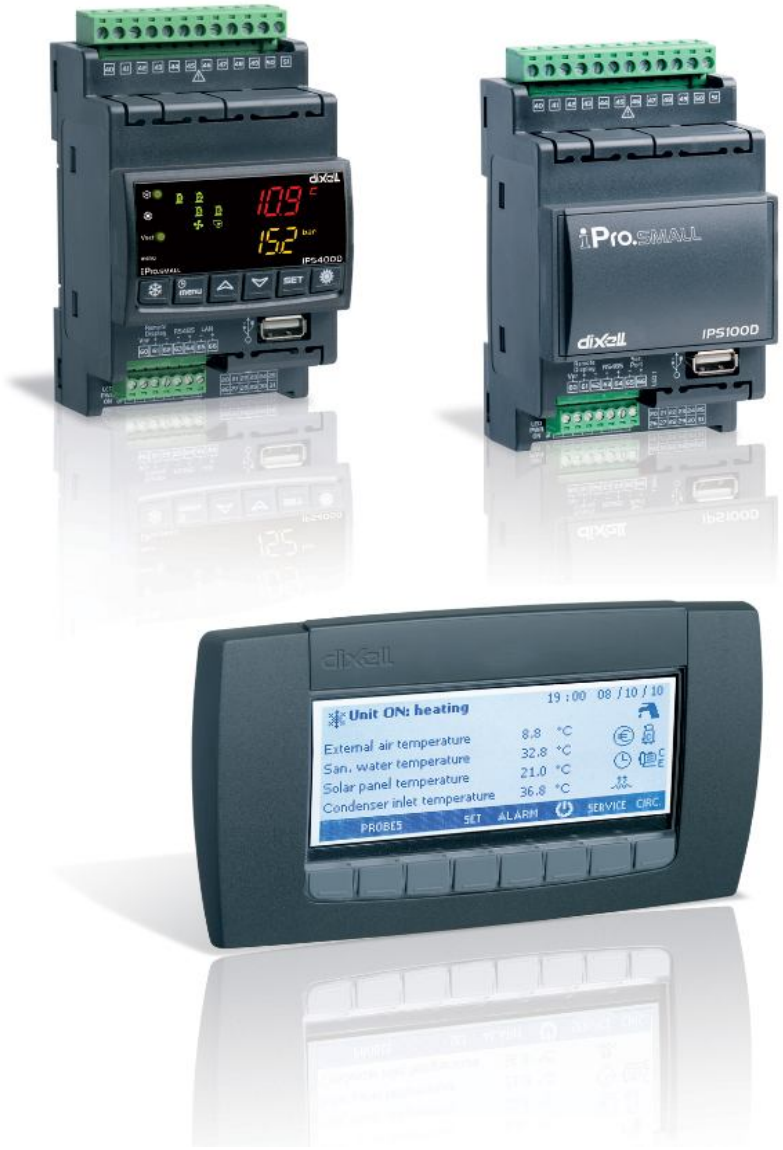


iProCHILL 4 DIN SERIES

(v.1.0)

INDEX

1. IMPORTANT RECOMMENDATIONS

- The  symbol alerts the user of non-insulated “dangerous voltage” within the product area that is sufficiently high to constitute a risk of electric shock to persons.

- The  symbol alerts the user of important operating and maintenance (assistance) instructions found in the documentation attached to the device.

- Dixell Srl cannot accept any liability for damages caused by modems that are not supported. Dixell Srl reserves the right to modify this manual without prior notice. The documentation can be downloaded from www.dixell.com even prior to purchase.

- Dixell Srl reserves the right to change the composition of its products, even without notice, ensuring the same and unchanged functionality.

- This manual forms part of the product and must always be kept near the device for easy and quick reference. The device cannot be used as a safety device. Verify the limits of application before using the device.

- Verify that the power supply voltage is correct before connecting the device. Do not expose it to water or humidity: use the controller only within the operating limits, avoiding sudden changes in temperature and high atmospheric humidity in order to prevent condensation from forming. Recommendation: disconnect all the electric connections before performing any maintenance. Insert the probe where it cannot be reached by the End User. The device must not be opened. Consider the maximum current that can be applied to each relay. Make sure that the wires for the probes, the loads and the electrical power supply are separated and sufficiently distant from each other, without crossing or intertwining with each other. In the case of applications in industrial environments, it may be useful to use the main filters (our mod. FT1) in parallel to the inductive loads.

- The customer shall bear full responsibility and risk for product configuration in order to achieve the results pertaining to installation and/or final equipment/system. Upon the customer's request and following a specific agreement, Dixell s.r.l. may be present during the start-up of the final machine/application, as a consultant, however, under no circumstances can the company be held responsible for the correct operation of the final equipment/system.

- Since Dixell products form part of a very high level of technology, a qualification/configuration/programming/commissioning stage is required to use them as best as possible. Otherwise, these products may malfunction and Dixell cannot be held responsible. The product must not be used in any way that differs from that stipulated in the documentation.

- The device must always be inserted inside an electrical panel that can only be accessed by authorised personnel. For safety purposes, the keyboard must be the only part that can be reached.

- The device must never be hand-held while being used.

- It is good practice to bear the following in mind for all Dixell products:

    - Prevent the electronic circuits from getting wet as contact made with water, humidity or any other type of liquid can damage them. Comply with the temperature and humidity limits specified in the manual in order to store the product correctly.
    - The device must not be installed in particularly hot environments as high temperatures can damage it (electronic circuits and/or plastic components forming part of the casing). Comply with the temperature and humidity limits specified in the manual in order to store the product correctly.
    - Under no circumstances is the device to be opened - the user does not require the internal components. Please contact qualified service personnel for any assistance.
    - Prevent the device from being dropped, knocked or shaken as either can cause irreparable damage.
    - Do not clean the device with corrosive chemical products, solvents or aggressive detergents.
    - The device must not be used in applications that differ from that specified in the following material.

- ***Separate the power of the device from the rest of the electrical devices connected inside the electrical panel. The secondary of the transformer must never be connected to the earth.***

PRODUCT DISPOSAL (WEEE)

With reference to Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 and to the relative national legislation, please note that:

- There lies the obligation not to dispose of electrical and electronic waste as municipal waste but to separate the waste.
- Public or private collection points must be used to dispose of the goods in accordance with local laws. Furthermore, at the end of the product's life, it is also possible to return this to the retailer when a new purchase is made.
- This equipment may contain hazardous substances. Improper use or incorrect disposal can have adverse effects on human health and the environment.
- The symbol shown on the product or the package indicates that the product has been placed on the market after 13 August 2005 and must be disposed of as separated waste.
- Should the product be disposed of incorrectly, sanctions may be applied as stipulated in applicable local regulations regarding waste disposal.

2. INTRODUCTION

iPRO is the range of programmable controllers manufactured by Dixell.
The range consists of programmable controllers, I/O expansions, drivers for electronic valves and graphical interfaces adapted to cover any type of application in the air-conditioning sector, cooling sector and any relative area. As the system is one of the most technologically advanced, it is flexible and can be customised for it to be adapted to the user's particular requirements.

3. GENERAL SPECIFICATIONS

The Dixell programmable controllers are all powered at 24Vac/dc and use a high speed performance 32-bit ARM9 (200 MHz) microprocessor. The models differ in size (10 DIN or 4 DIN) and number of inputs and outputs (analog and digital).
One of the features that distinguishes the iPRO controllers is the vast range of connection options with external devices, Dixell as well as other brands. CANBus, RS485 Master and Slave, and an Ethernet and USB port provide maximum flexibility of integration with the outside world. MODBUS RTU protocol, one of the most popular in the world, is used for serial communication.
Up to 80 MB of flash memory are entirely available to the user, according to the model. All the inputs and outputs are fully configurable.

PROCESSING ENVIRONMENT

All Dixell programmable controllers use the following software as a processing environment:

- ISaGRAF® to process the iPRO application.
- VISOPROG to process the LCD graphic interface application (VISOGRAPH)

ISaGRAF® software is used worldwide and allows those with no programming experience to build applications ranging from the simplest to the more sophisticated. The vast range of the most popular programming languages (Structured Text, Function Block Diagram, Ladder Diagram, Instruction List, Sequential Function Chart, Flow Chart, FBD IEC 61499) provides all programmers with access to the processing environment. Thanks also to the extensive libraries of blocks already developed by Dixell, the processing and debug times are reduced.
The SIMULATION (verification of the application without using the controller) and DEBUG options (verification of the actual application within the controller), allow the user to block and force the value of the variables to speed up the testing times.

Fields of application

The possibility of all-round configuration allows the Dixell iPRO programmable controller to be used for any type of application. The same applications can be downloaded in the various models available (obviously adapting the number of inputs and outputs).
The hardware has already been used for the following applications:

- Chillers and heat pumps
- Air treatment units
- Air-conditioners
- Roof-tops
- Cooling systems
- Energy saving management in systems
- Climatic chamber control
- Cold rooms and seasoner cabinets

Hardware architecture

The iPRO programmable controller is structured as follows:

- 32-bit microprocessor used to run the application
- Removable connectors (Molex) or bayonet connectors (Phoenix)

- The programme and parameters are stored in a permanent flash memory. No data is lost in case of power failure.
- Internal web server with the Dixell website as default with the option of downloading a customised website for reading and writing variables with synoptic creation (via HTML).
- Ethernet port.
- USB port.
- Connection to the dedicated remote LCD display.
- CANBus.
- RS485 Master.
- RS485 Slave.

The remote LCD display has the following features:
- 240x96 pixel LCD graphic display.
- 32-bit processor.
- Multilingual in ASCII or UNICODE version.
- 8 fully programmable keys.
- Panel or wall mounted.

The LED display (only for the IPS versions) has the following features:
- Configurable digits and icons
- 6 fully programmable keys

4. USER INTERFACE

4.1 ICONS AND LEDS

°C -°F BAR-PSI	On when the screens display temperature or pressure
	On in programming if the screens display temperature or pressure set points/differentials
	On during programming if the lower screen displays the working hours of the loads or the time. Flashing in functions menu if the remaining time to the beginning of defrost is displayed.
	Flashing on if alarms not identified by specific icons are present
Vset	On if an automatic Set Point change function is active (Dynamic set point, Energy Saving)
menu	On during menu navigation
	On if the heaters (antifreeze/support) are on
Flow!	Flashing on if the digital input of the flow is active when the pump is on; with the pump off it says that the flow contact is closed
	On if at least one of the water pumps is on
	On if at least one fan is on
	On if the relative compressor is on; flashing if the compressor is switched on with a timer
	On if the auxiliary output is active

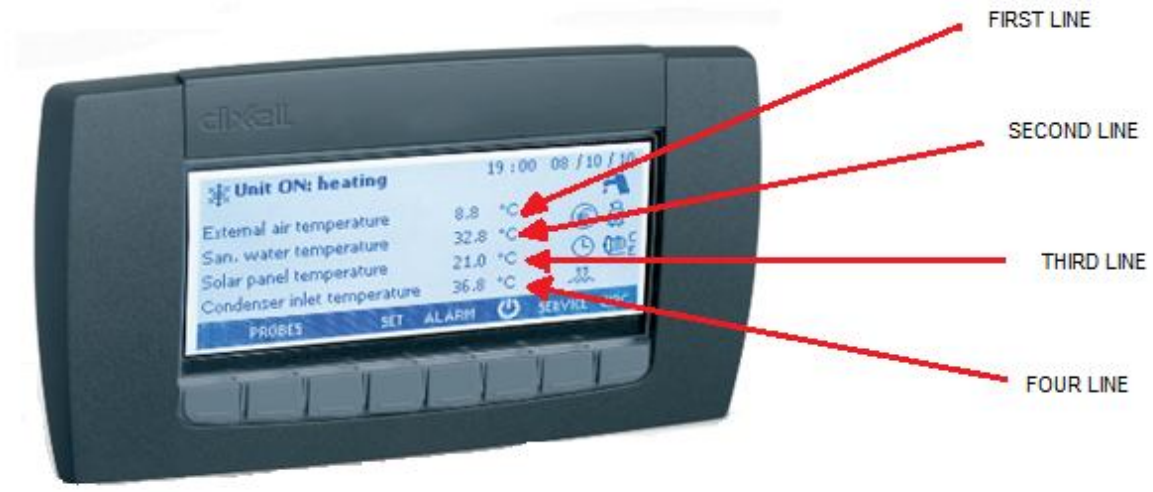
	On if the machine is on and represents the Heat or Cool mode of operation based on the logic set in the CF31 parameter
Cir1 Cir2	Cir1 on if in view values for circuit 1 Cir2 on if in view values for circuit 2
	The icon is flashing on when counting the interval between defrosting sessions; the icon is steady on during the defrosting phase

4.2 PERSONALISING THE VISOGRAPH AND LED DISPLAY KEYBOARDS

By suitably configuring the parameters contained in the dP family (display) the manufacturer has the possibility of personalising the information that he/she deems necessary to display on the main screen.

4.3 PARAMETERS DISPLAYED ON THE VISOGRAPH KEYBOARD

VISOGRAPH



Displays					
Parameter	**Description**	**min**	**max**	**um**	**Resolution**
VISOGRAPH					
dP 1	Allows you to personalise how an analog input is viewed on the first line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		
dP 2	Allows you to personalise how an analog input is viewed on the second line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		
dP 3	Allows you to personalise how an analog input is viewed on the third line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		
dP 4	Allows you to personalise how an analog input is viewed on the fourth line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		

List of all 36 possible probes that can be configured:

0. Disabled
1. Compressor 1 PTC supply temperature probe
2. Compressor 2 PTC supply temperature probe
3. Compressor 3 PTC supply temperature probe
4. Compressor 4 PTC supply temperature probe
5. Compressor 5 PTC supply temperature probe
6. Compressor 6 PTC supply temperature probe

Evaporator

7. Evaporator common input NTC temperature probe
8. Evaporator output 1 NTC temperature probe
9. Evaporator output 2 NTC temperature probe
10. Evaporator common output NTC temperature probe

Condenser

11. Condenser hot water common input NTC temp. probe
12. Circuit 1 Condenser hot water input NTC temp. probe
13. Circuit 2 Condenser hot water input NTC temp. probe
14. Circuit 1 Condenser hot water output NTC temp. probe
15. Circuit 2 Condenser hot water output NTC temp. probe
16. Condenser hot water common output NTC temp. probe

Free cooling and external air

17. System water input NTC temperature probe (free cooling)
18. External air / condenser water (free cooling) temperature NTC temperature probe
19. External air temp / dynamic set point / auxiliary heating / change over NTC temperature probe

Combined defrost and auxiliary probes

20. Circuit 1 combined defrost NTC temperature probe
21. Circuit 2 combined defrost NTC temperature probe
22. Auxiliary output 1 NTC temperature probe
23. Auxiliary output 2 NTC temperature probe

Domestic water

24. Domestic water temperature regulation NTC temperature probe (num. 1)
25. Domestic water temperature safety NTC temperature probe (num. 2)
26. Supply temperature NTC temperature probe
27. Solar panel temperature NTC temperature probe

Condensation probes/transducers

28. Circuit 1 condensation probe (NTC temperature)
29. Circuit 2 condensation probe (NTC temperature)
30. Circuit 1 condensation probe (pressure 4÷20 mA / ratiometric 0÷ 5Volt)
31. Circuit 2 condensation probe (pressure 4÷20 mA / ratiometric 0÷ 5Volt)

Evaporation transducers

32. Circuit 1 condensation pressure probe (pressure 4÷20 mA / ratiometric 0÷ 5Volt)
33. Circuit 2 condensation pressure probe (pressure 4÷20 mA / ratiometric 0÷ 5Volt)

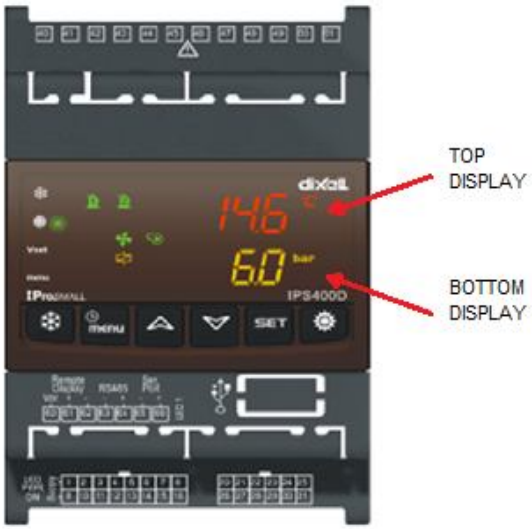
Auxiliary transducers and dynamic set point

