AERMEC
air conditioning



R410A RS485

AFTER SALES SERVICE - REGULATION MANUAL

- WATER / WATER CHILLER
- WATER COOLED REVERSIBLE CHILLER
- WATER/WATER HEAT PUMP

WRL

- SOFTWARE UPDATE

  CAREL µPC vers. up 2.2.2 to 2.6.3

EN

edition February 2013

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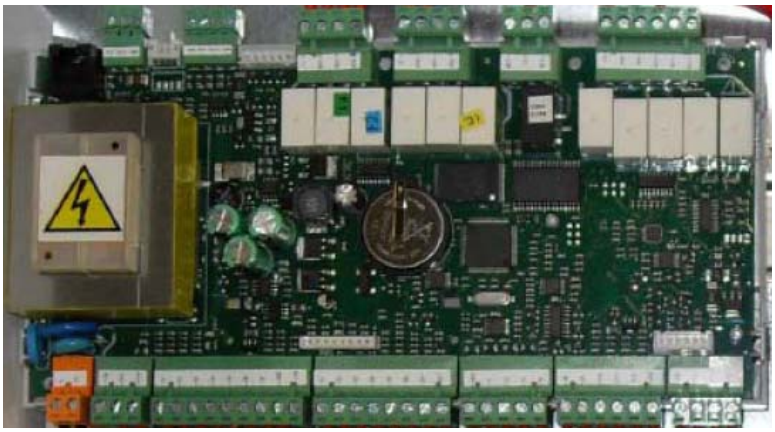
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CONTROL WITH THE ELECTRONIC BOARD
CAREL µPC









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1 Introduction

The following document contains the substantive changes, correction of some errors and some improvements added in the text compared to the previous document WRL ELECTRONIC REGULATION After Sales Service Manual edition 2 March 2012 relating to software version 2.2.1 with Carel µPC electronic board of 26 October 2011.

This text will then be shown the changes, updates and various correction of equipment made from version 2.2.2 (23 April 2012) to version 2.6.4 (29 November 2012).

To aid understanding, the text parts subject to changes and updates will be anticipated by the indication 

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also parts of the text modified, added or corrected compared to the previous manual will be written in this *font*, and highlighted with the color ..... also the new screens are added or changed will be seen in the following way.



(example)

In order to help understanding in the introduction of new parts included, some parts of the text of this document will be write equal to the previous manual.

It is therefore recommended to stick to the previous WRL ELECTRONIC REGULATION After Sales Service Manual edition 2 March 2012 as a basic text and refer this manual as an update.

Important: Regarding to the regulation of WRL cooling only units with electronic Moducontrol, remaining unchanged the software version to 4.3.0, then follow the previous WRL ELECTRONIC REGULATION After Sales Service Manual edition 2 March 2012 from paragraph 21

The parts of the text may be subject to update

After SalesService Department Aermec Spa

1.1 Informations present into the text

In this manual the following icons will appear to clarify particular topics or as a warning:

Highlight: provides clarification on the topic that the user should be aware of.

Suggestion: provides a suggestion that can help the user to better understand and use the information of the topic being covered.

Attention! : provides information for which a lack of knowledge could have negative consequences on the system or constitutes a risk to people, devices, data, etc.

2 Index of Revisions

New software release features compared to the previous manual.

SW WRL	Specifiche STP_WRL	Data	Note
2.2.1	E33	26/10/2011	Improvements: Inserted parameter “time to pre-position EEV valve” for unipolar valves. Faster action digital input (thermal, high pressure). Update BIOS to 5.17, updated control function electronic valve on board µPC.
2.2.2	E33	23/04/2012	Special version that corrects only the setpoints and alarms of the modulation valve water model Belimo.
2.3	E34	30/11/2011	Improvements: Insert MC18 parameter (Menu Factory) is used to delay the activation of the compressors from starting EEV valve In addition to this version: - If is select the presence of the modulating valve side, to change the setpoint to 14.0bar and the differential to 20.0bar (parameter P24, see the sub-menu Pumps Menu Service password 0101). - Disabled by default the parameter P34 (P34 parameter, see the sub-menu Pumps Menu Service password 0101). - Insert the second set-point and differential of geothermal pump for heat pump function (parameter P24, see the sub-menu Pumps Menu Service password 0101). - Insert into the parametere H43 the new functions of On/Off remote contact, according to the value inserted, it may turn off: 0= plant + zones + sanitary function, 1= plant + zones, 2 = plant only (parameter H43, see the sub-menu Plant Conf. Menu Service password 0101). Improvement of hystoric alarm: - Alarm Low performance, changed the default delta temperature to 0.3 ° C and the delay time to 60s (parameter A54, see the sub-menu Conf. Alarm Menu Factory password 0202). Improvement compatibility of accessories: - The time displayed in the zone thermostat accessory STA (temperature only) might not be exactly. From this version, the time displayed is synchronized with the time card Carel µPC.
2.4	E37	23/04/2012	Improvements: - Inserted the codes into the mask of Menu Set Up Procedure (password 0009). - Ability to see the temperature of the zone and the outdoor temperature from the thermostat accessory STA (accessory). - From this software version the WRL units are compatible with the thermostats th-Tune Carel (accessory STH) software version 1.3 or higher.
2.4.1	E38	02/05/2012	Improvements: - Display K22 added to control remote ON/OFF from Wizard Menu, password: 0303. - Display K23 added to control system storage from Wizard Menu, password: 0303. - Option to switch off zone pump/3-way mixer valve added during cold system running (parameters Z36, Z48 and Z60, see Zones sub-menu in Support Menu, password: 0101). - High temperature alarm on system inlet/geothermic added; also works with unit in stand-by (parameter A56, see Alarms Config. Sub-menu in Manufacturer’s Menu, password: 0202). - With this version, in WRL>160 units (not X or Y models), the delayed low pressure alarm threshold has been set to 4.0bar (parameter A21, see Alarms Config. Sub-menu in Manufacturer’s Menu, password: 0202).
2.5	E38	27/07/2012	New version for running test with supervisory system Aerweb 300. Improvements: - parameter MC21 added, option to invert VIC valve cycle without waiting for compressor to turn off (parameter MC21, see Compressors sub-menu in Manufacturer’s Menu, password: 0202). - Delay time in shutting of electronic EEV thermostatic expansion valve added, after compressor turns off, parameter MC18. This function allows the operator to equalize pressure values (parameter MC18, see EEV Driver sub-menu in Manufacturer’s Menu, password: 0202).
2.6	E39	30/08/2012	- In the total recovery model units, in cold operating mode, the problem tied to compressor restart during system running in DHW only has been corrected.
2.6.2	E40	19/10/2012	Improvements: - In this version, if the flow-meter on the geothermic side triggers, all loading sequences stop and the “alarm” symbol appears on the compressor template.
2.6.3	E41	29/11/2012	**Actually in use** Improvements: - Option to turn off system pumps if zones are off added. - Room air adjustment differential default changed to 0.3°C.

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2.6.4	/	/	**Preliminary version NOT CONFIRMED !!!** - Compressor inlet gas high temperature safety added; allows operator to turn compressor off and turn 3rd pump from off to on. - DHW pump forcing added if outlet temperature on recovery side exceeds 90.0°C Option added to generate DHW at a higher temperature if generating cold water; allows the operator to save on energy, by running for longer time in total recovery mode.

The latest software version is compatible with all previous.

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3 Unit configuration code

1 2 3	4 5 6	7	8	9	10	11	12	13	14	15
WRL	Size	Field of use	Model	Version	Heat Recovery	Geoth. side pump	User side pump	Recovery side pump	Soft start	Power supply

WRL	
SIZE	025 - 030 - 040 - 050 - 070 - 080 - 100 - 140 – 160
	180-200-300-400-500-550-600-650
FIELD OF USE	° - Standard with leaving water above +4°C Y – Low temperature with leaving water down to -6°C X – Electronic expansion valve (EEV) with leaving water down to -6°C
MODEL	° - Cooling (Reversible water-side) H – Heat pump (Reversible refrigerant circuit) E – Evaporating unit (not available for heat pump versions)
VERSION	° - Standard A – With system buffer tank
HEAT RECOVERY	° - Without heat recovery D - Desuperheater (ONLY FOR COOLING ONLY VERSION) T- With total heat recovery (ONLY FOR HEAT PUMP VERSIONS a variable flow Pump is recommended to be installed on the geothermal side)
GEOTHERMIC SIDE PUMP	° - Without pump B – ON-OFF circulator with 3 speeds (models up to size 080) Low head pump (models above size 080) U – High head pump (models above size 080) F – Pump suitable for phase shaving (models up to size 080) I – Inverter pump high head (models up to size 080) V – Modulating valve
USER SIDE PUMP	Evaporator in cooling mode ° - Without pump P – ON-OFF circulator with 3 speeds (models up to size 080) Low head pump (models above size 080) J – ON-OFF high head circulator with 3 speeds(for WRL models see section 2.3 for sizes 025-030-040) N – High head pump (models above size 080, or for WRL models see section 2.3 for sizes from 050 to 160)
RECOVERY SIDE PUMP	° - Without DHW pump Q – With DHW pump
SOFT-START	° - Without compressor soft-start S – With compressor soft-start
POWER SUPPLY	° - 400V 3N~ 50Hz M - 230V ~ 50Hz (only model sizes 025, 030, 040) 4 – 230V – 3 – 50Hz (only model sizes 050, 070, 080, 100, 140, 160) 5 – 500V – 3 – 50Hz (only model sizes 400, 550, 600, 650)

3.1 Parameters influenced

Added the description of the parameters influenced in relation to the application.

Field	Description	***Parameters influenced***
SIZE	- 025, 030, 040, 050, 070, 080, 100 , 140, 160 - 180, 200, 300, 400, 500, 550, 600, 650	Sizes ≥ 100: two compressors (parameter H21 Plant Conf. Menu Service) Sizes ≥ 100: enable thermal switch of compressor 2 (parameter H42 Plant Conf. Menu Service) Sizes ≥ 100: n° max compressor = 2 (parameter H21 Plant Conf. Menu Service)
FIELD OF USE	° - Standard with leaving water above +4°C Y – Low temperature with leaving water down to -6°C X – Electronic expansion valve (EEV) with leaving water down to -6°C	Models X: enable driver EEV (parameter H27 Plant Conf. Menu Service) Models X and sizes ≥ 180: exthernal driver EEV (parameter H27 Plant Conf. Menu Service)

	PID (parameter ER9 Driver EEV Menu Factory)	Time start-up forced to pre-position (parameter ER3 Driver EEV Menu Factory)	Open valve at start-up (parameter ER3 Driver EEV Menu Factory)	EEV time opening before start of compressor parameter MC18 Compressors Menu Factory)
Models X and sizes ≤100	5.0, 60s, 1.0s	10s	30%	5s
Models X and sizes from 100 and 160	5.0, 60s, 1.0s	10s	40%	5s
Models X and sizes ≥180	15.0, 150s, 5.0s	5s	80%	0s

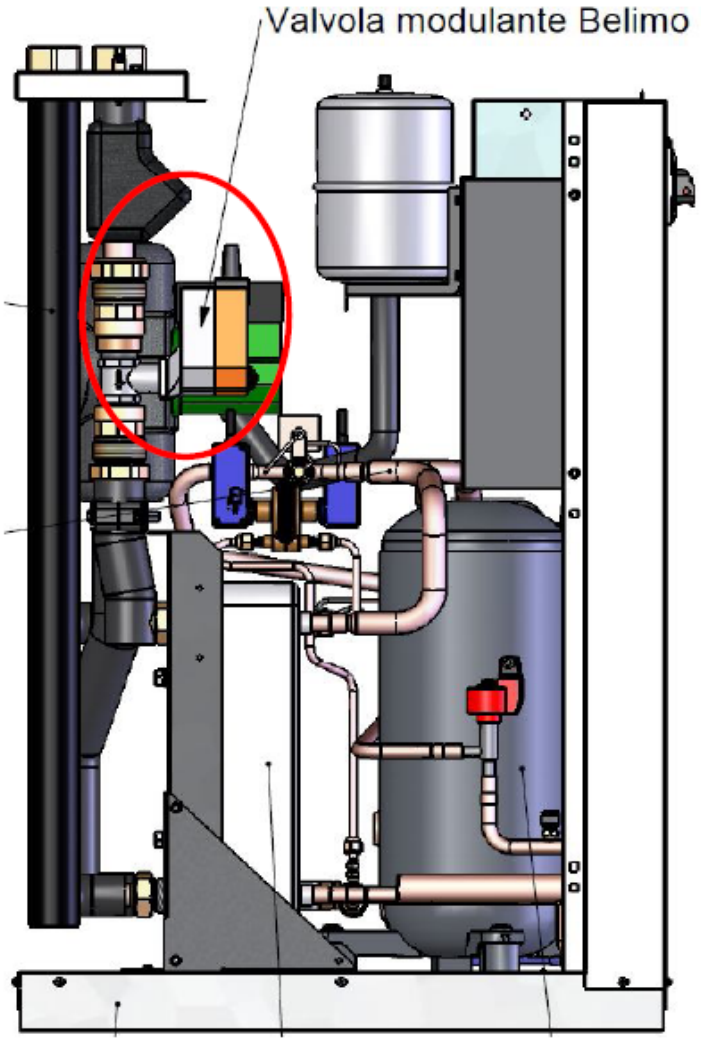
MODEL	° - Cooling (Reversible water-side) H – Heat pump (Reversible refrigerant circuit) E – Evaporating unit (not available for heat pump versions)	Models °: reversing water side (parameter H6 Plant Conf. Menu Service) Models H: reversing refrigerant gas side (parameter H6 Plant Conf. Menu Service) Models H: enable geothermal flow-switch (parameter H30 Plant Conf. Menu Service) Models H: added probe SDHW with the unit Models E: disable geothermal delivery water temperature (parameter H51 Plant Conf. Menu Service) Models E: disable geothermal return water temperature (parameter H51 Plant Conf. Menu Service)
VERSION	° - Standard A – With system buffer tank	
HEAT RECOVERY	° - Without heat recovery D - Desuperheater (ONLY FOR COOLING ONLY VERSION) T- With total heat recovery	Models T: type of sanitary= Total Recovery (parameter H3 Plant Conf. Menu Service) Models T: enable sanitary buffer tank probe (parameter H51 Plant Conf. Menu Service) Models D: type of sanitary = Desuperheater (parameter H3 Plant Conf. Menu Service)

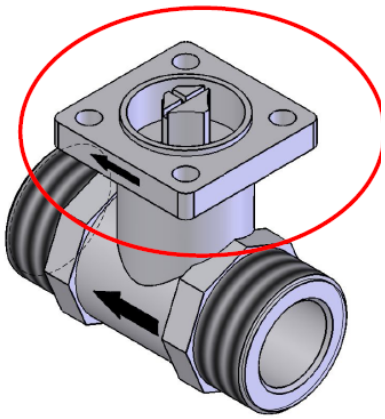
GEOTHERMIC SIDE PUMP	° - Without pump B – ON-OFF circulator with 3 speeds (models up to size 080) U – High head pump (models above size 080) F – Pump suitable for phase shaving (models up to size 080) I – Inverter pump high head (models up to size 080) V – Modulating valve		Set. Geo. (parameter P24 Pumps Menu Service)	Diff. Geo. (parameter P24 Pumps Menu Service)	Minimum Speed/ Opening (parameter P39 Pumps Menu Service)	Compressor On delay time after Geoth. pump On (parameter P12 Pumps Menu Service)	Geoth. flow-switch delay time (parameter A45 Alarm Conf. Menu Factory)
		Models °, B,U,F,I	17.0	12.0	15%	60s	30s
		Models V and sizes from 025 to 080	14.0	20.0	20%	110s	100s
		Models V and H and sizes from 100 to 160	14.0	20.0	20%	160s	150s
		Models V and not H and sizes from 100 to 160	14.0	20.0	20%	110s	100s
		Models V and sizes from 180 to 650	14.0	20.0	10%	100s	90s
		Models V with MUT modulating valve (obsolete)	17.0	12.0	35%	60s	30s

Field	Description	***Parameters influenced***
GEOTHERMIC SIDE PUMP		Models F,I,V: geothermal pump regulation by pressurere (parameter P21 Pumps Menu Service) Models B,U,F,I,V: enable thermal switch of pumps
USER SIDE PUMP	Evaporator in cooling mode ° - Without pump P – ON-OFF circulator with 3 speeds (models up to size 080) N – High head pump	Models P,N: enable thermal switch of pumps
RECOVERY SIDE PUMP	° - Without DHW pump Q – With DHW pump	Models Q: sanitary priority + valve or priority + pump or total recovery (parameter H3 Plant Conf. Menu Service)
SOFT-START	° - Without compressor soft-start S – With compressor soft-start	
POWER SUPPLY	° - 400V 3N~ 50Hz M - 230V ~ 50Hz (only model sizes 025, 030, 040)	

3.2 New! ***V version with modulating valve for geothermal water flow side model Belimo***

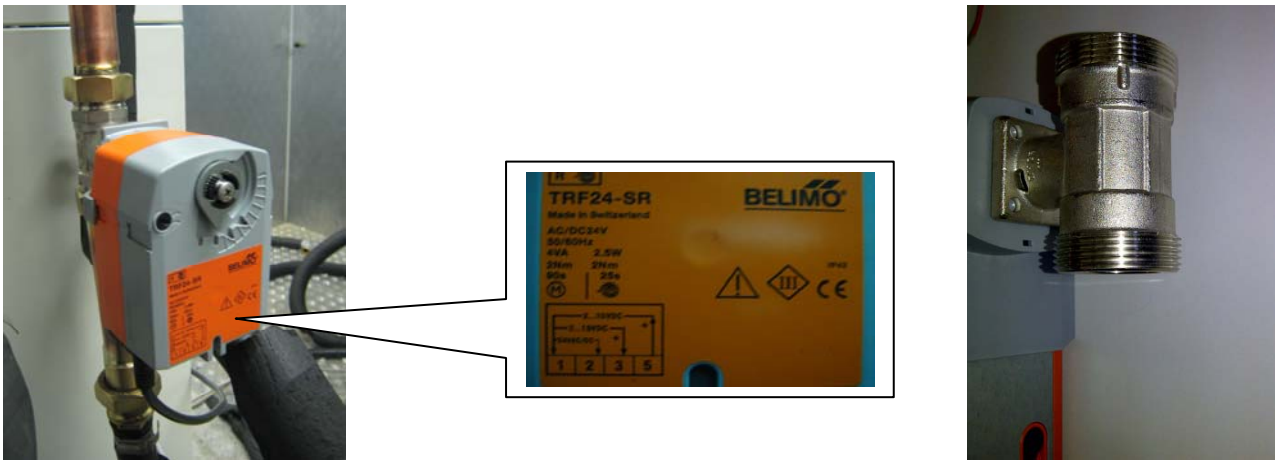
3.2.1 Positioning of hydraulic valve model Belimo and controls to be performed in case of problems





Important: Verify, during the unit is in off, that the stem of the valve model Belimo is properly oriented with respect to the direction of the fluid (water) as shown in the picture.
In the case proceed to correctly position the stem of the valve and reassemble the actuator on it.

