MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

USER MANUAL

Translation of the original instructions

W3000+

Version 08

EN

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Before carrying out any operation on the machine,
you must carefully read this manual
and make sure you understand
all the instructions and information given

Keep this manual in a known and easily accessible
place to refer to
as necessary during the entire life-span of the unit.

Contents

Warning: *The KIPLink controller software is protected by a digital signature.*
This means that it can only work on boards supplied by MEHITS S.p.A. *and not on boards purchased from other dealers.*
Additionally, the plastic elements and screen prints on the installed hardware are exclusive to MEHITS S.p.A.

SYMBOLS:

A number of symbols are used to highlight some parts of the text that are of particular importance. These are described below.

CAUTION:
Information on the occurrence of situations/operations which, if ignored or not duly acted upon, could put not only the Unit but also the functions of the Software and the various electronic parts at risk

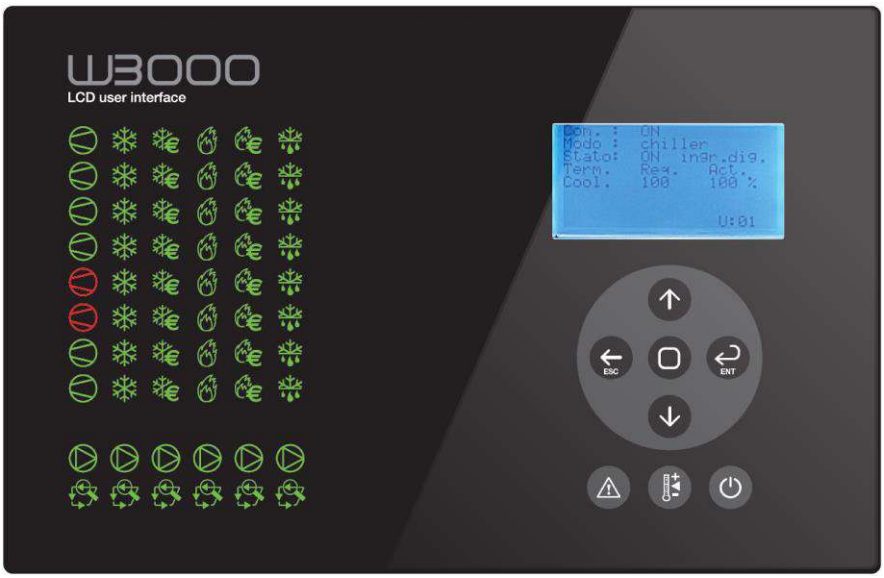
OBLIGATION:
Indicates the need to take appropriate precautions/perform specific operations to avoid compromising protection of the points of access reserved for authorised operators and/or operators who guarantee the proper operation of the Unit

INFORMATION:
Indicates technical/functional information of particular importance which should not be overlooked

1 USER INTERFACE

1.1 Available keyboards

There are three types of user interface:



W3000 large

W3000 compact

W3000+ TOUCH

W3000+ TOUCH

Figure 1-1: *Display W3000+ large, W3000 compact, W3000+ TOUCH with 7" screen and W3000+ TOUCH with 13" screen*

Figure 1-2: Mobile version

Figure 1-3: Tablet version

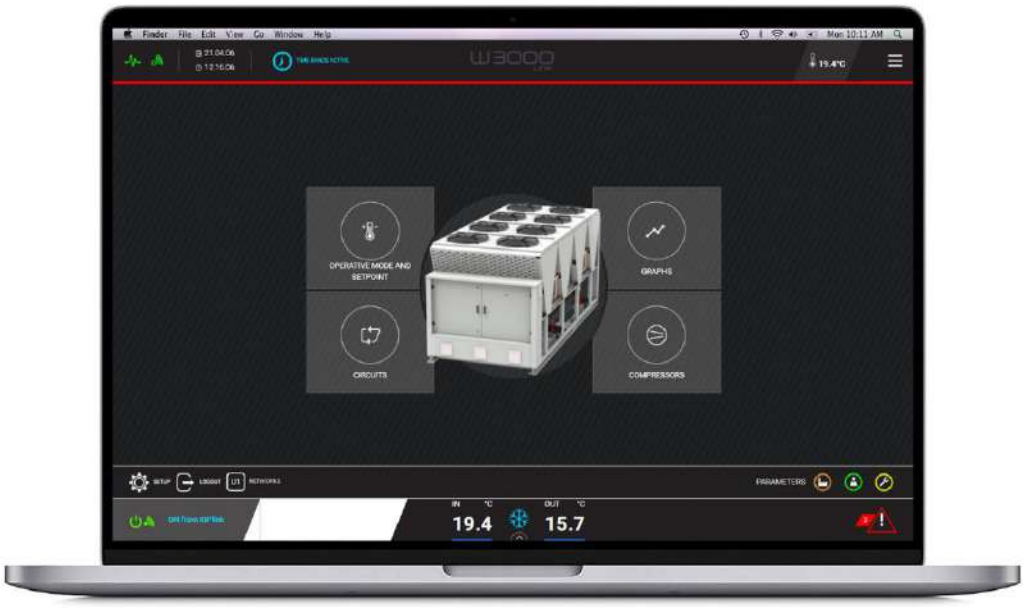


Figure 1-4: Notebook Version (Local Monitoring)

INFORMATION:
The image of the main mimic diagram shown in the figures in this manual is indicative as it is for a certain type of machine; it may not, therefore, be exactly the same as that shown on the user interface of the control unit.

1.1.1 W3000 large keyboard

Meanings of keys:

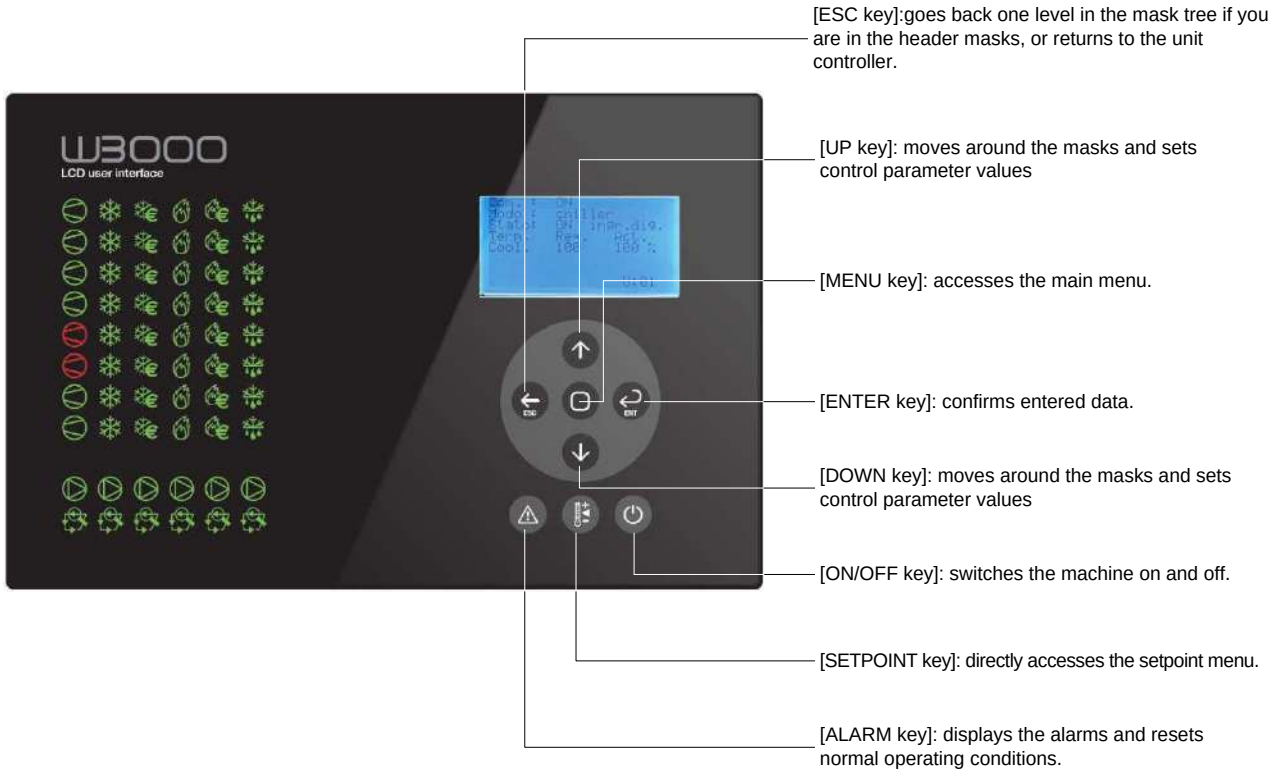


Figure 1-5: *Meanings of the keys on the W3000 large keyboard*

Meanings of the compressor LED's:

[Compressor LED]
- Fixed green: the compressor is on
- Flashing green: compressor demand
- Red: The compressor is blocked by a compressor or circuit alarm

[Chiller LED]
- Fixed green: The compressor is in the “chiller” mode

[Freecooling LED]
- Fixed green: “freecooling” active

[Heat pump LED]
- Fixed green: The compressor is in the “heat pump” mode

[Recovery LED]
- Fixed green: The compressor is in the “recovery” mode
- Flashing green: compressor in “recovery alarm”

[Defrost LED]
- Fixed green: The compressor is in the “defrost” mode
- Flashinig green: The compressor is in the “drip” mode

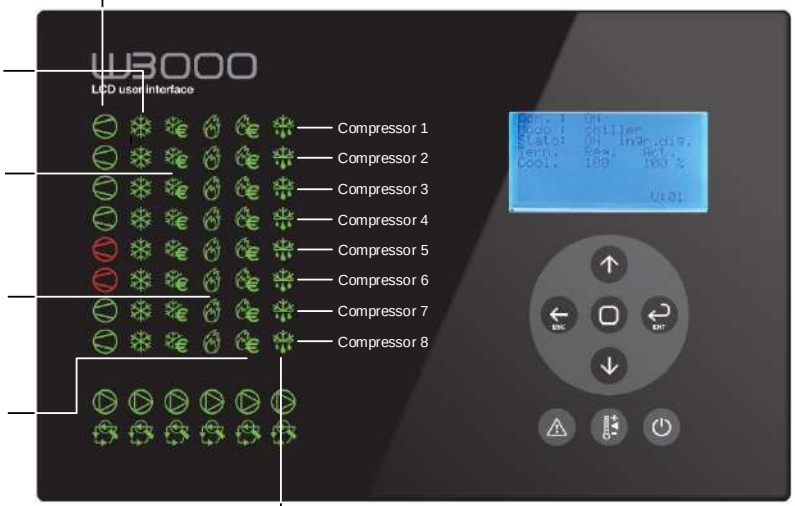


Figure 1-6: *Meanings of the Compressor LEDs on the W3000 large keyboard*

Meanings of the pump and condenser (ventilation or condensation valve) LED's:

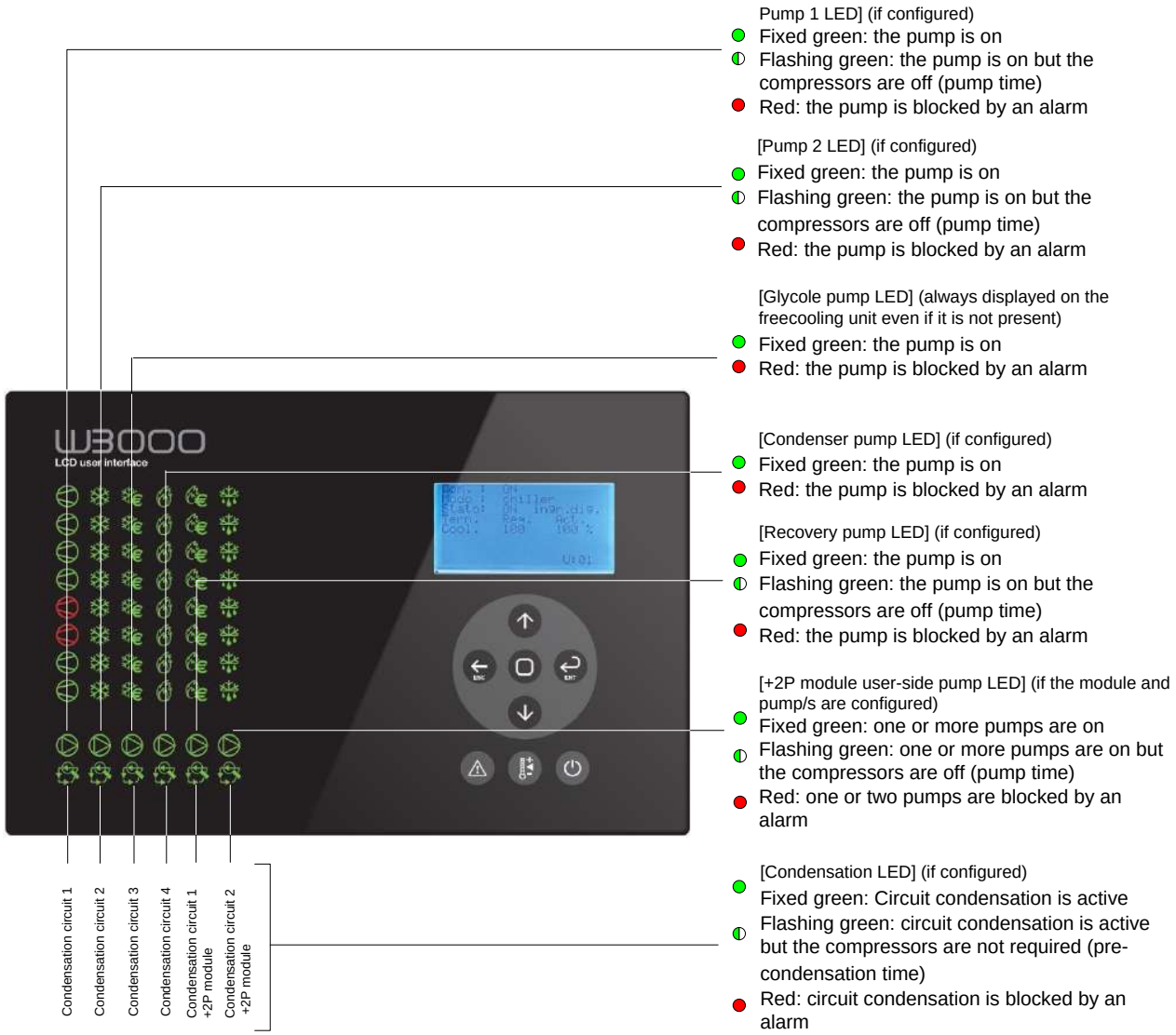


Figure 1-7: *Meanings of the Pump and Condenser LEDs on the W3000 large keyboard*

Notes:

- When the unit is powered, all the LEDs on the keyboard are tested for a couple of seconds by turning them on all together (for two-colour LEDs, first red and then green)
- The example in the figure shows an 8-compressor unit. The compressor rows light up depending on the number of compressors present.
- The condenser LED's can light up simultaneously on more than one circuit if the condenser is shared by two or more circuits.
- The back-lighting of the keypad turns off after 2 minutes when no buttons are pressed
- The back-lighting of the keypad flashes when the unit is in alarm mode and there is no interaction with the keypad

Notes for units fitted with +2P module:

- The data and parameters of the +2P module can be displayed by pressing ESC+UP, repeat this key combination to return to the main user interface.
- The unit cannot be switched on/off if the user interface is positioned on the +2P module controller; in this case press ESC+UP to switch to the main interface and give the required command.
- In this case, the LED's that are usually dedicated to compressors 5, 6, 7, 8 show the status of compressors 1, 2, 3, 4 on the +2P module.

1.1.2 W3000 compact keyboard

[ALARM key]: displays the alarms and resets normal operating conditions. If it shines red at least one alarm/signal is present.

[MENU key]: accesses the main menu. It turns yellow when inside the menu.

[ESC key]:goes back one level in the mask tree if you are in the header masks, or returns to the unit controller.

[UP key]: moves around the masks and sets control parameter values

[ENTER key]: confirms entered data.

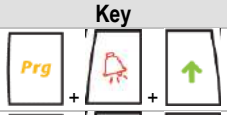
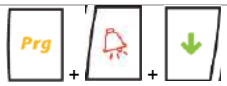
[DOWN key]: moves around the masks and sets control parameter values

Notes:

- The back-lighting of the keypad turns off after 2 minutes when no buttons are pressed
- The back-lighting of the keypad flashes when the unit is in alarm mode and there is no interaction with the keypad

Figure 1-8: *Meanings of the keys and LEDs on the W3000 compact keyboard*

Key combinations activate a set of specific functions

Key	Description
	[PRG + ALARM + UP keys]: Increase screen contrast.
	[PRG + ALARM + DOWN keys]: Decrease screen contrast.
	[ESC + ALARM keys]: in the shared keypad mode, this combination shares screenshots and parameters among pLAN connected units.
	[UP + DOWN + ENTER keys]: press for 5 seconds to set the pLAN address on the user terminal.
	[ALARM + UP keys] with the user terminal set to 0, it configures the pLAN address on the control board.

These combinations of keys (even though with different symbols) are also valid for the W3000 large

1.1.3 W3000+ touch keyboard

Version with 7” screen

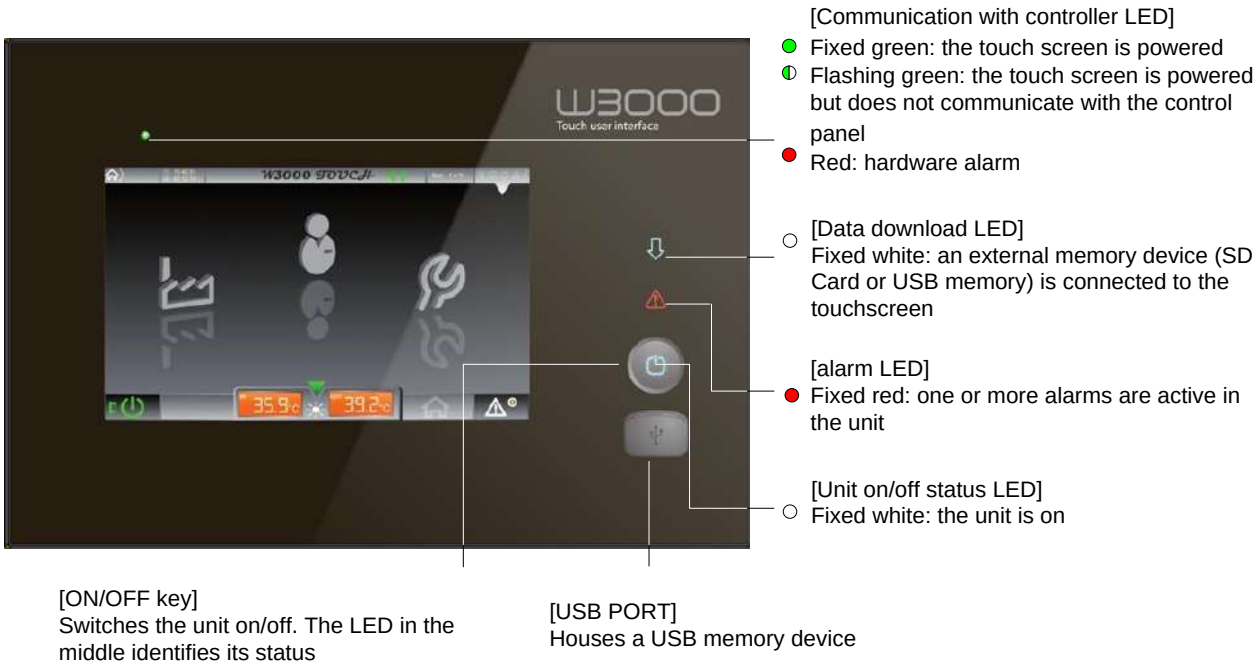


Figure 1-9: *Explanation of the various elements of the W3000+ touch keyboard with 7" screen*

Version with 13” screen

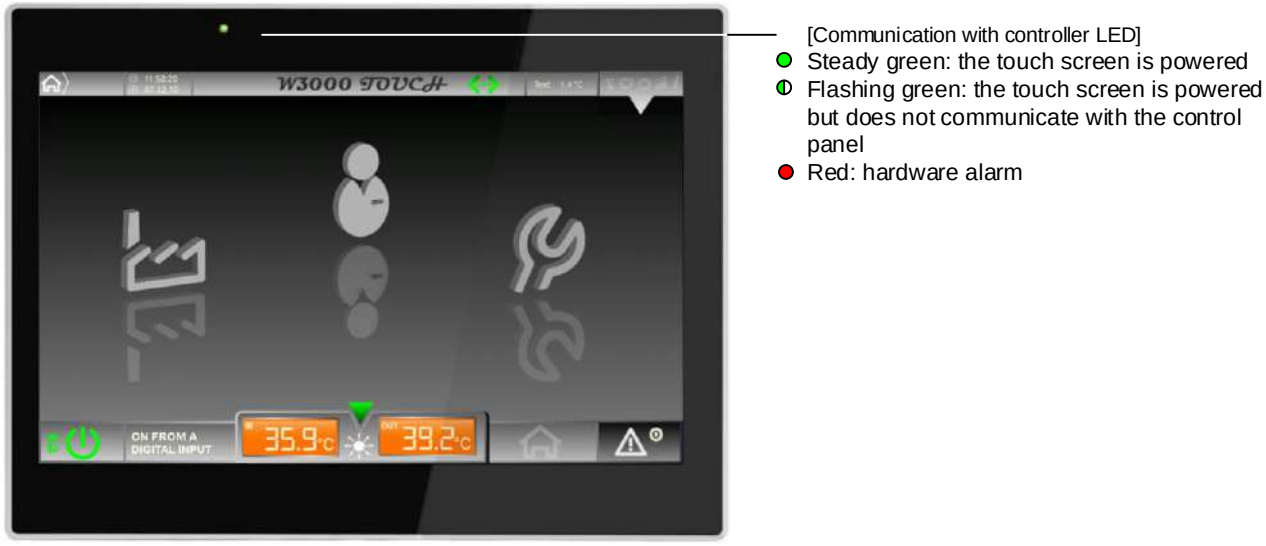


Figure 1-10: *Explanation of the various elements of the W3000+ touch keyboard with 13" screen*

It is possible to use a kit to connect a W3000+ touch keyboard as a remote keyboard away from the units. The functions and screens are the same while the LEDs, buttons and front USB connector are not present in this case.

For further information about this keyboard, consult the dedicated manual corresponding to the software version of the W3000+.

1.1.4 Use of the MEHITS APP to access the KIPlink interface

After installing the KL device in the MEHITS unit, to access and control the machine download - using a mobile device (Tablet or Smartphone) with Android 5 or higher / IOS 8 or higher / the MEHITS® App from Google Play®, Apple Store®.

Open the App*, scan the QR Code found on the machine** and connect to the KIPLink device through the Wi-Fi network following the instructions shown on the display. After this, go to the unit control using the button found in the App.

INFORMATION:
*** The first time the KIPLink section is accessed, the user must log in to obtain authorisation for using the unit control.**

INFORMATION:
**** On the machine is a KIPLink device adhesive label with the encrypted QR Code, which can only be read using the MEHITS® App. In addition to the QR Code, there is also some information regarding the serial number of the machine on which the KIPLink device is installed and, in case of networks consisting of several KIPLink devices, if the device is the network Master (for more details see Chapter 8).**

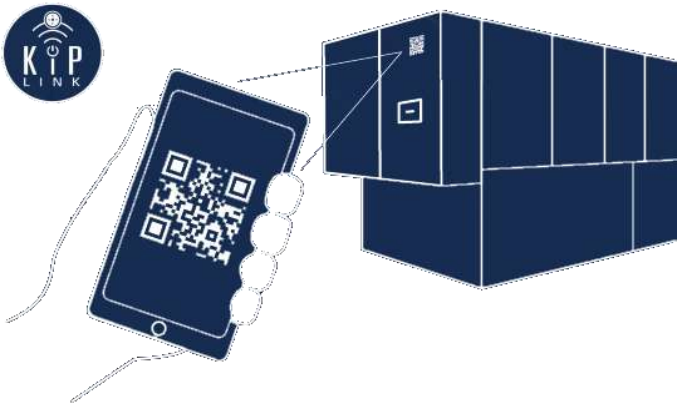


Figure 1-11: *QR Code label*

Figure 1-12: *detail of QR Code*

INFORMATION:
If the QR Code on the machine is damaged or missing, contact technical support for a replacement code.

INFORMATION:
For more information on the use of the MEHITS APP on a Tablet / Smartphone, see the TUTORIAL section of the App itself.

Further information on the KIPlink device is available in the specific manuals with the following codes.

KIPlink device	KIPlink user manual code
W3000+ link	C024456140-IT, C024456141-EN, C024456142-FR C024456143-DE, C024456144-ES, C024456145-RU C024456146-ML

Units configured with KIPlink that do not have a physical keyboard have instead a function button, as shown in the image below, for switching the unit on/off and viewing the power and alarm status of the unit.

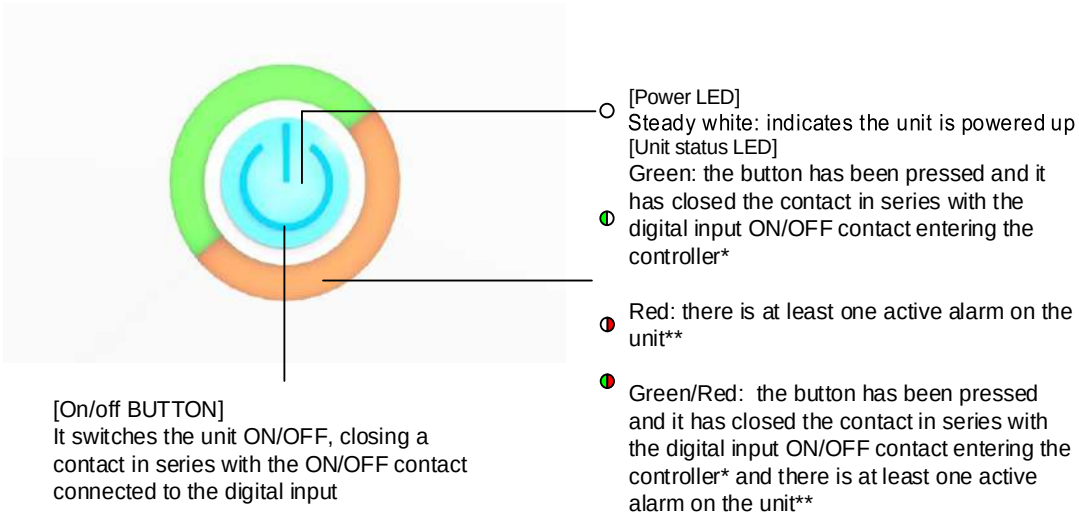


Figure 1-13: ON/OFF button for units with only the KIPlink user interface

INFORMATION:
*** The contact that closes in the button is fitted in series with the digital ON/OFF contact.**
If the green LED is shining but the machine does NOT start up, this means another element used to switch the machine on or off is keeping the machine switched OFF. Check that all the elements (time bands, supervision, remote on/off, KIPLink, etc....) give the ON command.
To identify the element preventing the machine from switching on, simply check the "unit status" on the KIPLink homepage or main page of any other type of keyboard.

INFORMATION:
**** The red LED depends on the digital output in the controller for the "cumulative alarms". The signals do not show the red LED shining.**

1.2 Language selection

A special feature of the new hardware is that is has an additional memory containing all the supported languages.
During programming, all the languages are loaded to the controller and the end user performs a simple procedure to select the language to display.

Italian	Danish	German	Greek	English	Spanish	Finnish	French	Croatian	Hungarian
EN	**DA**	**DE**	**EL**	**EN**	**ES**	**FI**	**FR**	**HR**	**HU**

Dutch	Norwegian	Polish	Portuguese	Romanian	Russian	Swedish	Turkish	Chinese
NL	**NO**	**PL**	**PT**	**RO**	**RU**	**SV**	**TR**	**ZH**

***Table 1.2.a**: table showing the correspondence between the language and the international language code*

To select any one of the available languages, proceed as follows.

	Make sure the unit is OFF. Make sure "OFF" (or OFF from keypad, OFF from digital input…) appears in the first row of the main menu screen. If the unit is ON, accessing the system menu described below causes the compressors to turn off instantly.	09:26 ON ALXXX Mode: chiller Status: ON tast. Term. Req. Act. Cool. 050 050 % Hot 000 000 % Pump time 000s LIMIT ID:011 U:01
	Press [ALARM] and [ENTER] together and hold down until the mask shown to the side appears.	> SYSTEM INFORMATION LOG DATA OTHER INFORMATION FLASH NAND FILES
	Press [UP] and [DOWN] to move the cursor ">" to the "FLASH NAND FILES" row, and press [ENTER] to select.	SYSTEM INFORMATION LOG DATA OTHER INFORMATION > FLASH NAND FILES
	The mask to the side will appear, to confirm access to the "FLASH NAND FILES" menu. Press [ESC] to exit the menu without changing the language.	[ ] TA001_PGD1_EN.iup
	Now select the file for the required language. Press [ENTER] to select the language. An "X" appears between square brackets. Press [ENTER] again to deselect the language.	[X] TA001_PGD1_EN.iup
	Press [UP] and [DOWN] to view other files. Files with ".iup" extensions concern the language. The ".bin" file concerns the application. The ".grp" file concerns the graphic resources.	[ ] TA.grp
	It is necessary to choose **exclusively an ".iup" file** depending on the language that you want to display (refer to the table showing corresponding languages and international language codes).	[X] TA001_PGD1_EN.iup
	Select the ".bin" file.	[X] FLASH1.bin
	Select the ".grp" file.	[X] TA.grp
	After selecting one of the ".iup" files, the ".bin" file and the ".grp" file, move to the mask on the side and press [ENTER].	Press Enter to start copying
	When requested by the mask at the side press [ENTER] and leave "NO" indicated. This mask only appears in large size software versions. Therefore it may not appear.	Erase Log data? NO press ENTER to conf.
	The mask on the side will appear, indicating that the files are being copied.	copy process is running

	After the installation process ends, the mask on the side appears.	ok, copy completed. wait for restart
	During the process, messages such as “I/O BOARD FAULT” and “NO LINK” may appear. This is caused by the application restart process. They will disappear after a few seconds.	I/O BOARD FAULT
	Once the operation has finished, the masks will appear in the selected language. The installed language can be checked in the “Unit” menu.	W 3000 + Cod. TA 08.00 EN

All the steps of the procedure must be completed. If even just one file is omitted, the following faults may occur:

If no “.iup” file is selected, this means that no language has been selected and an empty mask will appear! Repeat the operation taking care to select a “.iup” file.	Select one iup file
If the “.bin” file is not selected, the application file has also not been selected. Therefore, the mask on the side will appear. Press [ESC] and repeat the operation taking care to select the “.bin” file.	ERROR : press menu select one blb file
If the “.grp” file is not selected, the graphics file have also not been selected. The language and the application have been installed but images will not be processed. Repeat the operation taking care to select a “.grp” file.	Select one blb file
No file has been selected	No files selected
An error occurred while copying to the NOR memory	Error copying files
An error occurred while reading the file from the NAND memory	Error reading file (11)
CRC incorrectly calculated while copying to the NOR memory	Error reading file (12)
An error occurred while reading the file from the NAND memory	Error reading file (13)
An error occurred while writing to the NOR memory	Writing error (14)
The file is too large to be a correct DEV file	DEV file not valid
The file is not a correct DEV (heading not recognised)	Code error 9
All other situations	Code error X

1.3 Menu structure

The tree structures for moving around the various menus are shown below.