34. Auxiliary output 1 pressure probe (pressure 4÷20 mA / ratiometric 0÷ 5Volt)
35. Auxiliary output 2 pressure probe (pressure 4÷20 mA / ratiometric 0÷ 5Volt)

36. Dynamic set point probe 4÷20 mA

4.4 KEYBOARD DISPLAY PARAMETERS FOR LED DISPLAY

LED DISPLAY



Displays					
Parameter	**Description**	**min**	**max**	**um**	**Resolution**
Led Display					
Dp9	**Top** led display with unit on 0 = No Display 1 = Evaporator input temperature 2 = Output temperature evaporator 1 3 = Output temperature evaporator 2 4 = Evaporator common output temperature 5 = Condenser common input temperature 6 = Condenser input temperature 1 7 = Condenser input temperature 2 8 = Condenser output temperature 1 9 = Condenser output temperature 2 10 = Condenser common output temperature 11 = External air temperature 12 = Remote terminal temperature 13 = Combined defrost temperature circuit 1 14 = Combined defrost temperature circuit 2 15 = Condensation temperature circuit 1 16 = Condensation temperature circuit 2 17 = Set point 18 = Hysteresis 19 = Machine status	0	19		

Dp10	**Bottom** led display with unit on 0 = No Display 1 = Evaporator input temperature 2 = Output temperature evaporator 1 3 = Output temperature evaporator 2 4 = Evaporator common output temperature 5 = Condenser common input temperature 6 = Condenser input temperature 1 7 = Condenser input temperature 2 8 = Condenser output temperature 1 9 = Condenser output temperature 2 10 = Condenser common output temperature 11 = External air temperature 12 = Remote terminal temperature 13 = Combined defrost temperature circuit 1 14 = Combined defrost temperature circuit 2 15 = Condensation temperature circuit 1 16 = Condensation temperature circuit 2 17 = Set point 18 = Hysteresis 19 = Machine status 20 = Condensation pressure circuit 1 21 = Condensation pressure circuit 2 22 = Evaporation pressure circuit 1 23 = Evaporation pressure circuit 2 24 = RTC	0	24		
Dp11	**Led display screen with unit in stand-by** 0 = Stby above, nothing below 1 = Defined by parameters dP9 and dP10 2 = OFF above, nothing below	0	2		

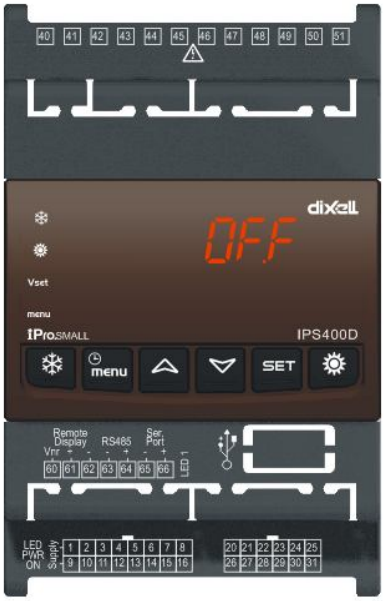
EXAMPLES OF PERSONALISED TOP SCREEN DISPLAY

Parameter dP09=01: as the default for circuit 1 and circuit 2 which display the temperature value of the probe configured as the evaporator water INPUT NTC temperature probe (see probes configuration).
Parameter dP09=02: as the default for circuit 1 that displays the temperature value of the probe configured as evaporator 1 output NTC temperature probe (see probes configuration), circuit 2 displays the temperature value of the probe configured as evaporator 2 output NTC temperature probe (see probes configuration)

EXAMPLES OF PERSONALISED BOTTOM SCREEN DISPLAY

Parameter dP10=03: as the default for circuit 1 and circuit 2 which display the temperature value of the probe configured as the evaporator water OUTPUT NTC temperature probe (see probes configuration)

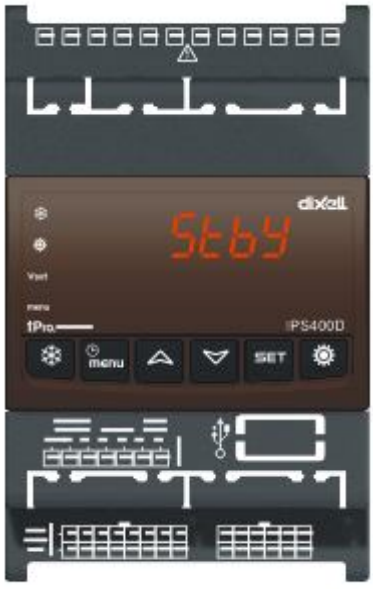
Parameter dP10=8: as the default for circuit 1 that displays the temperature value of the probe configured as condenser 1 output temperature probe (see probes configuration), circuit 2 displays the temperature value of the probe configured as condenser 2 NTC temperature probe (see probes configuration)



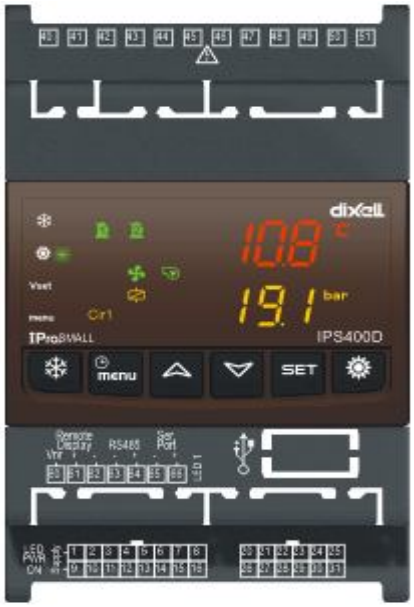
4.5 DISPLAY SCREEN FOR THE DEVICE IN STD-BY

Parameter dP11: Display in STD-BY
0= displays the "STD-BY" label
1= displays the values defined by par. dP9 and dP10
2= displays the "OFF" label

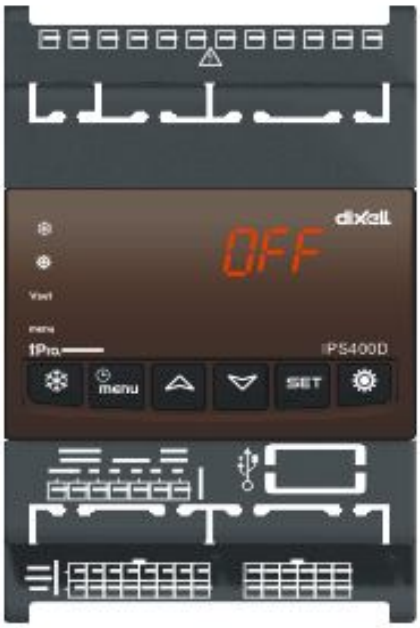
dP11=0



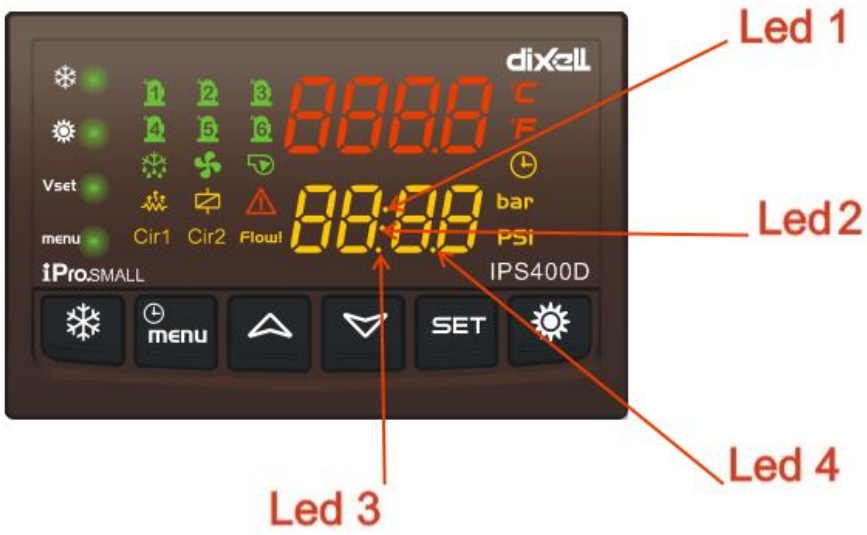
dP11=1
The screen displays the values defined by par. dP9 and dP10.


dixell
10.8
19.1
bar
IPS400D
menu
SET

dP11=2


dixell
OFF
IPS400D
menu
SET

4.6 BOTTOM SCREEN LED



CLOCK LED
When the time is displayed leds 1 / 2 flash

FUNCTION MENU LEDS
In functions menu leds 1 / 2 flash when the remaining time to the beginning of defrost in circuit 1 / 2 is displayed

5. DISPLAY OF CONTROLLED VALUES

In normal function circuit 1 is always displayed as the default.
The displayed circuit is marked by the icon **Cir1** (circuit 1) or **Cir2** (circuit 2).

5.1 HOW TO VIEW THE VALUES WITHIN A CIRCUIT

From the home page it is possible to view the values of all of the selected circuits.

Each selected value has a corresponding label identifying the temperature or pressure value displayed on the screens. (see top, bottom display screen tables)

5.2 HOW TO VIEW THE VALUES FOR CIRCUIT 1 OR CIRCUIT 2

By pressing the UP or DOWN keys on the home page it is possible to view the values of a circuit;

Example:
Fig.1 Cir1 icon on: the top screen displays the evaporator output temperature for circuit 1, the bottom screen displays the pressure relative to circuit 1.

Fig.1

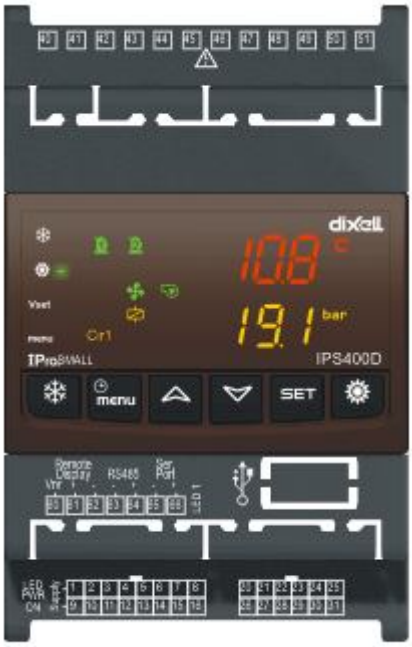
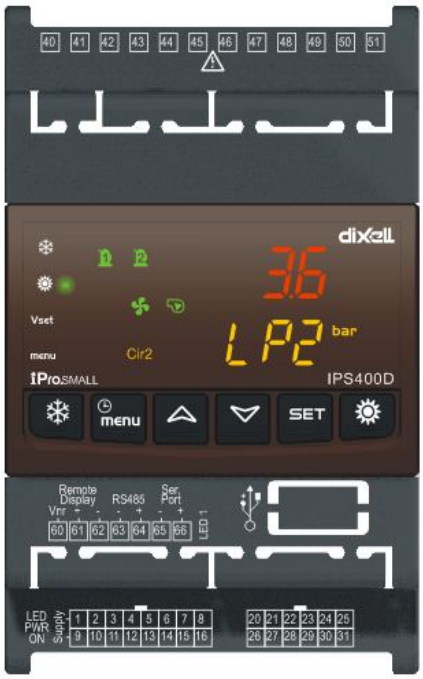


Fig.2 Cir2 icon on: the top screen displays the low pressure relative to circuit 2 (3.6 bar).

Fig.2



6. OTHER SCREEN DISPLAYS

6.1 HOW TO DISPLAY THE SET POINT

From the home page press the **SET** key, and the bottom screen will display **SetC** (set chiller) and by pressing a second time it will display **SetH** (set heat pump if configured). With the unit on only the set point relative to the state of operation will be displayed.
To exit the set point Menu press the SET key.

6.2 HOW TO CHANGE THE SET POINT

1) Inside the SET point menu, press the **SET** key for at least **3** sec;
2) To change the value act on the **UP** or **DOWN** keys

To memorise the new set point press the **SET** key or wait for the time out to exit programming.

6.3 HOW THE VIEW THE REAL OPERATING SET POINT WITH EITHER ENERGY SAVING OR DYNAMIC SET ACTIVATED

Activating set energy saving and dynamic set point is signalled by the **Vset**icon; it is possible to view them only if the machine is on.

With the unit in chiller mode: if the **SET** key is pressed once the bottom screen displays **SEtC** (set chiller) and the top screen displays the set value. If you press the **DOWN** key with either energy saving or dynamic set point activated, the **"SEtS"** label will be displayed in the bottom screen (real operating set).

With the unit in heating pump mode: if the **SET** key is pressed once the bottom screen displays **SEtC** (set chiller) and the top screen displays the set value. If you press the **DOWN** key with either energy saving or dynamic set point activated, the **"SEtS"** label will be displayed in the bottom screen (real operating set).

CAUTION

The **SEtS** label appears only if energy saving or dynamic set point are activated.

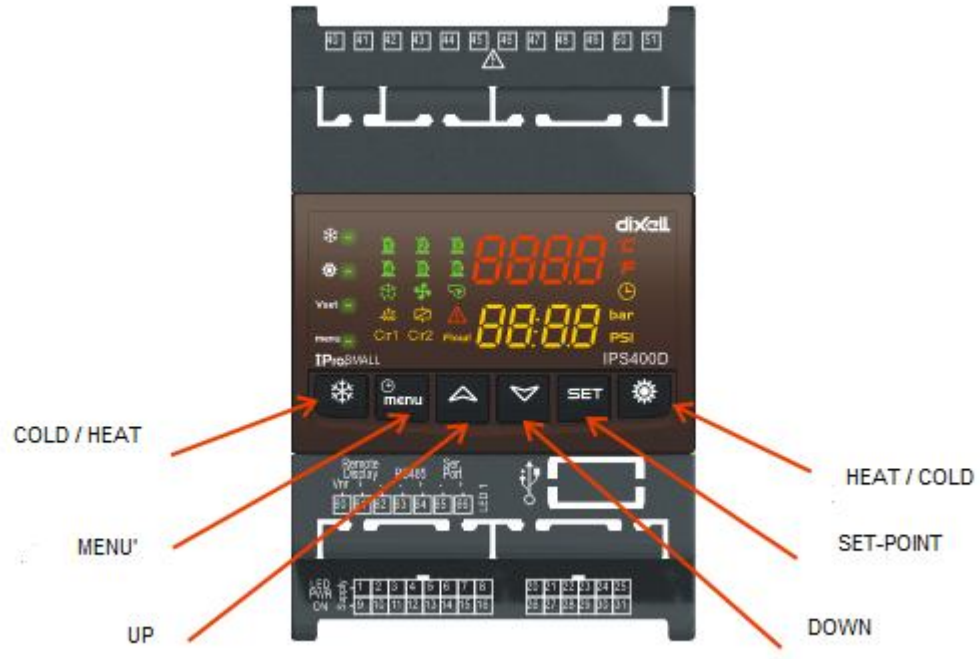
6.4 DISPLAY SCREEN OF DISABLED COMPRESSORS

If one of the compressors is in the OFF position (see procedure) a flashing label alternating with the value currently being displayed will appear on the bottom screen:

compressor 1 disabled: label c1ds

compressor 2 disabled: label c2ds

6.5 KEY FUNCTIONS



KEY	ACTION	FUNCTION
SET	Press and release with default display	It shows the set point in the chiller (**SetC** label) and/or in the heat pump (**SetH** label)
	Press and release in the SetS menu	With the unit in chiller or heat pump mode, if the energy saving or dynamic set point function is enabled, it shows the real operating set (**SetS** label); the Vset icon is on.
	From the SET POINT Menu hold it down for 3 seconds.	Change chiller / heat pump set point (only chiller if the unit is in this mode, only heat pump if the unit is in this mode, chiller and heat pump wit the unit in std-by)
	Press and release in programming	Allows access to change the value of the parameter; it confirms the value of the parameter.
	Press and release in the ALrM menu	It allows you to reset the alarm
∧	Press and release	This allows you to view the temperature / pressures in the top / bottom screen.
	Press and release in parameters programming	This allows you to scroll through the groups and parameters; it increases the value of the parameter as it is being changed.
∨	Press and release	This allows you to view the temperature / pressures in the top / bottom screen.
	Press and release in programming	This allows you to scroll through the groups and parameters; it decreases the value of the parameter as it is being changed.
❄	Press and release	This allows you to turn the machine on / off (in chiller / hp based on how the tool is programmed)
☼	Press and release	This allows you to turn the machine on / off (in chiller / hp based on how the tool is programmed)
menu	Press and release	This allows you to access the functions menu
	Press for 3 seconds and release	This allows you to set the time.
	Press and release in programming	This allows you to exit the display of parameter families or parameter changing

Combined FUNCTION of the KEYS

KEY	ACTION	FUNCTION
SET + ∨	Press for 3 seconds and release	Entry in programming
SET + ∧	Press for 5 seconds	Manual defrost (if in heat pump mode and conditions allow it)

6.6 FIRST INSTALLATION

6.6.1 Tool with Clock On Board (Optional)

If the message "**rtC**" appears in the bottom screen alternating with the temperature / pressure when the tool is powered **it means it is necessary to adjust the clock.**
If the probes designed to control the unit are not connected or are broken, the relative alarm will appear in the two screens. It is nevertheless possible to proceed with regulating the clock or programming.
CAUTION
The clock is optional. If you require the use of an instrument with an on-board clock, this must be specified in the purchase order

6.6.2 How to Regulate the Clock

1. Press the **Menu** button for a number of seconds until the word **"Hour**" appears in the bottom screen, and the memorised time in the top screen.
2. Press the **SET** key: the hour starts to flash.

