Operating and Service Manual

MPX PRO Electronic Controller

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1. Introduction

The Smeva MPX PRO controller is a modular control system in which different controllers can function together in a master-slave configuration. In this way, a maximum of 6 temperature zones can be linked together. 2 versions of this controller are available:

- 0143300 – MPX PRO TEV for thermostat expansion valves
- 0143302 – MPX PRO EEV for Carel E2V electronic expansion valve (stepper motor)

For every type of refrigerated cabinet that Smeva supplies with MPX PRO, there is a parameter set available that is preprogrammed and tested at the factory. The refrigerated cabinets can therefore be put into operation quickly on site. In each controller there are 5 standard parameter sets that can be reset at any time. The controller has an integral real time clock and remote monitoring and control are possible.

In addition, a number of optional switches are possible for the functions cabinet ON/OFF, front light, day/night, worktop heating and display heating. The controller has an external user display with control buttons or a pure read-out display. In the latter case, changing of settings in the controller is only possible with a remote control.

The remote control offers the service fitter the possibility of quickly scrolling through all the available menus in order to quickly and efficiently find the parameters.

2. Functions of the switches

In combination with the Carel MPX PRO controller, 5 different switches may be installed in addition to the (user) display. Note: Not necessarily in this order.
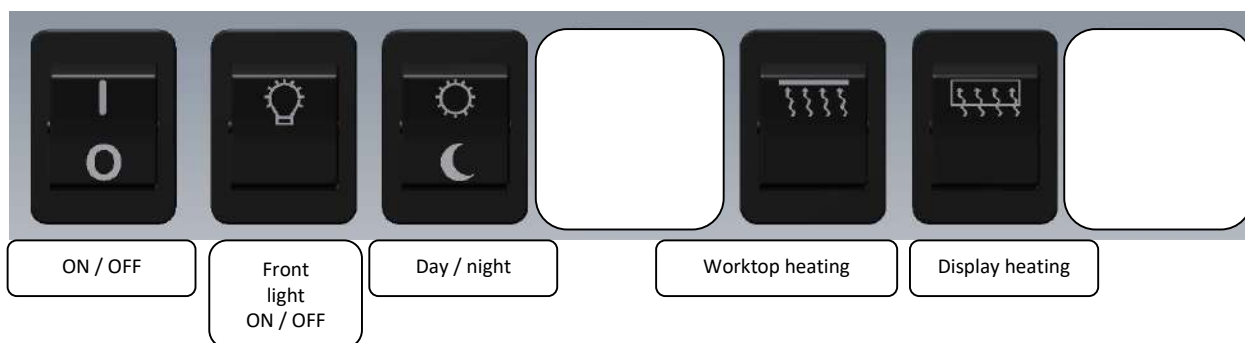
Switch:	Description of function	Control	Circuit	Remarks
ON / OFF	Cabinet ON or OFF	"OFF" on display	via DI controller	Central or per temperature zone
Day / night	Light and humidifier ON/OFF	Light and humidifier	via DI controller	Possibly night boost ON/OFF
Front light ON/OFF	Front light ON or OFF	Front light switches ON/OFF	Separate circuit	If front lighting is installed
Worktop heating	Worktop heating ON or OFF	Feel the worktop after a few minutes	Separate circuit	With granite worktop only
Display heating	Display heating ON or OFF	Feel the display heating on site	Separate circuit	With round display only

DI = Digital input of the controller
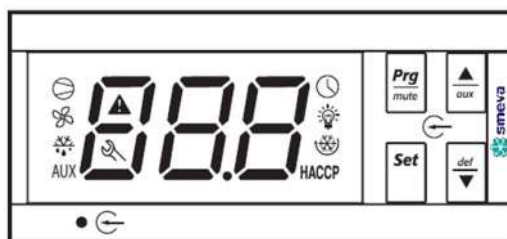The wiring of the different functions depends on the and can be found in the electrical circuit diagram of the display cabinet. This is supplied with the cabinet and is located in or near the control cabinet.

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3. User Display and Display

Each display cabinet has one or more user display(s). The user display has four control buttons.