Pictures about the positions of Belimo valve

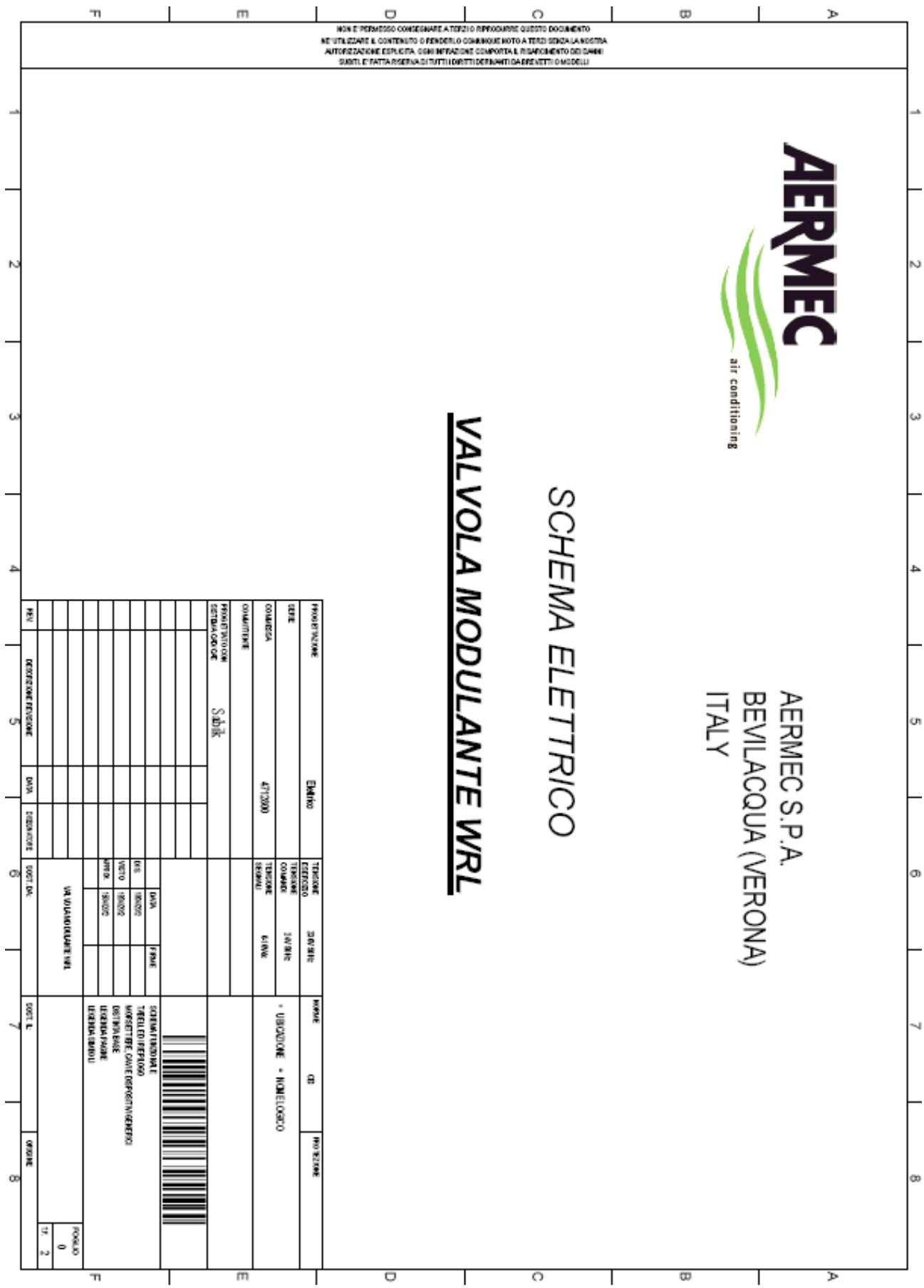


3.2.1 Regulation parameters influenced in the case of insertion of the modulating valve model Belimo

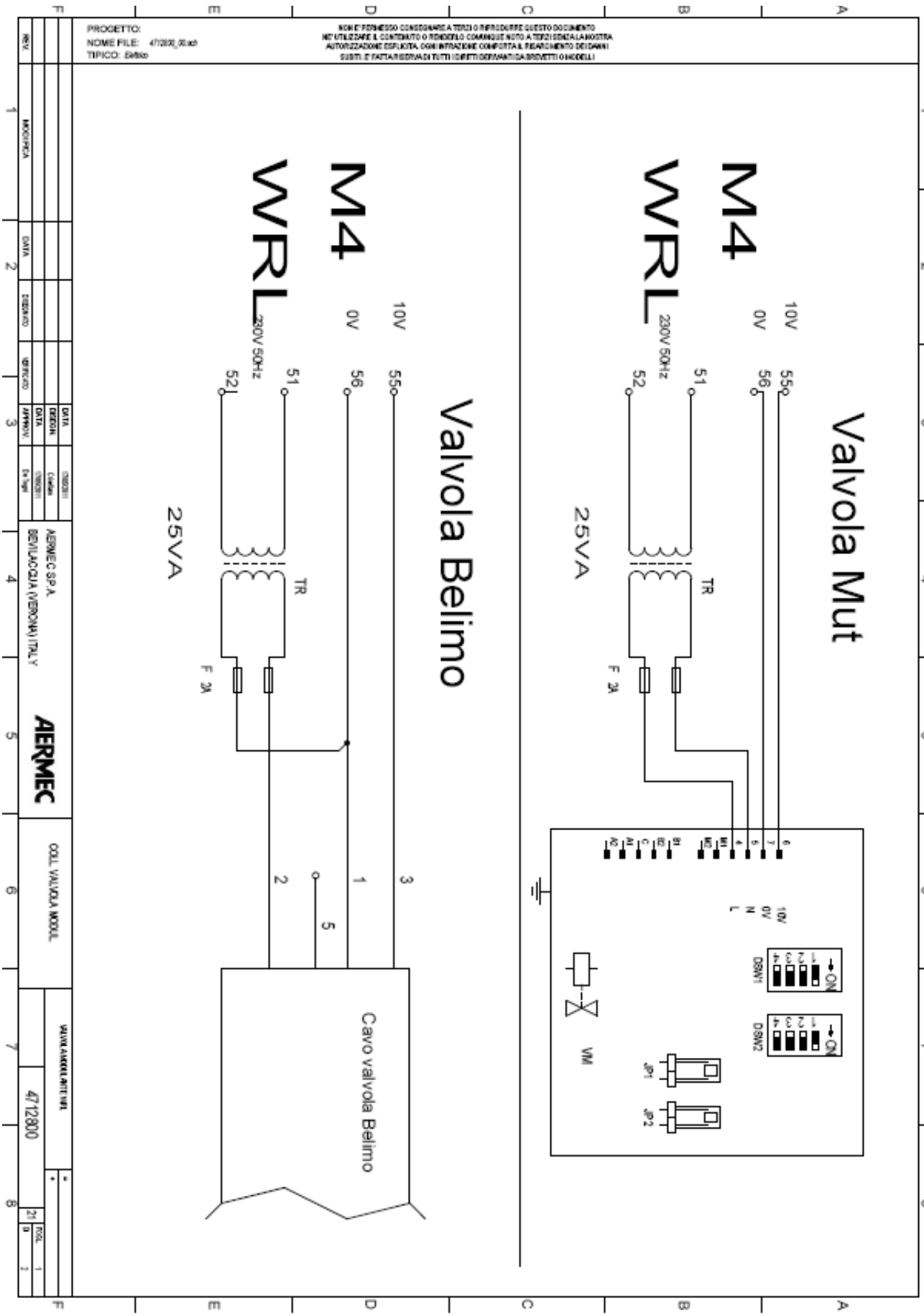
Field	Description	Parameters influenced
FIELD OF USE	° - Standard with leaving water above +4°C Y – Low temperature with leaving water down to -6°C X – Electronic expansion valve (EEV) with leaving water down to -6°C	X: enable driver EEV (parameter H27 Plant Conf. Menu Service) X and sizes > 160: exthernal driver EEV (parameter H27 Plant Conf. Menu Service) X and sizes > 160: PID = 15.0, 150s, 5.0s (parameter ER9 Driver EEV Menu Factory) Exthernal Driver X and sizes ≤ 160: PID = 5.0, 60s, 1.0s (parameter ER9 Driver EEV Menu Factory) Driver on board ***X and sizes ≤ 160: start compressor delay time from EEV 5s (parameter MC18 Driver EEV Menu Factory)*** ***X and sizes < 100: valve open during the start = 30% (parameter ER3 Driver EEV Menu Factory)*** ***X and sizes from 100 to 180: valve open during the start = 40% (parameter ER3 Driver EEV Menu Factory)*** ***X and sizes < 180: time start-up forced to pre-position =10s (parameter ER3 Driver EEV Menu Factory)*** X and sizes ≥ 180: open valve at start-up = 80% (parameter ER3 Driver EEV Menu Factory)
GEOTHERMIC SIDE PUMP	° - Without pump B – ON-OFF circulator with 3 speeds (models up to size 080) U – High head pump (models above size 080) F – Pump suitable for phase shaving (models up to size 080) I – Inverter pump high head (models up to size 080) V – Modulating valve	F,I,V: select regulation geothermal pump by high pressure (parameter P21 Pumps Menu Service) B,U,F,I,V: enable pump thermal switch ***V and sizes < 160: minimum speed of geothermal pump = 20% (parameter P39 Pumps Menu Service)*** V and sizes ≥ 160: minimum speed of geothermal pump = 10% (parameter P39 Pumps Menu Service) V and sizes < 160: MUT model valve, minimum speed of geothermal pump = 35% (parameter P39 Pumps Menu Service) ***V and sizes from 025 to 080: delay time start compressor from start pump =110s (parameter P12 Pumps Menu Service)*** ***V and sizes from 025 to 080: delay time of geothermal flow-switch during the start = 100s (parameter A54 Alarm Conf. Menu Factory)*** ***V and H and sizes from 100 to 160: delay time start compressor from start pump =160s (parametro P12 Pompe Menu Assistenza)*** ***V and H and sizes from 100 to 160: delay time of geothermal flow-switch during the start = 150s (parameter A54 Alarm Conf. Menu Factory)*** V and sizes > 160: delay time start compressor from start pump =100s (parameter P12 Pumps Menu Service) V and sizes > 160: delay time of geothermal flow-switch during the start = 90s (parameter A54 Alarm Conf. Menu Factory) V with MUT valve: delay time start compressor from start pump =60s (parameter P12 Pumps Menu Service) V with MUT valve: time of geothermal flow-switch during the start = 90s (parameter A54 Alarm Conf. Menu Factory) V:high pressure setpoint condensation 17.0bar (parameter P24 Pumps Menu Service) V: differential condensation pressure 12.0bar (parameter P24 Pumps Menu Service)

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3.2.1 Wiring diagram and electric connection of MUT and Belimo valves



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Valvola Mut
M4
WRL
230V 50Hz
25VA
10V
0V
55
56
51
52
TR
F 2A
DSW1
DSW2
ON
JP1
JP2
VM
Valvola Belimo
Cavo valvola Belimo
AERMEC S.P.A.
BEVILACQUA (VERONA) ITALY
COLL. VALVOLA MODUL.
4712800

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4 ModBus Network

The Carel µPC board does not have sufficient inputs and outputs to cover all functions.

Thanks to a port named "Field Bus", terminal J10 of the board, "the application" is capable of controlling various slave boards in ModBus protocol (Carel pCOe expansion board).

4.1 Table of devices controlled on the ModBus network

The devices installed must all be connected to the ModBus serial network.

Remember to install a 120 Ohm resistor between Tx+ and Tx- at the beginning and end of the serial network

Address	Device connected
1	**Zone 1, Room 1 directly controlled from the Carel µPC board**
2	Zone 2, Room 1 (STA/H)
3	Zone 2, Room 2 (STA/H)
4	Zone 3, Room 1 (STA/H)
5	Zone 3, Room 2 (STA/H)
10	pCOe Accessory
11	pCOe Zone 2
12	pCOe Zone 3
16	Solar kit pCO compact

To address the Carel pCOe boards it is sufficient to change the dip-switches of the expansion boards.

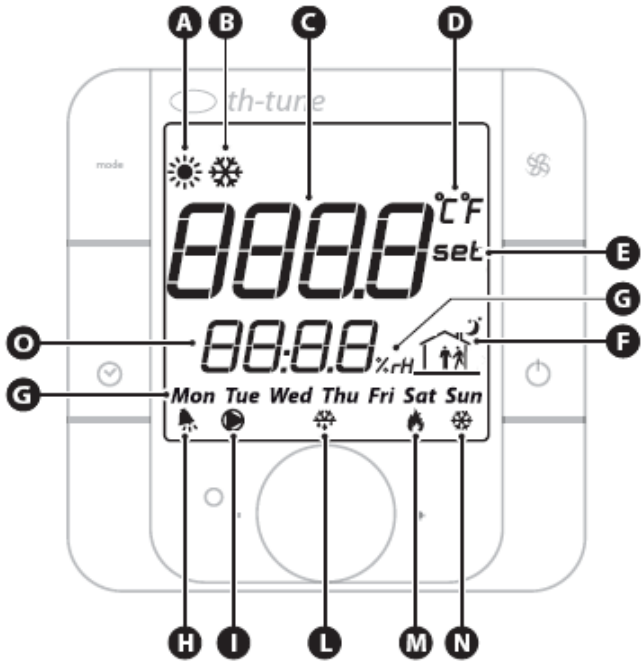
New ***Modified explanation for addressing thermostats STA / STH***

To address the STA/H (TH-Tune) room sensor requires:
1.Power up the device
2. Press FAN and POWER for 5 sec.
3. Enter the password 22, and press PUSCH
4. Turning the adjustment knob - PUSH +, search the wording "addr".
5. Having found "addr", press - PUSH + and enter the address comprised between 1 and 5, press - PUSH + to confi rm
6. Turning the adjustment knob- PUSH +, search the wording "esc", press - PUSH +, to confirm and exit.

New ***Added explanation of the function of the buttons and icons that appear on the thermostat Carel th-Tune***



Key	Description	Pre-heating
mode	MODE	Displays water temperature 1, 2, 3
	FAN	Displays outside temperature (if any KSAE)
		NOT USED
	POWER	ZONE On/Off
PUSH	Knob Adjust.	allows you to change the setpoint. Turn the knob to set the value and press to confirm
Access to special menus: MODE + CLOCK for 3s to access the alarms menu, active only if the icon is on.		



A Shows that it is the season WINTER
B Shows that it is the season SUMMER
C Mosta the value of ambient temperature or the current setpoint
D Indicates the unit of measure to which it refers
E Indicates that the value displayed is the setpoint
F OFF indicates force in the time bands
G Indicates the day of the week
H Indicates that an alarm is active
I Indicates that the pump area is active
L Indicates that the function is active dehumidifi cation
M Indicates the lack of hot water (the water temperature of the area, compared to the set, is lower than two times its differential)
N Indicates the lack of water freddda (the water temperature of the area, compared to the set, is higher than two times its differential)
O Indicates the system time or the humidity value (if applicable)

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5 User interface

5.1 pGD1 graphical terminal user guide

Like the unit's interface, the user has available a semi-graphical terminal named pGD1.
Through the pGD1 panel the complete unit status can be seen and it is possible to work on the parameters for configuration of the unit.
The various menu structures and displays are designed to be functional and easy to use.



The pGD1 terminal, shown in the preceding figure, has six keys with the following functions:

- Alarm	**Displays active alarm list and historical alarm list Red LED illuminated = at least one active alarm**
Prg	**Displays the Menu User Orange LED illuminated = winter mode**
Esc	**Returns to previous screen**
- *Up*	**Upwards flow of a list or increases the value shown on the display**
- Down	**Downwards flow of a list or decreases the value shown on the display**
- Enter	**Enters the selected sub-menu or confirms the value set**

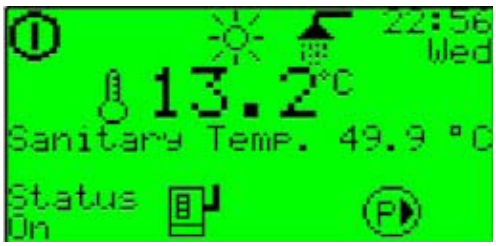
5.2 pGD1 Screen contrast adjustment



To adjust the contrast of the display, press the keys with Alarm and Prog

Alarm	**View the list of active alarms and alarm history Red LED on = at least one active alarm**
	Displays the main menu. Orange LED on = heating mode
	Scrolls the list up or allows to increase the value on the display.
	Scroll down or a list allows you to decrease the value shown on the display.

5.3 Structure of principal screen

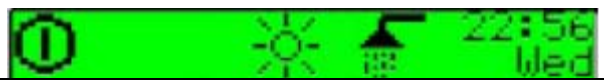


The principal screen provides the user various information through icons

Pressing the key enters the Menu IN/OUT

Pressing the key enters the Menu ON/Off and change of season

The description of the displays present is detailed below.

Icon	Description
Display Upper Part	
- on/off	The whole system (radiant panels, chiller, fan coil unit, solar kit and DHW) is enabled for operation
	Unit active in Economy mode
winter sum.	SEASON: indicates the mode of operation of the system; Summer or Winter
	DHW: indicates the presence of the DHW tank
22:56 Wed	HOUR and DAY: h:min and day of the week

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Icon	Description
Display Central Part	 Temperature the system is controlling to (outlet temp sensor B7)
Display Central Part	 Temperature DHW (sensor B3)
Display Lower Part	 Operating status and active device
	Indicates a preventative action is in operation
	Indicates Off by system time-clock
	Activates if the supplementary system (immersion heater of boiler) are in operation. If the “solar panels” icon is active at the same time only the latter is displayed
	Activates if one or more solar panels are installed and active
	Activates when the geothermal freecooling is active. It is alternative to the functioning of the compressor(s)
	Activates when a compressor is active, if there is a “2” within the icon it means two compressors are active
	Activates when a DHW pump is active
	Activates when there is a DHW request in a system with water device valve. Flashes during timing of changeover
	Activates when the system pump is active. If it flashes it means that the pump is on but not enough time has passed to allow the enabling of the compressor(s)
	Activates when the pump on the geothermal side is active. If it flashes it means that the pump is on but not enough time has passed to allow the enabling of the compressor(s)

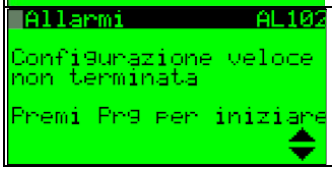
The operational status for the unit available is the following  **:**

Added new operating states and their meaning

Status		Description
Off	***0***	***The system is in stand-by***
On	1	The system is active and functioning
Alarm Off	2	A serious alarm is present which has stopped the system, check the list of active alarms pressing the key
Antifr.	***3***	***The air temperature of the rooms measured by the probes STA / STH go down below the set point (default 6.0 ° C)***
Super.Off	4	The supervisory system has inhibited the start of the unit
Fasc.Off	***5***	***The entire system shut down in Off by clock calendar***
DigIN Off	6	The digital input (ID8) is closed and places the system OFF
Off	***7***	***Off by pGD1***
Protect	8	An anti-freeze protection has triggered. Anti-freeze function
Antileg.	9	The anti-legionella function of the DHW side is active
Chiller	***10***	***The unit working to produce cooling water for the plant***
Sanitario	***11***	***The unit working to produce DHW heating water***
P.C.	***12***	***The unit working to produce heating water for the plant***
Ch+San.	***13***	***The unit working to produce cooling water for the plant and DHW heating water***

6 Menu Wizard (password 0303)

To speed up the WRL unit start-up it is possible to use the following start-up procedure.

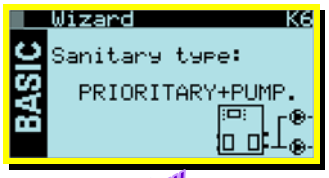
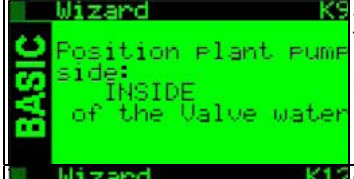
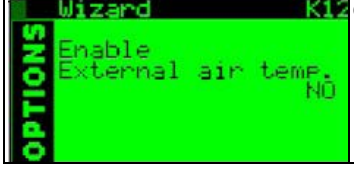
Mask	Description
	At first power up the selection of the available languages is asked “see language section” and the password will be requested
	This screen appears after the first power up of the unit and can be returned to **Press the Prog key and enter the Menu Service then press Enter and enter the password 0303**
	As long as the configuration Wizard is not completed an alarm will be generated (not history logged)

Once in the Menu Wizard it is possible to run though the list of screens using the keys and .

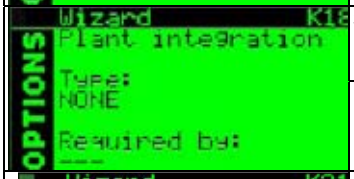
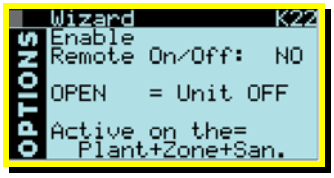
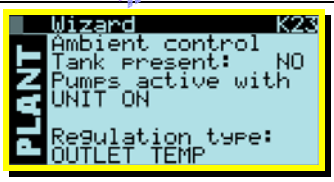
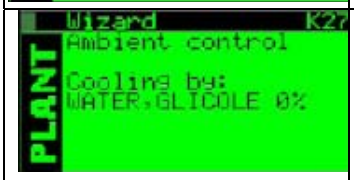
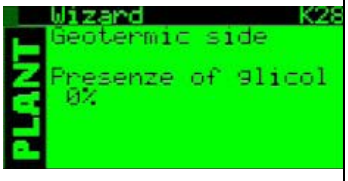
The chosen screen is selected pressing the key.

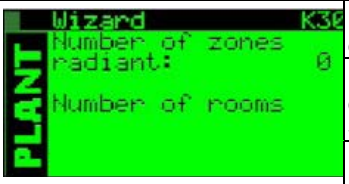
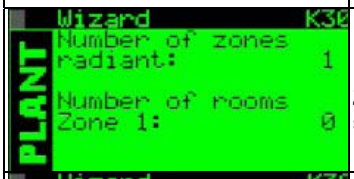
To modify the parameter(s) or content(s) of the screen use the key and to modify the parameter(s) use the and keys. To confirm the required modification press the key.

Modified some masks and descriptions and insert new masks with completly new descriptions.

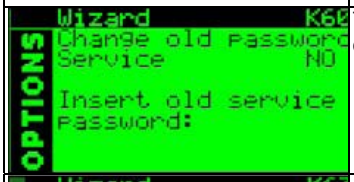
Mask	Description	Values descriptions	Def	Min	Max
	***Select if a DHW tank is present and how it is controlled*** ***= Not present*** ***= Total Recovery*** ***= Sanitary + valve*** ***= Sanitary + pump***	0. NOT PRESENT 1. TOTAL RECOVERY **(N.B. forced if digit T is inserted in the Menu start-up procedure password 0009)** 2. PRIORITY.+ VALVE = DHW with valve 3. PRIORITY + PUMP = DHW with twin pump	0	1	3
	The units with total heat recovery built after May 2011 have a sensor mounted in the heat exchanger. To simplify selection the value of the sensor is displayed	The unit will produce hot water based on the outlet heat recovery temperature and only if requested by the DHW tank sensor	0	0	1
	Selects if the system pump is before or after the water-side reversing valve. Displayed if unit with water-side reversing	0. UPSTREAM 1. DOWNSTREAM	0	0	1
	Outdoor temperature present	0. NO 1. YES	0	1	0

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Mask	Description	Values descriptions	Def	Min	Max
	Geothermal freecooling capability	0. NO 1. YES	0	1	0
	Solar panel heating control capability	0. NO 1. YES	0	1	0
	Select supplementary system heating	0. NONE 1. BOILER 2. HEATING EL.	0	1	2
	Method of supplementary heating	--- 0: Hp INTEGRATION 1: Hp REPLACEMENT	0	1	1
	Select DHW supplementary heating. If immersion heater is chosen it enables the anti-legionella function	0. NONE 1. BOILER 2. HEATING EL.	0	1	2
	Method of DHW supplementary heating	--- 0: Hp INTEGRATION 1: Hp REPLACEMENT	0	1	1
 	***ON/OFF unit selection if is present the remote contact. It is possible decide the logic of intervention and the type of action (parameter H43 sub-menu Plant Conf . Menu Service password 0101)***	***Logic: Open/Closed = Unit ON Activated on:*** ***Plant+Zones +Sanitary*** — ***Shut in Off all system if it is activated*** ***Plant+Zones*** — ***Shut in Off plant and zones*** ***Plant only*** — ***Shut in Off the plant only***	***0***	***1***	***2***
 	***In case the system has a water storage tank is possible to move the control probe within this accumulation and turn on the pump system only if is necessary.***	***0 Unit in ON — Plant pump always in ON*** ***1 COMP. (compressor) request — Plant pump is activated with compressor requested***	***0***	***0***	***1***
		0 OUTLET TEMP. ***1 INLET TEMP.***	***0***	***0***	***1***
	In the case of a mixed system the device requiring the hottest water temperature must be indicated. NB: in the case of a system with fan coil units or radiators it is not intended to install the pCOe expansion boards or the STA/H temperature/humidity sensor	0 RADIANT FLOW — 35,0 1 FANCOILS — 45,0 2 RADIATOR — 55.0°C 3 MIX, Set 40°C — 40,0	3	1	2
	In the case of a mixed system the device requiring the coldest water temperature must be indicated. NB: in the case of a system with fan coil units or radiators it is not intended to install the pCOe expansion boards or the STA/H temperature/humidity sensor	0 RADIANT FLOW — Summer set-point 17,0 — Plant Antifreeze set-point 4.0 — ***Set-point limits 6.0°C*** 1 FANCOILS — 12,0 — 4.0 — ***6.0°C*** 2 RADIATOR — 12,0 — 4.0 — ***6.0°C*** 3 WATER GLICOLE 0% — 7,0 — 4.0 — ***6.0°C*** 4 WATER GLICOLE 10% — 7,0 — -1.0 — ***1.0°C*** 5 WATER GLICOLE 20% — 7,0 — -10.0 — ***-8.0°C*** 6 WATER GLICOLE >20% — 7,0 — -10.0 — ***-8.0°C***	3	0	6
	With a water/glycol mix it is possible to produce lower temperatures so if a value other than 0% is used the following alarms are automatically modified: LOP (AL=91), LowTemp (AL097) = with EEV valve	0) 0% — Geo Antifreeze set-point [°C] 4.0 — LOP [°C] -2.0 — Evap Low temperature [°C] 2.0 1) 10% — -1.0 — -7.0 — -4.0 2) 20% — -10.0 — -13.0 — -9.0	0	0	2

Mask	Description	Values descriptions	Def	Min	Max
	Maximum number of zones that can be controlled	---	1	0	3
	Inserting 1 the Carel µPC board can directly control one zone and one room with the STA/H sensor	---	1	0	1
	In the case of other radiant zones being present inserting 2 or 3 it is necessary to install one or two pCOe expansion boards (one per zone) and to install at least one STA/H sensor per room	---	1	0	2
	**Example:** **Number of radiant zones: 1** **Number of rooms** **Zone 1: select 0 or 1 and the Carel µPC board can directly control one zone and one room with the STA/H sensor.**				
	**Example:** **Number of radiant zones: 2** **Number of rooms** **Zone 1: select 0 or 1** **Zone 2: select 0, 1 or 2**				
	**Example:** **Number of radiant zones: 3** **Number of rooms** **Zone 1: select 0 or 1** **Zone 2: select 0, 1 or 2** **Zone 3: select 0, 1 or 2**				
	**Example:** **Screen complete**				
	Zone 1 Type of device				
	Type of sensor connected to Room 1	0. STA/H Temperature only 1. STA/H Temperature/Humidity	0	0	1
	Zone 2 Type of device				
	Type of sensor connected to Room 1	0. STA/H Temperature only 1. STA/H Temperature/Humidity	0	0	1
	Type of sensor connected to Room 2	0. STA/H Temperature only 1. STA/H Temperature/Humidity	0	0	1
	Zone 3 Type of device				
	Type of sensor connected to Room 1	0. STA/H Temperature only 1. STA/H Temperature/Humidity	0	0	1
	Type of sensor connected to Room 2	0. STA/H Temperature only 1. STA/H Temperature/Humidity	0	0	1
	Personalised name of Room 1 Screen **K42**	A…Z and from 0..9 and "+" "-"	--	0	38
	Personalised name of Room 2 Screen **K45** not displayed	A…Z and from 0..9 and "+" "-"	--	0	38
	Personalised name of Room 3 Screen **K48** not displayed	A…Z and from 0..9 and "+" "-"	--	0	38
	Personalised name of Room 4 Screen **K51** not displayed	A…Z and from 0..9 and "+" "-"	--	0	38
	Personalised name of Room 5 Screen **K54** not displayed	A…Z and from 0..9 and "+" "-"	--	0	38

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Mask	Description	Values descriptions	Def	Min	Max
	Setting type of BMS protocol	0. --- 1. CAREL RS485 2. ModBus RS485 3.VMF	2	0	3
	Setting speed of BMS protocol	0. 1200 3. 9600 1. 2400 4. 19200 2. 4800	4	0	4
	Select address number for BMS protocol		200	1	207
	To insert the new Assistance password the old password must first be inserted		0000	9999	101
	On completion of the configuration the existing parameters are over-written with those from the Menu Wizard. The language selection is disabled. The Wizard not configured alarm is reset. Returns to the initial screen	0.NO 1.YES	No	No	Si

IMPORTANT: From software version 2.3.0 it is possible to have directly access to Menu Service (with password to access) from the Menu User simply by pressing the Prg key.