3. Set the hour with the down and UP keys. Confirm the hour by pressing the **SET** key; the controller will display the following setting.
4. Repeat operations 2. 3. and 4. on the other clock parameters:

- **Min:** minutes (0÷60)
- **UdAy:** day of the week **(Sun =** Sunday, **Mon** = Monday, **tuE** = Tuesday, **UEd** = Wednesday, **tHu** = Thursday, **Fri** = Friday, **SAt** = Saturday)
- **dAy:** day of the month (0÷31)
- **MntH:** month(1÷12)
- **yEAr:** year (2000÷2099)

7 IPS408D: TABLE OF PARAMETERS

SUB - MENU SELECTION

Label	Meaning
CF	Display the basic configuration parameters of the machine
ST	Display the temperature control parameters
DP	View the parameters of the display
SP	Display the set up parameters
Sd	Display the dynamic set point parameters
ES	Display the energy saving and automatic timed ON/OFF parameters
AH	Display the auxiliary heating parameters
CO	Display the compressor parameters
SL	Display the stepless compressor parameters
PA	This displays the parameters for the evaporator water pumps condenser / supply fan
Pd	This displays the pump down function parameters
Un	This displays the unloading function parameters
FA	This displays the condensation fan parameters
Ar	This displays the anti-freeze heater parameters
dF	This displays the defrost parameters
rC	This displays the recovery function parameters
FS	This displays the domestic hot water function parameters
FC	This displays the free cooling function parameters
US	This displays auxiliary output parameters
AL	This displays the alarm parameters
Et	This displays the driver parameters for the control of the electronic thermostatic valves

Configuration					
Parameter	**Description**	**min**	**max**	**um**	**Resolution**
Unit					
CF 1	Defines the type of unit to be controlled 0 = Chiller air / air 1 = Chiller air / water 2 = Chiller water / water	0	2		
CF 2	Selection of unit working mode 1 = chiller only 2 = heat pump only 3 = chiller with heat pump	1	3		
CF 3	Enable compressor operation 0 = chiller and heat pump 1 = chiller only 2 = heat pump only	0	2		
CF 4	Motor-condensing unit 0 = no 1 = yes Temperature control, dynamic set point and energy saving functions are automatically disabled when CF04 = 1	0	1		
Circuits/compressors					
CF 5	Number of compressors in circuit 1	1	3 (1 if CF9≠0)		
CF 6	Number of compressors in circuit 2	0	3 (1 if CF10≠0)		
CF 7					
CF 8					
CF 9	Number of distribution controls in circuit 1 0 = none – 1 step per compressor 1 = 1 – 2 steps per compressor 2 = 2 – 3 steps per compressor 3 = 3 – 4 steps per compressor	0	3		
CF 10	Number of distribution controls in circuit 2 0 = none – 1 step per compressor 1 = 1 – 2 steps per compressor 2 = 2 – 3 steps per compressor 3 = 3 – 4 steps per compressor	0	3		
CF 11					
CF 12					
Temperature control					
Parameter	**Description**	**min**	**max**	**um**	**Resolution**
St 1	Chiller set point This allows you to set the working set point in chiller mode	ST02	ST03	°C °F	tenth whole
St 2	Minimum chiller set This defines the minimum limit that can be used for the working set point in chiller mode	-50.0 -58	ST03	°C °F	Tenths whole
St 3	Maximum chiller set point This defines the maximum limit that can be used for the working set point in chiller mode	ST02	110 230	°C °F	Tenths whole
St 4	Heat pump set point This allows you to set the working set point in h.p. mode	ST05	ST06	°C °F	tenth whole
St 5	Heat pump minimum set point This defines the minimum limit that can be used for the working set point in heat pump mode	-50.0 -58	ST06	°C °F	Tenths whole
St 6	Heat pump maximum set point This defines the maximum limit that can be used for the working set point in heat pump mode	ST05	110 230	°C °F	Tenths whole
St 7	Intervention band regulation steps in chiller mode	0.1 1	25.0 45	°C °F	Tenths whole
St 8	Intervention band regulation steps in heat pump mode	0.1 1	25.0 45	°C °F	Tenths whole
St 9	Defines the temperature control probe of the machine in chiller mode 0= Evaporator input NTC temperature probe 1= Evaporator 1 output NTC temperature probe 2= Evaporator 2 output NTC temperature probe 3= Evaporator common output NTC temperature probe 4= temperature probe remote terminal 1	0	4		

St 10	This defines the temperature control probe of the machine in heat pump mode 0= Evaporator input NTC temperature probe 1= Evaporator 1 output NTC temperature probe 2= Evaporator 2 output NTC temperature probe 3= Evaporator common output NTC temperature probe 4= temperature probe remote terminal 1 5= condenser water common input NTC temperature probe 6=circuit 1 condenser water input NTC temperature probe 7=circuit 2 condenser water input NTC temperature probe 8=circuit 1 condenser water input NTC temperature probe 9=circuit 2 condenser water input NTC temperature probe 10=condenser water common output NTC temperature probe **CAUTION:** if you require the same temperature control in chiller and h.p. mode, set the same value in parameters St09 and St10	0	10		
St 11	Defines the type of temperature control 0 = Proportional 1 = Proportional weight 2 = Neutral zone 3 = Neutral zone weight 4 = PID	0	4		
St 12	Defines the temperature control logic 0 = machine temperature control 1 = temperature control on two separate circuits, circuit 1 and 2	0	1		
Temperature control of circuit 2 if temperature control is enabled on two separate circuits					
St 13	Chiller set point circuit 2 This allows you to set the working set point in chiller mode	ST14	ST15	°C °F	tenth whole
St 14	Circuit 2 chiller minimum set point This defines the minimum limit that can be used to set the working set point in chiller mode	-50.0 -58	ST15	°C °F	Tenths whole
St 15	Circuit 2 chiller maximum set This defines the maximum limit that can be used to set the working set point in chiller mode	ST14	110 230	°C °F	Tenths whole
St 16	Circuit 2 heat pump set point This allows you to set the working set point in h.p. mode	ST17	ST18	°C °F	tenth whole
St 17	Circuit 2 heat pump minimum set point This defines the minimum limit that can be used to set the working set point in heat pump mode	-50.0 -58	ST18	°C °F	Tenths whole
St 18	Circuit 2 heat pump maximum set point This defines the maximum limit that can be used to set the working set point in heat pump mode	ST17	110 230	°C °F	Tenths whole
St 19	Intervention band regulation steps of circuit 2 in chiller mode	0.1 1	25.0 45	°C °F	Tenths whole
St 20	Intervention band regulation steps in circuit 2 heat pump	0.1 1	25.0 45	°C °F	Tenths whole
St 21	This defines the probe for temperature control in chiller mode in circuit 2 0= Evaporator input NTC temperature probe 1= Evaporator 1 output NTC temperature probe 2= Evaporator 2 output NTC temperature probe 3= Evaporator common output NTC temperature probe 4= temperature probe remote terminal 1	0	4		
St 22	This defines the probe for temperature control in heat pump mode in circuit 2 0= Evaporator input NTC temperature probe 1= Evaporator 1 output NTC temperature probe 2= Evaporator 2 output NTC temperature probe 3= Evaporator common output NTC temperature probe 4= temperature probe remote terminal 1 5= condenser water common input NTC temperature probe 6=circuit 1 condenser water input NTC temperature probe 7=circuit 2 condenser water input NTC temperature probe 8=circuit 1 condenser water input NTC temperature probe 9=circuit 2 condenser water input NTC temperature probe 10=condenser water common output NTC temperature probe	0	10		
PID regulation circuit 1					
St 23	Circuit 1 band offset	- 25.0 - 45	25.0 45	°C °F	Tenths whole
St 24	Circuit 1 integral sampling time	0	250	Sec	
St 25	Circuit 1 derived sampling time	0	250	Sec	
PID regulation circuit 2					
St 26	Circuit 2 band offset	- 25.0 - 45	25.0 45	°C °F	Tenths whole
St 27	Circuit 2 integral sampling time	0	250	Sec	
St 28	Circuit 2 derived sampling time	0	250	Sec	
Neutral zone Regulation					

St 29	Activation offset with regulation of the neutral zone	0.0 0	25.0 45	°C °F	Tenths whole
St 30	Activation delay with regulation of the neutral zone	0	250	Sec	
St 31	Deactivation offset with regulation of the neutral zone	0.0 0	25.0 45	°C °F	Tenths whole
St 32	Deactivation delay with regulation of the neutral zone	0	250	Sec	
Displays					
Parameter	**Description**	**min**	**max**	**um**	**Resolution**
Remote terminal 1					
dP 5	Allows you to personalise how an analog input is viewed on the first line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		
dP 6	Allows you to personalise how an analog input is viewed on the second line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		
dP 7	Allows you to personalise how an analog input is viewed on the third line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		
dP 8	Allows you to personalise how an analog input is viewed on the fourth line of the 1st Visograph keyboard 0 = no display (the row remains empty)	0	36		
Remote terminal 2					
dP 9					
dP 10					
dP 11					
dP 12					
Led Display					
dP 13	Top led display screen with unit on 0 = No Display 1 = Evaporator input temperature 2 = Output temperature evaporator 1 3 = Output temperature evaporator 2 4 = Evaporator common output temperature 5 = Condenser common input temperature 6 = Condenser input temperature 1 7 = Condenser input temperature 2 8 = Condenser output temperature 1 9 = Condenser output temperature 2 10 = Condenser common output temperature 11 = External air temperature 12 = Remote terminal temperature 13 = Combined defrost temperature circuit 1 14 = Combined defrost temperature circuit 2 15 = Condensation temperature circuit 1 16 = Condensation temperature circuit 2 17 = Set point 18 = Hysteresis 19 = Machine status	0	19		
dP 14	Bottom led display screen with unit on 0 = No Display 1 = Evaporator input temperature 2 = Output temperature evaporator 1 3 = Output temperature evaporator 2 4 = Evaporator common output temperature 5 = Condenser common input temperature 6 = Condenser input temperature 1 7 = Condenser input temperature 2 8 = Condenser output temperature 1 9 = Condenser output temperature 2 10 = Condenser common output temperature 11 = External air temperature 12 = Remote terminal temperature 13 = Combined defrost temperature circuit 1 14 = Combined defrost temperature circuit 2 15 = Condensation temperature circuit 1 16 = Condensation temperature circuit 2 17 = Set point 18 = Hysteresis 19 = Machine status 20 = Condensation pressure circuit 1 21 = Condensation pressure circuit 2 22 = Evaporation pressure circuit 1 23 = Evaporation pressure circuit 2 24 = RTC	0	24		

dP 15	Led display screen with unit in stand-by 0 = Stby above, nothing below 1 = Defined by parameters dP9 and dP10 2 = OFF above, nothing below	0	2		
Machine set up					
Parameter	**Description**	**min**	**max**	**um**	**Resolution**
Analog inputs					
SP 1	Working in temperature or pressure from an analog input **0 = NTC temperature/pressure function – 4-20 mA:** The condensation temperature is controlled through the use of an NTC probe, while a transducer with an input of 4-20 mA must be used to control the evaporation pressure of the circuits and the pressure of the pressure probe configured as an auxiliary output **1 = Pressurised operation with an input of 4-20 mA:** A transducer with an input of 4-20 mA must be used to control the condensation or evaporation pressures **2 = NTC temperature/pressure function – 0-5 V:** The condensation temperature is controlled through the use of an NTC probe, while a ratiometric transducer with an input of 0÷5V must be used to control the evaporation pressure of the circuits and the pressure of the pressure probe configured as an auxiliary output **3 = Pressurised operation with an input of 0-5 V:** A ratiometric transducer with an input of 0-5 V must be used to control the condensation or evaporation pressures	0	3		
Type of gas					
SP 2	Type of gas used to calculate the saturated temperatures 1=R22 2=R407c 3=R134a 4=R410a 5=R404a 6=R507c **(not yet applicable)**	1	6		
SP 3	Choice between absolute and relative pressure to calculate overheating: 0 = Relative 1 = Absolute	0	1		
Remote terminal					
SP 4	Configuration of remote terminal 1 0 = absent 1 = on-board NTC probe 2 = without NTC probe on board	0	2		
SP 5					
SP 6	Remote terminal 1 NTC probe offset	-12.0 -21	12.0 21	°C °F	Tenths whole
SP 7					
Operating logic					
SP 8	Operating logic 0 = ❄ chiller / ✹ h.p. 1 = ✹ chiller / ❄ h.p.	0	1		
Chiller / heat pump mode selection					
SP 9	Chiller / heat pump mode selection 0 = from the keyboard 1 = from a digital input 2 = from an analog input	0	2		
Automatic change over					
SP 10	Automatic chiller / heat pump mode changeover setting	-50.0 -58	110 230	°C °F	Tenths whole
SP 11	Automatic chiller / heat pump mode changeover differential	0.1 1	25.0 45	°C °F	Tenths whole
Unit of measurement selection					
SP 12	Selection between °C or °F and between BAR or psi 0 = °C / BAR 1 = °F / psi	0	1		
Mains frequency selection					
SP 13					
Serial address					
SP 14	Serial address	1	247		
SP 15	Firmware release				
SP 16	Eeprom map of parameters				
Password					
SP 17	Level 2 password	0	9999		
SP 18	Level 3 password	0	9999		
Dynamic set point					