USER DISPLAY
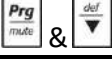
3.1 Symbol list for user display

The following list explains the meaning of the symbols that can appear on the user display. The symbols light up briefly on the display, but in general remain invisible.

Symbol	Function	Symbol status / function			Remarks
		ON	OFF	Flashing	
⊖	Cooling	active	not active	prompt	Flashes during cooling waiting time (delay time)
�	Fans	active	not active	prompt	Flashes if activation is not possible
❄	Defrosting	active	not active	prompt	Flashes if activation is not possible
AUX	Auxiliary output	active	not active	-	Flashes if activation is not possible
⚠	Alarm	Preactivate digital alarm	-	Alarm active	Flashes if activation is not possible
🕐	Clock	Night mode	-	Clock error	Symbol is always displayed briefly when switching on
💡	Light	active	not active	-	May light up if no lighting is installed; in that case, it can be switched off with the remote control
🔧	Service	Parameter upload mode	-	System fault	Indicates that a parameter is not or not correctly set. When using the remote control, this indicates a forced command
HACCP	HACCP	HACCP function active	-	HACCP alarm stored	During an HACCP alarm (if set), HA or HF is displayed on the display
❄	Continuous operation	active	-	prompt	Flashes if activation is not possible

3.2 Functions of the control buttons on the user display

Setting	Function	User display Buttons	Duration	Display during setting / remarks
Setpoint	Temperature setting	Set		Value on display flashes
		▲aux / ▼def		Setting of value
		Set		Save setpoint and back
Access to parameters (programming level)	**F**requent parameters (Type F)	Prg mute	5 s	First F parameter appears on screen
	Configuration parameters (Type C) or	Prg mute & Set	5 s	
		▲aux / ▼def		Enter password: 22 = C, 33 = A
	Advanced parameters (Type A)	Set		Confirm password, first C or A parameter appears
Quit program level and save		Prg mute	5 s	The changes are now saved and active
Defrosting	Local defrosting	▼def	5 s	dFb: Activate dFE: Deactivate
	Defrosting all controllers (via master only)	Set & ▼def	5 s	dFb: Activate dFE: Deactivate
Auxiliary functions	Continuous operation	▲aux / ▼def	5 s	ccb: Activate ccE: Deactivate
	Auxiliary output AUX	▲aux		Activate / deactivate AUX
Network functions (master only)	Copy parameters from master > slave	Prg mute & Set	5 s	
		▲aux / ▼def		Enter password: 66
		Set		See Carel MPXPRO user manual
	Display slave status via master	Prg mute Set ▼def		Select slave, see **Select desired controller**
Setting	**Function**	**User display Buttons**	**Duration**	**Display during setting / remarks**

| Reset factory setting	Parameter reset: Back to set "X" (*)	Prg/mute when switching on		Hold button pressed when switching on See **Smeva factory settings**
Alarms	Display alarm memory	Prg/mute & Set	5 s	
		Prg/mute & def ▼		Enter password: 44
		Set		See **Alarm logbook**
	Alarm manual reset	Prg/mute & ▲ aux	5 s	rES signals reset
	Deactivate buzzer and block alarm relay	Prg/mute		Buzzer always deactivated = Standard Smeva setting
HACCP	HACCP menu	Prg/mute & def ▼		See Carel MPXPRO user manual

(*) *Relates only to the visible parameters*

4. Programming with the user display

Parameters can be changed or read out via the user display. There are 3 types of parameter: **F**requent (F), **C**onfiguration (C) and **A**dvanced (A). Each type of parameter can be found in the parameter list. Access to the C and A parameters is protected with a password. The A parameters may only be changed by qualified service personnel as these parameters directly influence the controller.