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7 Menu Set Up Procedure (password 0009)

Group of hidden screens, DO NOT DIVULGE THE EXISTENCE.

To speed of the set-up procedure at the Aermec office this group of hidden screens were created.

If required by the Technical Assistance Service, this menu can be accessed on site where the unit is installed to verify the particular WRL unit configuration inserted into the characteristics label.

To access this group of screens insert the password 0009 from the Menu Service.

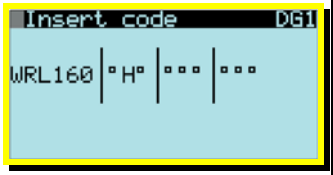
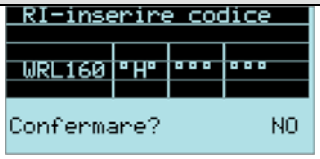
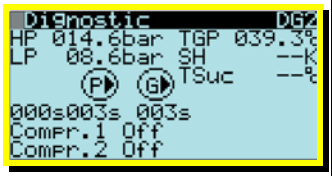
Mask	Description
	Press the **Prog** key and enter the **Menu Service** (see dedicated section) then press **Enter** and insert the **password 0009** **The password is always fixed at 0009** The password displayed will return to 0 after 5 minutes of inactivity of the user terminal.

Once in the Menu set-up procedure it is possible to run though the list of screens using the keys and

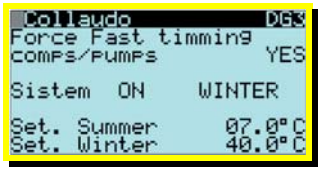
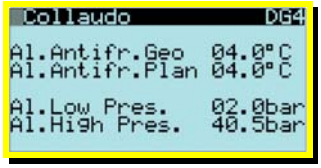
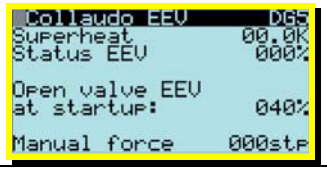
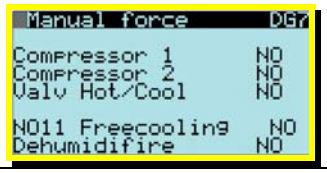
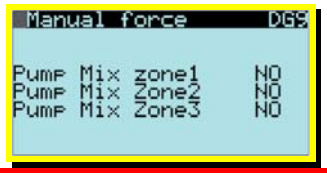
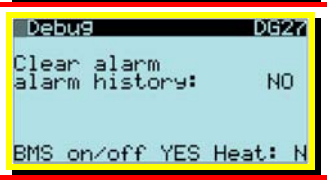
The chosen screen is selected pressing the key.

To modify the parameter(s) or content(s) of the screen use the key and to modify the parameter(s) use the and keys. To confirm the required modification press the key.

Changed all screens and add new meanings

Mask	Description		
	WRL unit configuration. The unit is configured in accordance with the symbols inserted in the spaces provided. At the end of the configuration the verification of the "code" is requested. **N.B.: the code and the date inserted are memorised in the Menu Info of the Menu Service password 0101.**		
	***HP e TGP***	***High pressure and compressor discharge temperature***	***Push the Enter key to display the saturation temperature***
	LP e SH	***Low pressure and super heating***	***Push the Enter key to display the saturation temperature***
	P G	***Pumps status and countdown time for compressor/s start***	
	----- s ----- s ----- s Compr	***Minimum time in OFF and minimum time in ON Compressor/s status***	

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Mask	Description
	Forced accelerated timings like: **N.B. If power is removed then re-instated the timings return to default values** Forced accelerated timings like: **N.B. If power is removed then re-instated the timings return to default values** System WINTER: ON/OFF of the system and select SUMMER/WINTER. Parameter the same as screen u3 (Menu ON/OFF of the Menu User). **N.B.: the selection SUMMER/WINTER can only be changed with the unit off.** Set. Sys. Summer: System cooling water setpoint. Parameter the same as screen S3 (Menu Chiller of the Menu User) Set.Sys.Winter: System heating water setpoint. Parameter the same as screen S6 (Menu Chiller of the Menu User)
	Al. Antif. Geo: anti-freeze alarm setting of the outlet side (geothermal). Parameter the same as screen (Menu Conf. Alarm of the Menu Factory password 0202). Al. Antif. Sys.: anti-freeze alarm setting of the system side. Parameter the same as screen A6 (Menu Conf. Alarm of the Menu Factory password 0202). Al. Low Pres.: low pressure alarm setting. Parameter the same as screen A21 (Menu Conf. Alarm of the Menu Factory password 0202). Al. High Pres.: high pressure alarm setting. Parameter the same as screen A18 (Menu Conf. Alarm of the Menu Factory password 0202)
	Superheat: state of the suction refrigerant super heat. State EEV: state of percentage opening of the electronic expansion valve. Valve opening at start-up: set opening of the electronic expansion valve. Forced manual: Valve forced manual with value of modification “stp” = step
	***Forced operation of geothermal pump*** ***Forced operation of plat pump*** ***Forced operation of heater plant*** ***Forced operation of sanitary pump*** ***Forced operation of DHW heater***
	***Forced operation of compressor 1.*** ***Forced operation of compressor 2.*** ***Forced operation of inversing cycle valve refrigerant circuit*** ***Forced operation of free-cooling*** ***Forced operation of dehumidifiers***
	***Forced operation in percentage of sanitary pump*** ***Forced operation in percentage of geothermal pump*** ***Forced operation in percentage of valve zone 1*** ***Forced operation in percentage of dehumidifier***
	Forced operation pumps Zone 1, 2 and 3.
	**Cancellation historical alarm.** **To carry out at the end of set-up in factory or as required by technical assistance service after consultation and verification with the factory.**

IMPORTANT: From software version 2.3.0 it is possible to have directly access to Menu Service (with password to access) from the Menu User simply by pressing the Prg key.

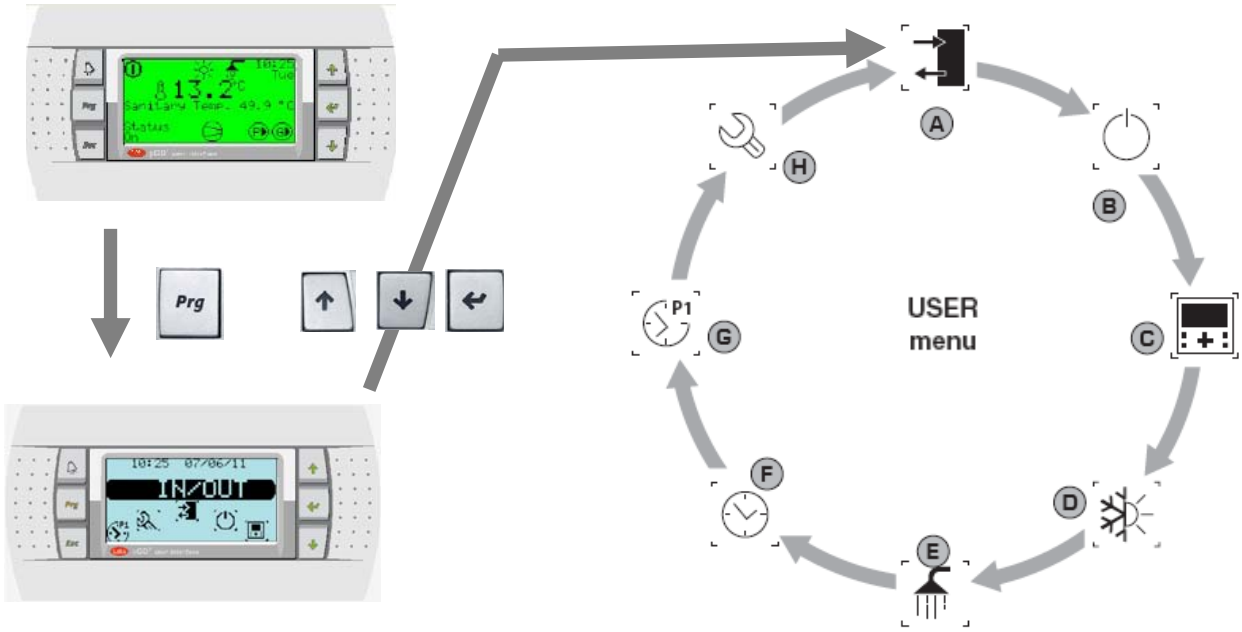
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8 Menu User (push Prg key Prg directly)

From the principal screen, which appears when turned on, press the Prg key to access the Menu User without having to enter the access password.

The various menus seen from within Menu User contain further view only screens or adjustable parameters. With the "arrow" keys move through the sub-menus shown or access via the "enter" key for any modifications.

For example, within the Menu Zone all the parameters for the control of the radiant zones are found.



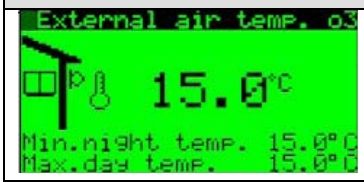
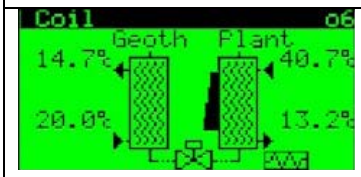
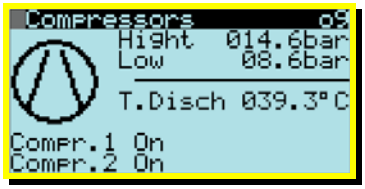
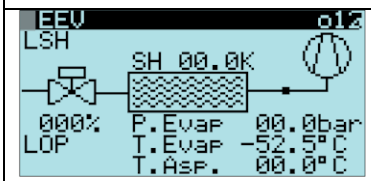
	A) IN/OUT	Status of the WRL system various parts
	B) ON/OFF	On and off of the unit. change of season and time-clock
	C) ZONE	Control of radiant zones (parameters of the STA/H, Th-Tune sensor (s)) and selection of the time-clock
	D) CHILLER	CHILLER parameter (Chiller, PdC, condensing), set point comfort and Economy
	E) SANITARY	Set point, enable, temperature, time-clock
	F) CLOCK	Date, hour, change of Winter, Summer time
P1	G) TIME ZONE	Selection of 5 programmes of the radiant zones with 2 time-clocks
	H) SERVICE	Assistance, from which other menus can be accessed (password 0101 Menu Service, password 0202 Menu Factory)

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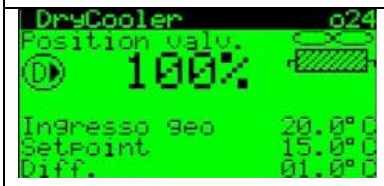
8.1 IN/OUT menu

In this menu it is possible to have a summary of the unit operation.

Changed some masks with the addition of new meanings

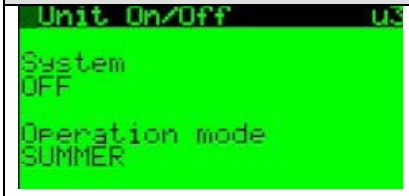
Mask	Description
	Indicates the actual outdoor air temperature and the minimum and maximum temperatures recorded during the night and day ***Screen visible if enabled air external probe, parameter K12 Menu Wizard password 0303.***
	Indicates the inlet/outlet temperatures within the heat exchangers of the geothermal side and system side Icon / Description: pump geothermal side active pump system side active 4 way valve displayed with black head if enabled flow switch open system pump forced on to overcome low pressure prevention high system outlet water temperature prevention low system outlet water temperature anti-freeze heater active due to low temperature system demand 0 - 100%
	Indicates the suction and discharge pressures of the compressor and the discharge temperature. Also shows if the compressor is on or off: ***0 Off — Compressor/s off*** ***1 On — Compressor/s on*** ***2 Min.On — Compressor/s on and in coutdown time of minimum on status*** ***3 Min.Off — Compressor/s off and in coutdown time of minimum off status*** ***4 Allarme — Compressor/s in alarm*** ***5 Forz.Off — Compressor/s forced in off*** ***6 Forz.On — Compressor/s forced in on*** ***7 --- — Compressor not configured (second compressor)***
	The screen gives useful information of the state of the electronic expansion valve such as super heat (SH), the suction pressure and its suction temperature and refrigerant evaporating temperature (Suct.). LOP = prevention of low suction pressure, MOP = prevention of high suction pressure. LSH = prevention low super heat. = alarm present on the electronic expansion valve driver. ***Screen visible if is present the electronic expansion valve, code X insert into model of unit, see Menu Set Up Procedure password 0009***

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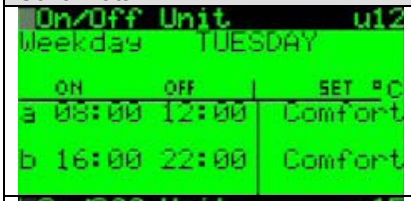
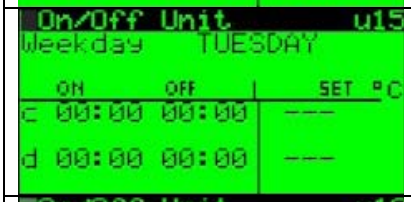
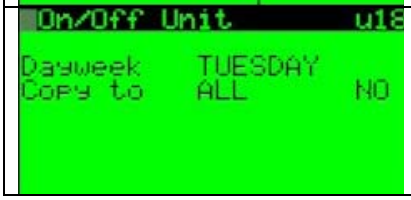
Mask	Description
	Indicates the water temperature of the DHW tank, outlet water temperature, the setpoint used and the relative differential. In addition the following symbols mean, anti-legionella active, DHW pump running, off by time-clock. The icon "LP" indicates that the DHW pump is forced on to overcome a low pressure (suction pressure) of the refrigerant circuit. Other information is shown in the following table: **0 — ---** The system is off **1 — On** The system is available to produce DHW **2 — Alarm** An alarm relating to DHW is present **3 — Comp Off** With the desuperheater the DHW does not work with compressor off **4 — Unit Off** The central system has inhibited the starting of all devices **5 — Time-Cl Off** DHW is disabled by time-clock **6 — Ingr.IDg** DHW is disabled by digital input ID8 **7 — Off key** DHW is disabled by user **8 — Manual** DHW is forced on by digital input **9 — Antilegion.** Anti legionella function ***Screen visible if is insert the presence of DHW parameter K6 Menu Wizard password 0303 or parameter H3 sub menu Plant Comf., Menu Service password 0101.***
	The modulation of the geothermal side flow rate is used to stabilise the condensing pressure. In this screen the operating setpoint and differential can be seen and the pressure and temperature seen by the sensors and percentage opening of the valve or the percentage speed of the pump inverter. The icon "LP" indicates that the DHW pump is forced on to overcome a low pressure (suction pressure) of the refrigerant circuit. NB. In heat pump mode with head pressure control the opening of the valve or the speed of the pump inverter is fixed at' 80%.
	The screen indicates that the drycooler system is in operation (see the enabling in the sub-menu Accessory of the Menu Service screen B27 and B30). Shows the percentage opening of the mixing valve/percentage speed of the fans relative to output Y1 (0-10V) of the pCOe expansion board accessory. In screen B27 the sensor can be selected which the thermostat uses; in this case the geothermal side return sensor. As well determine the operating Setpoint and differential ***Screen visible if is insert the presence of dry cooler, parameters present into sub-menu Optional, Menu Service screens B27 and B30.***

8.2 *Menù On/Off*

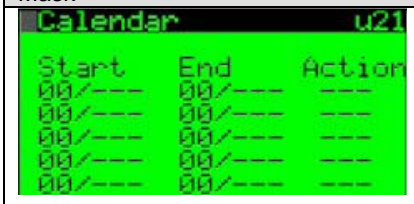
Added new meanings

Mask	Description
	From the first row of the screen selection it is possible to change the state of the unit: • OFF (the whole system will be placed in off mode) • ON (the controlled supply of hot/cold water is enabled) • ECONOMY (the system will control with setpoints adjusted for energy saving) • ON BY TIMEZONE Time-clock (the system runs in accordance with the time-clock settings) In the second row of the screen selection (visible only if OFF selected in the first row) it is possible to select the change of season • SUMMER (production of cold water) • WINTER (production of hot water) • DHW ONLY (this mode envisions that the unit works only for the production of DHW) • AUTO BY TEMP.EXT (outdoor ambient sensor if present)

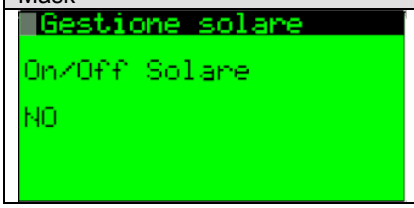
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Schermata	Significato
	If the AUTO Time-clock function is selected the following screens allow setting of the unit's time-clock. Note that the selections possible are: --- = time-clock not used. Unit off Comfort (nominal setpoint) Eco (economy setpoint) 4 time-clock programmes can be selected per day, over the 7 days of the week ***Screen visible if is enable ON BY TIMEZONE into the previous screen u3 Menu ON/OFF.***
	
	Entering this screen and modifying Copy in --- (default) in Copy in ALL and confirming with YES the time-clock programmes determined for one day can be copied for all days of the week. ***Screen visible if is enable ON BY TIMEZONE into the previous screen u3 Menu ON/OFF.***

8.2.1 Calendar

Mask	Description
	**Each programme has a "special" day called Holiday (Hol)** This day can be called from the function available in the "Calendar" screen **In this screen up to 5 actions can be enabled.** Each action has a start and stop date and the can be selected to switch off the system or enable the whole system for the holiday ***Screen visible if is enable ON BY TIMEZONE into the previous screen u3 Menu ON/OFF.***

8.2.1 Solar management (at the moment only after special unit request at the time of order of the unit)

Mask	Description
	Within this screen the solar heating module can be switched on or off. ***The screen appears if the Solar control is enable in the Menu Wizard password 0303***

8.2.2 Control Summer/Winter with external air temperature

Mask	Description
	If the presence of the external ambient sensor is selected in the Menu Wizard password 0303 in screen K12 and if in the preceding screen u3 the function AUTO from TEMP.EXT is selected (change of season from external temperature sensor); in this screen it is possible to enter the change of season limits. If the temperature is within the two limits the unit will maintain the mode of operation it had previously. Example: If the operating mode is winter, because the external air temperature is lower than the summer activation setting of 26°C, the operating state remains the same until the summer setting is exceeded. When the summer mode operates because the setpoint of 26°C is exceeded, this mode will be maintained until the lower setting of 7°C is passed which will activate the winter mode operation. **N.B. The change of season does NOT switch off the unit** ***Screen visible if is enable AUTO BY TEMP.EXT into the previous screen u3 Menu ON/OFF.***

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8.3 Zone Menù

Changed some masks with the addition of new meanings

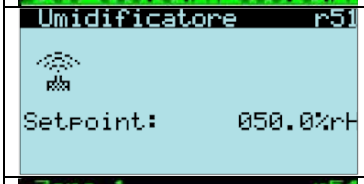
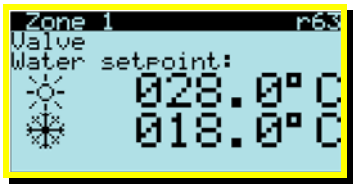
Mask	Description
	***Screen/s visible if is enable at least one zone*** To each ROOM controlled by a STA/H (Th-tune) room sensor a summary screen is available which through icons provides the user various system functioning information. ***Example: Screen visible if is enable the room 1 of zone 1.*** **The following shows the description of the information available**