Parameters	Description	min	max	um	Resolution
Sd 1	Maximum increase in chiller mode dynamic set point This determines the maximum variation of the working set point in chiller mode	-50.0 -58	110 230	°C °F	Tenths whole
Sd 2	Maximum increase in heat pump mode dynamic set point This determines the maximum variation in the working set point in heat pump mode	-50.0 -58	110 230	°C °F	Tenths whole
Sd 3	Dynamic set point in chiller mode for the external air temperature setting	-50.0 -58	110 230	°C °F	Tenths whole
Sd 4	Dynamic set point in heat pump mode for the external air temperature setting	-50.0 -58	110 230	°C °F	Tenths whole
Sd 5	External air temperature differential dynamic set point in chiller mode	-50.0 -58	110 230	°C °F	Tenths whole
Sd 6	Dynamic set point in heat pump mode for the external air temperature differential	-50.0 -58	110 230	°C °F	Tenths whole
	Energy saving				
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
ES 1	Start of working time band 1 (0-24)	0	24.00	Hr	10 Min
ES 2	End of working time band 1 (0-24)	0	24.00	Hr	10 Min
ES 3	Start of working time band 2 (0-24)	0	24.00	Hr	10 Min
ES 4	End of working time band 2 (0-24)	0	24.00	Hr	10 Min
ES 5	Start of working time band 3 (0-24)	0	24.00	Hr	10 Min
ES 6	End of working time band 3 (0-24)	0	24.00	Hr	10 Min
ES 7	Monday energy saving time band	0	7		
ES 8	Tuesday energy saving time band	0	7		
ES 9	Wednesday energy saving time band	0	7		
ES 10	Thursday energy saving time band	0	7		
ES 11	Friday energy saving time band	0	7		
ES 12	Saturday energy saving time band	0	7		
ES 13	Sunday energy saving time band	0	7		
ES 14	Increase energy saving setting in chiller mode	-50.0 -58	110 230	°C °F	Tenths whole
ES 15	Energy saving differential in chiller mode	0.1 1	25.0 45	°C °F	Tenths whole
ES 16	Increase energy saving set point in heat pump mode	-50.0 -58	110 230	°C °F	Tenths whole
ES 17	Increase energy saving differential in heat pump mode	0.1 1	25.0 45	°C °F	Tenths whole
ES 18	Monday mode with automatic ON / OFF	0	7		
ES 19	Tuesday mode with automatic ON / OFF	0	7		
ES 20	Wednesday mode with automatic ON / OFF	0	7		
ES 21	Thursday mode with automatic ON / OFF	0	7		
ES 22	Friday mode with automatic ON / OFF	0	7		
ES 23	Saturday mode with automatic ON / OFF	0	7		
ES 24	Sunday mode with automatic ON / OFF	0	7		
ES 25	Maximum unit working time in OFF from RTC if forced ON via a key	0	250	Min	10 Min
	Auxiliary heating				
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
AH 1	Auxiliary heating function 0 = Disabled 1 = Integration 2 = Replace	0	2		
AH 2	External air set point auxiliary heating activation	-50.0 -58	110 230	°C °F	Tenths whole
AH 3	External air differential auxiliary heating deactivation	0.1 1	25.0 45	°C °F	Tenths whole
AH 4	Auxiliary heating activation delay time	0	250		Min
AH 5	External air set point to deactivate the compressors if the integration mode is enabled	-50.0 -58	110 230	°C °F	Tenths whole
AH 6	External air differential to re-activate the compressors if the integration mode is enabled	0.1 1	25.0 45	°C °F	Tenths whole
AH 7	Compressor deactivation delay time if integration mode is active	0	250		Min
AH 8	Temperature control set point selection 0 = uses the set point (ST04) and the differential (ST08) of the heating mode. 1 = uses the set point and differential for the ON/OFF and Modulating auxiliary heating functions 2 = adds the value of the setting in parameter AH09/AH11 to the working set point of the heating mode (ST04) and uses the differential set in AH10/AH12	0	2		
AH 9	Auxiliary heating set point ON/OFF	-50.0 -58	110 230	°C °F	Tenths whole
AH 10	Auxiliary heating proportional band ON/OFF	0.1 1	25.0 45	°C °F	Tenths whole

AH 11	Modulating auxiliary heating set point	-50.0 -58	110 230	°C °F	Tenths whole
AH 12	Modulating auxiliary heating proportional band	0.1 1	25.0 45	°C °F	Tenths whole
AH 13	Modulating auxiliary minimum value heating output	0	AH14	%	
AH 14	Modulating auxiliary maximum value heating output	AH13	100	%	
AH 15	Enable maintenance of minimum value of modulating auxiliary heating output for temperatures above set point 0 = disabled 1 = enabled	0	1		
AH 16	Enable auxiliary heating in defrost 0 = disabled 1 = enabled	0	1		
	Compressors				
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
CO 1	Compressor minimum ON time Determines the length of time the compressor must remain **active** after being switched on, even if the request ceases.	0	250	Sec	10 sec
CO 2	Minimum compressor OFF time Determines the length of time the compressor must remain **deactivated** even if a request is transmitted for it to switch on again. During this stage, the LED pertaining to the compressor will flash.	0	250	Sec	10 sec
CO 3	Minimum time between one activation and another on the same compressor	0	250	Sec	10 sec
CO 4	Activation delay between 2 compressors/steps With two compressors this establishes the start-up delay between the two, to reduce absorption at peaks. During this stage, the LED pertaining to the compressor will flash. (only for the compressor) With units with partialised compressor. This determines switch-on time of the partialisation solenoid for start-up at minimum capacity (see compressors start-up)	1	250	Sec	
CO 5	Shut off delay between 2 compressors / steps This establishes the shut off delay between the two compressors two partialisation steps	1	250	Sec	
CO 6	Compressor ON Delay To Reach Maximum Power	0	250	Sec	
CO 7	Compressor switch-on delay from power ON (power from the mains). Delays activation of all the outputs in order to distribute the mains consumption and protect the compressors from repeated activation in case of frequent power failures	0	250	Sec	10 sec
	Partialisations				
CO 8	Partialisations operation (see partialisations operation) 0 = ON/OFF step insertion 1 = continuous insertion with direct action steps 2 = continuous insertion with inverse action steps 3 = Insertion with continuous direct global steps	0	3		
CO 9	Enabling upon operation of the minimum power of the compressor / idle start-up management 0 = Enables minimum power only upon compressor start-up (start-up upon minimum capacity/idle valve start-up in OFF with compressor off) 1 = Screw valves enable the minimum power at compressor start-up and in temperature control (start-up with minimum capacity / idle start-up valve in OFF with compressor off) 2 = Screw valves enable the minimum power at compressor start-up (start-up with minimum capacity / idle start-up valve in ON with compressor off) 3 = Screw valves enable the minimum power at compressor start-up and in temperature control (start-up with minimum capacity / idle start-up valve in ON with compressor off)	0	3		
	Intermittent valve function				
CO 10	Screw compressor intermittent valve control relay ON time 0 = function is disabled	0	250	Sec	
CO 11	Screw compressor intermittent valve control relay OFF time	0	250	Sec	
	Compressor start-up				
CO 12	Compressor start-up (see compressor start-up) 0 = direct 1 = part - winding 2 = star delta	0	2		
CO 13	**If CO10 = 1** part - winding start-up time applies. This allows you to vary the attachment of the two relays that supply the two motor coils. **If CO10 = 2** star triangle start-up time applies. This allows you to vary the simultaneous operation time of the line 1 relay and the relay that closes the star centre connection. (see start-up par.)	0	250	Tenths of sec	0.1 sec
CO 14	**If CO10 = 2** star triangle start-up time applies. This allows you to vary the time from unhooking the star centre relay from the hook on the relay of line 2 (see start-up par.)	0	250	Hund. of sec	0.01 sec

CO 15	Switch-on time with gas bypass valve / idle compressor start-up valve (see partialisation mode)	0	250	sec	
Compressor rotation - balancing - temperature control					
CO 16	Selection criteria of compressors in the circuit 0 = Fixed sequence 1 = FIFO 2 = Balance 3 = Saturation 4 = Compressor weight	0	4		
CO 17	Selection criteria of circuits 0 = Fixed sequence 1 = FIFO 2 = Balance 3 = Saturation 4 = Compressor weight	0	4		
CO 18	Balance/saturation criteria 0= Hours 1= Peaks	0	1		
Resource control in proportional/neutral zone mode					
CO 36	Max time with no resources being inserted with at least one resource active	0	250	Min	10 Min
CO 37	Max time in a neutral zone with no resources rotating	0	999	Hr	1 Hr
CO 38					
Compressor with modulating control					
CO 39	Compressor operation time at maximum speed requested by temperature control 0 = function is disabled	0	250	sec	
CO 40	Minimum value for output of digital analog scroll 0÷10V at peak	0	100	%	
CO 41	Power implementation interval at peak	1	250	sec	
CO 42	Determines the minimum continuative operation percentage of the modulating compressor below which the CO43 time count starts 0 = function is disabled	0	100	%	
CO 43	MAX continuative operation time of modulating compressor with operation percentage below CO42 0 = function is disabled	0	250	Min	10 Min
CO 44	Forced operation time at maximum speed	0	250	sec	10 sec
CO 45	Maximum continuative operation time of modulating compressor after which the modulating compressor is switched off and insertion of another compressor is forced depending on rotation 0 = function is disabled	0	999	Hr	
CO 46	Minimum value for output of digital analog scroll 0÷10V 5 circuit 1	0	CO47	%	
CO 47	Minimum value for output of digital analog scroll 0÷10V 5 circuit 1	CO46	100	%	
CO 48	Minimum value for output of digital analog scroll 0÷10V 6 circuit 2	0	CO49	%	
CO 49	Minimum value for output of digital analog scroll 0÷10V 6 circuit 2	CO48	100	%	
CO 50	Normal power implementation interval	1	250	sec	
Compressor liquid injection function					
CO 51	Activation set point of the liquid injection solenoid valve	-50 -58	150 302	°C °F	Tenths whole
CO 52	Differential deactivation of the liquid injection solenoid valve	0.1 1	25.0 45	°C °F	Tenths whole
Load maintenance					
CO 53	Set compressor 1 hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
CO 54	Set compressor 2 hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
CO 55	Set compressor 3 hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
CO 56	Set compressor 4 hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
CO 57	Set compressor 5 hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
CO 58	Set compressor 6 hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
CO 59					
CO 60					
CO 61					
CO 62					
CO 63					
CO 64					
CO 65					
CO 66					
CO 67					
CO 68					
CO 69	Delay time in enabling Refcomp Inverter compressor relay based on temperature control request	0	250	sec	
CO 70	Delay in VI valves activation from compressor start-up	0	250	sec	
CO 71	Minimum activation time for VI valves	0	250	sec	
Water pump					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
Evaporator water pump control					

PA 1	Evaporator pump/supply fan operation mode 0 = The pump and/or the supply fan are absent or not controlled. 1 = Continuous mode: the pump/supply fan is activated when the machine is switched on (chiller/h.p. selection). 2 = Working on demand of the compressors: the water pump/supply fan are linked with the compressors being switched on and off.	0	2		
PA 2	Compressors ON delay from pump/supply fan start-up	0	250	Sec	10 Sec
PA 3	Evaporator water pump/supply fan OFF delay from when the compressors are shut off	0	250	Sec	10 Sec
PA 4	Pump Off Delay when the Unit is shut off	0	250	Sec	10 Sec
PA 5	Pump Activation and Rotation: 0 = Pump - No Rotation; 1 = Pump - Manual Rotation; 2 = Pumps - Start Rotation; 3 = Pumps - Rotation at Hours; 4 = Pumps - Rotation at Start and Hours	0	4		
PA 6	Pump Manual Inversion: 0= Pump 1 On; 1= Pump 2 On	0	1		
PA 7	No. of hours for forced evaporator pump rotation	0	999	Hr	10 Hr
PA 8	Simultaneous pump running time after forced rotation	0	250	Sec	
Evaporator water pump operation with anti-freeze alarm					
PA9	Determines the evaporator water pump/s anti-freeze operation when the device is OFF or on Stand-by 0 = always OFF in remote OFF or Stand-by 1 = ON, parallel with the anti-freeze heaters 2 = on in remote OFF or Stand-by, depending on the temperature control request	0	2		
PA10	Temperature control probe for anti-freeze evaporator water pump/s operation 0 = disabled 1 = regulation on evaporator input 2 = regulation on evaporator output 1 3 = regulation on evaporator output 2 4 = regulation on evaporator output 1 / 2 5 = regulation on evaporator output 1 / 2 and common output 6 = regulation on external air temperature	0	6		
PA11	Evaporator water pump activation set point in anti-freeze mode on the temperature control probe	-50.0 -58	110 230	°C °F	Tenths whole
PA12	Evaporator water pump differential deactivation in anti-freeze mode on the temperature control probe	0.1 1	25.0 45	°C °F	Tenths whole
Evaporator water pump maintenance request					
PA 13	Set Pump/supply fan hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
PA 14	Set Evaporator 2 pump hour meter (see chap. maintenance request function)	0	999	Hr	10 Hr
Hot start function of the supply fan air/air unit					
PA 15	Hot start set point	-50.0 -58	110 230	°C °F	Tenths whole
PA 16	Hot start differential	0.1 1	25.0 45	°C °F	Tenths whole
Condenser water pump control					
PA 17	Condenser pump operation mode 0 = Absent, the pump is not controlled. 1 = Continuous mode: the pump being switched on and off is linked with the unit being switched on and off. 2 = Working on demand of the compressors: pump switch-on and off is linked with the compressors being switched on and off.	0	2		
PA 18	Compressor ON delay from condenser pump start-up	0	250	Sec	10 Sec
PA 19	Condenser pump OFF delay from compressor shut off	0	250	Sec	10 Sec
PA 20	Pump Off Delay when the Unit is shut off	0	250	Sec	10 Sec
PA 21	Pump Activation and Rotation: 0 = Pump - No Rotation; 1 = Pump - Manual Rotation; 2 = Pumps - Start Rotation; 3 = Pumps - Rotation at Hours; 4 = Pumps - Rotation at Start and Hours	0	4		
PA 22	Pump Manual Inversion: 0 = Pump 1 On; 1 = Pump 2 On	0	1		
PA 23	No. of hours for forced condenser pump rotation	0	999	Hr	10 Hr
PA 24	Simultaneous pump running time after forced rotation	0	250	Sec	
Condenser water pump operation with anti-freeze alarm					

PA 25	Determines the condenser water pump/s anti-freeze operation when the device is OFF or on Stand-by 0 = always OFF in remote OFF or Stand-by 1 = ON, parallel with the anti-freeze heaters 2 = on in remote OFF or Stand-by, depending on the temperature control request	0	2		
PA 26	Condenser anti-freeze temperature control probe alarm 0 = disabled 1 = regulation on common condenser water input probe 2 = regulation on common condenser water input probe and condenser input 1 3 = regulation on common condenser water input probe and condenser input 2 4 = regulation on condenser water output probe 1 5 = regulation on condenser water output probe 2 6 = regulation on condenser output 1 / 2 7 = regulation on condenser output 1 / 2 and common output 8 = regulation on external air temperature	0	8		
PA 27	Condenser water pump activation set point in anti-freeze mode on the temperature control probe	-50.0 -58	110 230	°C °F	Tenths whole
PA 28	Condenser water pump differential deactivation in anti-freeze mode on the temperature control probe	0.1 1	25.0 45	°C °F	Tenths whole
Condenser water pump maintenance request					
PA 29	Condenser pump timer setting (see chap. maintenance request function)	0	999	10 Hr	10 Hr
PA 30	Set condenser 2 pump hour meter (see chap. maintenance request function)	0	999	10 Hr	10 Hr
Pump down function					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
Pump down					
Pd 1	Pump down mode 0= function disabled 1= shut off with pump down without pump down in start-up 2= shut off with pump down with pump down in start-up 3= shut off with pump down only in chiller mode without pump down in start-up 4= shut off with pump down only in chiller mode with pump down in start-up	0	4		
Pd 2	Pump down pressure setting (see chap. ON/OFF operation with pump down)	0.0 0	50.0 725	Bar psi	Tenths whole
Pd 3	Pump down differential pressure (see chap. ON/OFF mode with pump down)	0.1 1	14.0 203	Bar Psi	Tenths whole
Pd 4	Max time in pump down at start up and at shutdown (see chap. ON/OFF mode with pump down)	0	250	Sec	
Timed pump down					
Pd 5	Pump down time upon start-up Pd5 = 0 function disabled	0	250	Sec	
Pd 6	Pump down time when stopped Pd6 = 0 function disabled	0	250	Sec	
Pump down alarm					
Pd 7	Maximum number of pump down alarm interventions per hour in shutdown which, when exceeded, the alarm is recorded and displayed on the screen with a code and the relay alarm + buzzer is activated Reset is always manual if Pd7 = 0 Reset is always automatic if Pd7 =60 Reset switches from automatic to manual if Pd7 falls between 1 and 59	0	60		
Pd 8	Maximum number of pump down alarm interventions per hour, when started-up Exceeding this limit, the alarm must be reset manually, it will be saved in the log and the alarm relay + buzzer will be activated Reset is always manual if Pd8 = 0 Reset is always automatic if Pd8 =60 Reset switches from automatic to manual if Pd8 falls between 1 and 59 and based on the configuration of Par. Pd9	0	60		
Pd 9	Enabling automatic or manual rearming of the pump-down alarm at start-up if the number of interventions per hour is met**Pd8** 0= the alarm remains in automatic reset even if the number of interventions per hour is met 1=enables manual reset when the number of interventions per hour is met	0	1		
Unloading function					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
Evaporator water high temperate unloading					

