3002
bCtr	Operation mode B	1V/2V	0	9	9 - Not_used	Enum 15	RW	3018
CA11	Power backup alarm	1V/2V	0	1	0 - No	Enum 5	RW	3209
I-O	Configuration > I/O configura- tion							
AC00	PeA configura- tion	1V/2V	0	9	1 - inp_PeA	Enum 28	RW	3210
bC00	PeB configura- tion	2V	0	10	3 - inp_PeB	Enum 29	RW	3211
AC01	S2A configura- tion	1V/2V	0	9	2 - inp_S2A	Enum 30	RW	3212
bC01	S2B configura- tion	2V	0	10	4 - inp_S2B	Enum 31	RW	3213
AC02	S3A configura- tion	1V/2V	0	9	0 - Not used	Enum 32	RW	3214
bC02	S3B configura- tion	2V	0	10	0 - Not used	Enum 33	RW	3215
AC03	S4A configura- tion	1V/2V	0	9	0 - Not used	Enum 32	RW	3216
bC03	S4B configura- tion	2V	0	10	0 - Not used	Enum 34	RW	3217
AC05	ExtA configura- tion	1V/2V	0	9	0 - Not used	Enum 35	RW	3220
bC05	ExtB configura- tion	2V	0	9	0 - Not used	Enum 37	RW	3221
AC06	Driver reference A configuration	1V/2V	0	9	0 - Not used	Enum 28	RW	3222
bC06	Driver reference B configuration	2V	0	9	0 - Not used	Enum 35	RW	3223
AC07	DI1 NC/NO	1V/2V	0	1	1 - NO	Enum 50	RW	3224
bC07	DI2 NC/NO	1V/2V	0	1	1 - NO	Enum 50	RW	3225
P013	DO open collec- tor	1V/2V	0	2	1 - AlarmNO	Enum 49	RW	3226
P014	Voltage for out- put 5V/18V	1V/2V	0	3	3-Auto	Enum 53	RW	3342
AC08	Enable A config- uration	1V/2V	0	3	1 - DI_1	Enum 38	RW	3227
bC08	Enable B config- uration	2V	0	3	2 - DI_2	Enum 38	RW	3228
AC09	Heat cool selec- tion A configura- tion	1V/2V	0	3	0 - Not used	Enum 39	RW	3229
bC09	Heat cool selec- tion B configura- tion	2V	0	4	0 - Not used	Enum 40	RW	3230
AC10	Preset OD A con- figuration	1V/2V	0	3	0 - Not used	Enum 39	RW	3231
bC10	Preset OD B con- figuration	2V	0	4	0 - Not used	Enum 40	RW	3232
AC11	Defrost A config- uration	1V/2V	0	3	0 - Not used	Enum 39	RW	3233
bC11	Defrost B config- uration	2V	0	4	0 - Not used	Enum 40	RW	3234
P012	EKE 2U Signal Of Health	1V/2V	0	2	0 - Not_used	Enum 47	RW	3235
SEn	Configuration > Sensor config.							
AC50	PeA transmitter configuration	1V/2V	0	18	0 - Not_defined	Enum 41	RW	3006
AC51	PeA voltage low	1V/2V	0,0	AC52	0.0	v	RW	3007
AC52	PeA voltage high	1V/2V	AC51	10,0	10.0	V	RW	3008