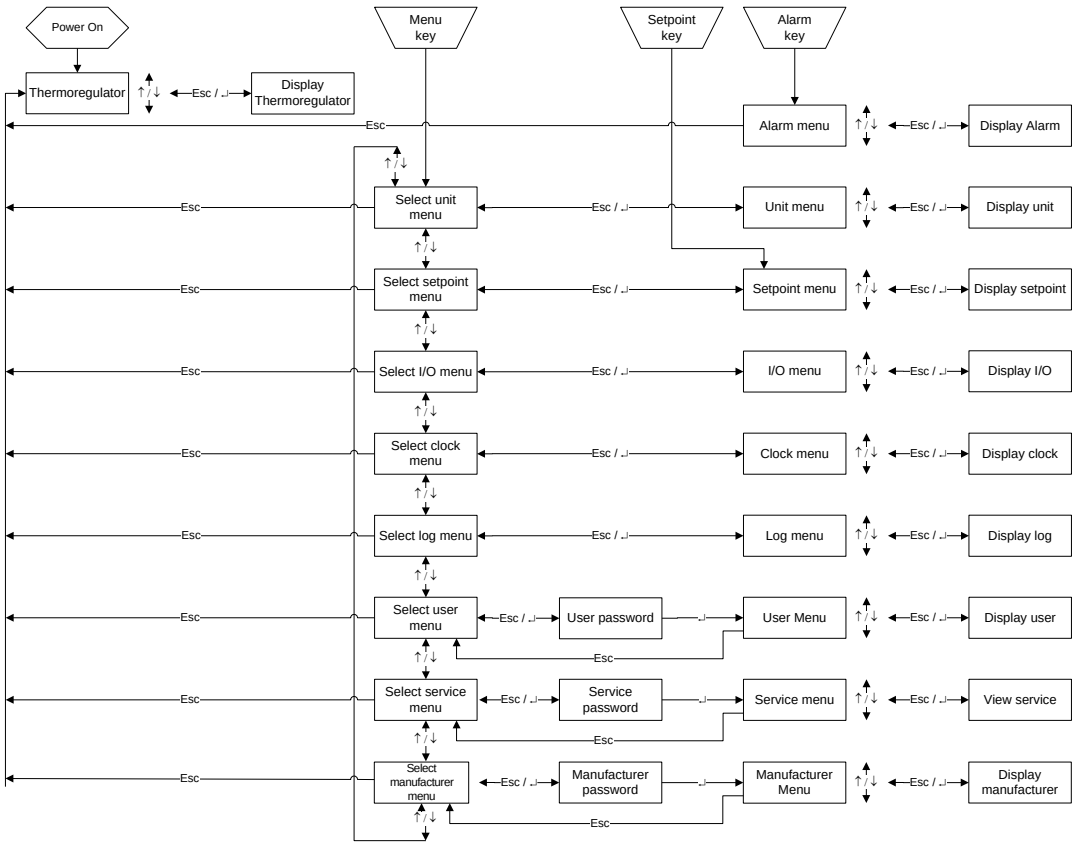


***Figure 1-14**: navigation tree used to move around the menus*

The menus are briefly described below:

- The “Unit Menu” displays information such as temperature, pressure and circuit states.
- The “Setpoint Menu” is used to set the setpoints for the various available functions. Different setpoints can be set depending on the available operating modes (chiller, heat pump and recovery). Double setpoint values can also be set for chiller and heat pump operation (only if the digital input is fitted and the “double setpoint” function is enabled in the “user menu”).
- The “I/O menu” shows the status of the digital inputs and values read from the analogue inputs.
  It also shows the status of the digital outputs and the voltage supplied to the analogue outputs.
  If expansions are necessary (depending on the configuration parameters), the inputs and outputs of the latter are also shown.
- The “Clock menu”, if the clock board is present, is used to set and display the date and time and configure the time bands.
- The list of events recorded by the unit can be viewed in the “Log menu” (only accessible if the clock card is installed).
- Parameters relative to user programming of the unit can be displayed and set in the “User menu”.
- The “Service menu” is used by service engineers to display and set parameters.
- The” Manufacturer menu” is used to display and set unit configuration parameters.

1.4 Switching the unit on and off

Warning: connect the unit to the power supply at least 8 hours before starting it; if this is not done, the guarantee will become null and void.

There are several ways to start and stop the unit: either at the buttons on the user interface or making a selection on the display/touch screen, or with the KIPlink via Wi-Fi.

1. on/off at the W3000 compact/W3000 large/W3000+ touch keyboard
2. on/off from KIPlink
3. on/off from Mitsubishi Electric system remote controllers;
4. on/off from digital input
5. on/off from time bands

The unit can start up only if all the elements required to start up the unit are ON.
If even just one control element is OFF, the unit remains off and indicates on the HMI (human machine interface) which element is preventing the unit from starting up.

E.g.
A unit has a physical keyboard (W3000 compact, large or touch); ON/OFF with the digital contact is enabled, ON/OFF from Supervision is enabled, and the KIPlink is available.

If all the control elements apart from supervision are ON, the unit remains off and the status of the unit is shown as: "OFF from supervision".

Using the [ON/OFF] key:

Only for W3000 large or W3000+ touch display (7 inches)

Proceed as follows:
- *SWITCHING ON:* press the [ON-OFF] key.
- *SWITCHING OFF:* press the [ON-OFF] key.

The display will show Com: ON (indicating that the unit is on); OFF (indicating that the unit is off).

Using the On/Off parameter:

The "Com: On/Off" parameter is displayed on the main screen. "Off" means that the unit is switched off while "On" means that the unit is switched on.
Proceed as follows:
- *SWITCHING ON:* Move to the "On/Off" parameter by pressing [Enter] and then press [Up] or [Down] until "On" appears. Press [Enter] again to confirm. If "On" continues to be displayed it means that the unit has been switched on.
- *SWITCHING OFF:* Move to the "On/Off" parameter and change to "Off" using the same procedure used to switch the unit on. Press [Enter] again to confirm. If "Off" continues to be displayed it means that the unit has been switched off.

Digital input:

Only if the digital input is fitted.

Open the "user menu" and check that the "On/Off enable from digital input" parameter is set to "Yes".
When the contact is open the unit is "Off", when the contact is closed the unit is "On".
Proceed as follows:
- *SWITCHING ON:* Close the remote On/Off contact. The "On from digital input" message appears in the main mask to show that the unit has been switched on.
- *SWITCHING OFF:* Open the remote On/Off contact. The "Off from digital input" message appears in the main mask to show that the unit has been switched off.

Using time bands:

Make sure that the “Clock board not installed” is not displayed in the “clock menu”.
Check that the “Time bands enabled” parameter in the “user menu” is set to “Yes”.

- *SWITCHING ON:* Set the required switching on time in the “clock menu”. The unit switches on when the set time is reached. The “On from time bands” message appears in the main mask to show that the unit has been switched on. NB: The unit does not switch on if it is set to “Off from keypad” or “Off from digital input”.
- *SWITCHING OFF:* Set the required switching off time in the “clock menu”. The unit switches off when the set time is reached. The “Off from time bands” message appears in the main mask to show that the unit has been switched off.

After enabling time bands from the “Enable time bands” parameter in the “user menu”, time bands can be set and different setpoints can be specified according to requirements.
Several time bands (up to 10) of different types (A, B, C and D) can be set during the day.
The beginning of the first band is set to 00:00 and the end of the tenth band is set to 23:59; the end of one band determines the beginning of the following one.
To use a smaller number of bands, set the time a band ends to the same time it begins, and that band will be ignored. Summer, winter and DHW setpoints can be set for each time band (when applicable). It is also possible to define whether the unit must be on or off; set “Off” to maintain the unit in “Off from time bands”, set “Adjustment” to switch the unit “On from time bands”.
The following chart shows some examples representing the default settings indicated in the clock menu for bands A, bands B and bands C. The chart after that is a weekly setting showing bands A for Monday, bands B for Tuesday, Wednesday, Thursday and Friday, band C for Saturday and time bands off for Sunday (with the bands disabled, the unit will stay to “Off from times bands”).

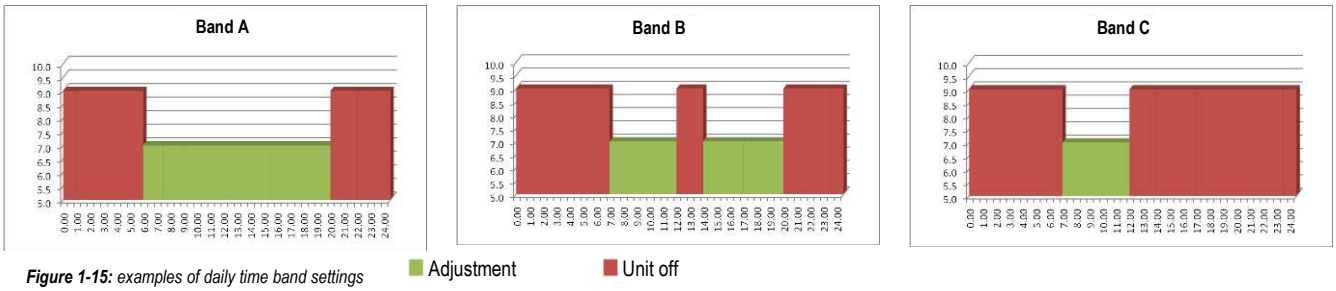


Figure 1-15: *examples of daily time band settings*

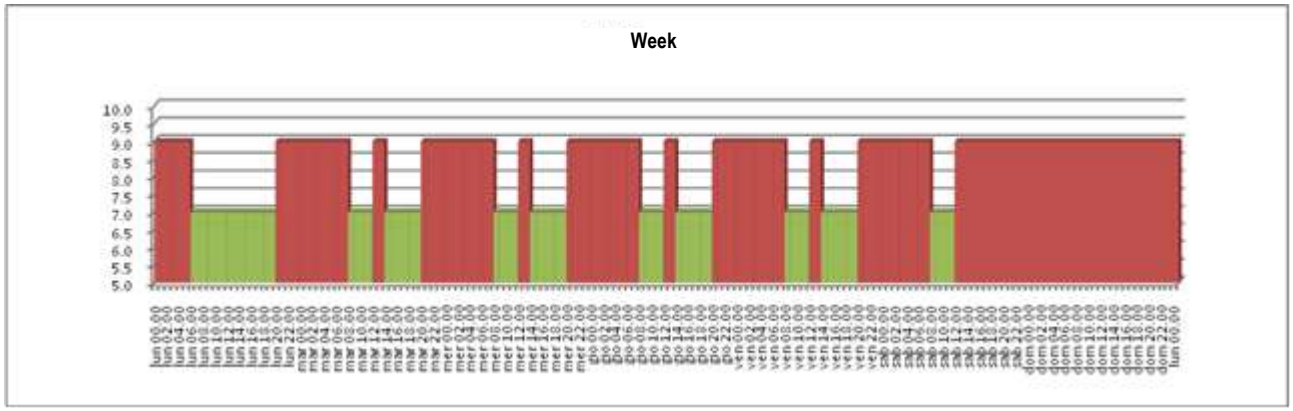


Figure 1-16: *examples of weekly time band settings*

Using the supervision protocol:

Only if the serial board is fitted.

Check that the “Serial line configuration” parameter is not “Disabled” and that “On/Off enable from supervisor” is set to “Yes” in the “user menu”.
Proceed as follows:

- *SWITCHING ON:* Send the switching on command from the protocol. The “On from supervisor” message appears in the main mask to show that the unit has been switched on. NB: The unit does not switch on if it is set to “Off from keypad” or “Off from digital input”.
- *SWITCHING OFF:* Send the switching off command from the protocol. The “Off from supervisor” message appears in the main mask to show that the unit has been switched off.

Devices like the Sequencer, Manager 3000 and climaPRO can turn the unit on and off, showing their effect as the status of the unit, e.g. if the climaPRO switches on the unit, "ON from climaPRO" appears on the HMI as the status of the unit.

With the KIPlink:

Only when the KIPlink is available:

The "KIPlink module" must be enabled in the "Settings2" submenu of the "Service" menu.
Proceed as follows:

- *SWITCHING ON:* Send the command to start the unit from your client device (smartphone/tablet/PC). "On from KIPlink" appears in the main mask of the physical keyboard or touchscreen or interface of the KIPlink to indicate successful start-up.
  NB: The unit does not start if it has been switched off from other devices. E.g. Off from digital input or Off from supervision, etc...
- *SWITCHING OFF:* Send the command to switch off the unit from your client device (smartphone/tablet/PC). The “Off from KIPlink” message appears in the main mask to show that the unit has been switched off.

Using Mitsubishi Electric system remote controllers:

Proceed as follows:

- SWITCHING ON: Send the system switching on command from the Mitsubishi Electric controller. The “ON superv” message appears in the main screen to confirm switching on. IMPORTANT: The unit does not switch on if the “Off from digital input” function has been selected.
- SWITCHING OFF: Send the system shutdown command from the Mitsubishi Electric controller. The “OFF superv” message appears in the main screen to confirm shutdown.

1.5 Setting the operating mode

Warning: Do not switch from chiller to heat pump unless the inlet temperature is above 15°C.
Do not switch from heat pump to chiller unless the inlet water temperature is below 30°C.

There are various ways of setting the operating mode of the unit.
The set operating mode may be any one of the following, as long as they are compatible with the unit:

Chiller unit:

Operating mode	Op. mode value	Description	Detail
chiller	3	Chiller	Chiller

Chillers with freecooling:

Operating mode	Op. mode value	Description	Detail
chiller	7	Chiller	Chiller
chiller+fc	8	Chiller plus freecooling	Chiller plus freecooling

Chillers with heat recovery:

Operating mode	Op. mode value	Description	Detail
chiller	3	Chiller	Chiller
chiller+rec	2	Chiller plus recovery	Chiller plus recovery

Heat pumps:

Operating mode	Op. mode value	Description	Detail
chiller	3	Chiller	Chiller
heatpump	4	Heat pump	Heat pump

Energy raisers:

Operating mode	Op. mode value	Description	Detail
chiller	3	Chiller	Chiller
chiller+rec	2	Chiller plus recovery	Chiller plus recovery
recovery	1	Recovery	Recovery only
auto	0	Automatic	Automatic

Heat pumps with recovery:

Operating mode	Op. mode value	Description	Detail
summer ch	13	Summer chiller	Chiller in summer mode
summer ch+rec	12	Summer chiller plus recovery	Chiller plus recovery in summer mode
summer rec	11	Summer recovery	Recovery in summer mode
summer auto	10	Summer automatic	Automatic in summer mode
winter hp	14	Winter heat pump	Heat pump in winter mode
winter rec	15	Winter recovery	Recovery in winter mode
winter auto	16	Winter automatic	Automatic in winter mode

Table 1-17: *details of operating modes*

N.B.: in water-cooled chillers with water-side reversal the following operating modes are not yet available: auto, summer auto, winter auto, chiller plus recovery.

The operating mode can be changed with:

- Digital input
- W3000 compact / W3000 large / W3000+ touch keyboard
- KIPlink
- Mitsubishi Electric system remote controllers;
- Supervision / Manager 3000 / Sequencer / ClimaPRO

Changing the operating mode from the digital input takes priority over the rest.
For all the other elements, the operating mode is changed after the last command sent to the unit.

E.g.:
Unit with changing of the operating mode enabled from the digital input, KIPlink and Supervision. The KIPlink or supervision cannot be used to change the operating mode when the unit has been set in Chiller mode from the digital input. The unit therefore remains in Chiller mode until the mode is changed again from the digital input.
Changing of the operating mode from the digital input needs to be disabled to permit switching of operating mode from the KIPlink or Supervision. In this case, the last command sent to the controller has priority.

Using the keyboard:

Make sure the unit is "Off". Access the "setpoint menu" and display the "Operating mode" parameter. Move to the "Operating mode" parameter by pressing [Enter] and modify the parameter by pressing [Up] or [Down]. Press [Enter] again to confirm. If the set message continues to be displayed it means that the operating mode has been changed.

Using digital inputs:

Applicable in all units with more than one operating mode (all except chiller only).
Open the "user menu" and check that the "Change mode enable from digital input" parameter is set to "Yes".
The chiller switches to the operating mode set according to the digital input settings shown in the following tables:

Chillers with freecooling:

Operating mode	Fc pin
chiller	Closed
chiller+fc	Open

Chillers with heat recovery:

Operating mode	Rec pin
chiller	Closed
chiller+rec	Open

Heat pumps:

Operating mode	Summer/winter pin
chiller	Closed
heatpump	Open

Energy raisers:

Operating mode	Auto pin	Summer/winter pin	Rec pin
chiller	Closed	Closed	Closed
chiller+rec	Closed	Closed	Open
recovery	Open	Closed	Open
auto	Open	Closed	Closed

Heat pumps with recovery:

Operating mode	Auto pin	Summer/winter pin	Rec pin
summer ch	Closed	Closed	Closed
summer ch+rec	Closed	Closed	Open
summer rec	Open	Closed	Open
summer auto	Open	Closed	Closed
winter hp	Closed	Open	Closed
winter rec	Open	Open	Open
winter auto	Open	Open	Closed

Table 1-18: *tables for digital inputs if the change operating mode via digital inputs is enabled*

Changing the operating mode using the digital inputs requires the unit to be switched off. Switching the digital inputs turns off the unit, changes the operating mode and automatically turns the unit back on again.
Changing the operating mode using the digital inputs is automatically disabled if the connection to Manager 3000 or Sequencer is enabled.

Using the supervision protocol:

Only applicable if the serial board is fitted.
Check that the “Serial line configuration” parameter is not “Disabled” and that “Enable operating mode change from supervisor” is set to “Yes” in the “user menu”.
Make sure the unit is “Off”. Send the change operating mode command from the protocol. The operating mode only changes if the unit is switched off.
The value restored to the protocol (or to send to the protocol) is the same as that shown in the supervision database. For simplicity it is shown in the above tables divided by type of unit.
Devices such as the Sequencer and Manager 3000 can change the operating mode of the unit.

Using Mitsubishi Electric system remote controllers:

Use the Mitsubishi Electric system remote controller to send the operating mode change command. The function is available for 2-pipe heat pump units. Refer to the Mitsubishi Electric system remote controller manual for further details

1.6 Setting adjustment methods

Depending on the type of compressor used, various adjustment methods may be selected.

Compressor	Unit type	Adjustment method
Hermetic	Water/water heat pump	• *Quick Mind on outlet probe (*)* • *Quick Mind on inlet probe* • *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
	Water/water chiller	
	Evaporating units	
	Water/air heat pump	
	Water/air chiller	
	Chiller with heat recovery	
	Chiller with free-cooling	
	Energy Raiser	
	Heat pump with heat recovery	
Hermetic with inverter on all circuits	Energy Raiser	• *Flexible step proportional on inlet probe + PID on outlet probe* • *Neutral zone on outlet probe + PID on outlet probe (*)* • *Sequential on outlet probe + PID on outlet probe*
Hermetic with inverter on one circuit + hermetic and fixed speed on the same circuit	Water/air chiller	• *Sequential on outlet probe + PID on outlet probe*
	Water/air heat pump	
Alternative	Chiller with free-cooling	• *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
	Energy Raiser	
	Heat pump with heat recovery	
	Chiller with heat recovery	
	Water/water heat pump	
	Water/water chiller	
	Evaporating units	
	Water/air heat pump	
	Water/air chiller	
Screw	Water/water heat pump	• *Modulating on outlet probe + PID on outlet probe (*)* • *Proportional step on inlet probe* • *Proportional step on inlet probe + integral on inlet probe*
	Water/water chiller	
	Evaporating units	
	Water/air heat pump	
	Water/air chiller	
	Chiller with heat recovery	
	Chiller with free-cooling	
	Energy Raiser	
	Heat pump with heat recovery	
Screw with inverter on all circuits	Water/water chiller	• *Flexible step proportional on inlet probe + PID on outlet probe* • *Neutral zone on outlet probe + PID on outlet probe (*)* • *Sequential on outlet probe + PID on outlet probe*
	Water/air chiller	
	Chiller with heat recovery	
	Energy Raiser	
	Heat pump with heat recovery	
Screw with inverter on one circuit + fixed-speed screw on the other circuits	Water/air chiller	• *Sequential on outlet probe + PID on outlet probe*
	Water/water chiller	
Centrifugal	Water/water chiller	• *Flexible step proportional on inlet probe + PID on outlet probe* • *Neutral zone on outlet probe + PID on outlet probe (*)*
	Water/air chiller	
	Water/water heat pump	
	Evaporating units	

***Table 1.6.a**: heat adjustment methods available by compressor type*

(*) adjustment necessary for units with pump speed control.

The various heat adjustment methods are described below.

1.6.1 Proportional step adjustment on inlet probe

Some examples of proportional “step” adjustment on the inlet temperature probe:

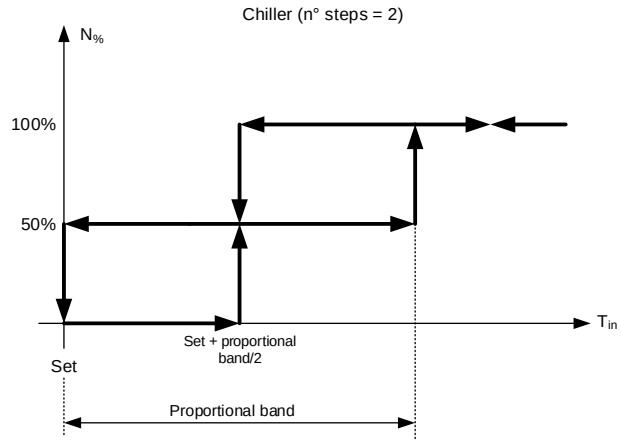


Figure 1-19: *T_{in} is the input variable, N% is the n° of active steps expressed in % (chiller)*

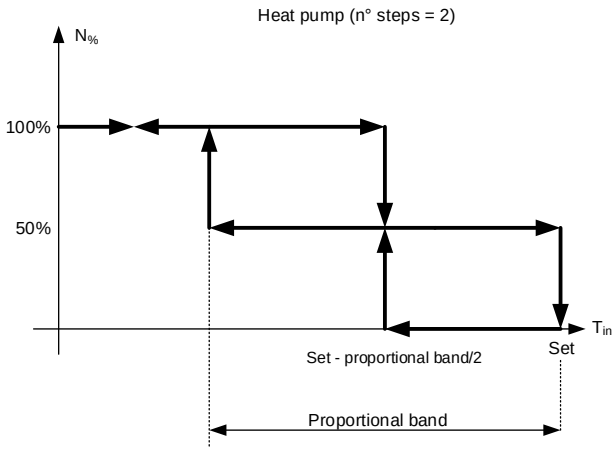


Figure 1-20: *T_{in} is the input variable, N% is the n° of active steps expressed in % (heat pump)*

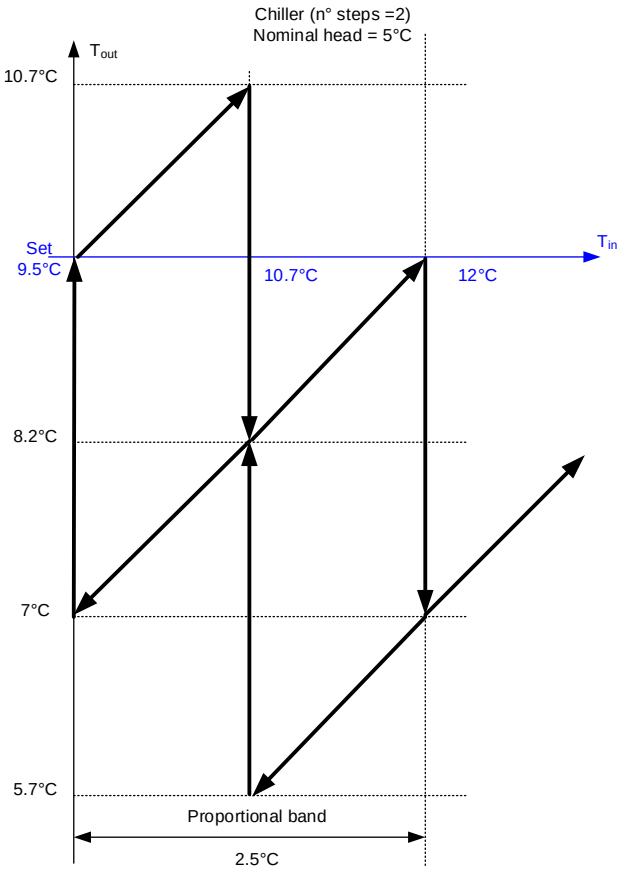


Figure 1-21: Relationship between *T_{in} and* T_{out}, *with 2 steps (chiller)*

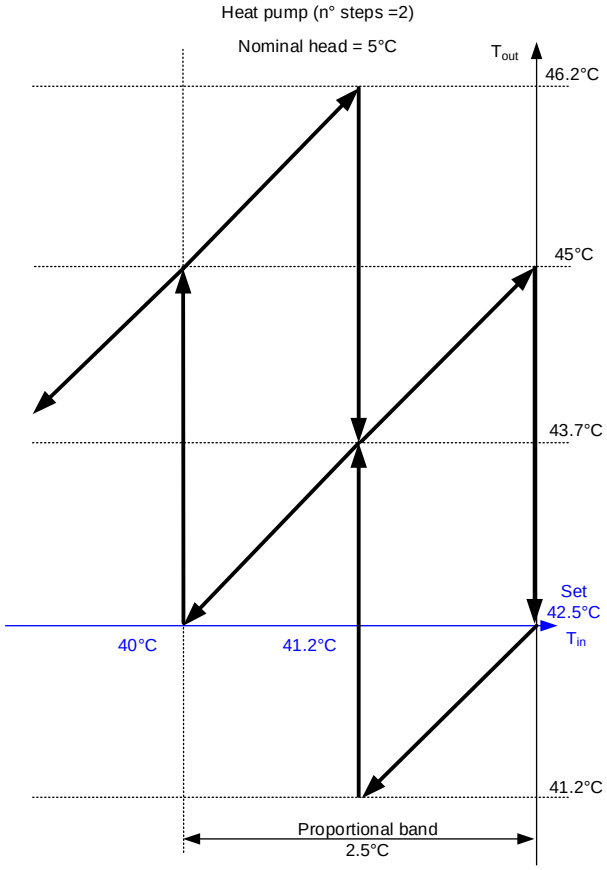


Figure 1-22: Relationship between *T_{in} and* T_{out}, *with 2 steps (heat pump)*

The following tables show some typical values for the parameters in question. The theoretical maximum and minimum outlet temperature values refer to operation at nominal flow rates (with a thermal head at the evaporator of 5.0 °C and sufficient water in the system to ensure a litre / kW ratio equal to or greater than 7).

N° steps	Setpoint (° C)	Proportional band (° C)	Theoric min. outlet T (°C)	Theoric max. outlet T (°C)
1	9.5	2.5	4.5	12.0
2	9.5	2.5	5.7	10.8
4	7.0	5.0	5.7	8.3
5	7.0	5.0	6.0	8.0
6	7.0	5.0	6.2	7.8
8	7.0	5.0	6.4	7.6

***Table 1.6.1.b**: normal setpoint and proportional band values according to the number of steps (chiller).*

N° steps	Setpoint (° C)	Proportional band (° C)	Theoric min. outlet T (°C)	Theoric max. outlet T (°C)
1	42.5	2.5	40.0	47.5
2	42.5	2.5	41.2	46.3
4	45.0	5.0	43.7	46.3
5	45.0	5.0	44.0	46.0
6	45.0	5.0	44.2	45.8
8	45.0	5.0	44.4	45.6

***Table 1.6.1.c**: normal setpoint and proportional band values according to the number of steps (heat pump).*

1.6.2 Proportional step adjustment on inlet probe + integral on inlet probe

This adjustment method is based on the sum of two components: proportional and integral.
The proportional component generates the percentage demand for activating/deactivating the steps, as illustrated in the previous paragraph "Proportional step adjustment on inlet probe".
The integral component adds the integral error to the proportional component at regular intervals (integral time). The integral error is calculated according to the following formula:

$$\text{Integral error} = \frac{\text{Inlet temperature} - \text{Set point}}{\text{Proportional band}} \times 100 \quad [\%]$$

However, the integral component is limited (integral limit) to prevent the adjustment.

If the inlet temperature varies by 5% or more in one second, a rapid change, therefore, the integral component is not calculated.
The integral time is counted from when the thermoregulator request is stable.

