

**AKO-16526****AKO-16526A**

# MODBUS map

## Introduction

This document is aimed at describing to the user the operation of the MODBUS RTU communications series protocol implemented by AKO in the AKOCORE controllers. We should take into account that we assume that the user who wants to interact with any of our equipment with communication capacity has some knowledge of the protocol.



**IMPORTANT:** The functions and parameters described below are available depending to the chosen unit, for more information consult the device's user manual.

## Technical specifications

RS-485 communications

Physically speaking, the AKOCORE devices can be connected to a RS-485 communications bus with other units. This is a multipoint connection where the maximum distance is 1200\* m. The configuration of this bus should be identical to the one presented in the following table:

RS-485 SERIES CONFIGURATION	
Baud rate	9600**, 19200, 38400, 57600
Data length	8 bits
Parity bit	No
Stop bits	1 bit

## Modbus protocol

The protocol defines a network configuration where a network manager device (master) coexists with one or several slaves, up to a maximum of 32 networked devices (247 in the case of placing repeaters in the RS-485 network).

Among the two transmission modes defined by the protocol: ASCII and RTU (Remote Terminal Unit), AKO adopts the RTU mode. It must be said that in a network of devices connected via the MODBUS protocol, devices cannot be shared using different transmission modes.

The datagram format in RTU format is:



The maximum data unit is the integer (2 bytes)

T is the time of transition of one character.

## Defined MODBUS functions

AKO solves the management of its devices using several basic functions of the MODBUS protocol:

Function	Definition	Description of operation
03	Read holding registers	Reading of multiple logs
06	Preset single registers	Writing a log
16	Preset multiple registers	Writing of multiple logs

## Definitions

Types of log	
N	Numeric value
Nx10	Numeric value multiplied by 10, it has to be divided by 10 to represent it correctly.
Nx100	Numeric value multiplied by 100, it has to be divided by 100 to represent it correctly.
UTF8	2 bytes utf8 (to represent texts)
BITS	Bit map, each bit represents a value, 0 = not active, 1 = active.
Types of access	
R	Read-only. (Parameters to display to the user in the parameter section)
W	Read and write. (Parameters to display to the user in the parameter section)

\* Maximum distance at 9600 baud, the distance is reduced on increasing the baud rate.

\*\*Default value.

## Parameters

It allows the user to display and edit the operating parameters.

### Regulation and control (rE)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
200	N x100	W	SP	Temperature setting (Set Point)	-5000 - 9900	-5000	0	9900
201*	N	W	CE	SELFDRIIVE mode	0= Deactivated 1= Activated	0	0	1
202	N x100	W	C0	Probe 1 calibration (Offset) <b>AKO-15626</b>	-2000 - 2000	-2000	0	2000
202*	N x100	W	C0	Probe 1 calibration (Offset) <b>AKO-15626A</b>	-400 - 400	-400	0	400
203	N x100	W	C1	Probe 1 differential (Hysteresis)	10 - 2000	10	200	2000
204	N x100	W	C2	Set point top locking	-5000 - 9900	C3	9900	9900
205	N x100	W	C3	Set point bottom locking	-5000 - 9900	-5000	-5000	C2
206	N	W	C4	Type of delay for the protection of the compressor	0 = Minimum time of compressor in OFF 1 = Minimum time of compressor in OFF and in ON in each cycle	0	0	1
207	N	W	C5	Protection delay time	0 - 120	0	0	120
208	N	W	C6	COOL relay status with fault in probe 1	0 = OFF; 1 = ON; 2 = Average prior 24 hours; 3 = According to C7 and C8	0	2	3
209	N	W	C7	Time of relay ON in the event of damaged 1 probe	0 - 120	0	10	120
210	N	W	C8	Time of relay OFF in the event of damaged 1 probe	0 - 120	0	5	120
211	N	W	C9	Maximum duration of the continuous cycle mode	0 - 48	0	0	48
212	N x100	W	C10	Variation of the set point (SP) in continuous cycle mode	-14900 - 0	0	-5000	C3-SP
213	N x100	W	C12	Variation of the set point (SP) when the change set point change function is active	-14900 - 14900	C3-SP	0	C2-SP
214	N	W	C19	Maximum time for start-up after gas collection (values between 1 and 9 seconds are not accepted)	0 - 120	0	0	120
215	N	W	C20	Maximum time for pump down	0 - 15	0	0	15
217	N	W	C22	Stop fans and compressor on opening door	0 = No 1 = Yes	0	0	1
218	N	W	C23	Start-up delay for fans and COOL when door open	0 - 999	0	0	999
219*	N	W	C24	Delay time of cold stop with door open	0 - 999	0	0	C23
220*	N	W	C25	Influence of probe S3 when regulating with two temperature probes	0 - 95	0	0	95
221*	N x100	W	C27	Probe 4 calibration (S4)	-400 - 400	-400	0	400