AC33         Producement high         11/1/2         0.0         AC34         4.0         mA         SW         0.009           AC34         Productore         11/1/2         AC33         20.0         mA         SW         20.01           AC35         Productore         11/2/2         AC33         PC3         10         %         SW         20.11           AC35         Productore         11/2/2         AC37         Productore         SW         30.13           AC39         Productore         11/2/2         AC37         20.00         1.2         Barg         RW         30.14           BC43         Productore         11/2/2         AC37         20.00         12.0         Barg         RW         30.14           BC43         Productore         2/2         0         18         0.80-tdfmtd         Enum41         RW         30.22           BC53         Productore         2/2         0.00         BC52         0.00         V         RW         30.23           BC53         Productore         2/2         0.01         0.0         W         8.00         30.23           BC54         Productore         3/2         0.0         1.0	AC33         Producered into into into into into into into into	LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
MC34         PeA current high         IV/2V         AC33         20.0         20.0         mA         FW         3011           AC35         PeA tatio high         IV/2V         AC55         97         93         %         FW         3011           AC37         PeA tatio high         IV/2V         AC55         97         93         %         FW         3011           AC37         PeA tatio high         IV/2V         AC57         20.0         1.0         birg         FW         3011           AC38         Pea tatio high         IV/2V         AC57         20.0         1.0         birg         FW         3011           AC38         Pea tatio high         IV/2V         AC57         20.0         1.0         birg         FW         3023           DC51         Pea vintage high         2V         0.0         BC51         10.0         V         FW         3023           DC53         Pea vintage high         2V         0.03         20.0         20.0         AR         FW         3027           DC54         Pea tatio high         2V         0.0         2.5         0.4         BP         FW         3027           DC53	AC36         Producensi high         1V/2V         AC33         P Ac3         P Ac4 stabe         IV/2V         AC35         P Ac4 stabe         IV/2V         AC35         P Ac4 stabe high         IV/2V         AC37         P Ac         P Ac        P Ac         P Ac									
AC36         PA Atto hummitor         IV/2V         AC53         97         90         %         KW         3012           AC57         min.         IV/2V         -1.0         AC58         -1.0         burg         RW         3013           AC58         PRA tenomitor         IV/2V         AC57         200.0         12.2         burg         RW         3014           BC50         Personantitar         XV         0         IS22         0.0         V         WW         3023           BC51         Personantitar         XV         0.0         IS22         0.0         V         WW         3023           BC52         Personapelips         ZV         0.0         IS22         0.0         V         WW         3023           BC53         Personapelips         ZV         0.0         IS25         400         mA         WW         3023           BC54         Personapelips         ZV         IS25         97         90         %         WW         3023           BC55         Personapelips         ZV         IS25         97         90         %         3030           BC54         Personapelits momiter         ZV         IS	ACS0         Period bolky         IV/2V         ACS3         97         90         96         96         97         90 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
ACS7         PA Transmitter         IV/2V         I-0.0         ACS8         I-1.0         barg         FW         30131           ACS8         PA Transmitter         IV/2V         ACS7         200.0         12.0         barg         FW         3014           biC30         Pet transmitter         2V         0.0         18         0-Net_defined         from 41         FW         3022           biC31         Pet voltage ing         2V         0.0         LCS2         0.0         V         FW         3023           biC34         Pet voltage ing         2V         0.0         LCS2         0.0         V         FW         3023           biC34         Pet summet inv         2V         0.0         LCS3         FW         3027           biC34         Pet summet inv         2V         1.0         biC58         10         5%         FW         3028           biC35         Pet summet inv         2V         1.0         biC58         10.0         Barg         FW         3028           biC37         Pet summet inv         10/2V         0         25         0-Net_defined         Enum <tt>8W         3031           biC69         Sassenscont- figuration</tt>	A.53         Pet Transmitter         YV/2V         A.63         A.638         I-1.0         barg         BW         3011           A.638         Pet Transmitter         YV/2V         A.657         200.0         12.0         barg         RW         3012           b.630         Pet Transmitter         2V         0.0         18.         0-Nut, defined         Enum 41         RW         3022           b.631         Pet voltage log         2V         0.0         b.632         0.0         W         RW         3023           b.634         Pet voltage log         2V         0.0         b.634         0.0         mA         RW         3026           b.634         Pet current log         2V         0.01         b.658         1.0         BW         3026           b.635         Pet cursmitter         2V         1.0         b.658         1.0         Bwg         RW         3026           b.636         Pet stansmitter         2V         1.0         b.658         1.0         Bwg         RW         3026           b.637         Restansmitter         2V         1.0         2.5         b.586         RW         3027           b.638         Pet stansmitte	AC55	PeA ratio low	1V/2V	3	AC56	10	%	RW	3011
A.S.Y         min.         MV/V         M.CS         1.0         Barty         MW         2013           A.CSB         PRAcmamitter         MV/V         A.CS7         200,0         12.0         Barty         NW         3013           B.CSB         Predimantiter         2V         0         18         0-Not, define         Barty         3013           B.CS3         Predivalga-low         2V         0.0         E.CS2         0.0         V         NW         3022           B.CS3         Predivalga-low         2V         0.01         E.CS3         0.0         NW         3023           B.CS3         Predivalga-low         2V         0.03         E.CS4         10.0         V         NW         3025           B.CS3         Predivalsa-low         2V         1.0         E.CS3         70         0         NW         3027           B.CS3         Predivalsa-low         2V         1.0         E.CS3         7.0         NW         3027           B.CS3         P.B transmitter         2V         1.0         E.CS         P.MW         3021           B.CS4         P.B transmitter         2V         0.0         2.5         0-Not_defined <td< td=""><td>A.S.7         min.         11/2         A.S.8         Pi.0         Borg         FW         3013           A.S.8         PA.S.8         PA.S.9         200.0         12.0         burg         NW         3014           b.S.1         Performantic T         2V         0         18         c-Not_selence         NW         3023           b.S.2         Performantic T         2V         0.0         LS.2         0.0         V         NW         3023           b.S.2         Performantic T         2V         0.0         LS.5         NW         3023           b.S.3         Performantic T         2V         0.0         LS.5         0.0         W         3024           b.S.3         Performantic T         2V         0.0         LS.5         10         NA         RW         3022           b.S.3         Performantic T         2V         0.5         20.00         12.0         barg         RW         3023           b.S.4         Performantic T         2V         0.0         2.5         0.4.2.4         RW         3023           b.S.4         Performantic T         2V         0.0         2.5         0.4.2.4.4.4.4.4         RW         3024</td><td>AC56</td><td>PeA ratio high</td><td>1V/2V</td><td>AC55</td><td>97</td><td>90</td><td>%</td><td>RW</td><td>3012</td></td<>	A.S.7         min.         11/2         A.S.8         Pi.0         Borg         FW         3013           A.S.8         PA.S.8         PA.S.9         200.0         12.0         burg         NW         3014           b.S.1         Performantic T         2V         0         18         c-Not_selence         NW         3023           b.S.2         Performantic T         2V         0.0         LS.2         0.0         V         NW         3023           b.S.2         Performantic T         2V         0.0         LS.5         NW         3023           b.S.3         Performantic T         2V         0.0         LS.5         0.0         W         3024           b.S.3         Performantic T         2V         0.0         LS.5         10         NA         RW         3022           b.S.3         Performantic T         2V         0.5         20.00         12.0         barg         RW         3023           b.S.4         Performantic T         2V         0.0         2.5         0.4.2.4         RW         3023           b.S.4         Performantic T         2V         0.0         2.5         0.4.2.4.4.4.4.4         RW         3024	AC56	PeA ratio high	1V/2V	AC55	97	90	%	RW	3012
A.K.S         MAX.         MUX         ALU         Barg         NV         3014           bCS0         Pest anamiter configuration         2V         0         18         0 - Not_defined         Enum 41         RW         3022           bCS1         Pest voltage low         2V         00         BCS3         Pest voltage low         3023           bCS3         Pest voltage low         2V         00         BCS4         40         MM         8023           bCS3         Pest voltage low         2V         00         BCS4         40         MA         8N         3024           bCS5         Pest anamiter         2V         0.0         BCS4         40         MA         8N         3027           bCS6         Pest latin bigh         7V         BCS5         70         90         %         RW         3028           bCS8         Pest latin bigh         7V         BCS5         20.00         12.0         barg         RW         3028           bCS8         Pest latin bigh         7V         0         25         0-Not_defined         Enum 42         RW         3031           bCS9         SB sensor com         2V         0         25	A.S.3         max.         ( $1/2/4$ $A.S.7$ $20,0$ $1.23$ $1.24$	AC57		1V/2V	-1,0	AC58	-1.0	barg	RW	3013
International         2/V         0         18         0	bC30         configuration         2V         0         18         0         box         etum 41         RW         3022           bC31         Pet voltage high         2V         bC3         10.0         10.0         V         RW         3024           bC32         Pet voltage high         2V         bC3         10.0         10.0         V         RW         3024           bC34         Pet sources high         2V         0.0         BC4         4.0         mA         RW         3024           bC45         Pet sources high         2V         0.5         Pet framme         RW         3027           bC55         Pet framme         2V         bC5         7.0         90         %         RW         3027           bC55         Pet framme         2V         bC57         20.00         12.0         barg         RW         3031           bC58         Pet framme         2V         0.0         25         0-Not_defined         Enum 42         RW         3031           bC69         \$39 emprono         2V         0         25         0-Not_defined         Enum 42         RW         3238           bC61         \$40 ampaton <td< td=""><td>AC58</td><td></td><td>1V/2V</td><td>AC57</td><td>200,0</td><td>12.0</td><td>barg</td><td>RW</td><td>3014</td></td<>	AC58		1V/2V	AC57	200,0	12.0	barg	RW	3014
bC52         Pe8 volnge high         2V         bC51         10.0         10.0         V         RW         3024           bC53         Pe8 current high         2V         0.0         bC54         4.0         mA         RW         3025           bC55         Pe8 current high         2V         0.5         9.0         %         RW         3026           bC55         Pe8 ratio high         2V         0.5         9.0         %         RW         3029           bC57         Pe8 ratio high         2V         1.0         bC58         1.0         barg         RW         3039           bC68         Pe8 ratio high         2V         bC57         200.0         12.0         barg         RW         3031           bC69         \$25 sentor con- figuration         2V         0         2.5         0 - Not_defined         Enum 42         RW         3238           bC69         \$35 sentor con- figuration         2V         0         2.5         0 - Not_defined         Enum 42         RW         3238           bC61         figuration         2V         0         2.7         0 - Not_defined         Enum 42         RW         3238           bC71         E	bC32         Pe8 voltage high         2V         bC31         10.0         10.0         V         RW         3024           bC33         Pe8 current ligh         2V         0.0         bC54         4.0         mA         RW         3025           bC54         Pe8 current ligh         2V         53         BC56         10         W         RW         3027           bC55         Pe8 traito ligh         2V         55         FP8         10         W         RW         3027           bC57         Pe8 traito ligh         2V         1.0         BC58         10         W         RW         3027           bC58         Pe8 traito ligh         2V         0.557         700.0         12.0         bMrg         RW         3031           bC59         S23 sensor control         1V/2V         0         25         0-Not_defined         Enum42         RW         3231           bC60         S33 sensor control         1V/2V         0         25         0-Not_defined         Enum42         RW         3239           bC61         S48 sensor control         2V         0         25         0-Not_defined         Enum42         RW         3239           <	bC50		2V	0	18	0 - Not_defined	Enum 41	RW	3022
bC33         PeB current low         2V         0.0         bC54         4.0         mA         RW         3025           bC54         PeB current ligh         2V         bC33         PeB current ligh         2V         3         BC55         F07         90         %A         RW         3027           bC55         PeB ratio low         2V         1.0         BC55         97         90         %         RW         3029           bC57         PeB ratio low         2V         1.0         BC58         -1.0         barg         RW         3029           bC58         PeB ratio low         2V         0         25         0         Not_defined         Enum 42         RW         3031           AC59         S2B sensor com- max.         2V         0         25         0         Not_defined         Enum 42         RW         3236           BC58         S3B sensor com- sparation         2V         0         25         0         Not_defined         Enum 42         RW         3238           BC59         S3B sensor com- garation         2V         0         25         0         Not_defined         Enum 43         RW         3238           BC59	bC33         Pell current low         2V         0.0         bC54         4.0         mA         RW         3025           bC54         Pell current loyh         2V         5C3         20.0         20.0         mA         RW         3025           bC55         Pell current loyh         2V         3         bC56         97         90         %         RW         3025           bC57         Pell rainhigh         2V         bC55         97         90         %         RW         3025           bC58         Pell rainhigh         2V         bC55         97         90         %         RW         3029           bC58         Pell rainhigh         2V         0         25         0 -Not_defined         Enum 42         RW         3031           bC69         S38 renor corm- figuration         2V         0         25         0 -Not_defined         Enum 42         RW         3237           bC60         S38 renor corm- figuration         2V         0         25         0 -Not_defined         Enum 42         RW         3238           bC61         S48 renor corm- figuration         2V         0         25         0 -Not_defined         Enum 42         RW		_							
bC54         PeB current high         2V         bC53         20.0         20.0         mA         RW         3026           bC55         PeB train high         2V         3         bC56         90         %         RW         3027           bC57         PeB train high         2V         1.0         bC58         70         90         %         RW         3029           bC57         PeB trainsing         2V         1.0         bC58         -1.0         barg         RW         3039           bC58         PeB trainsing         2V         bC57         200.0         12.0         barg         RW         3039           bC59         \$23 sensor con- mans.         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3236           bC69         \$38 sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3238           bC61         \$8 sensor con- figuration         2V         0         27         0 - Not_defined         Enum 42         RW         3239           AC71         Ext ref configuration         1V/2V         0.0         AC73         0.0         V         RW	bC34         Pells current high         2V         bC33         20.0         20.0         mA         FW         3026           bC53         Pell ratio high         2V         3         bC56         10         %         FW         3022           bC57         Pel ratio high         2V         bC57         92         90         %         FW         3028           bC58         Pel ratio high         2V         bC57         200.0         12.0         barg         FW         3030           bC58         Pel ransmitter         2V         0         25         0-Not_defined         Enum 42         FW         3031           bC59         S28 sensor corm         1V/2V         0         25         0-Not_defined         Enum 42         FW         3237           bC60         S38 ansor corm         1V/2V         0         25         0-Not_defined         Enum 42         FW         3238           bC61         S8 sensor corm         1V/2V         0         25         0-Not_defined         Enum 42         FW         3238           bC61         S8 sensor corm         1V/2V         0.0         AC73         0.0         W         FW         3238									
bC55         PeB ratio low         2V         3         bC56         10         %         RW         3027           bC56         PeB ratio low         2V         bC53         97         90         %         RW         3028           bC57         PeB ratio low         2V         1.0         bC58         -1.0         barg         RW         3029           bC58         PeB ratio low         2V         bC57         20.0.8         12.0         barg         RW         3030           AC59         Scherose com- figuration         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3031           AC60         Scherose com- figuration         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3237           AC61         Scherose com- figuration         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3238           bC61         Scherose com- figuration         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3239           AC71         Eack ref. compu- figuration         1V/2V         0         27         0 -Not_defined         Enum 43	bCSS         PeB rate holo         2V         3         bCS6         10         %         RW         3027           bCS5         PB rate high         2V         bCS5         97         90         %         RW         3028           bCS7         PB rate high         2V         1.0         bCS8         1.0         borg         RW         3029           bCS8         PB rate mamitter         2V         bCS7         200.0         1.2.0         bbrg         RW         3030           AC95         S24seor cm <sup>2</sup> 0         25         0 -Not_defined         Enum42         RW         3031           bC60         S8 senor cm <sup>2</sup> 0         25         0 -Not_defined         Enum42         RW         3237           AC61         SA senor cm <sup>2</sup> 0         25         0 -Not_defined         Enum42         RW         3238           bC61         S8 senor cm <sup>2</sup> 1V/2V         0         25         0 -Not_defined         Enum42         RW         3238           bC61         S8 senor cm <sup>2</sup> 1V/2V         0         AC73         D.0         V         RW         3239           AC71         Ext ref configu- guation         1V/									
bC56         Pell ratio high Ind         2V         bC57         97         90         %         RW         3028           bC57         Pell traininter ind         2V         1.0         bC58         -1.0         barg         RW         3029           bC58         Pell traininter mak.         2V         bC57         200.0         12.0         barg         RW         3030           AC59         S2A sensor con- guardion         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3031           AC60         S3A sensor con- guardion         2V         0         25         0 - Not_defined         Enum 42         RW         3237           AC61         S4A sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3238           bC641         S4A sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3239           AC71         Ext Art configuration figuration         1V/2V         0         27         0 - Not_defined         Enum 42         RW         3239           AC72         Ext Art configuration         1V/2V         AC72         10.0	bCS6         PeB ratio high         2V         bCS5         97         90         %         RW         3028           bCS7         PeB transmitter         2V         -1.0         bCS8         -1.0         barg         RW         3029           bCS8         PeB transmitter         2V         bCS7         200.0         12.0         barg         RW         3030           ACS9         S2A sension con- guartion         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3031           bCS9         S2B sensor con- guartion         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3238           bC60         S3B sensor con- fguartion         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3238           bC61         S4B sensor con- fguartion         1V/2V         0         25         0 -Not_defined         Enum 42         RW         3238           AC71         Ext Are Confguartion         1V/2V         0.0         27         0 -Not_defined         Enum 43         BW         3269           AC73         Ext Are Confguartion         1V/2V         AC74         20.0         20.0		5							
bC57         Pell transmitter max.         2V         -1.0         bC58         -1.0         barg         RW         3029           bC58         Prest transmitter max.         2V         bC57         200.0         12.0         barg         RW         3030           AC59         Systemstor on- figuration         1V/2V         0         25         0 - Not_defined         Enum42         RW         3031           AC60         Systemstor on- figuration         1V/2V         0         25         0 - Not_defined         Enum42         RW         3236           AC60         Systemstor on- figuration         1V/2V         0         25         0 - Not_defined         Enum42         RW         3238           BC60         Systemstor on- figuration         1V/2V         0         25         0 - Not_defined         Enum42         RW         3238           BC61         Systemstor on- figuration         2V         0         25         0 - Not_defined         Enum42         RW         3239           AC71         ExtArt of voltage figuration         1V/2V         0.0         AC73         0.0         V         RW         3260           AC72         ExtArt of voltage figuration         1V/2V         AC74	LCS7         Pitk transmitter max.         2V         1.0         LCS8         1.0         barg         RW         3029           LCS8         max.         2V         LCS7         2000         12.0         barg         RW         3039           ACS9         S2 sensor con- figuration         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3031           ACS0         S3 sensor con- figuration         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3236           AC60         S3 sensor con- figuration         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3237           AC61         S4 sensor con- figuration         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3238           AC71         Ext Are configuration         1V/2V         0.0         AC73         0.0         V         RW         3238           AC72         Ext Are configuration         1V/2V         0.0         AC73         0.0         V         RW         3236           AC73         Figuration         1V/2V         AC72         10.0         10.0         V </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
DC.7/         min.         ZV         1.0         DC.98         1.0         DB/9         KW         3029           bCS8         P8t ransmiter         ZV         bCS7         200.0         12.0         barg         RW         3030           ACS9         \$23. sensor con- max.         11/ZV         0         25         0-Not_defined         Enum 42         RW         3031           ACS0         \$33. sensor con- guardian         11/ZV         0         25         0-Not_defined         Enum 42         RW         3031           ACG0         \$33. sensor con- guardian         2V         0         25         0-Not_defined         Enum 42         RW         3238           bCG0         \$35. sensor con- guardian         2V         0         25         0-Not_defined         Enum 42         RW         3238           bCG1         \$50 sensor con- guardian         2V         0         25         0-Not_defined         Enum 42         RW         3238           bCG1         \$50 sensor con- guardian         2V         0         27         0-Not_defined         Enum 42         RW         3239           AC71         Ext net configu- fox         11/ZV         AC72         10.0         10.0	DCS/         min.         ZV         -1.0         DCS8         -1.0         Darg         RW         3039           LCS8         PRE transmitter max.         2V         bC57         200,0         12.0         barg         RW         3039           LCS9         S2A sensor con- max.         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3031           LCS9         S2B sensor con- figuration         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3237           LC60         S3A sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3238           LC61         S4A sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3239           AC71         ExtA ret configuration         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3239           AC71         ExtA ret configuration         1V/2V         0         AC73         0.0         V         RW         3249           AC71         ExtA ret configuration         1V/2V         AC74         20.0         MC4<	DC56	5	2V	DC55	97	90	%	RW	3028
BC-S8         max.         DV         DV         DC-S7         DD-D0         Barg         RW         3030           ACS9         SDA sensor com- figuration         IV/ZV         0         25         0 - Not_defined         Enum 42         RW         3013           ACS9         SDA sensor com- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3031           AC60         SDA sensor com- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3236           bC60         SBA sensor com- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3239           AC61         SdA sensor com- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3239           AC71         ExtA efc configu- ration         1V/ZV         0         27         0 - Not_defined         Enum 43         RW         3258           AC72         ExtA efc configu- ration         1V/ZV         AC72         10.0         10.0         V         RW         3261           AC74         ExtA efc configu- ration         1V/ZV         AC74 <td< td=""><td>BC-S8         max.         ZV         BC-S7         Z000         T20         Barg         RW         3030           ACS9         <math>525</math> sensor con- figuration         1V/ZV         0         25         0-Not_defined         Enum 42         RW         3031           ACS9         <math>525</math> sensor con- figuration         2V         0         25         0-Not_defined         Enum 42         RW         3031           ACS0         <math>535</math> sensor con- figuration         2V         0         25         0-Not_defined         Enum 42         RW         3236           ACG1         <math>545</math> sensor con- figuration         2V         0         25         0-Not_defined         Enum 42         RW         3239           ACG1         <math>545</math> sensor con- figuration         1V/ZV         0         27         0-Not_defined         Enum 42         RW         3239           ACG1         <math>545</math> sensor con- figuration         1V/ZV         0.0         AC73         0.0         V         RW         3258           AC73         <math>547</math> ef contage         1V/ZV         AC74         10.0         10.0         V         RW         3261           AC73         <math>547</math> ef contage         2V         0.0         AC75         4.0</td><td>bC57</td><td>min.</td><td>2V</td><td>-1,0</td><td>bC58</td><td>-1.0</td><td>barg</td><td>RW</td><td>3029</td></td<>	BC-S8         max.         ZV         BC-S7         Z000         T20         Barg         RW         3030           ACS9 $525$ sensor con- figuration         1V/ZV         0         25         0-Not_defined         Enum 42         RW         3031           ACS9 $525$ sensor con- figuration         2V         0         25         0-Not_defined         Enum 42         RW         3031           ACS0 $535$ sensor con- figuration         2V         0         25         0-Not_defined         Enum 42         RW         3236           ACG1 $545$ sensor con- figuration         2V         0         25         0-Not_defined         Enum 42         RW         3239           ACG1 $545$ sensor con- figuration         1V/ZV         0         27         0-Not_defined         Enum 42         RW         3239           ACG1 $545$ sensor con- figuration         1V/ZV         0.0         AC73         0.0         V         RW         3258           AC73 $547$ ef contage         1V/ZV         AC74         10.0         10.0         V         RW         3261           AC73 $547$ ef contage         2V         0.0         AC75         4.0	bC57	min.	2V	-1,0	bC58	-1.0	barg	RW	3029
A.G.9         Figuration Siguration         IV/V         0         2.5         0.1Not_defined Enum 42         FNW         3013           b.C59         S38 sensor com- figuration         2V         0         25         0.Not_defined Enum 42         RW         3031           A.C60         S38 sensor com- figuration         1V/2V         0         25         0.Not_defined Enum 42         RW         3236           b.C60         S38 sensor com- figuration         1V/2V         0         25         0.Not_defined Enum 42         RW         3237           A.C61         S48 sensor com- figuration         1V/2V         0         25         0.Not_defined Enum 42         RW         3239           A.C71         Ext Aref.configu- ration         1V/2V         0         27         0.Not_defined Enum 43         RW         3239           A.C72         Ext Aref.configu- low         1V/2V         0.0         A.C73         0.0         V         RW         3261           A.C73         Ext Aref.configu- low         1V/2V         0.0         A.C73         0.0         W         RW         3261           A.C74         Ext Aref.configu- ration         1V/2V         0.0         20.0         mA         RW         3264 <t< td=""><td>ACS9         Figuration         IV/V         0         25         0. Not_defined         Fill         Fill         RNV         3011           bCS9         <math>538</math> sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3236           bC60         <math>538</math> sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3237           AC61         <math>548</math> sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3238           bC61         <math>598</math> sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3238           AC71         ExtA eff configu- ration         1V/2V         0         27         0. Not_defined         Enum 43         RW         3258           AC73         ExtA eff configu- ration         1V/2V         0.0         AC73         6.0         V         RW         3261           AC74         ExtA eff configu- ration         1V/2V         AC74         20.0         mA         RW         3262           bC71         ExtA eff configu- figh         2V         0.0         <td< td=""><td>bC58</td><td>max.</td><td>2V</td><td>bC57</td><td>200,0</td><td>12.0</td><td>barg</td><td>RW</td><td>3030</td></td<></td></t<>	ACS9         Figuration         IV/V         0         25         0. Not_defined         Fill         Fill         RNV         3011           bCS9 $538$ sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3236           bC60 $538$ sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3237           AC61 $548$ sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3238           bC61 $598$ sensor con- figuration         2V         0         25         0. Not_defined         Enum 42         RNV         3238           AC71         ExtA eff configu- ration         1V/2V         0         27         0. Not_defined         Enum 43         RW         3258           AC73         ExtA eff configu- ration         1V/2V         0.0         AC73         6.0         V         RW         3261           AC74         ExtA eff configu- ration         1V/2V         AC74         20.0         mA         RW         3262           bC71         ExtA eff configu- figh         2V         0.0 <td< td=""><td>bC58</td><td>max.</td><td>2V</td><td>bC57</td><td>200,0</td><td>12.0</td><td>barg</td><td>RW</td><td>3030</td></td<>	bC58	max.	2V	bC57	200,0	12.0	barg	RW	3030
DC.59         figuration figuration         LV         0         2.5         0 - Not_defined         Enum 4.2         RW         3031           AC60         S3A sensor con- figuration         1V/2V         0         2.5         0 - Not_defined         Enum 4.2         RW         3236           bC60         S3B sensor con- figuration         2V         0         2.5         0 - Not_defined         Enum 4.2         RW         3237           AC61         S4A sensor con- figuration         1V/2V         0         2.5         0 - Not_defined         Enum 4.2         RW         3238           AC61         S4A sensor con- figuration         2V         0         2.5         0 - Not_defined         Enum 4.2         RW         3239           AC71         ExtA ref. configur- ration         1V/2V         0.0         AC73         0.0         V         RW         3258           AC72         Iow         0.0         AC73         0.0         V         RW         3260           AC74         ExtA ref. configur- ration         1V/2V         AC74         20.0         20.0         mA         RW         3263           bC71         ExtB ref. configur- ration         2V         0.0         bC73         0.0 <td>DL39         figuration figuration         2.V         0         2.5         0. Not_defined         Enum 42         RW         3031           AC60         S33 sensor con- figuration         1V/2V         0         2.5         0. Not_defined         Enum 42         RW         3236           AC61         S33 sensor con- figuration         2V         0         2.5         0. Not_defined         Enum 42         RW         3238           AC61         S43 sensor con- figuration         1V/2V         0         2.5         0. Not_defined         Enum 42         RW         3238           AC61         S48 sensor con- figuration         2.V         0         2.5         0. Not_defined         Enum 42         RW         3239           AC71         ExtA fer (onfigu- ration         1V/2V         0.0         AC73         0.0         V         RW         3259           AC72         ExtA fer (onfigu- low         1V/2V         AC72         10.0         10.0         V         RW         3261           AC73         ExtA fer (onfigu- low         1V/2V         AC74         20.0         20.0         mA         RW         3263           LC71         ExtA fer (onfigu- tation         2V         0.0         AC7</td> <td>AC59</td> <td>figuration</td> <td>1V/2V</td> <td>0</td> <td>25</td> <td>0 - Not_defined</td> <td>Enum 42</td> <td>RW</td> <td>3015</td>	DL39         figuration figuration         2.V         0         2.5         0. Not_defined         Enum 42         RW         3031           AC60         S33 sensor con- figuration         1V/2V         0         2.5         0. Not_defined         Enum 42         RW         3236           AC61         S33 sensor con- figuration         2V         0         2.5         0. Not_defined         Enum 42         RW         3238           AC61         S43 sensor con- figuration         1V/2V         0         2.5         0. Not_defined         Enum 42         RW         3238           AC61         S48 sensor con- figuration         2.V         0         2.5         0. Not_defined         Enum 42         RW         3239           AC71         ExtA fer (onfigu- ration         1V/2V         0.0         AC73         0.0         V         RW         3259           AC72         ExtA fer (onfigu- low         1V/2V         AC72         10.0         10.0         V         RW         3261           AC73         ExtA fer (onfigu- low         1V/2V         AC74         20.0         20.0         mA         RW         3263           LC71         ExtA fer (onfigu- tation         2V         0.0         AC7	AC59	figuration	1V/2V	0	25	0 - Not_defined	Enum 42	RW	3015
A.C.00         figuration         IV/2V         0         2.5         0 - Not_defined         Enum 42         RW         3238           bC60         S3B sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         32337           A.C61         S4A sensor con- figuration         1V/2V         0         25         0 - Not_defined         Enum 42         RW         3238           bC61         S4B sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3238           A.C71         ExtA ref. configu- ration         1V/2V         0         27         0 - Not_defined         Enum 42         RW         3259           A.C73         ExtA ref. configu- ration         1V/2V         0.0         A.C73         0.0         V         RW         3260           A.C74         ExtA ref. current Iow         1V/2V         A.C74         20.0         20.0         mA         RW         3261           A.C75         ExtA ref. current Migh         1V/2V         A.C74         20.0         20.0         mA         RW         3263           b.C71         ExtB ref. current Iow         2V         0.0         b	A.C.00         figuration         IV.2V         0         2.5         0 - Not_defined         Enum42         RW         3238           bC60         SB sensor con- figuration         2V         0         25         0 - Not_defined         Enum42         RW         3238           AC61         SA sensor con- figuration         IV/2V         0         25         0 - Not_defined         Enum42         RW         3238           bC61         Sagessor con- figuration         2V         0         25         0 - Not_defined         Enum42         RW         3239           AC71         Ext ref. configu- ration         1V/2V         0         27         0 - Not_defined         Enum43         RW         3259           AC72         Ext ref. configu- ration         1V/2V         AC72         10,0         10.0         V         RW         3260           AC73         Ext ref. configu- ration         1V/2V         AC74         20,0         20,0         mAA         RW         3263           bC71         Ext ref. configu- ration         2V         0         27         0 - Not_defined         Enum43         RW         3263           bC73         Ext ref. configu- ration         2V         0,0         bC7	bC59	figuration	2V	0	25	0 - Not_defined	Enum 42	RW	3031
b.col         figuration         2V         0         2S         0-Not_defined         Enum42         NW         3237           A.C61         S4A sensor con- figuration         1V/2V         0         2S         0-Not_defined         Enum42         RW         3238           b.C61         S4B sensor con- figuration         2V         0         2S         0-Not_defined         Enum42         RW         3239           A.C71         ExtA ref. configu- ation         1V/2V         0         27         0-Not_defined         Enum43         RW         3258           A.C72         ExtA ref. voltage         1V/2V         0,0         A.C73         0.0         V         RW         3259           A.C73         ExtA ref. voltage low         1V/2V         0,0         A.C73         0.0         V         RW         3261           A.C74         ExtA ref. voltage low         1V/2V         A.C74         20.0         20.0         mA         RW         3263           b.C71         ExtB ref. configu- ration         2V         0,0         bC73         0.0         V         RW         3264           b.C73         ExtB ref. voltage low         2V         0,0         bC73         0.0         V<	Buckov         Figuration $L^{VV}$ $0$ $L^{2}$ $0 \cdot \text{bcd_cenne}$ Ehum $42$ $RW$ $3237$ AC61         SAA sensor con-figuration $V/2V$ $0$ $25$ $0 \cdot \text{Not_defined}$ Enum $42$ $RW$ $3238$ bC61         SAB sensor con-figuration $2V$ $0$ $25$ $0 \cdot \text{Not_defined}$ Enum $42$ $RW$ $3239$ AC71         Ext aref. configuration $1V/2V$ $0$ $27$ $0 \cdot \text{Not_defined}$ Enum $43$ $RW$ $32259$ AC72         Ext aref. voltage $1V/2V$ $0.0$ $AC73$ $0.0$ $V$ $RW$ $32261$ AC73         Ext aref. voltage $1V/2V$ $AC74$ $20.0$ $mA$ $RW$ $3261$ AC74         Ext aref. outrent $1V/2V$ $AC74$ $20.0$ $mA$ $RW$ $3262$ bC71         Ext aref. outrent $1V/2V$ $AC74$ $20.0$ $MA$ $RW$ $3264$ bC72         Ext aref. outrent $2V$ $bC74$	AC60	figuration			25	0 - Not_defined	Enum 42	RW	3236
A.C.51         figuration         1V/2V         0         25         0-Not_defined         Enum42         RW         3238           bC61         \$4B sensor con- figuration         2V         0         25         0-Not_defined         Enum42         RW         3239           A.C71         Ext Aref. configu- figuration         1V/2V         0         27         0-Not_defined         Enum42         RW         3258           A.C72         Ext Aref. voltage low         1V/2V         0,0         A.C73         0.0         V         RW         3259           A.C73         Ext Aref. voltage low         1V/2V         0,0         A.C73         0.0         V         RW         3260           A.C75         Ext Aref. current high         1V/2V         A.C74         20,0         20.0         mA         RW         3263           b.C71         ExtB ref. current high         1V/2V         A.C74         20,0         20.0         mA         RW         3264           b.C71         ExtB ref. current high         2V         0,0         b.C73         0.0         V         RW         3265           b.C74         ExtB ref. current low         2V         0,0         b.C75         4.0         m	AC61         figuration $11/2V$ 0         25         0 - Not_defined         Enum 42         RW         3238           bC61         SH8 sensor con- figuration         2V         0         25         0 - Not_defined         Enum 42         RW         3239           AC71         ExtA ref. configu- ration $11/2V$ 0         27         0 - Not_defined         Enum 42         RW         3258           AC72         ExtA ref. voltage low $11/2V$ 0.0         AC73         0.0         V         RW         3259           AC73         ExtA ref. voltage low $11/2V$ AC72         10.0         10.0         V         RW         3260           AC74         ExtA ref. current high $11/2V$ AC74         20.0         20.0         mAA         RW         3263           bC71         ExtB ref. current high         2V         0.0         bC73         0.00         V         RW         3263           bC72         ExtB ref. voltage low         2V         0.0         bC73         0.0         V         RW         3264           bC73         ExtB ref. urlent low         2V         bC72         10.0         10.0         V<	bC60	figuration	2V	0	25	0 - Not_defined	Enum 42	RW	3237
b.cs1         figuration         2.V         0         2.s         0 - Not_defined         Ehum 42         RW         3229           AC71         Ext Aref. configu- ration         1V/2V         0         27         0 - Not_defined         Enum 43         RW         3258           AC72         Ext Aref. configu- low         1V/2V         0.0         AC73         0.0         V         RW         3259           AC73         ExtA ref. voltage low         1V/2V         AC72         10.0         10.0         V         RW         3260           AC74         ExtA ref. current low         1V/2V         AC74         20.0         20.0         mAA         RW         3261           AC75         ExtB ref. configu- ration         1V/2V         AC74         20.0         20.0         mAA         RW         3263           bC71         ExtB ref. configu- ration         2V         0         27         0 - Not_defined         Enum 43         RW         3263           bC72         ExtB ref. configu- ration         2V         0.0         bC73         0.0         V         RW         3266           bC74         ExtB ref. current low         2V         bC74         20.0         mAA	b.c)         figuration $\lambda$ 0 $25$ 0-Not_defined         Extm 42         RW         3239           AC71         ExtA ref. configuration         1V/2V         0         27         0-Not_defined         Enum 43         RW         3258           AC72         ExtA ref. voltage         1V/2V         0.0         AC73         0.0         V         RW         3259           AC73         ExtA ref. voltage         1V/2V         0.0         AC73         0.0         V         RW         3260           AC74         ExtA ref. current         1V/2V         0.0         AC74         4.0         mA         RW         3261           AC74         ExtB ref. current         1V/2V         AC74         20.0         20.0         mA         RW         3263           bC71         ExtB ref. configuration         2V         0         27         0-Not_defined         Enum 43         RW         3263           bC72         ExtB ref. roinfaguration         2V         0.0         bC73         0.0         V         RW         3264           bC73         ExtB ref. roinfaguration         2V         bC72         10.0         10.0         V         RW	AC61	figuration	1V/2V		25	0 - Not_defined	Enum 42	RW	3238
AC.71         ration         IV/2V         0         2/         0 - NoC_Genned         Endmass         RW         3258           AC72         ExtA ref_voltage low         1V/2V         0,0         AC73         0.0         V         RW         3259           AC73         ExtA ref_voltage high         1V/2V         AC72         10,0         10.0         V         RW         3260           AC74         ExtA ref_current low         1V/2V         AC74         20,0         20.0         mA         RW         3261           AC75         ExtB ref_current high         1V/2V         AC74         20,0         20.0         mA         RW         3262           bC71         ExtB ref_current high         1V/2V         AC74         20,0         20.0         mA         RW         3263           bC72         ExtB ref_current low         2V         0         bC73         0.0         V         RW         3264           bC73         ExtB ref_current low         2V         0,0         bC75         4.0         mA         RW         3265           bC74         ExtB ref_current low         2V         bC74         20,0         20,0         mA         RW         3266	A.C.1         ration         IV/2V         0         2/         0-Noc_defined         EHUM P3         RW         3258           A.C72         ExtA ref. voltage low         1V/2V         0,0         A.C73         0.0         V         RW         3259           A.C73         ExtA ref. voltage high         1V/2V         A.C72         10,0         10.0         V         RW         3260           A.C74         ExtA ref. current low         1V/2V         A.C74         20,0         20.0         mA         RW         3261           A.C75         ExtA ref. current high         1V/2V         A.C74         20,0         20.0         mA         RW         3263           b.C71         ExtB ref. configu- ration         2V         0,0         b.C73         0.Not_defined         Enum 43         RW         3263           b.C73         ExtB ref. voltage low         2V         0,0         b.C73         0.0         V         RW         3264           b.C73         ExtB ref. voltage log         2V         b.C74         20,0         20.0         mA         RW         3265           b.C74         ExtB ref. voltage log         2V         b.C74         20,0         20.0         mA	bC61	figuration			25	0 - Not_defined	Enum 42	RW	3239
AC/2         Iow         IV/2V         0.0         AC/3         0.0         V         RW         3259           AC73         Ext Aref. voltage high         IV/2V         AC72         10,0         10.0         V         RW         3260           AC74         ExtA ref. current low         1V/2V         0,0         AC75         4.0         mA         RW         3261           AC75         ExtA ref. current high         1V/2V         AC74         20,0         20.0         mA         RW         3262           bC71         ExtB ref. configu- ration         2V         0         27         0-Not_defined         Enum 43         RW         3263           bC72         ExtB ref. voltage low         2V         0,0         bC73         0.0         V         RW         3264           bC73         ExtB ref. voltage low         2V         bC72         10,0         10.0         V         RW         3265           bC74         ExtB ref. current high         2V         bC74         20,0         20.0         mA         RW         3266           bC75         ExtB ref. current high         2V         5,00         5,00         0.00         Bar         RW         3267	AC72IowIO/2VO.0AC73O.0VRW3259AC73Ext ref. voltage highIV/2VAC7210.010.0VRW3260AC74ExtA ref. current logIV/2V0.0AC754.0mARW3261AC75ExtA ref. current highIV/2VAC7420.020.0mARW3262bC71ExtB ref. configu- log2V0270-Not_defined bC73Enum 43RW3263bC72ExtB ref. voltage log2V0.0bC730.0VRW3264bC73ExtB ref. voltage high2V0.0bC730.0VRW3265bC74ExtB ref. voltage high2V0.0bC754.0mARW3266bC74ExtB ref. current low2V0.0bC754.0mARW3266bC74ExtB ref. current low2V0.0bC754.0mARW3267bC74ExtB ref. current low2V0.0bC754.0mARW3267bC75Sa CorrectionIV/2V-5.005.000.00BarRW3268bC76PeB Correction2V-5.005.000.00BarRW3269bC77S2B Correction2V-10.010.00.0KRW3271bC76PeB Correction1V/2V-10.010.00.0K </td <td></td> <td>ration</td> <td>10/20</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		ration	10/20						
AC3         high         I         IV2V         AC72         IU0         IU0         IV0         IVV         AC73         IU0         IU0         IU0         IV0         AC74         IVV         IU0         AC75         IU0         mA         RW         3261           AC75         ExtA ref. current low         1V/2V         AC74         20,0         20.0         mA         RW         3262           bC71         ExtB ref. configu- ration         2V         0         27         0-Not_defined         Enum 43         RW         3263           bC72         ExtB ref. voltage low         2V         0,0         bC73         0.0         V         RW         3264           bC73         ExtB ref. voltage low         2V         0,0         bC73         10.0         V         RW         3265           bC74         ExtB ref. current low         2V         0,0         bC75         4.0         mA         RW         3266           bC74         ExtB ref. current low         2V         0,0         bC75         4.0         mA         RW         3267           bC75         ExtB ref. current logh         2V         0,0         bC75         0.00         Bar	AC73       high       IV/2V       AC72       IU00       IU00       V       RW       3260         AC74       ExtA ref. current low       IV/2V       0,0       AC75       4.0       mA       RW       3261         AC75       ExtA ref. current high       IV/2V       AC74       20,0       20.0       mA       RW       3262         bC71       ExtB ref. configu- ration       2V       0       27       0-Not_defined       Enum 43       RW       3263         bC72       ExtB ref. voltage low       2V       0,0       bC73       0.0       V       RW       3264         bC73       ExtB ref. voltage low       2V       0,0       bC73       0.0       V       RW       3265         bC74       ExtB ref. current low       2V       bC72       10,0       10.0       V       RW       3266         bC73       ExtB ref. current low       2V       bC74       20,0       20.0       mAA       RW       3266         bC75       ExtB ref. current low       2V       bC74       20,0       20.0       mA       RW       3267         bC75       PeB Correction       1V/2V       5,00       5,00       0.00		low							
AC.74       Iow       IV/2V       0.0       AC.75       4.0       mA       RW       3261         AC.75       ExtA ref. current high       IV/2V       AC.74       20,0       20.0       mA       RW       3262         bC.71       ExtB ref. configu- ration       2V       0       27       0-Not_defined       Enum 43       RW       3263         bC.72       ExtB ref. voltage low       2V       0,0       bC.73       0.0       V       RW       3264         bC.73       ExtB ref. voltage high       2V       0,0       bC.73       0.0       V       RW       3265         bC.74       ExtB ref. roltage high       2V       0,0       bC.75       4.0       mA       RW       3266         bC.74       ExtB ref. current low       2V       0,0       bC.75       4.0       mA       RW       3266         bC.74       ExtB ref. current low       2V       0,0       bC.75       4.0       mA       RW       3267         AC.76       PA Correction       1V/2V       5.00       5.00       0.00       Bar       RW       3269         AC.77       S2A Correction       2V       10,0       10,0       0.0	AC74       Iow       IV/2V       0,0       AC75       4.0       mA       RW       3261         AC75       ExtB ref. current       IV/2V       AC74       20,0       20.0       mA       RW       3262         bC71       ExtB ref. configu- ration       2V       0       27       0-Not_defined       Enum 43       RW       3263         bC72       ExtB ref. voltage low       2V       0,0       bC73       0.0       V       RW       3264         bC73       ExtB ref. voltage low       2V       0,0       bC73       0.0       V       RW       3264         bC74       ExtB ref. voltage low       2V       0,0       bC73       0.0       V       RW       3265         bC74       ExtB ref. current low       2V       bC72       10,0       10.0       V       RW       3266         bC74       ExtB ref. current low       2V       bC74       20,0       20.0       mA       RW       3267         bC75       ExtB ref. current low       2V       bC74       20,0       20.0       mA       RW       3268         bC75       ExtB ref. current low       2V       bC74       20,0       0.00       Bar<		high							
AC/3       high       IV/2V       AC/4       20,0       20.0       IIIA       RW       3262         bC71       ExtB ref. configu- ration       2V       0       27       0-Not_defined       Enum 43       RW       3263         bC72       ExtB ref. voltage low       2V       0,0       bC73       0.0       V       RW       3263         bC73       ExtB ref. voltage high       2V       0,0       bC73       0.0       V       RW       3265         bC74       ExtB ref. current low       2V       0,0       bC75       4.0       mA       RW       3266         bC75       ExtB ref. current high       2V       0,0       bC75       4.0       mA       RW       3266         bC74       ExtB ref. current high       2V       bC74       20,0       20.0       mA       RW       3267         AC76       PeA Correction       1V/2V       -5,00       5,00       0.00       Bar       RW       3268         bC75       S2A Correction       1V/2V       -5,00       5,00       0.00       Bar       RW       3269         AC76       PeB Correction       1V/2V       -10,0       10,0       0.0       K </td <td>AC/3       high       IV/2V       AC/4       20.0       20.0       IIIA       RW       3262         bC71       ExtB ref. configu- ration       2V       0       27       0-Not_defined       Enum 43       RW       3263         bC72       ExtB ref. voltage low       2V       0.0       bC73       0.0       V       RW       3264         bC73       ExtB ref. voltage low       2V       0.0       bC73       10.0       V       RW       3265         bC74       ExtB ref. voltage low       2V       0.0       bC75       4.0       mA       RW       3266         bC74       ExtB ref. current low       2V       0,0       bC75       4.0       mA       RW       3267         bC74       ExtB ref. current high       2V       0,0       bC74       20,0       mA       RW       3267         AC76       PeA Correction       1V/2V       -5,00       5,00       0.00       Bar       RW       3269         AC77       S2A Correction       2V       -5,00       5,00       0.00       K       RW       3270         bC75       PeB correction       2V       -10,0       10,0       0.0       K</td> <td></td> <td>low</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	AC/3       high       IV/2V       AC/4       20.0       20.0       IIIA       RW       3262         bC71       ExtB ref. configu- ration       2V       0       27       0-Not_defined       Enum 43       RW       3263         bC72       ExtB ref. voltage low       2V       0.0       bC73       0.0       V       RW       3264         bC73       ExtB ref. voltage low       2V       0.0       bC73       10.0       V       RW       3265         bC74       ExtB ref. voltage low       2V       0.0       bC75       4.0       mA       RW       3266         bC74       ExtB ref. current low       2V       0,0       bC75       4.0       mA       RW       3267         bC74       ExtB ref. current high       2V       0,0       bC74       20,0       mA       RW       3267         AC76       PeA Correction       1V/2V       -5,00       5,00       0.00       Bar       RW       3269         AC77       S2A Correction       2V       -5,00       5,00       0.00       K       RW       3270         bC75       PeB correction       2V       -10,0       10,0       0.0       K		low							
bC/1ration2V02/0-Not_definedEnum 43RW3263bC72ExtB ref. voltage low2V0,0bC730.0VRW3264bC73ExtB ref. voltage high2VbC7210,010.0VRW3265bC74ExtB ref. current low2V0,0bC754.0mARW3266bC75ExtB ref. current high2V0,0bC754.0mARW3266bC75ExtB ref. current high2VbC7420,020.0mARW3267AC76PeA Correction1V/2V-5,005,000.00BarRW3269bC76PeB Correction2V-5,005,000.00KRW3270bC77S2A Correction1V/2V-10,010,00.0KRW3271bC77S2B Correction2V-10,010,00.0KRW3272bC78S3B Correction1V/2V-10,010,00.0KRW3273AC79S4A Correction1V/2V-10,010,00.0KRW3273AC79S4B Correction2V-10,010,00.0KRW3273AC79S4A Correction1V/2V-10,010,00.0KRW3274bC79S4B Correction2V-10,010,00.0KRW3274bC79S4B C	bC/1         ration         2V         0         2/         0-Not_denned         Enum 43         RW         3263           bC72         ExtB ref. voltage low         2V         0,0         bC73         0.0         V         RW         3264           bC73         ExtB ref. voltage low         2V         0,0         bC73         0.0         V         RW         3264           bC74         ExtB ref. current low         Aug         DC72         10,0         10.0         V         RW         3266           bC74         ExtB ref. current low         2V         0,0         bC75         4.0         mA         RW         3266           bC75         ExtB ref. current low         2V         bC74         20,0         20.0         mA         RW         3267           AC76         PeA Correction         2V         bC74         20,0         20.0         mA         RW         3268           bC75         ExtB ref. current high         2V         bC74         20,0         0.00         Bar         RW         3268           bC75         PeB Correction         2V         -5,00         5,00         0.00         K         RW         32270		high							
bC/2         low         2V         0,0         bC/3         0.0         V         RW         3264           bC73         ExtB ref. voltage high         2V         bC72         10,0         10.0         V         RW         3265           bC74         ExtB ref. current low         2V         0,0         bC75         4.0         mA         RW         3266           bC75         ExtB ref. current low         2V         0,0         bC75         4.0         mA         RW         3266           bC75         ExtB ref. current high         2V         bC74         20,0         20.0         mA         RW         3267           AC76         PeA Correction         1V/2V         -5,00         5,00         0.00         Bar         RW         3269           AC76         PeB Correction         2V         -5,00         5,00         0.00         Bar         RW         3269           AC77         S2A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3270           bC77         S2B Correction         2V         -10,0         10,0         0.0         K         RW         3273           AC78	bC/2         low         2V         0,0         bC/3         0,0         V         RW         3264           bC73         ExtB ref. voltage high         2V         bC72         10,0         10.0         V         RW         3265           bC74         ExtB ref. current low         2V         0,0         bC75         4.0         mA         RW         3266           bC75         ExtB ref. current high         2V         0,0         bC74         20,0         20.0         mA         RW         3267           AC76         PeA Correction         1V/2V         -5,00         5,00         0.00         Bar         RW         3269           AC76         PeB Correction         2V         -5,00         5,00         0.00         Bar         RW         3269           AC77         S2A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3270           bC77         S2B Correction         2V         -10,0         10,0         0.0         K         RW         3271           AC78         S3A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3273           <		ration	2V			_			
bC/3       high       2V       bC/2       10,0       10,0       10,0       V       RW       3265         bC74       ExtB ref. current low       2V       0,0       bC75       4.0       mA       RW       3266         bC75       ExtB ref. current high       2V       bC74       20,0       20.0       mA       RW       3267         AC76       PeA Correction       1V/2V       -5,00       5,00       0.00       Bar       RW       3268         bC75       PeB Correction       2V       -5,00       5,00       0.00       Bar       RW       3269         AC77       S2A Correction       2V       -5,00       5,00       0.00       Bar       RW       3269         AC77       S2A Correction       2V       -10,0       10,0       0.0       K       RW       3270         bC77       S2B Correction       2V       -10,0       10,0       0.0       K       RW       3271         AC78       S3A Correction       2V       -10,0       10,0       0.0       K       RW       3273         bC78       S3B Correction       2V       -10,0       10,0       0.0       K       RW	bC/3         high         2V         bC/2         10,0         10,0         10,0         V         RW         3263           bC74         ExtB ref. current low         2V         0,0         bC75         4.0         mA         RW         3266           bC75         ExtB ref. current high         2V         bC74         20,0         20.0         mA         RW         3267           AC76         PeA Correction         1V/2V         -5,00         5,00         0.00         Bar         RW         3268           bC76         PeB Correction         2V         -5,00         5,00         0.00         Bar         RW         3269           AC77         S2A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3270           bC77         S2B Correction         2V         -10,0         10,0         0.0         K         RW         3271           AC78         S3A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3273           AC79         S4A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3274 <t< td=""><td></td><td>low</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>		low							
bC/4         low         2V         0,0         bC/5         4.0         MA         RW         3266           bC75         ExtB ref. current high         2V         bC74         20,0         20.0         mA         RW         3267           AC76         PeA Correction $1V/2V$ -5,00         5,00         0.00         Bar         RW         3268           bC76         PeB Correction $2V$ -5,00         5,00         0.00         Bar         RW         3269           AC77         S2A Correction $1V/2V$ -10,0         10,0         0.0         K         RW         3270           bC77         S2B Correction $2V$ -10,0         10,0         0.0         K         RW         3271           AC78         S3A Correction $1V/2V$ -10,0         10,0         0.0         K         RW         3272           bC78         S3B Correction $2V$ -10,0         10,0         0.0         K         RW         3273           bC78         S3B Correction $2V$ -10,0         10,0         0.0         K         RW         3274           bC79	bC/4         low         2V         0,0         bC/5         4.0         MA         RW         3266           bC75         ExtB ref. current high         2V         bC74         20,0         20.0         mA         RW         3267           AC76         PeA Correction         1V/2V         -5,00         5,00         0.00         Bar         RW         3268           bC76         PeB Correction         2V         -5,00         5,00         0.00         Bar         RW         3269           AC77         S2A Correction         2V         -5,00         5,00         0.00         K         RW         3269           AC77         S2A Correction         2V         -10,0         10,0         0.0         K         RW         3270           bC77         S2B Correction         2V         -10,0         10,0         0.0         K         RW         3271           AC78         S3A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3273           AC79         S4A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3274           bC79         S4B Cor		high							
AC76PeA Correction $1V/2V$ -5,005,000.00BarRW3268bC76PeB Correction $2V$ -5,00 $5,00$ $0.00$ BarRW $3269$ AC77S2A Correction $1V/2V$ -10,0 $10,0$ $0.0$ KRW $3270$ bC77S2B Correction $2V$ -10,0 $10,0$ $0.0$ KRW $3271$ AC78S3A Correction $1V/2V$ -10,0 $10,0$ $0.0$ KRW $3272$ bC78S3B Correction $2V$ -10,0 $10,0$ $0.0$ KRW $3273$ AC79S4A Correction $1V/2V$ -10,0 $10,0$ $0.0$ KRW $3274$ bC79S4B Correction $2V$ -10,0 $10,0$ $0.0$ KRW $3275$ REAConfiguration > Ext. ref. config. AConfiguration > Ext. ref. config.Configuration > Configuration >Configuration > Ext. ref. config.Configuration > Configuration >Configuration > Ext. ref. config.Configuration > Configuration >Configuration >	AC76         PeA Correction         1V/2V         -5,00         5,00         0.00         Bar         RW         3268           bC76         PeB Correction         2V         -5,00         5,00         0.00         Bar         RW         3269           AC77         S2A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3270           bC77         S2B Correction         2V         -10,0         10,0         0.0         K         RW         3271           bC78         S3A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3271           AC78         S3A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3272           bC78         S3B Correction         2V         -10,0         10,0         0.0         K         RW         3273           AC79         S4A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3274           bC79         S4B Correction         2V         -10,0         10,0         0.0         K         RW         3275 <b>REA</b> <td< td=""><td></td><td>low</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		low							
bC76         PeB Correction         2V         -5,00         5,00         0.00         Bar         RW         3269           AC77         S2A Correction $1V/2V$ -10,0 $10,0$ $0.0$ K         RW $32270$ bC77         S2B Correction $2V$ -10,0 $10,0$ $0.0$ K         RW $3270$ bC77         S2B Correction $2V$ -10,0 $10,0$ $0.0$ K         RW $3271$ AC78         S3A Correction $1V/2V$ -10,0 $10,0$ $0.0$ K         RW $3272$ bC78         S3B Correction $2V$ -10,0 $10,0$ $0.0$ K         RW $3273$ AC79         S4A Correction $1V/2V$ -10,0 $10,0$ $0.0$ K         RW $3274$ bC79         S4B Correction $2V$ -10,0 $10,0$ $0.0$ K         RW $3275$ <b>REA Configuration &gt;</b> <b>A</b> $2V$ -10,0 $10,0$ $0.0$ K         RW	bC76       PeB Correction       2V       -5,00       5,00       0.00       Bar       RW       3269         AC77       S2A Correction $1V/2V$ -10,0 $10,0$ $0.0$ K       RW $3270$ bC77       S2B Correction $2V$ -10,0 $10,0$ $0.0$ K       RW $3270$ bC78       S3A Correction $1V/2V$ -10,0 $10,0$ $0.0$ K       RW $3271$ AC78       S3A Correction $1V/2V$ -10,0 $10,0$ $0.0$ K       RW $3272$ bC78       S3B Correction $2V$ -10,0 $10,0$ $0.0$ K       RW $3273$ AC79       S4A Correction $2V$ -10,0 $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ -10,0 $10,0$ $0.0$ K       RW $3275$ <b>REA Configuration</b> $2V$ -10,0 $10,0$ $0.0$ K       RW $3275$ <b>REA Ext. ref. config.</b> $A$ $A$ $A$ $A$ </td <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		-							
AC77         S2A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K         RW $3270$ bC77         S2B Correction $2V$ $-10,0$ $10,0$ $0.0$ K         RW $3271$ AC78         S3A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K         RW $3271$ AC78         S3A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K         RW $3272$ bC78         S3B Correction $2V$ $-10,0$ $10,0$ $0.0$ K         RW $3273$ AC79         S4A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K         RW $3274$ bC79         S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K         RW $3275$ REA         Configuration > Ext. ref. config. A         Line         Line         Line         Line         Line	AC77       S2A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3270$ bC77       S2B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3271$ AC78       S3A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3271$ AC78       S3A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3272$ bC78       S3B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3273$ AC79       S4A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3275$ REA       Configuration > Ext. ref. config. A       Ext. ref. config. A									
bC77       S2B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3271$ AC78       S3A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3272$ bC78       S3B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3273$ AC79       S4A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3275$ <b>REA Configuration</b> > <b>Ext. ref. config.</b> <b>A A Configuration</b> > <b>Configuration</b> > <b>Configur</b>	bC77       S2B Correction       2V       -10,0       10,0       0.0       K       RW       3271         AC78       S3A Correction $1V/2V$ -10,0       10,0       0.0       K       RW       3272         bC78       S3B Correction $2V$ -10,0       10,0       0.0       K       RW       3273         bC78       S3B Correction $2V$ -10,0       10,0       0.0       K       RW       3273         AC79       S4A Correction $1V/2V$ -10,0       10,0       0.0       K       RW       3274         bC79       S4B Correction $2V$ -10,0       10,0       0.0       K       RW       3274         bC79       S4B Correction $2V$ -10,0       10,0       0.0       K       RW       3275         REA       Configuration > Ext. ref. config. A       Ext. ref. config. A <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
AC78       S3A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3272$ bC78       S3B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3273$ AC79       S4A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3275$ <b>REA Configuration</b> > <b>Ext. ref. config.</b> <b>A Configuration</b> > <b>Configuration</b> > <b>Configuration</b> >	AC78       S3A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3272$ bC78       S3B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3273$ AC79       S4A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3275$ <b>REA Configuration</b> > <b>Ext. ref. config.</b> A <b>Ext. ref. config.</b> A <b>Ext. ref. config.</b> $1V/2V$ $0$ $2$ $0.5$ H       Enum 24       BW $3278$									
bC78       S3B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3273$ AC79       S4A Correction $1V/2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3274$ bC79       S4B Correction $2V$ $-10,0$ $10,0$ $0.0$ K       RW $3275$ REA       Configuration > Ext. ref. config. A       Configuration > Ext. r	bC78       S3B Correction       2V       -10,0       10,0       0.0       K       RW       3273         AC79       S4A Correction $1V/2V$ -10,0       10,0       0.0       K       RW       3274         bC79       S4B Correction $2V$ -10,0       10,0       0.0       K       RW       3275         bC79       S4B Correction $2V$ -10,0       10,0       0.0       K       RW       3275         REA       Configuration > Ext. ref. config. A       External refer- $1V/2V$ 0       2       0 a SH       Enum 24       BW       3278									
AC79         S4A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3274           bC79         S4B Correction         2V         -10,0         10,0         0.0         K         RW         3275           REA         Configuration > Ext. ref. config. A         Configuration > Configuration >         Configuration >         Confi	AC79         S4A Correction         1V/2V         -10,0         10,0         0.0         K         RW         3274           bC79         S4B Correction         2V         -10,0         10,0         0.0         K         RW         3275           REA         Configuration > Ext. ref. config. A         Configuration > Ext. ref. config.         Configuration > A         Configuration > Configuration >         Configuration > Configuration > <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>									
REA Ext. ref. config. A	REA     Configuration > Ext. ref. config. A     Line     Line       AE01     External refer- 11/2/2/     11/2/2/     0     2     0.5H     Enum 24     BW     3278									
REA Ext. ref. config. A	REA     Ext. ref. config. A       External refer-     1V/2V       0     2       0.5H     Enum 24       BW     3278	bC79	S4B Correction	2V	-10,0	10,0	0.0	К	RW	3275
AE01 External refer-		REA	Ext. ref. config.							
ence function		AE01		1V/2V	0	2	0 - SH	Enum 24	RW	3278