4.1 Select desired controller

From the user display of the master it is also possible to access the slaves (the reverse, from slave to master, is not possible). This is helpful particularly if only the master has a user display and the slaves have only a display. Proceed as follows:

- Select the menu to be changed, e.g. parameter setting or alarm memory, as follows [Set]

- The message uM (= Master) appears on the user display: uM

- The desired slave can be selected with [▲ aux] [def ▼] : u1= 1st slave, u2= 2nd slave, u3…u5: etc.
  $u1$ as follows [Set] *(NB: uXo indicates that controller **X** is OFFLINE)*

- Settings can now be made in the selected menu for the selected controller

- To return to the default view, press [Prg mute] for 5 s

The controller also returns automatically to the default view after a time-out of 1 minute

If the slave modules have their own user display, these can naturally also be used for access

4.2 Changing setpoint St

The setpoint, i.e. the set air temperature in the display cabinet, can be easily set for each temperature zone:

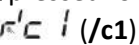- Press [Set] until the current value of **St** flashes

- The desired value for **St** can now be set with [▲ aux] [def ▼]

- The press [Set] briefly to confirm the new value
- After a few seconds, the display returns to the default view

In the case of a master module with 1 or more slave controllers, the desired controller has to be selected between step 1 and step 2 as described in the previous paragraph.

4.3 Access to the frequent parameters, Type F

The F parameters are the most frequently used parameters, such as calibration of the sensors, setpoint and switching hysteresis, defrosting final temperature and time. Refer also to the parameter list at the end of this manual.

Proceed as follows:

- Hold [Prg/mute] pressed for longer than 5 s; the first editable F parameter then appears on the display: $r'c$ l (/c1)
- Edit the F parameter(s): See following paragraph "Editing parameters"

4.4 Access to the configuration parameters, Type C

The C parameters are the configuration parameters in which, for example, the display view, assignment of the sensors, configuration of digital inputs, master/slave network and defrosting cycles are defined. For a more detailed overview, see the parameter list at the end of this manual.

Proceed as follows:

- Hold [Prg/mute] & [Set] pressed simultaneously for longer than 5 s; the digit 0 now flashes on the display
- Press [▲/aux][def/▼], enter password **22** and confirm with [Set]
- The first editable C parameter then appears on the display: **/4**
- Edit the C parameter(s): See following paragraph "Editing parameters"

4.5 Access to the advanced parameters, Type A

The advanced parameters A are the parameters with which, for example, the sensor type is selected per sensor group and all the important control parameters are defined. All visible parameters are accessible from here. The complete overview can be found in the parameter list at the end of this manual.

The A parameters may only be changed by qualified service personnel as these parameters directly influence the controller and can result in serious damage to the cooling system.

Proceed as follows:

- Hold [Prg/mute] & [Set] pressed simultaneously for longer than 5 s; the digit **0** now flashes on the display
- Press [▲/aux][def/▼], enter password **33** and confirm with [Set]
- The first editable A parameter then appears on the display: **/2**
- Edit the A parameter(s): See following paragraph "Editing parameters"

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4.6 Editing parameters

After selecting the desired programming level (A, C or F):

- Use ??? to select the desired parameter; as the parameters are scrolled, an icon lights up on the display that indicates the menu to which this parameter belongs (see following table)

- OR: Press to scroll through the parameter menus with , see following table and the complete parameter table at the end of this manual. When the right menu is reached, activated it with . Pressing scrolls through the parameters from this menu. This is a quick method for finding a specific parameter.

- Activate the desired parameter with ; the current value is now displayed.

- Edit the displayed value with , if necessary

- Then provisionally the value by going back to the display of the parameter code with

- The new parameter values are only finally stored when the button is pressed for 5 s. Edit mode is quit in this way and the default view appears on the display again

If no button is pressed for 10 s, the display starts to flash. After 1 minute without an input, it returns to the default view without any changes made being saved. No changes are saved either in the event of an interruption in the power supply.