\*Only available on AKO-16526A

## Defrost (dEF)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
230	N	W	d0	Defrost frequency (time between 2 starts)	0 - 96	0	6	96
231	N	W	d1	Maximum defrost duration	0 - 255	0	Inl	255
232	N	W	d2	Type of message during the defrost	0=sign of the real temperature; 1=sign of the temperature at the start of the defrost; 2=sample of the dEF message	0	2	2
233	N	W	d3	Maximum message duration	0 - 255	0	5	255
234	N x100	W	d4	Final defrost temperature <b>AKO-15626</b>	-5000 - 5000	-5000	800	5000
234*	N x100	W	d4	Final defrost temperature <b>AKO-15626A</b>	0 - 5000	0	800	5000
235	N	W	d5	Defrost on connecting the unit	0=NO, first defrost according to d0; 1=YES, first defrost according to d6	0	0	1
236	N	W	d6	Delay of the defrost start on connecting the unit	0 - 255	0	0	255
237	N	W	d7	Type of defrost	0=resistors; 1=air/fans 2=hot gas	0	Inl	2
238	N	W	d8	Time calculation between defrost periods:	0=total real time 1=sum of COOL time connected	0	0	1
239	N	W	d9	Drip time when a defrost finishes	0 - 255	0	1	255
240*	N	W	d30	Defrost strategy in SELFDRIVE mode	0 - 10	0	5	10
241*	N	W	d31	Maximum time without defrosting	0 - 999	0	96	999
242*	N	W	d32	Maximum time of cold room outside the temperature regulation range	0 - 10	0	2	10

\*Only available on AKO-16526A

## Evaporator fans (FAn)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
250	N x100	W	F0	Shutdown temperature of fans	-5000 - 5000	-5000	4500	5000
251	N x100	W	F1	Probe 2 differential if fans are shut down (If I00≠1)	10 - 2000	10	200	2000
252	N	W	F2	Shut down fans when the compressor shuts down	0 = No 1 = Yes	0	0	1
253	N	W	F3	Status of the fans during the defrost	0=Shut down; 1=Running	0	Inl	1
254	N	W	F4	Delay of start-up after defrost (If F3=0)	0 - 99	0	2	99
257*	N	R	F10	Fan control type*	0=ON/OFF 1=frequency inverter	0	0	1

## Expansion valve (EEV)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
340	N	R	u00	Valve type <b>AKO-15626</b>	0=solenoid + EV thermostat 1= PWM-type EEV 2=Stepper-type EEV*	0	Inl	2
340*	N	R	u00	Valve type <b>AKO-15626A</b>	1= PWM-type EEV 2=Stepper-type EEV*	1	Inl	2
341	N x100	W	Sh	Superheating set point	10 - 4000	10	800	4000
342	N	R	u02	Refrigerant gas type	0=R404A 1=R134A 2=R407A 3=R407F 4=R410A 5=R450A 6=R513A 7=R744 8=R449A 9=R290 10=R32 11=R448A 12=R1234ze 13=R23 14=R717 15=R407C 16=R1234yf 17=R22 18=R454c 19=R455a 20=R507a 21=R515b 22=R452a 23=R452b 24=R454a	0	0	24
343	N	W	u03	PWM cycle time	2 - 10	2	6	10
344	N x100	W	u04	Proportional constant value (P)	100 - 10000	100	1000	10000