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
AE02	External refer- ence offset min.	1V/2V	-50,0	AE03	0.0	К	RW	3279
AE03	External refer- ence offset max.	1V/2V	AE02	50,0	0.0	К	RW	3280
REb	Configuration > Ext. ref. config. B							
bE01	External refer- ence function	2V	0	2	0 - SH	Enum 24	RW	3281
bE02	External refer- ence offset min.	2V	-50,0	bE03	0.0	К	RW	3282
bE03	External refer- ence offset max.	2V	bE02	50,0	0.0	К	RW	3283
VLA	Configuration > Valve A							
AJ00	Valve configura- tion	1V/2V	0	51	0 - Select_type	Enum 8	RW	3017
AJ02	Valve motor de- cay mode	1V/2V	0	2	0 - Fast	Enum 10	RW	3285
AJ03	Valve step mode	1V/2V	0	4	31_8	Enum 12	RW	3286
AJ04	Valve step posi- tioning	1V/2V	0	2	0 - Fullstep	Enum 13	RW	3287
AJ05	Valve total steps	1V/2V	0	10000	0	stp	RW	3288
AJ06	Valve speed	1V/2V	10	400	10	pps	RW	3289
AJ07	Valve start speed	1V/2V	1	100	100	%	RW	3290
AJ08	Valve emengen- cy speed	1V/2V	50	200	100	%	RW	3291
AJ09	Valve drive cur- rent	1V/2V	10	1000	10	mA	RW	3292
AJ10	Valve accelera- tion current	1V/2V	100	150	100	%	RW	3293
AJ11	Valve accelera- tion time	1V/2V	10	1000	10	ms	RW	3294
AJ12	Valve holding current	1V/2V	0	100	0	%	RW	3295
AJ13	Valve excitation time after stop	1V/2V	0	1000	10	ms	RW	3296
AJ14	Compensation backlash	1V/2V	0,0	10,0	0.0	%	RW	3297
AJ15	Valve duty cycle	1V/2V	5	100	100	%	RW	3298
AJ16	User defined overdrive	1V/2V	0	20	5	%	RW	3299
AJ17	Overdriver ena- ble OD	1V/2V	0	100	10	%	RW	3300
AJ18	Overdrive block time	1V/2V	0	1440	10	min	RW	3301
AJ19	Valve neutral zone	1V/2V	0,0	5,0	0.5	%	RW	3302
AJ20	Preset OD	1V/2V	0,0	100,0	50.0	%	RW	3303
AJ22	Valve size reduc- tion	1V/2V	0	80	0	%	RW	3305
AJ23	Forced overdrive time	1V/2V	0	9000	0	h	RW	3306
AJ24	Manifolded valves	1V/2V	0	1	0 - No	Enum 5	RW	3307
AJ25	Manifolded valve	1V/2V	0	3	2 - Par	Enum 44	RW	3308
AJ26	Manifolded valve single move band	1V/2V	0,0	10,0	5.0	%	RW	3309
AJ27	Use open coil alarm	1V/2V	0	1	1 - Yes	Enum 5	RW	3310
VLb	Configuration > Valve B							
bJ00	Valve configura- tion Valve motor de-	2V	0	51	0 - Select_type	Enum 11	RW	3033



LABEL	DESCRIPTION	EKE 100 Type	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
bJ03	Valve step mode	2V	0	4	31_8	Enum 12	RW	3313
bJ04	Valve step posi- tioning	2V	0	2	0 - Fullstep	Enum 13	RW	3314
bJ05	Valve total steps	2V	0	10000	0	stp	RW	3315
bJ06	Valve speed	2V	10	400	10	pps	RW	3316
bJ07	Valve start speed	2V	1	100	100	%	RW	3317
bJ08	Valve emengen- cy speed	2V	50	200	100	%	RW	3318
p109	Valve drive cur- rent	2V	10	1000	10	mA	RW	3319
bJ10	Valve accelera- tion current	2V	100	150	100	%	RW	3320
bJ11	Valve accelera- tion time	2V	10	1000	10	ms	RW	3321
bJ12	Valve holding current	2V	0	100	0	%	RW	3322
bJ13	Valve excitation time after stop	2V	0	1000	10	ms	RW	3323
bJ14	Compensation backlash	2V	0,0	10,0	0.0	%	RW	3324
bJ15	Valve duty cycle	2V	5	100	100	%	RW	3325
bJ16	User defined overdrive	2V	0	20	5	%	RW	3326
bJ17	Overdriver ena- ble OD	2V	0	100	10	%	RW	3327
bJ18	Overdrive block time	2V	0	1440	10	min	RW	3328
bJ19	Valve neutral zone	2V	0,0	5,0	0.5	%	RW	3329
bJ20	Preset OD	2V	0,0	100,0	50.0	%	RW	3330
bJ22	Valve size reduc- tion	2V	0	80	0	%	RW	3332
bJ23	Forced overdrive time	2V	0	9000	0	h	RW	3333
bJ24	Use open coil alarm	2V	0	1	1 - Yes	Enum 5	RW	3334
dSP	Configuration > Display							
D001	Display unit	1V/2V	0	1	0 - MET	Enum 2	RW	3335
D002	Display timeout	1V/2V	0	60	0 - No_timeout	Enum 51	RW	3336
buS	Configuration > Modbus							
CAdr	Controller ad- dress	1V/2V	1	127	1		RW	3337
C002	Bus sharing min- imum update in- terval	1V/2V	0	60	5	Sec	RW	3341
C003	Modbus bau- drate	1V/2V	1	8	619200	Enum 3	RW	3338
C004	Modbus mode	1V/2V	0	2	18E1	Enum 4	RW	3339
Out	Service > Man- ual output							
H007	Alarm relay	1V/2V	0	2	0 - Auto	Enum 46	Read	3769
AU01	Manual mode A	1V/2V	0	1	0 - Off	Enum 1	Read	3741
AU02	Manual mode timeout A	1V/2V	0	3600	60	Sec	RW	3120
AU03	Manual OD A	1V/2V	0,0	100,0	0.0	%	Read	3742
bU01	Manual mode B	2V	0	1	0 - Off	Enum 1	Read	3755
bU02	Manual mode timeout B	2V	0	3600	60	Sec	RW	3207
bU03	Manual OD B	2V	0,0	100,0	0.0	%	Read	3756
CSI	Service > Con- troller service info.							
H100	Sales number 080G5xxx	1V/2V	0	9999	0		Read	3770
SVEr	Software version	1V/2V	0,00	100,00	0.50		Read	3771



LABEL	DESCRIPTION	ЕКЕ 100 Туре	MIN	MAX	VALUE/TYPE	UNIT	RW	ADU
RSt	Service > Facto- ry reset							
H102	Factory reset	1V/2V	0	1	0 - None	Enum 6	RW	3340
buS	Service > Mod- bus							
C002	Bus sharing min- imum update in- terval	1V/2V	0	60	5	Sec	RW	3341
AX00	Modbus enable A	1V/2V	0	1	0 - Off	Enum 1	RW	4001
bX00	Modbus enable B	2V	0	1	0 - Off	Enum 1	RW	4002
AX01	Modbus heat cool A	1V/2V	0	1	0 - Off	Enum 1	RW	4003
bX01	Modbus heat cool B	2V	0	1	0 - Off	Enum 1	RW	4004
AX02	Modbus preset OD A	1V/2V	0	1	0 - Off	Enum 1	RW	4005
bX03	Modbus preset OD B	2V	0	1	0 - Off	Enum 1	RW	4006
AX04	Modbus defrost A	1V/2V	0	1	0 - Off	Enum 1	RW	4007
bX04	Modbus defrost B	2V	0	1	0 - Off	Enum 1	RW	4008
AX05	Modbus Pe A	1V/2V	-1,00	200,00	0.00	barg	RW	4009
bX05	Modbus Pe B	2V	-1,00	200,00	0.00	barg	RW	4010
AX06	Modbus S2 A	1V/2V	-200,0	200,0	0.0	°C	RW	4011
bX06	Modbus S2 B	2V	-200,0	200,0	0.0	°C	RW	4012
AX07	Modbus S3 A	1V/2V	-200,0	200,0	0.0	°C	RW	4013
bX07	Modbus S3 B	2V	-200,0	200,0	0.0	°C	RW	4014
AX08	Modbus S4 A	1V/2V	-200,0	200,0	0.0	°C	RW	4015
bX08	Modbus S4 B	2V	-200,0	200,0	0.0	°C	RW	4016
AX09	Modbus external reference A	1V/2V	-100,0	100,0	0.0		RW	4017
bX09	Modbus external reference B	2V	-100,0	100,0	0.0		RW	4018
AX11	Modbus com- pressor % A	1V/2V	0,0	100,0	0.0	%	RW	4021
bX11	Modbus com- pressor % B	2V	0,0	100,0	0.0	%	RW	4022

## 7.2 Enumeration list

Table 15: The below table contains enumeration information for Modbus paramters.

Enum	Value	Description
		(ENUM_OFF_ON)
Enum 1	0	Off
	1	On
Enum 2	0	MET
	1	IMP
		(ENUM_MODBUS_BAUDRATE)
	1	_1200
	2	_2400
	3	_4800
Enum 3	4	_9600
	5	_14400
	6	_19200
	7	_28800
	8	_38400
		(ENUM_MODBUS_MODE)
Enum 4	0	_8N1
Lindin 4	1	_8E1
	2	_8N2



Enum	Value	Description
		(ENUM_NO_YES)
Enum 5	0	No
	1	Yes
		(ENUM_APPLY_DEFAULTS)
Enum 6	0	None
	1	Factory
		(ENUM_CONTROLLER_STATES)
	0	Power_up
	1	Stop
Enum 7	2	Operation
Lituit /	3	Defrost
	4	Driver
	5	Manual
	6	Safe



