CAREL

refrigeration & retail controllers

MPXPRO series

MPXPRO

high performance and usability

carel.com

Complete solution for the management of multiplexed refrigeration units

MPXPRO is the advanced CAREL Retail sistema solution for the complete and integrated control of multiplexed showcases.
It guarantees high performance and flexibility, offering excellent energy saving opportunities, with special focus on easy operation and installation.

Continuous modulation now also available for commercial refrigeration at more competitive costs

MPXPRO step3 offers the benefits of continuous refrigerant modulation for the same overall cost and with the same simple installation as the old PWM technology that has for some years now no longer been used in air-conditioning applications.
All this without restrictions, complications or additional components!

No more external transformer

The new versions (MX3*) can power the CAREL E²V driver directly without needing an external transformer, using a powerful switching power supply.

No more solenoid valves

Shut-off solenoid valves are no longer required to close the circuit.
The use of ultra cap technology ensures the expansion valve is closed even when the controller is not powered.

CAREL retail sistema

Energy saving

MPXPRO includes several features to optimise showcase or cold room operation and achieve considerable energy savings, in addition to the traditional techniques for optimising defrosts and daily management.

Usability

The device comes complete with specific functions and commissioning tools that make it easier to use and configure, above all during setup.

Performance

Innovative and highly flexible algorithms allow MPXPRO to satisfy the widest market requirements.

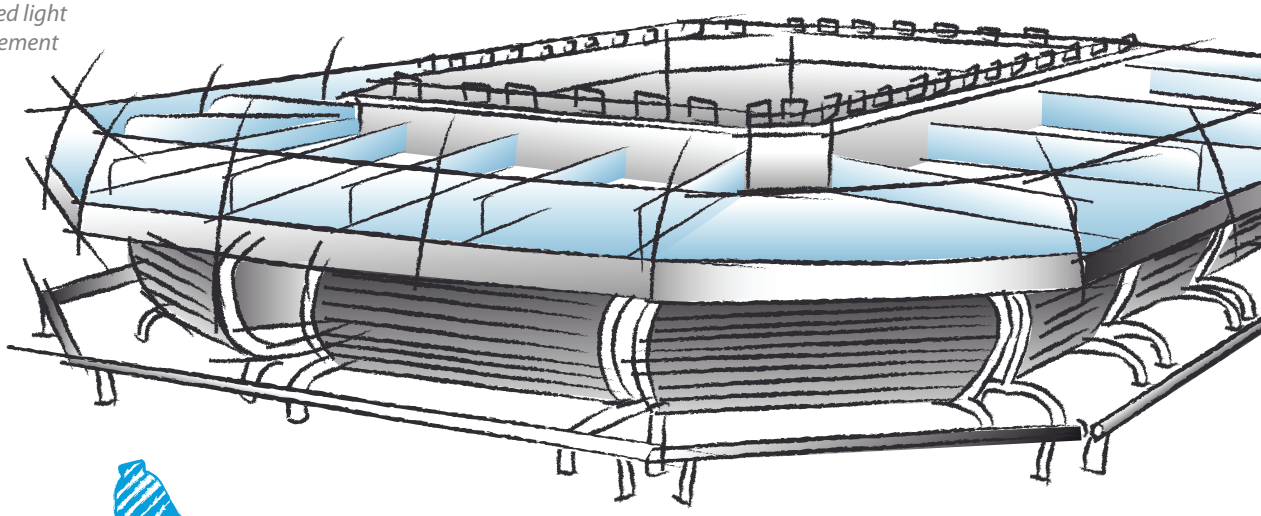
MPXPRO is complete with specifi c functions and commissioning tools to simplify use and configuration, above all during setup