\*Only available on AKO-16526

## Expansion valve (EEV)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
345	N x100	W	u05	Integral constant value (I)	0 - 10000	0	1000	10000
346	N x100	W	u06	Derivative constant value (D)	0 - 10000	0	0	10000
347	N	W	u07	Opening value of the electronic expansion valve when cooling is activated	0 - 100	u13	50	u12
348	N	W	u08	Duration of valve opening on cooling demand	2 - 240	2	5	240
349	N	W	u09	Valve opening value with sensor error S5 or S6	0=fixed opening according to u10 1=average opening over the last 24 hours	0	0	1
350	N	W	u10	Valve opening value with sensor error S5 or S6 (if u09=0)	0 - 100	u13	0	u12
351	N	W	u11	Manual valve opening value (0=disabled) (cycles acc. to u03)	0 - 100	u13	0	u12
352	N	W	u12	Maximum valve opening value	0 - 100	u13	0	100
353	N	W	u13	Minimum valve opening value	0 - 100	0	0	u12
354	N	W	u14	Valve opening value after defrost (0=disabled), (duration according to u15)	0 - 100	0/ u13	0	u12
355	N	W	u15	Duration of valve opening after defrosting	0 - 240	0	0	240
356	N	W	u16	Valve opening in case of LOP error (0=valve closed)	0 - 100	0/ u13	0	u12

## Alarms (AL)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
260	N	W	A0	Configuration of the temperature alarms	0=Relative to SP 1=Absolute	0	1	1
261	N x100	W	A1	Alarm for maximum in probe 1 (It should be higher than the SP)	-5000 - 9900	A2	9900	9900
262	N x100	W	A2	Alarm for minimum in probe 1 (It should be lower than the SP)	-5000 - 9900	-5000	-5000	A1
263	N	W	A3	Delay of temperature alarms in the start-up	0 - 120	0	0	120
264	N	W	A4	Delay of temperature alarms from the end of a defrost	0 - 99	0	0	99
265	N	W	A5	Delay of temperature alarms from when the A1 or A2 value is reached	0 - 99	0	30	99
266	N	W	A6	Delay of the external alarm/Severe external alarm on receiving a signal in digital input (I10 or I20 =2 or 3)	0 - 120	0	0	120
267	N	W	A7	Delay of external alarm deactivation/Severe external alarm deactivation when the signal in digital input disappears (I10 or I20=2 or 3)	0 - 120	0	0	120
268	N	W	A8	Show warning if the defrost ends for maximum time	0 = No 1 = Yes	0	0	1
269	N	W	A9	Relay alarm polarity	0= Relay ON in alarm (OFF without alarm) 1= Relay OFF in alarm (ON without alarm)	0	0	1

## Alarms (AL)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
270	N x100	W	A10	Differential of temperature alarms (A1 and A2)	10 - 2000	10	100	2000
272	N	W	A12	Delay of open door alarm (If I10 or I20=1)	0 - 120	0	10	120
275	N x100	W	A20	Minimum superheating value for LSH alarm	0 - Sh	0	200	Sh
276	N	W	A21	LSH alarm activation delay	0 - 240	0	30	240
277	N x100	W	A22	LSH alarm hysteresis	10 - 4000	10	200	Sh / A20
278	N x100	W	A23	Maximum overheating value for LSH warning	Sh - 4000	Sh	4000	4000
279	N	W	A24	Delayed activation of the HSH warning	0 - 240	0	30	240
280	N x100	W	A25	HSH warning deactivation hysteresis	10 - 4000	10	200	A23 / Sh
281	N x100	W	A26	Maximum evaporating pressure (MOP)	0 - 6000	0	6000	6000
282	N x100	W	A27	MOP alarm activation delay (delay time for activating alarm after threshold has been exceeded)	0 - 240	0	30	240
283	N x100	W	A28	MOP alarm deactivation hysteresis (when the pressure drops below the MOP-hysteresis level the alarm is deactivated)	10 - 6000	10	100	6000
284	N x100	W	A29	Minimum evaporating pressure (LOP)	-100 - 800	-100	0	800
285	N	W	A30	LOP alarm activation delay (delay time for activating alarm after threshold has been exceeded)	0 - 240	0	30	240
286	N x100	W	A31	LOP alarm deactivation hysteresis (when the pressure exceeds the LOP-hysteresis level the alarm is deactivated)	10 - 800	10	100	800