Enum 8         IBMU MURE ALUST)           0         Select.type           2         CCM_20           3         CCM_20           4         CCM_20           5         CCM_40           6         CCMT_3L           7         CCMT_3L           8         CCMT_3L           9         CCMT_3L           10         CCMT_3L           11         CCMT_3L           12         CCMT_3L           13         CCMT_3L           14         CCMT_2A           15         CCMT_3L           16         CCMT_4A           17         CTR_3D           18         CCMT_4A           19         CCMT_3L           10         CCMT_4A           11         CCMT_4A           12         CCMT_4A           13         CTS_6           14         CCMT_4A           15         CCMT_4A           16         CCMT_4A           17         CTR_2D           18         CTS_4D           19         CTS_4D           10         CTS_4D           11         CTS_4D	Enum	Value	Description
Pinum 8     0     Set: type       2     CM, 10       3     CM, 20       4     CM, 30       5     CM, 40       6     CMT, 81       7     CMT, 81       8     CMT, 101       10     CMT, 101       11     CMT, 101       12     CMT, 101       13     CMT, 101       14     CMT, 101       15     CMT, 101       16     CMT, 101       17     CH, 20       18     CMT, 101       19     CMT, 101       10     CMT, 101       11     CMT, 101       12     CMT, 101       13     CMT, 101       14     CMT, 101       15     CMT, 101       16     CMT, 101       17     CH, 20       18     CMT, 101       19     CH, 20       20     CH, 20       21     CH, 20       23     CH, 20       24     EH, 50       25     CH, 10       26     CH, 20       27     EH, 50       28     CH, 20       29     CH, 20       20     EH, 50       20     CH, 20			
2       CCM,10         3       CCM,20         4       CCM,30         5       CCM,40         6       CCMT,31,         7       CCMT,54,         8       CCMT,24,         10       CCMT,10,         11       CCMT,34,         12       CCMT,10,         13       CCMT,10,         14       CCMT,24         15       CCMT,30,         16       CCMT,34         17       CTR,30         18       CCMT,30,         19       CCMT,10,         11       CCMT,42         12       CCMT,30,         13       CCMT,30,         14       CCMT,30,         15       CCMT,30,         16       CCMT,42,         17       CTR,30,         18       CSM,20,         19       CSMT,30,         20       CTS,30,         21       CTS,30,         22       CTS,30,         23       CTS,30,         24       CTS,300,         25       CTS,00,         26       CTS,30,         27       CTS,300, <td></td> <td>0</td> <td></td>		0	
3       ССМ.20         4       ССМ.30         5       ССМ.40         6       ССМ.31.         7       ССМ.31.         9       ССМ.71.01.         10       ССМ.3.         11       ССМ.7.4.         12       ССМ.3.         13       ССМ.7.4.         14       ССМ.7.4.         15       ССМ.7.4.         16       ССМ.7.4.         17       С.7.3.0.         18       ССМ.7.4.         19       ССМ.7.4.         10       ССМ.3.0.         11       ССМ.7.4.         12       ССМ.3.0.         14       ССМ.7.4.         15       ССМ.7.4.         16       ССМ.7.4.         17       С.7.3.0.         18       ССМ.7.3.0.         19       ССМ.7.3.0.         10       ССМ.7.3.0.         11       ССМ.7.3.0.         12       ССМ.7.3.0.         13       ССМ.7.3.0.         14       ССМ.7.2.         15       ССМ.7.2.         16       ССМ.7.2.         17       СТ.5.7.5.         18 </td <td></td> <td></td> <td></td>			
4     ССМ. 30       5     ССМ. 30       7     ССМ. 30       7     ССМ. 51       9     ССМ. 7.01       10     ССМ. 7.01       11     ССМ. 7.01       12     ССМ. 7.01       13     ССМ. 7.01       14     ССМ. 7.01       15     ССМ. 7.01       16     ССМ. 7.01       17     ССМ. 7.01       18     ССМ. 7.01       19     ССМ. 7.01       10     ССМ. 7.01       11     ССМ. 7.01       12     ССМ. 7.01       13     ССМ. 7.01       14     ССМ. 7.02       15     ССМ. 7.01       15     ССМ. 7.01       16     ССМ. 7.02       17     СТВ. 20       18     ССМ. 7.02       19     15.1       20     15.1       21     15.1       21     15.1       22     15.2       23     15.2       24     15.5       25     15.1       28     15.2       29     15.2       20     15.2       21     15.3       22     15.4       23     15.3			
S     CCM. 40       6     CCMT, 3L       7     CCMT, 5L       8     CCMT, 3L       10     CCMT, 3L       11     CCMT, 3L       11     CCMT, 3L       11     CCMT, 3L       12     CCMT, 3L       13     CCMT, 3L       14     CCMT, 3L       15     CCMT, 3L       16     CCMT, 3L       17     CR, 2L       18     CCMT, 3L       19     CCMT, 3L       11     CCMT, 3L       12     CCMT, 3L       13     CCMT, 3L       14     CCMT, 3L       15     CCMT, 3L       16     CCMT, 3L       17     CR, 2D       18     CCMT, 3L       20     CTS, 5G       19     CTS, 5G       11     CTS, 3D       12     CTS, 5D       13     CTS, 2D       14     CTS, 2D       15     SS       16     CTS, 2D       17     CTS, 2D       18     CTS, 2D       19     CTS, 2D       14     CTS, 2D       14     CTS, 2D       15     SS       16     SS			
6     ССМТ.3L       7     ССМТ.3L       9     ССМТ.3L       9     ССМТ.3L       10     ССМТ.2       11     ССМТ.4       12     ССМТ.3L       13     ССМТ.3L       14     ССМТ.3L       15     ССМТ.3L       16     ССМТ.3L       17     СП.2       16     ССМТ.3L       17     СП.2       16     ССМТ.42       17     СП.2       18     ССМТ.3L       19     ССМТ.42       10     СП.2       11     ССМТ.42       12     ССМТ.42       13     ССМТ.42       14     ССМТ.42       15     ССМТ.42       16     ССМТ.42       17     СП.2       18     СП.2       19     СП.2       21     СП.2       23     СП.2       24     СП.2       25     СП.2       26     СП.2       27     ГП.3/5L       28     СП.2       29     СП.3/2       29     СП.3/2       29     СП.3/2       20     СП.3/2       21     СП.2			
Prum 8     CCMT_5L       8     CCMT_5L       9     CCMT_10L       10     CCMT_10       11     CCMT_4       12     CCMT_8L       13     CCMT_30       14     CCMT_24       15     CCMT_30       16     CCMT_42       17     CTR_20       18     CCMT_21       19     CTR_20       11     CTR_20       11     CTR_20       11     CTR_20       12     CTR_20       13     CTR_20       14     CTR_20       15     SM       16     CTT_42       17     CTR_20       18     CTS_50       19     ETS_50       11     CTS_50       12     ETS_50       13     ETS_50       14     CTS_50       15     SOUL       14     ETS_50       15     SOUL       16     ETS_50       17     ETS_50       18     ETS_50       19     ETS_50       14     ETS_50       14     ETS_50       15     SOUL       14     ETS_50       15     SOUL   <			
8       COMT_81         9       COMT_101         10       COMT_2         11       COMT_4         12       COMT_8         13       COMT_8         14       COMT_8         15       COMT_8         16       COMT_40         17       CTR_20         18       COMT_42         20       FTS_6         21       FTS_12         22       CTS_12         23       CTS_25         24       CTS_50         25       CTS_10         26       CTS_250         27       CTS_174         28       CTS_250_COMT         29       CTS_175         28       CTS_250_COMT         29       CTS_170         20       CTS_250_COMT         21       CTS_250_COMT         22       CTS_250_COMT         23       CTS_250_COMT         24       CTS_250_COMT         25       CTS_250_COMT         26       CTS_250_COMT         27       CTS_175_CC         28       CTS_250_COMT         29       CTS_10C         <			
P     CCMT_10L       10     CCMT_2       11     CCMT_4       12     CCMT_8       13     CCMT_10       14     CCMT_24       15     CCMT_42       16     CCMT_42       17     CTR_20       20     FTS_6       21     FTS_10       23     FTS_25       24     FTS_50       25     FTS_100       26     FTS_200       27     FTS_100       28     FTS_200       29     FTS_200       21     FTS_200       23     FTS_200       24     FTS_200       25     FTS_100       26     FTS_200       27     FTS_175_0 CMT       28     FTS_200       29     FTS_200_       20     FTS_200_       21     FTS_200_       22     FTS_200_       23     FTS_200_       24     FTS_200_       25     FTS_100       26     FTS_200_       27     FTS_100       28     FTS_200_       29     FTS_100       20     FTS_200_       21     FTS_100       22     FTS_100			
Ini       Cont_2         Ini       Cont_3			
11       CCMT_4         12       CCMT_9         13       CCMT_16         14       CCMT_30         15       CCMT_42         16       CCMT_42         17       CTR_20         18       CCMT_42         19       CTR_20         11       CTR_20         11       CTR_20         12       CTR_20         13       CTS_56         14       CTS_50         15       CTS_50         16       CTS_50         17       CTS_50         18       CTS_50         19       CTS_50         10       CTS_50         11       CTS_50         12       CTS_50         13       CTS_50         14       CTS_50         15       CTS_50         16       CTS_50         17       CTS_50         18       CTS_50         19       CTS_175         10       CTS_175         11       CTS_50         12       CTS_100         13       CTS_100         14       CTS_50			
12       CCMT_8         13       CCMT_16         14       CCMT_24         15       CCMT_30         16       CCMT_42         17       CTR_20         20       ETS_6         21       ETS_12         23       ETS_25         24       ETS_500         25       ETS_00         26       ETS_200         27       ETS_100         28       ETS_200         29       ETS_200         20       ETS_00         21       ETS_500         22       ETS_500         23       ETS_200         24       ETS_500         25       ETS_00         26       ETS_500         27       ETS_500         28       ETS_500         29       ETS_500         20       ETS_400         21       ETS_400         22       ETS_400         23       ETS_500         24       ETS_500         25       ETS_40         26       ETS_500         27       ETS_40         28       ETS_500			
13       CCMT_16         14       CCMT_24         15       CCMT_30         16       CCMT_42         17       CTR_20         20       ETS_6         21       ETS_6         23       ETS_25         24       ETS_50         25       ETS_100         26       ETS_250         27       ETS_1751         28       ETS_250         29       ETS_250         20       ETS_250         21       ETS_250         28       ETS_250         29       ETS_1751         28       ETS_250         29       ETS_100         20       ETS_250         21       ETS_250         22       ETS_250         23       ETS_250         24       ETS_250         25       ETS_000         26       ETS_250         27       ETS_175         28       ETS_250         29       ETS_250         20       ETS_200         21       ETS_200         22       ETS_100         23       ETS_200 <td></td> <td></td> <td></td>			
14       CCMT_24         15       CCMT_30         17       CTR_20         17       CTR_20         20       ETS_6         21       ETS_8M         23       ETS_25         24       ETS_50         25       ETS_100         26       ETS_250         27       ETS_150         28       ETS_250         29       ETS_1751         28       ETS_250         29       ETS_1751         28       ETS_250         29       ETS_1751         28       ETS_250_CHTT         29       ETS_1752_CHTT         46       ETS_1752_CHTT         47       ETS_1752_CHTT         49       ETS_100_CHT         49       ETS_10C         21       ETS_10C         22       ETS_10C         23       ETS_10C         24       ETS_200_CHT         25       ETS_10C         26       ETS_20C         27       ETS_10C         28       ETS_10C         29       ETS_20C         20       ETS_20C         21			
15       ССМТ.30         16       ССМТ.42         17       СТR.20         20       ETS.6         21       ETS.25         23       ETS.25         24       ETS.20         25       ETS.20         33       ETS.200         33       ETS.200         34       ETS.200         35       ETS.200         36       ETS.200         37       ETS.200         38       ETS.200         39       ETS.200         46       ETS.200         47       ETS.200         48       ETS.200         49       ETS.400         49       ETS.400         40       ETS.200         41       ETS.200         42       ETS.200         43       ETS.200         43       ETS.200         44       ETS.200         45       ETS.200         46       ETS.200         47       ETS.200         48       ETS.200         49       ETS.200         40       ETS.200         41       KYS.20			
16         ССМТ_42           17         СГR_20           17         СГR_20           10         ГГS_6           21         ГГS_25           24         ГГS_25           24         ГГS_25           23         ГГS_250           24         ГГS_250           25         ГГS_100           26         ГГS_250           33         ГГS_250           34         ГГS_250           35         ГГS_250           36         ГГS_250           37         ГГS_175           38         ГГS_250           39         ГГS_250           46         ГГS_250           47         ГГS_250           48         ГГS_250           49         ГГS_250           49         ГГS_260           41         КОS_25           43         ГГS_500           43         ГГS_500           43         ГГS_500           43         КУS_1C           43         КУS_2C           43         КУS_2C           43         КУS_12           43         КУS_12			
17       СТR.20         20       СТR.36         21       СТS.8M         23       СТS.25         24       СТS.25         25       СТS.100         26       СТS.100         28       СТS.250         29       СТS.175.1         28       СТS.250         29       СТS.175.1         28       СТS.250         29       СТS.175.1         28       СТS.250.0         29       СТS.175.0         20       СТS.250.0         21       СТS.300.0         22       СТS.300.0         23       СТS.250.0         24       СТS.250.0         25       СС.0         26       СТS.300.0         27       СТS.300.0         28       СТS.250.0         29       СТS.250.0         20       СТS.300.0         21       СТS.300.0         22       СТS.300.0         23       СТS.300.0         24       СТS.300.0         25       СС.0         26       СТS.300.0         27       СТS.300.0         28<			
20     FTS_6       1     FTS_BM       21     FTS_12       23     FTS_25       24     FTS_50       25     FTS_100       23     FTS_400       23     FTS_10       23     FTS_10       24     FTS_50       23     FTS_400       24     FTS_50       28     FTS_400       28     FTS_400       29     FTS_50L       29     FTS_50L       29     FTS_10C       20     FTS_10C       21     FTS_50L       29     FTS_20C       20     FTS_20C       21     FTS_20C       22     FTS_20C       23     FTS_20C       24     FTS_20C       25     FTS_20C       26     FTS_20C       27     FTS_20C       28     FTS_20C       29     FTS_20C       20     FTS_20C       21     FTS_20C       23     FTS_20C       24     FTS_20C       25     FTS_20C       26     FTS_20C       27     FTS_20C       28     FTS_20C       29     FTS_20C       20			
Fum 8         51         ETS_8M           21         ETS_12           23         ETS_25           24         ETS_50           25         ETS_200           26         ETS_200           27         ETS_175L           28         ETS_200           29         ETS_100           200         ETS_200           210         ETS_200L           211         ETS_200L           212         ETS_200L           213         ETS_200L           214         ETS_200L           215         ETS_200L           216         ETS_200L           217         ETS_200L           218         ETS_200L           219         ETS_200L           210         ETS_200L           211         ETS_200L           212         ETS_200L           213         ETS_200L           214         ETS_200L           215         216           216         210           217         ETS_200L           218         ETS_200L           219         ETS_200L           210         ETS_200L <t< td=""><td></td><td></td><td></td></t<>			
21         ETS_12           23         ETS_25           24         ETS_25           25         ETS_100           26         ETS_230           27         ETS_1714           28         ETS_250.           29         ETS_250.           20         ETS_250.           20         ETS_250.           21         ETS_250.           24         ETS_250.           24         ETS_250.           24         ETS_250.           24         ETS_250.           24         ETS_250.           24         ETS_250.           25         ETS_250.           26         ETS_250.           27         ETS_250.           28         ETS_250.           29         ETS_12           20         ETS_200.           21         ETS_500.           23         ETS_200.           24         ETS_200.           25         ETS_200.           26         ETS_200.           27         ETS_200.           28         ETS_200.           29         ETS_200.           20         <			
23         ETS_25           24         ETS_50           25         ETS_100           26         ETS_250           33         ETS_400           28         ETS_250L           46         ETS_250L           47         ETS_175L, OFHT           48         ETS_200L, OFHT           49         ETS_00L, OFHT           50         ETS_500L, OFHT           29         ETS_12C           21         ETS_25C           30         ETS_25C           31         ETS_50C           32         ETS_100C           33         ETS_800P           37         ETS_800P           37         ETS_800P           38         ETS_50C           43         KVS_1C           43         KVS_5C           43         KVS_5C           43         KVS_5C           43         KVS_5C           43			
Enum 824FTS_S025FTS_10026FTS_25027FTS_40028FTS_250.34FTS_40034FTS_500.46FTS_500.47FTS_175L.OFHT48FTS_250.OFHT49FTS_400.49FTS_400.20FTS_500.21FTS_500.22FTS_400.30FTS_500.23FTS_250.30FTS_500.31FTS_501.32FTS_100C33FTS_500.34KVS_1C35FTS_800.36FTS_500.37FTS_800.38FTS_800.39FTS_800.30FTS_500.31FTS_500.32FTS_800.33FTS_800.34KVS_1C35FTS_800.36FTS_800.37FTS_800.38FTS_800.39FTS_800.39FTS_800.30FTS_800.31FTS_800.32FTS_800.33FTS_800.34KVS_15.35FTS_800.36FTS_800.37FTS_800.38FTS_800.39FTS_800.39FTS_800.39FTS_800.39FTS_800.39FTS_80.39FTS_80.39FTS_80.30FTS_80. <td></td> <td></td> <td></td>			
Enum 825FIS_100666FS_25033FTS_40028FTS_25028FTS_50029FTS_50040FTS_500_OFHT40FTS_500_OFHT40FTS_500_OFHT40FTS_500_OFHT40FTS_250_OFHT40FTS_500_OFHT40FTS_500_OFHT40FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT41FTS_500_OFHT42FTS_500_OFHT43FTS_500_OFHT44FTS_500_OFHT44FTS_500_OFHT45FTS_500_OFHT46FTS_500_OFHT47FTS_500_OFHT48FTS_500_OFHT49FTS_500_OFHT49FTS_500_OFHT40FTS_500_OFHT41FTS_500_OFHT42FTS_500_OFHT43FTS_500_OFHT44FTS_500_OFHT44FTS_500_OFHT45FTS_500_OFHT46FTS_500_OFHT47FTS_500_OFHT <td></td> <td></td> <td></td>			
Permina       26       ETS_250         133       ETS_400         28       ETS_250L         28       ETS_250L         134       ETS_500L         146       ETS_500L         147       ETS_175L_0FHT         148       ETS_500L_0FHT         149       ETS_500L_0FHT         149       ETS_500L_0FHT         149       ETS_500L_0FHT         140       ETS_500L_0FHT         140       ETS_500L_0FHT         140       ETS_500L_0FHT         140       ETS_500L_0FHT         140       ETS_500L_0FHT         141       ETS_500L_0FHT         141       ETS_500L_0FHT         143       ETS_500L_0FHT         144       KVS_1C         144       KVS_1C         144       KVS_1C         144       KVS_1S         144       KVS_1S         145       KVS_42			
33         ETS_400           127         ETS_175L           28         ETS_250L           34         ETS_400L           46         ETS_50L           47         ETS_175L_0FHT           48         ETS_200_0FHT           49         ETS_500L_0FHT           29         ETS_100_0FHT           21         ETS_100_0FHT           22         ETS_200_0FHT           23         ETS_100_0FHT           24         S0           25         ETS_100_0FHT           29         ETS_100_0FHT           21         ETS_200_0FHT           22         ETS_200_0FHT           23         ETS_500_0           31         ETS_500_0           33         ETS_500_0           34         KVS_1C           35         ETS_800P           36         ETS_800P           37         ETS_800P           38         KVS_1C           39         ETS_800_0           31         KVS_1C           33         KVS_1C           34         KVS_1C           35         KVS_1C           36         ST	Enum 8		
Partial			
1       28       FTS_250L         34       ETS_400L         46       ETS_500L         47       ETS_50L         48       ETS_250L_OFHT         49       ETS_400L_OFHT         49       ETS_400L_OFHT         20       ETS_500L_OFHT         21       22         22       ETS_26C         23       ETS_50C         30       ETS_50C         31       ETS_500P         32       ETS_100C         33       ETS_500P         34       KVS_1C         34       KVS_2C         34       KVS_2C         34       KVS_1S         34       KVS_1S         34       KVS_1S         35       KVS_42         36       KVS_1S         36       KVS_1S         36       KVS_1S         37       ETS_600P         38       KVS_5C         39       KVS_1S         30       KVS_1S         31       Ber_def         33       KVS_1S         34       KVS_1S         35       KVS_1S         36			
134       FTS_400L         146       FTS_50L         147       FTS_17SL_0FHT         148       FTS_250L_0FHT         149       FTS_400L_0FHT         1500       FTS_102C         1500       FTS_100L_0FHT         1200       FTS_102C         1210       FTS_200L_0FHT         1201       FTS_102C         1202       FTS_102C         1203       FTS_202C         1204       FTS_202C         1205       FTS_202C         1206       FTS_202C         1207       FTS_202C         1208       FTS_202C         1209       FTS_102C         1201       FTS_50C         1202       FTS_50C         1203       FTS_500P         1203       FTS_500P         1204       FTS_500P         1205       FTS_500P         1204       KVS_12C			
46       ETS_500L         47       ETS_175L_0FHT         48       ETS_250L_0FHT         49       ETS_400L_0FHT         50       ETS_500L_0FHT         20       ETS_122         21       22         22       ETS_2401         30       ETS_250         31       ETS_500         32       ETS_100C         33       ETS_500P         34       ETS_500P         35       ETS_500P         36       ETS_500P         37       ETS_500P         3800P       ETS_500P         36       ETS_500P         37       ETS_500P         3800P       ETS_500P         36       ETS_500P         37       ETS_500P         3800P       ETS_500P         3800P       ETS_500P         3900P       ETS_500P         3000P			
1       47       ETS_175L_0FHT         48       ETS_250L_0FHT         49       ETS_400L_0FHT         1       50       ETS_500L_0FHT         29       ETS_12C         20       ETS_24C         30       ETS_25C         31       ETS_500P         32       ETS_100C         33       ETS_500P         40       KVS_1C         41       KVS_2C         43       KVS_3C         444       KVS_15         443       KVS_42         444       KVS_16         45       KVS_42         6       1         45       KVS_42         6       6         6       6         6       KVS_42         6       Fast         6       6         6       Fast			
48       ETS_250_0FHT         49       ETS_400_0FHT         50       ETS_500_0FHT         29       ETS_12C         210       ETS_24C         210       ETS_25C         210       ETS_500_0FHT         221       ETS_200_0FHT         222       ETS_200_0FHT         230       ETS_200_0FHT         231       ETS_200_0FHT         232       ETS_500_0FHT         233       ETS_500_0FHT         234       ETS_500_0FHT         235       ETS_500_0FHT         236       ETS_500_0FHT         237       ETS_500_0FHT         238       ETS_500_0FHT         239       ETS_500_0FHT         240       KVS_1C         241       KVS_2C         241       KVS_15         241       KVS_15         241       KVS_15         241       KVS_42         241       User_def_         242       KVS_42         243       KVS_42         244       KVS_15         245       KVS_42         246       KVS_10         247       KVS_10			
9       ETS_400L_OFHT         100       ETS_500L_OFHT         29       ETS_12C         21       ETS_24C         20       ETS_25C         30       ETS_50C         31       ETS_500P         32       ETS_100C         33       ETS_500P         34       ETS_500P         35       ETS_500P         36       ETS_500P         37       ETS_600P         400       KVS_1C         401       KVS_2C         41       KVS_2C         42       KVS_3C         43       KVS_15         44       KVS_15         45       KVS_42         10       User_def_         Enum10       Fast         10       Slow			
9         ETS_500L_OFHT           29         ETS_12C           21         ETS_24C           30         ETS_50C           31         ETS_50C           32         ETS_100C           36         ETS_500P           37         ETS_800P           400         KVS_1C           410         KVS_2C           420         KVS_3C           433         KVS_5C           444         KVS_15           454         KVS_42           40         User_def_           41         User_def_           41         User_def_           41         User_def_           41         User_def_           41         User_def_           41         User_def_			
129       ETS_12C         120       ETS_24C         30       ETS_25C         31       ETS_50C         32       ETS_100C         36       ETS_500P         400       KVS_1C         410       KVS_2C         42       KVS_3C         433       KVS_5C         444       KVS_15         454       KVS_42         455       KVS_42         1       User_def_         60       Fast         60       Fast			
1       22       ETS_24C         30       ETS_25C         31       ETS_50C         32       ETS_100C         36       ETS_500P         40       KVS_1C         41       KVS_2C         42       KVS_3C         43       KVS_3C         444       KVS_15         444       KVS_15         45       KVS_42         46       KVS_42         47       User_def_         1       User_def_         60       Fast         61       Slow			
130ETS_25C31ETS_50C32ETS_100C36ETS_500P37ETS_800P40KVS_1C41KVS_2C42KVS_3C43KVS_5C44KVS_1545KVS_421User_def_1User_def_1NU_DECAY_MODES)1Slow			
131ETS_50C132ETS_100C36ETS_500P137ETS_800P40KVS_1C40KVS_1C41KVS_2C41KVS_3C424343KVS_15444KVS_1545KVS_4241Jernel45KVS_4246147Fast40Slow			
132ETS_100C36ETS_500P37ETS_800P40KVS_1C41KVS_2C41KVS_3C42KVS_3C43KVS_5C44KVS_1545KVS_421User_def_1User_def_11611Slow			
Image: section of the section of th			
137ETS_800P40KVS_1C41KVS_2C42KVS_3C43KVS_5C44KVS_1545KVS_421User_def_Enum10Fast1Slow			
40         KVS_1C           41         KVS_2C           42         KVS_3C           43         KVS_5C           444         KVS_15           45         KVS_42           1         User_def_           60         Fast           60         1         Slow			
41         KVS_2C           42         KVS_3C           43         KVS_5C           44         KVS_15           45         KVS_42           1         User_def_           (ENUM_DECAY_MODES)         Fast           1         Slow			
42         KVS_3C           43         KVS_5C           44         KVS_15           45         KVS_42           1         User_def_           (ENUM_DECAY_MODES)         Fast           1         Slow			
43         KVS_5C           44         KVS_15           45         KVS_42           1         User_def_           Enum 10         Fast           1         Slow			
44         KVS_15           45         KVS_42           1         User_def_           Enum 10         Fast           1         Slow			
45         KVS_42           1         User_def_           I         (ENUM_DECAY_MODES)           Enum 10         1         Slow			
1         User_def_           (ENUM_DECAY_MODES)           Enum 10         1			
Enum 10         (ENUM_DECAY_MODES)           1         Slow			
Enum 10         0         Fast           1         Slow		1	
Enum 10 1 Slow			
1 Slow	Enum 10		
2 Mixed			
		2	Mixed



Enum	Value	Description
		(ENUM_VALVE_B_LIST)
	0	Select_type
	2	CCM_10
	3	CCM_20
	4	CCM_30
	5	CCM_40
	6	CCMT_3L
	7	CCMT_5L
	8	CCMT_8L
	9	CCMT_10L
	10	CCMT_2
	11	CCMT_4
	12	CCMT_8
	13	CCMT_16
	14	CCMT_24
	15	CCMT_30
	16	CCMT_42
	17	CTR_20
	20	ETS_6
	51	ETS_8M
	21	ETS_12
	23	ETS_25
Enum 11	24	ETS_50
	25	ETS_100
	26	ETS_250
	33	ETS_400
	27	ETS_175L
	28	ETS_250L
	34	ETS_400L
	46	ETS_500L
	47	ETS_175L_OFHT
	48	ETS_250L_OFHT
	49	ETS_400L_OFHT
	50	ETS_500L_OFHT
	29	ETS_12C
	22	ETS_24C
	30	ETS_25C
	31	ETS_50C
	32	ETS_100C
	40	KVS_1C
	41	KVS_2C
	42	KVS_3C
	43	KVS_5C
	44	KVS_15
	45	KVS_42
	1	User_def_
		(ENUM_STEP_MODES)
	0	Full
	1	Half
Enum 12	2	
		_1_4
	3	_1_8
	4	
		(ENUM_STEP_POSITIONING)
Enum 13	0	Fullstep
	1	Halfstep
	2	Auto



Enum	Value	Description
		(ENUM_OPERATION_MODES_A)
Enum 14	0	SH_control
Enum 14	1	Valve_driver
	2	Modbus_Controlled_I_O
		(ENUM_OPERATION_MODES_B)
	0	SH_control
Enum 15	1	Valve_driver
	2	Modbus_Controlled_I_O
	9	Not_used



Enum	Value	Description
		(ENUM_REFRIGERANTS_A)
	0	Undef
	1	R12
	6	R13
	7	R13b1
	2	R22
	8	R23
	14	R32
	11	R114
	3	R134a
	12	R142b
	24	R170
	15	R227
	25	R290
	16	R401A
	18	R402A
	19	R404A
	21	R407A
	22	R407B
	20	R407C
	37	R407F
	49	R407H
	23	R410A
	32	R413A
	30	R417A
	31	R422A
	33	R422D
Enum 16	34	R427A
	35	R438A
	40	R448A
	41	R449A
	48	R449B
	43	R450A
	42	R452A
	44 50	R452B R454A
	45	R454B
	51 52	R454C R455A
	9	R500
	4	R502
	10	R503
	17	R507
	36	R513A
	53	R516A
	26	R600
	27	R600a
	5	R717
	28	R744
	46	R1233zdE
	39	R1234yf
	38	R1234ze
	47	R1234zeZ
	29	R1270
	13	R_user
		(ENUM_STARTUP_MODES)
	0	PropCtrl
Enum 17	1	Fix_OD_w_prot
	2	Fix_OD_wo_prot
	-	



Enum	Value	Description
		(ENUM_REFRIGERANTS_B)
	0	Common
	1	R12
	6	R13
	7	R13b1
	2	R22
	8	R23
	14	
		R32
	11	R114
	3	R134a
	12	R142b
	24	R170
	15	R227
	25	R290
	16	R401A
	18	R402A
	19	R404A
	21	R407A
	22	R407B
	20	R407C
	37	R407F
	49	R407H
	23	R410A
	32	R413A
	30	R417A
	31	R422A
	33	R422D
Enum 18	34	R427A
	35	R438A
	40	R448A
	41	R449A
	48	R449B
	43	R450A
	42	R452A
	44	R452B
	50	R454A
	45	R454B
	51	R454C
	52	R455A
	9	R500
	4	R502
	10	R503
	17	R507
	36	R513A
	53	R516A
	26	R600
	27	R600a
	5	R717
	28	R744
	46	R1233zdE
	39	R1234yf
	38	R1234ze
	47	R1234zeZ
	29	R1270
	13	R_user
		-



Enum	Value	Description
		(ENUM_SH_REF_MODES)
	0	Fixed_sp_
Enum 19	1	Loadap
	2	MSS
	3	Delta_temp
		(ENUM_SENSOR_ERROR_ACTIONS)
	0	Stop
Enum 20	1	Fixed_OD
	2	Average
		(ENUM_INJECTION_STATES)
	0	Off
	1	Startup
Enum 21	2	Injection
	3	Error
	4	TherCutout
		(ENUM_INJECTION_DETAILS)
	0	Off
	1	SH_ctrl_normal
	2	SH_ctrl_MTR
	- 3	SH_ctrl_LOP
	4	SH_ctrl_MOP
	5	SH_ctrl_minPC
Enum 22	6	SH_ctrl_maxPc
	7	SH_ctrl_SH_cl
	8	SH_ctrl_minS4
	9	Start_P_Control
	10	Start_Fixed
	11	Manual
	12	SH_ctrl_Tc
		(ENUM_ON_OFF)
Enum 23	1	Off
	0	On
		(ENUM_EXT_REF_FUNCTIONS)
	0	SH
Enum 24	1	Temp
	2	Max_OD
	2	(ENUM_THERMOSTATIC_MODES)
	0	Not_used
Enum 25	1	Cutln_CutOut
	2	MTR
	2	(ENUM_THERMOSTATIC_SENSORS)
Enum 26	0	S3
Linum 20	1	55 54



Enum	Value	Description
		(ENUM_OPERATION_STATES)
	0	Power_up
	1	Stop
	2	Manual
	3	Service
	4	Safe_State
	5	Defrosting
	6	Valve_driver
	7	TherCutout
	8	Emercooling
	9	SH_ctrl_err_
Enum 27	10	SH_start_Pctrl
	11	SH_start_fix_OD
	12	SH_ctrl_normal
	12	SH_ctrl_MTR
	15	SH_ctrl_LOP
	14	
		SH_ctrl_minPC
	16	SH_ctrl_MOP
	17	SH_ctrl_maxPc
	18	SH_ctrl_SH_cl
	19	SH_ctrl_minS4
	20	SH_ctrl_Tc
	0	Not used
Enum 28	1	inp_PeA
	9	Modbus
	0	Not used
	3	inp_PeB
Enum 29	9	Modbus
	10	Common
	0	Not used
Enum 30	2	inp_S2A
	9	Modbus
	0	Not used
Enum 31	4	inp_S2B
EIIUIII 51	9	Modbus
	10	Common
Enum 32	0	Not used
LIMIT 52	4	inp_S2B
	9	Modbus
	0	Not used
Enum 33	9	Modbus
	10	S3A
	0	Not used
Enum 34	9	Modbus
	10	S4A
Enum 25	0	Not used
Enum 35	3	inp_PeB
	9	Modbus
	0	Not used
Enum 36	9	Modbus
	10	Common
	0	Not used
Enum 37	9	Modbus
	У	WUUUUUS



Enum	Value	Description
	Value	(ENUM_EXT_CIRCUIT_ENABLE)
	0	No_external
Enum 38	1	DI_1
Lindingo	2	DI_2
	3	Bus_Enable
	0	Not used
Enum 39	1	DI1
	2	DI2
	3	Modbus
	0	Not used
	1	DI1
Enum 40	2	DI2
	3	Modbus
	4	Common
		(ENUM_PRESSURE_TRANSMITTERS)
	0	Not_defined
	1	AKS_32R
	9	AKS_32_1_5V
	11	AKS_32_1_6V
	12	AKS_32_0_10V
	13	AKS_33
	5	AKS_2050
	17	AKS_3000
Enum 41	2	ACCPBP_Ratio
	15	ACCPBP_Current
	6	DST_P110
	16	DST_P310_Current
	7	DST_P310_Ratio
	4	NSK
	14	XSK
	3	_112CP
	8	OEM_Ratio
	18	OEM_Current
	10	OEM_Voltage
		(ENUM_TEMPERATURE_SENSORS)
	0	Not_defined
	24	PT1000
	20	NTC10K_3435
Enum 42	19	EKS_221
	21	ACCPBT_NTC10K
	22	MBT_153_10K
	23	_112CP
	25	AKS
	28	NTC10K_G
		(ENUM_EXT_REF_SENSORS)
Enum 43	0	Not_defined
	26	Voltage
	27	Current
		(ENUM_MANIFOLDED_TYPES)
	2	Par
Enum 44	0	Seq
	1	SeqEq
	3	Optim



Enum	Value	Description
		(ENUM_APP_SELECT)
	0	Select
	1	_1
	2	2
	3	_3
	4	_4
Enum 45	5	_5
	6	_6
	7	_7
	8	_8
	9	_9
	10	_10
	11	_11
	12	_12
		(ENUM_AUTO_ON_OFF)
Enum 46	0	Auto
Lindin 40	1	ON
	2	OFF
		(ENUM_DI_SEL_NO_1_2)
F 47	0	Not_used
Enum 47	1	DI_1
	2	DI_2
		(ENUM_SOH_STATE)
	0	Ready
Enum 48	1	Charge
	2	Repl_
	3	Fail
		(ENUM_DO_ALARM)
	0	Not_used
Enum 49	1	AlarmNO
	2	AlarmNC
	2	(ENUM_NC)
Enum 50	0	NC
Enum 50		
	1	
		(ENUM_DISPLAY_TIMEOUT)
	0	No_timeout
F	1	_1_minute
Enum 51	5	_5_minutes
	10	_10_minutes
	30	_30_minutes
	60	_60_minutes
		(ENUM_DRIVER_SIGNALS)
	3	_0_20mA
	1	_4_20mA
Enum 52	0	_0_10_V
	2	_0_5V
	5	Modbus
	4	User_defined
	0	off
	1	5 V
Enum 53	2	18 V
	3	Auto