Mask	Description
1.1	***Number given to room***
ROOM 1	Name of the room (personalised in the service section)
1 2 3 4 5	PROGRAM: indicates association of the room
- on/off	The room is enabled
23.0°C (example)	***Room air temperatura***
winter summer	SEASON: indicates the mode of operation of the room
Humidity: 64.3% (example)	***Relative humidity of the room (if present)***
Set active: 20.0°C (example)	***Active setpoint of the room***
	Activates when there is a heat/cool demand
	Indicates activation of the dehumidifier
OFF	Room disabled (operate in the next screen to switch on the room)
	Off from time-clock
	Room enabled for operation

The Status of operation in which one can find the room are the following:

Status	Description
On	The room is active and functioning
Alarm Off	An alarm is present in the room (check the active alarm list pressing the alarm key)
Unit.Off	The central system has inhibited the start of all the zones
Status	Description
Disabl.	The room is not configured (check service/assistance parameters)
Off Sched.	The room is disabled by the time-clock (check the associated programme)
DigIN Off	Disabled by input to the pCOe (only with configuration Th-tune disabled)
Off tasto	The room is disabled by the user

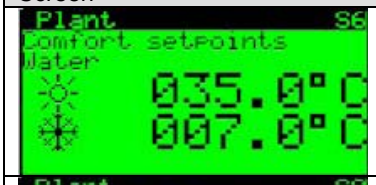
Mask	Description
	The screen indicates the temporary control setpoint that the room sensor is working to, in this screen **ROOM 1** is shown**.** The operating setpoint limits can be modified in the Menu Service password 0101, in sub-menu Zone. The room can be switched on or off through the “Enable room” setting. **P.S. If the time-clock operates this setpoint is overwritten each time the time-clock is updated.** ***Screen visible if is enable the room 1 of zone 1.***

Mask	Description
	The screen indicates the time-clock to which the room is associated, in this screen **ROOM 1** is shown. **N.B. In the case other rooms are activated in the Menu Wizard password 0303 (if the respective pCOe expansion boards are installed) the following additional screens will appear:** **- r15 and r18 for ROOM 2** **- r24 and r27 for ROOM 3** **- r33 and r36 for ROOM 4** **- r42 and r45 for ROOM 5** In this way specific setpoints in specific time-clock settings of the day can be controlled. **PS: The programmes associated to the rooms are controlled from within the Menu time-clock** ***Screen visible if is enable the room 1 of zone 1.***
	The screen indicates the dehumidifier setpoints of Zones 1, 2 and 3. The operating limits must be adjusted from the Menu Service in the sub-menu Zone ***Screen visible if is enable at least one zone***
	The screen indicates the humidifier setpoint. The operating limits must be adjusted from the Menu Service in the sub-menu Zone ***Screen visible if is enable at least one zone***
	The screen shows various information on the state of **Zone 1**: ***- The pump of the active zone is shown with the P circled*** ***- Deliv. 50.8°C (example): The water temperature of the zone*** ***- Set 30.0°C (example): The active setpoint at that time*** ***- Diff 4.0°C (example): The active differential at that time*** ***- Valv. 000% (example): The state of the mixing valve 0..10 Volt*** ***- The state of the zone may be: On, Alarm, Manual, Disabl., Room Off, Off Rem, Unit Off*** **N.B. In the case other zones are activated the following screens will also appear always with the same indications:** **r57 for ZONE 2** **r60 for ZONE 3**
	The screen indicates the chilled water Setpoint, example **Zone 1** (screen r72 for Zone 2 and r78 for Zone 3). Zone 1 Setpoint water in cooling mode ☼ Setpoint water in heating mode ❄ The operating limits must be adjusted from the Menu Service in the sub-menu Zone ***Example: Screen visible if is enable "FIXED SETPOINT" into the parameter Z36 sub-menu Zone, Menu Service password 0101.***
	The screen indicate the water setpoint in heating mode, example **Zone 2**. The limits of the operating range can be changed in the Menu Service, sub-menu Zone ***Example: Screen visible if is enable "FIXED SETPOINT" into the parameter Z36 sub-menu Zone, Menu Service password 0101.***

8.4 Menu Chiller

Screen	Description
	The screen shows the system water Setpoint and demand

Icon	Description
12.0°C	Active system Setpoint (example 12.0°C)
winter summer	SEASON: indicates the operating mode of the room
Diff. 03.0°C	Active control Differential (example 3°C)
Demand 100%	Load demand for compressor(s) from the thermostat (example demand 100%). In the case of a unit with only one compressor, the compressor is switched on after the 100% demand is visible in the % of the screen (and after compressor minimum stop timer). In the case of 2 compressors present, the starting and operation of the compressors will be additionally tied to the requested % demand, to the different running hours (the compressor with the least running hours will start first), and to the minimum compressor stop time

Screen	Description
	Unit temperature control. Adjustable hot and cold water nominal Setpoint
	Unit temperature control Adjustable hot and cold water Comfort Setpoint

Index Scr.	Description display	Description	Description Values	Def.	Unit	Min	Max	R/W
S6	Setpoint Comfort							
		Water setpoint in heating	---	35.0	°C	Me9	Me9	RW
		Water setpoint in cooling	---	17.0	°C	Me9	Me9	RW
S9	Setpoint Economy							
		Water setpoint in heating	The economy function can be activated from screen u3 Menu ON/OFF or the Time-clock (Menu User)	32.0	°C	Me9	Me9	RW
		Water setpoint cooling	The economy function can be activated from screen u3 Menu ON/OFF or the Time-clock (Menu User)	15.0	°C	Me9	Me9	RW

8.5 Menu DHW

Screen	Description
	In this screen the operation of the DHW tank and the water temperature can be monitored

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Icon	Description
Setpoint 50.0°C	Active DHW setpoint (adjustable), example 50.0°C
	Hot water demand DHW tank. The DHW pump will switch on when the bar turns completely black and will switch off when no demand is shown
Demand 94%	The compressors will be switched on based on the heat recovery outlet water temperature sensor. If the demand reached 100% all compressors will be switched on
Enabled	Allows the user the switch on/off the supply of DHW
3rd row	If the image flashes the immersion heater is on. This can be switched on manually as supplementary or for the programmed anti-legionella cycle

The available states of the DHW are:

State	Description
On	The system is available to produce DHW
Alarm	A alarms is present relative to the DHW (check the active alarm list pressing the alarm key)
Comp Off	If the DHW is configured as desuperheater and the compressor is off then hot water cannot be produced
Unit Off	The central system (for example from remote ON/OFF) has inhibited the start of all devices
Time-Cl Off	DHW is disabled by time-clock
Off key	DHW is disabled by user
Manual	DHW is forced by digital input independent from unit switch off (by accessory pCOe expansion board)

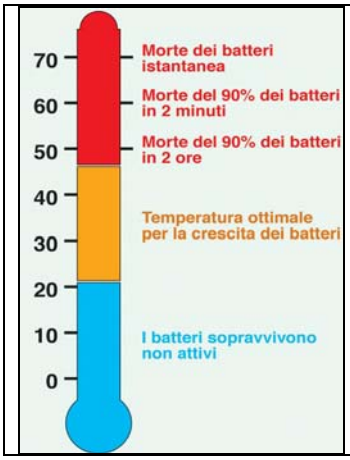
Screen	Description
	Select DHW time-clock
 	In this screen it is possible to enter the time-clock programmes. Up to 4 daily programmes can be selected (a, b, c, d), for the 7 days of the week
	Entering this screen the time-clock programmes for one day of the week can be copied for all the other days

8.5.1 Anti-legionella Treatment

The Legionella bacteria are very dangerous and proliferate in DHW tanks. As can be seen from the image below above a certain temperature the bacteria can instantly be killed.
The anti-legionella procedure can be enabled from the Menu DHW screen D18 of the Menu User.

This function is only available if the immersion heater or supplementary system heater within the DHW tank is enabled (see Menu Wizard password 0303 screen K21).
Attention: the unit must also be configured as total heat recovery or without heat recovery (digit T or ° in the Menu set-up procedure password 0009), entering in the Menu Wizard password 0303, TOTAL HEAT RECOVERY. (Automatic if the WRL unit is configured with digit T in the Menu set-up procedure password 0009) or PRIORY+ VALVE or PRIORITY+PUMP.

This function raises the temperature within the DHW tank for a determined time. The specific parameters are found in the Menu Service password 0101 entering the sub-menu DHW, screen Q15.

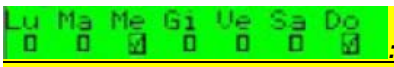




User side



: indicate the hour to activation of antilegionella treatment



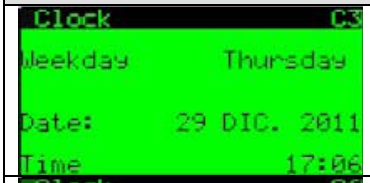
: indicate the days of week to activation of antilegionella treatment

Abilitazione: indicate the legionella function enabling

NB: This function is active even with the unit is OFF.

Index Scr.	Description display	Description	Description Values	Def.	Unit	Min	Max	R/W
Q15	Anti-legionella							
		Function start hour		3.00	h	0	23	RW
	Mon, Tue,…… Sun.	Day which the cycle starts		Mo				RW
	Enable	Enabling of the function				0	1	RW

8.6 Menu Clock

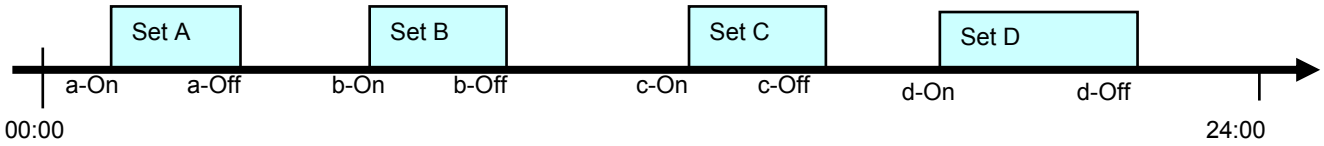
Screen	Description
	In the first screen of this menu the system time can be changed. To commence the change of hour pressing the ENTER key is sufficient; on first pressing the numbers showing the hour are displayed. To modify the value use the (UP) and (Down) keys. To confirm the selection of the hour press the enter key then passing to the modification of the minutes. The change of system time is completed with the modification of the seconds and confirmation by pressing the key
	In this screen the automatic change between Winter and Summer time is possible

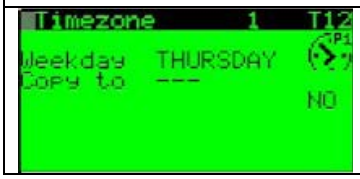
Index Scr.	Description display	Description	Description Values	Def.	Unit	Min	Max	R/W
C3	Day of the week	Day of the week based on the date	MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY SUNDAY	--	--	1	7	R
	Date	Enter Day (dd),Month (mm), Year (yy)	----	--	--	0 0 0	31 12 99	RW
	Time	Enter hour and minutes	---	0		0 0	23 59	RW
C6	Summer time	Enable Summer time	0. NO 1. YES	No	---	0	1	RW
	Trans time	Variation relative Winter time	--	0	min	-90	90	RW
	Init.	Day/time start Summer time	FIRST SUNDAY/SATURDAY LAST SUNDAY/SATURDAY		--			RW
	End	Day/time finish Summer time	FIRST SUNDAY/SATURDAY LAST SUNDAY/SATURDAY					RW

8.7 Time zones menu

The application has 5 programmes (scenarios) present that can be associated to the various rooms. Each programme has 8 possibilities, 7 days plus 1 holiday, each day has four time-clock programmes to enable the hour to switch on and switch off, setpoint summer and winter. Outside of these 4 time-clock programmes the relevant room is switched.

The change of the time-clock overwrites the temporary setpoint.



Screen	Description
	In this screen one of the 5 programmes relative to the Menu time-clock can be selected (example Programme 3). Pressing the Enter key enters the relative programme
	Programme 3 = name of the programme (example Programme 3) Day MONDAY = selection day of the week (example MONDAY) The possible selections are: from MONDAY to SUNDAY a = ON and OFF of the first time-clock programme b = ON and OFF of the second time-clock programme
	Programme 3 = name of the programme (example Programme 3) Day MONDAY = selection day of the week (example MONDAY) The possible selections are: from MONDAY to SUNDAY c = ON and OFF of the third time-clock programme d = ON and OFF of the fourth time-clock programme
	In this screen all the days of the week can be entered with the same selections made for the day chosen. The possible selections are: MONDAY…SUNDAY or ALL

IMPORTANT: From software version 2.3.0 it is possible to have directly access to Menu Service (with password to access) from the Menu User simply by pressing the Prg key.

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9 Menu Service (password 0101)

From the Menu User, pressing the Enter key on the symbol enters the Menu Service.
To access the Menu Service enter the password 0101 in the access screen.

The group of screens of the Menu Service are password protected. On the first screen the password is requested.

Screen	Description
	Press the **Prog** key and enter the **Menu Service** (see dedicated section) then press **Enter** and insert the **password 0101** **The password is always fixed at 0101** The password displayed will return to 0 after 5 minutes of inactivity of the user terminal.

Procedure to enter Menu Service (password 0101):

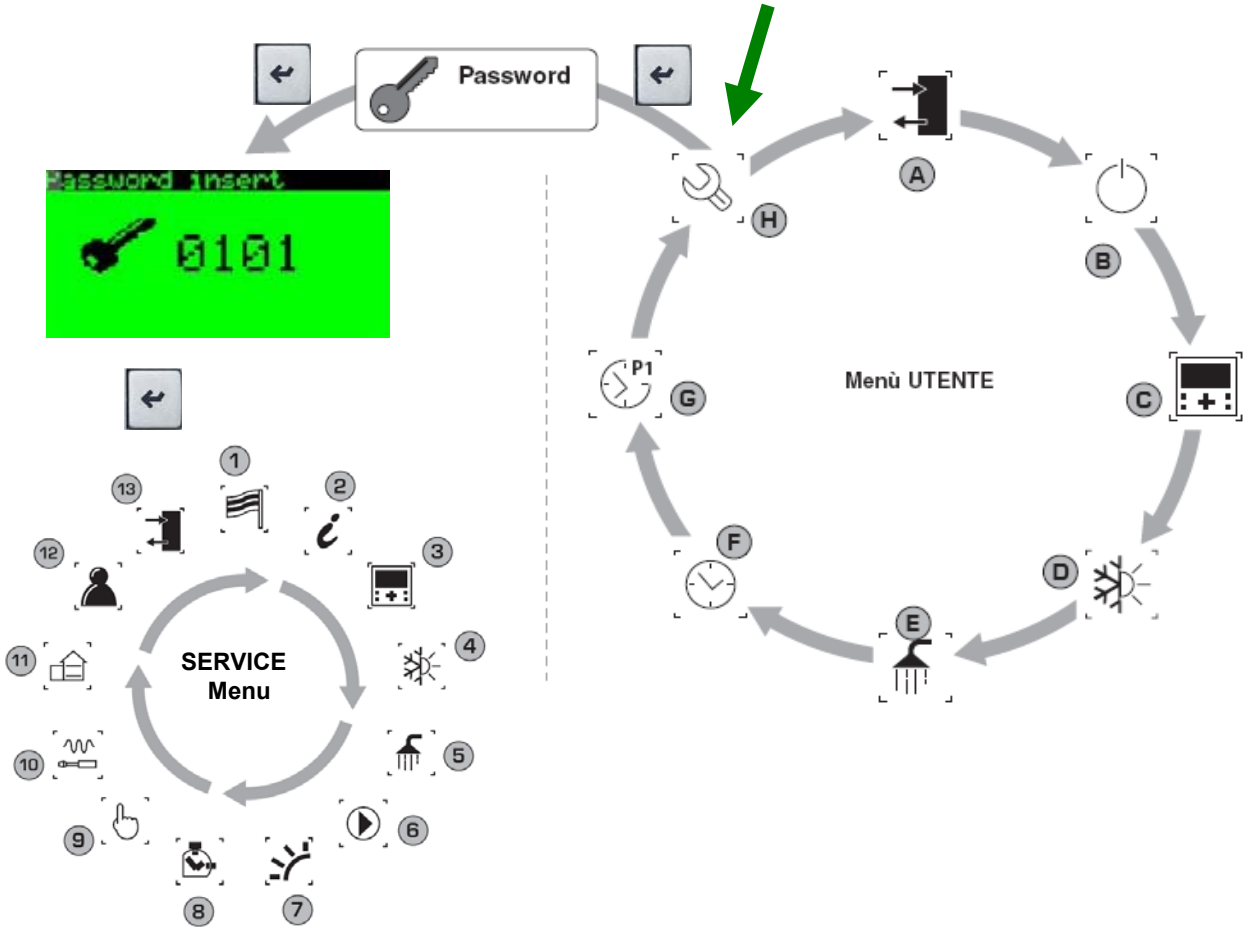


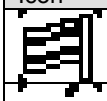
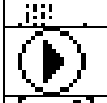
press the key Prg **to move to screen**



continue to press **to arrive at the screen**





Icon	Text	Description
	1) LANGUAGE	Select language, enable visualisation change of language after re-start of board
	2) INFO	Software version
	3) ZONE	Temperature control differential, name of room, default setpoint, type of valve control, type of humidifier, setpoint limits
	4) CHILLER	Differential, type of control, geothermal parameters, electronic expansion valve EEV setpoint
	5) SANITARY	Setpoint limits, DHW differential, type of control, DHW immersion heater, anti-legionella.
	6) PUMPS	Type of control, start/stop delay, geothermal parameters
	7) SOLAR	Parameter for control of the solar supplementary heating
	8) HOUR COUNTER	Device hours run, limits hours run, setting hours run alarm
	9) MANUAL	Forced pump, forced electronic expansion valve, forced anti-legionella procedure
	10) OPTIONAL	Enable freecooling, solar kit, supplementary immersion heater/boiler, enable solar module. BMS configuration
	11) PLANT CONF.	Type of chiller, type of DHW, number of compressors, number of zones, enable sensors and digital inputs
	12) USER	Cancel alarm history, personalise password, unit of measurement
	13) IN/OUT	Detailed status of all inputs and outputs

 **Once in the Menu Service it is possible to run though the list of sub-menus using the keys** 

The chosen sub-menu is selected pressing the  **key.**

To modify the parameter(s) or content(s) of the sub-menu use the  **key and to modify the parameter(s) use the**  **and**  **keys. To confirm the required modification press the**  **key.**

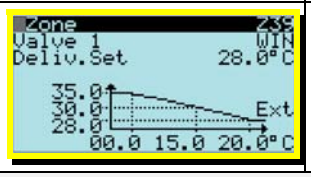
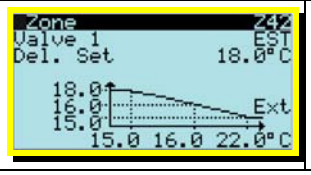
 **The appearance of many screens contained in the sub-menus detailed below is directly linked to the selections in the Menu Wizard (password 0303) and Menu set-up procedure (password 0009).**
In reference to the selections in these Menus (Menu Wizard and Menu set-up procedure), many screens in the sub-menu of the Menu Service appear already configured.
Some screens contained in the sub-menus detailed here are only visible after enabling options contained in other screens of the same sub-menu (for example Zones) or other options contained in sub-menus of the Menu Service.

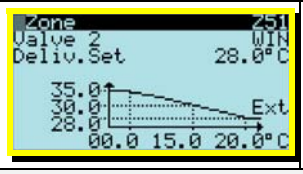
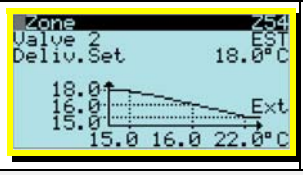
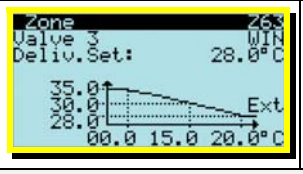
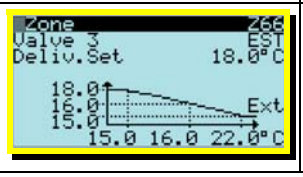
 ***Added new complete parameter descriptions and modified and / or correct some earlier.***
Some parameters have been deleted.