## Basic configuration (bcn)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
290	N	W	b00	Delay of all functions on receiving power supply	0 - 255	0	0	255
291	N	W	b01	Cold room light timing	0 - 999	0	0	999
292	N	W	b10	Function of password	0=Inactive 1=Block access to parameters 2=Block keypad	0	0	2
293	N	W	PAS	Access code (Password)	0 - 99	0	0	99
294	N	W	b20	MODBUS address	1 - 247	1	1	247
295	N	W	b21	Communication speed	0 = 9600bps 1 = 19200bps 2 = 38400bps 3 = 57600bps	0	0	3
296	N	W	b22	Acoustic alarm enabled	0 = No 1 = Yes	0	1	1
297	N	W	b23	Lower display function	1=sensor S2, 2=sensor S3, 3=sensor S4, 4=sensor S5, 5=superheating, 6=pressure sensor, 7=% EEV, 8=% eFAN, 9=carousel, 10=off	0	Inl	10
299	N	W	b30	Activation of manual calibration	0=Deactivated 1= Activated Requires security code	0	0	1
298	N	R	Unt	Work units	0 = °C 1 = °F	0	0	1

\*Only available on AKO-16526A

## Inputs and outputs (In0)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
310	N	W	I00	Connected probes	1 = Cold room temp. 2 = Cold room temp. + Evaporator temp.	1	2	2
311	N	W	I10	D1/S3 input configuration	0=deactivated, 1=door contact, 2=external alarm, 3=severe external alarm, 4=change SP, 5=remote defrost, 6=defrost lockout, 7=low pressure switch, 8=remote activation in Stand-by mode, 9=product temperature	0	InI	9
312	N	W	I11	D1 input polarity	0=activates on closing 1=activates on opening contact	0	0	1
313	N	W	I20	D2 / S4 input configuration	0=deactivated, 1=door contact, 2=external alarm, 3=severe external alarm, 4=change SP, 5=remote defrost, 6=defrost lockout, 7=high pressure switch for hot gas, 8=remote activation of Stand-by mode, 9=product temperature, 10=defrost 2 <sup>nd</sup> evaporator 11=2nd cold room temperature probe*	0	InI	10 (*11)
314	N	W	I21	D2 input polarity	0=activates on closing 1=activates on opening contact	0	0	1
315**	N	W	I30	D3 / S5 input configuration	0=deactivated, 1=door contact, 2=external alarm, 3=severe external alarm, 4=change SP, 5=remote defrost, 6=defrost lockout, 7=remote activation of Stand-by mode, 8=Product temperature, 9=superheating temperature (Sh)	0	InI	9
316**	N	W	I31	D3 input polarity	0=activates on closing 1=activates on opening contact	0	0	1
317	N	W	I60	Pressure units	0= Bar 1= PSI	0	InI	1