# 7.3 Parameter description

LABEL	ws explanations on parameters DESCRIPTION	ADU	Explanation
	PARAMETERS & STATUS VARIABLES		
Ho_	Setup & service > Home		
AU12	Actual SH reference	3701	Actual superheat reference
A_TE	Te saturated evaporation temperature	3702	Read saturated evaporating tempera- ture measured by pressure transmitter at evaporator outlet
A_od	Valve A request OD	3703	Requested valve opening degree (0-100%)
bU12	Actual SH reference	3704	Actual superheat reference
b_TE	Te saturated evaporation temperature	3705	Read saturated evaporating tempera- ture measured by pressure transmitter at evaporator outlet
b_od	Valve B request OD	3706	Requested valve opening degree (0-100%)
CAno	Number of active alarms	3707	Show actual count of alarms
A_S3	S3 media inlet	3708	Read temperature of the S3 sensor at the media inlet
A_\$4	S4 media outlet	3709	Read temperature of the S4 sensor at the media outlet
b_\$3	S3 media inlet	3710	Read temperature of the S3 sensor at the media inlet
b_\$4	S4 media outlet	3711	Read temperature of the S4 sensor at the media outlet
StA	Home > Controller A status		
AU00	Operation status	3712	Read actual operation status 0 - Pow- er_up 1 - Stop 2 - Manual 3 - Service 4 - Safe_State 5 - Defrosting 6 - Valve_driv- er 7 - Ther_Cutout 8 - Emer_cooling 9 - SH_ctrl_err_10 - SH_start_Pctrl 11 - SH_start_fix_O 12 - SH_ctrl_normal 13 - SH_ctrl_MTR 14 - SH_ctrl_LOP 15 - SH_ctrl_MTR 14 - SH_ctrl_LOP 15 - SH_ctrl_maxPc 18 - SH_ctrl_SH_cl 19 - SH_ctrl_mis4 20 - SH_ctrl_SH_cl 19
AU12	Actual SH reference	3701	Actual superheat reference
AU13	Actual superheat	3713	Read measured superheat at suction line
AU24	Actual temperature reference	3714	Read actual temperature reference (ac- tive setpoint + any contribution from external signal)
A_od	Valve A request OD	3703	Requested valve opening degree (0-100%)
AI05	Actual position valve A	3777	Valve opening degree
A_PE	Pe evaporator	3715	Read evaporating pressure measured by pressure transmitter at evaporator outlet
A_TE	Te saturated evaporation temperature	3702	Read saturated evaporating tempera- ture measured by pressure transmitter at evaporator outlet
A_S2	S2 suction pipe	3716	Read the temperature of the S2 Suction line sensor measured at the evaporator outlet
A_\$3	S3 media inlet	3708	Read temperature of the S3 sensor at the media inlet
A_\$4	S4 media outlet	3709	Read temperature of the S4 sensor at the media outlet
AU17	DI Enable A section	3719	Read the status of DI enabling A section
AU18	DI Heat	3720	Read the status of DI heating signal
AU19	DI Preset OD	3721	Read the status of DI preset OD signal
AU20	DI defrost start	3722	Read the status of DI defrost start signal
AU26	Al Valve driver A	3723	Signal for driver request
Stb	Home > Controller B status		

Table 16: The below table shows explanations on parameters



LABEL	DESCRIPTION	ADU	Explanation
bU00	Operation status	3724	Read actual operation status 0 - Pow- er_up 1 - Stop 2 - Manual 3 - Service 4 - Safe_State 5 - Defrosting 6 - Valve_driv- er 7 - Ther_Cutout 8 - Emer_cooling 9 - SH_ctrl_err_10 - SH_start_Pctrl 11 - SH_start_fix_O 12 - SH_ctrl_normal 13 - SH_ctrl_MTR 14 - SH_ctrl_NOP 15 - SH_ctrl_MTR 14 - SH_ctrl_MOP 17 - SH_ctrl_maxPc 18 - SH_ctrl_SH_cl 19 - SH_ctrl_minS4 20 - SH_ctrl_Tc
bU12	Actual SH reference	3704	Actual superheat reference
bU13	Actual superheat	3725	Read measured superheat at suction line
bU24	Actual temperature reference	3726	Read actual temperature reference (ac- tive setpoint + any contribution from external signal)
b_od	Valve B request OD	3706	Requested valve opening degree (0-100%)
b_PE	Pe evaporator	3727	Read evaporating pressure measured by pressure transmitter at evaporator out- let
b_TE	Te saturated evaporation temperature	3705	Read saturated evaporating tempera- ture measured by pressure transmitter at evaporator outlet
b_\$2	S2 suction pipe	3728	Read the temperature of the S2 Suction line sensor measured at the evaporator outlet
b_\$3	S3 media inlet	3710	Read temperature of the S3 sensor at the media inlet
b_\$4	S4 media outlet	3711	Read temperature of the S4 sensor at the media outlet
bU17	DI Enable B section	3731	Read the status of DI enabling B section
bU18	DI Heat	3732	Read the status of DI heating signal
bU19	DI Preset OD	3733	Read the status of DI preset OD signal
bU20	DI defrost start	3734	Read the status of DI defrost start signal
bU26	Al Valve driver B	3735	Signal for driver request
StC	Home > Common controller status		
CbtV	Actual battery voltage	3736	Battery backup - the voltage will close the stepper motor valves if the control- ler loses its supply voltage
CU02	Battery state	3737	Readout EKE2U battery state. 0: Ready 1: Charge 2: Replace 3: Fail
CinV	Input Voltage	3738	Measured input supply voltage
CU03	Alarm status	3739	0: No - no alarms, 1: Yes - one or more alarms
ALA	Home > Active Alarms		
1000	Active status	3740	Active alarm status 0: No - no alarms, 1: Yes - one or more alarms
CAno <b>SEt</b>	Number of active alarms Setup & service > Basic settings	3707	Show actual count of alarms
Cr12	Main switch	3001	Start/stop of all circuits (refrigeration and driver). Start/stop of individual cir- cuits can be accomplished with the Ena- ble section parameter and related digi- tal input
ACtr	Operation mode A	3002	EKE 100 can be used as superheat con- troller or as a driver. Select how you want to configure the controller in the system. 0: SH Control 1: Valve driver 2: Modbus Controlled I/O
ArFg	Refrigerant	3003	Select the type of refrigerant. If the re- quired refrigerant is not part of the list, the user defined option can be used. Please contact Danfoss for detailed in- formation Warning: Wrong selection of refrigerant may cause damage to the system.



LABEL	DESCRIPTION	ADU	Explanation
ASLo	SH minimum	3004	Min. value for the superheat reference when using adaptive control Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.
ASHI	SH maximum	3005	Max. value for the superheat reference when using adaptive control
AC50	PeA transmitter configuration	3006	Pe is the Pressure Transmitter mounted at the evaporator outlet. This is the main Pressure transmitter used for su- perheat calculation. Define the type of Danfoss Pressure Transmitter / OEM Pressure Transmitter. Note: Available supply for transmitters: 5 Volt/50mA 0: Not_defined 1: AKS_32R 2: ACCPBP_Rati 3: _112CP 4: NSK 5: AKS_2050 6: DST_P110 (Standard) 7: DST_P310_Ra 16: DST_P310_Cu 9: AKS_32_1_5V 11: AKS_32_1 6V 12: AKS_32_0_10 13: AKS_33 14: XSK 15: ACCPBP_Curr 17: AKS_3000 (Ext. 10V supply) 8: OEM_Ra- tio 10: OEM_Voltage 18: OEM_Current
AC51	PeA voltage low	3007	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the lower voltage range for Pe pressure transmitter
AC52	PeA voltage high	3008	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the higher voltage range for Pe pressure transmitter
AC53	PeA current low	3009	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the lower current range for Pe pressure transmitter
AC54	PeA current high	3010	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the higher current range for Pe pressure transmitter
AC55	PeA ratio low	3011	Only relevant for "OEM Ratio". Define the ratio at minimum pressure
AC56	PeA ratio high	3012	Only relevant for "OEM Ratio". Define the ratio at maximum pressure
AC57	PeA transmitter min.	3013	Working range for pressure transmitter Depending on the application a pres- sure transmitter with a given working range is used. This working range (say, -1 to 12 bar g) must be set in the con- troller. The min. Gauge pressure value is set.
AC58	PeA transmitter max.	3014	The max. Gauge pressure value is set for the selected Pe pressure transmitter.
AC59	S2A sensor configuration	3015	S2 sensor configuration - sensor type: 0: Not defined 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
A_in	Driver A input signal	3016	Input to the valve driver signal, if user- defined is choose, the corresponding parameters should be set in Advaced setting menu. 0 : 0-10V 1 : 4-20mA 2 : 0-5V 3 : 0-20mA 4 : User defined 5 : Modbus



LABEL	DESCRIPTION	ADU	Explanation
AJ00	Valve configuration	3017	Select the type of Danfoss stepper mo- tor valve from the list. ETS 6 (unipolar) Has by default "Open coil" alarm disa- bled, can be enabled by BJ27. If you want to correct a danfoss given valve profile, then first select the relevant valve and then select user def. For user defined: For non-Danfoss valve define "Valve configuration" =1 i.e. UserDef and set the motor parameters i.e BJ01, BJ09, BJ05, BJ06, BJ07 If previous valve selection is ETS_6 (unipolar), then Valve total steps is counted as half steps (480 half steps for ETS 6) 0: Select type 2: CCM_10 3: CCM_20 4: CCM_30 5: CCM_40 6: CCMT_3L 7: CCMT_5L 8: CCMT_8L 9: CCMT_10L 10: CCMT_211: CCMT_412: CCMT_8 13: CCMT_16 14: CCMT_24 15: CCMT_30 16: CCMT_42 17: CTR_20 20: ETS_6 (Unipolar) 51: ETS_8M (Bipolar) 21: ETS_12 23: ETS_25 24: ETS_50 25: ETS_100 26: ETS_250 27: ETS_175L 28: ETS_250L 29: ETS_12C 22: ETS_24C 30: ETS_25C 31: ETS_50C 32: ETS_550L 38: ETS_L0 39: ETS_L_Hi 40: KVS_5C 44: KVS_2C 42: KVS_3C 43: KVS_5C 44: KVS_15 45: KVS_42 1: User def.
bCtr	Operation mode B	3018	EKE 100 can be used as superheat con- troller or as a driver. Select how you want to configure the controller in the system. 0: SH Control 1: Valve driver 2: Modbus Controlled I/O 9: Not used
brFg	Refrigerant	3019	Select the type of refrigerant. If the re- quired refrigerant is not part of the list, the user defined option can be used. Please contact Danfoss for detailed in- formation Warning: Wrong selection of refrigerant may cause damage to the system.
bSLo	SH minimum	3020	Min. value for the superheat reference when using adaptive control Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.
bSHI	SH maximum	3021	Max. value for the superheat reference when using adaptive control
bC50	PeB transmitter configuration	3022	Pe is the Pressure Transmitter mounted at the evaporator outlet. This is the main Pressure transmitter used for su- perheat calculation. Define the type of Danfoss Pressure Transmitter / OEM Pressure Transmitter. Note: Available supply for transmitters: 5 Volt/50mA 0: Not_defined 1: AKS_32R 2: ACCPBP_Rati 3: _112CP 4: NSK 5: AKS_2050 6: DST_P110 (Standard) 7: DST_P310_Ra 16: DST_P310_Cu 9: AKS_32_1_5V 11: AKS_32_1_6V 12: AKS_32_0_10 13: AKS_33 14: XSK 15: ACCPBP_Curr 17: AKS_3000 (Ext. 10V supply) 8: OEM_Ra- tio 10: OEM_Voltage 18: OEM_Current
bC51	PeB voltage low	3023	USE only for non-Danfoss/ OEM ratio- metric voltage pressure transmitter. De- fine the lower voltage range for Pe pres- sure transmitter
bC52	PeB voltage high	3024	USE only for non-Danfoss/ OEM ratio- metric voltage pressure transmitter. De- fine the higher voltage range for Pe pressure transmitter
bC53	PeB current low	3025	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the lower current range for Pe pressure transmitter



LABEL	DESCRIPTION	ADU	Explanation
bC54	PeB current high	3026	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the higher current range for Pe pressure transmitter
bC55	PeB ratio low	3027	Only relevant for "OEM Ratio". Define the ratio at minimum pressure
bC56	PeB ratio high	3028	Only relevant for "OEM Ratio". Define the ratio at maximum pressure
bC57	PeB transmitter min.	3029	Working range for pressure transmitter Depending on the application a pres- sure transmitter with a given working range is used. This working range (say, -1 to 12 bar g) must be set in the con- troller. The min. Gauge pressure value is set.
bC58	PeB transmitter max.	3030	The max. Gauge pressure value is set for the selected Pe pressure transmitter.
bC59	S2B sensor configuration	3031	S2 sensor configuration: 0: Not defned 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
b_in	Driver B input signal	3032	Input to the valve driver signal, if user- defined is choose, the corresponding parameters should be set in Advaced setting menu. 0 : 0-10V 1 : 4-20mA 2 : 0-5V 3 : 0-20mA 4 : User defined 5 : Modbus
P100	Valve configuration	3033	Select the type of Danfoss stepper mo- tor valve from the list. ETS 6 (unipolar) Has by default "Open coil" alarm disa- bled, can be enabled by BJ27. If you want to correct a danfoss given valve profile, then first select the relevant valve and then select user def. For user defined: For non-Danfoss valve define "Valve configuration" =1 i.e. UserDef and set the motor parameters i.e BJ01, BJ09, BJ05, BJ06, BJ07 If previous valve selection is ETS_6 (unipolar), then Valve total steps is counted as half steps (480 half steps for ETS 6) 0: Select type 2: CCM_10 3: CCM_20 4: CCM_30 5: CCM_40 6: CCMT_3L 7: CCMT_5L 8: CCMT_41 2: CCMT_10L 10: CCMT_2 11: CCMT_24 15: CCMT_30 16: CCMT_42 17: CTR_20 20: ETS_6 (Unipolar) 51: ETS_8M (Bipolar) 21: ETS_12 23: ETS_25 24: ETS_50 25: ETS_100 26: ETS_250 27: ETS_175L 28: ETS_20L 29: ETS_12C 22: ETS_24C 30: ETS_6U 34: ETS_400 34: ETS_50L 38: ETS_400 34: ETS_400 34: ETS_50L 38: ETS_L_0i 39: ETS_LHi 40: KVS_1C 41: KVS_2C 42: KVS_3C 43: KVS_SC 44: KVS_15 45: KVS_42 1: User def.
ЬСА	Control A > Basic control		
AEnA	Enable A section	3034	Manuel Start/Stop of A section. Start/ stop A section can also be accomplish- ed with the external Digital input Ena- ble A switch function. Usage could be a door switch to stop cooling Enable A section 0: OFF 1: ON
ArFg	Refrigerant	3003	Select the type of refrigerant. If the re- quired refrigerant is not part of the list, the user defined option can be used. Please contact Danfoss for detailed in- formation Warning: Wrong selection of refrigerant may cause damage to the system.
Ar01	Antoine constant A1	3035	Refrigerant factor for a custom refriger- ant - please contact Danfoss for detailed information
Ar02	Antoine constant A2	3036	Refrigerant factor for a custom refriger- ant - please contact Danfoss for detailed information



LABEL	DESCRIPTION	ADU	Explanation
Ar03	Antoine constant A3	3037	Refrigerant factor for a custom refriger- ant - please contact Danfoss for detailed information
Ar04	Startup mode	3040	Selection of different startup modes. 0: Prop. Ctrl : The controller is program- med for automatic proportional control, opening degree will change fast based on Te and SH 1: Fix OD with protection: fixed defined valve opening degree (OD), where opening degree can be change due to low superheat, MOP, ETC. 2: Fixed defined: fixed defined valve opening degree (OD), which is un- changed during startup time. This fea- ture is used when it is necessary to open the valve quickly when the compressor turns on, to prevent too low suction pressure
Ar05	Startup time	3041	Start-up time for superheat control. For startup mode with fixed OD the open- ing degree will be fixed during startup time. With proprotional startup, normal superheat control will start when super- heat is down at reference or when start- up time is exceeded
Ar06	Minimum startup time	3042	For proportional startup this is the mini- mum startup time, used for to get stable signal on sensors
AodS	Startup OD	3043	Starting opening degree of valve. For startup mode this opening degree will be fixed during startup time, except for overrides by SH close, LOP, MOP. etc. With proprotional startup "Startup OD" is starting point for control. A higher value will lead to a more aggressive control
ArEf	SH reference mode	3044	Definition of superheat regulation 0 = Fixed SH: fixed superheat setpoint de- fined by "SH fixed setpoint" 1 = Loadap: SH reference based on load (opening degree), Higher OD => higher SH refer- ence. Limits set by SH min and SH max 2 = MSS: Adaptive regulation. Minimum Stable Superheat. Limits set by SH min and SH max. 3 = Delta temp: Superheat reference based on temperature differ- ence between S3 media inlet and Te. Limits set by SH min and SH max
AFSP	SH fixed setpoint	3045	This feature can be used In those appli- cation where fixed superheat is needed at all time. SH fixed setpoint can be var- ied according to the need of the appli- cation Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.
ASLo	SH minimum	3004	Min. value for the superheat reference when using adaptive control Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.
ASHI	SH maximum	3005	Max. value for the superheat reference when using adaptive control
AdEL	SH reference delta temp. factor	3046	Only relevant for SH reference mode = Delta temp Superheat reference is set as ratio of the average difference from S3 to Te
Ar07	SH Tn	3047	Integration time Tn for superheat con- trol If the Tn value is increased the regu- lation becomes slower. Lowering the value will create a faster superheat con- trol. Too low value will create superheat fluctuation.



LABEL	DESCRIPTION	ADU	Explanation
Ar08	SH Kp	3048	Amplification factor Kp for superheat control. If the Kp value is reduced the regulation becomes slower. Increasing the Kp value will make faster regulation. Too high value will create superheat fluctuation.
Ar09	SH Kp Min.	3049	Damping of amplification near refer- ence value. This setting damps the nor- mal amplification Kp, but only just around the reference value. A setting of 0.5 will reduce the KP value by half. The value should only be changed by spe- cially trained staff.
Ar10	SH КрТе	3050	Gain factor for feedback of evaporating temperature signal Te to the PI control- ler controlling the superheat (expert setting)
AodL	Minimum OD	3051	During superheat control opening de- gree can be set to have a minimum val- ue. This can be useful to overcome a un- defined open sequence
AodH	Maximum OD	3052	During superheat control opening de- gree can be set to have a minimum val- ue. The value is set in %. This feature is beneficial specially for oversized valve
Ar11	Thermostatic mode	3053	Used to control media temperature 0 not used: No media temperature con- trol, only the superheat is regulated 1 Cutin/Cutout: Media temperature con- trol based on temperature setpoint and differential as well as regulation of su- perheat. 2 MTR: Modulating thermostat, active evaporator area is adjusted to match cooling demand, reference is temperature setpoint + ½ differential
ArSn	Thermostatic sensor	3054	Its optional to connect a media sensor. Media sensor will be used to measure media temperature (air or water). De- pending on needs it is placed on inlet or outlet of evaporator 0: S3 media inlet 1: S4 media outlet
AtSP	Temperature setpoint	3055	This parameter is to be used if Thermo- static mode has been enabled. This is a reference value to maintain the temper- ature of the media to a desired temper- ature level.
Atdt	Temperature differential	3056	When the temperature is higher than the reference plus the set differential the super control will start. It will be- come deactivated when the tempera- ture drops below the set reference.
ECA	Control A > Extended control		
Au00	SH close function	3057	This is a safety feature that prevents the flooding of the liquid into the compres- sor. When the measured superheat goes below the setpoint, the valve will close faster.
Au01	SH close setpoint	3058	It is recommended to set the SH close setpoint valve 2k below the Min Super- heat. Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2 K.
Au02	SH close Tn divide	3059	When superheat is below setpoint a fast response is needed. Sh close Tn defined how much normal Tn is reduced
Au03	SH close Kp factor	3060	When superheat is below setpoint a fast respons is needed. Sh close Kp factor how much the normal Sh Kp is in- creased
Au04	Limit Kp	3061	LOP, MOP, S4 min, high condensing tem- perature protect share the same gain factor (Kp) review the limit settings when adjusting the general SH control



LABEL	DESCRIPTION	ADU	Explanation
Au05	Limit Tn	3062	LOP, MOP, S4 min, high condensing tem- perature protect share the same inte- gration time (Tn) review the limit set- ings when adjusting the general SH control
Au06	Minimum S4 mode	3063	Minimum S4 (media outlet) protection function. If S4 get below setpoint the valve will close to reduce capacity 1 = On: Function is active
Au07	Minimum S4 setpoint	3064	Minimum S4 (media outlet) protection setpoint
Au08	MSS Stability	3065	Only relevant for MSS. Stability factor for regulation of superheat, only relevant for MSS With a higher value the control function will allow a greater fluctuation of the superheat before the reference is changed.
Au09	MSS T0 stability factor	3066	Only relevant for MSS. T0 stability factor define if variation in suction pressure will influence superheat reference. The Superheat reference change can be ad- justed the value 0-1 (1= max Te influ- ence and S2, 0 only S2). With often change in suction pressure due com- pressor start/stop some Te influence on MSS is recommended
Au10	MOP function	3067	To reduce the strain on the compressor, a maximum operating pressure can be set. This useful at compressor startup and during pulldown period. If the pres- sure comes to this limit the controller will control the valve to provide a lower pressure instead of a low superheat.
Au11	MOP setpoint	3068	MOP setpoint Setpoint unit is saturated temperature in evaporator. If the suc- tion pressure reaches the set MOP limit, the valve will close faster irrespective of superheat.
Au12	LOP function	3069	Lowest Operating Pressure function will keep the pressure than LOP setpoint. In case of pressure below setpoint the valve will open faster On: function is ac- tive
Au13	LOP setpoint	3070	Lowest Operating Pressure setpoint Set- point unit is saturated temperature in evaporator
Au14	LOP priority mode	3071	In case of conflict between low pressure and SH close, Lop function can be set to override SH close actions (could be nee- ded a startup in low ambient tempera- ture) On: Lop can override low super- heat The value should only be changed by specially trained staff.
Au15	LOP maximum time	3072	Maximum time for LOP to override SH close
Au16	LOP oscillation detection	3073	Enable LOB stability detection 0: Off 1: On
Au19	Compressor speed feedforward func- tion	3076	Compressor speed feed forward adapt superheat control reaction to compres- sor speed. In case of low-speed super- heat control will react slower (greater integration time Tn). Information on compressor speed is feed via bus (0.0-100.0%). Off: Feed forward function is not active On: Feed forward function is active.
Au20	FF low capacity turning point	3077	Below this speed superheat control is slower
Au21	FF maximum factor for Tn tuning	3078	The maximum adds to the integration time. At 0 % the TN = normal Tn * Comp FF SH Tn factor



LABEL	DESCRIPTION	ADU	Explanation
Au22	SH control sensor error action	3079	If SH control sensor such as temperature sensor S2 and pressure transmitter Pe has an error, then an action can be set to position the valve OD to the desired level. 0 = Stop: close the valve and su- perheat control 1 = Fixed OD: Keep the refrigeration running with setting a fixed valve OD (Fixed OD during error emergency cooling) 2 = Average: Used the average OD (calculated as an aver- age of the last hour) to set a reduced OD which will be fixed during error peri- od. The value should only be changed by specially trained staff
Au23	Thermostatic sensor error action	3080	If Thermostatic sensor such as tempera- ture sensor S3 or S4 has an error, then an action can be set to position the valve OD to the desired level. 0 = Stop: close the valve and superheat control & temperature control 1 = Fixed OD: Keep the refrigeration running (constant with setting a fixed valve opening degreed (Fixed OD during error emergency cool- ing) 2 = Average: for Cut-in/cut-out use average on and off time to continue cooling. For MTR use reduced opening degreed based average opening degreed The value should only be changed by specially trained staff
Au24	Fixed OD during emergency cooling	3081	Relevant if "Fixed OD" is selected as op- tion during emergency cooling
Au25	MTR Tn	3082	Integration time for MTR. Use long inte- gration time for S3 sensor and short for S4 sensor Expert setting for injection function The value should only be changed by specially trained staff.
Au26	MTR Kp	3083	Amplification factor for MTR Expert set- ting for injection function The value should only be changed by specially trained staff.
SHA	Control A > Heat control		
AH00	Heat startup time	3084	Start-up time for superheat control in heat mode For startup mode with "Fixed OD" the opening degree will be fixed during startup time. With propor- tional startup, normal superheat control will start when superheat is down at ref- erence or when startup time is excee- ded.
AH01	Heat minimum startup time	3085	For proportional startup in heat mode this is the minimum startup time, used for to get stable signal on sensors
AH02	Heat startup OD	3086	Starting opening degree of valve in heat mode. For startup mode this opening degree will be fixed during startup time, except for overrides by SH close, LOP, MOP. etc. With proportional startup "Startup OD" is starting point for con- trol. A higher value will lead to a more aggressive control.
АНОЗ	Heat SH fixed setpoint	3087	This feature can be used In those appli- cation where fixed superheat in heating mode is needed at all time. SH fixed set- point can be varied according to the need of the application Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is rec- ommended to keep this value 2k above the SH closed value.
AH04	Heat SH minimum	3088	Min. value for the superheat reference in heat mode when using adaptive con- trol Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.



LABEL	DESCRIPTION	ADU	Explanation
AH05	Heat SH maximum	3089	Max. value for the superheat reference in heat mode when using adaptive control
AH06	Heat SH ref. delta temp. factor	3090	Only relevant for SH reference mode = Delta temp Superheat reference is set as ratio of the average difference from S3 to Te.
АН07	Heat SH Tn	3091	Integration time Tn for superheat con- trol in heat mode If the Tn value is in- creased the regulation becomes slower. Lowering the value will create a faster superheat control. Too low value will create superheat fluctuation.
AH08	Heat SH Kp	3092	Amplification factor Kp for superheat control in heat mode If the Kp value is reduced the regulation becomes slower. Increasing the Kp value will make faster regulation. Too high value will create su- perheat fluctuation.
AH09	Heat SH Kp minimum	3093	Damping of amplification near refer- ence value in heat mode This setting damps the normal amplification Kp, but only just around the reference value. A setting of 0.5 will reduce the KP value by half. The value should only be changed by specially trained staff.
AH10	Heat SH КрТе	3094	This setting determines the valve open- ing degree as a function of the change in evaporating pressure in heat mode. An increase of the evaporating pressure will result in a reduced opening degree. When there is a drop-out on the low- pressure thermostat during start-up the value must be raised a bit. If there is too much instability during start-up the val- ue must be reduced a little. The value should only be changed by specially trained staff.
AH11	Heat SH close setpoint	3095	It is recommended to set the SH close setpoint valve 2k below the Min Super- heat. Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2 K.
AH12	Heat Limit Kp	3096	LOP, MOP, S4 min, high condensing tem- perature protect share the same inte- gration time (Tn) review the limit set- tings when adjusting the general SH control
AH13	Heat Limit Tn	3097	LOP, MOP, S4 min, high condensing tem- perature protect share the same gain factor (Kp). Review the limit settings when adjusting the general SH control
DFA	Control A > Defrost control		
AD00	Defrost start time	3098	Defrost start is used to empty the evap- orator The defrost sequence start with closing the valve. The valve is kept closed until "Defrost start low pressure limit" is reached or "Defrost start time" is exceeded, then the defrost sequence will continue.
AD01	Defrost start low pressure limit	3099	Defrost start is used to empty the evap- orator The defrost sequence start with closing the valve. The valve is kept closed until "Defrost start low pressure limit" is reached or "Defrost start time" is exceeded, then the defrost sequence will continue.
AD02	Defrost OD	3100	Defrost start is used to empty the evap- orator The defrost sequence start with closing the valve. The valve is kept closed until "Defrost start low pressure limit" is reached or "Defrost start time" is exceeded, then the defrost sequence will continue.