9.1 Info 

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Gb01	Aermec							
	WRL160XH°°IPQ° (example)	Unit configuration	See the Menu Set Up Procedure Password 0009	---	---	---	---	R
	Ver 2.6 30/08/12	***Software version***						
	24/10/12 (example)	***Software version***	***Test factory date It isn't the factory realization of the unit***	***---***	***---***	***---***	***---***	***R***

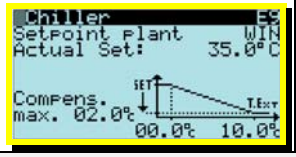
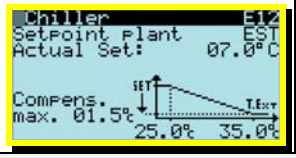
9.2 Zone

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Z21	1.1 ROOM 1							
	Set point default							
	22.0°C 20.0°C	Initial setpoint, to be used when changing season and if time periods have been enabled but do not operate		22.0 20.0	°C	***Par. Z81***	***Par. Z81***	RW
Z24	2.1 ROOM 2							
	Set point default							
	22.0°C 20.0°C	Initial setpoint, to be used when changing season and if time periods have been enabled but do not operate		22.0 20.0	°C	***Par. Z81***	***Par. Z81***	RW
Z27	2.2 ROOM 3							
	Set point default							
	22.0°C 20.0°C	Initial setpoint, to be used when changing season and if time periods have been enabled but do not operate		22.0 20.0	°C	***Par. Z81***	***Par. Z81***	RW
Z30	3.1 ROOM 4							
	Set point default							
	22.0°C 20.0°C	Initial setpoint, to be used when changing season and if time periods have been enabled but do not operate		22.0 20.0	°C	***Par. Z81***	***Par. Z81***	RW
Z33	3.2 ROOM 5							
	Set point default							
	22.0°C 20.0°C	Initial setpoint, to be used when changing season and if time periods have been enabled but do not operate		22.0 20.0	°C	***Par. Z81***	***Par. Z81***	RW
Z36	Zone							
	Valve 1							
	Cold regulation	Summer adjustment of the Y3 mixing valve from Carel µPC electronic board directly	0.FIXED SETPOINT 1. CLIMATIC CURVE 2. DEW POINT ***3. OFF (Valve/Pump OFF)***	0	---	0	***3***	RW
	Heat regulation	Winter adjustment of the Y3 mixing valve from Carel µPC	0.FIXED SETPOINT 1.TEMP. CURVE	0	---	0	1	RW
Z39	Zone (this mask is visible if is enable the TEMP.CURVE on the Heat regulation into Mask Z36 into this menu)							
	Valve 1 WIN	Winter management						
	Deliv. Set	Current setpoint of water delivery		---	°C	-99.9	99.9	R
		Set by 3 external air temperature (Y axis) and 3 delivery water temperature (X axis) values to generate the winter climate curve desired	Exthernal air temperature (X axis)	***20.0*** 15.0 00.0	°C	-99.9	99.9	RW
			Delivery water temperature (Y axis)	35.0 30.0 28.0	°C	-99.9	99.9	RW
Z42	Zone (this mask is visible if is enable the CLIMATIC CURVE on the Cold regulation into Mask Z36 into this menu)							
	Valve 1 SUM	Summer management						
	Del. Set	Current setpoint of water delivery		---	°C	-99.9	99.9	R
		Set by 3 external air temperature (Y axis) and 3 delivery water temperature (X axis) values to generate the winter climate curve desired	Exthernal air temperature (X axis)	***22.0*** 16.0 15.0	°C	-99.9	99.9	RW
			Delivery water temperature (Y axis)	18.0 16.0 ***15.0***	°C	-99.9	99.9	RW

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Z48	Zone							
	Valve 2							
	Cold regulation	Summer adjustment of the mixing valve output Y1 of expansion boad pCOe zone 2	0.FIXED SETPOINT 1. CLIMATIC CURVE 2. DEW POINT ***3. OFF (Valve/Pump OFF)***	0	---	0	***3***	RW
	Heat regulation	Winter adjustment of the mixing valve output Y1 of expansion boad pCOe zone 2	0.FIXED SETPOINT 1.TEMP. CURVE	0	---	0	1	RW
Z51	Zone (this mask is visible if is enable the TEMP.CURVE on the Heat regulation into Mask Z48 into this menu)							
	Valve 2 WIN	Winter management						
	Deliv. Set	Current setpoint of water delivery		---	°C	-99.9	99.9	R
		Set by 3 external air temperature (Y axis) and 3 delivery water temperature (X axis) values to generate the winter climate curve desired	Exthernal air temperature (X axis)	20.0 15.0 00.0	°C	-99.9	99.9	RW
			Delivery water temperature (Y axis)	35.0 30.0 28.0	°C	-99.9	99.9	RW
Z54	Zone (this mask is visible if is enable the CLIMATIC CURVE on the Cold regulation into Mask Z48 into this menu)							
	Valve 2 SUM	Summer management						
	Del. Set	Current setpoint of water delivery		---	°C	-99.9	99.9	R
		Set by 3 external air temperature (Y axis) and 3 delivery water temperature (X axis) values to generate the winter climate curve desired	Exthernal air temperature (X axis)	22.0 16.0 15.0	°C	-99.9	99.9	RW
			Delivery water temperature (Y axis)	18.0 16.0 ***15.0***	°C	-99.9	99.9	RW
Z60	Zone							
	Valve 3							
	Cold regulation	Summer adjustment of the mixing valve output Y1 of expansion boad pCOe zone 3	0.FIXED SETPOINT 1. CLIMATIC CURVE 2. DEW POINT ***3. OFF (Valve/Pump OFF)***	0	--	0	***3***	RW
	Heat regulation	Winter adjustment of the mixing valve output Y1 of expansion boad pCOe zone 3	0.FIXED SETPOINT 1.TEMP. CURVE	0	--	0	1	RW
Z63	Zone (this mask is visible if is enable the TEMP.CURVE on the Heat regulation into Mask Z60 into this menu)							
	Valve 3 WIN	Winter management						
	Deliv. Set	Current setpoint of water delivery		---	°C	-99.9	99.9	R
		Set by 3 external air temperature (Y axis) and 3 delivery water temperature (X axis) values to generate the winter climate curve desired	Exthernal air temperature (X axis)	20.0 15.0 00.0	°C	-99.9	99.9	RW
			Delivery water temperature (Y axis)	35.0 30.0 28.0	°C	-99.9	99.9	RW
Z66	Zone (this mask is visible if is enable the CLIMATIC CURVE on the Cold regulation into Mask Z60 into this menu)							
	Valve 3 SUM	Summer management						
	Del. Set	Current setpoint of water delivery		---	°C	-99.9	99.9	R
		Set by 3 external air temperature (Y axis) and 3 delivery water temperature (X axis) values to generate the winter climate curve desired	Exthernal air temperature (X axis)	22.0 16.0 15.0	°C	-99.9	99.9	RW
			Delivery water temperature (Y axis)	18.0 16.0 ***15.0***	°C	-99.9	99.9	RW

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Z81	Zone							
	Rooms Temperature set limits							
	Summer min	Room temperature min. setpoint in winter mode		***18.0***	°C	-99.9	99,9	RW
	Summer max	Room temperature max. setpoint in summer mode		30.0	°C	-99.9	99,9	RW
	Winter min	Room temperature min. setpoint in winter mode		6.0	°C	-99.9	99,9	RW
	Winter max	Room temperature max. setpoint in winter mode		***25.0***	°C	-99.9	99,9	RW

9.3 Chiller

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
E3	Chiller							
	Setpoint plant							
	System compr. Reg. type	Proportional or integral regulation adjustment of the compressors	0. P (proportional) 1. P+I (proportional + integral)	0	---	0	1	RW
	Pr. Band sys.	Compressor differential activation value from plant request		***4.0***		0.5	15.0	Rw
	Integral time	Compressor adjustment integral time		600	s	0	999	RW
E9	Chiller (this mask is visible if is enable the TEMP.CURVE on the Heat regulation into the E6 mask)							
	Setpoint plant WIN							
		Current setpoint value		---	°C	---	---	R
		Min. ext. temperature		0.0	°C	-99.9	99.9	RW
		Max. external temperature		10.0	°C	-99.9	99.9	RW
		Max. deviation of the “comfort” or “economy” chiller setpoint		***2.0***	°C	-99.9	99.9	RW
E12	Chiller (this mask is visible if is enable the TEMP.CURVE on the Cold regulation)							
	Setpoint plant SUM							
		Current setpoint value		---	°C	---	---	R
		Min. ext. temperature		25.0	°C	-99.9	99.9	RW
		Max. external temperature		***35.0***	°C	-99.9	99.9	RW
		Max. deviation of the “comfort” or “economy” chiller setpoint		1.5	°C	-99.9	99.9	RW
E24	Chiller							
	Auto. definiction of the differential		0.NO 1.SI	0		0	1	RW
	Time startup unit	***After this time the input and output water temperatures are controlled and is calculated the differential control***		3	min	0	999	RW
	Min. Diff.	***Minimum differential for regulation***		3.0	°C	-99.9	99.9	RW
	Max. Diff.	***Maximum differential for regulation***		8.0	°C	-99.9	99.9	RW
E27	Chiller (this mask is visible if is enable YES on Auto. definiction of the differential into the precedent mask)							
	Automat.definict.diff.							
	Chiller	***Differential calculated in cooling mode***		***3.0***	***°C***	***-99.9***	***99.9***	RW
	HeatPump	***Differential calculated in heating mode***		***8.0***	***°C***	***-99.9***	***99.9***	RW

9.4 Sanitary

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Q15	***Antilegionella*** (this mask is visible if is select TOTAL RECOVERY T letter into Menu Set Up Procedure password 0009 or if is select SANITARY presence into K6 mask and after insert HEATING EL. presence into ***K18*** mask on Menu Wizard password 0303)							
	Antilegionella							
	End setpoint	Max. limit beyond which the antilegionella treatment ends		65.0	°C	0.0	99.9	RW
	Minimum time	Min. time spent above the setpoint to complete the function		5	min	0.0	999	RW
	Maximum time	Max. time spent above the setpoint to complete the function		120	min	0.0	500	RW
Q21	Sanitary water							
	HP termoregolation	Enable high pressure control with inverter pump or modulating valve	0 NO 1 YES	0		0	1	
	Setpoint			18.0	bar	0	50.0	RW
	Differential			2.0	bar	0	50.0	RW
	Min. speed Deleted	***Minimum percentage speed (inverter pump) / open (modulating valve)***		***10.0***	***%***	***0***	***100***	***RW***
	Max. speed Deleted	***Maximum percentage speed (inverter pump) / open (modulating valve)***		***100.0***	***%***	***0***	***100***	***RW***
Q24	Sanitary water							
	Delay time between Compressor ON and sanitary	Time delay between ON compressor/s and ON sanitary pump	---	***10***	s	0	900	RW
Q30	Sanitary water							
	Regolat. Outlet water	Indicate the probe where the system working to produce the sanitary water. The probes may be: - Buffer tank probe - Outlet water probe - Inlet water probe - Total rcovery outlet water probe						
	Setpoint			57.0	°C	0.0	99.9	RW
	Differential			***5.0***	°C	0.0	99.9	RW

9.5 Pumps

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
P24	Pumps (this mask is visible if is select HIGH PRESSURE into Regulat. Inverter/valv, parameter P21)							
	Geo pump (summer)							
	Setpoint	Summer setpoint of modulating geothermal pump	***Models of units with valve geothermal side (V) = 14.0 bar***	17.0 ***14.0***	bar	0	99.9	RW
	Differential	Adjustment point, central setpoint	***Models of units with valve geothermal side (V) = 20.0 bar***	12.0 ***20.0***	bar	0	99.9	RW
	Geo pump (winter)							
	Speed (1° comp)	A fixed speed is set in winter		80.0	%	0.0	100.0	RW
	Speed (2° comp)			80.0	%	0.0	100.0	RW

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
P30	Pumps (this mask is visible if is select TEMPERATURE INLET/OUTLET GEO. into Regulat. Inverter/valv, parameter P21)							
	Plant system							
	Geo pump band							
	Summer	Temperature band about regulation of modulating geothermal pump, Summer/Winter		***3.0***	°C	0	99.9	RW
	Winter			***3.0***	°C	0	99.9	RW
P39	Pumps							
	System control							
	Geo pump speed	Speed limits about inverter pump or opening about modulating valve						
	Max			100.0	%	0	99.9	RW
	Min			***15.0***	%	0	99.9	RW
	Pre-positioning	***Fixed position of inverter/valve during the start***		***80.0***	***%***	***0***	***100.0***	***RW***

9.6 *Optional*

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
B33	Accessori							
	Type sensor B5	Enable B5 auxiliary sensor and type of function to use it	0.NOT AVAILABLE 1.TEMP. OUTLET RECOVERY 2.TEMP. COMMON PLANT 3.COMPENSAT.SET (4-20mA) ***4. SET PLANT*** ***5.POWER LIMIT*** **In case of selection, B5 will appear into the D03 mask into menu In/Out of Menu Service**	0	---	0	***5***	RW
	Type	***Type of probe connected into the input B5***	***0. NTC*** ***1. 0-1Volt*** ***2. 4-20mA*** ***3. NTC 0-150°C***	***0***	***---***	***0***	***3***	***RW***

9.7 *Plant Conf.*

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
H6	Configuration							
	Type Unit							
	Reverse type	It shows the type of reversing system, if the machine is reversible	0. GAS SIDE 1. WATER SIDE	0	---	0	1	RW
	Plant pump to --- of the water valve	Selects whether the plant pump is before or after the water side cycle inversion valve ***Appear these possibilities if is insert WATER SIDE like type of inversion***	0. EXTERN. 1. INSIDE	0	---	0	1	RW

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
H43	Configuration (this mask is visible if is able the ID08 remote On/Off contact into the mask H39)							
	Digital inputs							
	Remote On/Off logic Zona OFF=	On/Off input remote logic	0. CLOSE 1. OPEN	1	---	0	1	RW
	Active on	***Digital input ID8 opened or closed (depending on what chose above) could turn off all (system, zones and DHW), only the plant and zones, or the plant only***	***0. PLANT + ZONES + DHW*** ***1. PLANT + ZONEs*** ***2. PLANT ONLY***	***0***	***---***	***0***	***2***	***RW***
H45	Configuration							
	Digital outputs							
	Logic inversion 4-way valve refrigerant side summer = relè ***CLOSE***	Logic inversion 4-.way valve Heat pump cycle inversion	***0. CLOSE = inversing valve activated during cooling mode*** ***1. OPEN = inversing valve activated during heating mode***	0	---	0	1	RW
H54	Configuration							
	Sensor enable							
	B5: ***Auxiliary probe***	B5= Auxiliary probe temperature	0. N 1. Y	0	---	0	1	RW
	B6: External temp.	B6= External air temperature	0. N 1. Y	0	---	0	1	RW
	B7: Delivery plan	B7= Plant water delivery temperature	0. N 1. Y	1	---	0	1	RW
	B8: Delivery zone 1	B8= Circuit mix. 1 water delivery temperature	0. N 1. Y	0	---	0	1	RW

9.8 User

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Hd3	***Initialization***							
Deleted!	***Enable automatic change unit of measure in masks IN/OUT***		***0. NO*** ***1. YES***	***0***	***---***	***0***	***1***	***RW***

9.9 In/Out

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
D34	Inputs/Outputs							
NO	pCOe expansion 10 Digital output							
D33	1.Drycooler		0. Off 1. On	---	---	0	1	R
	2.Close valv.3P			---	---	0	1	R
	3.Open valv.3P			---	---	0	1	R
	4.---			---	---	0	1	R

Legenda: Explanation about beginning squares of parameters columns:

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W

Mask Index: Index signature about the mask views on the display up right corner side  **(example)**
Display view: Parameters and them values views
Description: Parameters description views
Values: All values that is possible insert in replace to the default parameters
Def.: Default value
UOM: Unit measure type
Min: Minimum value that is possible insert on the parameter respect the default
Max: Maximum value that is possible insert on the parameter respect the default
R/W: Parameter views to read (R= Read) and/or modification (W= Write)

IMPORTANT: From software version 2.3.0 it is possible to have directly access to Menu Service (with password to access) from the Menu User simply by pressing the 

key.

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10 Factory Menu (password 0202)

From the Menu User, pressing the Enter key on the symbol enters the Menu Service.
To access the Menu Factory enter the password 0202 in the access screen.

The group of screens contained in the Menu Factory are password protected and are hidden. DO NOT DIVULGE THE EXISTENCE, REFER TO THE FACTORY TO MODIFY PARAMETERS CONTAINED IN THE SUB-MENUS DETAILED HERE.

	The default password is **0202**, but can be changed from the Menu Various entering the Menu Factory. If the password is wrong there will be an error message. The password displayed will return to 0 after 5 minutes of inactivity of the user terminal.
	Once entered within the manufacturer section there will be a sub-menu CONF. ALARM

Procedure to enter the Menu Factory:

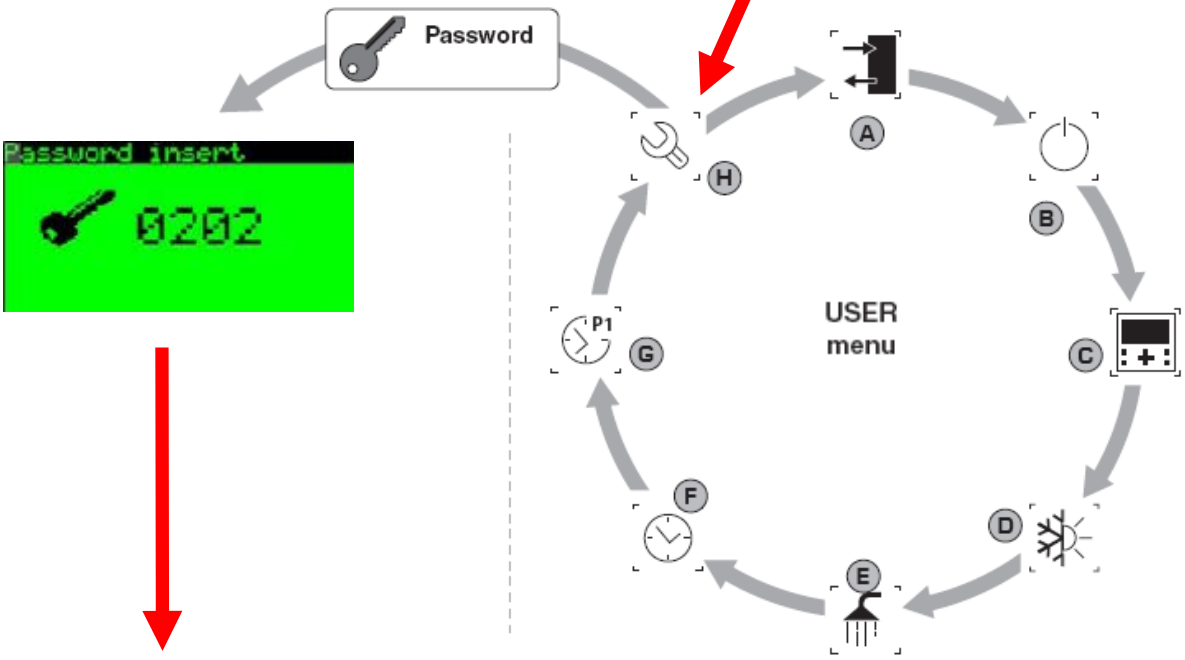


press the key Prg **to move to screen**

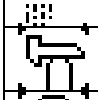


continue to press ↓ **to arrive at the screen**





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Icon	Text	Description
	CONF. ALARM	Setting, alarm delays
	ZONE	Humidity setpoint limits
	CHILLER	Setpoint limits, differential, type of control, geothermal parameters, electronic expansion valve EEV setpoint
	SANITARY	Setpoint limits, DHW differential, type of control, DHW immersion heater, anti-legionella.
	CONF.SENSOR	Active sensor limits and calibration
	COMPRESSOR	Type of rotation, safety timers
	DRIVER EEV	Electronic expansion valve parameters: Configuration Control Custom
	OPTIONS	ModBus
	DEFAULT	Reset factory default parameters

 **Once in the Menu Factory it is possible to run though the list of screens using the keys**  

The chosen screen is selected pressing the  **key.**

To modify the parameter(s) or content(s) of the screen use the  **key and to modify the parameter(s) use the**  **and**  **keys. To confirm the required modification press the**  **key.**

 **The appearance of many screens contained in the sub-menus detailed below is directly linked to the selections in the Menu Wizard (password 0303) and Menu set-up procedure (password 0009).**

 ***Added new complete parameter descriptions and modified and / or correct some earlier. Some parameters have been deleted.***

10.1 Conf. Alarm 

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
A14	***Conf. Alarm***							
	***DHW high temp. alarm***	***If the water temperature exceed the 75°C appear this alarm***						
	Setpoint	***High temperature alarm setpoint intervention***		***75.0***	***°C***	***0***	***999,9***	***RW***
	Differential	***Differential of alarm***		***2.0***	***°C***	***0***	***999,9***	***RW***

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
A27	Conf. Alarm							
	Alarm delayed Low pressure							
	Delay time on the compr. start-up	Delay time low pressure alarm from start compressor/s		40	s	0	999	RW
	Running delay	***Low pressure alarm delay time at compressor / s running***		***3***	***s***	***0***	***999***	***RW***
	Reset type	***Reset type of low pressure alarm by trasducer***	***0. SEMIAUTO 1. MANUAL***	***0***	***---***	***0***	***1***	***RW***
A30 Deleted	***Conf. Alarm***							
	Alarm delayed							
	Running delay time compressor/s	***Low pressure alarm delay compressor/s during normal operation compressors***		***10***	***s***	***0***	***999***	***RW***
A33 Deleted	***Conf. Alarm***							
	Compressors							
	Low pressure alarm reset	***Low pressure alarm reset type from low pressure transducer***	***0. SEMIAUTO 1. MANUAL***	***0***	***---***	***0***	***1***	***RW***
A42	Conf. Alarm							
	Primary system							
	Pause pump after alarm Plant flowstate	Pump will restart after set pause time		120	s	0	***999***	RW
A54	Conf. Alarm							
	Low capacity signal of machine	Different temperature from inlet and otlet water after the setting time of start compressor/s	0. YES 1. NO	0		0	1	RW
	Delay check of startup	Delay time		60	s	0	999	RW
	Delta Evaporat.	Evaporator different temperature from inlet and outlet water		***1.0***	°C	0.0	99.9	RW
	Delta Condens.	Condenser different temperature from inlet and outlet water		***1.0***	°C	0.0	99.9	RW
A56 New	***Conf. Allarmi***							
	High temperature alarm inlet plant/Geo side							
	Setpoint	***Alarm threshold (it also active in stand-by)***		***65.0***	***°C***	***0,0***	***99,9***	***RW***
	Delay	***Alarm delay***	***In case Total Recovery (T) delay= 360s***	***5***	***°C***	***20,0***	***99,9***	***RW***
	Tipo reset	***Low pressure alarm reset type from low pressure transducer***	***0. SEMIAUTO 1. MANUAL***	***0***	***---***	***0***	***1***	***RW***
A57	Conf. Alarm							
	Zone control							
	Temperature alarm mix circuit water							
	Summer min	Summer Mix circuit water delivery min. temperature limit		4.0	°C	-99.9	99.9	RW
	Winter max	Winter Mix circuit water delivery max. temperature limit		45.0	°C	20,0	99.9	RW
	Delay	Delay time		***30***	***s***	0	999	RW

10.2 Chiller

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Me3	Chiller							
	Regolation type	Decide the type probe for the regulation	**0. OUTLET TEMP (B7)** **1. INLET TEMP. (B4)** **2. TEMP. COMMON PLANT (B5)**	***1***		0	2	RW
Me6	Chiller							
	Delay time change pos. Valv. 4way	Delay time to start compressor/s after inversing cycle		***5***	s	0	300	RW
Me9	Chiller							
	Water setpoint limits							
	Chiller min	Chiller configurable min. limit set point for the unit		***7.0***	°C	-999.9	999.9	RW
	Chiller max	Chiller configurable max. limit set point for the unit		***17.0***	°C	-999.9	999.9	RW
	Hp min	Heat pump configurable min. limit set point for the unit		20.0	°C	-999.9	999.9	RW
	Hp max	Heat pump configurable max. limit set point for the unit		55.0	°C	-999.9	999.9	RW

10.3 Sanitary

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
MQ3	Sanitary water							
	Regolation type	Establish the probe to control the sanitary function It depend to the type of sanitary water system that is enable on the mask K6 into Menu Wizard password 0303.	0. TANK DHC 1. OUTLET PLANT 2. INLET PLANT 3. OUTLET RECOVERY	***3***	---	0	3	RW

10.4 Conf. Sensor

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
Hb10	EVD Config.							
	Sensor suction temp.							
	Alarm	Disable or enable probe fault alarms	0. YES 1. NO	0	---	0	1	RW
	Tipo	Select S2 probe type	0: NTC CAREL 1: NTC SPKP**T0 2: NTC-HT ALTA T.	0	---	0	2	RW
	Al.min	S2 temperature: MIN. alarm value	---	-50.0	°C	***-999.9***	999.9	RW
	Al.max	S2 temperature: MAX. alarm value	---	105.0	°C	-999.9	***999.9***	RW
Gb21	Sensor calib.							
	EEV							
	Press. Evap	Low pressure transducer	---	---	bar	---	---	R
	Offset	Transducer calibration value	---	0.0	bar	-99.9	99.9	RW
	Temp. Suction	Suction temperature probe		---	°C	---	---	R
	Offset	Probe calibration value		0.0	°C	-99.9	99.9	RW