Menu	Category	Icon
Pro	Sensors	
CtL	Control	
CMP	Compressor	
dEF	Defrost	
ALM	Alarm	
FAn	Fans	

Menu	Category	Icon
Eud	Electric valve	
CnF	Configuration	AUX
HSt	Alarm log	
HcP	HACCP	HACCP
rtc	Real Time Clock	

4.7 Editing sub-parameters: Date and time

A number of parameters, such as date and time, defrosting schedule and day/night cycle have sub-parameters. Taking date/time as an example, we will show how these sub-parameters can be edited:

- Hold [Prg mute] & [Set] pressed simultaneously for longer than 5 s; the digit 0 now flashes on the display
- Press [▲ aux][def ▼], enter password **22** and confirm with [Set]
- The first editable C parameter then appears on the display: **/4**
- Press [Prg mute]: Menu **Pro**
- [▲ aux][def ▼] to select menu **rtc**
- [Set] to confirm; [▲ aux] until parameter **tc** appears
- [Set] to activate; the first sub-parameter **y** appears, followed by 2 digits
- Press [Set] to set the year (e.g. **18**) with [▲ aux][def ▼], then press [Set] again
- [▲ aux] to select the following sub-parameter; **M**=month. Repeat the steps as for **y**
- Repeat these steps for the sub-parameters **d**=day of the month, **u**=day of the week, **h**=hours, **n**=minutes; see overview below
- Press [Prg mute] to return to the main parameter list
- Press [Prg mute] to go one level higher and to finally save the settings

Par.	Description	Default	Min.	Max.	Unit
tc	Date/time (press Set)	-	-	-	-
y__	Date/time: year	0	0	99	Year
M__	Date/time: month	1	1	12	Month
d__	Date/time: day of the month	1	1	31	Day
u__	Date/time: day of the week	6	1	7	Day
h__	Date/time: hours	0	0	23	Hour
n__	Date/time: minutes	0	0	59	Minutes

4.8 Editing sub-parameters: Defrosting times

It can be useful to slightly shift the defrosting times set in the parameter list at the end of this manual in line with the working or opening hours.

- Hold [Prg mute] & [Set] pressed simultaneously for longer than 5 s; the digit 0 now flashes on the display
- Press [▲ aux][def ▼], enter password **22** and confirm with [Set]
- The first editable C parameter then appears on the display: **/4**
- Press [Prg mute]: Menu **Pro**
- [▲ aux][def ▼] to select menu **rtc**
- [Set] to confirm; [▲ aux][def ▼] until parameter **td1** appears, this is the 1st defrosting on a day
- [Set] to activate; the first sub-parameter **d** appears, followed by 2 digits
- [Set] to set the days on which this defrosting is to take place with [▲ aux][def ▼], then [Set]
- [▲ aux] to select the following sub-parameter; **M**=month. Repeat the steps as for **y**
- Repeat these steps for the sub-parameters **h**=starting time (hour), **n**=starting time (minute), **P**=Power defrost (0, is not used); see overview below
- Press [Prg mute] to return to the main parameter list
- [▲ aux] to select **td2**, this is the 2nd defrosting; repeat the steps also for the following defrosting settings **td3…td8**
- Press [Prg mute] to go one level higher and to finally save the settings

Par.	Description	Default	Min.	Max.	Unit
td1…td8	Defrost 1..8 (press Set)	-	-	-	-
d__	Defrosting 1…8 weekday: 0=Not active, 1…7=Mon…Sun, 8=Mon to Fri, 9=Mon to Sat, 10 = Sat + Sun, 11=every day	11	0	11	Day
h__	Defrosting 1..8 starting time (hour)	..	0	12	Hour
n__	Defrosting 1..8 starting time (minute)	..	0	31	Minutes
P__	Defrosting 1…8 enable Power defrost 0=normal, 1=Power defrost (not used)	0	0	1	-

5. Defrosting of evaporators and start manual defrosting

The set defrosting times are coordinated in a master-slave network so that the temperature zones are defrosted at the same time and wait for one another. Cooling starts again only when either the defrosting final temperature in all the zones or the maximum set defrosting time is reached. During defrosting, the fans remain in operation to make maximum use of the latent heat. When one zone has finished defrosting, the fans in this zone stop until the other zones are also finished.