LABEL	DESCRIPTION	ADU	Explanation
AD03	Defrost end closed time	3101	After defrosting a defrost start is per- formed. Valve opening is set by "Defrost OD" and this opening degree is kept un- til defrost stop signal.
AD04	Defrost end OD time	3102	After the defrost stop signal the is kept closed and kept closed during "Defrost end closed time". Useful during 4 way valve change over
AD05	Defrost end OD	3103	Before startup of SH control "Defrost end OD time" and "Defrost end OD" can be used overcome the dynamic in the 4way valve change over and rapid sig- nal change which make normal SH con- trol unsafe
ASA	Control A > Alarm setup		
AA00	MOP alarm delay	3104	Alarm delay on Maximum operation pressure (MOP)
AA01	MOP alarm differential	3105	Te signal must be above "MOP setpoint" + "MOP alarm differential" before an high pressure (MOP) alarm can be raised.
AA02	LOP alarm delay	3106	Alarm delay on Low operating pressure (LOP)
AA03	LOP alarm differential	3107	Te signal must below "LOP setpoint" - "LOP alarm differential" before a low pressure (LOP) alarm can be raised.
AA04	High SH alarm delay	3108	Alarm delay on high superheat
AA05	High SH alarm differential	3109	Superheat has to be above actual sh ref- erence + High SH alarm differential be- fore an low SH alarm can be raised
AA06	Low SH alarm delay	3110	Alarm delay on low superheat
AA07	Low SH alarm differential	3111	Superheat has to be below actual SH reference - low SH alarm differential be- fore a low SH alarm can be raised
AA08	Lack of capacity alarm delay	3112	Alarm delay on lack of capacity Valve opening degree is monitored to ob- serve if the valve capacity can control Sh to desired level. If opening degree is close to 100 % an Lack of capacity alarm raised.
AA09	Upper temperature alarm	3113	Alarm for too high thermostat tempera- ture is set here. The value is set as offset in Kelvin. The alarm becomes active when the thermostat temperature ex- ceeds setpoint + high alarm offset
AA10	Lower temperature alarm	3114	Alarm for too low thermostat tempera- ture is set here The value is set in Kelvin. The value is set as offset in Kelvin. The alarm becomes active when the ther- mostat temperature exceeds setpoint - low alarm offset
AA11	Temperature alarm delay	3115	Alarm delay If one of the two limit val- ues is exceeded, a timer function will commence. The alarm will not become active until the set time delay has been passed. The time delay is set in minutes.
AA12	Minimum S4 band	3116	Delay time for low min S4 alarm
AA13	Minimum S4 delay	3117	S4 has be to be below "Min S4 setpoint" - "Low min S4 band" before a low min S4 alarm can be raised.
SSA	Control A > Service		
AU00	Operation status	3712	Read actual operation status 0 - Pow- er_up 1 - Stop 2 - Manual 3 - Service 4 - Safe_State 5 - Defrosting 6 - Valve_driv- er 7 - Ther_Cutout 8 - Emer_cooling 9 - SH_ctrl_err_10 - SH_start_Pctrl 11 - SH_start_fix_O 12 - SH_ctrl_normal 13 - SH_ctrl_MTR 14 - SH_ctrl_LOP 15 - SH_ctrl_minPC 16 - SH_ctrl_SH_cl 19 - SH_ctrl_maxPc 18 - SH_ctrl_SH_cl 19 - SH_ctrl_minS4 20 - SH_ctrl_Tc
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LABEL	DESCRIPTION	ADU	Explanation
AU01	Manual mode A	3741	Manual control of outputs For service purposes the individual relay outputs and valve can be controlled. 0=OFF: No override 1=ON: valve relay can be con- trolled. Going into manual mode no output will change from the current po- sition/opening degree.
AU02	Manual mode timeout A	3120	Manual mode time out and go to off when Manual mode timeout is excee- ded. Setting to zero no timeout will happen.
AU03	Manual OD A	3742	This feature is basically use in a service mode to drive the stepper motor valve to the desired level. The desired valve opening degree is provided in OD%.
AU04	Manual homeing	3743	This feature is basically used in a service mode. On enabling Manual homing the valve will close to zero OD% and even- tual overdrive it in the closing direction. 1=on: start the homing, when done the value will revert to off.
A_PE	Pe evaporator	3715	Read evaporating pressure measured by pressure transmitter at evaporator out- let
A_TE	Te saturated evaporation temperature	3702	Read saturated evaporating tempera- ture measured by pressure transmitter at evaporator outlet
A_\$2	S2 suction pipe	3716	Read the temperature of the S2 Suction line sensor measured at the evaporator outlet
A_S3	S3 media inlet	3708	Read temperature of the S3 sensor at the media inlet
A_54	S4 media outlet	3709	Read temperature of the S4 sensor at the media outlet
AU12	Actual SH reference	3701	Actual superheat reference
AU13	Actual superheat	3713	Read measured superheat at suction line
AU14	Injection state	3744	Read state of injection operation 0 - Power_up 1 - Stop 2 - Manual 3 - Service 4 - Safe State 5 - Defrosting 6 - Valve driver 7 - Thermstat cutout 8 - Emergen- cy cooling 9 - SH ctrl error_10 - SH start Pctrl 11 - SH start fixed OD 12 - SH ctrl normal 13 - SH ctrl MTR 14 - SH ctrl LOP 15 - SH ctrl minPC 16 - SH ctrl MOP 17 - SH ctrl maxPc 18 - SH ctrl SH_cl 19 - SH ctrl minS4 20 - SH ctrl Tc
AU15	Injection details	3745	Read detailed info on SH control includ- ing limitor functions.
AU16	Average OD	3746	Average valve opening degree, updated and saved every 3 hours. Expert readout - contact Danfoss for further informa- tion
AU17	DI Enable A section	3719	Read the status of DI enabling A section
AU18	DI Heat	3720	Read the status of DI heating signal
AU19	DI Preset OD	3721	Read the status of DI preset OD signal
AU20	DI defrost start	3722	Read the status of DI defrost start signal
AU21	Act. ext. ref. SH offset	3747	Read the external signal contribution to sh reference
AU22	Act. ext. ref. temperature offset	3748	Read the external signal contribution to temperature reference
AU23	Act. ext. ref. maximum OD	3749	Read the external offset signal for maxi- mum valve opening degree
AU24	Actual temperature reference	3714	Read actual temperature reference (ac- tive setpoint + any contribution from external signal)
AU25	Actual maximum OD	3750	Read the maximum opening degree
AU26	Al Valve driver A	3723	Signal for driver request
A_od	Valve A request OD	3703	Requested valve opening degree (0-100%)



LABEL	DESCRIPTION	ADU	Explanation
Ax20	PeA Sensor	3751	Modbus readout of PeA pressure when modbus controlled IO is activated. Value will be shown in the format of xx.xx barg on the user interface Modbus val- ue will be : pressure *100
Ax20	PeA Sensor	3752	Modbus readout of PeA pressure when modbus controlled IO is activated. Value will be shown in the format of xx.xx barg on the user interface Modbus val- ue will be : pressure *100
Ax20	PeA Sensor	3753	Modbus readout of PeA pressure when modbus controlled IO is activated. Value will be shown in the format of xx.xx barg on the user interface Modbus val- ue will be : pressure *100
Ax21	S2A Sensor	3754	Modbus readout of S2A sensor when modbus controlled IO is activated. Value will be shown in the format of xx.x °C on the user interface Modbus value will be : temperature * 10
bCb	Control B > Basic control		
bEnb	Enable B section	3121	Manuel Start/Stop of B section. Start/ stop B section can also be accomplished with the external Digital input Enable B switch function. Usage could be a door switch to stop cooling Enable B section 0: OFF 1: ON
brFg	Refrigerant	3019	Select the type of refrigerant. If the re- quired refrigerant is not part of the list, the user defined option can be used. Please contact Danfoss for detailed in- formation Warning: Wrong selection of refrigerant may cause damage to the system.
br01	Antoine constant A1	3122	Refrigerant factor for a custom refriger- ant - please contact Danfoss for detailed information
br02	Antoine constant A2	3123	Refrigerant factor for a custom refriger- ant - please contact Danfoss for detailed information
br03	Antoine constant A3	3124	Refrigerant factor for a custom refriger- ant - please contact Danfoss for detailed information
br04	Startup mode	3127	Selection of different startup modes. 0: Prop. Ctrl : The controller is program- med for automatic proportional control, opening degree will change fast based on Te and SH 1: Fix OD with protection: fixed defined valve opening degree (OD), where opening degree can be change due to low superheat, MOP, ETC. 2: Fixed defined: fixed defined valve opening degree (OD), which is un- changed during startup time. This fea- ture is used when it is necessary to open the valve quickly when the compressor turns on, to prevent too low suction pressure
br05	Startup time	3128	Start-up time for superheat control. For startup mode with fixed OD the open- ing degree will be fixed during startup time. With proprotional startup, normal superheat control will start when super- heat is down at reference or when start- up time is exceeded
br06	Minimum startup time	3129	For proportional startup this is the mini- mum startup time, used for to get stable signal on sensors
bod\$	Startup OD	3130	Starting opening degree of valve. For startup mode this opening degree will be fixed during startup time, except for overrides by SH close, LOP, MOP. etc. With proprotional startup "Startup OD" is starting point for control. A higher value will lead to a more aggressive control



LABEL	DESCRIPTION	ADU	Explanation
brEF	SH reference mode	3131	Definition of superheat regulation 0 = Fixed SH.: fixed superheat setpoint de- fined by "SH fixed setpoint" 1 = Loadap: SH reference based on load (opening degree), Higher OD => higher SH refer- ence. Limits set by SH min and SH max 2 = MSS: Adaptive regulation. Minimum Stable Superheat. Limits set by SH min and SH max. 3 = Delta temp: Superheat reference based on temperature differ- ence between S3 media inlet and Te. Limits set by SH min and SH max
bFSP	SH fixed setpoint	3132	This feature can be used In those appli- cation where fixed superheat is needed at all time. SH fixed setpoint can be var- ied according to the need of the appli- cation Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.
bSLo	SH minimum	3020	Min. value for the superheat reference when using adaptive control Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.
bSHI	SH maximum	3021	Max. value for the superheat reference when using adaptive control
bdEL	SH reference delta temp. factor	3133	Only relevant for SH reference mode = Delta temp Superheat reference is set as ratio of the average difference from S3 to Te
br07	SH Tn	3134	Integration time Tn for superheat con- trol If the Tn value is increased the regu- lation becomes slower. Lowering the value will create a faster superheat con- trol. Too low value will create superheat fluctuation.
br08	SH Кр	3135	Amplification factor Kp for superheat control. If the Kp value is reduced the regulation becomes slower. Increasing the Kp value will make faster regulation. Too high value will create superheat fluctuation.
br09	SH Kp Min	3136	Damping of amplification near refer- ence value. This setting damps the nor- mal amplification Kp, but only just around the reference value. A setting of 0.5 will reduce the KP value by half. The value should only be changed by spe- cially trained staff.
br10	SH KpTe	3137	Gain factor for feedback of evaporating temperature signal Te to the PI control- ler controlling the superheat (expert setting)
bodL	Minimum OD	3138	During superheat control opening de- gree can be set to have a minimum val- ue. This can be useful to overcome a un- defined open sequence
bodH	Maximum OD	3139	During superheat control opening de- gree can be set to have a minimum val- ue. The value is set in %. This feature is beneficial specially for oversized valve
br11	Thermostatic mode	3140	Used to control media temperature 0 not used: No media temperature con- trol, only the superheat is regulated 1 Cutin/Cutout: Media temperature con- trol based on temperature setpoint and differential as well as regulation of su- perheat. 2 MTR: Modulating thermostat, active evaporator area is adjusted to match cooling demand, reference is temperature setpoint + ½ differential



LABEL	DESCRIPTION	ADU	Explanation
brSn	Thermostatic sensor	3141	Its optional to connect a media sensor. Media sensor will be used to measure media temperature (air or water). De- pending on needs it is placed on inlet or outlet of evaporator 0: S3 media inlet 1: S4 media outlet
btSP	Temperature setpoint	3142	This parameter is to be used if Thermo- static mode has been enabled. This is a reference value to maintain the temper- ature of the media to a desired temper- ature level.
btdt	Temperature differential	3143	When the temperature is higher than the reference plus the set differential the super control will start. It will be- come deactivated when the tempera- ture drops below the set reference.
ECb	Control B > Extended control		
bu00	SH close function	3144	This is a safety feature that prevents the flooding of the liquid into the compres- sor. When the measured superheat goes below the setpoint, the valve will close faster.
bu01	SH close setpoint	3145	It is recommended to set the SH close setpoint valve 2k below the Min Super- heat. Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2 K.
bu02	SH close Tn divide	3146	When superheat is below setpoint a fast response is needed. Sh close Tn defined how much normal Tn is reduced
bu03	SH close Kp factor	3147	When superheat is below setpoint a fast respons is needed. Sh close Kp factor how much the normal Sh Kp is in- creased
bu04	Limit Kp	3148	LOP, MOP, S4 min, high condensing tem- perature protect share the same gain factor (Kp) review the limit settings when adjusting the general SH control
bu05	Limit Tn	3149	LOP, MOP, S4 min, high condensing tem- perature protect share the same inte- gration time (Tn) review the limit set- ings when adjusting the general SH control
bu06	Minimum S4 mode	3150	Minimum S4 (media outlet) protection function. If S4 get below setpoint the valve will close to reduce capacity 1 = On: Function is active
bu07	Minimum S4 setpoint	3151	Minimum S4 (media outlet) protection setpoint
bu08	MSS Stability	3152	Only relevant for MSS. Stability factor for regulation of superheat, only relevant for MSS With a higher value the control function will allow a greater fluctuation of the superheat before the reference is changed.
bu09	MSS T0 stability factor	3153	Only relevant for MSS. T0 stability factor define if variation in suction pressure will influence superheat reference. The Superheat reference change can be ad- justed the value 0-1 (1= max Te influ- ence and S2, 0 only S2). With often change in suction pressure due com- pressor start/stop some Te influence on MSS is recommended
bu10	MOP function	3154	To reduce the strain on the compressor, a maximum operating pressure can be set. This useful at compressor startup and during pulldown period. If the pres- sure comes to this limit the controller will control the valve to provide a lower pressure instead of a low superheat.
bu11	MOP setpoint	3155	MOP setpoint Setpoint unit is saturated temperature in evaporator. If the suc- tion pressure reaches the set MOP limit, the valve will close faster irrespective of superheat.



LABEL	DESCRIPTION	ADU	Explanation
bu12	LOP function	3156	Lowest Operating Pressure function will keep the pressure than LOP setpoint. In case of pressure below setpoint the valve will open faster On: function is ac- tive
bu13	LOP setpoint	3157	Lowest Operating Pressure setpoint Set- point unit is saturated temperature in evaporator
bu14	LOP priority mode	3158	In case of conflict between low pressure and SH close, Lop function can be set to override SH close actions (could be nee- ded a startup in low ambient tempera- ture) On: Lop can override low super- heat The value should only be changed by specially trained staff.
bu15	LOP maximum time	3159	Maximum time for LOP to override SH close
bu16	LOP oscillation detection	3160	Enable LOB stability detection 0: Off 1: On
bu19	Compressor speed feedforward func- tion	3163	Compressor speed feed forward adapt superheat control reaction to compres- sor speed. In case of low-speed super- heat control will react slower (greater integration time Tn). Information on compressor speed is feed via bus (0.0-100.0%). Off: Feed forward function is not active On: Feed forward function is active.
bu20	FF low capacity turning point	3164	Below this speed superheat control is slower
bu21	FF maximum factor for Tn tuning	3165	The maximum adds to the integration time. At 0 % the TN = normal Tn * Comp FF SH Tn factor
bu22	SH control sensor error action	3166	If SH control sensor such as temperature sensor S2 and pressure transmitter Pe has an error, then an action can be set to position the valve OD to the desired level. 0 = Stop: close the valve and su- perheat control 1 = Fixed OD: Keep the refrigeration running with setting a fixed valve OD (Fixed OD during error emergency cooling) 2 = Average: Used the average OD (calculated as an aver- age of the last hour) to set a reduced OD which will be fixed during error peri- od. The value should only be changed by specially trained staff
bu23	Thermostatic sensor error action	3167	If Thermostatic sensor such as tempera- ture sensor S3 or S4 has an error, then an action can be set to position the valve OD to the desired level. 0 = Stop: close the valve and superheat control & temperature control 1 = Fixed OD: Keep the refrigeration running (constant with setting a fixed valve opening degreed (Fixed OD during error emergency cool- ing) 2 = Average: for Cut-in/cut-out use average on and off time to continue cooling. For MTR use reduced opening degreed based average opening degreed The value should only be changed by specially trained staff
bu24	Fixed OD during emergency cooling	3168	Relevant if "Fixed OD" is selected as op- tion during emergency cooling
bu25	MTR Tn	3169	Integration time for MTR. Use long inte- gration time for S3 sensor and short for S4 sensor Expert setting for injection function The value should only be changed by specially trained staff.
bu26	MTR Kp	3170	Amplification factor for MTR Expert set- ting for injection function The value should only be changed by specially trained staff.
SHb	Control B > Heat control		



LABEL	DESCRIPTION	ADU	Explanation
ЬН00	Heat startup time	3171	Start-up time for superheat control in heat mode For startup mode with "Fixed OD" the opening degree will be fixed during startup time. With propor- tional startup, normal superheat control will start when superheat is down at ref- erence or when startup time is excee- ded.
bH01	Heat minimum startup time	3172	For proportional startup in heat mode this is the minimum startup time, used for to get stable signal on sensors
ЬН02	Heat startup OD	3173	Starting opening degree of valve in heat mode. For startup mode this opening degree will be fixed during startup time, except for overrides by SH close, LOP, MOP. etc. With proportional startup "Startup OD" is starting point for con- trol. A higher value will lead to a more aggressive control.
ЬН03	Heat SH fixed setpoint	3174	This feature can be used In those appli- cation where fixed superheat in heating mode is needed at all time. SH fixed set- point can be varied according to the need of the application Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is rec- ommended to keep this value 2k above the SH closed value.
ЬН04	Heat SH minimum	3175	Min. value for the superheat reference in heat mode when using adaptive con- trol Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2-4 K. It is recommended to keep this value 2k above the SH closed value.
bH05	Heat SH maximum	3176	Max. value for the superheat reference in heat mode when using adaptive con- trol
bH06	Heat SH ref. delta temp. factor	3177	Only relevant for SH reference mode = Delta temp Superheat reference is set as ratio of the average difference from S3 to Te.
bH07	Heat SH Tn	3178	Integration time Tn for superheat con- trol in heat mode If the Tn value is in- creased the regulation becomes slower. Lowering the value will create a faster superheat control. Too low value will create superheat fluctuation.
bH08	Heat SH Kp	3179	Amplification factor Kp for superheat control in heat mode If the Kp value is reduced the regulation becomes slower. Increasing the Kp value will make faster regulation. Too high value will create su- perheat fluctuation.
ЬН09	Heat SH Kp minimum	3180	Damping of amplification near refer- ence value in heat mode This setting damps the normal amplification Kp, but only just around the reference value. A setting of 0.5 will reduce the KP value by half. The value should only be changed by specially trained staff.
ЬН10	Heat SH KpTe	3181	This setting determines the valve open- ing degree as a function of the change in evaporating pressure in heat mode. An increase of the evaporating pressure will result in a reduced opening degree. When there is a drop-out on the low- pressure thermostat during start-up the value must be raised a bit. If there is too much instability during start-up the val- ue must be reduced a little. The value should only be changed by specially trained staff.
bH11	Heat SH close setpoint	3182	It is recommended to set the SH close setpoint valve 2k below the Min Super- heat. Warning! Due to the risk of liquid flow the setting should not be lower than approx. 2 K.



LABEL	DESCRIPTION	ADU	Explanation
bH12	Heat Limit Kp	3183	LOP, MOP, S4 min, high condensing tem- perature protect share the same inte- gration time (Tn) review the limit set- tings when adjusting the general SH control
bH13	Heat Limit Tn	3184	LOP, MOP, S4 min, high condensing tem- perature protect share the same gain factor (Kp). Review the limit settings when adjusting the general SH control
DFb	Control B > Defrost control		
bD00	Defrost start time	3185	Defrost start is used to empty the evap- orator The defrost sequence start with closing the valve. The valve is kept closed until "Defrost start low pressure limit" is reached or "Defrost start time" is exceeded, then the defrost sequence will continue.
bD01	Defrost start low pressure limit	3186	Defrost start is used to empty the evap- orator The defrost sequence start with closing the valve. The valve is kept closed until "Defrost start low pressure limit" is reached or "Defrost start time" is exceeded, then the defrost sequence will continue.
bD02	Defrost OD	3187	Defrost start is used to empty the evap- orator The defrost sequence start with closing the valve. The valve is kept closed until "Defrost start low pressure limit" is reached or "Defrost start time" is exceeded, then the defrost sequence will continue.
bD03	Defrost end closed time	3188	After defrosting a defrost start is per- formed. Valve opening is set by "Defrost OD" and this opening degree is kept un- til defrost stop signal.
bD04	Defrost end OD time	3189	After the defrost stop signal the is kept closed and kept closed during "Defrost end closed time". Useful during 4 way valve change over
bD05	Defrost end OD	3190	Before startup of SH control "Defrost end OD time" and "Defrost end OD" can be used overcome the dynamic in the 4way valve change over and rapid sig- nal change which make normal SH con- trol unsafe
ASb	Control B > Alarm setup		
bA00	MOP alarm delay	3191	Alarm delay on Maximum operation pressure (MOP)
bA01	MOP alarm differential	3192	Te signal must be above "MOP setpoint" + "MOP alarm differential" before an high pressure (MOP) alarm can be raised.
bA02	LOP alarm delay	3193	Alarm delay on Low operating pressure (LOP)
bA03	LOP alarm differential	3194	Te signal must below "LOP setpoint" - "LOP alarm differential" before a low pressure (LOP) alarm can be raised.
bA04	High SH alarm delay	3195	Alarm delay on high superheat
bA05	High SH alarm differential	3196	Superheat has to be above actual sh ref- erence + High SH alarm differential be- fore an low SH alarm can be raised
bA06	Low SH alarm delay	3197	Alarm delay on low superheat
bA07	Low SH alarm differential	3198	Superheat has to be below actual SH reference - low SH alarm differential be- fore a low SH alarm can be raised
bA08	Lack of capacity alarm delay	3199	Alarm delay on lack of capacity Valve opening degree is monitored to ob- serve if the valve capacity can control Sh to desired level. If opening degree is close to 100 % an Lack of capacity alarm raised.



LABEL	DESCRIPTION	ADU	Explanation
bA09	Upper temperature alarm	3200	Alarm for too high thermostat tempera- ture is set here. The value is set as offset in Kelvin. The alarm becomes active when the thermostat temperature ex- ceeds setpoint + high alarm offset
bA10	Lower temperature alarm	3201	Alarm for too low thermostat tempera- ture is set here The value is set in Kelvin. The value is set as offset in Kelvin. The alarm becomes active when the ther- mostat temperature exceeds setpoint - low alarm offset
bA11	Temperature alarm delay	3202	Alarm delay If one of the two limit val- ues is exceeded, a timer function will commence. The alarm will not become active until the set time delay has been passed. The time delay is set in minutes.
bA14	Minimum S4 band	3203	Delay time for low min S4 alarm
bA15	Minimum S4 delay	3204	S4 has be to be below "Min S4 setpoint" - "Low min S4 band" before a low min S4 alarm can be raised.
SSb	Control B > Service		
ЬИОО	Operation status	3724	Read actual operation status 0 - Pow- er_up 1 - Stop 2 - Manual 3 - Service 4 - Safe_State 5 - Defrosting 6 - Valve_driv- er 7 - Ther_Cutout 8 - Emer_cooling 9 - SH_ctrl_err_10 - SH_start_Pctrl 11 - SH_start_fix_O 12 - SH_ctrl_normal 13 - SH_ctrl_MTR 14 - SH_ctrl_LOP 15 - SH_ctrl_MIR 14 - SH_ctrl_LOP 15 - SH_ctrl_minPC 16 - SH_ctrl_MOP 17 - SH_ctrl_maxPc 18 - SH_ctrl_SH_cl 19 - SH_ctrl_minS4 20 - SH_ctrl_Tc
bU01	Manual mode B	3755	Manual control of outputs For service purposes the individual relay outputs and valve can be controlled. 0–OFF: No override 1=ON: valve relay can be con- trolled. Going into manual mode no output will change from the current po- sition/opening degree.
bU02	Manual mode timeout B	3207	Manual mode time out and go to off when Manual mode timeout is excee- ded. Setting to zero no timeout will happen.
bU03	Manual OD B	3756	This feature is basically use in a service mode to drive the stepper motor valve to the desired level. The desired valve opening degree is provided in OD%.
bU04	Manual homeing	3757	This feature is basically used in a service mode. On enabling Manual homing the valve will close to zero OD% and even- tual overdrive it in the closing direction. 1=on: start the homing, when done the value will revert to off.
b_PE	Pe evaporator	3727	Read evaporating pressure measured by pressure transmitter at evaporator outlet
b_TE	Te saturated evaporation temperature	3705	Read saturated evaporating tempera- ture measured by pressure transmitter at evaporator outlet
b_S2	S2 suction pipe	3728	Read the temperature of the S2 Suction line sensor measured at the evaporator outlet
b_\$3	S3 media inlet	3710	Read temperature of the S3 sensor at the media inlet
b_\$4	S4 media outlet	3711	Read temperature of the S4 sensor at the media outlet
bU12	Actual SH reference	3704	Actual superheat reference
bU13	Actual superheat	3725	Read measured superheat at suction line



LABEL	DESCRIPTION	ADU	Explanation
LADEL	DESCRIPTION	ADO	Read state of injection operation 0 -
bU14	Injection state	3758	Power_up 1 - Stop 2 - Manual 3 - Service 4 - Safe State 5 - Defrosting 6 - Valve driver 7 - Thermstat cutout 8 - Emergen- cy cooling 9 - SH ctrl error_ 10 - SH start Pctrl 11 - SH start fixed OD 12 - SH ctrl normal 13 - SH ctrl MTR 14 - SH ctrl LOP 15 - SH ctrl minPC 16 - SH ctrl MOP 17 - SH ctrl maxPc 18 - SH ctrl SH_cl 19 - SH ctrl minS4 20 - SH ctrl Tc
bU15	Injection details	3759	Read detailed info on SH control includ- ing limitor functions.
bU16	Average OD	3760	Average valve opening degree, updated and saved every 3 hours. Expert readout - contact Danfoss for further informa- tion
bU17	DI Enable B section	3731	Read the status of DI enabling B section
bU18	DI Heat	3732	Read the status of DI heating signal
bU19	DI Preset OD	3733	Read the status of DI preset OD signal
bU20	DI defrost start	3734	Read the status of DI defrost start signal
bU21	Act. ext. ref. SH offset	3761	Read the external signal contribution to sh reference
bU22	Act. ext. ref. temperature offset	3762	Read the external signal contribution to temperature reference
bU23	Act. ext. ref. maximum OD	3763	Read the external offset signal for maxi- mum valve opening degree
bU24	Actual temperature reference	3726	Read actual temperature reference (ac- tive setpoint + any contribution from external signal)
bU25	Actual maximum OD	3764	Read the maximum opening degree
bU26	Al Valve driver B	3735	Signal for driver request
b_od	Valve B request OD	3706	Requested valve opening degree (0-100%)
b105	Actual position valve B	3778	Valve opening degree
bx18	PeB Sensor	3765	Modbus readout of PeB pressure when modbus controlled IO is activated. Value will be shown in the format of xx.xx barg on the user interface Modbus val- ue will be : pressure *100
bx19	PeB Sensor	3766	Modbus readout of PeB pressure when modbus controlled IO is activated. Value will be shown in the format of xx.xx barg on the user interface Modbus val- ue will be : pressure *100
bx20	PeB Sensor	3767	Modbus readout of PeB pressure when modbus controlled IO is activated. Value will be shown in the format of xx.xx barg on the user interface Modbus val- ue will be : pressure *100
bx21	S2B sensor	3768	Modbus readout of S2B sensor when modbus controlled IO is activated. Value will be shown in the format of $xx.x$ °C on the user interface Modbus value will be : temperature * 10
АРР	Configuration > Application config.		
ACtr	Operation mode A	3002	EKE 100 can be used as superheat con- troller or as a driver. Select how you want to configure the controller in the system. 0: SH Control 1: Valve driver 2: Modbus Controlled I/O
bCtr	Operation mode B	3018	EKE 100 can be used as superheat con- troller or as a driver. Select how you want to configure the controller in the system. 0: SH Control 1: Valve driver 2: Modbus Controlled I/O 9: Not used
CA11	Power backup alarm	3209	Configure Power backup alarm to be monitored and presented. 0: No 1: Yes
I-O	Configuration > I/O configuration		
AC00	PeA configuration	3210	PeB configuration 0: Not used, 3: inp_PeB, 9: Modbus
bC00	PeB configuration	3211	PeB configuration 0: Not used, 3: inp_PeB, 9: Modbus, 10: Common