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Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
	Probe adjust.							
	Room n°01							
	Temperature	Temperature probe	---	---	°C	---	---	R
	Offset	Probe calibration value	---	0.0	°C	-9.9	9.9	RW
	Humidity	Humidity ambient probe	---	---	***%rH***	---	---	R
	Offset	Probe calibration value	---	0.0	***%rH***	-9.9	9.9	RW
	Probe adjust.							
	Room n°02							
	Temperature	Temperature probe	---	---	°C	---	---	R
	Offset	Probe calibration value	---	0.0	°C	-9.9	9.9	RW
	Humidity	Humidity ambient probe	---	---	***%rH***	---	---	R
	Offset	Probe calibration value	---	0.0	***%rH***	-9.9	9.9	RW
	Probe adjust.							
	Room n°03							
	Temperature	Temperature probe	---	---	°C	---	---	R
	Offset	Probe calibration value	---	0.0	°C	-9.9	9.9	RW
	Humidity	Humidity ambient probe	---	---	***%rH***	---	---	R
	Offset	Probe calibration value	---	0.0	***%rH***	-9.9	9.9	RW
	Probe adjust.							
	Room n°04							
	Temperature	Temperature probe	---	---	°C	---	---	R
	Offset	Probe calibration value	---	0.0	°C	-9.9	9.9	RW
	Humidity	Humidity ambient probe	---	---	***%rH***	---	---	R
	Offset	Probe calibration value	---	0.0	***%rH***	-9.9	9.9	RW
	Probe adjust.							
	Room n°05							
	Temperature	Temperature probe	---	---	°C	---	---	R
	Offset	Probe calibration value	---	0.0	°C	-9.9	9.9	RW
	Humidity	Humidity ambient probe	---	---	***%rH***	---	---	R
	Offset	Probe calibration value	---	0.0	***%rH***	-9.9	9.9	RW

10.5 Compressors

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
MC12	Config. Compr.							
	Compressors							
	Min. time betw. starts of diff. compressors	Min. time between start-ups different compressors	---	***30***	s	0	900	RW
MC18	***Config. Compr.***							
	Compressors							
New	***Delay switch on compressors by require software***	***EEV time opening before start of compressor***	***Important.: parameter present from vers.2.3 For WRL sizes from 025 to 160 = 5s***	***0***	***s***	***0***	***9***	***RW***
	Delay closed EEV after switch off compr.	***Allows to delay the closure of the valve EEV at shutdown***	***Important: parameter present from vers.2.6***	***0***	***s***	***0***	***9***	***RW***

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
MC21	Config. Compr.							
	Compressors							
	Change the position VIC without switch off compressor	***Allows to reverse quickly (without turning off the compressor) the position of the valve VIC (optimizes the time)***	***0. NO 1. YES***	***0***	***---***	***0***	***1***	***RW***

10.6 Driver EEV

EEV Configuration menu



Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
EV3	Configuration EEV							
	Refrigerant type	Refrigerant type used	0: NOT USED 1: R22 / 6 R507A / 11 R744 2 R134a / 7 R290 / 12 R728 3 R404A / 8 R600 / 13 R1270 4 R407C / 9 R600a / 14 R417A ***5 R410A*** / 10 R717 / 15 R422D	***5***	---	0	***15***	RW
EV6	Configuration EEV							
	Main regulation	Regulation type	***0: USER DEFINE*** 1: AC/CHILLER WITH ADAPT. REGULATION 2: AC/CHILLER WITH DIG. SCROLL COMPRESSOR 3: CENTRALIZED CABINET COLD ROOM 4: SELF CONTAINED CABINET COLD ROOM 5: PERTURBATED CABINET COLD ROOM 6: SUBCRITICAL CO2 CABINET/COLD ROOM 7: R404A CONDENSER FOR SUBCRITICAL CO2 8: AC OR CHILLER WITH PLATE EVAPORATOR 9: AC OR CHILLER WITH SHELL TUBE EVAPORATOR 10: AC OR CHILLER WITH BATTERY COIL EVAPORATOR. 11: AC OR CHILLER WITH VAR. COOLING CAPACITY 12: AC OR CHILLER PERTURBATED UNIT 13: EPR BACK PRESSURE 14: HOT GAS BY-PASS BY PRESSURE 15: HOT GAS BY-PASS BY TEMPERATURE 16: TRANSCRITICAL CO2 GAS COOLER 17: ANALOG POSITIONER (4-20MA	***0***	---	0	***17***	RW
	Auxiliary regulation	Auxiliary regulation type	0: USER DEFINE ***1: DISABLED*** 2: HIGH CONDENSING TEMP.PROTECTION ON S3 3: MODULATING THERMOSTAT ON S4 PROBE 4: BACKUP PROBES ON S3 AND S4	***1***	---	0	4	RW

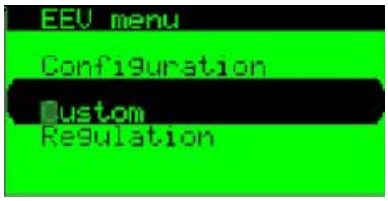
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EEV Regulation menu



Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
ER9 ***(*1)***	EEV Regulation							
	PID parameters							
	Prop. gain	Proportional gain	***(*1) Important: For EEV valve manage directly from Carel µPC electronic board(ONBOARD)***	***5.0***	---	0	800	RW
	Integral time	Integral time		***60***	s	0	1000	RW
	Derivat. time	Derivative time		***1.0***	s	0	800	RW
ER9 ***(*2)***	EEV Regulation							
	PID parameters							
	Prop. gain	Proportional gain	***(*2) Important: For EEV valve manage from exthernal driver***	15.0	---	0	800	RW
	Integral time	Integral time		150	s	0	1000	RW
	Derivat. time	Derivative time		5.0	s	0	800	RW

EEV Custom menu



Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
EC1 ***(*1)***	Config. EEV							
	Valve type	**Electronic expansion valve type, installed since WRL 160 size included *(*1)***	***0: USER DEFINE 1: CAREL E2V***	0	---	0	7	RW
EC1 ***(*2)***	Config. EEV							
	Valve type	**Electronic expansion valve type, installed from WRL 180 size included *(*2)***	***0: USER DEFINE 1: CAREL ExV***	0	---	0	17	RW
EC6 ***(*1)***	Valve Custum							
	Speed nominal	Nominal speed	**Check that the value must be setted to 50Hz**	50	Hz	1	999	RW
	Speed closing			***50***	Hz	---	---	---
	Target current		***(*1) Important: For EEV valve manage directly from Carel µPC electronic board(ONBOARD)***	***300***	mA	0	800	RW
	Holding current	Holding current		***50***	mA	0	800	RW
EC6 ***(*2)***	Valve Custum							
	Speed nominal	Nominal speed	**Check that the value must be setted to 50Hz**	50	Hz	1	999	RW
	Speed closing			***50***	Hz	---	---	---
	Target current		***(*2) Important: For EEV valve manage from exthernal driver***	***450***	mA	0	800	RW
	Holding current	Holding current		***100***	mA	0	800	RW

Legend: Explanation about beginning squares of parameters columns:

Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W

Mask Index: Index signature about the mask views on the display up right corner side  **(example)**
Display view: Parameters and them values views
Description: Parameters description views
Values: All values that is possible insert in replace to the default parameters
Def.: Default value
UOM: Unit measure type
Min: Minimum value that is possible insert on the parameter respect the default
Max: Maximum value that is possible insert on the parameter respect the default
R/W: Parameter views to read (R= Read) and/or modification (W= Write)

IMPORTANT: From software version 2.3.0 it is possible to have directly access to Menu Service (with password to access) from the Menu User simply by pressing the 

key.

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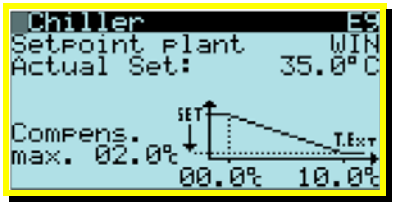
11 Regulation

11.1 Chiller/Heat pump

The application provides control of a water/water heat pump which can have up to two compressors in one refrigerant circuit. These can produce either hot or cold water for the system, based on the active seasonal mode and hot water for the DHW circuit.
It controls up to two compressors in one refrigerant circuit which alternate using a rotation type FIFO (First In First Out).
It controls the safety timers of the compressor and the relative pumps. For further information see the sections relevant in the Menu Service and Manufacturer.
The unit can be supplied with an electronic expansion valve EEV, which below side WRL160 is directly controlled, whilst above this size requires the driver EVO.
The guided installation (Menu Wizard) allows an easy configuration of the WRL once installed.

11.1.1 Control of Chiller temperature profile

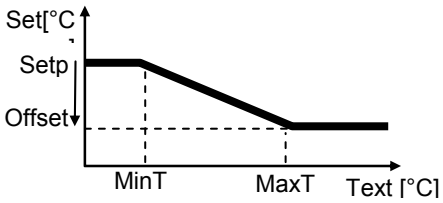
Added new screens and changed some previous descriptions.



For energy saving purposes a setpoint compensation function based on outdoor air temperature can be enabled (if is present the air-exthernal probe).

Based on selected parameters the compensation can be selected as either positive or negative compensation.

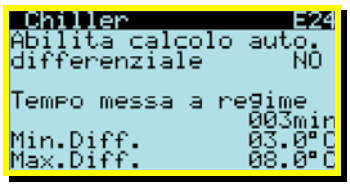
As can be seen in the adjacent graph (***winter example***) the software creates a straight line with the parameters entered in the screen and depending on the offset there will be a smaller or greater compensation with respect to the initial setpoint.
So according to this line plus the outside temperature will be high more the set point will be low



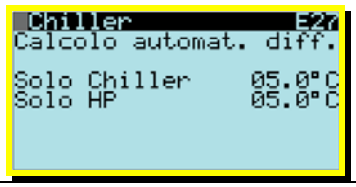
Legend:

	Description	Default
TExt	External temperature	---
MinT	Min. external temperature	0.0°C
MaxT	Max. external temperature	10.0°C
Setp	Setpoint setted	38.0°C
OffS	Max. offset	2.0°C
Sp	Actual setpoint	---

11.1.1 *Automatic differential calculation*



Depending on the mode of operation, the geothermal temperature side and the hydraulic characteristics of the plant, the yield of the system changes over the year.
With automatic calculation of the differential in the software is able to respond better and faster to the demands of the users.
Substantially through this parameter each time the unit goes to the regim the software in relation to the temperature input and output calculates the delta temperature and sets it automatically as new differential (band).

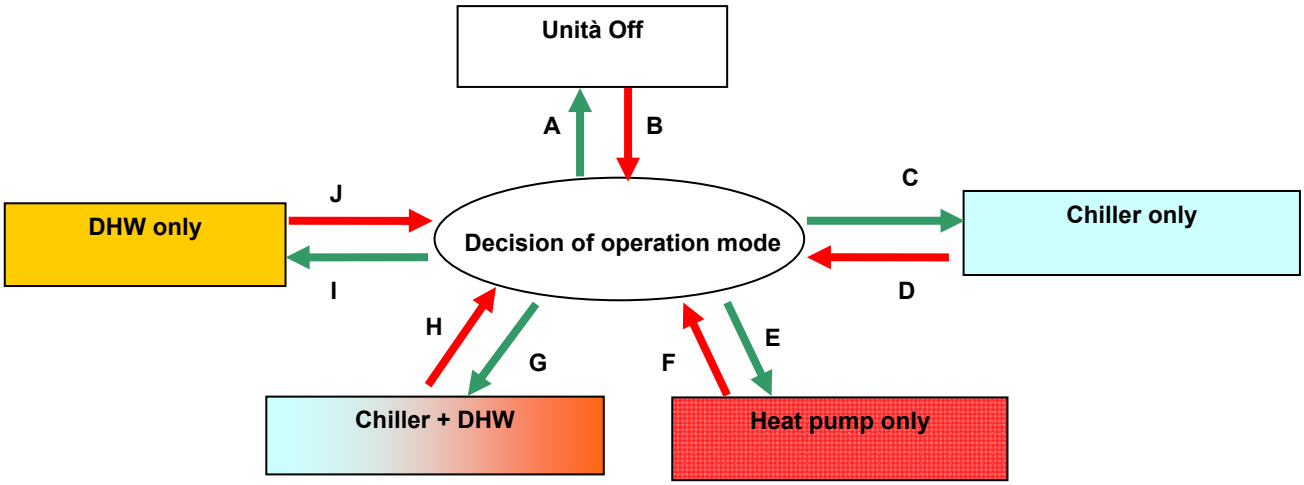


Mode of automatic differential calculation

Function mode	Differential calculation
Chiller	T.return.Plant – T.deliv. Plant
Heat pump	T.deliv. Plant – T.return.Plant

11.2  Conditions to exchange the mode of operation

The WRL unit can produce both cooling water and heating water simultaneously.
Simultaneously manages two thermostats. The DHW thermostat is always priority



→	Inlet condition
←	Outlet condition

Minimum threshold = 100% units with one compressor, 50% units with 2 compressors

A	→	• Plant (System) request = 0 e DHW (Sanitary) request = 0 • Or Alarm
B	←	• Plant (System) request > Minimum threshold, • Or DHW (Sanitary) request > Minimum threshold,
C	→	Plant cooling request > Minimum threshold, but DHW (Sanitary) request < Minimum threshold;
D	←	• DHW (Sanitary) request > Minimum threshold, • Or plant cooling request = 0;
E	→	Plant heating request > Minimum threshold, ma DHW (Sanitary) request < Minimum threshold;
F	←	• DHW (Sanitary) request > Minimum threshold, • Or Plant heating request = 0;
G	→	Plant cooling request > Minimum threshold and DHW (Sanitary) request > Minimum threshold and unit “T” (Total Recovery) model
H	←	• DHW (Sanitary) request = 0; • Plant cooling request = 0;
I	→	• DHW (Sanitary) request > Minimum threshold (in case of unit “T” model must have Plant cooling request also < Minimum threshold);
J	←	• DHW (Sanitary) request =0; • Or plant cooling request > Minimum threshold (unit “T” model)

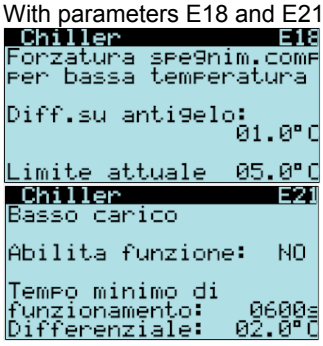
 **Each time that change the operating mode must be wait the minimum time in On by the compressor / s.**

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11.3 Low load check and force off

Added diagrams with descriptions

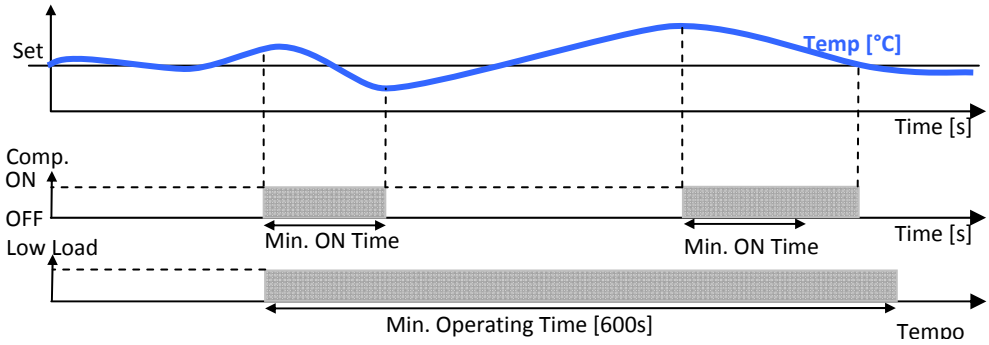
With parameters E18 and E21 in the Chiller sub-menu of the Support Menu, the operator can run the system with a low thermal load.



If the water outlet temperature on the evaporator side (system cold, geothermic in heat pump) drops below a minimum limit, the compressor(s) is turned off, regardless of safety timeouts.

If the unit reaches the forced switch-off thresholds due to low temperature in cold outlet, the low load check allows the operator to restart the compressor(s) at a higher temperature threshold (cold) compated to what required by the thermal switch, so that it can at least run for the minimum operating time of the compressor(s).
In versions with two compressors, the second one can start as soon as the first has maxed its minimum operating time.

If the software requests that the operator switch off a compressor that has just started running (minimum switch-on time not over), a low load procedure starts. This action will increase the adjustment differential so that the compressor will restart at a higher temperature threshold when cold and lower when hot.
The "low load" operation lasts for at least the minimum running time.
This action prevents the cold anti-freeze cycle and the high-temperature threshold when hot.



11.4 Yield control alarm

Former display modified.

To eliminate the problem of inverted probes between the water inlet and outlet (depending on the chosen operating mode), the software checks the difference in temperature between water inlet and outlet of the affected exchanger.



With parameter A54 in the Alarms Config. sub-menu in the Manufacturer's Menu, the operator has the option to enable it, time-out the check, the thermicd trip that must be generated for cold and heat pump running mode.
The check is made once:

- the exchanger pump (system or geothermic) is on
- the compressor is on after a settable time
- with reference to the previous time lapse, a minimum thermic trip must have occurred between water inlet and outlet (depending on the chosen operating mode)

If the thermic trip (dT) between water inlet and outlet (depending on the operating mode) is less than a settable value, a yield error alarm is triggered.

11.5 Auxiliary Probe B5

New displays added, inclusive of descriptions, and some of the former ones modified.

The software allows the operator to use the auxiliary probe B5 for multiple functions:



With parameter B33 in the Accessories sub-menu of the Support Menu, the operator can maintain the auxiliary probe disabled or enable it, selecting what it must control:

- ***NOT AVAILABLE***
- ***Common Recovery temp. used in units with total recovery***
- ***Common System Temp. Used where there is a system storage***
- ***Set Compensation. Used to compensate set-point***
- ***System set. Replaces the system set-point from template S3 in Chiller sub-menu in User Menu:***



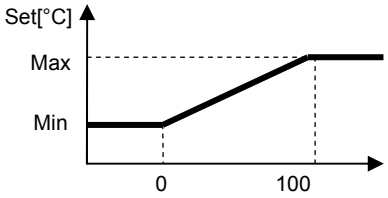
- ***Power limit. Power limitation (mostly applies to bi-compressor unit)***

Types of probes used:

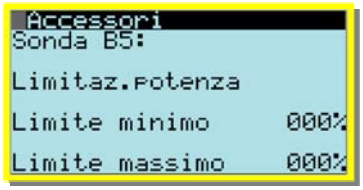
- ***NTC***
- ***0..1 Volt***
- ***4..20 mA***
- ***NTC 0..150°C***



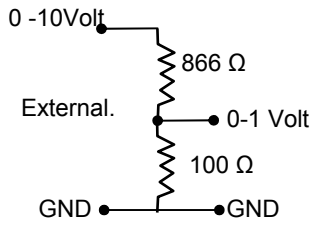
Display B36 always included in the Accessories sub-menu of the Service Menu can be used by the operator to set the maximum and minimum offset limits of the main system set-point, both when hot and cold, in Set Compensation mode.



Example of system set-point compensation via enabled analog input 4-20mA
B5= analog input B5
Set= main set-points used by unit
Max= maximum offset
Min = minimum offset



Another type of operating mode that can be used for probe B5 is the power limitation



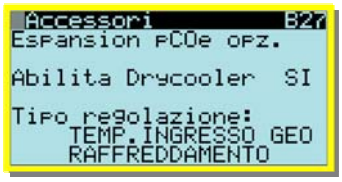
Example of how to convert a 0-10 Volt signal into a 0 – 1 Volt signal connectable to input B5 of Carel uPC board

If the auxiliary probe B5 is enabled by entering a function in parameter B33 in the Accessories sub-menu, the operator can view the value read by the auxiliary probe in parameter D03 in the In/Out menu of the Support menu.

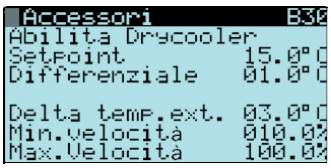
11.6 Drycooler system management

New displays added, inclusive of descriptions, and some of the former ones modified.

Using the outputs of the accessory pCOe board with address 10, the software can control a drycooler system (exchanger in air with ventilation) to generate cold water that will be used on the geothermic side (exchanger) instead of or to aid (in special cases) the geothermic probes.
If usually the drycooler air exchanger is used in place of the geothermicd probes (or for special integration), there may be systems that require continuous supply of cold water, where the drycooler, provided that the external climate conditions are tolerable, supplies this energy directly to the system; with these systems, the drycooler basically becomes a free-cooling system in air on the plant side.
See paragraphs 6.8, 6.9 and of the original text.6.10

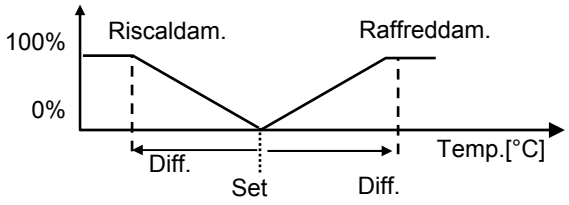


In the Accessories sub-menu of the Support Menu, by accessing display B27, the operator can enable operation of the drycooler:
The fans/valve controlled by output Y1 (0-10 Volt) can be adjusted based on the set-point and differential defined in display B27 in the Accessories sub-menu of the Support Menu, depending on:
- the geothermic outlet temperature
- the geothermic inlet temperature
- the drycooler's temperature (probe B1 of pCOe expansion board)
- the system's outlet temperature



For the drycooler to work, the external temperature detected must be less than the controlled temperature, plus a thermic trip (dT) defined on display B30, it too found in the Accessories sub-menu.
If it is not necessary to operate the pump on the geothermic side or the free-cooling system, the Drycooler stays off.
If the operator selects the system outlet temperature, the Drycooler will act as an external free-cooling. It will then turn on if the unit is in summer mode and if the unit is on and requiring compressor(s) operation.

The fans, or the 3-way valve, are controlled by output 0-10 Volt "Y1" of board pCOe.
Adjustment takes place based on the set-point and differential defined in the B30 display, see the following graph:



12 System alarms

12.1 Alarm history

The last 100 alarms of the WRL unit or related devices can be seen in the alarm history pressing the  key.