\*Only available on AKO-16526A / \*\*Only available on AKO-16526



## Inputs and outputs (In0)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
318	N	W	l61	Pressure sensor type (S6)	0=Disabled 1=4-20mA 2=0-5V 3=0,5-4,5V 4=0-10V 5=1-5V	0	0	5
319	N x100	W	l62	Minimum pressure sensor value (4mA, 0V, 0,5V, 1V)	-100 - 6000	-100	0	l63
320	N x100	W	l63	Maximum pressure sensor value (20mA, 5V, 4.5V, 10 V)	-100 - 6000	l62	1200	6000
321	N x100	W	l64	Pressure sensor calibration (offset)	-1000 - 1000	-1000	0	1000
323	N	W	o00	AUX 1 relay configuration	0=deactivated 1=compressor / crank-case resistance, 2=light, 3=virtual control, 4= alarm, 5=resistor door frame 6=Drainage resistor*	0	InI	5 (*6)
324	N	W	o10	AUX 2 relay configuration	0=deactivated, 1=alarm, 2=light, 3=virtual control, 4=defrost 2 <sup>nd</sup> evaporator, 5=resistor. door frame, 6=equal solenoid status, 7=equal device status 8=Drainage resistor*	0	2	7 (*8)
325	N	W	o20	AUX 3 relay configuration	0=deactivated, 1=alarm, 2=light, 3=external AO controller ON/OFF, 4=defrost 2 <sup>nd</sup> evaporator, 5=resistor. door frame 6=Drainage resistor*	0	0	5 (*6)
326	N	W	o30	AO - Analogue output type	0=4-20mA 1=0-10V	0	0	1

\*Only available on AKO-16526A

## HACCP alarm (HCP)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
331	N x100	W	h1	HACCP alarm maximum temperature	-5000 - 9900	-5000	9900	9900
332	N	W	h2	Maximum permitted time for activation of the HACCP alarm	0 - 255	0	0	255

## Information (read only)

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
798	N	R	InI	Option chosen in the configuration wizard	0 - 8	0	InI	8
799	N	R	Pd	Pump down active?	0= No 1= Yes	0	InI	1
801	N	R	PU	Software version	-	-	-	-
802	N	R	Pr	Program revision	-	-	-	-
803	N	R	PSr	Program Subversion	-	-	-	-
804	N	R	bU	Bootloader version	-	-	-	-
805	N	R	br	Bootloader revision	-	-	-	-
806	N	R	bSr	Program Subversion	-	-	-	-
807	N	R	PAr	Parameter map revision	-	-	-	-
808	N	R	PCr	Firmware CRC	-	-	-	-
809	N	R	bCr	Bootloader CRC	-	-	-	-

## Parameters only available with the CAMM module installed

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
821	N	W	C40	Days/s of SP Change mode activation by programming	0 = Deactivated 1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday 7 = Sunday 8 = Monday to Sunday 9 = Monday to Saturday 10 = Monday to Friday 11 = Saturday and Sunday	0	0	11
822	N	W	C41	Start time of the Change of SP by programming	0 - 23	0	0	23
823	N	W	C42	Minutes of the Change of SP programming	0 - 59	0	0	59
824	N	W	C43	Duration of the Change of SP by programming	0 - 24	0	0	24
825	N	W	d10	Start time defrost 1	-1 - 23*	-1	-1	23
826	N	W	d11	Start time defrost 2	-1 - 23*	-1	-1	23
827	N	W	d12	Start time defrost 3	-1 - 23*	-1	-1	23
828	N	W	d13	Start time defrost 4	-1 - 23*	-1	-1	23
829	N	W	d14	Start time defrost 5	-1 - 23*	-1	-1	23
830	N	W	d15	Start time defrost 6	-1 - 23*	-1	-1	23
831	N	W	L1	Log interval	0 = 1 minute 1 = 5 minutes 2 = 15 minutes 3 = 30 minutes 4 = 60 minutes	0	2	4
832	N	W	L2	Delete record and event log	0 = No 1 = Yes	0	0	1
833	N	W	L3	Start day of the log	0 = Monday 1 = Tuesday 2 = Wednesday 3 = Thursday 4 = Friday 5 = Saturday 6 = Sunday	0	0	6

\* -1= Deactivated

Register	Type	Access	Parameter	Description	Range	Min.	Def.	Max.
834	N	W	L4	Decimal separator in .cvs file	0 = , 1 = .	0	0	11
840	N	W		Parameters map CRC	-	-	-	-

## Unit status

Allows the user to consult the status of the unit.