AC01         S2A configuration         S212         S2A configuration         S212           bC01         S2B configuration         S2B configuration         S2B configuration         S2B configuration           AC02         S3A configuration         S214         S2B configuration         S2B configuration           bC02         S3B configuration         S2B configuration         S2B configuration         S2B configuration           bC02         S3B configuration         S2B configuration         S2B configuration         S2B configuration           bC03         S4B configuration         S2D configuration         S2D configuration         S2D configuration           bC03         S4B configuration         S2D configuration         S2D configuration         S2D configuration           bC03         S4B configuration         S2D configuration         S2D configuration         S2D configuration           bC03         S4B configuration         S2D configuration         S2D configuration         S2D configuration           bC03         Exit configuration         S2D configuration         S2D configuration         S2D configuration           bC04         Driver reference & configuration         S2D configuration         S2D configuration         S2D configuration           bC05         DrixANO         S2D conf	LABEL	DESCRIPTION	ADU	Explanation
Image: Additional and the second se				S2A configuration 0: Not used, 2:
Markan         Markan         Markan           AC02         SAA configuration         3214         SAA configuration (Not used, 4: Inp. SAA, Not used, 9: Mod- but, 10: SAA           AC03         SAA configuration         3216         SAA configuration (Not used, 9: Mod- but, 10: SAA           AC03         SAA configuration         3217         SAA configuration (Not used, 9: Mod- but, 10: SAA           AC03         SAA configuration         3217         SAA configuration (Not used, 9: Mod- but, 10: SAA           AC03         SAA configuration         3220         End configuration (Not used, 9: Mod- but, 10: SAA           AC05         ExtA configuration         3221         End configuration (Not used, 9: Mod- bus, 10: SAA           AC06         Driver reference A configuration         3222         Driver reference A configuration (Not used, 3: Inp. Pie.8: Mod-Not Not used, 9: Mod- bus           AC06         Driver reference B configuration         3223         Driver reference A configuration (Not used, 3: Inp. Pie.8: Mod Not Not used, 9: Mod Not Not Incore Not Non doe (NC, 1: NO           AC07         DI NC/NO         3224         DI active at NCN mode (NC, 1: NO           P013         DO open collector         3226         Used, 3: Inp. Pie.8: Mod Not Not Incore Sector Not Not Not Incore Sector Not Not Not Incore Sector Not Not Not Incore Sector Not Not Not Not Incore Sector Not		-		
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DC08Enable b Configuration32281, 2: Dl2, 3: ModbusAC09Heat cool selection A configuration3229Heat cool selection A configuration 0: Not used 1: Dl 1, 2: Dl2, 3: ModbusbC09Heat cool selection B configuration3230Heat cool selection B configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: CommonAC10Preset OD A configuration3231Preset opening degree A configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus De- fine preset valve OD% by: Valve config, Valve A: "AJ20 Preset OD"bC10Preset OD B configuration3232Preset opening degree B configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: Common Define preset valve OD% by: Valve config, Valve config, Valve A: "AJ20 Preset OD"AC11Defrost A configuration3233Defrost A configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: Common Define preset valve OD% by: Valve config, Valve Configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: Common Define preset valve OD% by: Valve configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: Common Defrost A configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: Common 1, 2: Dl2, 3: Modbus, 4: CommonP012EKE 2U Signal Of Health3235EKE 2U Signal Of Health configuration 0: Not used 1: Dl 1, 2: Dl2	AC08	Enable A configuration	3227	Enable A configuration 0: Not used 1: DI 1, 2: DI2, 3: Modbus
AC09Heat cool selection A configuration3229Not used 1: Dl 1, 2: Dl2, 3: ModbusbC09Heat cool selection B configuration3230Heat cool selection B configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: CommonAC10Preset OD A configuration3231Preset opening degree A configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus De- 	bC08	Enable B configuration	3228	
bC09Heat cool selection B configuration3230Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: CommonAC10Preset OD A configuration3231Preset opening degree A configuration O: Not used 1: Dl 1, 2: Dl2, 3: Modbus De- fine preset valve OD% by: Valve config. Valve A: "AJ20 Preset OD"bC10Preset OD B configuration3232Preset opening degree B configuration O: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: Common Define preset valve OD% by: Valve config. Valve A: "AJ20 Preset OD"AC11Defrost A configuration3233Defrost A configuration 0: Not used 1: Dl 1, 2: Dl2, 3: ModbusbC11Defrost B configuration3234Defrost B configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: CommonP012EKE 2U Signal Of Health3235EKE 2U Signal Of Health	AC09	Heat cool selection A configuration	3229	5
AC10Preset OD A configuration32310: Not used 1: DI 1, 2: DI2, 3: Modbus De- fine preset valve OD% by: Valve config. Valve A: "AJ20 Preset OD"bC10Preset OD B configuration3232Preset opening degree B configuration 0: Not used 1: DI 1, 2: DI2, 3: Modbus, 4: Common Define preset valve OD% by: Valve config. Valve B: "bJ20 Preset OD"AC11Defrost A configuration3233Defrost A configuration 0: Not used 1: DI 1, 2: DI2, 3: ModbusbC10Defrost A configuration3233Defrost A configuration 0: Not used 1: DI 1, 2: DI2, 3: ModbusbC11Defrost B configuration3234Defrost B configuration 0: Not used 1: DI 1, 2: DI2, 3: Modbus, 4: CommonP012EKE 2U Signal Of Health3235EKE 2U Signal Of Health	bC09	Heat cool selection B configuration	3230	Not used 1: DI 1, 2: DI2, 3: Modbus, 4:
bC10Preset OD B configuration32320: Not used 1: DI 1, 2: DI2, 3: Modbus, 4: Common Define preset valve OD% by: Valve config, Valve B: "bJ20 Preset OD"AC11Defrost A configuration3233Defrost A configuration 0: Not used 1: DI 1, 2: DI2, 3: ModbusbC11Defrost B configuration3234Defrost B configuration 0: Not used 1: DI 1, 2: DI2, 3: Modbus, 4: CommonP012EKE 2U Signal Of Health3235EKE 2U Signal Of Health	AC10	Preset OD A configuration	3231	0: Not used 1: DI 1, 2: DI2, 3: Modbus De- fine preset valve OD% by: Valve config,
ACTIDefrost A configuration32331, 2: Dl2, 3: ModbusbC11Defrost B configuration3234Defrost B configuration 0: Not used 1: Dl 1, 2: Dl2, 3: Modbus, 4: CommonP012EKE 2U Signal Of Health3235EKE 2U Signal Of Health configuration 0: Not used 1: Dl 1 2: Dl2	bC10	Preset OD B configuration	3232	0: Not used 1: DI 1, 2: DI2, 3: Modbus, 4: Common Define preset valve OD% by:
DefinitionS2341, 2: Dl2, 3: Modbus, 4: CommonP012EKE 2U Signal Of Health3235EKE 2U Signal Of Health configuration 0: Not used 1: Dl 1 2: Dl2	AC11	Defrost A configuration	3233	Defrost A configuration 0: Not used 1: DI 1, 2: DI2, 3: Modbus
Not used 1: DI 1 2: DI2	bC11	Defrost B configuration	3234	Defrost B configuration 0: Not used 1: DI 1, 2: DI2, 3: Modbus, 4: Common
SEn Configuration > Sensor config.	P012	EKE 2U Signal Of Health	3235	EKE 2U Signal Of Health configuration 0: Not used 1: DI 1 2: DI2
	SEn	Configuration > Sensor config.		



LABEL	DESCRIPTION	ADU	Explanation
AC50	PeA transmitter configuration	3006	Pe is the Pressure Transmitter mounted at the evaporator outlet. This is the main Pressure transmitter used for su- perheat calculation. Define the type of Danfoss Pressure Transmitter / OEM Pressure Transmitter. Note: Available supply for transmitters: 5 Volt/SomA 0: Not_defined 1: AKS_32R 2: ACCPBP_Rati 3: _112CP 4: NSK 5: AKS_2050 6: DST_P110 (Standard) 7: DST_P310_Ra 16: DST_P310_Cu 9: AKS_32_1_5V 11: AKS_32_1_6V 12: AKS_32_0_10 13: AKS_33 14: XSK 15: ACCPBP_Curr 17: AKS_3000 (Ext. 10V supply) 8: OEM_Ra- tio 10: OEM_Voltage 18: OEM_Current
AC51	PeA voltage low	3007	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the lower voltage range for Pe pressure transmitter
AC52	PeA voltage high	3008	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the higher voltage range for Pe pressure transmitter
AC53	PeA current low	3009	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the lower current range for Pe pressure transmitter
AC54	PeA current high	3010	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the higher current range for Pe pressure transmitter
AC55	PeA ratio low	3011	Only relevant for "OEM Ratio". Define the ratio at minimum pressure
AC56	PeA ratio high	3012	Only relevant for "OEM Ratio". Define the ratio at maximum pressure
AC57	PeA transmitter min.	3013	Working range for pressure transmitter Depending on the application a pres- sure transmitter with a given working range is used. This working range (say, -1 to 12 bar g) must be set in the con- troller. The min. Gauge pressure value is set.
AC58	PeA transmitter max.	3014	The max. Gauge pressure value is set for the selected Pe pressure transmitter.
bC50	PeB transmitter configuration	3022	Pe is the Pressure Transmitter mounted at the evaporator outlet. This is the main Pressure transmitter used for su- perheat calculation. Define the type of Danfoss Pressure Transmitter / OEM Pressure Transmitters: 5 Volt/SomA 0: Not_defined 1: AKS_32R 2: ACCPBP_Rati 3:_112CP 4: NSK 5: AKS_2050 6: DST_P110 (Standard) 7: DST_P310_Ra 16: DST_P310_Cu 9: AKS_32_1_5V 11: AKS_32_1_6V 12: AKS_32_0_10 13: AKS_33 14: XSK 15: ACCPBP_Curr 17: AKS_3000 (Ext. 10V supply) 8: OEM_Ra- tio 10: OEM_Voltage 18: OEM_Current
bC51	PeB voltage low	3023	USE only for non-Danfoss/ OEM ratio- metric voltage pressure transmitter. De- fine the lower voltage range for Pe pres- sure transmitter
bC52	PeB voltage high	3024	USE only for non-Danfoss/ OEM ratio- metric voltage pressure transmitter. De- fine the higher voltage range for Pe pressure transmitter
bC53	PeB current low	3025	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the lower current range for Pe pressure transmitter
bC54	PeB current high	3026	USE only for non-Danfoss/ OEM current signal pressure transmitter. Define the higher current range for Pe pressure transmitter



LABEL	DESCRIPTION	ADU	Explanation
bC55	PeB ratio low	3027	Only relevant for "OEM Ratio". Define the ratio at minimum pressure
bC56	PeB ratio high	3028	Only relevant for "OEM Ratio". Define the ratio at maximum pressure
bC57	PeB transmitter min.	3029	Working range for pressure transmitter Depending on the application a pres- sure transmitter with a given working range is used. This working range (say, -1 to 12 bar g) must be set in the con- troller. The min. Gauge pressure value is set.
bC58	PeB transmitter max.	3030	The max. Gauge pressure value is set for the selected Pe pressure transmitter.
AC59	S2A sensor configuration	3015	S2 sensor configuration - sensor type: 0: Not defined 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
bC59	S2B sensor configuration	3031	S2 sensor configuration: 0: Not defned 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
AC60	S3A sensor configuration	3236	S3 sensor configuration: 0: Not defined 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
bC60	S3B sensor configuration	3237	S3 sensor configuration: 0: Not defined 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
AC61	S4A sensor configuration	3238	S4 sensor configuration: 0: Not defined 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
bC61	S4B sensor configuration	3239	S4 sensor configuration: 0: Not defined 24: PT 1000 20: NTC10K 3435 19: EKS 221 21: ACCPBT NTC10K 22: MBT 153 10K 23: 112CP 25: AKS
AC71	ExtA ref. configuration	3258	External reference input type 0: Not de- fined 26: Voltage 27: Current
AC72	ExtA ref. voltage low	3259	Define the external minimum reference voltage used as analogue signal
AC73	ExtA ref. voltage high	3260	Define the external maximum reference voltage used as analogue signal
AC74	ExtA ref. current low	3261	Define the external minimum reference current used as analogue signal
AC75	ExtA ref. current high	3262	Define the external maximum reference current used as analogue signal
bC71	ExtB ref. configuration	3263	External reference input type 0: Not de- fined 26: Voltage 27: Current
bC72	ExtB ref. voltage low	3264	Define the external minimum reference voltage used as analogue signal
bC73	ExtB ref. voltage high	3265	Define the external maximum reference voltage used as analogue signal
bC74	ExtB ref. current low	3266	Define the external minimum reference current used as analogue signal
bC75	ExtB ref. current high	3267	Define the external maximum reference current used as analogue signal
AC76	PeA Correction	3268	Input offset calibration
bC76	PeB Correction	3269	Input offset calibration
AC77	S2A Correction	3270	Input offset calibration
bC77	S2B Correction	3271	Input offset calibration
AC78	S3A Correction	3272	Input offset calibration
bC78	S3B Correction	3273	Input offset calibration
AC79	S4A Correction	3274	Input offset calibration
bC79	S4B Correction	3275	Input offset calibration
REA	Configuration > Ext. ref. config. A		



LABEL	DESCRIPTION	ADU	Explanation
AE01	External reference function	3278	Define how the external reference sig- nal is used: 0: SH: External current signal offset superheat reference 1: Temp: Ex- ternal current signal offset temperature reference 2: Max OD: External current signal offset opening degree reference
AE02	External reference offset min.	3279	External contribution to the reference This setting determines how large a contribution is to be added to the set setpoint when the input signal is min.
AE03	External reference offset max.	3280	External contribution to the reference This setting determines how large a contribution is to be added to the set setpoint when the input signal is max.
REb	Configuration > Ext. ref. config. B		
bE01	External reference function	3281	Define how the external reference sig- nal is used: 0: SH: External current signal offset superheat reference 1: Temp: Ex- ternal current signal offset temperature reference 2: Max OD: External current signal offset opening degree reference
bE02	External reference offset min.	3282	External contribution to the reference This setting determines how large a contribution is to be added to the set setpoint when the input signal is min.
bE03	External reference offset max.	3283	External contribution to the reference This setting determines how large a contribution is to be added to the set setpoint when the input signal is max.
VLA	Configuration > Valve A		
AJ00	Valve configuration	3017	Select the type of Danfoss stepper mo- tor valve from the list. ETS 6 (unipolar) Has by default "Open coil" alarm disa- bled, can be enabled by BJ27. If you want to correct a danfoss given valve profile, then first select the relevant valve and then select user def. For user defined: For non-Danfoss valve define "Valve configuration" = 1 i.e. UserDef and set the motor parameters i.e BJ01, BJ09, BJ05, BJ06, BJ07 If previous valve selection is ETS_6 (unipolar), then Valve total steps is counted as half steps (480 half steps for ETS 6) 0: Select type 2: CCM_10 3: CCM_20 4: CCM_30 5: CCM_40 6: CCMT_3L 7: CCMT_5L 8: CCMT_8L 9: CCMT_10L 10: CCMT_2 11: CCMT_4 12: CCMT_8 13: CCMT_16 14: CCMT_24 15: CCMT_30 16: CCMT_42 17: CTR_20 20: ETS_6 (Unipolar) 51: ETS_8M (Bipolar) 21: ETS_12 23: ETS_250 27: ETS_175L 28: ETS_25C 31: ETS_50C 32: ETS_1175L 28: ETS_25C 31: ETS_50C 32: ETS_510 23: ETS_400 34: ETS_400 35: ETS_510 38: ETS_400 34: ETS_401 35: ETS_550 138: ETS_400 34: ETS_401 35: ETS_550 138: ETS_400 34: ETS_401 35: ETS_50 36: ETS_102 32: ETS_102 32: ETS_12 30: ETS_224 20: ETS_224 20: ETS_12 4: KVS_2C 42: KVS_3C 43: KVS_5C 44: KVS_15 45: KVS_42 1: User def.
AJ02	Valve motor decay mode	3285	Only consider changing to slow decay if the cable distance between the control- ler and the valve is longer i.e 30m and issue with step loss because of EMC
AJ03	Valve step mode	3286	Valve stepper mode define the resolu- tion of current through use of micro stepping. For Bipolar motors 1/8 is rec- ommend having smooth and powerful operation $0 = Full:$ only 1 current level pr step 1 = Half: 2 current levels (micro steps) pr full step 2 = 1/4: 4 current lev- els (micro steps) pr full step 3 = 1/8: 8 current levels (micro steps) pr full step 4 = 1/16: 16 current levels (micro steps) pr full step



AVA4Value step positioning3.287In general, Unclose value are position at Full step.A105Wahe total steps3.288Wahe total warber of stepsA105Wahe total steps3.288Wahe total warber of stepsA106Wahe speed3.289Wahe speed set in this parameter b.05 Wahe warb, Dipler speed warb total warber of stepsA106Value speed3.289Wahe speed set in this parameter b.05 Wahe warb, Dipler speed warb total warber of stepsA107Value speed3.289Wahe speed set in this parameter speed and total or half step at total warber of stepsA107Value speed3.290Wahe steps set in this parameter speed at total warb high total regard set in this parameter speed at total warb high total speed at total warb high total warb stepsA.007Wahe start speed3.291The fatture start speed warb speed at total warb high total warb start speed warb high total warb start speed warb speed at total warb high total warb start speed warb high to tow warb start speed warb high tot and speed at total warb high to tow warb start	LABEL	DESCRIPTION	ADU	Explanation
A03Valve total steps3288where the total number of steps. member to set if the value shull for a full are in parameter both of the value shull for a full are in parameter both of the value shull for a full are in parameter both of the value shull be driven with high, low torque to the motor, on the other hand torque to the motor on the sould to to the step et al.A007Walve start speed3290The facture is used with high one speedA008Walve energency speed3291In case of emergency to power loss walve can down with high of walve speedA009Valve drive current3293Other and band steps.A110Valve acceleration time3293Other and band steps.A111Valve acceleration time3293Other and band steps.A112Valve holding current3293Other and band steps.A113Valve acceleration time after step3296After fact st	AJ04	Valve step positioning	3287	valve. Define the valve step positioning. In general, Unipolar valve are position in halfstep whereas bipolar are position at
Alo6Valve speedSpeedSpeed als peed als pe	AJ05	Valve total steps	3288	valve. Define the total number of steps. Remember to set if the valve should po- sition in Half or Full step in parameter
AJ07Valve start speedaspeedaspeedspeedsthe first will be taken with a backe sure speed than normal speedAJ08Valve emengency speed3291is decleration of the motor. Make sure mormal speedin case of emergency i.e. power lossAJ08Valve emengency speed3291in case of emergency i.e. power lossspeed. Unit is % taken from normal speedAJ09Valve drive current3292in case of emergency i.e. power lossspeed. Unit is % taken from normal speedAJ10Valve drive current3293Only for non-Danfoss stepper motorAJ11Valve acceleration current3293Only for non-Danfoss stepper motorAJ11Valve acceleration time3293Only for non-Danfoss stepper motorAJ11Valve acceleration time3293Only for non-Danfoss stepper motorAJ11Valve acceleration time3293Only for non-Danfoss stepper motorAJ11Valve acceleration time3293Case of emergency i.e. power lossAJ12Valve biding current3295Case of the current frequirement of the avae the fire will we design screet the acceleration timeAJ13Valve excitation time after stop3296Methed acceleration time step for zono more step is assessed acceleration time step is assessed acceleration backlashAJ13Valve duty cycle3293Case step of of cono more step is assessed of the full stype for going into holding the faiture.AJ14Compensation backlash3297The the valve change direction compensation backlashAJ13Valve duty cycle3298Case	AJ06	Valve speed	3289	or balanced speed as set in this parame- ter. Note: higher speed will provide low torque to the motor, on the other hand low speed will provide the higher tor- que. There should be balance between speed and torque depending on the ap- plication. Unit is Pulses per second, a pulse is either a full or a half step as de- fined in "Valve step positioning"
AU08Valve emengency speed3291valve can be driven with high or low speed. Unit is the star from normal speedAU09Valve drive current3292Only for non-Danfoss stepper motor valve. Set the current current or valve. Set the current to the motor in mA Peak. Note: Im A RMS = 1.41 mA peakAU10Valve acceleration current3293Define current during acceleration in % of non-Danfoss stepper motor valve. Set the current during acceleration in % of the motor in mA Peak. Note: Im A RMS = 1.41 mA peakAU10Valve acceleration current3293Define current during acceleration in % of non-Danfoss stepper motor valve. Holding currentAU11Valve acceleration time3294Only for non-Danfoss stepper motor valve. Holding currentAU12Valve holding current3295Only for non-Danfoss stepper motor valve. Holding current is too secure the actual position. Not all valve design sre- quire holding current. heck with the actual position. Not all valve design sre- quire holding current. heck with the valve manducturer if not mentoned on ther ilterature.AJ13Valve excitation time after stop3296Then the valve change direction com- pensation backlashAJ14Compensation backlash3297Valve duty cycle init the valve travel time is no so fit all stoke Note: setting this value to Zero means disabiling the feature.AJ15Valve duty cycle3298Extra steps for zero calibrating valve po- sition, scied as a percentage of the full open attack in scied to as only silghtly openAJ16User defined overdrive3299Extra steps for zero calibrating valve po	AJ07	Valve start speed	3290	speeds. The first will be taken with a lower speed than normal to avoid too big acceleration of the motor. Make sure to select a start speed which is recom- mended for the valve Unit is % taken
AJ09Valve drive current3292valve. Set the current requirement of n AP Peak. Note: ImA RMS = 1.41 mA PeakAJ10Valve acceleration current3293Define current during acceleration in % of noninal currentAJ11Valve acceleration time3294Define current during acceleration in % of noninal currentAJ12Valve acceleration time3294Define current during acceleration timeAJ12Valve holding current3295Only for non-Danfoss stepser motor valve. Holding current is to secure the actual position. Not all valve designs re- quire holding current is not secure the actual position. Not all valve designs re- quire holding current is to secure the actual position. Not all valve designs re- quire holding current is to secure the actual position. Not all valve designs re- 	AJ08	Valve emengency speed	3291	valve can be driven with high or low speed. Unit is % taken from normal
All0Valve acceleration current3293of nominal currentAJ11Valve acceleration time3294Define acceleration timeAJ12Valve holding current3295Only for non-Danfoss stepper motor valve. Holding current is too secure the actual position. Not all valve designs re- quire holding current from text with the valve manufacturer if not mentioned on their literature.AJ13Valve excitation time after stop3296After list step before going into holding mode full current is kept for some time Then the valve change direction com- pensation backlash sused to overcome turining play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the feature.AJ15Valve duty cycle3298The the valve change direction com- pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the feature.AJ15Valve duty cycle3298The direction more step. is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the feature.AJ16User defined overdrive3299Siton zero calibrating valve po- sition, scaled as a percentage of the full opening.AJ17Overdriver enable OD3300To do a overdrive OD has to be higher than Overdrive enable OD during oper- ation. This is use thi avoid not needed overdrive it he valve is only slightly open	90LA	Valve drive current	3292	valve. Set the current requirement of the motor in mA Peak. Note: 1mA RMS =
AJ12Valve holding current3295Only for non-Danfoss stepper motor valve. Holding current is too secure the actual position. Not all valve designs re- quire holding current. heck with the valve manufacturer if not mentioned on their literature.AJ13Valve excitation time after stop3296After last step before going into holding mode full current is kept for some timeAJ14Compensation backlash3297Then the valve change direction com- pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full store Note: setting this value to Zero means disabling the feature.AJ15Valve duty cycle3298Extra steps for zero calibrating valve po- stion, scaled as a percentage of the full opening.AJ16User defined overdrive3299Extra steps for zero calibrating valve po- stion, scaled as a percentage of the full opening.AJ17Overdriver enable OD3300To do a overdrive OD has to be higher than Overdrive enable OD during oper- aution valve is only slightly open	AJ10	Valve acceleration current	3293	
AJ12Valve holding current3295valve. Holding current is to secure the actual position. Not all valve designs re- quire holding current is to secure the valve manufacturer if not mentioned on their literature.AJ13Valve excitation time after stop3296After last step before going into holding mode full current is kept for some timeAJ14Compensation backlash3297Then the valve change direction com- turning play. In the direction more step is added. Unit is in % of the full stroke Note setting this value to zero means disabling the feature.AJ15Valve duty cycle3298Valve duty cycle limit the valve travel tivalue to zero means disabling the feature.AJ16User defined overdrive3299Extra steps for zero calibrating valve po- sition, scaled as a percentage of the full alvay set a ellowed.AJ17Overdriver enable OD3300To do a overdrive OD has to be higher than Overdrive enable OD during oper- ation. This is us full avoid to zero ation. This is us full avoid to zero ation, scaled as a percentage of the full avoid to zero enable oper- is us full avoid to zero enable oper- ation.	AJ11	Valve acceleration time	3294	Define acceleration time
Alisvalue excitation time after stop3296mode full current is kept for some time mode full current is kept for some timeAliaCompensation backlash3297Then the valve change direction compensation backlash is used to overcome time added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the feature.AliaCompensation backlash3297Valve duty cycle limit the valve travel time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is made. A valve force close will always be allowed.AliaUser defined overdrive3299Extra steps for zero calibrating valve po- sition, scaled as a percentage of the full opening.AliaOverdrive enable OD3300To do a overdrive oD has to be higher taion. This is use full avoid not needed overdrive if the valve is only slightly openAliaImage: Section of the valve is only slightly openSection of the valve is only slightly openAliaImage: Section of the valve is only slightly openNext valve over drive will be suppressed until valve opening degree has been	AJ12	Valve holding current	3295	valve. Holding current is too secure the actual position. Not all valve designs re- quire holding current. heck with the valve manufacturer if not mentioned on
AJ14Compensation backlash3297pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means 	AJ13	Valve excitation time after stop	3296	After last step before going into holding mode full current is kept for some time
AJ15Valve duty cycle3298time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is made. A valve forced close will always be allowed.AJ16User defined overdrive3299Extra steps for zero calibrating valve po- sition, scaled as a percentage of the full opening.AJ17Overdriver enable OD3300To do a overdrive OD has to be higher than Overdrive enable OD during oper- ation. This is use full avoid not needed overdrive if the valve is only slightly openImage: Comparison of the subpressed until valve opening degree has beenNext valve over drive will be suppressed until valve opening degree has been	AJ14	Compensation backlash	3297	pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means
AJ16User defined overdrive3299sition, scaled as a percentage of the full opening.AJ17Overdriver enable ODassociationTo do a overdrive OD has to be higher than Overdrive enable OD during operation. This is use full avoid not needed overdrive if the valve is only slightly openImage: Comparison of the transformation of the transformation openation operation.State openationImage: Comparison openation operationState openationNext valve over drive will be suppressed until valve opening degree has been	AJ15	Valve duty cycle	3298	time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is made. A valve forced close will always
AJ17       Overdriver enable OD       3300       than Overdrive enable OD during oper- ation. This is use full avoid not needed overdrive if the valve is only slightly open         Image: Construction of the suppressed Next valve opening degree has been       Next valve over drive will be suppressed until valve opening degree has been	AJ16	User defined overdrive	3299	
until valve opening degree has been	AJ17	Overdriver enable OD	3300	than Overdrive enable OD during oper- ation. This is use full avoid not needed overdrive if the valve is only slightly
is use full avoid not needed overdrive if the valve is only slightly open	AJ18	Overdrive block time	3301	bigger than "Overdrive enable OD". This is use full avoid not needed overdrive if