From this screen if press the Alarm button again is possible to access into the alarm history

For each alarm event it is possible to have:



N: B Press the Enter key to display the second page





First page
- Date and time of the event
- Nature of the alarm
- Geothermal inlet/outlet temperature
- System inlet/outlet temperature
- DHW temperature

Second page (visible with pressing the Enter key)
- Date and time of the event
- Nature of the alarm
- Status of the unit
- Opening percentage of EEV valve
- High and low pressure
- Discharge compressor temperature
- Suction compressor temperature
- Status of the compressor(s) and about the inversing valve open or closed
- Status of the pumps, plant, geothermal, sanitary

When the last position of the alarm history is reached the software will overwrite the first (which was the oldest) with the most recent event.

12.2 Alarm list

New ***Updating and correct the alarm list***

Rearm mode:
Auto (---) = Automatic, the alarm disappears when the event that has triggered the alarm has ended.
Manual = Manual, manual reset of the event is required in order to resume standard operation when the event that has triggered the alarm has ended.
Semi = Semi-automatic, rearming is automatic but it becomes manual when alarm is triggered more than three times in one hour period.

Code	Description	Reset	Delay	*Causes/Checks*
AL001	Probe B1: Temperature probe on inlet of geothermic side damaged or disconnected	---	10s	Cause: Ohmic value of probe not within limit range. Check: 1) Wiring diagram 2) Wiring installation 3) Ohmic probe value
AL002	Probe B2: Temperature probe on outlet of geothermic side damaged or disconnected	---	10s	
AL003	Probe B3: DHW storage tank temperature probe damaged or disconnected	---	10s	
AL004	Probe B4: System outlet temperature probe damaged or disconnected	---	10s	
AL005	Probe B5: Auxiliary temperature probe damaged or disconnected	---	10s	
AL006	Probe B6: External air temperature probe damaged or disconnected	---	10s	

Code	Description	Reset	Delay	***Causes/Checks***
AL007	Probe B7: System water inlet temperature probe damaged or disconnected	---	10s	Cause: Ohmic value of probe not within limit range. Check: 1) Wiring diagram 2) Wiring installation Ohmic probe value
AL008	Probe B8: Zone 1 water inlet temperature probe damaged or disconnected	---	10s	
AL009	Probe B9: TGP temperature probe on compressor output damaged or disconnected	---	10s	
AL010	Probe B10: Compressor suction temperature probe damaged or disconnected	---	10s	
AL011	Probe B11: Compressor inlet pressure transducer damaged or disconnected	---	10s	Cause: Value of pressure transducer not within limit range. Check: 1) Wiring diagram 2) Wiring installation
AL012	Probe B12: Compressor suction pressure transducer damaged or disconnected	---	10s	Cause: Value of pressure transducer not within limit range. Check: 1) Wiring diagram 2) Wiring installation
AL013	Digital input ID3: High pressure	Man	0s	Cause: high pressure in cooling circuit from digital input and transducer. Check condensate side: 1) possible high water temperature 2) pumps not enabled 3) poor exchange due to dirty water filter 4) external water shut-off valves closed
AL014	Probe B11: High pressure from transducer	Man	System	
AL015	Probe B12: Low pressure from transducer	Semi	System	Cause: low pressure in cooling circuit detected by transducer. Check evaporation side: 1) possible low water temperature 2) pumps not enabled 3) poor exchange due to dirty water filter 4) malfunction of electronic EEV expansion valve 5) unit model configuration error 6) no cooling gas in unit
AL016	Digital input ID2: Compressor 1 thermic	---	0s	Cause: compressor thermic protection triggered. Check: 1) compressor electrical absorption 2) compressor remote switch electrical contacts 3) network voltage 4) wiring and tightening of power cables
AL017	Digital input ID9 Compressor 2 thermic	---	0s	
AL018	Digital input pCOe: External alarm ID1	---	0s	External alarm
AL019	Digital input ID1: Water flow-meter on geothermic side	Semi	System	Cause: protection triggered due to lack of water flow on geothermic side. Check: 1) pump enabling 2) opening of shutters on geothermic side 3) clean water filter 4) wiring and electrical connections
AL020	Digital input ID4: Pumps thermic / RCS	Man	0s	Cause: thermic protection triggered on pumps and/or relays to control RCS phase sequence. Check: 1) pumps electrical absorption 2) pumps remote switch electrical contacts 3) wiring and electrical connections 4) correct phase sequence 5) low power voltage

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Code	Description	Reset	Delay	***Causes/Checks***
AL021	Digital input ID10: Water flow-meter on system side	Semi	System	Cause: protection triggered due to lack of water in system. Check: 1) pump enabling 2) opening of shutters 3) clean water filter 4) wiring and electrical connections
AL022	Digital input ID7: Boiler/System integr. Yld alarm	---	0s	Cause: alarm contact triggered in boiler and/or heaters thermic for integration of system storage. Check: 1) alarm contact triggered in boiler and/or heaters magneto-thermic for integration of system storage 2) electrical absorption 3) wiring and electrical connections
AL024	Digital input ID6: DHW storage heater thermic alarm	---	0s	Cause: heaters thermic for integration of DHW storage. Check: 1) heaters magneto-thermic for integration of DHW storage 2) electrical absorption 3) wiring and electrical connections
AL025	pCOe expansion offline (adjustable optional)	---	0s	Cause: expansion pCOe not connected (address 10). Check: 1) pCOe routing 2) serial wiring 3) unit parameter configuration error
AL026	Probe B12: Severe Low pressure from transducer	---	0s	Cause: cooling circuit pressure detected below minimum admissible threshold. Check: cooling gas leaks in cooling circuit
AL027	Geothermic exchanger anti-freeze	Semi	System	Cause: protection triggered due to poor water flow on geothermic side (thermic trip very high btwn water inlet and outlet). Check: 1) opening of shutters 2) clean water filter
AL028	System exchanger anti-freeze	Semi	System	Cause: protection triggered due to poor water flow on system side (thermic trip very high btwn water inlet and outlet). Check: 1) opening of shutters 2) clean water filter
AL029	DHW storage anti-freeze	Semi	System	Cause: storage tank poorly insulated, possible ice forming inside storage tank. Check: 1) opening of shutters 2) clean water filter 3) storage water actual temperature WARNING: danger of breakage
AL030	Room no. 01 Probe(s) of STA/H in fault or disconnected	---	40s	Cause: Problems in connections of STA/H probes or values not within set limit range. Check: 1) Wiring and electrical connections 2) settings 3) routing Adr (address) parameter in STA/H probe
AL031	Room no. 01 Alarm – STA/H disconnected	---	System	
AL032	Room no. 02 Probe(s) of STA/H in fault or disconnected	---	40s	
AL033	Room no. 02 Alarm – STA/H disconnected	---	System	
AL034	Room no. 03 Probe(s) of STA/H in fault or disconnected	---	40s	
AL035	Room no. 03 Alarm – STA/H disconnected	---	System	
AL036	Room no. 04 Probe(s) of STA/H in fault or disconnected	---	40s	
AL037	Room no. 04 Alarm – STA/H disconnected	---	System	
AL038	Room no. 05 Probe(s) of STA/H in fault or disconnected	---	40s	
AL039	Room no. 05 Alarm – STA/H disconnected	---	System	

Code	Description	Reset	Delay	***Causes/Checks***
AL040	Room1 air anti-freeze	---	System	Cause: threshold of anti-freeze temperature enabling in room exceeded. Check: 1) actual room temperature with thermometer for comparison 2) Wiring and electrical connections 3) settings
AL041	Room2 air anti-freeze	---	System	
AL042	Room 3 air anti-freeze	---	System	
AL043	Room 4 air anti-freeze	---	System	
AL044	Room 5 air anti-freeze	---	System	
AL045	Anti-legionella procedure not complete	Man	System	Cause: timeframe for anti-legionella procedure too long. Check: 1) DHW storage heater power 2) probe position on storage tank for temperature detection
AL046	High temperature on geothermic outlet alarm	System	System	Cause: geothermic outlet temperature high Check: 1) any heat supplied by external sources (solar panels) 2) check hydraulic circuit WARNING: danger of breakage
AL047	High temperature on system outlet alarm	System	System	Cause: system outlet temperature high Check: 1) any heat supplied by external sources (solar panels) 2) check hydraulic circuit WARNING: danger of breakage
AL052	Zone 3 water temperature probe B2 pCOe expansion damaged or disconnected	Auto	10s	Cause: Ohmic value of probe not within limit range. Check: 1) Wiring and electrical connections 2) settings
AL053	Compressor inlet gas temperature high alarm (B9)	Man	System	Cause: compressor discharge temperature high. Check: 1) compressor discharge temperature with thermometer for comparison 2) Wiring and electrical connections 3) gas over-heating in suction to compressor 4) various parameters and controls of electronic EEV thermostatic valve. 5) water generation set-point too high 6) dehydrating filter partly clogged
AL054	Threshold of compr. 1 operating hours maxed 1	Man	0s	Cause: operating hours threshold maxed Check: maintenance Note: do not consider as alarm signal but as warning. Default: 10,000 hours of operation
AL055	Threshold of compr. 1 operating hours maxed 2	Man	0s	
AL056	Goethermic pump operating hours threshold maxed	Man	0s	
AL057	Primary pump operating hours threshold maxed	Man	0s	
AL058	DHW pump operating hours threshold maxed	Man	0s	
AL059	Zone 1 pump operating hours threshold maxed	Man	0s	
AL060	Zone 2 pump operating hours threshold maxed	Man	0s	
AL061	Zone 3 pump operating hours threshold maxed	Man	0s	
AL064	Zone 1 inlet water temperature high	---	System	Cause: high and/or low water inlet temperature to zone. Check: 1) position of zone temperature probe 2) Wiring and electrical connections 3) zone water set-point 4) main WRL set-point 5) zone(s) water mixing valve
AL065	Zone 1 inlet water temperature low	---	System	
AL066	Zone 2 inlet water temperature high	---	System	
AL067	Zone 2 inlet water temperature low	---	System	
AL068	Zone 3 inlet water temperature high	---	System	
AL069	Zone 3 inlet water temperature low	---	System	

Code	Description	Reset	Delay	***Causes/Checks***
AL070	Zone 1 humidity low	---		Cause: high and/or low humidity detected by STH probe. Check: 1) position of STH temperature/humidity probe 2) check actual zone humidity with humidity detector
AL071	Zone 1 humidity high	---		
AL072	Zone 2 humidity low	---		
AL073	Zone 2 humidity high	---		
AL074	Zone 3 humidity low	---		
AL075	Zone 3 humidity high	---		
AL076	pCOe expansion dedicated to zone 2 offline	---	40s	Cause: expansion pCOe not connected. Check: 1) pCOe routing 2) serial wiring 3) parameter settings 4) LED blinking in pCOe board
AL077	pCOe expansion dedicated to zone 3 offline	---	40s	
AL078	Zone 2 water temperature probe B1 pCOe expansion damaged or disconnected	---	10s	Cause: Ohmic value of probe not within limit range. Check: 1) Wiring diagram 2) Wiring and electrical connections 3) ohmic value
AL079	Zone 3 water temperature probe B1 pCOe expansion damaged or disconnected	---	10s	
AL080	Zone 1 dehumidifier alarm	---	0s	Cause : zone dehumidifier alarm contact triggered. Check: check alarm contact
AL081	Zone 2 dehumidifier alarm	---	0s	
AL082	Zone 3 dehumidifier alarm	---	0s	
AL083	Zone 2 water temperature probe B2 pCOe expansion damaged or disconnected	---	0s	Cause: Ohmic value of probe not within limit range. Check: 1) Wiring diagram 2) Wiring and electrical connections 3) ohmic value
AL084	Zone 2 pump thermic	---	0s	Cause: pumps thermic protection triggered. Check: 1) pumps electrical absorption 2) pumps remote switch electrical contacts 3) wiring and electrical connections
AL085	Zone 3 pump thermic	---	0s	
AL086	DHW temperature high	---	0s	Cause: limit temperature threshold in DHW storage exceeded. Check: 1) DHW set-point activated 2) position of DHW probe inside storage tank 3) suitable surface of coil/exchanger for DHW based on supplied power 4) any heat supplied by external sources (solar panels) 5) hydraulic circuit WARNING: danger of breakage
AL087	Maximum threshold for DHW generation with aid of Solar Kit support reached	---	0s	
AL088	BlackOut (indicates the occurrence of an electrical power outage)			Cause: lack of electrical power Alarm visible in log only as indication. Check: electrical power supply and its continuity Note: do not consider as alarm signal but as warning, does not cause unit to stop

Code	Description	Reset	Delay	***Causes/Checks***
AL089	EEV Driver Low-Pressure Probe Suct. Temp. Probe.	---		Cause: various problems tied to electronic EEV expansion valve. Check: 1) electronic EEV valve 2) suction temperature read and compared with thermometer 3) over-heating read and compared 4) poor water flow-rate 5) no cooling gas in unit 6) water to evaporator too cold or too hot 7) Wiring and electrical connections NOTE: the battery low alarm may be caused by frequent black-outs. To reset the alarm, you must wait for the battery to recharge.
AL090	EEV Driver Low over-heating (LowSH)	---		
AL091	EEV Driver low evaporation temperature (LOP)	---		
AL092	EEV Driver high evaporation temperature (MOP)	---		
AL094	EEV Driver Alarm EEPROM	---		
AL095	EEV Driver valve motor Error	---		
AL096	EEV Driver offline	---		
AL097	EEV Driver Low suction temperature	---		
AL098	EEV Driver Battery low	---		
AL099	No thermic yield on system side	Man		Cause: lack of thermic trip btwn water inlet and outlet during operation. Check: 1) actual thermic trip with thermometer for comparison 2) probes ohmic value 3) probes wiring 4) actual position of VIC valve 5) actual compressor start-up 6) soft-start if present
AL100	No thermic yield on geothermic side	Man		Cause: lack of thermic trip btwn water inlet and outlet during operation. Check: 1) actual thermic trip with thermometer for comparison 2) probes ohmic value 3) probes wiring 4) actual position of VIC valve 7) actual compressor start-up 5) soft-start if present
AL101	Solar module offline	---		Problem in serial connection of solar module
AL102	Fast configuration not complete, Consider pressing Prg to start	---		See Wizard Menu, password: 0303 Note: do not consider as alarm signal but as warning, does not cause unit to stop
AL103	Pump 1 Thermic Solar Kit – Solar manifold	---		Various problems with solar module
AL104	Pump 2 Solar Thermic Kit – DHW storage	---		
AL105	Solar Kit Alarm – 3rd safety threshold exceeded on manifold	---		
AL106	Solar Kit Probe B3 for temperature of solar manifold damaged or disconnected	---		
AL107	Solar Kit Probe B1 for system temperature damaged or disconnected	---		
AL108	Solar Kit Probe B2 for DHW storage temperature damaged or disconnected	---		

13 Spare part codes for various components

Accessory	Part code	Description
/	9116881	Carel µPC medium board
/	9116880	Display Carel
/	9116705	Low pressure Carel transducer
/	9112747	High pressure transducer
/	9115965	High pressure pressostat
/	9106994	Sensor NTC 10 kOhm
/	9105961	Sensor NTC 10 kOhm
/	9116709	Sensor for Carel electronic expansion valve driver
/	9112745	Sensor refrigerant pressure
/	9803216	Programming key Carel Smart Key
PGD1	/	Simplified remote panel. Allows monitoring of the unit's base functions and indication of alarms. Remote mounted to 500 m with TWISTED 2 PAIRS + SCREEN cable with twin screen and TCONN6J000
AER485P1	9116373	Serial RS 485 board of ModBus interface (6877320)
STA	/	Room temperature sensor
STH	/	Room temperature and humidity sensor
KSAE	9115977	Outdoor temperature sensor
VMF-CRP	9113073	Carel pCOe expansion board
/	9117794	Driver for external electronic expansion valve
/	9116706	Battery module for Carel electronic expansion valve driver
/	9116710	Battery buffer for Carel electronic expansion valve driver
47175.01	/	Cable for external electronic expansion valve driver (length 6m)

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14 Setting up software version SW 2.5

Edition	Notes
2.2	Various improvement
2.3	WRL code table updating
2.4	WRL code table updating
2.5	Added paragraph display contrast view pGD1

14.1 Programming Carel µPC board with the Carel Smart-key

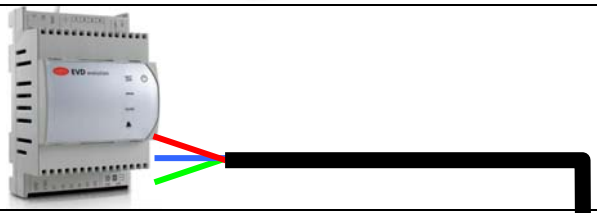
The key contains the software and the bios/boot and the default values of all the parameters.

1) Remove the power supply to the boards through the auxiliary circuit breaker MTA.

2) Connect the Smart-Key to the telephone connector of the Carel µPC board.



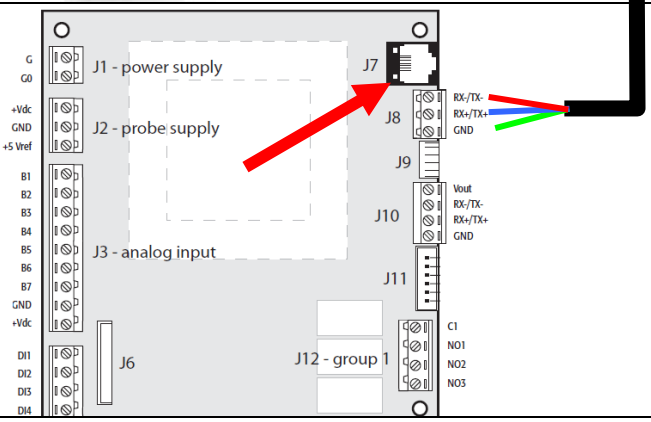
3) Disconnect drivers of the electronic expansion valve EVD (EVD0000E40) if present, connected to output J8 of the board.



4) On power up all the symbols of the Smart-Key illuminate for a moment and the buzzer emits a beep.

From this moment it is necessary to wait around **30 seconds** before the key can operate. This phase is indicated with the flashing of the key's symbols:





5) At the end the board enters the programming mode and the key **Start** of the Smart-Key is permanently illuminated.

6) If the Smart-Key has these LED permanently illuminated:
Start + ↑ then press the **Start** key and start the software writing procedure in the Carel µPC board.

7) If the Smart-Key has these LED permanently illuminated:
Start + ↓ then press the **Mode** key for 2 seconds, wait for the correct symbols shown previously, then press **Start**.

8) The programming procedure **approximately 3/5 minutes**, when the ↑ LED flashes faster and faster.

9) The end of the procedure is announced by a long beep.

10) Once the operation is finished **switch off** the Carel µPC board.

11) Remove the Smart-Key, reconnect the pGD1 display to the telephone connector.

12) Reconnect the electronic expansion valve EVD000E40 drive is previously disconnected.

13) Reconnect the electrical power and wait **approximately 30 seconds** before displaying the first screen of the WRL unit.

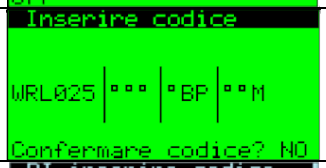
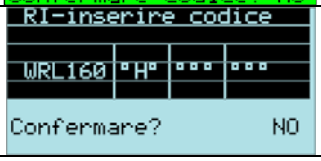
Select the language ENGLISH.



14) Once the correct language is selected press the **Esc** of the display and the following screen is seen:

Enter the password 0009 and press the **Enter** key.



15) When the adjacent screen appears: Press the **Prog** key and using the **arrow** keys run through the various menus to arrive at Menu Service then press **Enter** and inserted inserire la password **0009**.	
16) Insert the unit configuration code of the WRL unit refering to the nameplate or the order number of the unit.	
17) Insert again the code just entered and confirm with YES in the next screen. The display will flash for 3 seconds. NB: The date and time of the set-up will be memorised.	
ATTENTION! **18)** Remove the power supply to the Carel µPC board and reconnect the power supply so the new data inserted is definitively memorised.	

14.2 Addressing the EVD driver (electronic expansion valve) in pLAN network

Only applicable to WRL unit sizes greater than 180.
In units with the electronic expansion valve driver EVD0000E40 it has to be configured as address 5.

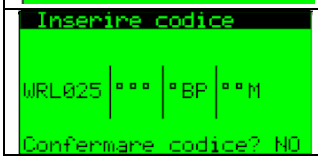
1) Connect the dedicated display of the EVD driver of the electronic expansion valve. **ATTENTION!** Check that the driver version is 4.3: (FW EVD 4.3) if not contact service	
2) Input the driver network address as **5**	
3) Continue to the last screen and confirm with YES	
4) Remove the terminal, disconnect and reconnect the electrical power.	

Once the configuration is finished it is useful to check the driver parameters through the unit's display.