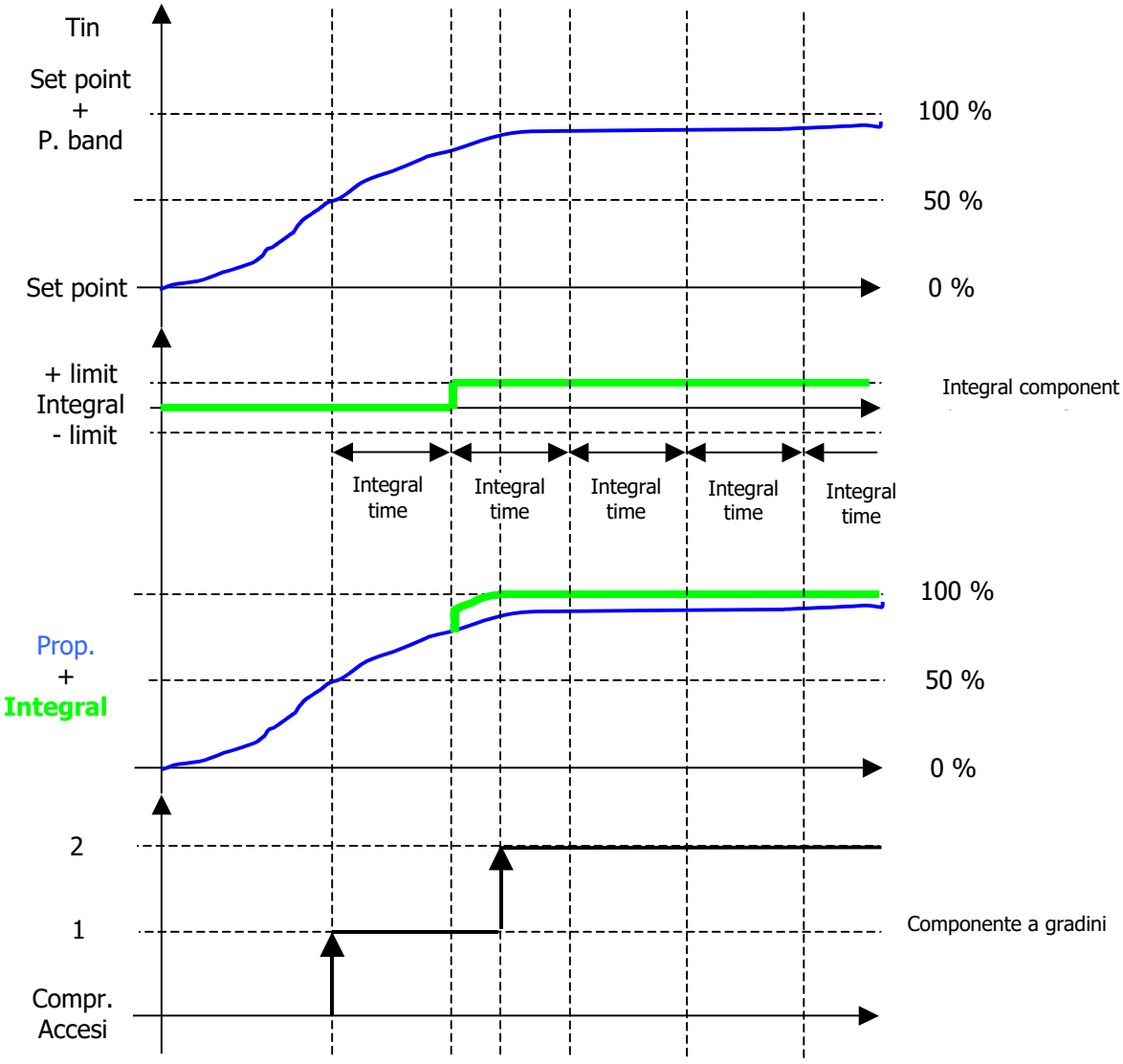


Figure 1-23: *Example of a 2 step adjustment in the chiller mode*

1.6.3 Quick mind adjustment

Users must only set the required setpoint as all the other parameters are adapted to the system by the Quick Mind algorithm.

QUICK MIND is a self-adapting algorithm for adjusting the temperature of the water treated by an all-in-one unit. The following figure shows how this adjustment is made when adjusting the outlet probe.

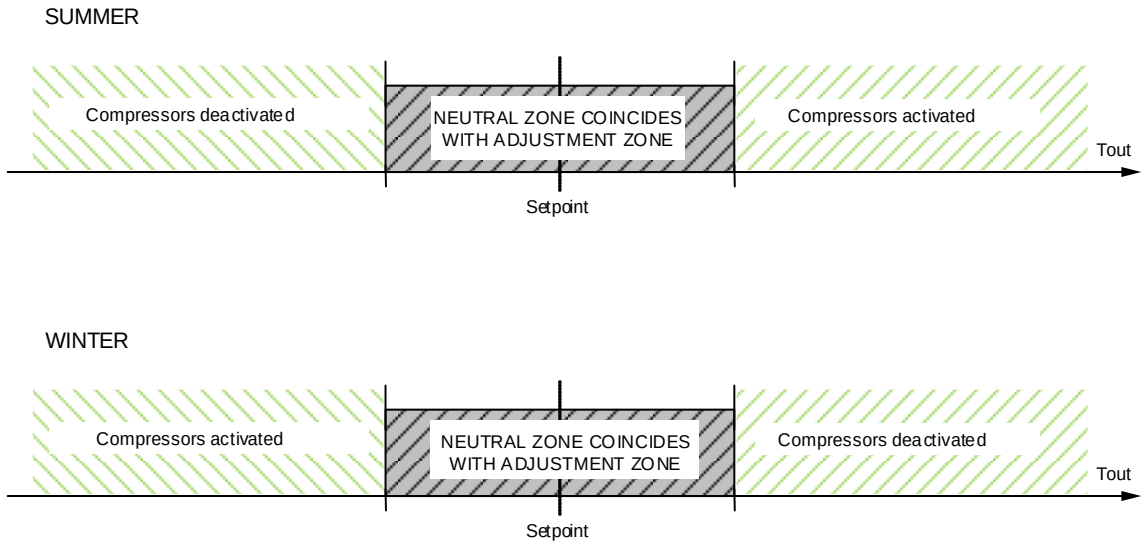


Figure 1-24:*QUICK MIND adjustment model (chiller and heat pump)*

The setpoint remains within a neutral zone. If the temperature also remains within this area, no change is made to the number of active compressors. When the temperature leaves the neutral zone following a change in system load, the compressors are either activated or deactivated in order to bring the temperature back to the neutral zone.
The amplitude of the neutral zone depends on the dynamic characteristics of the system and, in particular, on the amount of water it contains and the load. The self-adapting algorithm is able to “measure” system dynamics and calculate the minimum neutral zone in order to respect compressor activation times and the maximum number of start-ups per hour.
Both return and delivery temperatures can be adjusted.

Special functions are also present which reduce the number of compressor start-ups in the event of very low loads or start-ups of units with significantly higher or lower temperatures than the setpoint.

2 compressors - with maximum permitted number of start-ups per hour 10									
Litres / kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	3.2	3.3	3.4	3.5	3.6	3.8	4.1	4.5	5.3

4 compressors - with maximum permitted number of start-ups per hour 10									
Litres / kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	1.6	1.6	1.7	1.7	1.8	1.9	2.0	2.2	2.6

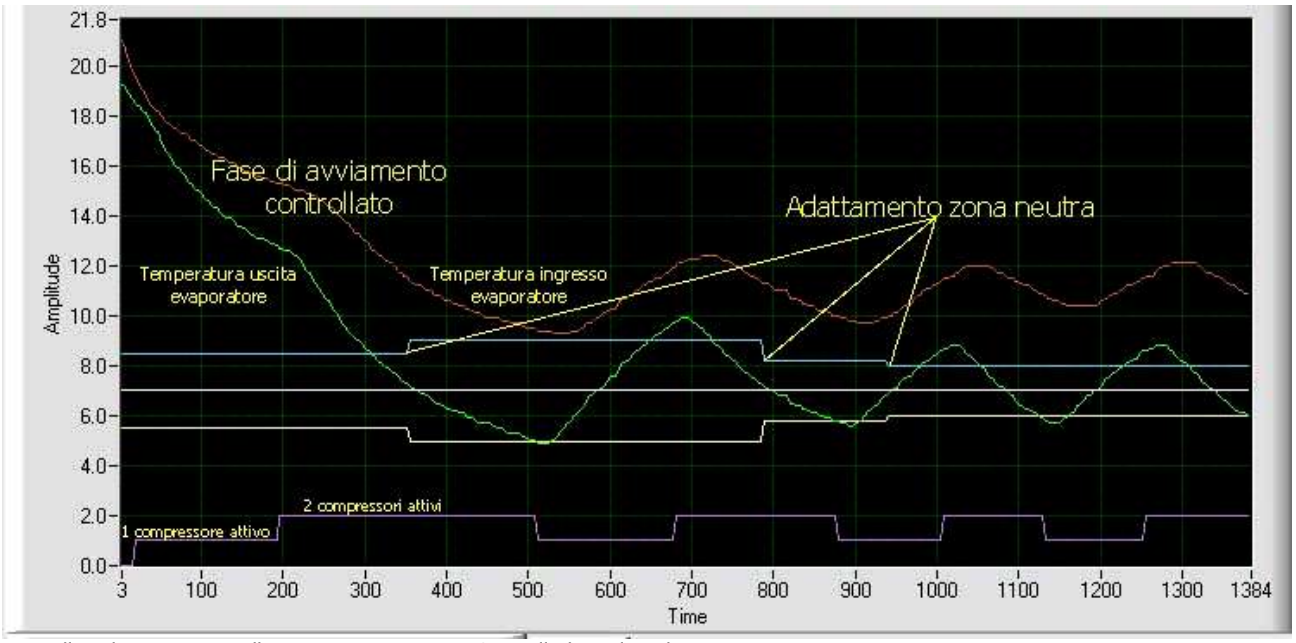
5 compressors - with maximum permitted number of start-ups per hour 10									
Litres / kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	1.3	1.3	1.3	1.4	1.5	1.5	1.6	1.9	2.1

6 compressors - with maximum permitted number of start-ups per hour 10									
Litres / kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.5	1.8

8 compressors - with maximum permitted number of start-ups per hour 10									
Litres / kW	10.5	9.5	8.5	7.5	6.5	5.5	4.5	3.5	2.5
Δ Tout	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.1	1.3

***Table 1.6.3.d**: maximum theoretical delivery temperature range at constant part load (depending on the quantity of water contained in the system) with outlet Quick Mind adjustment*

An example of real data acquired during operation with the Quick Mind adjuster on the delivery side is shown below.
Reference is made to the following figure:



Fase di avviamento controllato	=	Controlled starting phase
Adattamento zona neutra	=	Adaptation to neutral zone
Temperatura uscita evaporatore	=	Outlet temperature of evaporator
Temperatura ingresso evaporatore	=	Inlet temperature of evaporator
1 compressore attivo	=	1 compressor active
2 compressori attivi	=	2 compressors active

***Figure 1-25:** example of real data with quick-mind outlet adjustment (x-axis: time in [s]; y-axis: Tout in [°C]).*

This is an example of start-up with a very high initial temperature compared with the setpoint (7°C). About 10 seconds after data acquisition began, one compressor switches on. The second compressor does not switch on immediately as the algorithm which handles start-up checks if one compressor is enough to return delivery temperature to the setpoint and avoid unnecessary start-ups. As the delivery temperature is still at 12 °C after about 200 seconds, the second compressor is also switched on, otherwise it would take too long to reach setpoint.
Following the controlled starting phase, the delivery temperature falls until it "enters" the neutral zone. The algorithm (at t= 350 s) begins to adapt the amplitude of the neutral zone in order to respect compressor safety times. As can be seen, the neutral zone is later reduced (t= 780 s, 950 s) to the absolute minimum amplitude which allows safety times to be respected. It can also be seen that the compressors are activated and deactivated when the outlet temperature reaches the upper or lower limits of the neutral zone. The example shows that outlet temperature varies by about 3.5 °C during regular operation.

1.6.4 Modulating adjustment on outlet probe + PID on outlet probe for screw compressors

This adjustment is performed by two coordinated adjusters:

a) **Neutral zone** (step adjuster) on the outlet probe;
b) **PID** (adjustment) on the outlet probe.

The set point is identical for both adjusters.

a) This is a neutral zone step adjuster whose control variable is the outlet temperature **Tout** from the unit and whose controlled variable is the number of steps to enable (compressors).
The setpoint remains within a neutral zone. If the temperature also remains within this area, no change is made to the number of active compressors. When the temperature leaves the neutral zone following a change in system load, the compressors are either activated or deactivated in order to return the temperature to the neutral zone (see figure below).
The amplitude of the neutral zone depends on the dynamic characteristics of the system. The self-adapting algorithm is able to "measure" system dynamics and calculate the minimum neutral zone in order to respect compressor activation times and the maximum number of start-ups per hour.

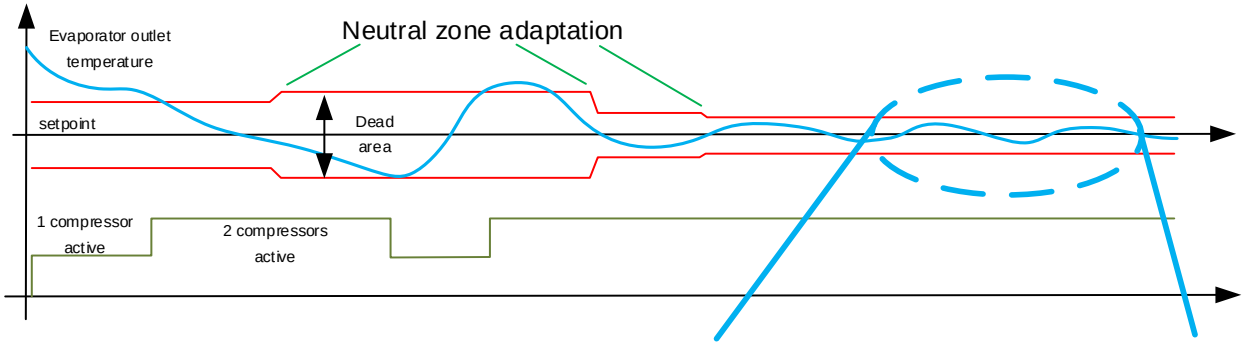


Figure 1-26: *modulating adjustment on the outlet probe*

b) Reference is made to the *figure on the side:*
The set point remains within a holding zone (ZM). If the outlet temperature also remains within this zone, no change is made to the number of active compressors or their load percentages (position of modulating chamber).
When the outlet temperature rises above zone B following a change in the system load, the compressors are activated in order to return the temperature to the adjustment area.
Inside zone B, if the outlet temperature derivative is greater than or equal to 0, compressor power is increased in order to return the temperature to the holding zone (ZM). The amount of the increase is calculated by a PID regulator according to the outlet temperature.
When the outlet temperature falls below zone C following a change in the system load, the compressors are deactivated in order to return the temperature to the adjustment area.

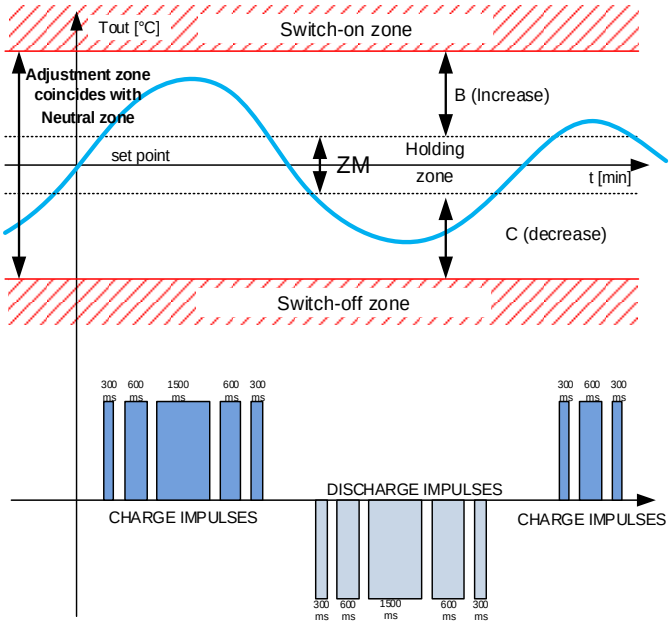


Figure 1-27: *modulating adjustment for screw compressors*

Inside zone C, if the outlet temperature derivative is less than or equal to 0, compressor power is decreased in order to return the temperature to the holding zone (ZM). The amount of the decrease is calculated by a PID regulator according to the outlet temperature.
The amplitude of the adjustment zone depends on the dynamic characteristics of the system and, in particular, on the amount of water it contains and the load. The self-adapting algorithm is able to "measure" system dynamics and calculate the minimum neutral zone in order to respect compressor activation times and the maximum number of start-ups per hour.
When a second or subsequent compressor is switched on, the ones that are already running are forced to a minimum, and the subsequent power increases/decreases are applied to all the compressors.

1.6.5 Flexible step proportional adjustment on inlet + PID on outlet probe

This adjustment is performed by two coordinated adjusters:

a) **Proportional step adjustment** (step adjuster) on the inlet probe;
b) **PID** (adjustment) on the outlet probe.

The set point is identical for both adjusters.

a) This is a proportional step adjuster, whose control variable is the unit input temperature **Tin**, and whose controlled variable is the number of steps to enable (compressors).

Compared with the traditional step adjuster, 2 further parameters have been added.

Rb: is a percentage of the proportional band **BP** and allows the steps to be compressed in this part of the proportional band.

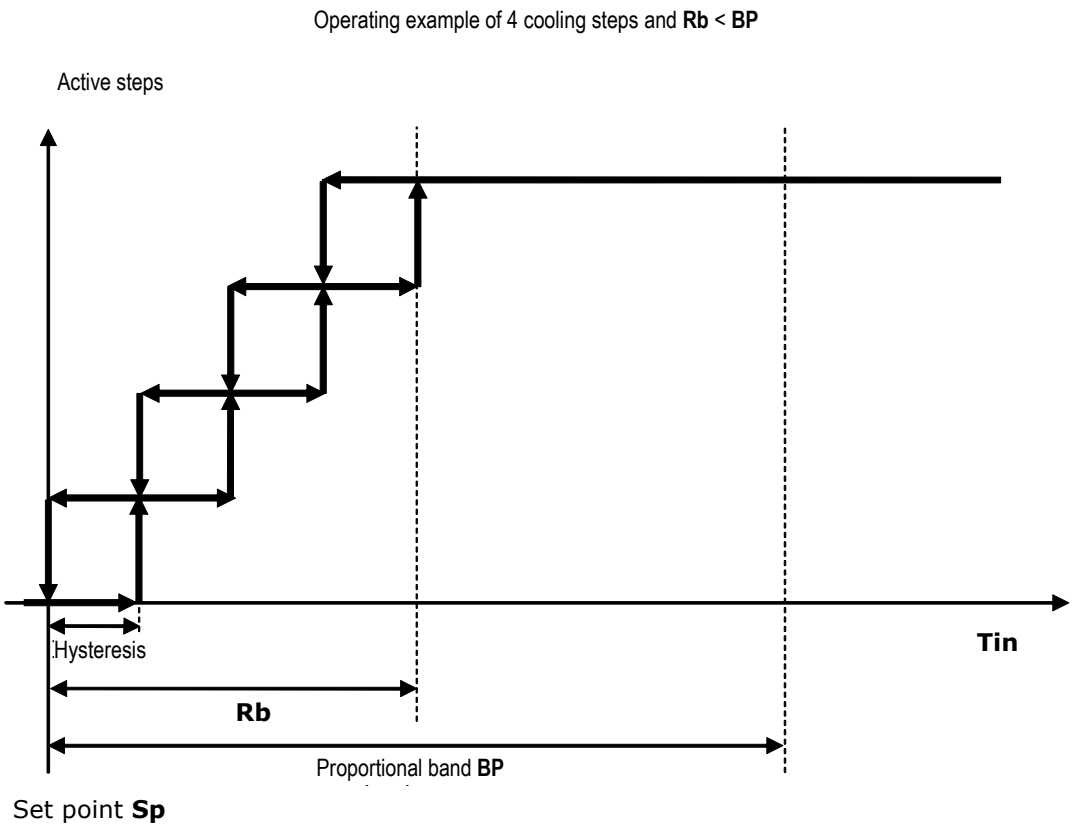


Figure 1-28: *proportional step adjuster with offset = 0 and Rb = 50%*

The hysteresis of each step is the reference proportional band **Rb** divided by the number of steps to manage.

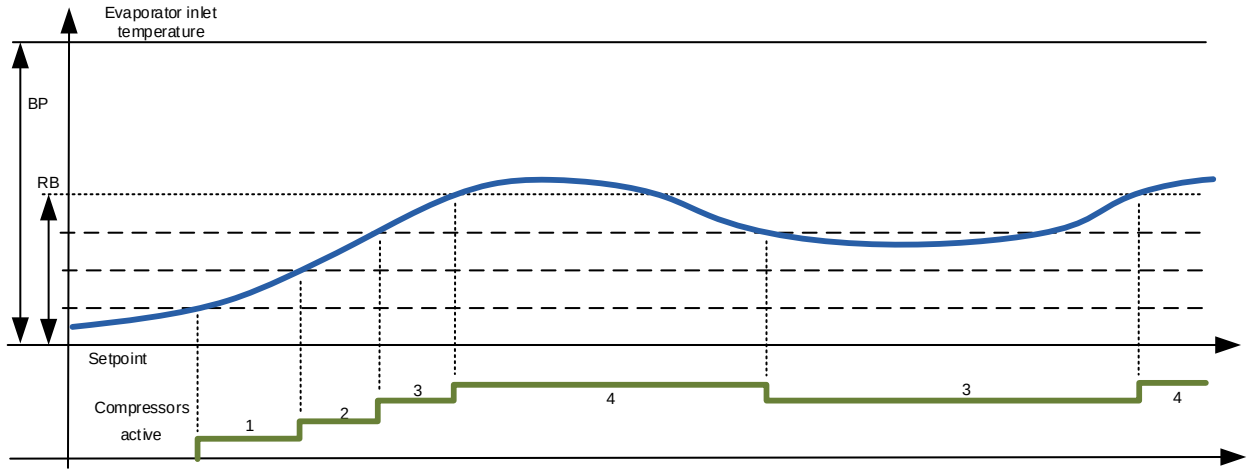


Figure 1-29: *proportional adjustable with flexible steps on the inlet probe with offset = 0 and Rb = 50%*

The **Offset** moves the enable/disable of the second half of the steps to a higher value with respect to offset = 0, and refers to the proportional band BP.

Operating example of 4 cooling steps and Offset > 0

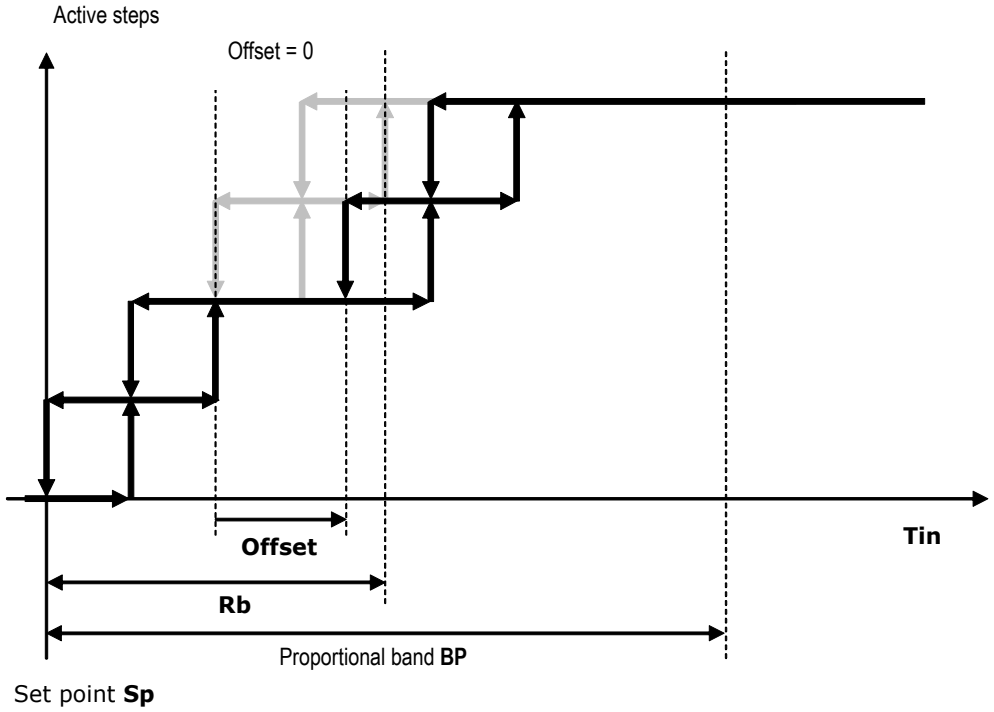


Figure 1-30: *proportional step adjuster with offset = 0 and Rb = 50%*

b) The **PID** (Proportional Integral Derivative adjuster), whose control variable is the outlet temperature, is activated when the first compressor starts and deactivated when the last compressor stops.
The controlled variable is the number of compressor revs (absorbed power per unit with centrifugal compressors), changing them from the settable minimum to maximum, thus achieving continuous adjustment of the outlet temperature.
The following parameters can be also set: kp (proportional component coefficient) and Ti (integral time). The derivative time is factory set.

When the outlet temperature lies within the *holding zone*, the compressor revs are not modified.
When the outlet temperature lies within the *PID adjustment zone*, the value of the compressor revs is modified to return the temperature to within the *holding zone*.
The zfi, holding zone and zfs parameters are factory set.

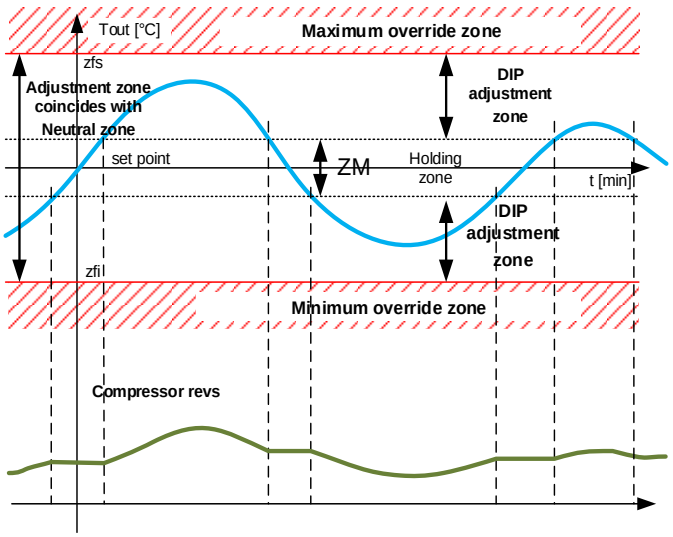


Figure 1-31: *operating diagram of PID adjuster output*

1.6.6 Neutral zone adjustment on outlet probe + PID on outlet probe

This adjustment is performed by two coordinated adjusters:

a) **Neutral zone** (step adjuster) on the outlet probe;
b) **PID** (adjustment) on the outlet probe.

The set point is identical for both adjusters.

a) This is a neutral zone step adjuster whose control variable is the outlet temperature **Tout** from the unit and whose controlled variable is the number of steps to enable (compressors).
The setpoint remains within a neutral zone. If the temperature also remains within this area, no change is made to the number of active compressors. When the temperature leaves the neutral zone following a change in system load, the compressors are either activated or deactivated in order to return the temperature to the neutral zone (see figure below).
The amplitude of the neutral zone depends on the dynamic characteristics of the system. The self-adapting algorithm is able to "measure" system dynamics and calculate the minimum neutral zone in order to respect compressor activation times and the maximum number of start-ups per hour.

b) The **PID** (Proportional Integral Derivative adjuster), whose control variable is the outlet temperature, is activated when the first compressor starts and deactivated when the last compressor stops.
The controlled variable is the number of compressor revs (absorbed power per unit with centrifugal compressors), changing them from the settable minimum to maximum, thus achieving continuous adjustment of the outlet temperature.
The following parameters can be also set: kp (proportional component coefficient) and Ti (integral time). The derivative time is factory set.

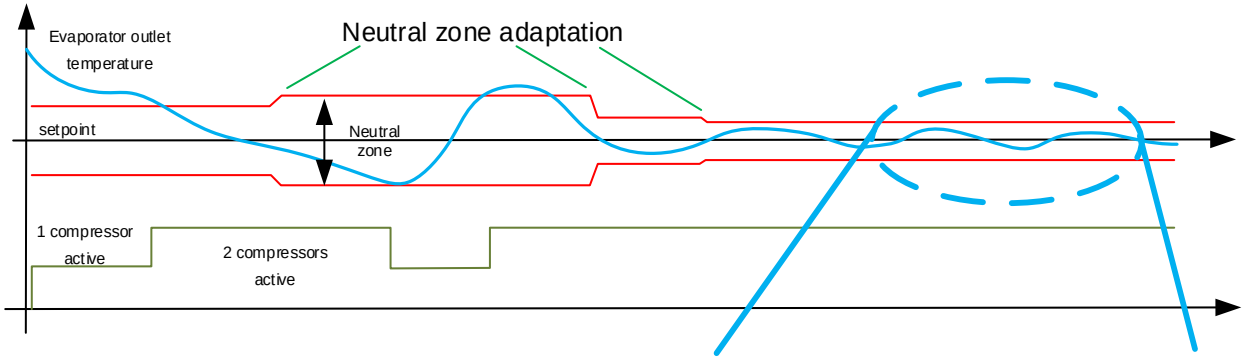


Figure 1-32: *neutral zone adjustment on outlet probe*

Operating diagram of the PID adjuster:
When the outlet temperature lies within the *holding zone*, the compressor revs are not modified.
When the outlet temperature lies within the *PID adjustment zone*, the value of the compressor revs is modified to return the temperature to within the *holding zone*.
The zfi, *holding zone* and zfs parameters are set to a fixed offset value with respect to the neutral zone.