### Alarms

Register	Type	Access	Description	Values
1566	BITS	R	Active alarms A: Bit 0: Max. alarm probe 1 (AH) Bit 1: Min. alarm probe 1 (AL) Bit 2: Open door alarm (AdO) Bit 3: External alarm (AE) Bit 4: Severe external alarm (AES) Bit 5: Error in probe 1 alarm (E1) Bit 6: Error in probe 2 alarm (E2) Bit 7: Error in probe 3 alarm (E3) Bit 8: Not in use Bit 9: Moisture entry in probe 2 alarm (E2) Bit 10: Moisture entry in probe 3 alarm (E3) Bit 11: HACCP alarm (HCP) Bit12: Error in probe 4 alarm (E4) Bit13: Error in probe 4 alarm (E5) Bit14: Error in probe 4 alarm (E6) Bit15: Minimum superheat alarm	0 = Inactive; 1 = Active
1567	BITS	R	Active alarms B: Bit0: Maximum evaporating pressure alarm Bit1: Minimum evaporating alarm. Bit6: E16 configuration error alarm	0 = Inactive; 1 = Active
1568	BITS	R	Saved alarms A: Bit 0: Max. alarm probe 1 (AH) Bit 1: Min. alarm probe 1 (AL) Bit 2: Open door alarm (AdO) Bit 3: External alarm (AE) Bit 4: Severe external alarm (AES) Bit 5: Error in probe 1 alarm (E1) Bit 6: Error in probe 2 alarm (E2) Bit 7: Error in probe 3 alarm (E3) Bit 8: Not in use Bit 9: Moisture entry in probe 2 alarm (E2) Bit 10: Moisture entry in probe 3 alarm (E3) Bit 11: HACCP alarm (HCP) Bit12: Error in probe 4 alarm (E4) Bit13: Error in probe 4 alarm (E5) Bit14: Error in probe 4 alarm (E6) Bit15: Minimum superheat alarm	0 = Inactive; 1 = Active
1569	BITS	R	Saved alarms B: Bit0: Maximum evaporating pressure alarm Bit1: Minimum evaporating alarm. Bit6: E16 configuration error alarm	0 = Inactive; 1 = Active