Un 1	Comp. unloading function Set Point In chiller mode at evaporator water input high temperature	-50.0 -58	110 230	°C °F	Tenths whole
Un 2	Compressor unloading relay differential at high temperature evaporator water input	0.1 1	25.0 45	°C °F	Tenths whole
Un 3	Compressor unloading function insertion delay time at high temperature evaporator water input	0	250	Sec	10 sec
Un 4	MAX time in compressor unloading mode at high temperature evaporator water input	0	250	Min	
Un 5	Analog input configuration for control of the unloading function of the evaporator high water temperature	1	29		
Evaporator water low temperate unloading					
Un 6	Compressor unloading set point from the evaporator low water temperature	-50.0 -58	110 230	°C °F	Tenths whole
Un 7	Compressor unloading differential from the evaporator low water temperature	0.1 1	25.0 45	°C °F	Tenths whole
Un 8	Comp. unloading function insertion delay time At low temperature evaporator water input	0	250	Sec	10 sec
Un 9	MAX time in compressor unloading status due to the evaporator low water temperature	0	250	Min	
Un 10	Analog input configuration for control of the unloading function of the evaporator low water temperature	1	29		
Chiller condensation unloading – heat pump					
Un 11	Comp. unloading Set Point Condensation temperature / pressure in chiller / h.p. mode	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
Un 12	Comp. unloading differential Condensation temperature / pressure in chiller / h.p. mode	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
Evaporation unloading – heat pump					
Un 13	Compressor unloading Set Point evaporation pressure in h.p. mode	-1.0 -14	50.0 725	Bar Psi	Tenths whole
Un 14	Compressor unloading differential evaporation pressure in h.p. mode	0.1 1	14.0 203	Bar Psi	Tenths whole
Un 15	Maximum time for compressor unloading at temp./press.	0	250	Min	
Un 16	Choice of steps for circuit to insert in unloading mode 1= 1 step 2= 2 steps 3= 3 steps 4= 4 steps	1	8		
Un 17	Minimum working time with partialisation step ON after the unloading function is activated (only for a compressor with partialisation controls)	0	250	Sec	

Condensing fan					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
FA1	Fan regulation 0= not present 1= always on 2 = ON/OFF step insertion 3= ON/OFF continuous step insertion 4= proportional speed regulator	0	4		
FA2	Fan operation mode 0= depending on the compressor 1= independent from the compressor	0	1		
FA3	MAX speed fan peak time after ON (TRIAC) At every start-up the fan is powered at maximum voltage for time FA03, irrespective of the condensation temperature/pressure. When this elapses, the fan continues at the speed set by the regulator.	0	250	Sec	
FA4	Fan phase displacement analog output 5 (only if configured as PWM / phase cut)	0	8	Micro Sec	250µs
FA5	Fan phase displacement analog output 6 (only if configured as PWM / phase cut)	0	8	Micro Sec	250µs
FA6	Single or separate condensation fan 0= unique condensation (1 / 2 / 3 / 4) 1= separate condensers	0	1		
FA7	Pre-fan in chiller mode before compressor ON. It allows you to set a start up time for the fans at the maximum speed in chiller mode before the compressor is switched on, in order to prepare for the sudden increase in condensation temperature / pressure (that starting up the compressor entails) and improving regulation. (only if FA01 = 4)	0	250	Sec	
Chiller mode					
FA8	Minimum operation speed of the fans in chiller mode. This allows you to set a minimum value for proportional fan regulation in chiller mode. It is expressed as a percentage of the maximum voltage allowed.	0	FA16	%	
FA9	Maximum operation speed of the fans in chiller mode. This allows you to set a maximum value for proportional fan regulation in chiller mode. It is expressed as a percentage of the maximum voltage allowed.	FA16	100	%	
FA10	**Proportional regulation** Minimum fan speed Set temperature/pressure in chiller mode. This allows you to set the condensation temperature / pressure value in **chiller** that corresponds to the minimum fan speed. **Step regulation** **SET 1st STEP** This allows you to set the condensation temperature / pressure value in chiller mode that corresponds to operation in ON of the relay output, configured as the 1st condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA11	**Proportional regulation** Set maximum fan speed temperature/pressure in chiller mode. This allows you to set the condensation temperature / pressure value in chiller that corresponds to the maximum fan speed. **Step regulation** **SET 2nd STEP** This allows you to set the condensation temperature / pressure value in chiller mode that corresponds to the operation in ON of the relay output, configured as the 2nd condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA12	**Proportional regulation** Proportional band regulation of fans in chiller mode This allows you to set a temperature / pressure differential that corresponds to a variation from minimum to maximum fan speed. **Step regulation** With Par. FA01=2/3 becomes the differential on the step itself of circuit 1 in chiller (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA13	**Proportional regulation** Differential CUT- OFF in chiller. This allows you to set a temperature / pressure differential in chiller mode to shut off the fan. **Step regulation** With Par. FA01=2/3 becomes the differential on the step itself of circuit 2 in chiller (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA14	Over ride CUT- OFF in chiller. This allows you to set a temperature / pressure differential in chiller mode, where the fan maintains minimum speed.	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole

FA15	CUT - OFF delay time. This allows you to set a delay time for the activation of the CUT - OFF function at fan start-up. If at compressor start-up the proportional regulator requests the fans to be shut off and FA15 ≠ 0, the fan will be forced at minimum speed for the set time. If FA15=0, the function is not enabled.	0	250	Sec	
FA16	Night function speed in chiller mode. This allows you to set a maximum value for proportional regulation of the fans in chiller mode. It is expressed as a percentage of the maximum voltage allowed.	FA8	FA9	%	
Heat pump mode					
FA17	Minimum fan speed in heat pump mode. This allows you to set a minimum value for the proportional regulation of the fans in h.p. It is expressed as a percentage of the maximum voltage allowed.	0	FA24	%	
FA18	Maximum fan speed in heat pump mode. This allows you to set a maximum value for the proportional regulation of the fans in h.p. It is expressed as a percentage of the maximum voltage allowed.	FA24	100	%	
FA19	**Proportional regulation** Set temperature / pressure for maximum fan speed in h.p. mode. This allows you to set the condensation temperature / pressure value in h.p. mode that corresponds to minimum fan speed. **Step regulation** **SET 1st STEP** This allows you to set the condensation temperature / pressure value in heat pump mode that corresponds to the operation of the relay output in ON configured as the 1st condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA20	**Proportional regulation** Set temperature / pressure for minimum fan speed in h.p. mode. This allows you to set the condensation temperature / pressure value in h.p. mode that corresponds to maximum fan speed. **Step regulation** **SET 2nd STEP** This allows you to set the condensation temperature / pressure value in heat pump mode that corresponds to the operation of the relay output in ON configured as the 2nd condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA21	**Proportional regulation** Proportional band regulation of fans in heat pump mode This allows you to set a temperature / pressure differential that corresponds to a variation from minimum to maximum fan speed. **Step regulation** With Par. FA01=2/3 becomes the differential on the step itself of circuit 1 in heat pump (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA22	**Proportional regulation** Differential CUT- OFF in heat pump. This allows you to set a temperature / pressure differential in h.p. mode to shut off the fan. **Step regulation** With Par. FA01**=**2/3 becomes the differential on the step itself of circuit 2 in heat pump mode (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA23	Over ride CUT- OFF in h.p. This allows you to set a temperature / pressure differential in h.p. mode, where the fan maintains minimum speed.	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA24	Night function speed in h.p. This allows you to set a maximum value for the proportional regulation of the fans in h.p. It is expressed as a percentage of the maximum voltage allowed.	FA17	FA18	%	
Condensation fan step 3 / 4 in chiller mode					
FA25	**SET 3rd STEP** This allows you to set the condensation temperature / pressure value in chiller mode that corresponds to the operation in ON of the relay output, configured as the 3rd condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA26	**SET 4th STEP** This allows you to set the condensation temperature / pressure value in chiller mode that corresponds to operation in ON of the relay output, configured as the 4th condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA27	With Par. FA01=2/3 becomes the differential on the step itself of circuit 7.62 cm chiller (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA28	With Par. FA01=2/3 becomes the differential on the step itself of circuit 10.16 cm chiller (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
Condensation fan step 3 / 4 in heat pump mode					
FA29	**SET 3rd STEP** This allows you to set the condensation temperature / pressure value in heat pump mode that corresponds to the operation of the relay output in ON configured as the 3rd condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole

FA30	**SET 4th STEP** This allows you to set the condensation temperature / pressure value in heat pump mode that corresponds to the operation of the relay output in ON configured as the 4th condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA31	With Par. FA01 = 2 / 3 becomes the differential on the step itself of circuit 3 in heat pump mode (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA32	With Par. FA01 = 2 / 3 becomes the differential on the step itself of circuit 10.16 cm heat pump mode (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
Operation in defrost (dF33 = 2)					
FA33	Minimum fan speed in defrost mode. This allows you to set a minimum value for proportional regulation of the fans in defrost mode. It is expressed as a percentage of the maximum voltage allowed.	0	FA40	%	
FA34	Maximum fan speed in defrost mode. This allows you to set a maximum value for proportional regulation of the fans in defrost mode. It is expressed as a percentage of the maximum voltage allowed.	FA40	100	%	
FA35	**Proportional regulation** Set maximum fan speed temperature/pressure in defrost mode. This allows you to set the condensation temperature / pressure value in defrost mode that corresponds to the minimum fan speed. **Step regulation** **SET 1st STEP** This allows you to set the condensation temperature / pressure value in defrost mode that corresponds to operation in ON of the relay output, configured as the 1st condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA36	**Proportional regulation** Set minimum fan speed temperature/pressure in defrost mode. This allows you to set the condensation temperature / pressure value in defrost mode that corresponds to the maximum fan speed. **Step regulation** **SET 2nd STEP** This allows you to set the condensation temperature / pressure value in defrost mode that corresponds to operation in ON of the relay output, configured as the 2nd condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA37	**Proportional regulation** Proportional band regulation of fans in defrost. This allows you to set a temperature / pressure differential that corresponds to a variation from minimum to maximum fan speed. **Step regulation** With Par. FA01=2/3 becomes the differential on the step itself of circuit 1 in defrost mode (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA38	**Proportional regulation** Differential CUT- OFF in defrost. This allows you to set a temperature / pressure differential in defrost mode to shut off the fan. **Step regulation** With Par. FA01**=**2/3 becomes the differential on the step itself of circuit 2 in defrost mode (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA39	Over ride CUT- OFF in defrost. This allows you to set a temperature / pressure differential in defrost where the fan maintains minimum speed.	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA40	Night function speed in defrost mode. This allows you to set a maximum value for proportional regulation of the fans in defrost mode. It is expressed as a percentage of the maximum voltage allowed.	FA33	FA34	%	
FA41	**SET 3rd STEP** This allows you to set the condensation temperature / pressure value in defrost mode that corresponds to relay output operation in ON configured as the 3rd condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA42	**SET 4th STEP** This allows you to set the condensation temperature / pressure value in defrost mode that corresponds to relay output operation in ON configured as the 4th condensation fan speed step.	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FA43	With Par. FA01=2/3 becomes the differential on the step itself of circuit 7.62 cm defrost mode (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FA44	With Par. FA01=2/3 becomes the differential on the step itself of circuit 10.16 cm defrost mode (see fans regulation graph).	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole

Anti-freeze heaters – support					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
Ar 1	Set point for anti-freeze/support heaters in chiller mode. The temperature value below which the heaters start up.	-50.0 -58	110 230	°C °F	Tenths whole
Ar 2	Anti-freeze/support heaters band regulation in chiller mode	0.1 1	25.0 45	°C °F	Tenths Whole
Ar 3	Set point for anti-freeze/support heaters in heat pump mode. The temperature value below which the heaters start up.	-50.0 -58	110 230	°C °F	Tenths whole
Ar 4	Anti-freeze/support heaters band regulation in heat pump mode	0.1 1	25.0 45	°C °F	Tenths whole
Ar 5	Anti-freeze/support heaters operation in defrosting mode 0= activated only from temperature control 1= activated from the temperature control and during the defrost cycle	0	1		
Ar 6	Anti-freeze/support heaters alarm temperature control probe in chiller mode 0 = disabled 1 = evaporator input 2 = evaporator output 1 3 = evaporator output 2 4 = evaporator output 1 / 2 5 = evaporator output 1 / 2 and common output	0	5		
Ar 7	Anti-freeze/support heaters temperature control probe in heat pump mode 0 = disabled 1 = evaporator input 2 = evaporator output 1 3 = evaporator output 2 4 = evaporator output 1 / 2 5 = evaporator output 1 / 2 and common output	0	5		
Ar 8	Condenser anti-freeze heaters temperature control probe 0 = disabled 1 = common condenser water input probe 2 = common condenser water input probe and condenser input 1 3 = common condenser water input probe and condenser input 3 4 = condenser water output probe 1 5 = condenser water output probe 2 6 = condenser output 1 / 2 7 = condenser output 1 / 2 and common output	0	7		
Ar 9	This determines the evaporator/condenser anti-freeze heaters function if a probe that is set to control them malfunctions 0 = OFF if the probe malfunctions 1 = ON if the probe malfunctions	0	1		
Ar 10	This determines the operation of the antifreeze heaters with the instrument on 0 = always OFF (chiller and h.p.) 1 = ON only in chiller mode, depending on the temperature control request 2 = ON only in h.p. mode, depending on the temperature control request 3 = ON in chiller and h.p. mode, depending on the temperature control request	0	3		
Ar 11	Determines the evaporator/condenser anti-freeze heaters operation depending on the remote OFF stand-by mode 0 = Always OFF 1 = ON via temperature control	0	1		
Defrost					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
dF 1	Defrost mode: 0 = defrost disabled 1 = temperature / pressure 2 = starts according to the value of parameter dF28 and ends according to the time 3 = starts according to the value of parameter dF28 and ends due to an external contact 4 = with a condensation fan	0	4		
dF 2	Start defrost temperature / pressure	-50.0 -58 0.0 0	110 230 50.0 725	°C °F bar psi	Tenths whole Tenths Whole
dF 3	Defrost ends by temperature/pressure	-50.0 -58 0.0 0	110 230 50.0 725	°C °F bar psi	Tenths whole Tenths Whole
dF 4	Minimum defrost duration	0	250	Sec	
dF 5	Maximum defrost duration	1	250	Min	
dF 6	Defrost delay between two circuits	0	250	Min	
dF 7	Waiting time with compressor OFF before defrost (inversion of 4-way valve)	0	250	Sec	

dF 8	Waiting time with compressor OFF after defrost (inversion of 4-way valve)	0	250	Sec	
dF 9	Defrost interval in the same circuit	1	99	Min	
dF 10	Set start temperature for combined defrost cycle circuit 1 after the counting of parameter dF09 elapses	-50.0 -58	110 230	°C °F	Tenths whole
dF 11	Set start temperature for combined defrost cycle circuit 2 after the counting of parameter dF09 elapses	-50.0 -58	110 230	°C °F	Tenths whole
dF 12					
dF 13					
dF 14	Set end cycle temperature for combined defrost cycle circuit 1	-50.0 -58	110 230	°C °F	Tenths whole
dF 15	Set end cycle temperature for combined defrost cycle circuit 2	-50.0 -58	110 230	°C °F	Tenths whole
dF 16					
dF 17					
dF 18	Forcing ON activates all steps in defrost mode in circuit 1 0= disabled 1= enabled	0	1		
dF 19	Forcing ON activates all steps in defrost mode in circuit 2 0= disabled 1= enabled	0	1		
dF 20					
dF 21					
dF 22	ON time delay between two steps / compressors in defrost mode	1	250	Sec	
dF 23	Fan ON activation during defrosting/dripping 0= disabled 1= only defrost enabled 2= enabled in defrost / drip	0	2		
dF 24	Set temperature/pressure that forces the fan ON in defrosting mode	-50.0 -58 0.0 0	110 230 50.0 725	°C °F bar psi	Tenths whole Tenths Whole
	Defrost with condensation fans				
dF 25	Set defrost activation with condensation fans	-50.0 -58	110 230	°C °F	Tenths whole
	Defrost mode				
dF 26	Start defrost cycle in units with a number of circuits 0= independent 1= if both have reached the defrost start request 2= if at least one has reached the defrost start request	0	2		
dF 27	End defrost cycle in units with a number of circuits 0= independent 1= if both have reached end defrost status 2= if at least one has reached end defrost status	0	2		
	Begin end defrost from analog input				
dF 28	Probe that determines the onset of end defrost 0= start and end with condensation temperature / pressure probe 1= start with evaporation pressure probe - end with condensation temperature / pressure probe 2= start with condensation temperature / pressure probe - end with evaporation pressure probe 3= start and end by evaporation pressure	0	3		
	Forced defrost				
dF 29	Minimum idle time before forced defrosting	0	250	sec	
dF 30	Set forced defrost temperature/pressure	-50.0 -58 0.0 0	110 230 50.0 725	°C °F bar psi	Tenths whole Tenths Whole
dF 31	Forced defrosting differential	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
	Supply fan operation in defrosting mode				
dF 32	Supply fan block in defrosting mode 0 = Not enabled 1= Enabled	0	1		
	Anti-freeze prevention in defrost				
dF 33	Forcing circuits that are not defrosting ON 0 = function is disabled 1 = function active with fan off 2 = function active with fan controlled by the circuits in h.p.	0	2		
	Recovery				
Parameters	**Description**	**min**	**max**	**um**	**Resolution**