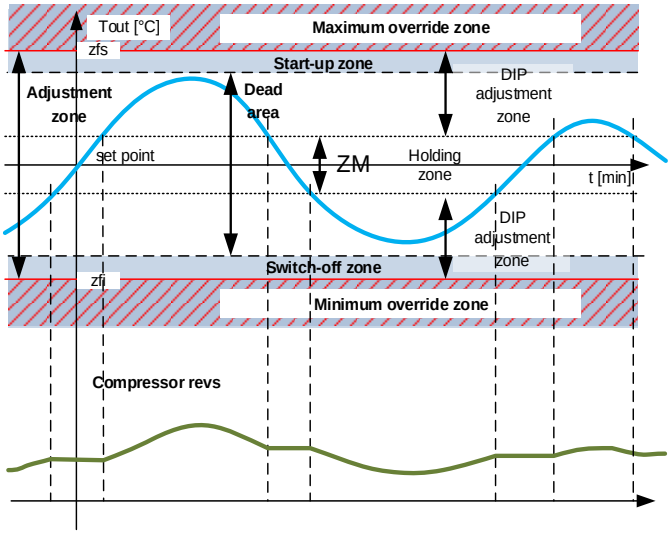


Figure 1-33: *operating diagram of PID adjuster output*

1.6.7 Sequential adjustment on outlet probe + PID on outlet probe

This adjustment is available on units with inverter compressor and one or more fixed-speed compressors, or on units with all inverter compressors.

1.6.7.1 Sequential adjustment on units with one inverter compressor and one or more fixed-speed compressors

The adjustment is performed by two coordinated adjusters:

a) **Sequential** (step adjuster) on the outlet probe;
b) **PID** (adjustment) on the outlet probe.

The set point is identical for both adjusters.

a) This is a neutral zone step adjuster whose control variables are the outlet temperature **Tout** from the unit and the speed of the inverter compressor and whose controlled variable is the number of steps to enable (compressors and/or separation stages of the fixed-speed compressors).

The following operating descriptions refer to the chiller operating mode.

The setpoint remains within a neutral zone. If the unit has no compressor running, the adjuster waits for the outlet temperature to exceed the upper limit of the neutral zone, after which the first step is requested. This involves starting the inverter compressor: the compressor is kept at the starting revolutions (CMP0091) for the compressor start time (or no-load startup, parameter CMP0028). The adjuster then starts to monitor the revs of the inverter compressor and to request further steps (which are allocated to the fixed-speed compressors, see Figure ***1-34*** and Figure ***1-35***) on the basis of certain percentage thresholds, set in the parameters, referring to the maximum revs for the modulation of the inverter compressor. The increase in the number of steps enabled on the fixed-speed compressors corresponds to a suitable percentage reduction of the revs of the compressor with inverter in order to maintain cooling power delivery uniform.
If the demand of the system decreases, the adjuster reduces the number of steps assigned to the fixed-speed compressors, still on the basis of certain thresholds for the revs of the inverter compressor set in the parameters.
Whether they are fixed-speed compressors or the compressor with inverter, the resources can only be switched off if the outlet temperature falls below the lower limit of the neutral zone.
The amplitude of the neutral zone depends on the dynamic characteristics of the system. The self-adapting algorithm is able to “measure” system dynamics and calculate the minimum neutral zone in order to respect compressor activation times and the maximum number of start-ups per hour.

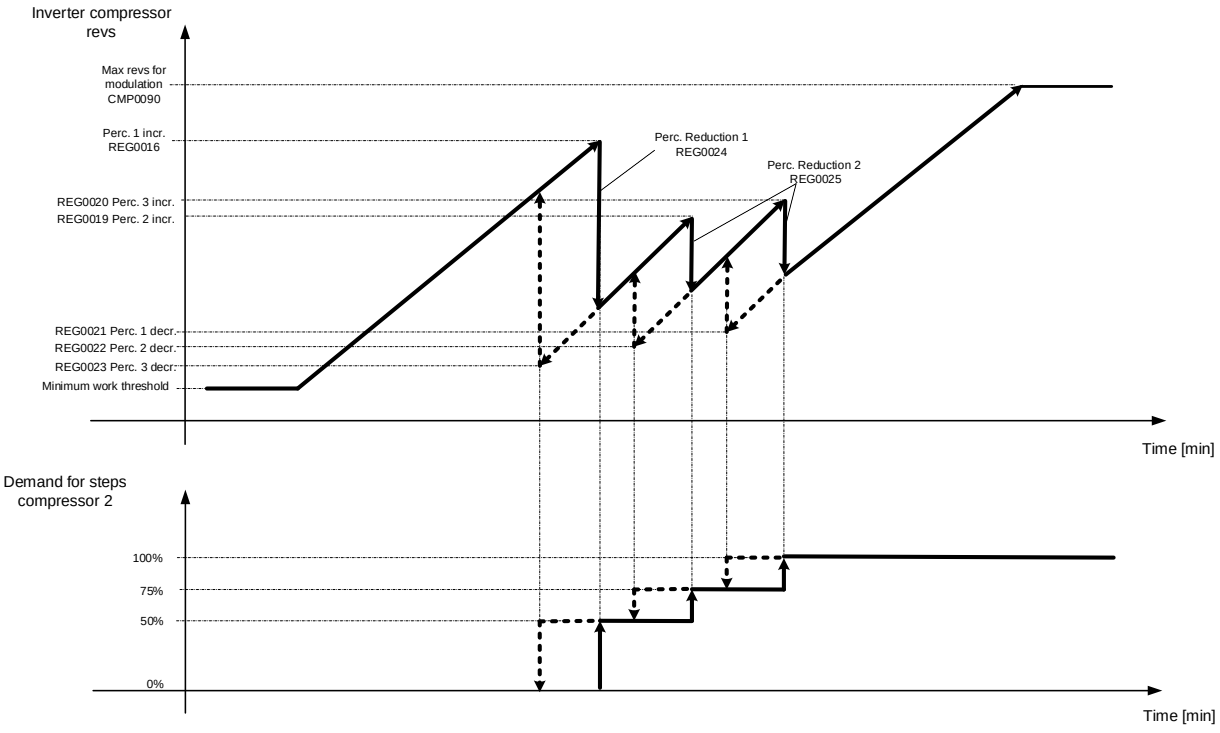


Figure 1-34: *operating diagram of sequential adjuster for units with 2 screw compressors, one of which inverter driven*

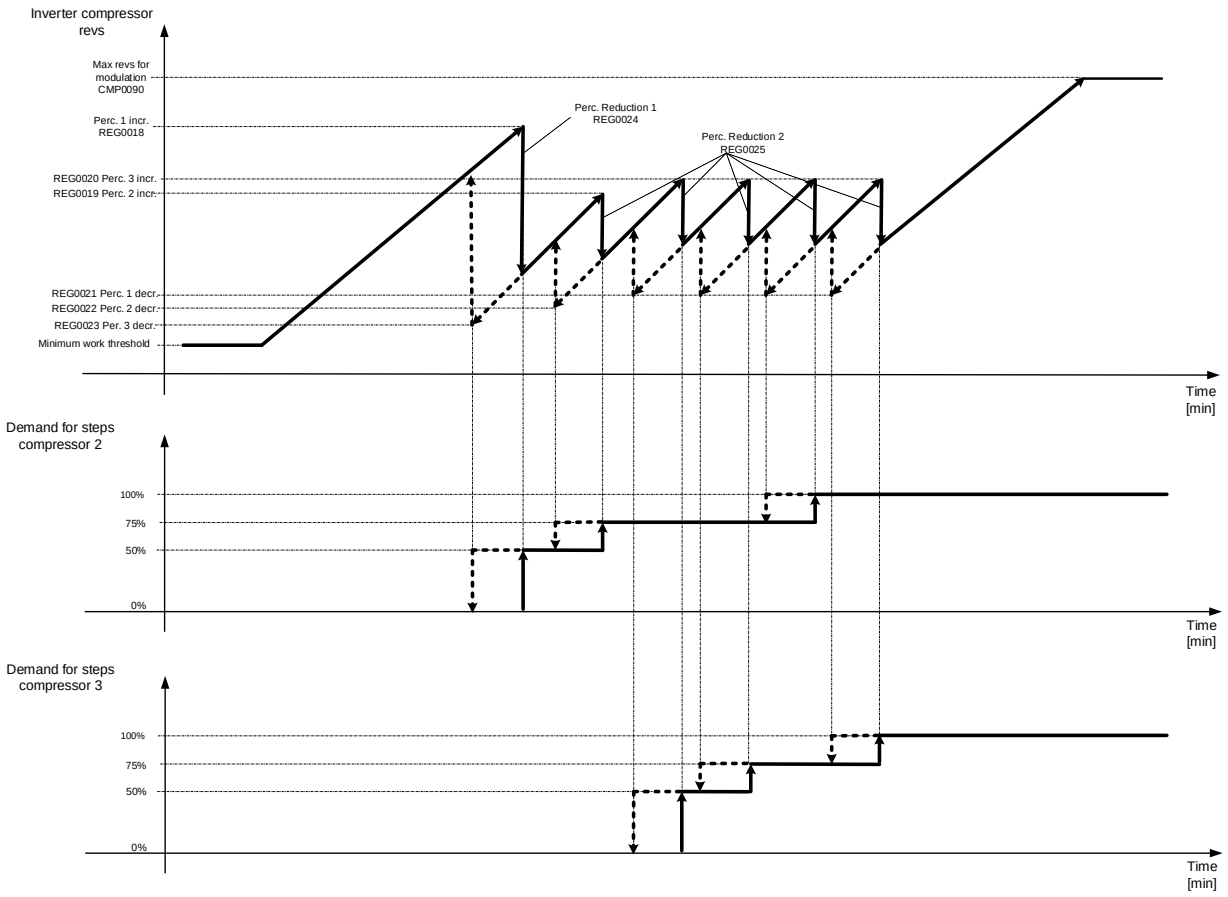


Figure 1-35: *operating diagram of sequential adjuster for units with 3 screw compressors, one of which inverter driven*

b) The **PID** (Proportional Integral Derivative adjuster), whose control variable is the outlet temperature, is activated when the inverter compressor starts and deactivated when the inverter compressor stops.
The variable concerned is the number of revs of the compressor with inverter. This can be set in a range between a minimum value and a maximum value (Figure ***1-36***) determined according to the condensation temperature of the circuit:

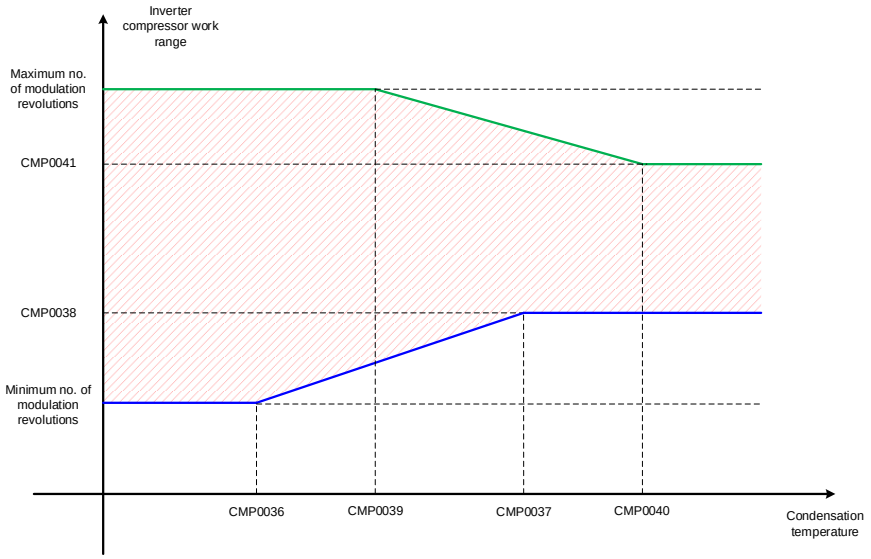


Figure 1-36: *calculation of the minimum and maximum operating threshold of the inverter compressor*

The following parameters can also be set for the PID adjuster: proportional band (proportional component) and Ti (integral time). The derivative time is factory set.

To side:
Operating diagram of the PID adjuster:
the delivery temperature is continuously monitored, thus constantly controlling the number of compressor revs.

The PID adjustment zone is related to the pb (proportional band) above the setpoint.

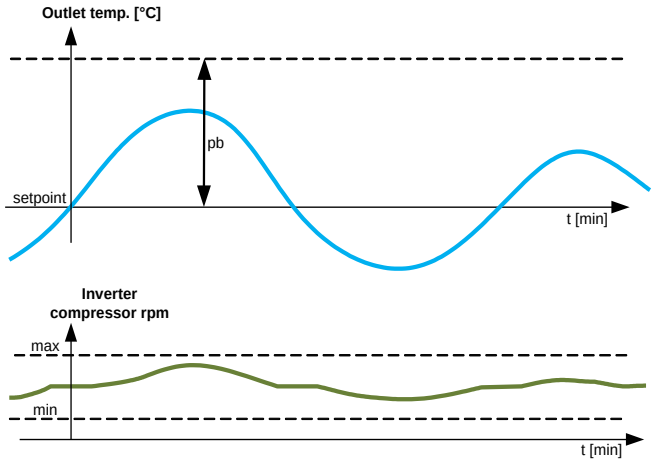


Figure 1-37: *PID detail on the outlet temperature*

1.6.7.2 **Sequential adjustments for units with all inverter compressors**

The adjustment is performed by two coordinated adjusters:

a) **Sequential** (step adjuster) on the outlet probe;
b) **PID** (adjustment) on the outlet probe.

The set point is identical for both adjusters.

a) This is a neutral zone step adjuster whose control variables are the outlet temperature **Tout** from the unit and the number of revs of the inverter compressors, and whose controlled variable is the number of compressors to enable.

The following operating descriptions refer to the chiller operating mode for units with two inverter compressors.

The setpoint remains within a neutral zone. If the unit has no compressor running, the adjuster waits for the outlet temperature to exceed the upper limit of the neutral zone, after which the first compressor is requested. This involves starting the first inverter compressor: the compressor is kept at the starting revolutions (parameters CMP0091 and CMP0095) for the compressor startup time (or no-load startup, parameter CMP0028). The adjuster then starts to monitor the revs of the inverter compressor and to request starting of the second inverter compressor on the basis of certain percentage thresholds, set in the parameters, referring to the maximum revs for the modulation of the inverter compressor. Starting of the second compressor corresponds to a suitable percentage reduction of the revs of the first inverter compressor in order to keep the supply of cooling power uniform. On start-up, the second compressor is kept at the starting revs for the time required to start the compressors (or no-load start), after which the second compressor is then brought up to the same revs as the first.
If the demand of the system decreases, the adjuster reduces the number of resources still on the basis of certain thresholds for the revs of the inverter compressor set in the parameters, by switching off a compressor.
The resources can only be switched off if the outlet temperature falls below the lower limit of the neutral zone.
The amplitude of the neutral zone depends on the dynamic characteristics of the system. The self-adapting algorithm is able to “measure” system dynamics and calculate the minimum neutral zone in order to respect compressor activation times and the maximum number of start-ups per hour.

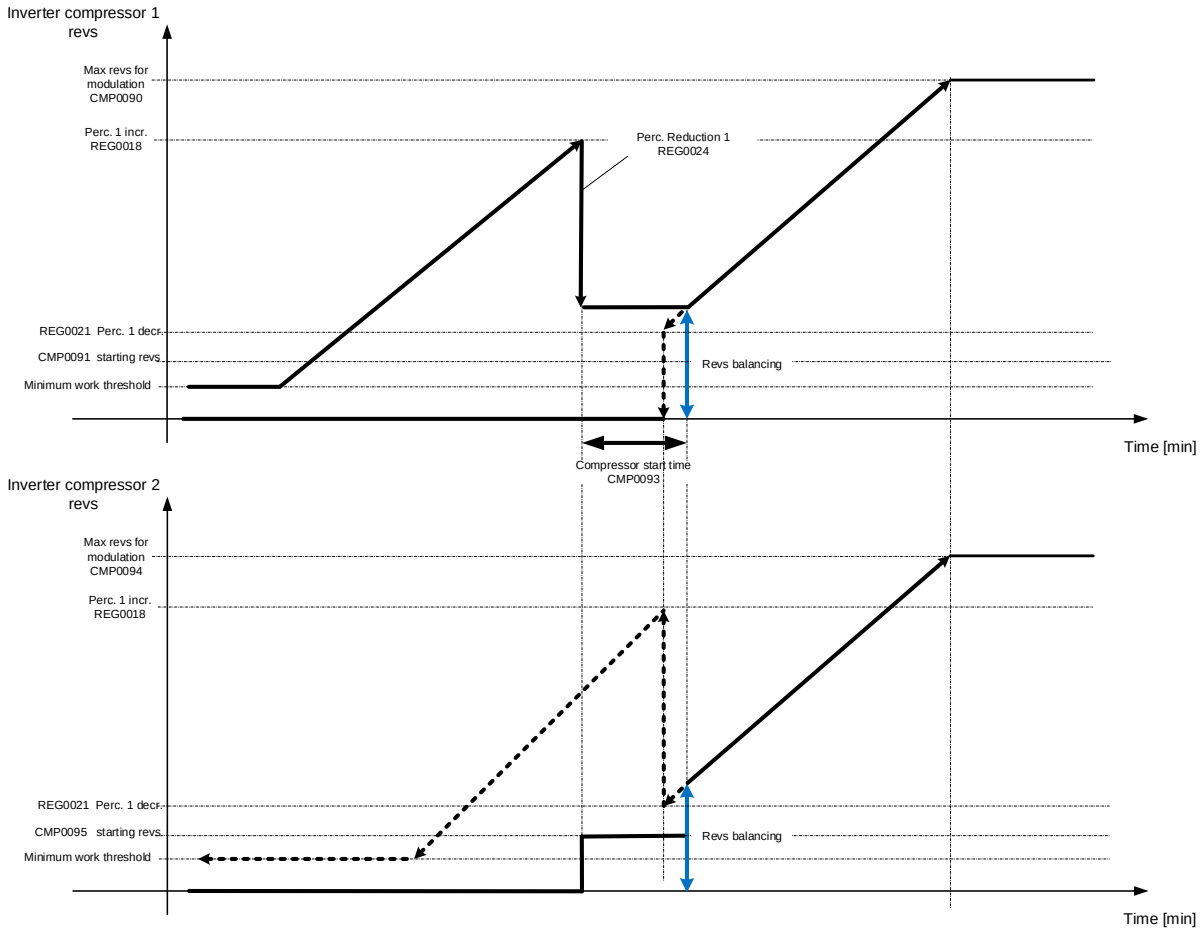


Figure 1-38: *diagram of operation of the sequential adjuster for unit with 2 inverter compressors*

The adjustment logic can be applied to full inverter units with up to 4 non-homogeneous (independent speed adjustment for each compressor) inverter compressors.
The reduction of the revolutions of active compressors due to the switching on of the third or fourth compressor is equal to 2/3 of the reduction percentage set in parameter REG0021.

b) The **PID** (Proportional Integral Derivative adjuster), whose control variable is the outlet temperature, is activated when the inverter compressor starts and deactivated when the inverter compressor stops.
The variable concerned is the number of revs of the inverter compressors. This can be set in a speed range between a minimum value and a maximum value (Figure 1-35) that are defined according to the condensation temperature of the circuit:

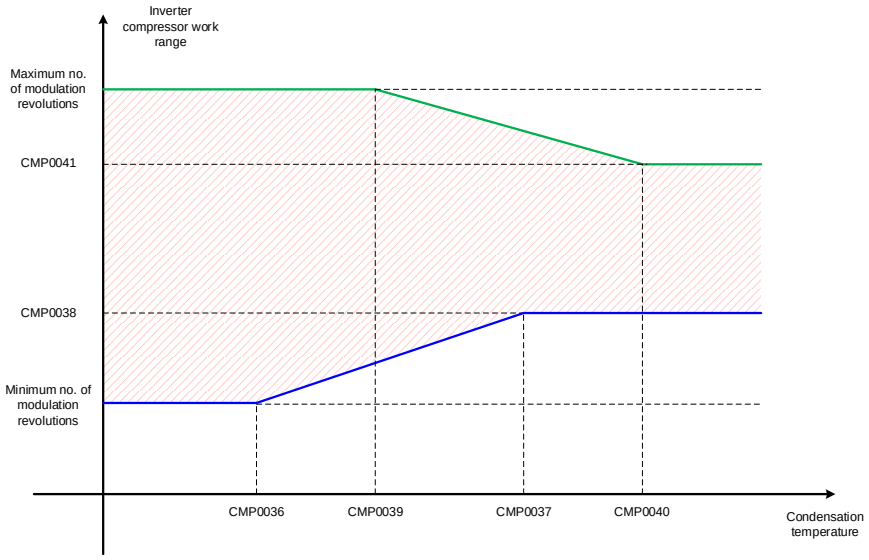


Figure 1-39: *calculation of the minimum and maximum operating threshold of the inverter compressor*

The following parameters can also be set for the PID adjuster: proportional band (proportional component) and Ti (integral time). The derivative time is factory set.

To side:
Operating diagram of the PID adjuster:
the delivery temperature is continuously monitored, thus constantly controlling the number of compressor revs.

The PID adjustment zone is related to the pb (proportional band) above the setpoint.

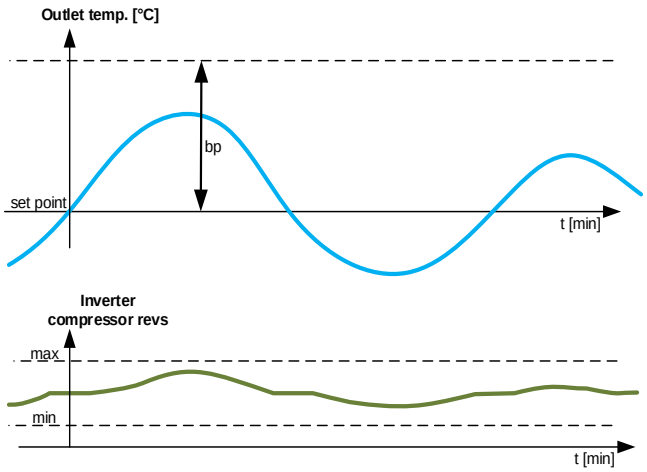


Figure 1-40: *PID detail on the outlet temperature*

1.7 Setting the setpoint

There are several procedures for setting the setpoint:

1. setpoint from the W3000 compact/W3000 large/W3000+ touch keyboard;
2. setpoint from Supervision or Mitsubishi Electric system remote controllers;
3. setpoint from KIPlink;
4. setpoint from time bands;
5. double setpoint external contact;

The setpoint set from the keyboard, or selected by the external contact for the dual setpoint, is modified by any functions that may be enabled which transform it into the active setpoint passed to the adjusters.

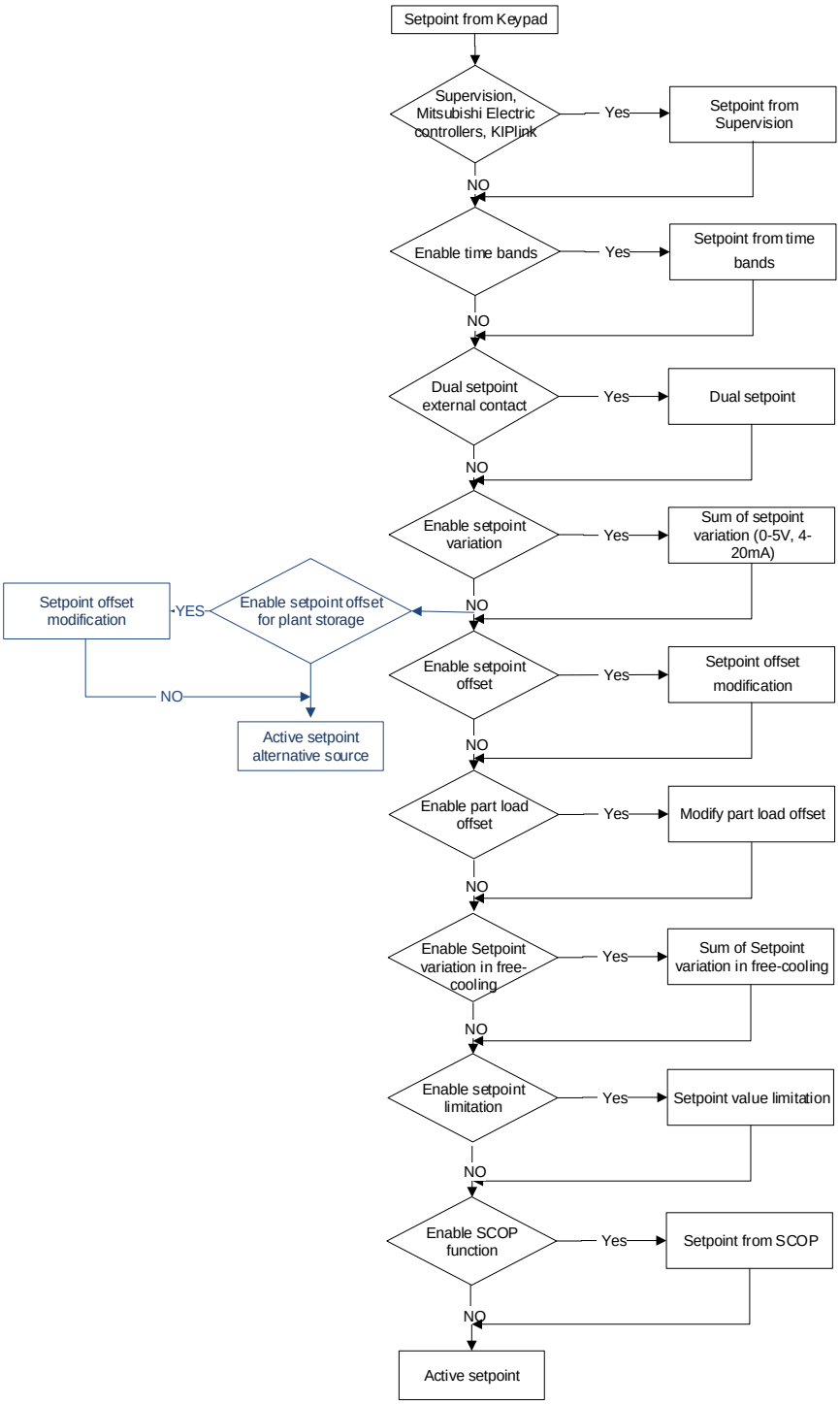


Figure 1-41: *sequence of functions for modifying the set setpoint so as to obtain the active setpoint.*

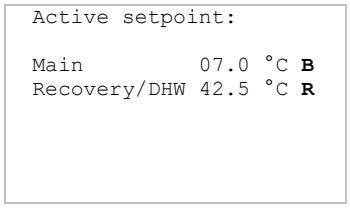
Example
Keypad setpoint: 7.0°C
Double setpoint: 10.0°C
A setpoint variation of 50% corresponds to 2.5°C
Active setpoint with open contact: 7.0 + 2.5 = 9.5°C
Active setpoint with closed contact: 10.0 + 2.5 = 12.5°C

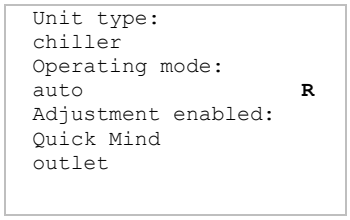
Note: the signal applied by the change in the setpoint is always summed, regardless of the operating mode of the unit.
Note: if Manager or Sequencer control is enabled, the time band, double set point and set point variation functions are forcibly disabled.
Note: The setpoint limitation and compensation functions are only available if the external air temperature probe is fitted. This probe is not available in for water-cooled units.
Note: The SCOP function disables the functions of compensation and limitation of the setpoint of the heat pump.

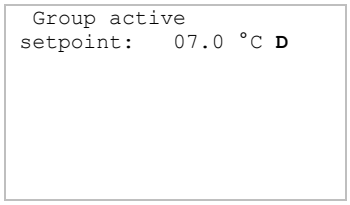
The setpoint menu shows the active temperature setpoint (of both the main setpoint and the recovery/DHW setpoint).
With the System Management function active, the active group temperature setpoint is displayed.

The captions of the flashing symbols indicating the functions active by setpoint and operating mode are indicated below:

R: change from remote contact function
V: change from external signal function
B: change from time band function
C: compensation from external temperature function
L: limitation from external temperature function
P: part load compensation function
S: value received from Sequencer
M: value received from Manager 3000
Q: value changed from Moving Band function
F: Free-cooling variation function
A: value received from ClimaPRO
E: SCOP function
D: group adaptive setpoint function
O: HPC function







When enabled at the same time:
- Configuration of the serial line USR0002 = 5 Supervision with watchdog
- Enable consent for autonomous operation in case of disconnection of the supervisor (only for serial line configured in "Supervision with watchdog" mode) (with the Modbus, Modbus over IP and Bacnet protocols)
- Stand-Alone local settings reset USR0010 = 1:enabled

the supervisor cannot modify the setpoint set from the keyboard since this is used in case of disconnection (U.ALONE unit status).

1.8 Symbols

The following symbols are used in the W3000+ and W3000 compact masks.

Flashing items on main mask	Description
BANDS	Time bands active
FCOOL	Unit in free-cooling mode
LIMIT	The demand limit, the limit for high room temperature or for current, is active
NIGHT ON	The night function is active
FREEZE	Outlet temperature approaching anti-freeze setpoint
PUMP ON	Pump running due to low temperature of the water/external air
FULL LOAD	Maximum override of at least one circuit is active
U.ALONE	The unit works independently after disconnecting the Manager3000, Sequencer or ClimaPRO
HPTC	Circuit limitation enabled due to elevated condensation pressures
DEFR	Defrosting is active on one or more circuits of the unit
DRIP	Dripping is active on one or more circuits of the unit
STORAGE	The energy storage function is active
MIN LOAD	Minimum override of at least one circuit is active
DHW COMPR	The unit is producing domestic hot water (DHW) using the compressors
DHW BOILER	The unit is producing domestic hot water (DHW) using the heating elements or boiler
DHW BOOST	The unit is producing domestic hot water (DHW) at the overboost setpoint
PLT COMPR	The unit is heating the plant storage tank using the compressors
PLT BOILER	The unit is heating the plant storage tank using the heating elements or boiler
ANTILEG	The antilegionella function is active
OFF SNIFF.	To enable the Sniffer function, the pumps are off or, if they are working, the system delivery/return temperatures are being updated before re-enabling the thermoregulators
OFF STOR.	The unit is switched off to allow the inertial storage tank to reach the temperature setpoint
POWER-ON	The unit is waiting for the post-blackout start delay to expire
WAIT	The unit is on and the thermoregulators are waiting for the current timers
FAST	The quick start function is active
PUMPDOWN ON	The pumpdown function is active in at least one of the unit circuits
+2P ENABLED	Module +2P enabled
KIPlink FOUND	KIPlink module found
OIL T. LOW	Low motor oil temperature

The BANDS, LIMIT, NIGHT ON and FREEZE indicator LED's are only enabled when the unit is ON.