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14.3 Checking the configuration code of the unit

Once the power supply to the unit is reconnected go to the Menu set-up procedure password 0009.
Press the **Prg** key and enter the password

	The password is fixed at 0009 The password displayed will return to 0 after 5 minutes of inactivity of the user terminal.
	**Check that the configuration code of the unit inserted is correct!!!**

14.4 Appendix A. Description of the unit configuration code

1 2 3	4 5 6	7	8	9	10	11	12	13	14	15
WRL	Size	Field of use	Model	Version	Heat Recovery	Geoth. side pump	User side pump	Recovery side pump	Soft start	Power supply

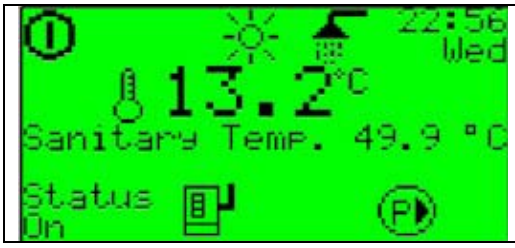
Field	Description	Parameters influenced
SIZE	- 025, 030, 040, 050, 070, 080, 100 , 140, 160 - 180, 200, 300, 400, 500, 550, 600, 650	Sizes ≥ 100: two compressors (parameter H21 Plant Conf. Menu Service) Sizes ≥ 100: enable thermal switch of compressor 2 (parameter H42 Plant Conf. Menu Service) Sizes ≥ 100: n° max compressor = 2 (parameter H21 Plant Conf. Menu Service)
FIELD OF USE	° - Standard with leaving water above +4°C Y – Low temperature with leaving water down to -6°C X – Electronic expansion valve (EEV) with leaving water down to -6°C	Models X: enable driver EEV (parameter H27 Plant Conf. Menu Service) Models X and sizes ≥ 180: exthernal driver EEV (parameter H27 Plant Conf. Menu Service)

	PID (parameter ER9 Driver EEV Menu Factory)	Time start-up forced to pre-position (parameter ER3 Driver EEV Menu Factory)	Open valve at start-up (parameter ER3 Driver EEV Menu Factory)	EEV time opening before start of compressor parameter MC18 Compressors Menu Factory)
Models X and sizes ≤100	5.0, 60s, 1.0s	***10s***	***30%***	***5s***
Models X and sizes from 100 and 160	5.0, 60s, 1.0s	***10s***	***40%***	***5s***
Models X and sizes ≥180	15.0, 150s, 5.0s	5s	80%	0s

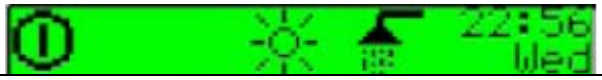
MODEL	° - Cooling (Reversible water-side) H – Heat pump (Reversible refrigerant circuit) E – Evaporating unit (not available for heat pump versions)	Models °: reversing water side (parameter H6 Plant Conf. Menu Service) Models H: reversing refrigerant gas side (parameter H6 Plant Conf. Menu Service) Models H: enable geothermal flow-switch (parameter H30 Plant Conf. Menu Service) Models H: added probe SDHW with the unit Models E: disable geothermal delivery water temperature (parameter H51 Plant Conf. Menu Service) Models E: disable geothermal return water temperature (parameter H51 Plant Conf. Menu Service)
VERSION	° - Standard A – With system buffer tank	
HEAT RECOVERY	° - Without heat recovery D - Desuperheater (ONLY FOR COOLING ONLY VERSION) T- With total heat recovery	Models T: type of sanitary= Total Recovery (parameter H3 Plant Conf. Menu Service) Models T: enable sanitary buffer tank probe (parameter H51 Plant Conf. Menu Service) Models D: type of sanitary = Desuperheater (parameter H3 Plant Conf. Menu Service)

Field	Description	Parameters influenced					
GEOTHERMIC SIDE PUMP	° - Without pump B – ON-OFF circulator with 3 speeds (models up to size 080) U – High head pump (models above size 080) F – Pump suitable for phase shaving (models up to size 080) I – Inverter pump high head (models up to size 080) V – Modulating valve		Set. Geo. (parameter P24 Pumps Menu Service)	Diff. Geo. (parameter P24 Pumps Menu Service)	Minimum Speed/ Opening (parameter P39 Pumps Menu Service)	Compressor On delay time after Geoth. pump On (parameter P12 Pumps Menu Service)	Geoth. flow-switch delay time (parameter A45 Alarm Conf. Menu Factory)
		Models °, B,U,F,I	17.0	12.0	15%	60s	30s
		Models V and sizes from 025 to 080	***14.0***	***20.0***	***20%***	***110s***	***100s***
		Models V and H and sizes from 100 to 160	***14.0***	***20.0***	***20%***	***160s***	***150s***
		Models V and not H and sizes from 100 to 160	***14.0***	***20.0***	***20%***	***110s***	***100s***
		Models V and sizes from 180 to 650	14.0	20.0	10%	100s	90s
		Models V with MUT modulating valve (obsolete)	17.0	12.0	35%	60s	30s
		Models F,I,V: geothermal pump regulation by pressurere (parameter P21 Pumps Menu Service) Models B,U,F,I,V: enable thermal switch of pumps					
USER SIDE PUMP	Evaporator in cooling mode ° - Without pump P – ON-OFF circulator with 3 speeds (models up to size 080) N – High head pump	Models P,N: enable thermal switch of pumps					
RECOVERY SIDE PUMP	° - Without DHW pump Q – With DHW pump	Models Q: sanitary priority + valve or priority + pump or total recovery (parameter H3 Plant Conf. Menu Service)					
SOFT-START	° - Without compressor soft-start S – With compressor soft-start						
POWER SUPPLY	° - 400V 3N~ 50Hz M - 230V ~ 50Hz (only model sizes 025, 030, 040)						

14.5 Appendix B. Principal screen



The principal screen provides the user various information through icons.
Below is the description of the information available.

Icon	Description
Display Upper Part	
- on/off	The whole system (radiant panels, chiller, fan coil unit, solar kit and DHW) is enabled for operation
	Unit active in Economy mode
winter sum.	SEASON: indicates the mode of operation of the system; Summer or Winter
	DHW: indicates the presence of the DHW tank
22:56 Wed	HOUR and DAY: h:min and day of the week

Icon	Description
Display Central Part	 Temperature the system is controlling to (outlet temp sensor B7)
Display Central Part	 Temperature DHW (sensor B3)
Display Lower Part	 Operating status and active device
	Indicates a preventative action is in operation
	Indicates Off by system time-clock
	Activates if the supplementary system (immersion heater of boiler) are in operation. If the “solar panels” icon is active at the same time only the latter is displayed
	Activates if one or more solar panels are installed and active
	Activates when the geothermal freecooling is active. It is alternative to the functioning of the compressor(s)
	Activates when a compressor is active, if there is a “2” within the icon it means two compressors are active
	Activates when a DHW pump is active
	Activates when there is a DHW request in a system with water device valve. Flashes during timing of changeover
	Activates when the system pump is active. If it flashes it means that the pump is on but not enough time has passed to allow the enabling of the compressor(s)
	Activates when the pump on the geothermal side is active. If it flashes it means that the pump is on but not enough time has passed to allow the enabling of the compressor(s)

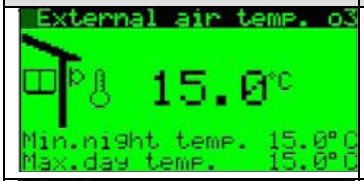
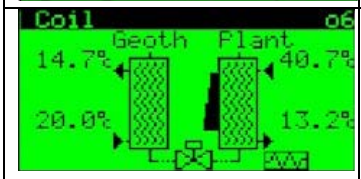
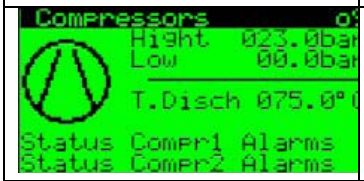
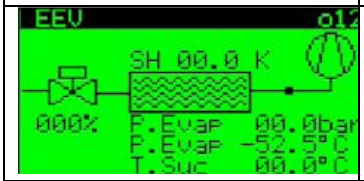
The operational status for the unit available is the following  **:**

Status		Description
Off	***0***	***The system is in stand-by***
On	1	The system is active and functioning
Alarm Off	2	A serious alarm is present which has stopped the system, check the list of active alarms pressing the key
Antifr.	***3***	***The air temperature of the rooms measured by the probes STA / STH go down below the set point (default 6.0 ° C)***
Super.Off	4	The supervisory system has inhibited the start of the unit
Fasc.Off	***5***	***The entire system shut down in Off by clock calendar***
DigIN Off	6	The digital input (ID8) is closed and places the system OFF
Off	***7***	***Off by pGD1***
Protect	8	An anti-freeze protection has triggered. Anti-freeze function
Antileg.	9	The anti-legionella function of the DHW side is active
Chiller	***10***	***The unit working to produce cooling water for the plant***
Sanitario	***11***	***The unit working to produce DHW heating water***
P.C.	***12***	***The unit working to produce heating water for the plant***
Ch+San.	***13***	***The unit working to produce cooling water for the plant and DHW heating water***

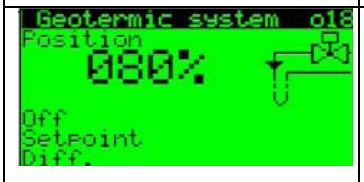
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14.6 Appendix C. Input output states

In this menu it is possible to have a summary of how the unit is operating.

Screen	Description
	Indicates the actual outdoor air temperature and the minimum and maximum temperatures recorded during the night and day
	In reference to the operating mode if cooling or heating or heat pump, the screen shows the water inlet/outlet temperatures within the geothermal (Cond.) and system (Evap.) the geothermal pump is on when the G is circled the system pump is on when the P is circled If the reversing valve is powered it is shown with the symbol (black head). The icon "(D)"means the flow switch is open at that time The icon "(LP)" the system pump is forced on to overcome a low pressure of the refrigerant circuit (parameter P34 seen in the sub-menu Pumps of the Menu Service). The indication of "steps" placed beside the heat exchanger "Evapor" indicates the system demand (0 - 100%)
	The screen shows the pressures at inlet (Low) and outlet (High) of the compressor and the discharge temperature. It also informs if the compressor is on, off or has a timer for starting or stopping (State Compr.).
	The screen gives useful information of the state of the electronic expansion valve such as super heat (SH), the suction pressure (P.Evap.) and its suction temperature and refrigerant evaporating temperature (T.Suct.).
	Indicates the water temperature of the DHW tank (Temp), the setpoint (Set) used and the relative differential (Diff.). The icon "(LP)" indicates that the DHW pump is forced on to overcome a low pressure of the refrigerant circuit (parameter P34 seen in the sub-menu Pumps of the Menu Service). It also indicates if the anti-legionella action is active and if the DHW pump is operating (State On or Off).

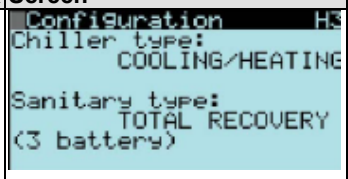
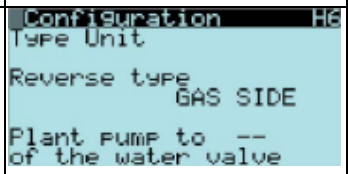
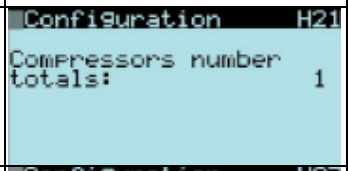
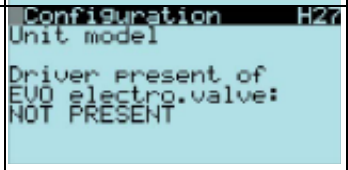
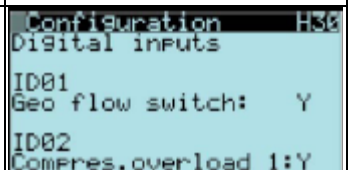
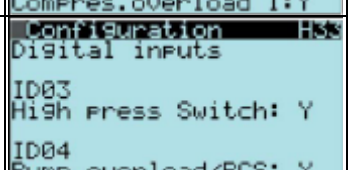
State	Description
On	The system is available to produce DHW
Alarm	An alarm relating to DHW is present
Comp Off	With the desuperheater the DHW does not work with compressor off
Unit Off	The central system has inhibited the starting of all devices
Time-ClOff	DHW is disabled by time-clock
Off key	DHW is disabled by user
Manual	DHW is forced on by digital input

	The screen shows the percentage opening of the valve or the percentage speed of the geothermal pump inverter. Additionally the refrigerant circuit discharge pressure (Pressure), the operating setpoint (Setpoint) and the relative differential (Diff) is shown. The icon "(LP)" indicates that the DHW pump is forced on to overcome a low pressure of the refrigerant circuit (parameter P34 seen in the sub-menu Pumps of the Menu Service). NB. In heat pump mode with head pressure control the opening of the valve or the speed of the pump inverter is fixed at' 80%.
	The screen indicates that the drycooler system is in operation (see the enabling in the sub-menu Accessory of the Menu Service screen B27 and B30). Shows the percentage opening of the mixing valve/percentage speed of the fans relative to output Y1 (0-10V) of the pCOe expansion board. In screen B27 the sensor can be selected which the thermostat uses; in this case the geothermal side return sensor. As well determine the operating Setpoint and differential

14.7 Appendix D. Menu Service, sub-menu Conf.System

Press Prog run through the icons until Menu Service. Then insert the password is shown in the figure.

	Default password is 0101 The password displayed will return to 0 after 5 minutes of inactivity of the user terminal.
	Entering the Menu Service with the UP and DOWN keys move to the sub-menu “PLANT CONF.” and press the ENTER key.

Index	Screen	Description of Values	Unit configuration code	Value
H3		Water/water unit Type of chiller: 0. COOLING ONLY 1. COOL/HEAT 2. HEAT ONLY	***Model ° = Cooling only or Heat Pump with inversing cycle by hydraulic side.*** ***Model H = Cooling/Heating inversing cycle by refrigerant side.***	1
		DHW type: 0. Not present, 1. Desuperheater 2. Total heat recovery , 3. Priority+valve 4.Priority+pump	Model D	1
			Model T	2
H6		Unit model Reversing method: 0. REFRIGERANT SIDE 1. WATER-SIDE	Model H = 0 = refrigerant circuit type	1
		System pump: 0. INTERNAL 1. EXTERNAL		0
H21		Unit model Number of compressors present in the unit: 1 or 2	Size < 100	1
			Size ≥100	2
H27		Unit model Presence of the electronic expansion valve EVO driver: 0. Not Present 1. Present EVO on Board 2. Present EVO in pLan network	Model X	1= Present
			Size <100	EVO on Board
			Size ≥160	EVO in pLan
H30		Digital inputs ID01 Alarm geothermal flow switch	Model H	YES
		ID02 Alarm compressor 1 thermal cut-out		YES
H33		Digital inputs ID03 Alarm high pressure pressostat		YES
		ID04 Alarm pump thermal cut-out	Models B,U,F,I,V, P,N, Q Check if phase sequence relay is in series to the pump thermal cut-outs.	YES

Index	Screen	Description of Values	Unit configuration code	Value
H36	Configuration H36 Digital inputs ID05 Humidifier Alarm: N ID06 DHW Heater overl.: Y	Digital inputs ID05 Alarm humidifier		YES
		ID06 Alarm DHW tank immersion heater thermal cut-out		YES
H39	Configuration H39 Digital inputs ID07 Boiler alarm: Y ID08 Remote On/Off N	Digital inputs ID07 Alarm boiler		YES
		ID08 On/Off remote		YES
H42	Configuration H42 Digital inputs ID09 Compres.overload 2:Y ID10 Plant flow switch: Y	Digital inputs ID 09 Alarm compressor 2 thermal cut-out	Size ≥100	YES
		ID 10 Alarm system flow switch		YES
H51	Configuration H51 Sensors enable B1:Delivery Geoter. Y B2:Return Geoterm Y B3:Sanitary Temp. N B4:Return temp.Plant Y	Sensor enabling B1: Temp. geothermal outlet	Model E	NO
		B2: Temp. geothermal return	Model E	NO
		B3: Temp. DHW	Model D,T,Q	YES
		B4: Temp. system return		YES
H54	Configuration H54 Sensor enable B5:--- N B6:External temp. N B7:Delivery plan Y B8:Delivery zone1 N	Sensor enabling B5: auxiliary sensor, if enabled, see parameter B33 seen in the sub-menu Accessories in the Menu Service		
		B6: Temp. outdoor air		NO
		B7: Temp. system outlet		YES
		B8: Temp. mixing valve Zone 1 outlet water		NO
H57	Configuration H57 Sensor enable B9: Delivery compr.Y B10:Suction compr. N B11:High pressure Y B12:Low pressure Y	Sensor enabling B9: Temp. compressor discharge		YES
		B10: Temp. compressor suction	Size <100	YES
		B11: Pressure condensing		
		B12: Pressure evaporating	Size >180 and X, probe inserted on exthernal driver	

14.8 Appendix E. Menu Factory. Parameters EVD

The following screens are found in the Menu Factory. Check the parameters of the electronic expansion valve EVD (if used). Press Prog then find the section Assistance. Then insert the password shown in the figure.

	Default password is 0202,

	Enter in the Menu Factory, the first mask that appear is the sub-menu “COF.SENSOR”, with the UP and DOWN keys move to the sub-menu “DRIVER EEV” and press the ENTER key.

EEV Configuration Menu



Screen Index	Description of display	Description	Value
EV3	Refrigerant:	Type of refrigerant used in the unit	**5: R410A**
EV6	Principal control:	Principal control	***0: USER DEFINE***
	Auxiliary control:	Auxiliary control	**1: Disabled**
EV9	Valve:1	Type of EEV	1. Carel EXV
EV12	Configuration relay		2. Alarm
	Configuration DI2		3. Control battery alarm
EV15	Control al.sensor S1		2.Forced closure of valve
	Control al.sensor S2		2.Forced closure of valve

EEV Regulation Menu

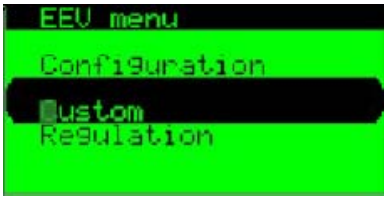


Screen Index	Description of display	Description	Def.	Unit
ER3	EVO Control			
	Opening valve at start-up:	Nominal opening of the valve at start-up (capacity relationship EVAP/EEV) **Important: 50% for 1 compressor models, 80% for 2 compressors models**	50 / 80	%
	Preposition time	Forced opening time at start-up (only for unit with external electronic expansion valve)	5	s
ER6	EVO Control			
	Valve open in stand-by		NO	
ER9 ***(*1)***	PID Parameters:	***(*1) Important: For EEV valve manage directly from Carel µPC electronic board(ONBOARD)***		
	Prop. gain:	PID: proportional gain	***5.0***	
	Integral time:	PID: integral time	***60***	s
	Derivative time:	PID: derivative time	***1.0***	s
ER9 ***(*2)***	PID Parameters:	***(*2) Important: For EEV valve manage from exthernal driver***		
	Prop. gain:	PID: proportional gain	15.0	
	Integral time:	PID: integral time	150	s
	Derivative time:	PID: derivative time	5.0	s
ER12	EEV			
	Setpoint SH	Setpoint electronic expansion valve	6.0	K
	Limit LowSH	Low superheat limit	2.0	K
	Limit LOP	Low evaporating pressure limit	-2.0	°C
	Limit MOP	High evaporating pressure limit	15.0	°C
ER15	Integral time Prot. LowSH:		10.0	s
	Integral time Prot. LOP:		10.0	s
	Integral time Prot. MOP:		20.0	s
ER18	Alarm delay			
	LowSH		300	s
	LOP		300	s
	MOP		600	s

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Screen Index	Description of display	Description	Def.	Unit
ER21	Alarm low suction temperature			
	Limit		2.0	°C
	Delay		300	s

EEV Custom Menu



Mask Index	Display view	Description	Values	Def.	UOM	Min	Max	R/W
EC1 ***(*1)***	Config. EEV							
	Valve type	**Electronic expansion valve type, installed since WRL 160 size included *(*1)***	***0: USER DEFINE 1: CAREL E2V***	0	---	0	7	RW
EC1 ***(*2)***	Config. EEV							
	Valve type	**Electronic expansion valve type, installed from WRL 180 size included *(*2)***	***0: USER DEFINE 1: CAREL ExV***	0	---	0	17	RW
EC3	Valve Custum							
	Min. steps			50	stp	0	999	RW
	Max. steps			480	stp	0	999	RW
	Closing steps			500	stp	0	999	RW
EC6 ***(*1)***	Valve Custum							
	Speed nominal	Nominal speed	**Check that the value must be setted to 50Hz**	50	Hz	1	999	RW
	Speed closing			***50***	Hz	---	---	---
	Target current		***(*1) Important: For EEV valve manage directly from Carel µPC electronic board(ONBOARD)***	***300***	mA	0	800	RW
	Holding current	Holding current		***50***	mA	0	800	RW
EC6 ***(*2)***	Valve Custum							
	Speed nominal	Nominal speed	**Check that the value must be setted to 50Hz**	50	Hz	1	999	RW
	Speed closing			***50***	Hz	---	---	---
	Target current		***(*2) Important: For EEV valve manage from exthernal driver***	***450***	mA	0	800	RW
	Holding current	Holding current		***100***	mA	0	800	RW
EC9	Valve Custom							
	Duty cycle:	Duty cycle		30	%	0	100	RW
	Opening synchr.	Electronic expansion valve syncrounism in opening status	0. NO 1. YES	1	---	0	1	RW
	Opening synchr.	Electronic expansion valve syncrounism in closing status	0. NO 1. YES	1	---	0	1	RW

14.9 Appendix F. Addressing procedure of the Carel µPC board and the pGD1display

14.9.1 Addressing the pGD1 terminal

It can be useful to change the address of the pGD1 terminal from the default address 32.
If the address is to be changed follow the following procedure:

1. Conned the pGD1 display (remote terminal)

2. Simultaneously press the keys ↓ ↑ ↵ (with remote terminal on) for at least 5 seconds

```
Display address
setting.........:nn

I/O Board address:xx
```

```
Display address
changed
```

3. Wai for the adjacent screen to appear
4. Press once the key ↵: the cursor will move to the address field (nn)
5. Change the address of the remote terminal (display address setting) with keys ↓↑ selecting the desired value and confirming pressing the key ↵.
6. If the selected value is different from that previously memorised the screen adjacent will appear for a time to allow the new value to be inserted in the permanent memory of the display.
7. Disconnect and reconnect the pGD1 remote terminal

14.9.2 Addressing the Carel µPC board

The procedure is the following:
1. Power the Carel µPC board,
2. Set the pGD1 remote panel with the address at **0**. (See preceding section),
3. Disconnect (if there are) all the other devices connected to the pLAN network (terminal J11 of the Carel µPC board)
4. Disconnect and reconnect power to the Carel µPC board
5. Simultaneously press the keys UP + ALARM
6. After a few seconds the following screen appears:

```
PLAN ADDRESS: 0
UP:     INCREASE
DOWN:   DECREASE
ENTER:  SAVE & EXIT
```

7. Use the UP and DOWN keys and enter the display address with value 1 (PLAN ADDRESS: 01)
8. Press ENTER to confirm.
9. When the following screen appears:

```
Display address
setting.........:nn

I/O Board address:xx
```

Simultaneously press the keys ↓ ↑ ↵ for at least 5 seconds and enter the address of the pGD1 remote panels as **32.**

14.10 Appendix G. pGD1 Screen contrast adjustment



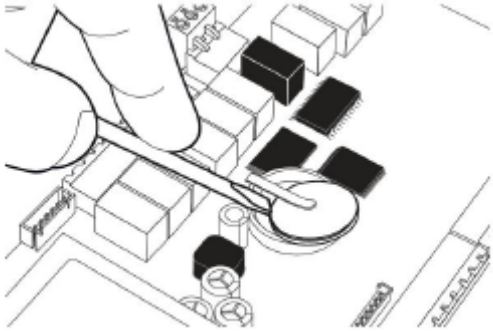
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To adjust the contrast of the display, press the keys with Alarm and Prog

Alarm	**View the list of active alarms and alarm history Red LED on = at least one active alarm**
Prg	**Displays the main menu. Orange LED on = heating mode**
	Scrolls the list up or allows to increase the value on the display.
	Scroll down or a list allows you to decrease the value shown on the display.

14.11 Appendix H. Carel uPC Internal watch

The watch battery inside of the card has a limited duration.
It is a so-called battery to CR2430 3 volt easily replaceable.
A clear symptom of the battery and 'the lost (begins to recount from 1/1/2004) after a reboot card power failure or change now.



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