rC 1	Recovery function 0 = disabled 1 = separate hydraulic circuits 2 = hydraulic circuits in parallel 3 = total recovery gas side	0	3		
rC 2	Choice of priority for recovery mode (rC1 = 3) 0= priority to user side 1= priority to recovery side	0	1		
rC 3	Forced step deactivation time	0	250	Sec	
rC 4	Forced step deactivation time after rotation of recovery valve	0	250	Sec	
rC 5	Minimum operation time in recovery mode	0	250	Min	
rC 6	Minimum delay between recovery end and next recovery	0	250	Min	
rC 7	Set recovery function disabling	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
rC 8	Recovery function enabling differential	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
rC 9	Maximum disabling time for recovery by condensation temp./press.	0	250	Min	
rC 10	Condensation ventilation operation in recovery mode 0 = enabled 1 = not enabled	0	1		
rC 11	Set recovery minimum. This defines the minimum limit that can be used to set the working set point in chiller mode.	-50.0 -58	rC12	°C °F	Tenths whole
rC 12	Set recovery maximum. This defines the maximum limit that can be used to set the working set point in chiller mode.	rC11	110 230	°C °F	Tenths whole
rC 13	Recovery set point. This allows you to set the working set point in chiller with recovery mode.	rC11	rC12	°C/°F	Whole/tenths
rC 14	Recovery differential. This allows you to set the working differential in chiller with recovery mode.	0.1 1	25.0 45	°C °F	Tenths whole
rC 15	This defines the temperature control probe of the machine in Recovery mode: 0 = condenser water common input NTC temperature probe 1 = circuit 1 condenser water input NTC temperature probe 2 = circuit 2 condenser water input NTC temperature probe 3 = circuit 1 condenser water output NTC temperature probe 4 = circuit 2 condenser water output NTC temperature probe 5 = condenser water common output NTC temperature probe	0	5		
Domestic hot water production Function					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
FS 1	Activation of domestic hot water production 0 = disabled 1 = domestic water production with common return 2 = domestic water production with dedicated return	0	2		
FS 2	Operation priorities 0 = domestic water 1 = heating / cooling	0	1		
FS 3	Domestic water set point. This defines the working set point for the production of domestic water.	FS05	FS06	°C °F	tenth whole
FS 4	Domestic water regulation steps intervention band	0.1 1	25.0 45	°C °F	tenth whole
FS 5	Minimum domestic water set point value. This defines the minimum limit that can be used to set the domestic water set point.	-50.0 -58	FS06	°C °F	tenth whole
FS 6	Maximum domestic water set point value. This defines the maximum limit that can be used to set the domestic water set point.	FS05	110 230	°C °F	tenth whole
FS 7	Activation of the steps to reach the domestic water set point 0 = activates all the compressors 1 = activates the compressors and heaters	0	1		
FS 8	Connection of the domestic water temperature control heaters 0 = no 1 = yes	0	1		
FS 9	Time to activate maximum power/heaters insertion	0	250	min	
FS 10	Delay in activating outputs for domestic water production	0	999	sec	
FS 11	Delay in cycle inversion during domestic water production	0	999	sec	
Anti legionella					
FS 12	Type of Anti-legionella **activation** 0 = timed 1 = time band	0	1		
FS 13	Delay time between two Anti-legionella production cycles. 0 = function is disabled	0	250	Hr	
FS 14	Anti legionella set point. This allows you to set the Anti legionella working set point.	FS15	FS16	°C °F	tenth whole

FS 15	Minimum Anti legionella set point value. This defines the minimum limit that can be used to set the Anti legionella set point.	-50.0 -58	FS16	°C °F	tenth whole
FS 16	Maximum Anti legionella set point value This defines the maximum limit that can be used to set the Anti legionella set point.	FS15	110 230	°C °F	tenth whole
FS 17	Anti-legionella activation time	0.00	24.00	Hr	10 min
FS 18	Day of activation Anti-legionella 0=disabled, 1=Sunday, 2=Monday... 7=Saturday	0	7		
FS 19	Time in anti-legionella production	0	250	min	
FS 20	Maximum idle time in Anti-legionella mode	0	250	min	
FS 21	Heaters OFF band in Anti-legionella mode	0.1 1	25.0 45	°C °F	tenth whole
Solar panels					
FS 22	Water set point for solar panel integration. This allows you to set the working set point for the solar panels.	FS24	FS25	°C °F	tenth whole
FS 23	Intervention band for solar panel integration.	0.1 1	25.0 45	°C °F	Tenths whole
FS 24	Minimum set point for solar panel water. This defines the minimum limit that can be used to set the solar panel set point.	-50.0 -58	FS25	°C °F	Tenths whole
FS 25	Maximum set point for solar panel water. This defines the maximum limit that can be used to set the solar panel set point.	FS24	110 230	°C °F	Tenths whole
Domestic water pump					
FS 26	Delay in domestic water output inversion from when the domestic water pump is activated	0	250	sec	
FS 27	Delay in domestic water pump shut off from when the domestic water output is inverted	0	250	sec	
FS 28	Domestic water pump operation mode: 0 = operation on demand: the pump goes ON only when there is a request for domestic water production 1 = continuous operation: the pump is linked to unit start up; delays FS26 and FS27 are ignored	0	1		
Interruption from probe number 2					
FS 29	Minimum interruption time during domestic water production by probe 2 and minimum time between two interruptions	0	250	sec	
FS 30	Domestic water probe set point 2 to interrupt domestic water production	-50.0 -58	110 230	°C °F	tenth whole
FS 31	Domestic water probe differential 2 to interrupt domestic water production	0.1 1	25.0 45	°C °F	tenth whole
Charge modulation					
FS 32	Overheating set point to activate the charge modulating valve	-50.0 -58	110 230	°C °F	tenth whole
FS 33	Overheating band for the charge modulating valve	0.1 1	25.0 45	°C °F	tenth whole
FS 34	Maximum operation time of the charge modulation button valve	1	250	sec	10 sec
FS 35	Water set point to change activation setting and band of the charge modulating valve	-50.0 -58	110 230	°C °F	tenth whole
FS 36	Water band to change activation setting and band of the charge modulating valve	0.1 1	25.0 45	°C °F	tenth whole
FS 37	New overheating set point	-50.0 -58	110 230	°C °F	tenth whole
FS 38	New overheating band	0.1 1	25.0 45	°C °F	tenth whole
FS 39	Charge modulation button valve ON time	1	250	sec	
FS 40	Charge modulation button valve OFF time	1	250	sec	
FS 41	Forced activation of the condensation fans during activation of the domestic water function 0 = function is disabled 1 = function enabled – during the FS26 time, the ventilation modulates according to the condensing temperature/pressure 2 = function active – during FS26 time ventilation is forced to operate at night function speed	0	2		
FS 42	Low condensing temperature/pressure threshold to by-pass the ON time of the domestic water pump before the commutation of the valves	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	tenth whole tenth whole
FS 43	Low evaporation pressure threshold to bypass the domestic water pump ON time before switching the domestic water valves	0.0 0	50.0 725	Bar Psi	tenth whole
FS 44	Evaporator anti-freeze prevention during domestic water production with a single-circuit machine 0 = function is disabled 1 = function is enabled	0	1		
FS 45	Evaporator water output set point to prevent anti-freeze	-50.0 -58	110 230	°C °F	tenth whole
FS 46	Band to prevent anti-freeze	0.1 1	25.0 45	°C °F	tenth whole
FS 47	External air set point to prevent anti-freeze	-50.0 -58	110 230	°C °F	tenth whole

FS 48	Do not turn the valves in production of domestic water only with dedicated return 0=function not active 1=function active	0	1		
FS 49	Evaporator water pump shut off during production of domestic water only in dedicated return mode 0=function not active 1=function active	0	1		
FS 50	Overlapping time between evaporator water pump and domestic water pump in dedicated return mode, during the transition to domestic water only with FS49=1	0	250	Sec	
FS 51	Waiting time before switching inversion valves from chiller to h.p.	0	250	Sec	
FS 52	Waiting time before switching inversion valves from h.p. to chiller	0	250	Sec	
FS 53	Minimum operation time in chiller mode before switching to domestic water production (only with dedicated return)	0	250	Sec	10 sec
FS 54	Minimum chiller demand threshold (power steps) before starting in chiller + domestic water mode	1	16		
FS 55	Minimum heat pump demand threshold (power steps) before stopping the domestic water production (with heat pump priority)	1	16		
FS 56	Power modulation if the user side and domestic water side are demanded simultaneously 0 = temperature control meets domestic water demand 1 = activation of max number of steps between domestic water and user side 2 = activation of 100% of available power (only h.p.; in chiller mode it behaves as FS56=1)	0	2		
	Free cooling				
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
FC 1	Activation of free cooling 0 = disabled 1 = enabled fan control with condensing priority 2 = enabled fan control with free cooling priority 3 = enabled with external free cooling ventilation 4 = enabled for water-water units	0	4		
FC 2	Free cooling mode input/output differential	0.1 1	25.0 45	°C °F	Tenths whole
FC 3	Free cooling input/output delay	0	250	Sec	10 Sec
FC 4	Damper closing/3-way water valve differential/free cooling ON/OFF relay with temperature control being satisfied	0.1 1	25.0 45	°C °F	Tenths whole
FC 5	Band regulation steps/ventilation modulating output in free cooling mode	0.1 1	25.0 45	°C °F	Tenths whole
FC 6	Fan regulation operation in free cooling 0 = 100% on demand 1 = with step/proportional regulation	0	1		
FC 7	Anti-freeze prevention setting with unit in free cooling mode	-50.0 -58	110 230	°C °F	Tenths whole
FC 8	Free cooling anti-freeze alarm prevention differential	0.1 1	25.0 45	°C °F	Tenths whole
FC 9	Minimum operation speed of the fans in free cooling mode	0	100	%	
FC 10	Maximum operation speed of the fans in free cooling mode	0	100	%	
FC 11	Peak time at maximum speed after switch-on 0 = function is disabled	0	250	sec	
	Split coil control				
FC 12	1st split coil step set point circuit 1 – 2	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FC 13	1st split coil step differential circuit 1 – 2	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FC 14	2nd split coil step set point circuit 1 – 2	-50.0 -58 0.0 0	110 230 50.0 725	°C °F Bar Psi	Tenths whole Tenths whole
FC 15	2nd split coil step differential circuit 1 – 2	0.1 1 0.1 1	25.0 45 14.0 203	°C °F Bar Psi	Tenths whole Tenths whole
FC 16	Delay time for valve exchange 1st and 2nd split coil step	0	250	sec	
	Water-water unit				
FC 17	External air set point temperature to enable free cooling	-50.0 -58	110 230	°C °F	tenth whole

FC 18	FC condenser water set point temperature to activate free cooling	-50.0 -58	110 230	°C °F	tenth whole
FC 19	Delay in free cooling activation The FC condenser water temperature must be below the FC18 set point for FC19 seconds before the effective activation of free cooling	0	250	sec	
FC 20	Switching delay for ON/OFF free cooling valves	0	250	sec	
FC 21	Free cooling set point	-50.0 -58	110 230	°C °F	tenth whole
FC 22	Free cooling differential	0.1 1	25.0 45	°C °F	tenth whole
FC 23	Delay in outfeed from free cooling	0	250	sec	
FC 24	Delay in activation of anti-freeze prevention in free cooling	0	250	sec	
FC 25	Free cooling valve set point in chiller mode	-50.0 -58	110 230	°C °F	tenth whole
FC 26	Free cooling valve differential in chiller mode	0.1 1	25.0 45	°C °F	tenth whole
FC 27	Minimum regulation percentage for free cooling valve	0	FC28	%	
FC 28	Maximum regulation percentage for free cooling valve	FC27	0	%	
FC 29	Maintaining minimum valve opening 0 = no 1 = yes	0	1		
Auxiliary outputs					
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
Auxiliary relay 1					
US 1	Auxiliary relay 1 operation (see auxiliary relay operation and diagrams) 0 = not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 2	Analog input configuration for control of the auxiliary relay 1	1	36		
US 3	Set point of auxiliary relay 1 (see auxiliary relay operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 4	Auxiliary relay differential 1 (see auxiliary relay operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
Auxiliary relay 2					
US 5	Auxiliary relay 2 operation (see auxiliary relay operation and diagrams) 0 = not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 6	Analog input configuration for control of the auxiliary relay 2	1	36		
US 7	Set point of auxiliary relay 2 (see auxiliary relay operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 8	Auxiliary relay differential 2 (see auxiliary relay operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
Auxiliary relay 3					
US 9	Auxiliary relay 3 operation (see auxiliary relay operation and diagrams) 0 = not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 10	Analog input configuration for control of the auxiliary relay 3	1	36		
US 11	Set point of auxiliary relay 3 (see auxiliary relay operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths

US 12	Auxiliary relay differential 3 (see auxiliary relay operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
Auxiliary relay 4					
US 13	Auxiliary relay 4 operation (see auxiliary relay operation and diagrams) 0 = not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 14	Analog input configuration for control of the auxiliary relay 4	1	36		
US 15	Set point of auxiliary relay 4 (see auxiliary relay operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 16	Auxiliary relay differential 4 (see auxiliary relay operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
0÷10V proportional auxiliary output 1					
US 17	Proportional auxiliary output 1 operation (see auxiliary output operation and diagrams) 0= not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 18	Analog input configuration for control of the auxiliary output 1	1	36		
US 19	Set point for auxiliary 1 (see auxiliary output operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 20	Differential for auxiliary 1 (see auxiliary output operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 21	Minimum value for 0 ÷10V analog output 1	0	US22	%	
US 22	Maximum value for 0 ÷10V analog output 1	US21	100	%	
US 23	Maintaining minimum value of analog output 1 0 = no 1 = yes	0	1		
0÷10V proportional auxiliary output 2					
US 24	Proportional auxiliary output 2 operation (see auxiliary output operation and diagrams) 0= not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 25	Analog input configuration for control of the auxiliary output 2	1	36		
US 26	Set point for auxiliary 2 (see auxiliary output operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 27	Differential for auxiliary 2 (see auxiliary output operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 28	Minimum value for 0 ÷10V analog output 2	0	US29	%	
US 29	Maximum value for 0 ÷10V analog output 2	US28	100	%	
US 30	Maintaining minimum value of analog output 2 0 = no 1 = yes	0	1		
0÷10V proportional auxiliary output 3					