Unit menu symbol	Description
GRP FCOOL	At least one unit of the group is in free cooling
GRP LIMIT	The group power limit is active (group demand limit)
GRP FAST	The group quick start function is active
WAIT LAN	Fault in the connection among units within the group. Group On/Off command prohibited

GRP FCOOL, GRP LIMIT and GRP FAST will only flash with the system ON.

Unit menu symbol	Description
Off	Unit/circuit off
Ch nr	Chiller circuit not demanded by thermoregulator
Ch	Chiller circuit demanded by thermoregulator
Ch+R	Chiller circuit plus recovery demanded by thermoregulator
Hp nr	Heat pump circuit not demanded by thermoregulator
Hp	Heat pump circuit demanded by thermoregulator
R nr	Recovery only circuit not demanded by thermoregulator
R	Recovery only circuit demanded by thermoregulator
Pd	Circuit in pump-down mode
Defr	Circuit in defrost mode
Drip	Circuit in drip mode

2 ALARMS

Pressing [ALARM] once opens the alarm menu which shows an alarm message with the code, date and time of the alarm, type of reset (Automatic or Manual), position of the alarm and type of block. This information is shown in a mask an example of which is given below.

```
10:36:04    01/05/08
              A002
 Phase sequence


 Reset    : Automatic
 Position: Unit
 Block    : Unit
```

If there is more than one alarm, scroll the menu using the [UP] and [DOWN] keys.
Press any other button to exit this menu.
To reset the alarm press the [ALARM] key again and hold it down until the message "No active alarm" is displayed. If the message does not appear it means that one or more alarm conditions are still active.

2.1 Event log on display

The function registers and displays alarm events, indicating the date and time of the event, the code of the alarm or signal, the activation or deactivation event, the number and description of the event, the type of reset (Automatic or Manual), position of the alarm and type of block. This information is shown in a mask an example of which is given below. The clock board is required to correctly view the events log.

```
10:36:04    01/05/08
 Event N°001  A002 S
 Phase sequence


 Reset    : Automatic
 Position: Unit
 Block    : Unit
```

The information in the event log, taken from the control of the W3000+, is also shown on the dedicated page of the W3000+ touch keyboard.

2.2 Table of W3000+alarms

Code	Description	Details	Reset	Action
002	Phase sequence / Voltage out of range	*Faulty phase connection. Totally shuts down the unit (only displayed if the input that detects it is fitted)*	A	U
003	No water flow on evaporator	*No flow to evaporator. The alarm automatically resets 3 times in the same hour if flow is restored within the maximum operating time of the pumps with a small amount of water, otherwise manual reset is required*	A/M	U
005	Low inlet temperature	*Only enabled in "heat pump" mode. Low water temperature at exchanger inlet on the heating side.*	S-A	-/U
006	High inlet temperature	*Enabled only in the "chiller" mode. High water temperature at evaporator inlet.*	S-A	-/U
007	Plant alternative source blocked	*The alternative source used to fill the plant storage tank is blocked*	S	-
008	DHW alternative source blocked	*The alternative source used to fill the DHW storage tank is blocked*	S	-
010	Evaporator antifreeze	*Low evaporator outlet water temperature. The actual evaporator affected by the alarm condition is also indicated (if more than one)* *The alarm also appears if the antifreeze limit trips more than 5 times in 8 operating hours.*	M	CI
014	Too low system pressure	*Only displayed if the relative input is present (see I/O menu). Unit stops due to an external pressure switch.*	S/M	-/U
017	Low external air temperature	*Indicates that the external air temperature has fallen below the set point.*	S	-
021	Low water charge in plant circuit	*The evaporator inlet temperature changes too quickly, due to the low water level in the system.*	S	-

Code	Description	Details	Reset	Action
022	Low water flow in plant circuit	*Indicates that the temperature difference between the system exchanger inlet and outlet is too high, or that the flow of water to the exchanger is too low. The alarm automatically resets the number of times in the same hour defined in par. SFT0014 if flow is restored within the set maximum time in par. SFT0016, otherwise, it must be reset manually. During thawing or dripping with the compressors on it immediately becomes manual. In the case of heat pumps with water side inversion, the alarm is activated controlling the adjustment probes (evaporator in chiller mode, condenser in heat pump mode).*	A/M	U*
023	High water flow in plant circuit	*Indicates that the water flow to the evaporator is too high.*	M	U*
041	Low temperature at condenser input	*Enabled only in the "heat pump" and recovery mode. Low water temperature at condenser inlet.*	S-A	-/U
042	High temperature at condenser output	*Enabled only in the "chiller" mode. High water temperature at condenser outlet.*	S-A	-/U
043	Low water flow rate in the condenser	*Indicates that the temperature difference between the condenser inlet and outlet is too high, or that the flow of water to the condenser is too low. The alarm automatically resets the number of times in the same hour defined in par. SFT0014 if flow is restored within the set maximum time in par. SFT0020, otherwise, it must be reset manually.*	A/M	U
044	High water flow rate in the condenser	*Indicates that the water flow to the condenser is too high.*	M	U
045	Too low condenser water flow rate	*Similarly to "No water flow to evaporator" (only for water/water units with freon reversal).*	A/M	U
046	Too low recovery water flow rate	*No water flow to the recuperator.*	A/M	U*
051	Pump 1 maintenance	*Maintenance hours limit exceeded (in units with just 1 pump, pump 1 is the evaporator pump)*	S	-
052	Pump 2 maintenance	*Pump 2 maintenance hours limit exceeded (in units with more than one pump).*	S	-
057	Recuperator pump maintenance/DHW	*(in units with recuperator pump) Recuperator pump maintenance hours limit exceeded.*	S	-
058	Condenser pump maintenance	*(in units with condenser pump) Condensation pump maintenance hours limit exceeded.*	S	-
060	Input condenser maintenance	*(only for units with Turbocor compressors) Powering condenser maintenance hours limit exceeded.*	S	-
061	Subcooling driver offline / first stage no.1	*It indicates the disconnection of the driver for the management of the subcooling of circuit 1 / compressor 1 first stage valve (only for units with Turbocor compressors)*	A	CI
062	Subcooling driver offline / first stage no.2	*"as above, for circuit no. 2" / compressor 2 first stage valve*	A	CI
063	Subcooling driver offline / first stage no.3	*"as above, for circuit no. 1" / compressor 3 first stage valve*	A	CI
064	Subcooling driver offline / first stage no.4	*"as above, for circuit no. 2" / compressor 4 first stage valve*	A	CI
065	Low water content in recuperator circuit	*The recuperator inlet temperature changes too quickly and creates a low water level in the recuperator circuit.*	S	-
066	Low water flow in recuperator circuit	*Indicates that the temperature difference between the recuperator inlet and outlet is too high, or that the flow of water to the recuperator is too low. The alarm automatically resets 3 times in the same hour if flow is restored within the set maximum time, otherwise, it must be reset manually During thawing or dripping with the compressors on it immediately becomes manual.*	A/M	U*
067	Anti-legionellosis alarm	*The anti-legionellosis function has exceeded the maximum time set (DHW0022) for the maximum permitted number of cycles (DHW0021).*	S	-

Code	Description	Details	Reset	Action
068	Refrigeration section control fault	*Signals an alarm from the main controller in units fitted with a +2P module.* *To view details of the alarm and reset it, switch to the main controller interface by pressing "ESC+UP".*	S	-
069	Air section control fault	*Alarm from the controller of the air section of the rooftop units.* *To view details of the alarm and reset it, switch to the main controller interface by pressing "ESC+UP".*	S	-
070	Module +2P control fault	*Indicates an alarm from the +2P module controller.* *To view details of the alarm and reset it, switch to the +2P controller interface by pressing "ESC+UP".*	S	-
072	High water flow in recuperator circuit	*Indicates that the water flow to the recuperator is too high.*	M	U*
075	Condenser antifreeze	*Low water temperature at condenser outlet. Except for W3000+ base, it also specifies which condenser (if more than one) is involved in the alarm condition. The alarm also appears if the antifreeze limit trips more than 5 times in 8 operating hours (only for water/water units with freon reversal).*	M	U*
076	Recuperator antifreeze	*Low water temperature at recuperator outlet.*	A	U*
079	VPF management module disconnected	*Disconnection of the module that adjusts the water flow rate on the primary circuit*	A	-
080	VPF management module faulty	*The module that adjusts the water flow rate on the primary circuit is faulty. Check the fault on the user interface of the module.*	A	-
081	Pump 1 thermal switch	*It indicates that pump 1 is overheating. (in units with just 1 pump, pump 1 = evaporator pump)*	M	U*
082	Pump 2 thermal switch	*Pump 2 overheated (in units with more than one pump).*	M	U*
085	Condenser pump thermal switch	*It indicates overheating of the condenser pump (only for units with water condensation)*	M	U
086	Recuperator pump thermal switch	*Recuperator pump overheated*	M	U*
087	Glycol pump thermal switch	*Glycol pump overheated (in units with freecooling).*	A	FC*
090	Slave no-link	*The slave card is disconnected (only for units with 3 or 4 circuits)* *If the unit is fitted with a +2P module, it signals when the module is disconnected.*	A	U
091	Expansion 1 no-link	*Master expansion 1 unlinked, the word master appears in units with 3 or 4 circuits.*	A	U
092	Expansion 2 no-link	*"as above, for expansion 2"*	A	U
093	Expansion 3 no-link	*"as above, for expansion 3"*	A	U
094	Expansion 4 no-link	*"as above, for expansion 4"*	A	U
095	Expansion 5 no-link	*"as above, for expansion 5"*	A	U
101	Slave expansion 1 no-link	*Slave expansion 1 unlinked.*	A	U
102	Slave expansion 2 no-link	*"as above, for expansion 2"*	A	U
103	Slave expansion 3 no-link	*"as above, for expansion 3"*	A	U
104	Slave expansion 4 no-link	*"as above, for expansion 4"*	A	U
105	Slave expansion 5 no-link	*"as above, for expansion 5"*	A	U
106	P3 module disconnected	*It indicates that module P3 for the management of more than 2 pumps is disconnected*	A	-
111	Compressor 1 oil	*No oil on compressor 1 due to low compressor oil level or pressure*	A/M	CO
112	Compressor 2 oil	*"as above, for compressor 2"*	A/M	CO
113	Compressor 3 oil	*"as above, for compressor 3"*	A/M	CO
114	Compressor 4 oil	*"as above, for compressor 4"*	A/M	CO
121	Compressor 1 high discharge temperature	*It indicates that the compressor 1 discharge temperature has exceeded the set threshold*	M	CO
122	Compressor 2 high discharge temperature	*"as above, for compressor 2"*	M	CO
123	Compressor 3 high discharge temperature	*"as above, for compressor 3"*	M	CO
124	Compressor 4 high discharge temperature	*"as above, for compressor 4"*	M	CO
125	Compressor 5 high discharge temperature	*"as above, for compressor 5"*	M	CO
126	Compressor 6 high discharge temperature	*"as above, for compressor 6"*	M	CO
127	Compressor 7 high discharge temperature	*"as above, for compressor 7"*	M	CO
128	Compressor 8 high discharge temperature	*"as above, for compressor 8"*	M	CO
131	Compressor 1 fault	*Compressor 1 motor overheated or any another fault. For units with Turbocor centrifugal*	M - A/M	CO

Code	Description	Details	Reset	Action
		compressors, this can indicate overheating of the reactance coil of compressor 1		
132	Compressor 2 fault	*"as above, for compressor 2"*	M - A/M	CO
133	Compressor 3 fault	*"as above, for compressor 3"*	M - A/M	CO
134	Compressor 4 fault	*"as above, for compressor 4"*	M - A/M	CO
135	Compressor 5 fault	*"as above, for compressor 5"*	M - A/M	CO
136	Compressor 6 fault	*"as above, for compressor 6"*	M - A/M	CO
137	Compressor 7 fault	*"as above, for compressor 7"*	M - A/M	CO
138	Compressor 8 fault	*"as above, for compressor 8"*	M - A/M	CO
141	Compressor 1 offline	*No communication with compressor n° 1 (only for units with centrifuge compressors)*	A	CO
142	Compressor 2 offline	*"as above, for compressor 2"*	A	CO
143	Compressor 3 offline	*"as above, for compressor 3"*	A	CO
144	Compressor 4 offline	*"as above, for compressor 4"*	A	CO
151	Compressor 1 maintenance	*Maintenance hours limit exceeded on compressor 1*	S	-
152	Compressor 2 maintenance	*"as above, for compressor 2"*	S	-
153	Compressor 3 maintenance	*"as above, for compressor 3"*	S	-
154	Compressor 4 maintenance	*"as above, for compressor 4"*	S	-
155	Compressor 5 maintenance	*"as above, for compressor 5"*	S	-
156	Compressor 6 maintenance	*"as above, for compressor 6"*	S	-
157	Compressor 7 maintenance	*"as above, for compressor 7"*	S	-
158	Compressor 8 maintenance	*"as above, for compressor 8"*	S	-
161	Compressor 1 motor power input	*Compressor 1 motor alarm (only for units with Turbocor compressors)*	A/B	CO
162	Compressor 2 motor power input	*"as above, for compressor 2"*	A/B	CO
163	Compressor 3 motor power input	*"as above, for compressor 3"*	A/B	CO
164	Compressor 4 motor power input	*"as above, for compressor 4"*	A/B	CO
171	Compressor 1 start-up timeout	*For Turbocor compressors: compressor 1 not started within the set Timeout limit* *For screw compressors: possible attempt at starting compressor 1 without freon*	Turbocor: A/M screw: A	CO
172	Compressor 2 start-up timeout	*"as above, for compressor 2"*	Turbocor: A/M screw: A	CO
173	Compressor 3 start-up timeout	*"as above, for compressor 3"*	Turbocor: A/M screw: A	CO
174	Compressor 4 start-up timeout	*"as above, for compressor 4"*	Turbocor: A/M screw: A	CO
191	Economiser compressor 1	*Indicates a high level of refrigerant in the economiser of compressor 1*	A	CO
192	Economiser compressor 2	*"as above, for compressor 2"*	A	CO
193	Economiser compressor 3	*"as above, for compressor 3"*	A	CO
194	Economiser compressor 4	*"as above, for compressor 4"*	A	CO
201	Circuit 1 fault	*Indicates a fan adjustment fault in cooling circuit 1. CONTACT THE NEAREST TECHNICAL SERVICE CENTRE*	S	-
202	Circuit 2 fault	*"as above, for circuit 2"*	S	-
203	Circuit 3 fault	*"as above, for circuit 3"*	S	-
204	Circuit 4 fault	*"as above, for circuit 4"*	S	-
211	Circuit 1 high pressure	*High pressure on cooling circuit 1*	A/M	CI
212	Circuit 2 high pressure	*"as above, for circuit 2"*	A/M	CI
213	Circuit 3 high pressure	*"as above, for circuit 3"*	A/M	CI
214	Circuit 4 high pressure	*"as above, for circuit 4"*	A/M	CI
221	Circuit 1 fan fault	*The condensation fan in circuit 1 is malfunctioning and has stopped.*	M	CI
222	Circuit 2 fan fault	*"as above, for circuit 2"*	M	CI
223	Circuit 3 fan fault	*"as above, for circuit 3"*	M	CI
224	Circuit 4 fan fault	*"as above, for circuit 4"*	M	CI
231	Circuit 1 low pressure	*Low pressure detected by the transducer/pressure switch on circuit 1*	A/M	CI
232	Circuit 2 low pressure	*"as above, for circuit 2"*	A/M	CI
233	Circuit 3 low pressure	*"as above, for circuit 3"*	A/M	CI
234	Circuit 4 low pressure	*"as above, for circuit 4"*	A/M	CI

Code	Description	Details	Reset	Action
241	Transducer 1 high pressure	*It indicates high pressure detected by the transducer on cooling circuit 1*	A/M	CI
242	Transducer 2 high pressure	*"as above, for circuit 2"*	A/M	CI
243	Transducer 3 high pressure	*"as above, for circuit 3"*	A/M	CI
244	Transducer 4 high pressure	*"as above, for circuit 4"*	A/M	CI
251	Circuit 1 start-up timeout	*Possible start-up attempt with no Freon in circuit 1.*	A	CI
252	Circuit 2 start-up timeout	*"as above, for circuit 2"*	A	CI
253	Circuit 3 start-up timeout	*"as above, for circuit 3"*	A	CI
254	Circuit 4 start-up timeout	*"as above, for circuit 4"*	A	CI
261	No freon in circuit 1	*Possible Freon leakage in circuit 1 as the "Start-up timeout" alarm has continued for at least 8 hours.*	A	CI
262	No freon in circuit 2	*"as above, for circuit 2"*	A	CI
263	No freon in circuit 3	*"as above, for circuit 3"*	A	CI
264	No freon in circuit 4	*"as above, for circuit 4"*	A	CI
271	Circuit 1 too many forced defrost cycle	*Circuit 1 condensation coil obstructed in defrost mode*	M	CI
272	Circuit 2 too many forced defrost cycle	*"as above, for circuit 2"*	M	CI
273	Circuit 3 too many forced defrost cycle	*"as above, for circuit 3"*	M	CI
274	Circuit 4 too many forced defrost cycle	*"as above, for circuit 4"*	M	CI
281	Insufficient evaporation pressure circuit 1	*There may not be any freon in circuit 1 as the evaporation pressure has fallen below the set point*	M	CI
282	Insufficient evaporation pressure circuit 2	*"as above, for circuit 2"*	M	CI
283	Insufficient evaporation pressure circuit 3	*"as above, for circuit 3"*	M	CI
284	Insufficient evaporation pressure circuit 4	*"as above, for circuit 4"*	M	CI
291	Insufficient freon in circuit n°1	*The freon content in circuit 1 is insufficient as the unit has worked below the approach threshold*	A/M	CI
292	Insufficient freon in circuit n°2	*"as above, for circuit 2"*	A/M	CI
293	Insufficient freon in circuit n°3	*"as above, for circuit 3"*	A/M	CI
294	Insufficient freon in circuit n°4	*"as above, for circuit 4"*	A/M	CI
301	Compressor 1 inverter temperature	*Compressor 1 inverter overtemperature (only for units with Turbocor compressors)*	A/M/B	CO
302	Compressor 2 inverter temperature	*"as above, for compressor 2"*	A/M/B	CO
303	Compressor 3 inverter temperature	*"as above, for compressor 3"*	A/M/B	CO
304	Compressor 4 inverter temperature	*"as above, for compressor 4"*	A/M/B	CO
305	Compressor 5 inverter temperature	*"as above, for compressor 5"*	A/M/B	CO
306	Compressor 6 inverter temperature	*"as above, for compressor 6"*	A/M/B	CO
307	Compressor 7 inverter temperature	*"as above, for compressor 7"*	A/M/B	CO
308	Compressor 8 inverter temperature	*"as above, for compressor 8"*	A/M/B	CO
311	Compressor 1 discharge temperature	*Compressor 1 discharge overtemperature (only for units with Turbocor compressors)*	A/M/B	CO
312	Compressor 2 discharge temperature	*"as above, for compressor 2"*	A/M/B	CO
313	Compressor 3 discharge temperature	*"as above, for compressor 3"*	A/M/B	CO
314	Compressor 4 discharge temperature	*"as above, for compressor 4"*	A/M/B	CO
315	Compressor 5 discharge temperature	*"as above, for compressor 5"*	A/M/B	CO
316	Compressor 6 discharge temperature	*"as above, for compressor 6"*	A/M/B	CO
317	Compressor 7 discharge temperature	*"as above, for compressor 7"*	A/M/B	CO
318	Compressor 8 discharge temperature	*"as above, for compressor 8"*	A/M/B	CO
321	Compressor 1 low pressure	*For Turbocor compressors: suction pressure below the minimum limit of compressor 1* *For screw compressors: low pressure acquired from compressor 1 transducer/pressure switch pre-alarm*	Turbocor: A/M/B Screw: A/M	CO
322	Compressor 2 low pressure	*"as above, for compressor 2"*	Turbocor: A/M/B Screw: A/M	CO
323	Compressor 3 low pressure	*"as above, for compressor 3"*	Turbocor: A/M/B Screw: A/M	CO
324	Compressor 4 low pressure	*"as above, for compressor 4"*	Turbocor: A/M/B Screw: A/M	CO
325	Compressor 5 low pressure	*"as above, for compressor 5"*	Turbocor: A/M/B	CO

Code	Description	Details	Reset	Action
			Screw: A/M	
326	Compressor 6 low pressure	*"as above, for compressor 6"*	Turbocor: A/M/B Screw: A/M	CO
327	Compressor 7 low pressure	*"as above, for compressor 7"*	Turbocor: A/M/B Screw: A/M	CO
328	Compressor 8 low pressure	*"as above, for compressor 8"*	Turbocor: A/M/B Screw: A/M	CO
331	Compressor 1 high pressure	*For Turbocor compressors: compression pressure exceeding the maximum limit for compressor 1* *For screw compressors: indicates high pressure of compressor 1*	Turbocor: A/M/B Screw: A/M	CO
332	Compressor 2 high pressure	*"as above, for compressor 2"*	Turbocor: A/M/B Screw: A/M	CO
333	Compressor 3 high pressure	*"as above, for compressor 3"*	Turbocor: A/M/B Screw: A/M	CO
334	Compressor 4 high pressure	*"as above, for compressor 4"*	Turbocor: A/M/B Screw: A/M	CO
335	Compressor 5 high pressure	*"as above, for compressor 5"*	Turbocor: A/M/B Screw: A/M	CO
336	Compressor 6 high pressure	*"as above, for compressor 6"*	Turbocor: A/M/B Screw: A/M	CO
337	Compressor 7 high pressure	*"as above, for compressor 7"*	Turbocor: A/M/B Screw: A/M	CO
338	Compressor 8 high pressure	*"as above, for compressor 8"*	Turbocor: A/M/B Screw: A/M	CO
341	Compressor 1 input current	*Compressor 1 current input exceeding the maximum limit (only for units with Turbocor compressors)*	A/M/B	CO
342	Compressor 2 input current	*"as above, for compressor 2"*	A/M/B	CO
343	Compressor 3 input current	*"as above, for compressor 3"*	A/M/B	CO
344	Compressor 4 input current	*"as above, for compressor 4"*	A/M/B	CO
345	Compressor 5 input current	*"as above, for compressor 4"*	A/M/B	CO
346	Compressor 6 input current	*"as above, for compressor 4"*	A/M/B	CO
347	Compressor 7 input current	*"as above, for compressor 4"*	A/M/B	CO
348	Compressor 8 input current	*"as above, for compressor 4"*	A/M/B	CO
351	Compressor 1 rotor temperature	*Compressor 1 rotor temperature exceeding the maximum limit (only for units with Turbocor compressors)*	A/M/B	CO
352	Compressor 2 rotor temperature	*"as above, for compressor 2"*	A/M/B	CO
353	Compressor 3 rotor temperature	*"as above, for compressor 3"*	A/M/B	CO
354	Compressor 4 rotor temperature	*"as above, for compressor 4"*	A/M/B	CO
355	Compressor 5 rotor temperature	*"as above, for compressor 5"*	A/M/B	CO
356	Compressor 6 rotor temperature	*"as above, for compressor 6"*	A/M/B	CO
357	Compressor 7 rotor temperature	*"as above, for compressor 7"*	A/M/B	CO
358	Compressor 8 rotor temperature	*"as above, for compressor 8"*	A/M/B	CO
361	Compressor 1 compression ratio	*Compressor 1 compression ratio exceeding the maximum limit (only for units with Turbocor compressors)*	A/M/B	CO
362	Compressor 2 compression ratio	*"as above, for compressor 2"*	A/M/B	CO
363	Compressor 3 compression ratio	*"as above, for compressor 3"*	A/M/B	CO

Code	Description	Details	Reset	Action
364	Compressor 4 compression ratio	*"as above, for compressor 4"*	A/M/B	CO
365	Compressor 5 compression ratio	*"as above, for compressor 5"*	A/M/B	CO
366	Compressor 6 compression ratio	*"as above, for compressor 6"*	A/M/B	CO
367	Compressor 7 compression ratio	*"as above, for compressor 7"*	A/M/B	CO
368	Compressor 8 compression ratio	*"as above, for compressor 8"*	A/M/B	CO
371	Compressor 1 bearings	*Compressor 1 bearings faulty (only for units with Turbocor compressors)*	A/M/B	CO
372	Compressor 2 bearings	*"as above, for compressor 2"*	A/M/B	CO
373	Compressor 3 bearings	*"as above, for compressor 3"*	A/M/B	CO
374	Compressor 4 bearings	*"as above, for compressor 4"*	A/M/B	CO
375	Compressor 5 bearings	*"as above, for compressor 5"*	A/M/B	CO
376	Compressor 6 bearings	*"as above, for compressor 6"*	A/M/B	CO
377	Compressor 7 bearings	*"as above, for compressor 7"*	A/M/B	CO
378	Compressor 8 bearings	*"as above, for compressor 8"*	A/M/B	CO
381	Compressor 1 SCR temperature	*Compressor 1 SCR temperature exceeding the maximum limit (only for units with Turbocor compressors)*	A/M/B	CO
382	Compressor 2 SCR temperature	*"as above, for compressor 2"*	A/M/B	CO
383	Compressor 3 SCR temperature	*"as above, for compressor 3"*	A/M/B	CO
384	Compressor 4 SCR temperature	*"as above, for compressor 4"*	A/M/B	CO
385	Compressor 5 SCR temperature	*"as above, for compressor 5"*	A/M/B	CO
386	Compressor 6 SCR temperature	*"as above, for compressor 6"*	A/M/B	CO
387	Compressor 7 SCR temperature	*"as above, for compressor 7"*	A/M/B	CO
388	Compressor 8 SCR temperature	*"as above, for compressor 8"*	A/M/B	CO
391	Compressor 1 rotor block	*Compressor 1 blocked (only for units with Turbocor compressors)*	A/M/B	CO
392	Compressor 2 rotor block	*"as above, for compressor 2"*	A/M/B	CO
393	Compressor 3 rotor block	*"as above, for compressor 3"*	A/M/B	CO
394	Compressor 4 rotor block	*"as above, for compressor 4"*	A/M/B	CO
395	Compressor 5 rotor block	*"as above, for compressor 5"*	A/M/B	CO
396	Compressor 6 rotor block	*"as above, for compressor 6"*	A/M/B	CO
397	Compressor 7 rotor block	*"as above, for compressor 7"*	A/M/B	CO
398	Compressor 8 rotor block	*"as above, for compressor 8"*	A/M/B	CO
400	Probe 10 error	*Probe 10 error The values read by probe 10 out of range.*	A	*
401	Probe 1 error	*"analogue, as above"*	A	*
402	Probe 2 error	*"analogue, as above"*	A	*
403	Probe 3 error	*"analogue, as above"*	A	*
404	Probe 4 error	*"analogue, as above"*	A	*
405	Probe 5 error	*"analogue, as above"*	A	*
406	Probe 6 error	*"analogue, as above"*	A	*
407	Probe 7 error	*"analogue, as above"*	A	*
408	Probe 8 error	*"analogue, as above"*	A	*
409	Probe 9 error	*"analogue, as above"*	A	*
410	Expansion 1 probe 10 error	*Probe 10, expansion 1 fault*	A	*
411	Expansion 1 probe 1 error	*"analogue, as above"*	A	*
412	Expansion 1 probe 2 error	*"analogue, as above"*	A	*
413	Expansion 1 probe 3 error	*"analogue, as above"*	A	*
414	Expansion 1 probe 4 error	*"analogue, as above"*	A	*
415	Expansion 1 probe 5 error	*"analogue, as above"*	A	*
416	Expansion 1 probe 6 error	*"analogue, as above"*	A	*
417	Expansion 1 probe 7 error	*"analogue, as above"*	A	*
418	Expansion 1 probe 8 error	*"analogue, as above"*	A	*
419	Expansion 1 probe 9 error	*"analogue, as above"*	A	*
420	Expansion 2 probe 10 error	*"analogue, as above"*	A	*
421	Expansion 2 probe 1 error	*"analogue, as above"*	A	*
422	Expansion 2 probe 2 error	*"analogue, as above"*	A	*
423	Expansion 2 probe 3 error	*"analogue, as above"*	A	*
424	Expansion 2 probe 4 error	*"analogue, as above"*	A	*
425	Expansion 2 probe 5 error	*"analogue, as above"*	A	*
426	Expansion 2 probe 6 error	*"analogue, as above"*	A	*
427	Expansion 2 probe 7 error	*"analogue, as above"*	A	*
428	Expansion 2 probe 8 error	*"analogue, as above"*	A	*
429	Expansion 2 probe 9 error	*"analogue, as above"*	A	*