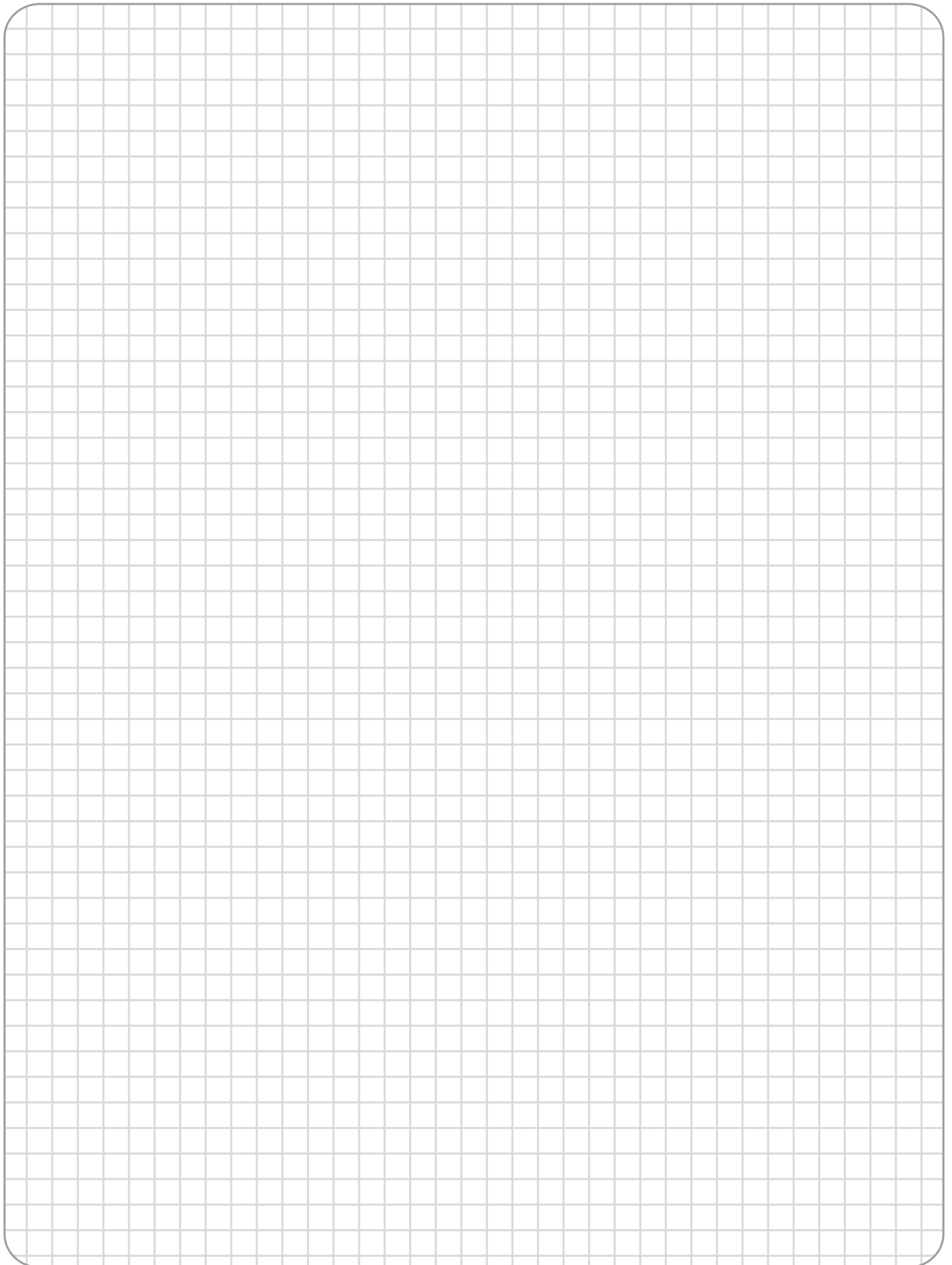
Register	Type	Access	Description	Values
1570	BITS	R	Muted alarms A: Bit 0: Max. alarm probe 1 (AH) Bit 1: Min. alarm probe 1 (AL) Bit 2: Open door alarm (AdO) Bit 3: External alarm (AE) Bit 4: Severe external alarm (AES) Bit 5: Error in probe 1 alarm (E1) Bit 6: Error in probe 2 alarm (E2) Bit 7: Error in probe 3 alarm (E3) Bit 8: Not in use Bit 9: Moisture entry in probe 2 alarm (E2) Bit 10: Moisture entry in probe 3 alarm (E3) Bit 11: HACCP alarm (HCP) Bit12: Error in probe 4 alarm (E4) Bit13: Error in probe 4 alarm (E5) Bit14: Error in probe 4 alarm (E6) Bit15: Minimum superheat alarm	0 = Inactive; 1 = Active
1571	BITS	R	Muted alarms B: Bit0: Maximum evaporating pressure alarm Bit1: Minimum evaporating alarm. Bit6: E16 configuration error alarm	0 = Inactive; 1 = Active
1572	BITS	R	Active warnings A: Bit 0: Defrost ended by time alert (Adt) Bit 1: Error in pump down alert (Stop) (Pd) Bit 2: Error in pump down alert (Start-up) (LP) Bit 3: HACCP alert due to power supply failure (HCP/PF) Bit 4: HACCP alert (HCP) Bit 5: Maximum superheat alert Bit 6 to 15: Not in use	0 = Inactive; 1 = Active
1573	BITS	R	Active warnings B: Bit 0: Alert of defrost finished by time during the calibration (Evaporator 1). (E10) Bit 1: Alert of insufficient temperature difference between Probes of the cold room and of evaporator 1 during the calibration. (E11) Bit 2: Alert of fault in the calibration due to lack of stability of the system. (E12) Bit 3: Alert of insufficient temperature difference between Probes of the cold room and of evaporator 1 in normal operation (SELFDRIIVE ON Mode). (E13) Bit 4: Alert of lack of system stability in normal operation (SELFDRIIVE ON Mode). (Evaporator 1). (E14) Bit 5: The persistent lack of stability has deactivated the SELFDRIIVE mode. (E15) Bit 6: Not in use Bit 7: Alert of excessive door openings during calibration. (E17) Bit 8: Alert of SELFDRIIVE Mode deactivation due to excessive door openings. (E18) Bit 9: Not in use Bit 10: Alert of defrost finished by time during the calibration (Evaporator 2). (E20) Bit 11: Alert of insufficient temperature difference between Probes of the cold room and of evaporator 2 during the calibration. (E21) Bit 12: Alert of fault in the calibration due to lack of system stability. (E22) Bit 13: Alert of insufficient temperature difference between Probes of the cold room and of evaporator 2 in normal operation (SELFDRIIVE ON Mode). (E23) Bit 14: Alert of lack of system stability in normal operation (SELFDRIIVE ON Mode). (Evaporator 2). (E24) Bit 15: The persistent lack of stability has deactivated the SELFDRIIVE mode. (E25)	0 = Inactive; 1 = Active