Ali9     Value neutral zone     3302     signal. This focure in maintain the life       Ali9     Value neutral zone     signal. This focure in the neutral zone       Ali20     Preset OD     3303     grin Dia to general general zone       Ali22     Value size reduction     3305     Grin Dia to general general zone       Ali22     Value size reduction     3305     Grin Dia to general general zone       Ali23     Porced overdrive time     3306     Grin Dia to general general science       Ali24     Manfolded values     3307     Grin The factor walue to general science       Ali24     Manfolded values     3307     Grin Control Walue Science Control Walue Science       Ali24     Manfolded values     3307     Grin The factor Walue Science       Ali24     Manfolded values     3307     Science To and and to and	LABEL	DESCRIPTION	ADU	Explanation
A.20     Preset OD     3393     go to this opering degree.       A.22     Valve size reduction     3305     Bin means no valve Size in application. Example means no valve Size in colucid means that the valve size is reduced by Bin means no valve Size in colucid means that the valve size is reduced by Bin means no valve Size in colucid means that the valve size is reduced by Bin means no valve Size in colucid means that the valve size is reduced by Bin means no valve Size in the valve size is reduced by Bin means no valve Size in the valve size is reduced by Bin means no valve Size in the valve size is reduced by Bin means no valve Size in the valve size is reduced by Bin means no valve Size is reduced by Bin bin Bin Bin Bin Bin Bin Bin Bin Bin Bin B	AJ19	Valve neutral zone	3302	necessary movement of the valve be- cause of fluctuating signal from control signal. This feature will maintain the life- time of the valve. In the neutral zone there is no valve movement. The valve will only move if the signal from the
AJ22Wake size reduction3305Sized wakes in an application. Examples from 100% to 8%, see reduced of from 100% to 8%, and that maximum number of steps are reduced by 20% number of steps are reduc	AJ20	Preset OD	3303	The DI can be used to force the valve to go to this opening degree.
A123     Forced overdrive time     3306     drive in time evolution is able on end of the average close is done (forced value over- rule) Ecc at a close is done (forced value over- rule) Ecc at come of manifold values: 0:       A124     Manifolded values     3307     Selection of use of manifold values: 0:       A125     Manifolded value type     3308     Selection of use for manifold values: 0:       A125     Manifolded value type     3308     Selection of use for manifold values: 0:       A125     Manifolded value type     3308     Selection of use for manifold values: 0:       A126     Manifolded value type     3308     Selection of use for manifold values: 0:       A127     Manifolded value type     3309     Selection of use are neceling same value opening digree.       A126     Manifolded value single move band     3309     Selection value value type       A127     Use open coil alarm     3310     Enable monitoring of open coil alarm       A127     Use open coil alarm     3310     Select the type of Danfoss stepper mo- ter value for the value for the list ETS 6 (upice) of the value for the value for the value configuration       b.000     Value configuration     303 <t< td=""><td>AJ22</td><td>Valve size reduction</td><td>3305</td><td>sized valves in an application. Examples: 0% means no valve size reduction 20% means that the valve size is reduced from 100% to 80%, and that maximum</td></t<>	AJ22	Valve size reduction	3305	sized valves in an application. Examples: 0% means no valve size reduction 20% means that the valve size is reduced from 100% to 80%, and that maximum
AJ24     Mantfolded valves     3307     No. 1: Yes       Selection of mode for manifolded valves 0: Seq: Valve A 0: 50%: Valve B 4 56(10%) Whee A and Whee B And Selection of mode A there is Valve B 1: Sec eq. 60(10%) Whee A and Whee B And Selection of mode A there is Valve B 1: Sec eq. 60(10%) Whee A and Whee B And Selection of mode A there is Valve B 1: Sec eq. 60(10%) Whee A and Whee B And Selection of mode A there is Valve B A 2: Part Both valves are receiving same valve opening signal furming in paral- led B: 3: Optim: Dive valve is an opti- mized sequence, mainly one valve per control loop.       A125     Mantfolded valve single move band     3309     Used with "Mantfolded valve type" = 3: Optim: Disprise a band where only one of the two valves ownill move.       A127     Use open coil alarm     3310     enable. Moliticity Selection of the work only selection of walve. No 1: Yes       VLb     Configuration > Valve B     Select the type of Danfoss stepper mo- tor valve from the Ist. ETS 6 (unpolar) thes by defaul "Open coil alarm on valve. Root 1: Yes       bJ00     Valve configuration     3033     CGM, Tay. 1: Key CGM, 3:	AJ23	Forced overdrive time	3306	drive. If no valve overdrive has been performed within this period, then a valve close is done (forced valve over- drive). Be care full and consider eventu-
AJ25       Manifolded valve type       3308       Selection of modes for manifolded valves 0: Set 1000 KValve A But SA Set 1000 KValve B Aut SA Set 1000 KV Aute B Aut SA Set 1000 KV Aut SA Set 1000 KV Aute B Aut SA Set 1000 KV Aute SA SA SET 1000 KV AUTE SA SA SET 10000 KV AUTE SA SA SET 10000 KV AUTE SA SA SET 10000 KV AUTE SA	AJ24	Manifolded valves	3307	
AJ26       Manifolded valve single move band       3309       3: "Optim: Defines a band where only one of the two valves will move.         AJ27       Use open coil alarm       3310       Enable monitoring of open coil alarm on valve.0: No 1: Yes         VLb       Configuration > Valve B       Select the type of Danfoss stepper motor valve from the list. ETS 6 (unipolar) Has by default "Open coil" alarm disabled, can be enabled by BJ27. Hyou want to correct a danfoss given valve profile, then first select the relevant valve and then select user def. For user defined: For non-Danfoss valve define "Valve configuration = 1 i.e. UserDef and set the motor parameters is BJ01, BJ09, BJ05, BJ06, BJ06, BJ06, BJ06, BJ07, Hp revious valve selection is ETS 6 (unipolar), then Valve configuration         bJ00       Valve configuration       3033       CCM_103: CCM_204 : CCM_303: CCM_406 : CCM_305: CCM_406 : CCM_301: FTS = 600: S175, S072; ETS = 10: 20: ETS = 60: S175, S072; ETS = 10: 20: ETS = 500; ETS = 10: 20:	AJ25	Manifolded valve type	3308	Selection of modes for manifolded valves: 0: Seq: Valve A 0-50% - Valve B 50-100% (Valve A then Valve B) 1: Se- qEq: Valve A/B 0-50% - Valve B/A 50-100% Valve A and Valve B must alter- nately start from zero opening degree. 2: Par: Both valves are receiving same valve opening signal (running in paral- lel) 3: Optim: Drive valve in an opti- mized sequence, mainly one valve per
N227     Ose open con airm     3310     on value 0: No 1: Yes       VLb     Configuration > Valve B       Select the type of Danfoss stepper motor valve from the list. ETS 6 (unipolar) tor valve from the list. ETS 6 (unipolar) that by default "Open coll" airm disa- bled, can be enabled by B27. If you want to correct a danfoss given valve profile, then first select the relevant valve and then select user def. For user "Valve configuration =1 i.e. UserDef and set the motor parameters i.e. BJ01, BJ09, BJ05, BJ06, BJ07If previous valve selection is ETS_6 (unipolar), then Valve total steps is counted as half steps (480 half steps for ETS 6) 0: Select type 2: CCM_103 : CCM_204 : CCM_305: CCM_406 : CCM_317 : CCM_512 : CCM_406 : CCM_317 : CCM_512 : CCM_406 : CCM_317 : CCM_512 : CCM_412 : CCMT_61 : CCMT_412 : CCMT_61 : CCMT_61	AJ26	Manifolded valve single move band	3309	3: "Optim". Defines a band where only
bi00       Valve configuration       3033       CCM_103: CCM_204: CCM_305: Stepper motor valve from the list. ETS 6 (unipolar) Has by default "Open coil" alarm disabled, can be enabled by BJ27. If you want to correct a danfoss given valve profile, then first stepict the relevant valve and then select user def. For user defined: For non-Danfoss valve define "Valve configuration = 1 i.e. UserDefand set the motor parameters i.e. B01, B109, BJ05, BJ06, BJ07. If previous valve selection is ETS_6 (unipolar). If previous valve selection is ETS_5 (unipolar). If previous valve selection is ETS_6 (unipolar). If the cable. If the previous valve selection is ETS_6 (unipolar). If the previous valve selection is ETS_6 (unipolar). If the previous valve selection is ET	AJ27	Use open coil alarm	3310	
b/00Valve configuration3033CCM_10 3: CCM_201; Hor user big of CCM_201; Hor Use	VLb	Configuration > Valve B		
h 102 Valve motor decay mode 3312 the cable distance between the control	P100	Valve configuration	3033	tor valve from the list. ETS 6 (unipolar) Has by default "Open coil" alarm disa- bled, can be enabled by BJ27. If you want to correct a danfoss given valve profile, then first select the relevant valve and then select user def. For user defined: For non-Danfoss valve define "Valve configuration" = 1 i.e. UserDef and set the motor parameters i.e BJ01, BJ09, BJ05, BJ06, BJ07 If previous valve selection is ETS_6 (unipolar), then Valve total steps is counted as half steps (480 half steps for ETS 6) 0: Select type 2: CCM_10 3: CCM_20 4: CCMT_30 5: CCM_40 6: CCMT_31.7: CCMT_5L 8: CCMT_8L 9: CCMT_10L 10: CCMT_2 11: CCMT_4 12: CCMT_8 13: CCMT_16 14: CCMT_24 15: CCMT_30 16: CCMT_42 17: CTR_20 20: ETS_100 26: ETS_250 27: ETS_175L 28: ETS_250L 29: ETS_12C 22: ETS_100C 33: ETS_400 34: ETS_500 32: ETS_500 13: ETS_400 34: ETS_400 35: ETS_500 13: ETS_L0 i 39: ETS_L140: KVS_1C 41: KVS_2C 42: KVS_3C 43: KVS_5C 44: KVS_15 45: KVS_42 1: User def.
issue with step loss because of EMC	bJ02	Valve motor decay mode	3312	the cable distance between the control- ler and the valve is longer i.e 30m and



Image: Control of the control of th	LABEL	DESCRIPTION	ADU	Explanation
bl04Walve step positioning3314memory ingerent (Unipolar Valves are position in halfsep where balance are position in high valve	bJ03	Valve step mode	3313	tion of current through use of micro stepping. For Bipolar motors 1/8 is rec- ommend having smooth and powerful operation 0 = Full: only 1 current level pr step 1 = Half: 2 current levels (micro steps) pr full step 2 = 1/4: 4 current lev- els (micro steps) pr full step 3 = 1/8: 8 current levels (micro steps) pr full step 4 = 1/16: 16 current levels (micro steps) pr
b/05Value total steps3315value. Define the total number of steps. ostition in Hier Aules should be presented to step in parameter bits Value step in parameter 	bJ04	Valve step positioning	3314	valve. Define the valve step positioning. In general, Unipolar valve are position in halfstep whereas bipolar are position at
b/06Vaive speed3316Biblance igned as get a stern this parame re to Note injugate of the motor, on the other hand low speed will provide the mitor, on the other hand low speed will provide the mitor, on the other hand low speed will provide the mitor, on the other hand low speed will provide the mitor, on the other hand low speed will provide the mitor, on the other hand 	bJ05	Valve total steps	3315	valve. Define the total number of steps. Remember to set if the valve should po- sition in Half or Full step in parameter
bi07Valve start speedSalt and the initial speedSpeed in the first will be taken with a speed with is recommended for the valve Unit is % staken from normal speedbi08Valve emengency speed3318In case of emergency i.e. power loss valve can be driven with high or low valve seed that six steps from order valve. Set the current requirement of valve. Set the current term RARS in the motor in mA Pask. Note: Im ARMS in 141 mA peakbl09Valve drive current3320Define current during acceleration in % of normal acceleration in % of normal speedbl10Valve acceleration time3221Define acceleration in % of normal speedbl11Valve acceleration time3322Valve drive current during acceleration in % of normal speedbl12Valve holding current3322Pefine current during acceleration in % of normal speedbl13Valve excitation time after stop3323After last step before going into holding or walve former during speed into holding current head with the valve change direction combined full current last pot form ormal speedbl14Compensation backlash3324Then the valve change direction combined full current last pot form ormal speedbl15Valve duty cycle3326Etra steps for zero calibrating valve poc (els is valved for ced) is s	bJ06	Valve speed	3316	or balanced speed as set in this parame- ter. Note: higher speed will provide low torque to the motor, on the other hand low speed will provide the higher tor- que. There should be balance between speed and torque depending on the ap- plication. Unit is Pulses per second, a pulse is either a full or a half step as de-
b.08Valve emengency speed3318valve can be driven with high or low speed. Unit is % taken from normal speedb.09Valve drive current3319% from on-Darfoss stepper motor valve. Set the current torguirement of mode and the motor in mA Peak. Note: 1mA RMS = 1.11 mA Peak.b.010Valve acceleration current3320Define current during acceleration in % of nominal currentb.011Valve acceleration current3320Define current during acceleration in % of nominal currentb.012Valve acceleration time3322Only for non-Darfoss stepper motor valve. Holding current is too secure the actual position. Not all Warde designs recurrentb.012Valve holding current3322Only for non-Darfoss stepper motor valve. Holding current is too secure the actual position. Not all Warde designs recurrent for some time valve. Holding current is too secure the actual position. Not all Warde designs recurrent for some time valve. Banufacturer if not mentioned on their literature.b.013Valve excitation time after stop3323After last step before going into holding mode ful current is kept for some time sadded. Unit is in % of the full stroke Note: setting this value to Zero means disabiling the fature.b.014Compensation backlash3326Then the valve frange direction com- persation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabiling the fature.b.015b.016User defined overdrive3326Etra steps for zero calibrating valve po- sition, scieled as a percentage of the full <td>Ы07</td> <td>Valve start speed</td> <td>3317</td> <td>speeds. The first will be taken with a lower speed than normal to avoid too big acceleration of the motor. Make sure to select a start speed which is recom- mended for the valve Unit is % taken</br></br></br></td>	Ы07	Valve start speed	3317	speeds. The first will be taken with a lower speed than normal to avoid too 
bl09Valve drive current3319valve. Set the current requirement of the motor in mA Peak. Note: ImA RMS = 1.41 mA peakbJ10Valve acceleration current3320Define current during acceleration in % of nominal currentbJ11Valve acceleration time3321Define acceleration timebJ12Valve holding current3322Active acceleration timebJ12Valve holding current3322Active acceleration timebJ13Valve excitation time after stop3323After last step before going into holding mode full current is kept for some time to ware manufacturer if not mentioned on their literature.bJ14Compensation backlash3324Then the valve change direction com- pensation backlashbJ15Valve duty cycle3325Walve duty cycle limit the valve travel time. If the limited duty cycle is violated, balle and waves for zero calibrating valve going into doling opening.bJ16User defined overdrive3326Stor zero calibrating valve po- stion, This is use fold on uppening.bJ17Overdriver enable OD3327To do averdrive OD has to be higher than Overdrive enable OD during open- ation. This is use till avoid not meeded overdrive if the valve si only slightly	80Ld	Valve emengency speed	3318	valve can be driven with high or low speed. Unit is % taken from normal
D10Valve acceleration current3320of nominal currentbJ11Valve acceleration time3321Define acceleration timebJ12bJ12Valve holding current3322Valve holding current is too secure the actual position. Not all valve designs re- quire holding current is not secure the actual position. Not all valve designs re- quire holding current is not secure the actual position. Not all valve designs re- quire holding current is not secure the actual position. Not all valve designs re- quire holding current is not secure the actual position. Not all valve designs re- quire holding current is not secure the valve manufacturer if not mentioned on their literature.bJ13Valve excitation time after stop3323After last step before going into holding mode full current is kept for some time mode full current is kept for some time is added. Unit is not soft of value to zero means disabling the feature.bJ14Compensation backlash3324Then the valve charge direction com- pensation backlash is used to overcome turning play. In the direction more step is added. Unit is not soft of this solue to Zero means disabling the feature.bJ15Valve duty cycle3325Extra steps for zero calibrating valve po- sition, scaled as a percentage of the full opening.bJ16User defined overdrive3326Extra steps for zero calibrating valve po- sition, scaled as a percentage of the full opening.bJ17Overdrive enable OD3327To do a verdrive OD has to be higher than Overdrive is only slightly	60fq	Valve drive current	3319	valve. Set the current requirement of the motor in mA Peak. Note: 1mA RMS =
bJ12Valve holding current3322Only for non-Danfoss stepper motor valve. Holding current is too secure the actual position. Not all valve designs re- quire holding current. heck with the valve manufacturer if not mentioned on their literature.bJ13Valve excitation time after stop3323After last step before going into holding mode full current is kept for some timebJ14Compensation backlash3324Then the valve change direction com- pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the feature.bJ15Valve duty cycle3325Valve duty cycle limit the valve travel time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is pensition, scaled as a percentage of the full opening.bJ16User defined overdrive3326Extra steps for zero calibrating valve po- sition, scaled as a percentage of the full opening.bJ17Overdriver enable OD3327To do a overdrive OD has to be higher than Overdrive is only slightly	bJ10	Valve acceleration current	3320	5
bJ12Valve holding current3322valve. Holding current is to o secure the actual position. Not all valve designs re- quire holding current. Not all valve designs re- quire holding current is kept for some time rode full current is kept for some time pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the fautre.bJ14Compensation backlash3324Then the valve change direction com- pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the fautre.bJ15Valve duty cycle3325Valve duty cycle limit the valve travel time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is made. A valve forced close will always be allowed.bJ16User defined overdrive3326Extra steps for zero calibrating valve po- stor, scaled as a percentage of the full opening.bJ17Overdrive enable OD3327To do a overdrive OD has to be higher than Overdrive is only slightly	bJ11	Valve acceleration time	3321	Define acceleration time
b)13value excitation time after stop3323mode full current is kept for some timeb)14Compensation backlash3324Then the valve change direction compensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the feature.b)14Compensation backlash3324Valve duty cycle limit the valve travel time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is made. A valve forced close will always be allowed.b)16User defined overdrive3326Extra steps for zero calibrating valve po- sition, scaled as a percentage of the full opening.b)17Overdriver enable OD3327To do a overdrive OD has to be higher than Overdrive enable OD during oper- ation. This is use full avoid not needed overdrive if the valve is only slightly	bJ12	Valve holding current	3322	valve. Holding current is too secure the actual position. Not all valve designs re- quire holding current. heck with the valve manufacturer if not mentioned on
bJ14Compensation backlash3324Then the valve change direction compensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means disabling the feature.bJ15Valve duty cycle3325Valve duty cycle is violated, then a pause of minimum 5 sec. is made. A valve forced close will always be allowed.bJ16User defined overdrive3326Extra steps for zero calibrating valve position, scaled as a percentage of the full opening.bJ17Overdriver enable OD3327To do a overdrive OD has to be higher than Overdrive is used to not needed overdrive is only slightly	bJ13	Valve excitation time after stop	3323	After last step before going into holding mode full current is kept for some time
bJ15Valve duty cycle3325time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is made. A valve forced close will always be allowed.bJ16User defined overdrive3326Extra steps for zero calibrating valve po- stion, scaled as a percentage of the full opening.bJ17Overdrive enable OD3327To do a overdrive OD has to be higher than Overdrive enable OD during oper- ation. This is use full avoid not needed overdrive if the valve is only slightly	bJ14	Compensation backlash	3324	Then the valve change direction com- pensation backlash is used to overcome turning play. In the direction more step is added. Unit is in % of the full stroke Note: setting this value to Zero means
bJ16User defined overdrive3326sition, scaled as a percentage of the full opening.bJ17Overdrive enable OD3327To do a overdrive OD has to be higher than Overdrive enable OD during oper- ation. This is use full avoid not needed overdrive if the valve is only slightly	bJ15	Valve duty cycle	3325	time. If the limited duty cycle is violated, then a pause of minimum 5 sec. is made. A valve forced close will always
bJ17 Overdrive enable OD 3327 ation. This is use full avoid not needed overdrive if the valve is only slightly	bJ16	User defined overdrive	3326	
	Ы17	Overdriver enable OD	3327	To do a overdrive OD has to be higher than Overdrive enable OD during oper- ation. This is use full avoid not needed overdrive if the valve is only slightly



LABEL	DESCRIPTION	ADU	Explanation
b118	Overdrive block time	3328	Next valve over drive will be suppressed until valve opening degree has been bigger than "Overdrive enable OD". This is use full avoid not needed overdrive if the valve is only slightly open
Ы19	Valve neutral zone	3329	The feature is useful to prevent the un- necessary movement of the valve be- cause of fluctuating signal from control signal. This feature will maintain the life- time of the valve. In the neutral zone there is no valve movement. The valve will only move if the signal from the controller is outside the neutral zone.
bJ20	Preset OD	3330	The DI can be used to force the valve to go to this opening degree.
bJ22	Valve size reduction	3332	This parameter can help reduce over- sized valves in an application. Examples: 0% means no valve size reduction 20% means that the valve size is reduced from 100% to 80%, and that maximum number of steps are reduced by 20%
bJ23	Forced overdrive time	3333	0 hours = Not used Timer based over- drive. If no valve overdrive has been performed within this period, then a valve close is done (forced valve over- drive). Be care full and consider eventu- al problems by using the function
bJ24	Use open coil alarm	3334	Enable monitoring of open coil alarm on valve. 0: No 1: Yes
dSP	Configuration > Display		
D001	Display unit	3335	Change of the unit of measurement 0= MET temperature unit in display °C and pressure unit is bar, barg, 1= IMP tem- perature unit in display °F pressure unit in display psia, psig Note: The unit used in Modbus are °C and bar g
D002	Display timeout	3336	Display will time out and goes to home menu after the choosen value 0: No timeout 1: 1 minute 5: 5 minutes 10: 10 minute 30: 30 minutes 60: 60 minutes
buS	Configuration > Modbus		
CAdr	Controller address	3337	The unique Modbus device address of the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller)
CAdr C002	Controller address Bus sharing minimum update interval	3337 3341	the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con-
			the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller) EKE 100 will generate an alarm mini- mum update interval is violated (not
C002	Bus sharing minimum update interval	3341	the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller) EKE 100 will generate an alarm mini- mum update interval is violated (not updated within set time) Set the required Modbus RS 485 RTU baud rate (all units on bus most have
C002 C003 C004 Out	Bus sharing minimum update interval Modbus baudrate Modbus mode Service > Manual output	3341 3338 3339	the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller) EKE 100 will generate an alarm mini- mum update interval is violated (not updated within set time) Set the required Modbus RS 485 RTU baud rate (all units on bus most have same baud rate) Set the required Modbus RS 485 RTU data bit ( all units on bus most have same mode)
C002 C003 C004	Bus sharing minimum update interval Modbus baudrate Modbus mode	3341 3338	the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller) EKE 100 will generate an alarm mini- mum update interval is violated (not updated within set time) Set the required Modbus RS 485 RTU baud rate (all units on bus most have same baud rate) Set the required Modbus RS 485 RTU data bit ( all units on bus most have same mode) Read the status of alarm relay
C002 C003 C004 Out	Bus sharing minimum update interval Modbus baudrate Modbus mode Service > Manual output	3341 3338 3339	the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller) EKE 100 will generate an alarm mini- mum update interval is violated (not updated within set time) Set the required Modbus RS 485 RTU baud rate (all units on bus most have same baud rate) Set the required Modbus RS 485 RTU data bit ( all units on bus most have same mode)
C002 C003 C004 Out H007	Bus sharing minimum update interval Modbus baudrate Modbus mode Service > Manual output Alarm relay	3341 3338 3339 3769	the controller. Device address is used when multiple controllers are used in a Modbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller) EKE 100 will generate an alarm mini- mum update interval is violated (not updated within set time) Set the required Modbus RS 485 RTU baud rate (all units on bus most have same baud rate) Set the required Modbus RS 485 RTU data bit ( all units on bus most have same mode) Read the status of alarm relay Manual control of outputs For service purposes the individual relay outputs and valve can be controlled. 0=OFF: No override 1=ON: valve relay can be con- trolled. Going into manual mode no output will change from the current po-
C002 C003 C004 Out H007 AU01	Bus sharing minimum update interval Modbus baudrate Modbus mode Service > Manual output Alarm relay Manual mode A	3341 3338 3339 3769 3741	the controller. Device address is used when multiple controllers are used in a Nodbus network. Optional: reset Mod- bus device address to 1 by applying 5 Volt on +Bat. input (use +5V from con- troller) EKE 100 will generate an alarm mini- mum update interval is violated (not updated within set time) Set the required Modbus RS 485 RTU baud rate (all units on bus most have same baud rate) Set the required Modbus RS 485 RTU data bit (all units on bus most have same mode) Read the status of alarm relay Manual control of outputs For service purposes the individual relay outputs and valve can be controlled. 0=OFF: No override 1=ON: valve relay can be con- trolled. Going into manual mode no output will change from the current po- sition/opening degree. Manual mode time out and go to off when Manual mode timeout is excee- ded. Setting to zero no timeout will



LABEL	DESCRIPTION	ADU	Explanation
bU01	Manual mode B	3755	Manual control of outputs For service purposes the individual relay outputs and valve can be controlled. 0=OFF: No override 1=ON: valve relay can be con- trolled. Going into manual mode no output will change from the current po- sition/opening degree.
bU02	Manual mode timeout B	3207	Manual mode time out and go to off when Manual mode timeout is excee- ded. Setting to zero no timeout will happen.
bU03	Manual OD B	3756	This feature is basically use in a service mode to drive the stepper motor valve to the desired level. The desired valve opening degree is provided in OD%.
CSI	Service > Controller service info.		
H100	Sales number 080G5xxx	3770	Last 3 digits in sales number
SVEr	Software version	3771	Application software version
RSt	Service > Factory reset		
H102	Factory reset	3340	Reset to parameters to factory default
buS	Service > Modbus		
C002	Bus sharing minimum update interval	3341	EKE 100 will generate an alarm mini- mum update interval is violated (not updated within set time)
AX00	Modbus enable A	4001	Modbus signal, updated from Modbus
bX00	Modbus enable B	4002	Modbus signal, updated from Modbus
AX01	Modbus heat cool A	4003	Modbus signal, updated from Modbus
bX01	Modbus heat cool B	4004	Modbus signal, updated from Modbus
AX02	Modbus preset OD A	4005	Modbus signal, updated from Modbus
bX03	Modbus preset OD B	4006	Modbus signal, updated from Modbus
AX04	Modbus defrost A	4007	Modbus signal, updated from Modbus
bX04	Modbus defrost B	4008	Modbus signal, updated from Modbus
AX05	Modbus Pe A	4009	Modbus signal, updated from Modbus
bX05	Modbus Pe B	4010	Modbus signal, updated from Modbus
AX06	Modbus S2 A	4011	Modbus signal, updated from Modbus
bX06	Modbus S2 B	4012	Modbus signal, updated from Modbus
AX07	Modbus S3 A	4013	Modbus signal, updated from Modbus
bX07	Modbus S3 B	4014	Modbus signal, updated from Modbus
AX08	Modbus S4 A	4015	Modbus signal, updated from Modbus
bX08	Modbus S4 B	4016	Modbus signal, updated from Modbus
AX09	Modbus external reference A	4017	Modbus signal, updated from Modbus
bX09	Modbus external reference B	4018	Modbus signal, updated from Modbus
AX11	Modbus compressor % A	4021	Modbus signal, updated from Modbus
bX11	Modbus compressor % B	4022	Modbus signal, updated from Modbus

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