Code	Description	Details	Reset	Action
430	Expansion 3 probe 10 error	*"analogue, as above"*	A	*
431	Expansion 3 probe 1 error	*"analogue, as above"*	A	*
432	Expansion 3 probe 2 error	*"analogue, as above"*	A	*
433	Expansion 3 probe 3 error	*"analogue, as above"*	A	*
434	Expansion 3 probe 4 error	*"analogue, as above"*	A	*
435	Expansion 3 probe 5 error	*"analogue, as above"*	A	*
436	Expansion 3 probe 6 error	*"analogue, as above"*	A	*
437	Expansion 3 probe 7 error	*"analogue, as above"*	A	*
438	Expansion 3 probe 8 error	*"analogue, as above"*	A	*
439	Expansion 3 probe 9 error	*"analogue, as above"*	A	*
440	Expansion 4 probe 10 error	*"analogue, as above"*	A	*
441	Expansion 4 probe 1 error	*"analogue, as above"*	A	*
442	Expansion 4 probe 2 error	*"analogue, as above"*	A	*
443	Expansion 4 probe 3 error	*"analogue, as above"*	A	*
444	Expansion 4 probe 4 error	*"analogue, as above"*	A	*
445	Expansion 4 probe 5 error	*"analogue, as above"*	A	*
446	Expansion 4 probe 6 error	*"analogue, as above"*	A	*
447	Expansion 4 probe 7 error	*"analogue, as above"*	A	*
448	Expansion 4 probe 8 error	*"analogue, as above"*	A	*
449	Expansion 4 probe 9 error	*"analogue, as above"*	A	*
450	Expansion 5 probe 10 error	*"analogue, as above"*	A	*
451	Expansion 5 probe 1 error	*"analogue, as above"*	A	*
452	Expansion 5 probe 2 error	*"analogue, as above"*	A	*
453	Expansion 5 probe 3 error	*"analogue, as above"*	A	*
454	Expansion 5 probe 4 error	*"analogue, as above"*	A	*
455	Expansion 5 probe 5 error	*"analogue, as above"*	A	*
456	Expansion 5 probe 6 error	*"analogue, as above"*	A	*
457	Expansion 5 probe 7 error	*"analogue, as above"*	A	*
458	Expansion 5 probe 8 error	*"analogue, as above"*	A	*
459	Expansion 5 probe 9 error	*"analogue, as above"*	A	*
500	Probe 10 slave error	*Slave probe 10 faulty - only in units with more than 2 circuits*	A	*
501	Probe 1 slave error	*"analogue, as above"*	A	*
502	Probe 2 slave error	*"analogue, as above"*	A	*
503	Probe 3 slave error	*"analogue, as above"*	A	*
504	Probe 4 slave error	*"analogue, as above"*	A	*
505	Probe 5 slave error	*"analogue, as above"*	A	*
506	Probe 6 slave error	*"analogue, as above"*	A	*
507	Probe 7 slave error	*"analogue, as above"*	A	*
508	Probe 8 slave error	*"analogue, as above"*	A	*
509	Probe 9 slave error	*"analogue, as above"*	A	*
510	Expansion 1 Slave probe 10 error	*Probe 10, expansion 1, connected to slave faulty*	A	*
511	Expansion 1 Slave probe 1 error	*"analogue, as above"*	A	*
512	Expansion 1 Slave probe 2 error	*"analogue, as above"*	A	*
513	Expansion 1 Slave probe 3 error	*"analogue, as above"*	A	*
514	Expansion 1 Slave probe 4 error	*"analogue, as above"*	A	*
515	Expansion 1 Slave probe 5 error	*"analogue, as above"*	A	*
516	Expansion 1 Slave probe 6 error	*"analogue, as above"*	A	*
517	Expansion 1 Slave probe 7 error	*"analogue, as above"*	A	*
518	Expansion 1 Slave probe 8 error	*"analogue, as above"*	A	*
519	Expansion 1 Slave probe 9 error	*"analogue, as above"*	A	*
520	Expansion 2 Slave probe 10 error	*"analogue, as above"*	A	*
521	Expansion 2 Slave probe 1 error	*"analogue, as above"*	A	*
522	Expansion 2 Slave probe 2 error	*"analogue, as above"*	A	*
523	Expansion 2 Slave probe 3 error	*"analogue, as above"*	A	*
524	Expansion 2 Slave probe 4 error	*"analogue, as above"*	A	*
525	Expansion 2 Slave probe 5 error	*"analogue, as above"*	A	*
526	Expansion 2 Slave probe 6 error	*"analogue, as above"*	A	*
527	Expansion 2 Slave probe 7 error	*"analogue, as above"*	A	*
528	Expansion 2 Slave probe 8 error	*"analogue, as above"*	A	*
529	Expansion 2 Slave probe 9 error	*"analogue, as above"*	A	*
530	Expansion 3 Slave probe 10 error	*"analogue, as above"*	A	*
531	Expansion 3 Slave probe 1 error	*"analogue, as above"*	A	*
532	Expansion 3 Slave probe 2 error	*"analogue, as above"*	A	*

Code	Description	Details	Reset	Action
533	Expansion 3 Slave probe 3 error	*"analogue, as above"*	A	*
534	Expansion 3 Slave probe 4 error	*"analogue, as above"*	A	*
535	Expansion 3 Slave probe 5 error	*"analogue, as above"*	A	*
536	Expansion 3 Slave probe 6 error	*"analogue, as above"*	A	*
537	Expansion 3 Slave probe 7 error	*"analogue, as above"*	A	*
538	Expansion 3 Slave probe 8 error	*"analogue, as above"*	A	*
539	Expansion 3 Slave probe 9 error	*"analogue, as above"*	A	*
540	Expansion 4 Slave probe 10 error	*"analogue, as above"*	A	*
541	Expansion 4 Slave probe 1 error	*"analogue, as above"*	A	*
542	Expansion 4 Slave probe 2 error	*"analogue, as above"*	A	*
543	Expansion 4 Slave probe 3 error	*"analogue, as above"*	A	*
544	Expansion 4 Slave probe 4 error	*"analogue, as above"*	A	*
545	Expansion 4 Slave probe 5 error	*"analogue, as above"*	A	*
546	Expansion 4 Slave probe 6 error	*"analogue, as above"*	A	*
547	Expansion 4 Slave probe 7 error	*"analogue, as above"*	A	*
548	Expansion 4 Slave probe 8 error	*"analogue, as above"*	A	*
549	Expansion 4 Slave probe 9 error	*"analogue, as above"*	A	*
550	Expansion 5 Slave probe 10 error	*"analogue, as above"*	A	*
551	Expansion 5 Slave probe 1 error	*"analogue, as above"*	A	*
552	Expansion 5 Slave probe 2 error	*"analogue, as above"*	A	*
553	Expansion 5 Slave probe 3 error	*"analogue, as above"*	A	*
554	Expansion 5 Slave probe 4 error	*"analogue, as above"*	A	*
555	Expansion 5 Slave probe 5 error	*"analogue, as above"*	A	*
556	Expansion 5 Slave probe 6 error	*"analogue, as above"*	A	*
557	Expansion 5 Slave probe 7 error	*"analogue, as above"*	A	*
558	Expansion 5 Slave probe 8 error	*"analogue, as above"*	A	*
559	Expansion 5 Slave probe 9 error	*"analogue, as above"*	A	*
602	BMS2 serial disconnection	*Loss of communication with the device connected to the BMS2 serial port*	S	-
611	Antifreeze pre-alarm evaporator 1	*Pre-alarm indicating low evaporator outlet water temperature. The actual evaporator affected by the alarm condition is also indicated (if more than one)*	S	PR
612	Antifreeze pre-alarm evaporator 2	*"as above, for evaporator 2"*	S	PR
613	Antifreeze pre-alarm evaporator 3	*"as above, for evaporator 3"*	S	PR
614	Antifreeze pre-alarm evaporator 4	*"as above, for evaporator 4"*	S	PR
631	Low pressure pre-alarm circuit 1	*Low pressure acquired from circuit 1 transducer pre-alarm*	S	PR
632	Low pressure pre-alarm circuit 2	*"as above, for circuit 2"*	S	PR
633	Low pressure pre-alarm circuit 3	*"as above, for circuit 3"*	S	PR
634	Low pressure pre-alarm circuit 4	*"as above, for circuit 4"*	S	PR
641	High pressure in circuit 1 pre-alarm	*High pressure acquired from circuit 1 transducer pre-alarm*	S	PR
642	High pressure pre-alarm circuit 2	*"as above, for circuit 2"*	S	PR
643	High pressure pre-alarm circuit 3	*"as above, for circuit 3"*	S	PR
644	High pressure pre-alarm circuit 4	*"as above, for circuit 4"*	S	PR
651	Envelope control: low overheating in delivery to circuit 1 compressors	*Indicates that the overheating value for the circuit 1 compressors is too low (depending on the active compression ratio)*	M	CI
652	Envelope control: low overheating in delivery to circuit 2 compressors	*"as above, for circuit 2"*	M	CI
653	Envelope control: low overheating in delivery to circuit 3 compressors	*"as above, for circuit 3"*	M	CI
654	Envelope control: low overheating in delivery to circuit 4 compressors	*"as above, for circuit 4"*	M	CI
661	Envelope control: high overheating in delivery to circuit 1 compressors	*Indicates that the overheating value for the circuit 1 compressors is too high (depending on the active compression ratio)*	M	CI
662	Envelope control: high overheating in delivery to circuit 2 compressors	*"as above, for circuit 2"*	M	CI
663	Envelope control: high overheating in delivery to circuit 3 compressors	*"as above, for circuit 3"*	M	CI
664	Envelope control: high overheating in delivery to circuit 4 compressors	*"as above, for circuit 4"*	M	CI
671	Envelope control: minimum high pressure limit of circuit 1 compressors	*Indicates that the compressors in cooling circuit 1 operate above the permitted limit*	M	CI

Code	Description	Details	Reset	Action
672	Envelope control: minimum high pressure limit of circuit 2 compressors	*"as above, for circuit 2"*	M	CI
673	Envelope control: minimum high pressure limit of circuit 3 compressors	*"as above, for circuit 3"*	M	CI
674	Envelope control: minimum high pressure limit of circuit 4 compressors	*"as above, for circuit 4"*	M	CI
681	Compressor 1 envelope alarm	*Indicates that compressor 1 is above the permitted limit*	A/M	CO
682	Compressor 2 envelope alarm	*"as above, for compressor 2"*	A/M	CO
683	Compressor 3 envelope alarm	*"as above, for compressor 3"*	A/M	CO
684	Compressor 4 envelope alarm	*"as above, for compressor 4"*	A/M	CO
701	Inverter 1 offline	*No communication with the inverter of compressor 1 (only for units with inverter compressors)*	A	CO
702	Inverter 2 offline	*"as above, for compressor 2"*	A	CO
703	Inverter 3 offline	*"as above, for compressor 3"*	A	CO
704	Inverter 4 offline	*"as above, for compressor 4"*	A	CO
711	Inverter 1 power supply input alarm	*Fault with the power supply of the inverter of compressor 1 (only for units with inverter compressors)*	M	CO
712	Inverter 2 power supply input alarm	*"as above, for compressor 2"*	M	CO
713	Inverter 3 power supply input alarm	*"as above, for compressor 3"*	M	CO
714	Inverter 4 power supply input alarm	*"as above, for compressor 4"*	M	CO
721	Inverter 1 motor power input alarm	*Fault with the power supply of the motor of compressor 1 (only for units with inverter compressors)*	M	CO
722	Inverter 2 motor power input alarm	*"as above, for compressor 2"*	M	CO
723	Inverter 3 motor power input alarm	*"as above, for compressor 3"*	M	CO
724	Inverter 4 motor power input alarm	*"as above, for compressor 4"*	M	CO
731	Inverter 1 voltage supply alarm	*Overload in inverter variator on compressor 1 (only for units with inverter compressors)*	M	CO
732	Inverter 2 voltage supply alarm	*"as above, for compressor 2"*	M	CO
733	Inverter 3 voltage supply alarm	*"as above, for compressor 3"*	M	CO
734	Inverter 4 voltage supply alarm	*"as above, for compressor 4"*	M	CO
741	Inverter 1 rectifier thermal alarm	*Overload in inverter rectifier on compressor 1 (only for units with inverter compressors)*	M	CO
742	Inverter 2 rectifier thermal alarm	*"as above, for compressor 2"*	M	CO
743	Inverter 3 rectifier thermal alarm	*"as above, for compressor 3"*	M	CO
744	Inverter 4 rectifier thermal alarm	*"as above, for compressor 4"*	M	CO
751	Inverter 1 motor thermal alarm	*Heat protection of compressor 1 motor (only for units with inverter compressors)*	M	CO
752	Inverter 2 motor thermal alarm	*"as above, for compressor 2"*	M	CO
753	Inverter 3 motor thermal alarm	*"as above, for compressor 3"*	M	CO
754	Inverter 4 motor thermal alarm	*"as above, for compressor 4"*	M	CO
761	Inverter 1 thermal alarm	*Heat protection of inverter variator on compressor 1 (only for units with inverter compressors)*	M	CO
762	Inverter 2 thermal alarm	*"as above, for compressor 2"*	M	CO
763	Inverter 3 thermal alarm	*"as above, for compressor 3"*	M	CO
764	Inverter 4 thermal alarm	*"as above, for compressor 4"*	M	CO
771	Inverter 1 IGBT alarm	*Fault in inverter IGBT on compressor 1 (only for units with inverter compressors)*	M	CO
772	Inverter 2 IGBT alarm	*"as above, for compressor 2"*	M	CO
773	Inverter 3 IGBT alarm	*"as above, for compressor 3"*	M	CO
774	Inverter 4 IGBT alarm	*"as above, for compressor 4"*	M	CO
781	Inverter 1 stator resistance alarm	*Fault with stator resistance in inverter on compressor 1 (only for units with inverter compressors)*	M	CO
782	Inverter 2 stator resistance alarm	*"as above, for compressor 2"*	M	CO
783	Inverter 3 stator resistance alarm	*"as above, for compressor 3"*	M	CO
784	Inverter 4 stator resistance alarm	*"as above, for compressor 4"*	M	CO
791	Inverter 1 overspeed alarm	*Overspeed fault in inverter on compressor 1 (only for units with inverter compressors)*	M	CO
792	Inverter 2 overspeed alarm	*"as above, for compressor 2"*	M	CO
793	Inverter 3 overspeed alarm	*"as above, for compressor 3"*	M	CO
794	Inverter 4 overspeed alarm	*"as above, for compressor 4"*	M	CO
801	Inverter 1 field bus alarm	*Fault in inverter field bus on compressor 1 (only for units with inverter compressors)*	M	CO

Code	Description	Details	Reset	Action
802	Inverter 2 field bus alarm	*"as above, for compressor 2"*	M	CO
803	Inverter 3 field bus alarm	*"as above, for compressor 3"*	M	CO
804	Inverter 4 field bus alarm	*"as above, for compressor 4"*	M	CO
811	Inverter 1 communication alarm	*Internal communication fault in inverter on compressor 1 (only for units with inverter compressors)*	M	CO
812	Inverter 2 communication alarm	*"as above, for compressor 2"*	M	CO
813	Inverter 3 communication alarm	*"as above, for compressor 3"*	M	CO
814	Inverter 4 communication alarm	*"as above, for compressor 4"*	M	CO
821	Inverter 1 safety input alarm	*Safety input fault in inverter on compressor 1 (only for units with inverter compressors)*	M	CO
822	Inverter 2 safety input alarm	*"as above, for compressor 2"*	M	CO
823	Inverter 3 safety input alarm	*"as above, for compressor 3"*	M	CO
824	Inverter 4 safety input alarm	*"as above, for compressor 4"*	M	CO
831	Inverter 1 self-calibration alarm	*Self-calibration fault in inverter on compressor 1 (only for units with inverter compressors)*	M	CO
832	Inverter 2 self-calibration alarm	*"as above, for compressor 2"*	M	CO
833	Inverter 3 self-calibration alarm	*"as above, for compressor 3"*	M	CO
834	Inverter 4 self-calibration alarm	*"as above, for compressor 4"*	M	CO
841	Inverter 1 counter rotation alarm	*Counter rotation fault in inverter on compressor 1 (only for units with inverter compressors)*	M	CO
842	Inverter 2 counter rotation alarm	*"as above, for compressor 2"*	M	CO
843	Inverter 3 counter rotation alarm	*"as above, for compressor 3"*	M	CO
844	Inverter 4 counter rotation alarm	*"as above, for compressor 4"*	M	CO
851	Inverter 1 generic alarm	*Generic alarm on inverter of compressor 1 (only for units with inverter compressors)*	M	CO
852	Inverter 2 generic alarm	*"as above, for compressor 2"*	M	CO
853	Inverter 3 generic alarm	*"as above, for compressor 3"*	M	CO
854	Inverter 4 generic alarm	*"as above, for compressor 4"*	M	CO
871	Compressor 1 transducer high pressure	*High pressure on compressor 1*	A/M	CO
872	Compressor 2 transducer high pressure	*"as above, for compressor 2"*	A/M	CO
873	Compressor 3 transducer high pressure	*"as above, for compressor 3"*	A/M	CO
874	Compressor 4 transducer high pressure	*"as above, for compressor 4"*	A/M	CO
875	Compressor 5 transducer high pressure	*"as above, for compressor 5"*	A/M	CO
876	Compressor 6 transducer high pressure	*"as above, for compressor 6"*	A/M	CO
877	Compressor 7 transducer high pressure	*"as above, for compressor 7"*	A/M	CO
878	Compressor 8 transducer high pressure	*"as above, for compressor 8"*	A/M	CO
881	No freon in compressor 1	*Possible Freon leakage in compressor 1 as the "Start-up timeout" alarm has continued for at least 8 hours.*	A	CO
882	No freon in compressor 2	*"as above, for compressor 2"*	A	CO
883	No freon in compressor 3	*"as above, for compressor 3"*	A	CO
884	No freon in compressor 4	*"as above, for compressor 4"*	A	CO
885	No freon in compressor 5	*"as above, for compressor 5"*	A	CO
886	No freon in compressor 6	*"as above, for compressor 6"*	A	CO
887	No freon in compressor 7	*"as above, for compressor 7"*	A	CO
888	No freon in compressor 8	*"as above, for compressor 8"*	A	CO
891	Low pressure pre-alarm compressor 1	*Low pressure acquired from compressor 1 transducer pre-alarm*	S	PR
892	Low pressure pre-alarm compressor 2	*"as above, for compressor 2"*	S	PR
893	Low pressure pre-alarm compressor 3	*"as above, for compressor 3"*	S	PR
894	Low pressure pre-alarm compressor 4	*"as above, for compressor 4"*	S	PR
895	Low pressure pre-alarm compressor 5	*"as above, for compressor 5"*	S	PR
896	Low pressure pre-alarm compressor 6	*"as above, for compressor 6"*	S	PR
897	Low pressure pre-alarm compressor 7	*"as above, for compressor 7"*	S	PR
898	Low pressure pre-alarm compressor 8	*"as above, for compressor 8"*	S	PR
901	High pressure pre-alarm compressor 1	*High pressure acquired from compressor 1 transducer pre-alarm*	S	PR
902	High pressure pre-alarm compressor 2	*"as above, for compressor 2"*	S	PR
903	High pressure pre-alarm compressor 3	*"as above, for compressor 3"*	S	PR
904	High pressure pre-alarm compressor 4	*"as above, for compressor 4"*	S	PR
905	High pressure pre-alarm compressor 5	*"as above, for compressor 5"*	S	PR
906	High pressure pre-alarm compressor 6	*"as above, for compressor 6"*	S	PR
907	High pressure pre-alarm compressor 7	*"as above, for compressor 7"*	S	PR
908	High pressure pre-alarm compressor 8	*"as above, for compressor 8"*	S	PR

Code	Description	Details	Reset	Action
911	Envelope control: low overheating in delivery to compressor 1	*It indicates that the overheating value for compressor 1 is too low (depending on the active compression ratio)*	M	CO
912	Envelope control: low overheating in delivery to compressor 2	*"as above, for compressor 2"*	M	CO
913	Envelope control: low overheating in delivery to compressor 3	*"as above, for compressor 3"*	M	CO
914	Envelope control: low overheating in delivery to compressor 4	*"as above, for compressor 4"*	M	CO
915	Envelope control: low overheating in delivery to compressor 5	*"as above, for compressor 5"*	M	CO
916	Envelope control: low overheating in delivery to compressor 6	*"as above, for compressor 6"*	M	CO
917	Envelope control: low overheating in delivery to compressor 7	*"as above, for compressor 7"*	M	CO
918	Envelope control: low overheating in delivery to compressor 8	*"as above, for compressor 8"*	M	CO
921	Envelope control: high overheating in delivery to compressor 1	*Indicates that the overheating value for compressor 1 is too high (depending on the active compression ratio).*	M	CO
922	Envelope control: high overheating in delivery to compressor 2	*"as above, for compressor 2"*	M	CO
923	Envelope control: high overheating in delivery to compressor 3	*"as above, for compressor 3"*	M	CO
924	Envelope control: high overheating in delivery to compressor 4	*"as above, for compressor 4"*	M	CO
925	Envelope control: high overheating in delivery to compressor 5	*"as above, for compressor 5"*	M	CO
926	Envelope control: high overheating in delivery to compressor 6	*"as above, for compressor 6"*	M	CO
927	Envelope control: high overheating in delivery to compressor 7	*"as above, for compressor 7"*	M	CO
928	Envelope control: high overheating in delivery to compressor 8	*"as above, for compressor 8"*	M	CO
931	Envelope control: minimum high pressure limit of compressor 1	*Indicates that compressor 1 is above the permitted limit*	M	CO
932	Envelope control: minimum high pressure limit of compressor 2	*"as above, for compressor 2"*	M	CO
933	Envelope control: minimum high pressure limit of compressor 3	*"as above, for compressor 3"*	M	CO
934	Envelope control: minimum high pressure limit of compressor 4	*"as above, for compressor 4"*	M	CO
935	Envelope control: minimum high pressure limit of compressor 5	*"as above, for compressor 5"*	M	CO
936	Envelope control: minimum high pressure limit of compressor 6	*"as above, for compressor 6"*	M	CO
937	Envelope control: minimum high pressure limit of compressor 7	*"as above, for compressor 7"*	M	CO
938	Envelope control: minimum high pressure limit of compressor 8	*"as above, for compressor 8"*	M	CO
941	Minimum compressor ratio at the start of compressor 1	*Compressor 1 is working at a low compressor ratio*	M	CO
942	Minimum compressor ratio at the start of compressor 2	*"as above, for compressor 2"*	M	CO
943	Minimum compressor ratio at the start of compressor 3	*"as above, for compressor 3"*	M	CO
944	Minimum compressor ratio at the start of compressor 4	*"as above, for compressor 4"*	M	CO
945	Minimum compressor ratio at the start of compressor 5	*"as above, for compressor 5"*	M	CO
946	Minimum compressor ratio at the start of compressor 6	*"as above, for compressor 6"*	M	CO
947	Minimum compressor ratio at the start of compressor 7	*"as above, for compressor 7"*	M	CO
948	Minimum compressor ratio at the start of compressor 8	*"as above, for compressor 8"*	M	CO

Code	Description	Details	Reset	Action
951	Compressor 1 HGBP valve disconnection	*The driver of the bypass valve of compressor 1 is disconnected*	S	CO
952	Compressor 2 HGBP valve disconnection	*"as above, for compressor 2"*	S	CO
953	Compressor 3 HGBP valve disconnection	*"as above, for compressor 3"*	S	CO
954	Compressor 4 HGBP valve disconnection	*"as above, for compressor 4"*	S	CO
960	Thermal meter disconnection	*The thermal meter is disconnected*	S	-
961	Driver offline / first stage no. 5	*It indicates the disconnection of the driver for the management of the first stage valve of compressor 5 (only for units with Turbocor compressors)*	A	CI
962	Driver offline / first stage no. 6	*"as above, for compressor 6"*	A	CI
963	Driver offline / first stage no. 7	*"as above, for compressor 7"*	A	CI
964	Driver offline / first stage no. 8	*"as above, for compressor 8"*	A	CI
5001	Operating mode change fault	*Signals a fault when overriding the unit operating mode after the system operating mode is changed. The alarm trips if the override does not take place within the timeout set on the parameter*	M	GR
5005	Input water temp. probes aver. error	*Error with the average of the input water temperature readings of the probes of all the units in the group.*	A	GR
5006	Output water temp. probes aver. error	*Error with the average of the output water temperature readings of the probes of all the units in the group.*	A	GR
5050	External temp. probes aver. error	*Error with the average of the external air temperature readings of the probes of all the units in the group.*	A	GR
5080	System pump thermal switch	*System pump overheated*	M	GR
5100	Group VPF management module disconnection	*Disconnection of the module that adjusts the water flow rate on the system. Check the fault on the user interface of the module*	A	GR
5101	Group VPF management module fault	*Fault of the module that adjusts the water flow rate on the system. Check the fault on the user interface of the module.*	A	GR
5120	Dynamic setpoint interruption	*Dynamic management of the unit's setpoint interrupted. Check that there is no disconnection of the KIPLan network*	A	GR
5201	Group probe 1 error	*Error with probe 1 of the group controller. The values read by probe 1 out of range.*	A	GR
5202	Group probe 2 error	*"analogue, as above"*	A	GR
5203	Group probe 3 error	*"analogue, as above"*	A	GR
5204	Group probe 4 error	*"analogue, as above"*	A	GR
5205	Group probe 5 error	*"analogue, as above"*	A	GR
5206	Group probe 6 error	*"analogue, as above"*	A	GR
5207	Group probe 7 error	*"analogue, as above"*	A	GR
5208	Group probe 8 error	*"analogue, as above"*	A	GR
5209	Group probe 9 error	*"analogue, as above"*	A	GR
5210	Group probe 10 error	*"analogue, as above"*	A	GR
5301	Unit 1 offline	*Disconnection from the Multi Manager LAN network of unit 1. Check the serial connection of the unit.*	A	GR
5302	Unit 2 offline	*"analogue, as above for unit 2"*	A	GR
5303	Unit 3 offline	*"analogue, as above for unit 3"*	A	GR
5304	Unit 4 offline	*"analogue, as above for unit 4"*	A	GR
5305	Unit 5 offline	*"analogue, as above for unit 5"*	A	GR
5306	Unit 6 offline	*"analogue, as above for unit 6"*	A	GR
5307	Unit 7 offline	*"analogue, as above for unit 7"*	A	GR
5308	Unit 8 offline	*"analogue, as above for unit 8"*	A	GR
5350	Master KIPlink offline	*Disconnection of KIPlink for the exchange of data between the external and internal units. Check the serial connections.*	A	GR
5401	Unit 1 fault	*Group probe alarms attributable to unit 1*	A	GR
5402	Unit 2 fault	*"analogue, as above for unit 2"*	A	GR

Code	Description	Details	Reset	Action
5403	Unit 3 fault	*"analogue, as above for unit 3"*	A	GR
5404	Unit 4 fault	*"analogue, as above for unit 4"*	A	GR
5405	Unit 5 fault	*"analogue, as above for unit 5"*	A	GR
5406	Unit 6 fault	*"analogue, as above for unit 6"*	A	GR
5407	Unit 7 fault	*"analogue, as above for unit 7"*	A	GR
5408	Unit 8 fault	*"analogue, as above for unit 8"*	A	GR

Key to "Reset" column:

M	= Manual reset alarm (if the condition that generated the alarm is eliminated, the alarm must be reset from the keypad); sets "cumulative alarms"
A	= Automatic reset alarm (if the condition that generated the alarm is eliminated, the alarm is reset automatically); sets "cumulative alarms"
A/M	= Automatic reset alarm for the first "n" interventions, after that manual; sets "cumulative alarms"
S	= Signal on display (does not set "cumulative alarms")
S-A	= Automatic reset signal (that does not stop the machine) or alarm. One mode or the other may be selected from the parameter.
S-M	= Manual reset signal (that does not stop the machine) or alarm. One mode or the other may be selected from the parameter.
M - A/M	= Manual reset alarm (in hermetic, alternative and screw compressors), automatic for the first "n" interventions, after that manual (in Turbocor compressors)
B	= Block that cannot be reset from the display; sets "cumulative alarms". To eliminate the alarm, switch the relative compressor off and then back on again.

Key to "Action" column:

-	=no block
U	=Unit block
-/U	= No shut-down or Unit shut-down. The type of action depends on the parameter set for the rearm
U*	= Unit shut-down in override operating modes. In the automatic mode the unit does not shut down but switches to the available operating modes
CI	= Shut-down of the circuit involved in the event
CO	= Shut-down of the compressor affected by the event
FC*	= Shut-down of the freecooling function, the unit switches to the available operating modes
*	= Depending on the sensor in alarm, there may not be any blocks, or the compressors, the circuits or the whole unit may be blocked.
PR	= Pre-alarm: the unit is not blocked in any way; it is an indication (enabled in the settings) that the monitored size has exceeded a limit (set in the settings) close to the actual alarm threshold.
GR	= Alarms that limit the functions of the system

2.3 Table of Turbocor compressor alarms

Details of the Turbocor compressor alarms transmitted by the compressor to the W3000+ via the serial line are shown below.
Any groupings of several compressor alarm codes under the same W3000+ controller alarm code are also indicated.

	W3000+ alarm			TURBOCOR alarm
AL	**Description**	**Modbus address**	**Alarm bit**	**Reason for fault**
141	Compressor offline			Turbocor disconnected
161	Compressor motor power	40106	0x0002	DC bus high voltage detect
			0x0010	IGBT inverter error signal active
			0x0100	Output voltage on the motor generate no current. IGBT inverter command signals disconnected or drive coil error
			0x0800	Motor back EMF is low. Shaft might be demagnetized.
			0x2000	Compressor is running in generator mode.
			0x4000	SCR phase loss.
		40026	0x1000	Winding Temperature
			0x2000	Super Heat
			0x4000	Earth Leakage
			0x8000	Soft Start Temperature
301	Compressor inverter temperature	40026	0x0001	Inverter temperature
311	Compressor discharge temperature		0x0002	Discharge temperature
321	Compressor low pressure		0x0004	Suction pressure
331	Compressor high pressure		0x0008	Discharge pressure
341	Compressor input current		0x0010	3 phase current trip
351	Compressor rotor temperature		0x0020	Shaft cavity temperature
361	Compressor compression ratio		0x0080	Total compression ratio fault
371	Compressor bearings		0x0100	Bearing motor fault
381	Compressor SCR temperature		0x0200	SCR temp fault
391	Compressor rotor shut-down		0x0400	System lock out state

2.4 Table of CSCV compressor alarms

Details of the CSCV compressor alarms transmitted by the compressor to the W3000+ via the serial line are shown below.
Any groupings of several compressor alarm codes under the same W3000+ controller alarm code are also indicated.