US 31	Proportional auxiliary output 3 operation (see auxiliary output operation and diagrams) 0= not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 32	Analog input configuration for control of the auxiliary output 3	1	36		
US 33	Set point for auxiliary 3 (see auxiliary output operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 34	Differential for auxiliary 3 (see auxiliary output operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 35	Minimum value for 0 ÷10V analog output 3	0	US36	%	
US 36	Maximum value for 0 ÷10V analog output 3	US35	100	%	
US 37	Maintaining minimum value of analog output 3 0 = no 1 = yes	0	1		
	0÷10V proportional auxiliary output 4				
US 38	Proportional auxiliary output 4 operation (see auxiliary output operation and diagrams) 0= not enabled 1= always enabled with direct action 2= enabled with direct action only with unit ON 3= always enabled with inverse action 4= enabled with inverse action only with unit ON	0	4		
US 39	Analog input configuration for control of the auxiliary output 4	1	36		
US 40	Set point for auxiliary 4 (see auxiliary output operation and diagrams)	-50.0 -58 0.0 0 4.0	110 230 50.0 725 20.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 41	Differential for auxiliary 4 (see auxiliary output operation and diagrams)	0.1 1 0.1 1 0.1	25.0 45 14.0 203 16.0	°C °F Bar Psi mA	Tenths whole Tenths whole Tenths
US 42	Minimum value for 0 ÷10V analog output 4	0	US43	%	
US 43	Maximum value for 0 ÷10V analog output 4	US42	100	%	
US 44	Maintaining minimum value of analog output 4 0 = no 1 = yes	0	1		
	Alarms				
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
	Low pressure alarm				
AL 1	Bypass time for low pressure alarm from digital / analog input from the start-up of the first compressor of the circuit and from the shut off of the last compressor of the circuit	0	250	sec	
AL 2	This defines low pressure alarm operation with pump-down enabled: 0 = the low pressure alarm is independent from pump-down 1 = the low pressure alarm is inhibited during compressor shutdown in pump down and when the compressor is stopped. When restarted, if ID is active, the solenoid valve opens but the compressor does not start up until the low pressure switch is deactivated. If the pressure switch is not deactivated within the AL01 time, the low pressure alarm is triggered. 2 = the low pressure alarm is inhibited during compressor shutdown in pump down, when the compressor is stopped and for AL01 time when the compressor restarts	0	2		
AL 3	Low pressure alarm set point from analog input	-50.0 -58 -1.0 -14	110 230 50.0 725	°C °F bar psi	tenth whole tenth whole
AL 4	Low pressure alarm differential from analog input	0.1 1 0.1 1	25.0 45 14.0 203	°C °F bar psi	tenth whole tenth Whole

AL 5	Maximum number of interventions per hour of the low pressure alarm from a digital/analog input Reset is always manual if AL05 = 0 Reset is always automatic if AL05 = 60 Reset switches from automatic to manual if AL05 falls between 1 and 59	0	60		
AL 6	Low temperature / pressure alarm in defrost mode 0 = not enabled 1= enabled	0	1		
AL 7	Low temperature / pressure alarm delay in defrost mode	0	250	sec	
AL 8	Low temperature / pressure alarm with the unit in remote OFF or stand-by mode 0 = alarm detection disabled 1 = alarm detection enabled	0	1		
	High temperature/pressure alarm				
AL 9	High condensing pressure/temperature alarm set point from analog input	-50.0 -58 0.0 0	110 230 50.0 725	°C °F bar psi	tenth whole tenth whole
AL 10	High condensing pressure/temperature differential from analog input	0.1 1 0.1 1	25.0 45 14.0 203	°C °F bar psi	tenth whole tenth whole
AL 11	Maximum number of high condensing pressure/temperature alarm interventions per hour from a digital/analog input Reset is always manual if AL11 = 0 Reset is always automatic if AL11 = 60 Reset switches from automatic to manual if AL11 falls between 1 and 59	0	60		
	Oil alarm				
AL 12	Low pressure / oil level alarm delay from a digital input	0	250	sec	
AL 13	Low pressure / oil level alarm input duration from digital input in normal working conditions	0	250	sec	
AL 14	Maximum number of interventions per hour for low oil pressure / level alarm Reset is always manual if AL14 = 0 Reset is always automatic if AL14 = 60 The reset switches from automatic to manual if AL14 falls between 1 and 59	0	60		
	Compressor oil alarm management				
AL 15	Oil pressure switch/float alarm with compressor OFF 0 = alarm detection disabled 1 = alarm detection enabled	0	1		
	Evaporator flow switch alarm operation				
AL 16	Evaporator flow switch/thermal overload supply fan alarm by-pass by activating the evaporator pump/supply fan	0	250	sec	
AL 17	Maximum time in evaporator flow switch alarm before switching to manual mode and blocking the evaporator water pump, if moving	0	250	sec	
AL 18	Duration of active evaporator flow switch / thermal overload supply fan input	0	250	sec	
AL 19	Evaporator flow switch / thermal overload supply fan input not active duration	0	250	sec	
AL 20	Evaporator flow switch alarm operating logic 0 = polarity control enabled 1 = polarity control disabled	0	1		
	Condenser flow switch alarm operation				
AL 21	Condenser flow switch operation 0 = disabled 1 = chiller only enabled 2 = heat pump only enabled 3 = enabled in both chiller and heat pump	0	3		
AL 22	Condenser flow switch alarm delay from when condenser pump is activated	0	250	sec	
AL 23	Maximum time in condenser flow switch alarm before switching to manual mode and blocking the condenser water pump, if moving	0	250	sec	
AL 24	Active condenser flow switch input duration	0	250	sec	
AL 25	Non-active condenser flow switch input duration	0	250	sec	
AL 26	Condenser flow switch alarm operating logic 0 = polarity control enabled 1 = polarity control disabled	0	1		
	Compressor thermal overload alarm				
AL 27	Compressor thermal overload alarm delay at start-up	0	250	sec	
AL 28	Maximum number of compressor thermal overload alarm interventions per hour Reset is always manual with password if AL28 = 0 Reset is always manual if AL28 = 60 The reset switches from manual to manual with password if AL28 falls between 1 and 59	0	60		

AL 29	Compressor thermal overload alarm function 0 = blocks the individual compressor 1 = blocks the circuit	0	1		
AL 30	Compressor thermal overload alarm with compressor OFF 0 = alarm detection disabled 1 = alarm detection enabled	0	1		
AL 31	Compressor thermal overload alarm reset password value (see procedures)	0	999		
Anti-freeze alarm in chiller mode					
AL 32	Anti-freeze minimum set point limit in chiller mode	-50.0 -58	AL33	°C °F	Tenths whole
AL 33	Anti-freeze maximum set point limit in chiller mode	AL32	110 230	°C °F	Tenths whole
AL 34	Anti-freeze alarm set point in chiller. This allows you to set a temperature value below which the anti-freeze, low ambient air temperature (air/air unit), low output air temperature (air/air unit) alarm is activated.	AL32	AL33	°C °F	Tenths whole
AL 35	Anti-freeze alarm differential in chiller, low ambient air temperature, low output air temperature. This allows you to set a differential that determines the alarm to be reset	0.1 1	25.0 45	°C °F	tenth whole
AL 36	Anti-freeze alarm delay, low ambient air temperature, low output air temperature in chiller mode. This allows you to set a time during which the temperature must remain below the AL34 set point so as to activate the anti-freeze alarm.	0	250	sec	
AL 37	Maximum number of interventions per hour of the anti-freeze, low output air temperature in chiller mode alarm. Reset is always manual if AL37 = 0 Reset is always automatic if AL37 = 60 Reset switches from automatic to manual if AL37 falls between 1 and 59	0	60		
AL 38	Anti-freeze alarm operation in chiller mode 0 = it shuts off ONLY the compressors when the temperature measured by the anti-freeze adjustment probe drops below AL34 set point and indicates the anti-freeze alarm with a label but does not trigger the buzzer nor the alarm relay 1 = it switches off the compressors when the temperature measured by the anti-freeze adjustment probe drops below the AL34 set point and indicates the anti-freeze alarm with a label + buzzer + alarm relay	0	1		
Anti-freeze alarm in heat pump mode					
AL 39	Anti-freeze minimum set point limit in heat pump mode	-50.0 -58	AL40	°C °F	Tenths whole
AL 40	Anti-freeze maximum set point limit in heat pump mode	AL39	110 230	°C °F	Tenths whole
AL 41	Anti-freeze alarm setting in heat pump mode This allows you to set a temperature value below which the anti-freeze, low ambient air temperature (air/air unit), low output air temperature (air/air unit) alarm is activated.	AL39	AL40	°C/°F	Whole/tenths
AL 42	Anti-freeze alarm differential in heat pump, low ambient air temperature, low output air temperature. This allows you to set a differential that determines the alarm to be reset.	0.1 1	25.0 45	°C °F	Tenths whole
AL 43	Anti-freeze alarm delay (low outfeed air temperature in air/air unit) from the start-up of the unit in heat pump mode **Caution:** if, in remote Stand-by/OFF mode, the unit presents an anti-freeze alarm situation and the AL43 time is not zero, by selecting h.p. mode from the key or from the digital input, this resets the anti-freeze situation and allows the compressors to start up for AL43 time as the unit heats the water or the air. Once the AL43 delay lapses, if the anti-freeze regulation probe still detects a temperature of < AL41 set point for at least AL44 seconds, the unit is blocked and an anti-freeze alarm is triggered.	0	250	sec	
AL 44	Anti-freeze alarm delay, low ambient air temperature, low output air temperature in heat pump mode. This allows you to set an amount of time during which the temperature must stay below the set point set by PAR. AL41 so that the anti-freeze alarm is triggered.	0	250	sec	
AL 45	Maximum number of interventions per hour for the anti-freeze, low output air temperature alarm in heat pump mode Reset is always manual if AL45 = 0 Reset is always automatic if AL45 = 60 Reset switches from automatic to manual if AL45 falls between 1 and 59	0	60		
AL 46	Anti-freeze alarm operation in heat pump mode 0 = it shuts off ONLY the compressors when the temperature measured by the anti-freeze adjustment probe drops below the AL41 set point and indicates the anti-freeze alarm with a label but does not trigger the buzzer and the alarm relay 1 = it shuts off the compressors when the temperature measured by the anti-freeze adjustment probe drops below the AL41 set point and indicates the anti-freeze alarm with a label + buzzer + alarm relay	0	1		
Selecting the probe to control the anti-freeze alarm					

AL 47	Anti-freeze temperature control probe alarm in chiller mode 0= disabled 1 = regulation on evaporator input 2 = regulation on evaporator output 1 3 = regulation on evaporator output 2 4 = regulation on evaporator output 1 / 2 5 = regulation on evaporator output 1 / 2 and common output	0	5		
AL 48	Anti-freeze temperature control probe alarm in heat pump mode 0= disabled 1 = regulation on evaporator input 2 = regulation on evaporator output 1 3 = regulation on evaporator output 2 4 = regulation on evaporator output 1 / 2 5 = regulation on evaporator output 1 / 2 and common output	0	5		
AL 49	Condenser anti-freeze temperature control probe alarm 0 = disabled 1 = regulation on common condenser input probe 2 = regulation on common condenser input probes and condensers 1 3 = regulation on common condenser input probes and condensers 2 4 = regulation output probes condensers 1 5 = regulation output probes condensers 2 6 = regulation on output probes condensers 1 / 2 7 = regulation on output probes condensers 1 / 2 and common output	0	7		
Compressors high discharge temperature					
AL 50	Compressor high discharge temperature alarm setting	-50 -58	150 302	°C °F	Whole/tenths whole
AL 51	Compressor high discharge temperature alarm differential	0.1 1	25.0 45	°C °F	Tenths whole
AL 52	Maximum number of interventions per hour high temperature supply compr. alarm Reset is always manual if AL52 = 0 Reset is always automatic if AL52 = 60 The reset switches from automatic to manual if AL52 falls between 1 and 59	0	60		
Unit general block alarm					
AL 53	Maximum number of unit general block alarm interventions per hour Reset is always manual if AL53 = 0 Reset is always automatic if AL53 = 60 Reset switches from automatic to manual if AL53 falls between 1 and 59	0	60		
AL 54	Delay time for general alarm block unit with digital input active	0	250	sec	
AL 55	Delay time for general alarm block unit with digital input not active	0	250	sec	10 sec
General block alarm / alert unit 2					
AL 56	General alarm 2 operation 0 = only signals; it does not depend on AL57 (alarm relay and buzzer activated); always resets automatically 1 = the alarm blocks the unit; alarm reset depends on the value of parameter AL57	0	1		
AL 57	Maximum number of interventions per hour for generic block alarm unit 2 Reset is always manual if AL57 = 0 Reset is always automatic if AL57 = 60 Reset switches from automatic to manual if AL57 falls between 1 and 59	0	60		
AL 58	Delay time for general alarm block unit with digital input active	0	250	Sec	10 sec
AL 59	Delay time for general alarm block unit with digital input not active	0	250	sec	10 sec
Evaporator input high water temperature alarm					
AL 60	Maximum number of system input high water temperature probe alarm interventions per hour Reset is always manual if AL60 = 0 Reset is always automatic if AL60 = 60 Reset switches from automatic to manual if AL60 falls between 1 and 59	0	60		
AL 61	System input high water temperature probe alarm delay from compressor activation	0	250	sec	10 sec
AL 62	System input high water temperature probe alarm set point	-50.0 -58	110 230	°C °F	tenth whole
AL 63	System input high water temperature probe alarm differential	0.1 1	25.0 45	°C °F	tenth whole
AL 64	**NTC / PTC** analog input configuration to manage the system input water high temperature alarm 0 = function is disabled	0	29		
Alarm relay					
AL 65	Activation of the alarm relay output in remote OFF or Stand-by mode 0 = alarm output enabled 1 = alarm output not enabled	0	1		
Alarm log reset password					

AL 66	Alarm log reset password value (see procedures)	0	999		
	Anti-freeze alarm in free cooling				
AL 67	Delay of the anti-freeze alarm signal in free cooling	0	250	sec	
AL 68	Maximum number of interventions per hour for anti-freeze alarm in free cooling Reset is always manual if AL68 = 0 Reset is always automatic if AL68 = 60 Reset switches from automatic to manual if AL68 falls between 1 and 59	0	60		
	Auxiliary heating alarms				
AL 69	The behaviour of the compressors in case of auxiliary heating alarms 0 = they follow their behaviour 1 = they turn back on again even if they were disabled by the auxiliary heating function	0	1		
AL 70	Maximum number of interventions per hour for auxiliary heating thermal overload alarm Reset is always manual if AL71 = 0 Reset is always automatic if AL71 = 60 Reset switches from automatic to manual if AL71 falls between 1 and 59	0	60		
AL 71	Maximum number of interventions per hour for auxiliary heating block alarm Reset is always manual if AL72 = 0 Reset is always automatic if AL72 = 60 Reset switches from automatic to manual if AL72 falls between 1 and 59	0	60		
	Electronic Thermostatic Driver				
Parameters	**Description**	**min**	**max**	**um**	**Resolution**
Et1	Configuration of probes Pb1 and Pb2 connected to the driver 0 = NTC temperature 1 = PTC temperature 2 = PT1000 temperature	0	2		
Et2	Configuration of probes Pb3 and Pb4 connected to the driver 0 = NTC temperature 1 = PTC temperature 2 = PT1000 temperature 3 = pressure 4÷20mA 4 = pressure 0÷5V 5 = not present (low pressure defined transducers are used)	0	5		
Et3	Type of valve: 1 = Unipolar 2 = Bipolar	1	2		
Et4	Selection of the bipolar valve body connected to the driver 0 = Custom 1 = Alco EX4 – EX5 – EX6 2 = Alco EX7 3 = Alco EX8 4 = Carel E2V* 5 = Carel E2V*P 6 = Danfoss ETS – 25/50 7 = Danfoss ETS – 100 8 = Danfoss ETS – 250/400 9 = Sporlan SEI 0.5 – 11 10 = Sporlan SEI 30 11 = Sporlan SEH 50/100/175	0	11		
Et5	Selection of the unipolar valve body connected to the driver 0 = Custom	0	0		
Et6	Valve driving 0 = drives both valves 1 = drives only valve 1	0	1		
Et7	Valve 1 output operation mode 0 = chiller 1 = heat pump 2 = chiller and heat pump	0	2		
Et8	Valve 2 output operation mode 0 = chiller 1 = heat pump 2 = chiller and heat pump	0	2		
Et9	Selection of output circuit valve 1 driver 1 0 = Not present 1 = Circuit 1 2 = Circuit 2	0	2		
Et10	Selection of output circuit valve 2 driver 1 0 = Not present 1 = Circuit 1 2 = Circuit 2	0	2		
Et11	Selection of output circuit valve 1 driver 2 0 = Not present 1 = Circuit 1 2 = Circuit 2	0	2		