If it is discovered that a great deal of ice has formed on the evaporator, an extra defrosting cycle can be started manually. This can be done per temperature zone or for all the zones at the same time:

- For local defrosting, hold [def ▼] pressed for 5 s on the corresponding user display. Message **dFb** appears: The defrosting cycle now starts. The cycle can be terminated prematurely by pressing [def ▼] again for 5 s: Message dFE defrost end

- Defrosting of all zones: Press [Set] & [def ▼] simultaneously on the master user display. Message **dFb** appears: Defrosting starts The cycle can be terminated prematurely by pressing [Set] & [def ▼] again for 5 s: Message **dFE** defrost end

Defrosting does not start if the temperature measured by the defrosting sensor is above the set defrosting final temperature.

6. Use of the remote control (optional accessory)

Settings can be changed and measured values checked very easily using the MPXPRO remote control. In addition to the remote keys that are also located on the user display, a variety of functions are available for manual control of inputs and outputs for checks and function tests. The remote control works in combination with both the user display and the display.

When aiming the remote control, take care that two (user) displays are not actuated at the same time.

6.1 Activation of the remote control

Button	Function	Message on (user) display
	Deactivate remote control	**rce**
	Activate remote control	**rct**

All visible parameters can be accessed directly with the remote control without the input of a password.

The remote control can be permanently deactivated with the parameters H2 and H3 or can be assigned a dedicated password; see also the detailed Carel MPX PRO manual.

If no button is pressed for 5 minutes, the connection is interrupted and all manual operations are canceled. To keep the connection active, press a button at regular intervals before the 5 minutes have expired. The display flashes 10 s before the interruption as a pre-warning.

6.2 Remote buttons and navigation

Button	Short press (1 s)	Long press (5 s)
Prg mute	Back to the next higher menu Deactivate buzzer at alarm	Back to default view and save changes Access to ALL parameters
Set	Edit parameter Confirm change	Display setpoint
▲ aux	Scroll down	Light / AUX
def ▼	Scroll up	Defrosting ON / OFF

The functions of the remote keys are thus practically identical with those of the corresponding keys

on the user display, with the sole difference that the [Prg mute] button gives immediate access to all visible parameters. The remote control can also be used to jump from menu to menu in the same way as described under **Editing parameters**.

6.3 On / Off function

Button	Function	Message on (user) display
⏻	Controller in logic OFF state	**OFF**

*Communication with the master/slave network and sensor management remain functional in the **OFF** state*

6.4 Status overview: Display of controller status

These buttons give direct access to the most important measured values from the different sensors and
 to the most important internal variables.

 Eud only with electronic expansion valve (EEV); ACC is not used by Smeva

An overview of the variables used by Smeva can be found below:

Pro		Eud	
SM	Temperature sensor Air OFF value *(yellow)*	SH	Overheating in K
Sd1	Defrost temperature sensor *(white)*	P3	Overheating setpoint
Sr	Temperature sensor Air ON value *(green)*	PPU	EEV position in %
Su	Virtual temperature *(default display)*	PF	EEV position in steps
St	Setpoint	tEu	Saturated evaporation temperature
Sd2	2nd defrost temperature sensor *(white)* (if installed)	tGS	Superheated gas temperature *(red)*
		PEu	Evaporation pressure in bar(g) *(=relative to atmospheric pressure)*

The color indicates the color marking of the respective sensor

6.5 Further functions of the remote control

The remote control has a wide range of further possibilities; these are described in the detailed Carel MPX PRO manual.

7. Standard controller settings

7.1 Smeva factory settings

At the factory, all MPX PRO controllers are preprogrammed with 5 parameter sets using a programming key. The correct parameter set is then activated and any special settings that may be necessary are programmed by hand. A function check is then carried out so that after connection to the power supply, the display cabinet only has to be switched on: Programming of the controllers is no longer necessary.

*The uploading of the MPX PRO parameters with a programming key is described in the Smeva Installation Manual **PO-MI-180516-01***

There are 5 parameter sets in the memory of the controller that can be reset at any time. If one of the parameter sets 1 to 5 is activated, this set automatically becomes the "toolbox" or set 0. Only parameters in the "toolbox" can be edited via the user display or the remote control.

A sticker is attached to the control cabinet showing which parameter list (key code in combination with set code) is in use and which parameters have been edited by hand.