W3000+ alarm		CSCV compressor alarms		
AL	**Description**	**N°**	**Console**	**Reason for fault**
701	Inverter offline			Disconnected inverter
711	Power alarm	1200	Mains failure	Loss of alternating current mains
		5002	Over Voltage	Overvoltage
		5003	Under Voltage	Undervoltage
721	Motor power input alarm	4000	Motor Overload	Motor overloaded
731	Inverter voltage supply alarm	5001	Over Current	Output over-current
751	Motor thermal alarm	4301	Motor Thermal Overload	Motor thermal probe tripped
761	Phase converter thermal alarm	5300	Over Temperature: Power Module	Overheating: Power Module
		5301	Over Temperature: Cold Plate	Overheating: Cold Plate
		5302	Over Temperature: Power I. Board	Overheating: Power I. Board
		6303	Over Temperature: Control Board	Overheating: Control Board
771	IGBT alarm	5000	Inverter Output	Inverter fault
		5004	FC Overload	Inverter overload
		5801	HW Fault: Power MCU	HW fault: Power MCU
		5802	HW Fault: Inrush Fault	HW fault: Inrush Fault
		5803	HW Fault: Inrush Supply Fault	HW fault: Inrush Supply Fault
		5810	HW Fault: Gate Drive U	HW fault: Gate Drive U
		5811	HW Fault: Gate Drive V	HW fault: Gate Drive V
		5812	HW Fault: Gate Drive W	HW fault: Gate Drive W
		5820	HW Fault: Fan1 Speed Low	HW fault: Fan1 Speed Low
		5821	HW Fault: Fan2 Speed Low	HW fault: Fan2 Speed Low
		5851	HW Fault: 24V	HW fault: 24V
		5852	HW Fault: 15V	HW fault: 15V
		5853	HW Fault: N15V	HW fault: N15V
		5854	HW Fault: PIB 3.3V	HW fault: PIB 3.3V
		6801	HW Fault: Control MCU	HW fault: Control MCU
		6810	HW Fault: CB 3.3V	HW fault: CB 3.3V
		6811	HW Fault: User 5V	HW fault: User 5V
		6812	HW Fault: User/Pres 5V	HW fault: User/Pres 5V
		6850	HW Fault: Power MCU Comm	HW fault: Power MCU Comm
811	Communication alarm	1100	Serial Control Timeout	Loss of communication via serial connection
821	Inverter safety input alarm	2500	Safe Torque Off	Safe torque disabled
		6814	HW: STO Diagnostics	HW: STO diagnostics
		6901	SW: STO Diagnostics	SW: STO diagnostics
851	Generic alarm	3001	Envelope Fault: SST Low, SDT Low	Envelope fault: SST Low, SDT Low
		3002	Envelope Fault: SST Low, SDT OK	Envelope fault: SST Low, SDT OK
		3003	Envelope Fault: SST Low, SDT High	Envelope fault: SST Low, SDT High
		3004	Envelope Fault: SST OK, SDT High	Envelope fault: SST OK, SDT High
		3005	Envelope Fault: SST High, SDT High	Envelope fault: SST High, SDT High
		3006	Envelope Fault: SST High, SDT OK	Envelope fault: SST High, SDT OK
		3007	Envelope Fault: SST High, SDT Low	Envelope fault: SST High, SDT Low
851	Generic alarm	3008	Envelope Fault: SST OK, SDT Low	Envelope fault: SST OK, SDT Low

W3000+ alarm		CSCV compressor alarms		
		3010	Envelope Fault: Startup Timeout	Envelope fault: Startup Timeout
		3011	Envelope Fault: Configuration Failure	Envelope fault: Configuration Failure
		3300	High Oil Temperature	High oil temperature
		3400	Suction pressure low	Compressor low inlet pressure
		3411	Discharge Pressure High	Compressor high pressure
		5600	HW Configuration Fault: Power Not Supported	HW configuration fault: Power Not Supported
		5601	HW config: Gate Drive Missing	HW fault: Gate Drive mancante
		6601	HW Configuration Fault: Control Not Supported	HW configuration fault: Control Not Supported
		6602	HW Configuration Fault: No XB	HW configuration fault: No XB
		5700	Configuration Data Fault: Power Data	Configuration data fault: Power Data
		5701	Configuration Data Fault: Prod Data	Configuration data fault: Prod Data
		6700	Configuration Data Fault: No File	Configuration data fault: No File
		6701	Configuration Data Fault: CRC error	Configuration data fault: CRC error
		6702	Configuration Data Fault: Wrong version	Configuration data fault: Wrong version
		6703	Configuration Data Fault: Read Only	Configuration data fault: Read Only
		6900	Datalog error	Datalogger Error
		5710	Parameter Configuration Fault: Motor Data	Parameter configuration fault: Motor Data
		7300	Temperature Sensor Fault: Power Module	Temperature sensor fault: Power Module
		7301	Temperature Sensor Fault: Cold Plate	Temperature sensor fault: Cold Plate
		7302	Temperature Sensor Fault: Power I. Board	Temperature sensor fault: Power I. Board
		7303	Temperature Sensor Fault: Control Board	Temperature sensor fault: Control Board
		7304	Temperature Sensor Fault: Motor Thermistor	Temperature sensor fault: Motor Thermistor
		7305	Temperature Sensor Fault: Oil Temperature	Temperature sensor fault: Oil Temperature
		7403	Pressure Sensor Fault: Suction Pressure Signal Low	Pressure sensor fault: signal of low suction pressure
		7404	Pressure Sensor Fault: Suction Pressure Signal High	Pressure sensor fault: signal of high suction pressure
		7405	Pressure Sensor Fault: Discharge Pressure Signal Low	Pressure sensor fault: signal of low discharge pressure
		7406	Pressure Sensor Fault: Discharge Pressure Signal High	Pressure sensor fault: signal of high discharge pressure

2.5 Table of compressor alarms with M35A inverter

Details of the compressor with M35A inverter alarms transmitted by the inverter to the W3000+ via the serial line are shown below.
When applicable, the set of inverter alarm codes for the same alarm code of the W3000 + controller is also given.

W3000+ alarm		Compressor alarms with M35A inverter		
AL	**Description**	**N°**	**Description**	**Reason for fault**
701	Inverter offline			Disconnected inverter
711	Power alarm	5	DC Bus under voltage (LU)	Over-voltage of the DC link intermediate circuit
		6	DC Bus over voltage (OU)	Under-voltage of the DC link intermediate circuit
		10	Over current at acceleration state (Software trip)	Over current of inverter during acceleration
		12	Over current at steady state (Software trip)	Over current of inverter in steady state
		13	Over current at deceleration state (Software trip)	Over current of inverter during deceleration
721	Motor power input alarm	2	Over current at acceleration state (Hardware trip)	Over current of motor during acceleration
		3	Over current at steady state (Hardware trip)	Over current of motor in steady state
		4	Over current at deceleration state (Hardware trip)	Over current of motor during deceleration
731	Inverter voltage supply alarm	11	Overload trip (OL)	Exceeding of the rated current of the inverter
751	Motor thermal alarm	7	Compressor Overheat (Software trip)	Engine overheat
811	Communication alarm	14	Compressor connected loss	Loss of communication via serial connection
		15	Communication time out error	The time for communication has elapsed
851	Generic alarm	1	Fin Overheat	Overheating of the inverter dissipator
		16	Power module over temperature	Overheating of the inverter control board
		17	Cooling fan error	Inverter fans faulty or not installed
		30	Emergency switch active	Activation of the emergency switch
		40	Abnormal condition	Sub-optimal operating conditions
		128	Internal memory error	Fault in internal memory of inverter
		129	Internal memory error	Fault in internal memory of inverter
		130	Internal memory error	Fault in internal memory of inverter

2.6 Table of compressor alarms with Danfoss inverter

Details of the compressor with Danfoss inverter alarms transmitted by the inverter to the W3000+ via the serial line are shown below.
When applicable, the set of inverter alarm codes for the same alarm code of the W3000 + controller is also given.

W3000+ alarm		Compressor alarms with Danfoss inverter		
AL	**Description**	**N°**	**Description**	**Reason for fault**
701	Inverter offline			Disconnected inverter
711	Power alarm	4	Mains phase loss	Missing mains power phase or excessively unbalanced voltage between the phases
		7	DC over voltage	Over-voltage of the DC link intermediate circuit
		8	DC under voltage	Under-voltage of the DC link intermediate circuit
		36	Mains failure	No input voltage
721	Motor power input alarm	13	Over Current	Output over-current
		14	Earth Fault	Dispersion from the output phases of the inverter towards the earth (in the cable between the inverter and motor or in the motor itself)
		16	Short Circuit	The motor or the connecting terminals of the motor have short-circuited
		30	Motor phase U is missing	No U phase between the inverter and the motor
		31	Motor phase V is missing	No V phase between the inverter and the motor
		32	Motor phase W is missing	No W phase between the inverter and the motor
		33	Inrush fault	Excessive number of power-ups in a short period of time
731	Inverter voltage supply alarm	9	Inverter overloaded	Exceeding of the rated current of the inverter
751	Motor thermal alarm	10	Motor ETR over temperature	Motor overheating (Electronic Thermal Protection)
		11	Motor thermistor over temperature	Motor (thermistor) overheating or disconnection of the thermistor
811	Communication alarm	17	Control Word Timeout	Loss of communication via serial connection
		34	Fieldbus communication fault	Fieldbus communication card not working
851	Generic alarm	2	Live zero error	The signal at terminal 53 or 54 is less than 50% of the minimum set for these terminals
		12	Torque limit	The torque supplied is above the maximum set limit
		23	Internal fans fault	Inverter fans faulty or not installed
		24	External fan fault	Inverter fans faulty or not installed
		25	Brake resistor short-circuited	Braking resistor short-circuited
		26	Brake resistor power limit	The power dissipated from the braking resistor is above the maximum set limit
		27	Brake chopper fault	Faulty transistor of the braking resistor
		28	Brake check failed	Faulty braking resistor
		29	Drive over temperature	Overheating of inverter (95 °C ± 5°C)
		38	Internal fault	Fault in inverter
		47	24 V supply low	Faulty inverter control board
		48	1.8 V supply low	Faulty inverter control board
		50÷58	AMA not ok	AMA (Automatic Motor Adaptation) error
		65	Control Card Over Temperature	Overheating of the inverter control board
		67	Option Configuration has Changed	Addition/removal of optional modules
		68	Safe Stop	The Safe Stop function is enabled
		80	Drive Initialised to Default Value	The factory settings of the inverter have been restored
		95	Broken Belt	Torque below the minimum set limit
		250	New Spare Part	A component in the inverter has been replaced
		251	New Type Code	The inverter has a new Type Code

2.7 Table of compressor alarms with Mitsubishi FR-F800 inverter

Details of the compressor with Mitsubishi inverter alarms transmitted by the inverter to the W3000 + via the serial line are shown below.
When applicable, the set of inverter alarm codes for the same alarm code of the W3000 + controller is also given.

W3000 TE alarm		Compressor alarms with Mitsubishi FR-F800 inverter		
AL	**Description**	**N°**	**Description**	**Reason for fault**
701	Inverter offline			Disconnected inverter
711	Power alarm	32	Regenerative overvoltage trip during acceleration	Over-voltage of the DC intermediate circuit in acceleration
		33	Regenerative overvoltage trip during constant speed	Over-voltage of the DC intermediate circuit at constant speed
		34	Regenerative overvoltage trip during deceleration or stop	Over-voltage of the DC intermediate circuit in deceleration
		80	Instantaneous power failure	No input voltage
		81	Undervoltage	Inverter power supply under-voltage
		82	Input phase loss	Missing mains power phase
		197	Inrush current limit circuit fault	Overheating of the switch-on circuit resistance
0721	Motor power input alarm	16	Overcurrent trip during acceleration	Output over-current in acceleration
		17	Overcurrent trip during constant speed	Output over-current at constant speed
		18	Overcurrent trip during deceleration or stop	Output over-current in deceleration
		49	Motor overload trip (electronic thermal relay function)	Motor overheating (Electronic Thermal Protection)
		128	Output side earth (ground) fault overcurrent	Dispersion to earth over-current
		129	Output phase loss	Missing phase between inverter and motor
		196	Abnormal output current detection	Output over-current
731	Inverter voltage supply alarm	48	Inverter overload trip (electronic thermal relay function)	Exceeding of the rated current of the inverter
751	Motor thermal alarm	144	External thermal relay operation	Motor overheating detected by thermistor outside or inside the motor
791	Overspeed alarm	98	Upper limit fault detection	Motor overloaded
811	Communication alarm	160	Option fault	Alarm definable by parameters
		161	Communication option fault	Loss of communication via serial connection
		177	PU disconnection	Loss of communication between inverter and power unit
		198	Communication fault (inverter)	Loss of communication via serial connection
		231	Ethernet communication fault	Loss of communication via ethernet connection
851	Generic alarm	64	Heatsink overheat	Overheating of the inverter dissipator
		96	Stall prevention stop	Stop due to stalling prevention function
		97	Loss of synchronism detection	Loss of synchronism between inverter and motor
		99	Lower limit fault detection	Motor underload
		112	Internal circuit fault	Fault in inverter
		145	PTC thermistor operation	Stop due to PTC thermistor overtemperature
		164	User definition error by the PLC function	Alarms defined by PLC functions
		165		
		166		
		167		
		168		
		176	Parameter storage device fault	Parameter saving fault (control board)
		178	Retry count excess	Exceeding maximum number of automatic alarm resets
		179	Parameter storage device fault	Parameter saving fault (main board)
		192	CPU fault	Inverter CPU fault
		193	Operation panel power supply short circuit/RS-485 terminal power supply short circuit	Control panel short circuit / RS-485 communication terminals short circuit
		194	24 V DC power fault	24 V AC/DC power supply short circuit

W3000 TE alarm		Compressor alarms with Mitsubishi FR-F800 inverter		
		199	Analog input fault	Abnormal input current or voltage at terminal 2
		200	USB communication fault	Loss of communication via USB connection
		201	Safety circuit fault	The Safe Stop function is enabled
		202	Internal circuit fault	Fault in inverter
		208	Overspeed occurrence	Motor overspeed
		228	4 mA input fault	Analogue input current level below 2 mA
		229	Pre-charge fault	Pre-charge operation fault
		230	PID signal fault	PID control fault
		241	Option fault	Option cards connection fault
		242		
		243		
		245	CPU fault	Inverter CPU fault
		246		
		247		
		253	Internal circuit fault	Fault in inverter

2.8 Table of compressor alarms with STEP inverter

Details of the compressor with STEP inverter alarms transmitted by the inverter to the W3000 + via the serial line are shown below.
When applicable, the set of inverter alarm codes for the same alarm code of the W3000 + controller is also given.

W3000 TE alarm		Compressor alarms with STEP inverter		
AL	**Description**	**N°**	**Description**	**Reason for fault**
701	Inverter offline			Disconnected inverter
711	Power alarm	8	Bus over voltage protection	Abnormal input voltage
				Re-rapid starting during motor in high speed rotating
				Too high load rotational inertia
				Too short deceleration time
				Too high braking resistance or no resistor
				Abnormal input power
				Too large load rotational inertia
				Too high braking resistance or no resistor
		9	Bus undervoltage	Power voltage lower than minimum equipment working voltage
				Instantaneous power off
				Too high fluctuation of input power voltage
				Loose power connection block
				Internal switch power abnormal
				A large starting current load existing in the same power supply system
		23	Input over-voltage	Too high input voltage
				Problem by detection loop of switch voltage
		29	Loss input phase	Abnormal voltage at inputside
				Loss input voltage phase
				Input terminal block loose
		44	The input power supply is abnormal	The input power supply changes a lot
				Input contactor abnormally connected
				Temporary electricity
721	Motor power input alarm	10	Loss of output phase	Abnormal wiring at inverter output, missing or breaking connection
				Loose output terminal block
				Insufficient motor power, less than 1/20 of maximum applicable inverter motor capacity
				Unbalanced three phase output
		11	Motor over current at low speed	Low network voltage
				Improper motor parameter setting
				Rapid start during motor running
				The acceleration time for load inertia (GD2) is too short.
				Low network voltage
				Too large load rotational inertia
				Improper motor parameter setting
				Too short deceleration time
				The deceleration time for load inertia (GD2) is too short
				Abrupt load change in running
				Improper motor parameter setting
		16	Wrong motor phase	Motor reversed connected
		21	abc over current	Motor single phase shorted to earth
				Encoder fault

W3000 TE alarm		Compressor alarms with STEP inverter		
				Test loop of drive board fault
		27	Output over current	Too long time operation under overload status. The larger the load, the shorter the time is.
				Motor blocked
				Motor coil short
				Output short
		31	Over current at motor high speed	Power grid voltage too low
				Abrupt load in operation
				Incorrect motor parameter
				Wrong encoder parameter or interference
		32	Grounding protection	Wrong wiring
				Abnormal motor
				Large drain current to earth at inverter output side
		35	Unbalance output	Abnormal wiring at inverter output side, missing or broking connection
				Motor three phase unbalance
		39	Too high instantaneous current	Three phase instantaneous current over and alarm while Ia, Ib and Ic not in operation
		42	IGBT short circuit protection	The cause is the same as Fualt 1.
		45	I2t instantaneous over current protection	Same as fault 21,27
		46	I2t valid over current protection	
		51	Abnormal running output current	Improper parameter setting Disconnection between the inverter and the motor Inverter hardware fault
731	Inverter voltage supply alarm	1	Module over-current protection	Too high voltage at DC terminal
				Possible short connection to peripheral circuit
				Losing output phase
				Encoder fault
				Hardware poor contact or damage
				Internal component loose
				The power circuit components overheat due to the cooling fan or cooling system problem.
811	Communication alarm	43	Communication fault	Communication disconnected No communication data received within the fixed time
851	Generic alarm	2	2 ADC fault	Current sensor damaged
				Problem of current sampling loop
		3	Heatsink overheat	Ambient temperature too high
				The cooling fan damaged or foreign object entered into the cooling system.
				Cooling fan is abnormal
				Temperature detect circuit fault
		4	Braking unit failure	Braking unit damaged
				External braking resistor circuit short
		5	Blown fuse failure	Fuse blown by high current
		6	Over torque output	Too low input voltage
				Motor stop rotating or abrupt loading change
				Encoder failure
				Missing output phase
		7	Speed deviation	Too short acceleration time
				Too high load
				Too low current limit
		13	Current detected at stopping	Current keep on flowing while motor stops

W3000 TE alarm		Compressor alarms with STEP inverter		
		22	Brake detection fault	Inactive output relay
				Relay triggered, brake not released
				No signal detected by feedback component
		30	Over speed protection	Wrong encoder parameter set or interference
				Abrupt load change
				Wrong parameter for over speed protection
		33	Capacitor aged	Inverter capacitor aged
		34	External fault	External fault signal input
		36	Wrong parameter setting	Wrong parameter setting
		37	Current sensor fault	Drive board hardware fault
		38	Brake resistor short	Connection of external brake resistor short
		40	KMY detection fault	KMY detect contactor signal and KMY control signal don't match
		41	Brake switch detection fault	Brake switch detect contactor signal and its control signal don't match

3 TABLE OF MASKS

Press [UP] or [DOWN] to move from one mask to another inside the same menu.
Press [ENTER] to access the parameter, press [UP] or [DOWN] to change the value of the parameter.

Manual mask	Description	Parameter ID
09:26 ON ALXXX Mode : chiller State: ON keypad Term. Req. Act. Cool. 050 050 % Rec. 000 000 % Pump time 000s LIMIT ID:011 U:01	Main display mask. Shows the operating mode and status. The unit can be switched on and off with the On/Off command: press “Enter” to move to “Com. :", select the command using the "Up" or "Down" buttons and press "Enter" again to confirm. **For air evaporation units, the on/off command is given by the air-handling control unit.** Also displays the following messages: “ALxxx” : alarm active, “ Sxxx” : signal active, "U:xx" : unit configuration address, "ID:xxx" : unit supervisor address, Symbols describing unit status also appear. Some fields may not be displayed, depending on the characteristics of the unit. If "Standby" appears in the "status" line, this means some of the mechanical components of the unit can be started even when the unit is OFF.	
GROUP STATUS 15:19 OFF ALXXXX Mode : chiller Status: ON tast. Term. Req. Act. Cool. 100 100 % ID:00	Main mask showing the status of of the Multi Manager LAN unit group. The system can be switched on and off with the On/Off command: press "Enter" and use the “Up” and “Down” keys to select the command, followed by “Enter” again to confirm. Also displays the following messages: "ID:xxx" : this is the address of the unit within the Multi Manager LAN network; depending on the characteristics of the unit, some fields may not be displayed. If "Standby" appears in the "status" line, this means some of the mechanical components of the unit can be started even when the unit is OFF.	
Temp. In. Out. Evap. 12.5 07.0°C Rec. 35.6 40.5°C Cond. 38.0 42.5°C A.DHW 59.8 °C A.PLANT 44.0 °C	Shows the inlet and outlet water temperature. (evaporator, recuperator, condenser and DHW storage tank and Plant storage tank are only displayed if they are fitted). In units with 2 evaporators, if the shared outlet probe is disabled, the average temperature between the two outlet probes of the individual evaporators is displayed.	
Temp. In. Out. Evap. 12.5 07.0°C Evap1 07.2°C Evap2 06.9°C	(if more than 1 evaporator is fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the evaporators.	
Temp. In. Out. Cond. 24.3 22.4°C Cond.1 22.3°C Cond.2 22.4°C	(if 2 condensers are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two condensers.	

Manual mask	Description	Parameter ID
Temp. In. Out. Evap. 45.0 40.0°C Evap.1 38.0°C Evap.2 42.0°C Cond. 70.0 75.0°C +2P MODULE	(if a +2P module is present) Displays the inlet and outlet temperatures of the evaporator and the outlet temperature of the condenser.	
Temp. Freecooling 12.3°C External air 15.4°C Optional 19.6°C Plant storage 12.5°C Rec. storage 40.5°C	(for air-cooled units) Displays freecooling temperature (in chiller+freecooling units), external air temperature and optional temperature (if the probes are enabled). Displays the temperature values of the plant storage tank and recovery (if the probes are enabled).	
User Password: 0000	Access mask to user menu. Enter the user password for access.	
User ← ↓	Access mask to user menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Enable time bands : Disabled	Activates/deactivates time bands. The time bands cannot be activated if the external setpoint is enabled.	USR0001
Serial line configuration: Disabled	Allows the devices connected to the serial interface board to be enabled and selected ("0":Disabled - "1":Supervision - "2":Sequencer - "3":Manager 3000 - "4":ClimaPRO - "5":Supervision with watchdog - "6":LAN Multi Master - "7": Manager 3000+ - "8":W3000-NET). N.B.: the Service software does not need to be enabled.	USR0002
En. from superv.: On/Off: N Operating mode: N	Allows the on/off status of the unit to be selected from a supervision system. Also performs operating mode switching (to modify the latter, the unit must be switched off).	USR0003 USR0004

Manual mask	Description	Parameter ID
Reset of local settings in Stand-Alone: Disabled	In case of watch-dog supervision active, it allows to set if the stand-alone unit must return to the settings entered using the keyboard. This function is only valid for the chiller setpoint set using the BMS and for the power limitation set using the BMS.	USR0010
Serial line setting Protocol Modbus Speed 9600 baud ID 011	Defines the connection parameters with the supervisor: protocol type, communication speed and unit identification number.	USR0005 USR0006 USR0007
Enable from dig. in: On/Off: Y Chiller/H.P.: N	Allows unit control to be enabled from external enables. The on/off command can be enabled to switch the unit on or off from a digital input. The operating mode can be changed (in heat pumps, chillers with heat recovery, chillers with freecooling a digital input is sufficient; in energy raisers or heat pumps with recovery three digital inputs are required).	USR0008 USR0009
Default reset only read password KIPlink Local Monitoring: N Please wait…	When the field is switched to “YES”, the password of the RO (read only) login profile for the KIPlink monitoring function is reset to the default value. After the reset has been completed, which will take a few seconds, the field returns to “NO”: 1234	
Insert other user password 0000	Personalises the password by defining one that will replace the default password.	
W 3000 + Cod. TA 08.00b000 EN Man. C024456280 CE HW pCO5+ L NAND 50MB Flash 2MB +7MB +4MB Ram 2048KB Boot 5.01 Bios 6.51	This mask contains the reference information of the software [Code TA 08.00 EN] and of the reference technical manual [Man. C024456281-EN]. The closed padlock symbol shows that the board is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits. The second part of the mask shows information about the hardware: size (M, L, XL), memories (50MB NAND, 2+7+4MB flash, 2048KB RAM) and the versions of the installed operating system (boot and bios).	
Log ← ↓	Access mask to Events Log menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	

Manual mask	Description	Parameter ID
10:36:04 01/05/08 Event N°001 A002 S Phase sequence Reset : Auto Position: Unit Block : Unit	Access mask to events log (only visible if the clock card is installed). Each event registered contains the following details: date and time, alarm or report code, activation or deactivation event (S = set, R = reset), number and description of event, type of reset (Automatic or Manual), position of the alarm and type of block.	
Clock ← ↓	Access mask to clock menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Clock board not installed	Mask indicating the lack or damage to the clock board.	
Clock configuration: Date Time 01/05/08 10:40	Current date and time setting.	
Time bands disabled. See user menu	Indicates that the time bands have been set correctly, though they are not enabled. To enable them, see user menu.	
Daily time band programming: advanced	Advanced time band programming manages four different daily time bands, type A and type B; each type can be personalised and each is independent from the other. Standard programming only allows for the use of A-type time bands.	BND0001
Weekly timetable Monday type A Tuesday type B Wednesday type B Thursday type B Friday type B Saturday type C Sunday disabled	Weekly timetable setting.	BND0002 BND0003 BND0004 BND0005 BND0006 BND0007 BND0008

Manual mask	Description	Parameter ID
Time band 1A Off Time 00:00 / 06:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 2A Adj. Time 06:00 / 12:00 Sp E 07.0°C I 42.0°C Sp R 42.0°C	Setting band A, first and second daily time band.	BND0009 BND0010 BND0011 BND0012 BND0013 BND0014 BND0015 BND0010 BND0011 BND0016 BND0017 BND0018 BND0019 BND0020
Time band 3A Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 4A Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band A, third and fourth daily time band.	BND0021 BND0022 BND0023 BND0024 BND0025 BND0026 BND0027 BND0022 BND0023 BND0028 BND0029 BND0030 BND0031 BND0032
Time band 5A Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 6A Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band A, fifth and sixth daily time band.	BND0033 BND0034 BND0035 BND0036 BND0037 BND0038 BND0039 BND0034 BND0035 BND0040 BND0041 BND0042 BND0043 BND0044
Time band 7A Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 8A Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band A, seventh and eighth daily time band.	BND0045 BND0046 BND0047 BND0048 BND0049 BND0050 BND0051 BND0046 BND0047 BND0052 BND0053 BND0054 BND0055 BND0056

Manual mask	Description	Parameter ID
Time band 9A Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 10A Off Time 20:00 / 23:59 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band A, ninth and tenth daily time band.	BND0057 BND0058 BND0059 BND0060 BND0061 BND0062 BND0063 BND0058 BND0059 BND0064 BND0065 BND0066
Time band 1B Off Time 00:00 / 07:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 2B Adj. Time 07:00 / 12:00 Sp E 07.0°C I 42.0°C Sp R 42.0°C	Setting band B, first and second daily time band.	BND0067 BND0068 BND0069 BND0070 BND0071 BND0072 BND0073 BND0068 BND0069 BND0074 BND0075 BND0076 BND0077 BND0078
Time band 3B Off Time 12:00 / 14:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 4B Adj. Time 14:00 / 20:00 Sp E 07.0°C I 42.0°C Sp R 42.0°C	Setting band B, third and fourth daily time band.	BND0079 BND0080 BND0081 BND0082 BND0083 BND0084 BND0085 BND0080 BND0081 BND0086 BND0087 BND0088 BND0089 BND0090
Time band 5B Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 6B Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band B, fifth and sixth daily time band.	BND0091 BND0092 BND0093 BND0094 BND0095 BND0096 BND0097 BND0092 BND0093 BND0098 BND0099 BND0100 BND0101 BND0102

Manual mask	Description	Parameter ID
Time band 7B Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 8B Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band B, seventh and eighth daily time band.	BND0103 BND0104 BND0105 BND0106 BND0107 BND0108 BND0109 BND0104 BND0105 BND0110 BND0111 BND0112 BND0113 BND0114
Time band 9B Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 10B Off Time 20:00 / 23:59 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band B, ninth and tenth daily time band.	BND0115 BND0116 BND0117 BND0118 BND0119 BND0120 BND0121 BND0116 BND0117 BND0122 BND0123 BND0124
Time band 1C Off Time 00:00 / 07:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 2C Adj. Time 07:00 / 12:00 Sp E 07.0°C I 42.0°C Sp R 42.0°C	Setting band C, first and second daily time band.	BND0125 BND0126 BND0127 BND0128 BND0129 BND0130 BND0131 BND0126 BND0127 BND0132 BND0133 BND0134 BND0135 BND0136
Time band 3C Off Time 12:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 4C Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band C, third and fourth daily time band.	BND0137 BND0138 BND0139 BND0140 BND0141 BND0142 BND0143 BND0138 BND0139 BND0144 BND0145 BND0146 BND0147 BND0148

Manual mask	Description	Parameter ID
Time band 5C Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 6C Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band C, fifth and sixth daily time band.	BND0149 BND0150 BND0151 BND0152 BND0153 BND0154 BND0155 BND0150 BND0151 BND0156 BND0157 BND0158 BND0159 BND0160
Time band 7C Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 8C Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band C, seventh and eighth daily time band.	BND0161 BND0162 BND0163 BND0164 BND0165 BND0166 BND0167 BND0162 BND0163 BND0168 BND0169 BND0170 BND0171 BND0172
Time band 9C Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 10C Off Time 20:00 / 23:59 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band C, ninth and tenth daily time band.	BND0173 BND0174 BND0175 BND0176 BND0177 BND0178 BND0179 BND0174 BND0175 BND0180 BND0181 BND0182
Time band 1D Off Time 00:00 / 07:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 2D Adj. Time 07:00 / 12:00 Sp E 07.0°C I 42.0°C Sp R 42.0°C	Setting band D, first and second daily time band.	BND0183 BND0184 BND0185 BND0186 BND0187 BND0188 BND0189 BND0184 BND0185 BND0190 BND0191 BND0192 BND0193 BND0194