Et12	Selection of output circuit valve 2 driver 2 0 = Not present 1 = Circuit 1 2 = Circuit 2	0	2		
Et13					
Et14					
Et15					
Et16					
Et17	Number of additional steps to achieve complete closure. When a closing request is received, the valve starts from the current number of steps and moves to 0, then closes for the set number of steps	0	250		
Et18	Number of return steps in opening mode after the valve has been closed completely. These decompress any closing spring inside the valve or to prevent sealing the circuit	0	250		
Et19	Maximum number of adjusting steps of the valve	Et20	8000		
Et20	Minimum number of adjusting steps of the valve	0	Et19		
Et21	Maximum current value per phase of the stepper motor	0	100	mA	x10 mA
Et22	Current stand-by value	0	100	mA	x10 mA
Et23	Maximum number of steps per second of the valve	0	600	Hz	
Et24	Indicates the number of steps the valve has to move before compressor start-up. 0 = function is disabled	0	Et19		
Et25	Sets valve manual operation mode 0= Automatic 1= Manual	0	1		
Et26	Absolute number of steps the valve has to move in manual mode	0	Et19		
Et27	Low pressure alarm activation delay (LOP)	0	250	Sec	
Et28	High pressure alarm activation delay (MOP)	0	250	Sec	
Et29	High overheating alarm activation delay	0	250	Sec	10 Sec
Et30	Low overheating alarm activation delay	0	250	Sec	10 Sec
PID regulation in chiller mode					
Et31	PID proportional constant in chiller mode	0.0 0	50.0 122	°C °F	tenth Whole
Et32	PID integral time in chiller mode	0	250	Sec	
Et33	PID derivative constant in chiller mode	0	250	Sec	
Et34	Overheating regulation set point during chiller mode	0.0 0	25.0 77	°C °F	tenth Whole
Et35	Overheating regulation dead band in chiller mode	0.0 0	5.0 41	°C °F	tenth Whole
Et36	High overheating threshold. The alarm status is signalled after the high overheating alarm activation delay	Et34	80.0 176	°C °F	tenth Whole
Et37	Low overheating threshold. In this case, an additional integral time is added to the normal regulation in order to speed up the return to the normal operating conditions	0.0 0	Et34	°C °F	tenth Whole
Et38	Additional integral time to prevent low overheating in chiller mode	0	250	Sec	
Et39	MOP protection activation threshold. This sets the high pressure protection intervention threshold, above which an additional regulation is activated, similar to that of low overheating mode.	0.0 0	50.0 725	bar psi	tenth Whole
Et40	Pressure set point used during PI function in MOP	0.0 0	50.0 725	bar psi	tenth Whole
Et41	Proportional part of the PI in MOP regulation	0.0 0	50.0 725	bar psi	tenth whole
Et42	Integral time for MOP protection	0	250	Sec	
Et43	LOP protection activation threshold. This sets the low pressure protection intervention threshold, below which an additional regulation is activated, similar to that of low overheating operation.	0.0 0	50.0 725	bar psi	tenth Whole
Et44	Pressure set point used during operation in LOP of PI	0.0 0	50.0 725	bar psi	tenth Whole
Et45	Proportional part of the PI in LOP regulation	0.0 0	50.0 725	bar psi	tenth Whole
Et46	Integral time for LOP protection	0	250	Sec	
Et47	Waiting time for machine start up before MOP chiller alarm signal	0	250	Sec	
PID regulation in Heat pump mode					
Et48	PID proportional constant in heat pump mode	0.0 0	50.0 122	°C °F	tenth Whole
Et49	PID integral time in heat pump mode	0	250	Sec	
Et50	PID derivative constant in heat pump mode	0	250	Sec	
Et51	Overheating regulation set point in heat pump mode	0.0 0	25.0 77	°C °F	tenth Whole

Et52	Overheating regulation dead band in heat pump mode	0.0 0	5.0 41	°C °F	tenth Whole
Et53	High overheating threshold. The alarm status is signalled after the high overheating alarm activation delay	Et51	80.0 176	°C °F	tenth Whole
Et54	Low overheating threshold. In this case, an additional integral time is added to the normal regulation in order to speed up the return to the normal operating conditions	0.0 0	Et51	°C °F	tenth Whole
Et55	Additional integral time to prevent low overheating in heat pump mode	0	250	Sec	
Et56	MOP protection activation threshold. Sets the high pressure protection threshold, above which an additional regulation is activated, similar to that of low overheating	0.0 0	50.0 725	bar psi	tenth Whole
Et57	Pressure set point used during PI function in MOP	0.0 0	50.0 725	bar psi	tenth Whole
Et58	Proportional part of the PI in MOP regulation	0.0 0	50.0 725	bar psi	tenth whole
Et59	Integral time for MOP protection	0	250	Sec	
Et60	LOP protection activation threshold. This sets the low pressure protection threshold, below which an additional regulation is activated, similar to that of low overheating	0.0 0	50.0 725	bar psi	tenth Whole
Et61	Pressure set point used during operation in LOP of PI	0.0 0	50.0 725	bar psi	tenth Whole
Et62	Proportional part of the PI in LOP regulation	0.0 0	50.0 725	bar psi	tenth Whole
Et63	Integral time for LOP protection	0	250	Sec	
Et64	Waiting time for machine start up before MOP chiller alarm signal	0	250	Sec	

8 ANALOG / DIGITAL INPUT/OUTPUT CONFIGURATIONS

8.1 CONFIGURATION OF ANALOG INPUTS

0. Disabled
1. Compressor 1 PTC supply temperature probe
2. Compressor 2 PTC supply temperature probe
3. Compressor 3 PTC supply temperature probe
4. Compressor 4 PTC supply temperature probe
5. Compressor 5 PTC supply temperature probe
6. Compressor 6 PTC supply temperature probe

Evaporator

7. Evaporator common input NTC temperature probe
8. Evaporator output 1 NTC temperature probe
9. Evaporator output 2 NTC temperature probe
10. Evaporator common output NTC temperature probe

Condenser

11. Condenser hot water common input NTC temp. probe
12. Circuit 1 Condenser hot water input NTC temp. probe
13. Circuit 2 Condenser hot water input NTC temp. probe
14. Circuit 1 Condenser hot water output NTC temp. probe
15. Circuit 2 Condenser hot water output NTC temp. probe
16. Condenser hot water common output NTC temp. probe

Free cooling and external air

17. System water input NTC temperature probe (free cooling)
18. External air / condenser water (free cooling) temperature NTC temperature probe
19. External air temp / dynamic set point / auxiliary heating / change over NTC temperature probe

Combined defrost and auxiliary probes

20. Circuit 1 combined defrost NTC temperature probe
21. Circuit 2 combined defrost NTC temperature probe
22. Auxiliary output 1 NTC temperature probe
23. Auxiliary output 2 NTC temperature probe

Domestic water

24. Domestic water temperature regulation NTC temperature probe (num. 1)
25. Domestic water temperature safety NTC temperature probe (num. 2)
26. Supply temperature NTC temperature probe
27. Solar panel temperature NTC temperature probe

Condensation probes/transducers

28. Circuit 1 condensation probe (**NTC** temperature)
29. Circuit 2 condensation probe (**NTC** temperature)
30. Circuit 1 condensation probe (pressure **4÷20 mA** / ratiometric **0÷ 5Volt**)
31. Circuit 2 condensation probe (pressure **4÷20 mA** / ratiometric **0÷ 5Volt**)

Evaporation transducers

32. Circuit 1 evaporation pressure probe (pressure **4÷20 mA** / ratiometric **0÷ 5Volt**)
33. Circuit 2 evaporation pressure probe (pressure **4÷20 mA** / ratiometric **0÷ 5Volt**)

Auxiliary transducers and dynamic set point

34. Circuit 1 auxiliary output pressure probe (pressure **4÷20 mA** / ratiometric **0÷ 5Volt**)
35. Circuit 2 auxiliary output pressure probe (pressure **4÷20 mA** / ratiometric **0÷ 5Volt**)
36. Dynamic set point 4-20 mA probe

8.2 CONFIGURATION OF DIGITAL INPUTS

0. Disabled
1. Remote ON/OFF
2. Remote chiller / heat pump
3. Evaporator flow switch
4. Condenser flow switch hot side
5. Domestic water flow switch
6. Anti-freeze alarm circuit 1
7. Anti-freeze alarm circuit 2
8. High pressure pressure switch circuit 1
9. High pressure pressure switch circuit 2
10. Low pressure pressure switch circuit 1
11. Low pressure pressure switch circuit 2
12. High pressure compressor 1
13. High pressure compressor 2
14. High pressure compressor 3
15. High pressure compressor 4
16. High pressure compressor 5
17. High pressure compressor 6
18. Thermal overload compressor 1
19. Thermal overload compressor 2
20. Thermal overload compressor 3
21. Thermal overload compressor 4
22. Thermal overload compressor 5
23. Thermal overload compressor 6
24. Condensation fan thermal overload circuit 1
25. Condensation fan thermal overload circuit 2
26. Condensation fan thermal overload common 1 / 2
27. Thermal overload water pump 1 evaporator / thermal overload supply fan
28. Evaporator support water pump thermal overload
29. Thermal overload water pump 1 condenser
30. Condenser support water pump thermal overload
31. Request for recovery operation circuit 1
32. Request for recovery operation circuit 2
33. End defrost circuit 1
34. End defrost circuit 2
35. Energy Saving
36. Compressor 1 oil pressure switch/float
37. Compressor 2 oil pressure switch/float
38. Compressor 3 oil pressure switch/float
39. Compressor 4 oil pressure switch/float
40. Compressor 5 oil pressure switch/float
41. Compressor 6 oil pressure switch/float
42. Pump down pressure switch circuit 1
43. Pump down pressure switch circuit 2
44. Digital input general block alarm unit 1
45. Digital input general alarm alert / block unit 2
46. Digital input working in RTC automatic activation (time band)/manual (keyboard)
47. Digital input working with supply fan only
48. Digital input temperature control request (motor-condensing unit)

49. Chiller request digital input (motor-condensing unit)
50. Heat pump request digital input (motor-condensing unit)
51. Digital input power step 1 request (motor-condensing unit)
52. Digital input power step 2 request (motor-condensing unit)
53. Digital input power step 3 request (motor-condensing unit)
54. Digital input power step 4 request (motor-condensing unit)
55. Digital input power step 5 request (motor-condensing unit)
56. Digital input power step 6 request (motor-condensing unit)
57. Digital input power step 7 request (motor-condensing unit)
58. Digital input power step 8 request (motor-condensing unit)
59. Solar panel flow switch
60. Incorrect sequence of phases
61. Auxiliary heating thermal overload
62. Auxiliary heating block

8.3 CONFIGURATION OF DIGITAL OUTPUTS

0. Disabled
1. Alarm
2. Evaporator water pump/supply fan
3. Evaporator support water pump
4. Anti-freeze heaters circuit 1
5. Anti-freeze heaters circuit 2
6. Recovery condenser water pump
7. Recovery condenser support water pump

Inversion valves

8. Chiller / heat pump inversion valve circuit 1
9. Chiller / heat pump inversion valve circuit 2

Condensation fan

10. 1st step ON/OFF condensation fan circuit 1
11. 2nd step ON/OFF condensation fan circuit 1
12. 3rd step ON/OFF condensation fan circuit 1
13. 4th step ON/OFF condensation fan circuit 1
14. 1st step ON/OFF condensation fan circuit 2
15. 2nd step ON/OFF condensation fan circuit 2
16. 3rd step ON/OFF condensation fan circuit 2
17. 4th step ON/OFF condensation fan circuit 2

Pump-down solenoids

18. Pump-down solenoid circuit 1
19. Pump-down solenoid circuit 2

Recovery

20. Recovery valve circuit 1
21. Recovery valve circuit 2

Free cooling, split coils and auxiliary outputs

22. Free cooling ON/OFF valve / valve 1 free cooling water-water unit
23. Fan relay output ON/OFF valve / valve 2 free cooling water-water unit
24. 1st step split coil circuit 1
25. 2nd step split coil circuit 1
26. 1st step split coil circuit 2
27. 2nd step split coil circuit 2
28. Auxiliary output 1
29. Auxiliary output 2
30. Auxiliary output 3
31. Auxiliary output 4

Intermittent valves and liquid injection

32. Intermittent valve for screw comp/increase valve for stepless compr. (compressor 1
33. Intermittent valve for screw comp/increase valve for stepless compr. (compressor 2)
34. Liquid injection solenoid valve compressor 1
35. Liquid injection solenoid valve compressor 2

Domestic water

36. ON/OFF valve 1 for domestic water production
37. ON/OFF valve 2 for domestic water production
38. Heaters (first step) for domestic water production

39. Heaters (second step) for domestic water production
40. Heaters (third step) for domestic water production
41. Solar panel pump
42. Solar coil activation/deactivation ON/OFF valve
43. Domestic water pump

Compressor 1

44. Direct start-up: compressor relay 1
    PW start-up: coil relay 1 compressor 1
    Star / triangle start-up: relay line 1 compressor 1
45. PW start-up: coil relay 2 compressor 1
    Star / triangle start-up: relay line 2 compressor 1
46. Star centre relay star start up / triangle compressor 1
47. Partialisation 1 compressor 1
48. Partialisation 2 compressor 1
49. Partialisation 3 compressor 1
50. Gas bypass valve in compressor 1 start-up

Compressor 2

51. Direct start-up: compressor relay 2
    PW start-up: coil relay 1 compressor 2
    Star / triangle start-up: relay line 1 compressor 2
52. PW start-up: coil relay 2 compressor 2
    Star / triangle start-up: relay line 2 compressor 2
53. Star centre relay star start up / triangle compressor 2
54. Partialisation 1 compressor 2
55. Partialisation 2 compressor 2
56. Partialisation 3 compressor 2
57. Gas bypass valve in compressor 2 start-up

Other Compressors

58. Direct start-up: compressor relay 3
59. Direct start-up: compressor relay 4
60. Direct start-up: compressor relay 5
61. Direct start-up: compressor relay 6

Charge modulating valves

62. Circuit 1 charge modulating valve
63. Circuit 2 charge modulating valve

Status relay

64. Operating unit
65. APS Alarm (phase sequence)
66. HP1 alarm
67. HP2 alarm
68. LP1 alarm
69. LP2 alarm
70. AEFL alarm
71. ACFL alarm
72. AHFL alarm
73. APFL alarm
74. ALC1 alarm
75. ALC2 alarm
76. C1tr alarm
77. C2tr alarm
78. C3tr alarm
79. C4tr alarm
80. C5tr alarm
81. C6tr alarm
82. B1A alarm
83. B2A alarm

Auxiliary heating

84. Auxiliary heating 1st step
85. Auxiliary heating 2nd step
86. Auxiliary heating 3rd step
87. Auxiliary heating 4th step

Refcomp Inverter / Management VI

88. Refcomp Inverter Power

89. IV management valve 14
90. IV management valve 15
91. IV management valve 16

8.4 CONFIGURATION OF PROPORTIONAL OUTPUTS

Configurable output signal 4÷20mA - 0÷10V

0. output disabled
1. proportional output 0÷10V condensation control circuit 1
2. proportional output 0÷10V condensation control circuit 2
3. proportional output 0÷10V damper / mixing valve free cooling direct action
4. proportional output 0÷10V damper / mixing valve free cooling direct action
5. auxiliary output 1 0÷10V
6. auxiliary output 2 0÷10V
7. auxiliary output 3 0÷10V
8. auxiliary output 4 0÷10V
9. modulating output 0÷10V compressor 1 circuit 1
10. modulating output 0÷10V compressor 1 circuit 2
11. modulating output 0÷10V auxiliary heating
12. proportional output 4÷20mA condensation control circuit 1
13. proportional output 4÷20mA condensation control circuit 2
14. proportional output 4÷20mA damper / mixing valve free cooling direct action
15. proportional output 4÷20mA damper / mixing valve free cooling inverse action
16. auxiliary output 1 4÷20mA
17. auxiliary output 2 4÷20mA
18. auxiliary output 3 4÷20mA
19. auxiliary output 4 4÷20mA
20. modulating output 4÷20mA compressor 1 circuit 1
21. modulating output 4÷20mA compressor 1 circuit 2
22. modulating output 4÷20mA auxiliary heating

External relay drive ON/OFF output

8.5 ADDITIONAL OUTPUTS

1 USB
1 RS485 slave
1 LAN

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