Parameters that are not used by Smeva are made "invisible" and cannot be accessed. The buzzer function of the alarm is deactivated as standard (parameter **H4 = 1** in menu **CnF**)

It is possible at any time to reset the Smeva factory settings:

- *Connect a display with operating panel (user display)*
- *RS485 and T-LAN cables must <u>not</u> be connected*
- *Switch on the power supply to the controller with the PRG button pressed*
- *The message UnA appears on the display, followed by Un*
- *Now release the PRG button and press SET*
- *The number 0 now appears on the display; this indicates set 0*
- *Select the desired set 1-5 with the UP and DOWN buttons*
- *Confirm the correct set with the SET button*
- *At the end of this procedure, the report STD appears on the display*

*Note: Refrigerant and a few other parameters are NOT factory settings. These have to be set again <u>manually</u>. Refer to the identification sticker on the control cabinet and paragraph **Manual Smeva settings**.*

Note: A change is only final when the menu is closed with the PRG button!

7.2 Carel factory settings

Set 5 is always reserved for the standard Carel factory settings that differ from the Smeva settings. More "visible" parameters are available here for more complex functions. These are generally not required, but could possibly occur in a "supermarket" application with a central control system. Reference is made to the Carel MPX PRO User Manual for the default Carel parameter settings.

7.3 Manual Smeva settings

The identification sticker on the control cabinet shows which parameter set is in use and which parameters have been set by hand for this client-specific application. If the system is reset to a factory parameter set, these client-specific parameters always have to be checked and possibly set again by hand. The function of these parameters is explained briefly in the following tables.

This is purely informative: The functions described have already been set to the correct values at the factory

7.4 Master-slave configuration

Set in:	Menu	Parameter	Description	Information source	Value
Master only	CnF	Sn	*Number of slaves installed*	*See ID sticker*	*Number of slaves*
Master only	CnF	H0	*Network address*	*See ID sticker*	*(default = 50)*
Slaves only	CnF	H0	*Network address*	*Number of the slave*	*1st slave = 1, 2nd = 2, etc.*

If the master-slave network is incorporated into a monitoring system via RS485, the master must have a unique number. If several display cabinets are used with an MPX PRO, <u>unique</u> numbers have to be assigned to the masters. The network address of a slave is always the network number of the master plus the slave number, thus e.g. 50+1 = 51. This is performed automatically, so that the slaves are always numbered from 1 = 1st slave, 2 = 2nd slave, etc.

7.5 Electronic expansion valve

Where an EEV is used, it is necessary to enter the correct range for the pressure sensor and the type of refrigerant:

Set in:	Menu	Parameter	Description	Information source	Value
Master only	Pro	/U6	*Max. pressure sensor range**	*See ID sticker*	*Maximum value*
Master only	Pro	/L6	*Min. pressure sensor range**	*See ID sticker*	*Minimum value*
Master <u>and</u> slaves	Eud	PH	*Type of refrigerant**	*See ID sticker*	*in table below*

*an incorrect setting of these parameters can result in serious compressor damage

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Refrigerant:	Parameter PH:
R134a	2
R404A	3
R410A	5
R507A	6
R744 (CO2)	11
R407A	19
R407F	22
R448A	33
R449A (XP40)	34
R452A (XP44)	36
R513A (XP10)	39

Smeva display cabinet models with a cold plate are not suitable for "Smooth Lines" control or modulating thermostat. ON/OFF control is then also set as standard.

7.6 2nd defrosting sensor

Only when using TEV is it possible to define a 2nd defrosting sensor within a temperature zone if the zone consists of 2 evaporators. This is installed at the position of DI1 (DI = digital input) and is activated by the following parameter:

Set in:	Menu	Parameter	Description	Information source	Value default	Value new
Master or slave(s)*	Pro	/FF	*Define 2nd defrosting sensor*	*See ID sticker*	*(0)*	4

* *in temperature zone(s) with 2 evaporators only*

7.7 Define ON/OFF function

In systems with more than 1 controller, it is standard that an ON/OFF switch is installed only on the master controller. This switches the cooling of the whole display cabinet ON or OFF centrally. The digital inputs of the controller are set for this as standard.