Manual mask	Description	Parameter ID
Time band 3D Off Time 12:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 4D Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band D, third and fourth daily time band.	BND0195 BND0196 BND0197 BND0198 BND0199 BND0200 BND0201 BND0196 BND0197 BND0202 BND0203 BND0204 BND0205 BND0206
Time band 5D Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 6D Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band D, fifth and sixth daily time band.	BND0207 BND0208 BND0209 BND0210 BND0211 BND0212 BND0213 BND0208 BND0209 BND0214 BND0215 BND0216 BND0217 BND0218
Time band 7D Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 8D Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band D, seventh and eighth daily time band.	BND0219 BND0220 BND0221 BND0222 BND0223 BND0224 BND0225 BND0220 BND0221 BND0226 BND0227 BND0228 BND0229 BND0230
Time band 9D Off Time 20:00 / 20:00 Sp E 09.0°C I 40.0°C Sp R 40.0°C Time band 10D Off Time 20:00 / 23:59 Sp E 09.0°C I 40.0°C Sp R 40.0°C	Setting band D, ninth and tenth daily time band.	BND0231 BND0232 BND0233 BND0234 BND0235 BND0236 BND0237 BND0232 BND0233 BND0238 BND0239 BND0240
In/Out ← ↓	Access mask to In/Out menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	

Manual mask	Description	Parameter ID
Dig. In. 12345 67890 master CCCCC CCCCC CCCCC CCC Dig. Out.12345 67890 master CCCCC CCCCC CCCCC CCCCC CCCCC CCCC	Displays the state of the digital inputs and outputs and specifies their state. C: Contact closed A: Contact open The number of inputs and outputs displayed depends on the type of unit. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 1 07.3 bar 2 12.3 °C 3 12.3 °C 4 12.3 °C 5 12.3 °C	Displays analogue inputs 1, 2, 3, 4 and 5. Master is only specified on units with 3 or 4 circuits.	
An. In. master N° Value 6 15.2 °C 7 27.6 °C 8 04.0 °C 9 15.3 °C 10 C	Display of analogue inputs 6,7,8.9 and 10. C: Contact closed A: Contact open (If the analogue inputs are configured as digital) The number of analogue inputs displayed depends on the type of unit. Master is only specified on units with 3 or 4 circuits.	
An. Out. master N° Value 1 00.0 V 2 00.0 V 3 00.0 V 4 00.0 V 5 00.0 V 6 00.0 V	Voltage applied to analogue outputs. The number of outputs displayed depends on the type of unit. Master is only specified on units with 3 or 4 circuits.	
Masters required Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N On-line master Exp.1: Y Exp.2: N Exp.3: Y Exp.4: N Exp.5: N	Mask indicating the address for the expansion boards. This changes depending on the parameter settings. Moreover, the second part of the mask shows the link with the expansion boards. N means that there is no link with the expansion indicated in the address. Master is only specified on units with 3 or 4 circuits.	
Dig.In. 12345 67890 exp1 CCCC master Dig.Out.12345 67890 exp1 ACAA master	Displays the state of the digital inputs and outputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	

Manual mask	Description	Parameter ID
An. In. master exp1 N° Value 1 35.6 °C 2 40.5 °C 3 37.2 °C 4 37.2 °C	Displays analogue inputs 1, 2, 3 and 4 of expansion 1 (if present). Master is only specified on units with 3 or 4 circuits.	
An. Out. master exp1 N° Value 1 00.0 V 2 00.0 V 3 00.0 V	Voltage applied to the analogue outputs of expansion 1. The number of outputs displayed depends on the type of unit. Master is only specified on units with 3 or 4 circuits.	
Dig.In. 12345 67890 exp2 CCCC master Dig.Out. 12345 67890 exp2 ACAA master	Displays the state of the digital inputs and outputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 1 04.2 bar 2 03.9 bar 3 35.6 °C 4 40.5 °C 5 22.3 °C 6 24.2 °C	Displays analogue inputs 1, 2, 3, 4, 5 and 6 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. In. master exp2 N° Value 7 22.4 °C 8 - °C	Displays analogue inputs 7 and 8 of expansion 2 (if present). Master is only specified on units with 3 or 4 circuits.	
An. Out. master exp2 N° Value 1 00.0 V 2 00.0 V 3 00.0 V 4 00.0 V	Voltage applied to the analogue outputs of expansion 2. The number of outputs displayed depends on the type of unit. Master is only specified on units with 3 or 4 circuits.	
Dig.In. 12345 67890 exp3 CCCC master Dig.Out. 12345 67890 exp3 ACAA master	Displays the state of the digital inputs and outputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	

Manual mask	Description	Parameter ID
An. In. master exp3 N° Value 1 06.0 °C 2 00.0 °C 3 00.0 °C 4 00.0 °C 5 A 6 A	Displays analogue inputs 1, 2, 3 and 4 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits. C: Contact closed A: Contact open (If the analogue inputs are configured as digital)	
An. Out. master exp3 N° Value 1 05.0 V 2 06.1 V 3 04.5 V	Voltage applied to analogue outputs 1, 2 and 3 of expansion 3 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. 12345 67890 exp4 CCCC master Dig.Out. 12345 67890 exp4 ACAA master	Displays the state of the digital inputs and outputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp4 N° Value 1 058.2 °C 2 067.3 °C 3 04.2 bar 4 03.9 bar	Displays analogue inputs 1, 2, 3 and 4 of expansion 4 (if present). Master is only specified on units with 3 or 4 circuits. C: Contact closed A: Contact open (If the analogue inputs are configured as digital)	
An. Out. master exp4 N° Value 1 05.0 V 2 06.1 V 3 04.5 V	Voltage applied to analogue outputs 1, 2 and 3 of expansion 4 (if present). Master is only specified on units with 3 or 4 circuits.	
Dig.In. 12345 67890 exp5 CCCC master Dig.Out. 12345 67890 exp5 ACAA master	Displays the state of the digital inputs and outputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. master exp5 N° Value 1 00.0 °C 2 00.0 °C 3 00.0 °C 4 00.0 °C	Displays analogue inputs 1, 2, 3 and 4 of expansion 5 (if present). Master is only specified on units with 3 or 4 circuits.	

Manual mask	Description	Parameter ID
An. In. master exp5 N° Value 7 055.3 kPa 8 -	Displays analogue inputs 7 and 8 of expansion 5 (if present). Master is only specified on units with 3 or 4 circuits. (only appears with the M-type expansion 5)	
An. Out. master exp5 N° Value 1 00.0 V 2 00.0 V 3 00.0 V	Voltage applied to the analogue outputs of expansion 5. The number of outputs displayed depends on the type of unit. Master is only specified on units with 3 or 4 circuits.	
Dig. In. 12345 67890 slave CCCCC CCCCC CCCCC CCC Dig. Out. 12345 67890 slave CCCCC CCCCC CCCCC CCCCC CCCCC CCCC	Displays the state of the digital inputs and outputs and specifies their state. C: Contact closed A: Contact open The number of inputs and outputs displayed depends on the type of unit.	
An. In. slave N° Value 1 07.3 bar 2 12.3 °C 3 12.3 °C 4 12.3 °C 5 12.3 °C	Displays analogue inputs 1, 2, 3, 4 and 5 of the slave (for 3 or 4 circuit units).	
An. In. slave N° Value 6 07.3 bar 7 27.6 °C 8 04.0 °C 9 - 10 -	Displays analogue inputs 6, 7, 8, 9 and 10 of the slave (for 3 or 4 circuit units). C: Contact closed A: Contact open (If the analogue inputs are configured as digital) The number of analogue inputs displayed depends on the type of unit.	
An. Out. slave N° Value 1 00.0 V 2 00.0 V 3 00.0 V 4 00.0 V 5 00.0 V 6 00.0 V	Voltage applied to the analgue outputs of the slave (for units with 3 or 4 circuits). The number of outputs displayed depends on the type of unit.	

Manual mask	Description	Parameter ID
Slaves required Exp.1: N Exp.2: N Exp.3: N Exp.4: N Exp.5: N On-line slave Exp.1: N Exp.2: N Exp.3: N Exp.4: N Exp.5: N	Mask indicating the address for the expansion boards. This changes depending on the parameter settings. Moreover, the second part of the mask shows the link with the expansion boards. N means that there is no link with the expansion indicated in the address.	
Dig.In. 12345 67890 exp1 CCCC slave Dig.Out. 12345 67890 exp1 ACAA slave	Displays the state of the digital inputs and outputs of expansion 1 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp1 N° Value 1 35.6 °C 2 40.5 °C 3 37.2 °C 4 37.2 °C	Displays analogue inputs 1, 2, 3, and 4 of slave expansion 1 (if present for 3 or 4 circuit units).	
An. Out. slave exp1 N° Value 1 00.0 V	Voltage applied to the analogue outputs of slave expansion 1 (for units with 3 or 4 circuits). The number of outputs displayed depends on the type of unit.	
Dig.In. 12345 67890 exp2 CCCCC CCCCC master CCCC Dig.Out. 12345 67890 exp2 CCCCC CCCCC master CCC	Displays the state of the digital inputs and outputs of expansion 2 (if present) and specifies their state. C: Contact closed A: Contact open Master is only specified on units with 3 or 4 circuits.	
An. In. slave exp2 N° Value 1 04.2 bar 2 03.9 bar 3 35.6 °C 4 40.5 °C 5 22.3 °C 6 24.2 °C	Displays analogue inputs 1, 2, 3, 4, 5 and 6 of slave expansion 2 (if present for 3 or 4 circuit units).	

Manual mask	Description	Parameter ID
An. In. slave exp2 N° Value 7 22.4 °C 8 - °C	Displays analogue inputs 7 and 8 of expansion 2 (if present).	
An. Out. slave exp2 N° Value 1 00.0 V 2 00.0 V 3 00.0 V 4 00.0 V	Voltage applied to the analogue outputs of slave expansion 2 (for units with 3 or 4 circuits). The number of outputs displayed depends on the type of unit.	
Dig.In. 12345 67890 exp3 CCCC slave Dig.Out. 12345 67890 exp3 ACAA slave	Displays the state of the digital inputs and outputs of expansion 3 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp3 N° Value 1 06.0 °C 2 00.0 °C 3 00.0 °C 4 00.0 °C	Displays analogue inputs 1, 2, 3, and 4 of slave expansion 3 (if present for 3 or 4 circuit units).	
An. Out. slave exp3 N° Value 1 00.0 V	Voltage applied to analogue output 1 of expansion 3 (if present).	
Dig.In. 12345 67890 exp4 CCCC slave Dig.Out. 12345 67890 exp4 ACAA slave	Displays the state of the digital inputs and outputs of expansion 4 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp4 N° Value 1 A 2 A 3 A 4 A	Displays analogue inputs 1, 2, 3, and 4 of slave expansion 4 (if present for 3 or 4 circuit units).	

Manual mask	Description	Parameter ID
Dig.In. 12345 67890 exp5 CCCC slave Dig.Out. 12345 67890 exp5 ACAA slave	Displays the state of the digital inputs and outputs of expansion 5 (if present) and specifies their state. C: Contact closed A: Contact open	
An. In. slave exp5 N° Value 1 00.0 °C 2 00.0 °C 3 00.0 °C 4 00.0 °C	Displays analogue inputs 1, 2, 3, and 4 of slave expansion 5 (if present for 3 or 4 circuit units).	
An. Out. slave exp5 N° Value 1 00.0 V	Voltage applied to analogue output 1 of expansion 5 (if present).	
Setpoint ← ↓	Access mask to Setpoint menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Unit type: chiller Operating mode: auto Active regulation: Quick Mind in output	Mask for displaying the unit type and setting the operating mode. Also shows the active regulation type. If an R is displayed to the right of the operating mode, the latter is remote controlled with the digital inputs. Captions to symbols: see manual.	SET0001
PLANT Mode: WINTER Storage tank load: HeatPump DHW Mode: OFF Storage tank load: HeatPump+Rep. Boiler	Sets the type of adjustment for the plant (OFF/WINTER/SUMMER) and the type of plant storage tank load when applicable (Heatpump, HeatP+Rep Boiler, HeatP+Integ. Boiler, Boiler Only). Control the temperature of the DHW storage tank (OFF/ON) (when applicable). Set the type of DHW storage tank load (HeatPump, HeatPump+Rep Boiler, Boiler Only) and bring the DHW storage tank up to the DHW setpoint with a single heat pump or with a heat pump and replaced boiler or with boiler only.	SET0002 SET0003 SET0004 SET0005
Active setpoint: Main 07.0 °C Recovery/DHW 42.5 °C +2P module 75.0 °C Plant St.T. 45.0 °C	Mask showing the main current setpoint, recovery setpoint, DHW setpoint (when applicable), +2P module setpoint (when applicable) and plant storage tank (when applicable). If the letter R appears to the right of the value, the active setpoint is the secondary one. Captions to symbols: see manual.	

Manual mask	Description	Parameter ID
Set setpoint: Chiller 07.0 °C Heatpump 42.5 °C Recovery/DHW 42.5 °C Overboost 80.0 °C	Sets the chiller, heat pump and recovery setpoint (DHW if present). Set also the overboost setpoint (if enabled) when there is a DHW storage tank.	SET0006 SET0007 SET0008 SET0009
Active neutral zone: Main high 01.6 °C low 05.5 °C Recovery high 02.0 °C low 05.5 °C	Displays the limits of the neutral zone for the main thermoregulator and the recovery one.	
DHW override No	Mask for manually overriding the unit so as to satisfy the demand for DHW.	
Dual setpoint: Chiller 07.0 °C Heatpump 45.0 °C Recovery/DHW 45.0 °C	Mask for setting the second setpoint (only visible if the dual setpoint function is enabled).	SET0010 SET0011 SET0012
+2P module setpoint 75.0 °C +2P enable ON	Mask for setting the +2P module setpoint and for enabling the module	SET0013 SET0014
Active group setpoint: 07.0 °C	Mask showing the main group current setpoint.	
Group setpoint set 07.0 °C Band: 05.0 °C Dual group setpoint: 10.0 °C	Mask for setting the group chiller setpoint and the second group setpoint (only displayed if the dual setpoint function is enabled).	SET0015 SET0016 SET0017

Manual mask	Description	Parameter ID
Group operating mode: chiller	Mask for setting the group operating mode.	SET0021
Current limit Active setpoint: 0100 A Set setpoint: 0100 A	Mask that displays the active setpoint and the setpoint set from the keyboard or from the BMS for the current limitation function.	SET0022
Unit ← ↓	Access mask to unit menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	
Temp. In. Out. Evap. 12.5 07.0°C Rec. 35.6 40.5°C Cond. 38.0 42.5°C Plant S.t. 38.2 °C DHW S.t. 59.8 °C	Shows the inlet and outlet water temperature. (evaporator, recuperator, condenser and Plant storage tank and DHW storage tank are only displayed if they are fitted). In units with 2 evaporators, if the shared outlet probe is disabled, the average temperature between the two outlet probes of the individual evaporators is displayed.	
Temp. In. Out. Evap. 12.5 07.0°C Evap1 07.2°C Evap2 06.9°C	(if more than 1 evaporator is fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the evaporators.	
Temp. In. Out. Cond. 24.3 22.4°C Cond.1 22.3°C Cond.2 22.4°C	(if 2 condensers are fitted) Displays inlet and outlet temperatures of the evaporator or condenser (depending on whether the unit is in the chiller or heat pump mode) and the outlet temperature of the two condensers.	
Temp. Freecooling 12.3°C External air 15.4°C Optional 19.6°C Plant storage 12.5°C Rec. stor. 40.5°C	(for air-cooled units) Displays freecooling temperature (in chiller+freecooling units), external air temperature and optional temperature (if the probes are enabled). Displays the temperature values of the plant storage tank and recovery (if the probes are enabled).	

Manual mask	Description	Parameter ID
Circ hp lp st 1 07.3 04.2 Off 2 07.3 03.9 Off 3 07.3 04.2 Off 4 07.3 03.9 Off bar bar	Displays high and low pressure values (if transducers are fitted) and codifies the operating mode of circuits 1, 2, 3 and 4.	
Comp hp lp 1 07.3 04.2 bar 2 07.3 03.9 bar Circuit state 1: Ch	Display of the high and low pressure values (when the transducers are present) in the case of distribution of transducers at the level of the compressor instead of the circuit. Coding of the work mode of the circuits.	
Circ tc tl subc. 1 07.3 00.0 00.0 2 07.3 00.0 00.0 3 07.3 00.0 00.0 4 07.3 00.0 00.0 °C °C °C	(in chiller units with recovery) Displays pressure converted into temperature values, temperature of the liquid and calculated subcooling values of circuits 1, 2, 3 and 4.	
Timer tuning defrost Range 1200 - 03600 s Free Defrost 0370 s	Displays, for timer tuning defrost, the variation range in the defrost delay calculated according to external temperature. Also displays the maximum duration of the free defrost calculated according to external temperature.	
Circ Time 1 02700 2 02700 3 02700 4 02700 s Timer tuning defrost	Displays the defrost delay calculated by the timer tuning defrost algorithm.	
Circ Time Max 1 0188 0125 2 0125 0270 3 0188 0125 4 0125 0270 s s Free Defrost	Displays the free defrost enable time and the maximum time calculated according to the length of the delay.	

Manual mask	Description	Parameter ID
Circ defr T.del T.dur 1 N 0904 0000 2 N 0000 0028 3 N 0904 0000 4 N 0000 0028 s s	Displays the defrosting status, the delay before defrosting starts and the time taken to defrost.	
Compressor discharge temperature C1:105.9 C2:058.2 C3:098.4 C4:067.3 C5:105.3 C6:104.9 C7:098.4 C8:068.2 °C °C	Displays the discharge temperature (if probes are present) of compressors.	
Differential transd. evaporator: 060.1 kPa recovery: 055.3 kPa condenser: 050.4 kPa	Displays the differential pressure values (if transducers are present) of the evaporator, recuperator and condenser hydraulic circuits.	
Ventilat. adj.: Circ1: 060 % Circ2: 043 % Circ3: 056 % Circ4: 092 % Circ1-2: 060 % Circ3-4: 092 %	Displays the ventilation percentages (or aperture of condensation valve for water-cooled units) of each circuit. This demand percentage does not correspond to the voltage delivered in V for non-linear devices (fans or valves). If the output controls AC fans or valves, the value indicated is the result of the demand of the condensation regulator. This demand is aligned (converted) before it is sent to the fan or valve, to make 60% of the demand correspond to 60% of the maximum permitted (fan flow rate or opening of valve). In the case of EC fans, instead, the output perfectly matches the demand value of the regulator. 60% at output therefore corresponds to 6Vdc. This is because the inverter of the same fan aligns the signal. Compare Circ1-2: for units with separately cooled hermetic compressors and its value corresponds to the greater of the percentages of circuit 1 and 2 (the same applies to circ3-4 for 4-circuit units).	
Analogue outputs: Adj.Condens. 1:000 % Adj.Condens. 2:000 % Adj.Condens. 3:000 % Adj.Condens. 4:000 %	DIsplay of condensation percentages for HW pCOEM. Shows the percentage of demand of the devices connected to it (for non-linear devices correspondence with supplied voltage V does not apply).	

Manual mask	Description	Parameter ID
Analogue outputs: 5 System pump speed : 000% Plant valve adjustment: 000%	Displays analogue outputs of expansion 5.	
Analogue outputs: 1 Recuperator pump speed: 000% Recovery valve adjustment: 000%	Displays analogue outputs of expansion 1.	
Analogue outputs: 2 Recuperator pump speed: 000% Recovery valve adjustment: 000%	Displays analogue outputs of expansion 2.	
Analogue outputs: 3 Freecooling :000 %	Displays analogue outputs of expansion 3.	
Analogue outputs: 3 Freecooling :000 %	Displays the analogue outputs of slave expansion 3.	
Hour counter Pump 1 001010 Pump 2 000982 Rec. pump 000450 Cond. pump 000625	Displays the operating hours of the circulation pumps (depending on whether the pump is enabled or not).	
P3 - evaporator Pump 1 Status: OFF Hours: 000000 Pump 2 Status: OFF Hours: 000000	Displays information on the pumps on the evaporator side associated with the P3 module, when this is present (and enabled).	

Manual mask	Description	Parameter ID
P3 - recovery unit Pump 1 Status: OFF Hours: 000000 Pump 2 Status: OFF Hours: 000000	Displays information on the pumps on the recuperator (or condenser) side associated with the P3 module, when this is present (and enabled).	
Compr. hour counter Av. hours 000000 C1 000000 C2 000000 C3 000000 C4 000000 C5 000000 C6 000000	Displays average compressor hours. Used to view the operating hours of the compressors.	
Work Act << 082% RPM 32450 CR 2.8 lp 03.9bar discharge temp.78.5°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	
Work Act << 080% RPM 29500 CR 2.8 lp 03.9bar discharge temp.78.5°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	
Work Act << 082% RPM 32450 CR 2.8 lp 03.9bar discharge temp.78.5°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	
Work Act << 080% RPM 29500 CR 2.8 lp 03.9bar discharge temp.78.5°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	
Work Act << 081% RPM 32120 CR 2.8 lp 03.9bar discharge temp.78.5°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	

Manual mask	Description	Parameter ID
Work Act << 078% RPM 34550 CR 2.3 lp 03.1bar discharge temp.76.5°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	
Work Act << 081% RPM 31450 CR 2.8 lp 03.2bar discharge temp.78.5°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	
Work Act << 080% RPM 14500 CR 2.6 lp 03.7bar discharge temp.78.2°C	Displays the operating status of the Turbocor compressors, the active percentage, the rpm and the percentage delivered. Also displays other data relative such as outlet temperature and inlet pressure	
subc 03.8 03.6 °C st Reg Reg step 1824 1630	Displays the subcooling value of circuits, the status of the electronic thermostat valve drivers and the number of valve aperture steps	
Circ SH steps st 1 05.9 1420 Ok 2 06.1 1382 Ok 3 06.0 1355 Ok 4 05.7 1444 Ok °C	Displays the overheating value of circuits, the status of the electronic thermostat valve drivers and the number of valve aperture steps	
Inverter 1: Online Command 1200 rpm Revs 1200 rpm	Displays whether inverter 1 is online with the controller. Also displays the command and the effective speed of rotation of the screw compressor with inverter.	
Inverter 2: Online Command 1400 rpm Revs 1400 rpm	Displays whether inverter 2 is online with the controller. Also displays the command and the effective speed of rotation of the screw compressor with inverter.	

Manual mask	Description	Parameter ID
Inverter 3: Online Command 1200 rpm Revs 1200 rpm	Displays whether inverter 3 is online with the controller. Also displays the command and the effective speed of rotation of the screw compressor with inverter.	
Inverter 4: Online Command 1400 rpm Revs 1400 rpm	Displays whether inverter 4 is online with the controller. Also displays the command and the effective speed of rotation of the screw compressor with inverter.	
Compr. 1: Online Command 060% Active perc. 060%	Displays whether inverter 1 is online with the controller. Also displays the command and the active percentage of the CSW105 screw compressor.	
Compr. 2: Online Comando 080% Perc. attiva 080%	Displays whether inverter 2 is online with the controller. Also displays the command and the active percentage of the CSW105 screw compressor.	
Compr. 3: Online Comando 055% Perc. attiva 055%	Displays whether inverter 3 is online with the controller. Also displays the command and the active percentage of the CSW105 screw compressor.	
Compr. 4: Online Comando 070% Perc. attiva 070%	Displays whether inverter 4 is online with the controller. Also displays the command and the active percentage of the CSW105 screw compressor.	
Comp.1 Work IGV 063.0% Frequency 50.0Hz CR 2.2 Oil temp 47.0°C Discharge temp 52.0°C	Displays the operating status of the Hanbell centrifugal compressors, the percentage of IGV and the operating frequency. Also displays other data such as outlet temperature, oil temperature and compression ratio.	

Manual mask	Description	Parameter ID
Energy meter Voltage (V) L1-L2 400 L2-L3 401 L3-L1 403 Neutral 1 233 Neutro 2 231 Neutro 3 230	It allows to display the values read by the energy meter.	
Energy meter Current (A) L1 030.0 L2 035.0 L3 028.0	It allows to display the values read by the energy meter.	
Energy meter Active power (kW) L1 0017.2 L2 0021.4 L3 0019.0 Total 0057.6	It allows to display the values read by the energy meter.	
Energy meter Energy 0000009kWh Time 0000002h	It allows to display the values read by the energy meter.	
Thermal power meter Portata 0015.6 m3/h T1 012.3 °C T2 007.2 °C Delta T 005.1 °C Power 00092 kW	Displays the measured data and the thermal power calculated by the thermal power meter.	
Enable circuits Circ1: Y Circ2: Y Circ3: N Circ4: N compressors C1:Y C2:Y C3:Y C4:Y C5:Y C6:Y C7:N C8:N	Selects/deselects circuits and compressors.	UNT0001 UNT0002 UNT0003 UNT0004 UNT0005 UNT0006 UNT0007 UNT0008 UNT0009 UNT0010 UNT0011 UNT0012
KIPlink Status: online SSID Wi-Fi Network: KIPlink_032078434 IP address: 192.168.030.001	Mask that displays the status and main information of the KIPlink module	

Manual mask	Description	Parameter ID
KIPlink Type of module: Master-EthOFF-WifiON Active channel: WIFI Ip: 192.168.030.001 Sub: 255.255.255.000 Gw: 000.000.000.000	Mask that displays the status and main information of the KIPlink module	
KIPlink ETHERNET channel Ip: 192.168.030.001 Sub: 255.255.255.000 Gw: 000.000.000.000	Mask that displays the information of the KIPlink Ethernet network	
KIPlink WIFI channel Ip: 192.168.030.001 Sub: 255.255.255.000 Gw: 000.000.000.000	Mask that displays the information of the KIPlink Wi-Fi network	
Several KIPlinks netw Master Wi-Fi netw name KIPlink_032078434 Network Master Ip: 192.168.030.001 Network ID: 01	Mask that displays the main information of the master module of the KIPlink network	
Unit serial number: 032078434	Mask that displays the serial number of the unit	
W 3000 + Cod. TA 08.00 EN CE HW pCO5+ L NAND 50MB Flash 2MB +7MB +4MB Ram 2048KB Boot 5.01 Bios 6.51	This mask contains the reference information of the software [Code TA 08.00 EN] The closed padlock symbol shows that the board is provided with its propriety software; two padlocks appear on units with 3 or 4 circuits. The second part of the mask shows information about the hardware: size (M, L, XL), memories (50MB NAND, 2+7+4MB flash, 2048KB RAM) and the versions of the installed operating system (boot and bios).	
System ← ↓	Access mask to unit menu. Press "Up" or "Down" to scroll the other masks and "Esc" to return to the submenu.	

Manual mask	Description	Parameter ID
System. In. Out. Temp. 10.3 6.5 °C External air 27.4 °C	Mask showing the system water loop and external air temperature (average of unit probes or single system probe)	
Demand limit from analogue. input: 040%	Mask showing the demand limit value acquired from the analogue input	
Status of external units 1:On 5:Alarm 2:On 6:On 3:On 7:Offline 4:Off 8:Offline	Mask showing the status of external units	
Operating mode of external units 1:chiller 5:chiller 2:chiller 6:chiller 3:chiller 7:chiller 4:chiller 8:chiller	Mask showing the operating mode of external units.	
Unit active perc. 1:030% 5:060% 2:050% 6:060% 3:100% 7:000% 4:100% 8:000%	Display of the active percentages of external units.	
Status of internal groups 1:ON 6:OFFLINE 2:-- 7:OFFLINE 3:ON 8:ON 4:-- 9:-- 5:OFF 10:OFFLINE	Mask showing the status of internal groups.	
Status of internal groups 11:ON 16:OFF 12:ON 17:OFFLINE 13:-- 18:ON 14:-- 19:ON 15:OFF 20:--	Mask showing the status of internal groups.	

Manual mask	Description	Parameter ID
Adaptive setpoint of internal groups 01: 03.0°C 06: ----°C 02: ----°C 07: ----°C 03: 00.6°C 08: 00.2°C 04: ----°C 09: ----°C 05: ----°C 10: ----°C	Mask used to display the adaptive setpoint request received by the groups of internal units.	
Adaptive set point gruppi interni 11: 01.0°C 16: ----°C 12: 00.6°C 17: ----°C 13: ----°C 18: 00.9°C 14: ----°C 19: 00.2°C 15: ----°C 20: ----°C	Mask used to display the adaptive setpoint request received by the groups of internal units.	
Inter. groups setpoint variation requests 01:ok 06::----- 02:optimiz.07:ok 03::----- 08:reset 04:reduce 09:ok 05::----- 10:-----	Mask used to display the dynamic setpoint request in HPC mode received by the groups of internal units.	
Richieste var setpoint gruppi interni 11::----- 16:ok 12:ok 17:reset 13::----- 18::----- 14::----- 19::----- 15:riduci 20:ok	Mask used to display the dynamic setpoint request in HPC mode received by the groups of internal units.	
Group adaptive setpoint: 02.3°C	Mask showing the value of the adaptive setpoint passed on to the external units as value to add to the set setpoint.	
ID unita' master nel gruppo: 02 Master KIPlink unit ID: 03	Mask showing the ID of the unit with master KIPlink within the KIPlan and of the master external unit within the Multi Manager LAN network	
LAN Multi Master Cod. TG 03.00 EN HW pCO5+ S Boot 5.01 Bios 6.51	This mask contains the reference information of the software [Code TG 03.00 EN]. The second part of the mask shows information about the hardware: size (S) and versions of the installed operating system (boot and bios).	

4 REMOTE CONTROL AND MONITORING CHARACTERISTICS

Object. The units acquired can be equipped with devices that will only allow Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. (hereinafter "**MEHITS**"), through mobile or wired connectivity, remote (i) monitoring, (ii) control, (iii) acquisition and analysis of the operating data of the units.

Functionality and system. The function can be offered in Machine-to-Machine (M2M) or Cloud mode. Each functionality requires the installation and use of a specific hardware and/or software product (**System**).

Connectivity.-The use of each Service requires the connection to Internet services (**Connectivity**), which is not supplied together with the Service or System, and must be ensured by the Customer.
As far as Connectivity, it must be remembered that although in its System MEHITS implements all the safety measures aimed at fighting cyber attacks, these cannot be totally excluded. The purchaser relieves from immediate effect MEHITS from all responsibility for such attacks, and undertakes to implement appropriate safety measures (firewalls and other protective measures) for preventing unwanted connection to the System by third parties and, if necessary, ensuring an appropriate level of security for the data transferred, or that may be transferred by the System (secure connections).
The Service can be affected (without responsibility for MEHITS) by Internet failures, by the failure to adapt to the minimum required requirements/characteristics, by the impossibility for the purchaser to ensure a connection to the Mobile or Wired network, as better specified below.

Consent. Remote connection is subjected to preliminary written consent by the user.

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