## Reading of inputs and outputs

Register	Type	Access	Description	Values
1582	N	R	Displays the effective temperature of the Set Point, after applying the possible variables (set point change function, continuous cycle, etc.).	
1000	N x100	R	Reading of temperature in probe 1	
1001	N x100	R	Reading of temperature in probe 2	
1002	N x100	R	Reading of temperature in probe 3	
1003	N x100	R	Reading of temperature in probe 4	
1004	N x100	R	Reading of temperature in probe 5	
1005	N x100	R	Reading of pressure in probe 6	
1006	N	R	Reading of digital input 1	0 = Inactive; 1 = Active
1007	N	R	Reading of digital input 2	0 = Inactive; 1 = Active
1008	N	R	Reading of digital input 3	0 = Inactive; 1 = Active
1011	N	R	COOL relay status	0 = Inactive; 1 = Active
1012	N	R	DEFROST relay status	0 = Inactive; 1 = Active
1013	N	R	FAN relay status	0 = Inactive; 1 = Active
1014	N	R	AUX1 relay status	0 = Inactive; 1 = Active
1015	N	R	AUX2 relay status	0 = Inactive; 1 = Active
1016	N	R	AUX 3 relay status	0 = Inactive; 1 = Active
1604	N x100	R	Probe 6 equivalent temperature	

## Keyboard

Register	Type	Access	Description	Values
20000	BITS	W	Activation of functions Bit 0 = Activation of Stand by Bit 1 = Activation of change of Set Point (According to C12) Bit 2 = Activation of the defrost Bit 3 = Activation of continuous cycle Bit 4 = Activation of the light Bit 5 = Activation of the mute Bit 6 = Activation of InI Bit 7 = Activation of AUX 1 relay Bit 8 = Activation of AUX 2 relay	
20001	BITS	W	Function status Bit 0 = Activation of Stand by Bit 1 = Activation of change of Set Point (According to C12) Bit 2 = Activation of the defrost Bit 3 = Activation of continuous cycle Bit 4 = Activation of the light Bit 5 = Activation of the mute Bit 6 = Activation of InI Bit 7 = Activation of AUX 1 relay Bit 8 = Activation of AUX 2 relay	
20002	BITS	W	Pending functions (Request made and pending execution) Bit 0 = Activation of Stand by Bit 1 = Activation of change of Set Point (According to C12) Bit 2 = Activation of the defrost Bit 3 = Activation of continuous cycle Bit 4 = Activation of the light Bit 5 = Activation of the mute Bit 6 = Activation of InI Bit 7 = Activation of AUX 1 relay Bit 8 = Activation of AUX 2 relay	



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