If the cooling system does not have a form of capacity control, only the whole display cabinet can be cooled (one temperature zone). This is then controlled via the master by deactivating the air sensors of the slaves:

Set in:	Menu	Parameter	Description	Information source	Value default	Value new
Slaves only*	Pro	/FA	*Air Off sensor*	*See ID sticker*	*(1)*	0
Slaves only*	Pro	/Fc	*Air On sensor*	*See ID sticker*	*(3)*	0

* *The message "Act." then appears on all displays of the slaves; this indicates that the slaves are controlled with the master via the tLAN*

It is possible that the slaves have their own ON/OFF switch (functions only if the cooling system has capacity control). If slaves have their own ON/OFF switch, the digital input configuration of each controller has to be set differently:

Set in:	Menu	Parameter	Description	Information source	Value default	Value new
Master only	ALM	A9	*Digital input master > slave*	*See electrical circuit diagram*	*(5)*	0

Set in:	Menu	Parameter	Description	Information source	Value default	Value new
Slaves only	ALM	A12	*Function of digital input DI5*	*See electrical circuit diagram*	*(0)*	*6*

It is possible that there is no ON/OFF switch. The controller then remains in OFF mode. Parameter A12 has to be changed for this.

Set in:	Menu	Parameter	Description	Information source	Value default	Value new
Master only	ALM	A12	*Function of digital input DI5*	*See electrical circuit diagram*	*(6)*	*0*

After the change: Close the menu with the PRG button and switch the controller to ON with the ⏻ button on the remote control.

7.8 Day/night switch

It is possible that there is no day/night switch. Parameter A5 has to be changed for this. In this case, parameter H9 also has to be changed.

Set in:	Menu	Parameter	Description	Information source	Value default	Value new
Master only	ALM	A5	*Configure digital input DI2*	*See electrical circuit diagram*	*(7)*	*0*
Master only	CnF	H9	*Select function associated with the "aux" button on the user terminal*		*(1)*	*0*

As standard, the night setpoint is 2 degrees higher than the set setpoint. If no night cover or night curtain is used, this should be set to 0 degrees.

Set in:	Menu	Parameter	Description	Information source	Value default	Value new
Master and slaves	CtL	r4	*Night boost setpoint*	*See ID sticker*	*(2)*	*0*

8. Messages and Alarms

An overview of the most frequent messages and most frequent alarms can be found below. The complete lists can be found in the Carel MPX PRO manual.

Message	Description
---	Display sensor not activated
rct	Remote control activated
rce	Remote control end
dFb	Manual command "defrost begin" see **Defrosting of evaporators**
dFE	Manual command "defrost end"
ON	Controller in logic ON state
OFF	Controller in logic OFF state
rES	(Alarm) reset
Act	Slave runs together with master via tLAN; see **Define ON/OFF function**
uS1..5	Slave 1..5 not configured

Alarm	Symbol (flashing)	Description	Possible remedy
E1	🔧	Sensor fault (Air off)	Loose/defective/wrong type set (parameter /P1)
E2	🔧	Sensor fault (Defrost)	Loose/defective/wrong type set (parameter /P1)
E3	🔧	Sensor fault (Air on)	Loose/defective/wrong type set (parameter /P1)
E4	🔧	Sensor fault (intake line or 2nd defrost)	Loose/defective/wrong type set (parameter /P2)
*E6**	🔧	Pressure sensor S6 fault	Loose/incorrectly connected/cable defective/no communication with Master/set incorrectly (parameter /FE and /P3)
LO	⚠	Low temperature alarm	Check intake pressure, evaporator and fans
HI	⚠	High temperature alarm	Check intake pressure, evaporator and fans
u1…u5	🔧	Communication error with slave (master only)	No LAN connection or no power to slave
n1…n5	⚠	Alarm in unit 1 to 5 in the network	Check alarm at corresponding slave
MA	🔧	Communication error with master (slave only)	No LAN connection or no power to master
LSH	⚠	Overheating low (with EEV only)	Check with meter set/check parameters PH/U6/L6
LSA	⚠	Intake pressure low (with EEV only)	Check with meter set/check parameters PH/U6/L6
bLo	⚠	Valve blocked	Remedy cause: see E6/LSH/LSA
Edc	🔧	Communication error with stepper motor driver	Check cable and connection
EFS	🔧	Stepper motor defective/not connected	See Edc / check function using a magnet

*If the alarm code E6 (pressure sensor alarm) appears when switching on, a protection system comes into operation after a few seconds that prevents further refrigerant being injected: Valve blocked alarm error code bLo. This alarm can only be canceled by:

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- *Remedying the E6 fault (generally parameter /FE)*
- *The message E6 now disappears, but the message bLo does not*
- *Switch the controller OFF and ON again*
- *The alarm bLo now also disappears*

For the temperature and pressure sensors used by Smeva, see **Smeva temperature and pressure sensors**

9. Alarm logbook

An alarm logbook is kept in each controller for the last 10 alarms. This is accessible as follows:

- Hold **Prg** & **Set** pressed simultaneously for longer than 5 s; the digit 0 now flashes on the display
- Press ▲ ▼, enter password **44** and confirm with **Set**
- The first alarm **HS0** appears
- Use ▲ ▼ to select alarm **HS0..9**
- Press **Set** to display the alarm code for the year (e.g. **HI**)
- Pressing ▲ displays in turn **h**.. (time - hours) and **m**.. (time -minutes) at which the alarm occurred followed by a **number** indicating the number of minutes for which the alarm lasted.
- Press **Prg** once to return to the alarm list **HS0..9**
- Press **Prg** for 5 s to return to the default display view

Second possibility: Enter the menu of the A parameters (password 33) and select the category **HSt**; see parameter table at the end of this manual. With the remote control, this menu **HSt** is directly accessible without a password. See also **Access to the advanced parameters - Type A** and **Use of the remote control**

Par.	Description	Default	Min.	Max.	Unit
HS0..9	Alarm 0..9 (press Set)	-	-	-	-
__	Alarm 0..9: code (see Alarm table)	-	-	99	-
h__	Alarm 0..9: Time hours	0	0	23	Time
n__	Alarm 0..9: Time minutes	0	0	59	Min
___	Alarm 0..9: Duration of alarm	0	0	999	Min

10. Smeva temperature and pressure sensors

Smeva uses its own temperature and pressure sensors for the application in its display cabinets.

- 0142566 - Temperature sensor TT4 for air and block temperature:

Parameter **/P1** to **2** (=standard Smeva factory setting)

- 0142568 - Temperature sensor TTOP for measurement of line temperature; this has an eye tape for easy installation on a line, ensuring that good contact is made with the line surface:

Parameter **/P2** to **2** (=standard Smeva factory setting)

*If a display cabinet with a Smeva SCU535 controller is converted to MPX PRO, the old SM811 sensors of the SCU can remain in place. For this, parameter **/P1** has to be set to **1**. A complete description of the conversion from an SCU535 to Carel MPX PRO can be found in the Smeva Installation Manual **PO-MI-180412-01***

- 0142556 - Pressure transmitter HFC -1..12.8 bar for HFKs and HFOs (test pressure max. 36 bar):

Parameter **/P3** to **4** (=standard Smeva factory setting)

- 0142558 - Pressure transmitter CO_2 0..40 bar for refrigerant CO_2 (test pressure max. 66 bar):

Parameter **/P3** to **4** (=standard Smeva factory setting)

- 0143318 - Connection cable SPKT 5M IP67; fitted with a Packard connector for connection of the Smeva pressure sensor (green = ground, black = +5V and white = measuring signal.

A pressure sensor is only used in combination with electronic expansion valves. One pressure sensor per master-slave network is sufficient and the pressure sensor is connected here to the master. It is important to configure the pressure sensor correctly, see also the paragraph **Electronic expansion valve**.

If the pressure sensor is not supplied by Smeva, these settings have to be adapted to the type of pressure sensor used. The MPX PRO controller can also be used in combination with Danfoss AKS pressure sensors.

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