integrated light management

night mode for energy saving

fan speed modulation

alarm management on dedicated probes

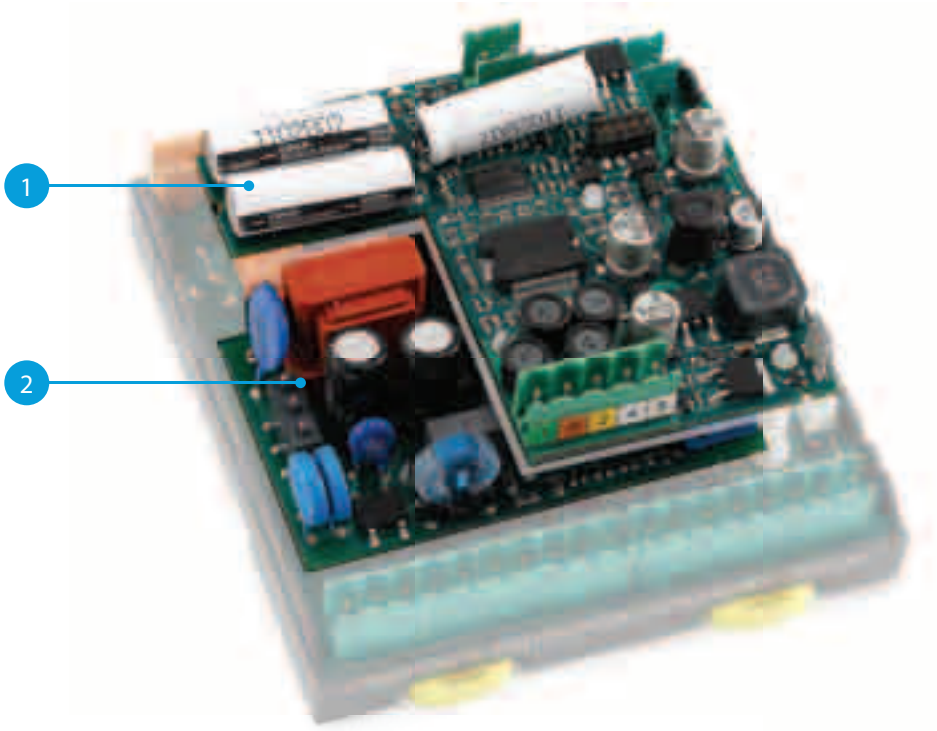


integrated control of CAREL stepper & PWM valves

optimised defrosts

lower anti-sweather heater power consumption

The new solution for managing electronic expansion valves now with switching power supply and ultracap technology



1 *CAREL E2V stepper valve driver board*

2 *switching power supply board*

Energy saving

Many features to optimise power consumption

EEV

Built-in driver for managing CAREL EXV or PWM electronic expansion valves:

- optimised compressor rack operating pressure;
- maximum efficiency;
- stable temperature inside the showcases;
- corrective procedures to ensure operation even in critical conditions.

Anti-sweat heaters

Specific functions to prevent condensate forming on the glass of low temperature showcases, allowing real time modulation of the anti-sweat devices based on the actual ambient and showcase conditions. Special care paid to installation costs, with the possibility to share values from common probes and estimates of values of hard-to-install probes.

Modulation and fans

Modulating control of evaporator fans to reduce energy consumption based on the real showcase operating conditions. Dedicated outputs for DC fans (0 to 10 Vdc).

Defrost optimisation

Defrosts can be increased or reduced in certain time bands, function to skip defrosts that are not needed, sequential/modulating defrost modes.

Energy saving mode

Settable based on internal clock, from supervisor or digital input.

Usability

Complete with specific functions the controller easier to use

Remote control

Interaction with the controller to manage correct operation:

- direct infrared connection with user terminal or remote display;
- remote user keypad installation;
- complete display of probes and internal variables;
- override inputs and outputs.

VPM - Visual Parameter Manager

Application program for managing lists of parameters and commissioning. Direct connection from instrument to PC via RS485 or tLAN; programming key customisation. Used to:

- manage lists of parameters, relay configurations;
- update the firmware;
- display status and graphs in real time;
- override the inputs/outputs.

Compact

Compact size, just 6 DIN modules.

and tools to make

Performance

Innovative and highly flexible algorithms to satisfy market requirements

cold room
cabinet LT
cabinet MT

Pre-configurations

Six distinct lists of parameters stored directly inside the instrument. Each list can identify a specific application that can be recalled at any time without needing a programming key.
The lists can easily be customised using VPM.

Parameter visibility

Up to 4 parameter access levels, the depending on the user and the operation.

Valve distance

The maximum allowable distance for connecting the EEV has been increased to 50 m, with appropriate wiring sizes.

Master-Slave network

Creation of sub-groups of up to 6 units that can be synchronised, sharing information and implementing common procedures. The various subnetworks are managed by a master unit that also acts as gateway to the supervisor.

Safety procedures

MPXPRO features many safety procedures (starting from commissioning) that allow the instrument to guarantee correct operation even in emergency conditions and thus postpone and optimise service call outs.

I/O configurability

Free association of probes to different functions for maximum flexibility and reduction of costs in your applications.

Modulating thermostat

Function used to improve control of the temperature inside the showcase through continuous modulation of the refrigerant inside the evaporator, avoiding the typical swings of traditional ON/OFF control.

Advanced hot gas defrost

MPXPRO features an innovative algorithm for managing hot gas defrosts, controlling a maximum of 6 outputs in different stages that can be configured. The procedure can also be synchronised in the master-slave network.

Multiple protocols

Compatible with the Modbus® RTU protocol.

Platform modularity

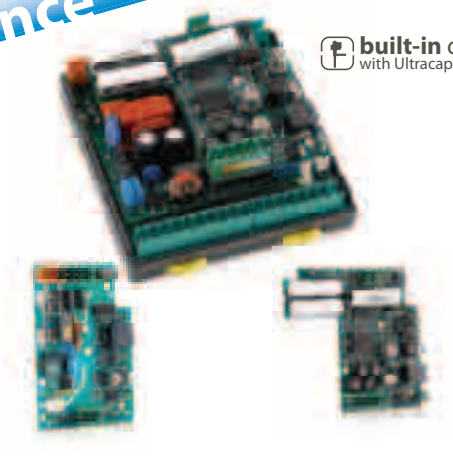
Freedom to choose the most suitable solution for each different application

MPXPRO light

- master/slave networks;
- shared user terminal;
- packs of 20 units;
- updateable firmware.

MPXPRO full

- EEV drivers can be installed later;
- anti-sweat heater modulation;
- fan modulation;
- active 4 to 20 mA and 0 to 10 Vdc inputs;
- plastic cover;
- single package versions.



MPXPRO EEV kit

- E^2V driver with integrated ultracap or PWM;
- pre-configuration of all control parameters.

MPXPRO light (MX1%)

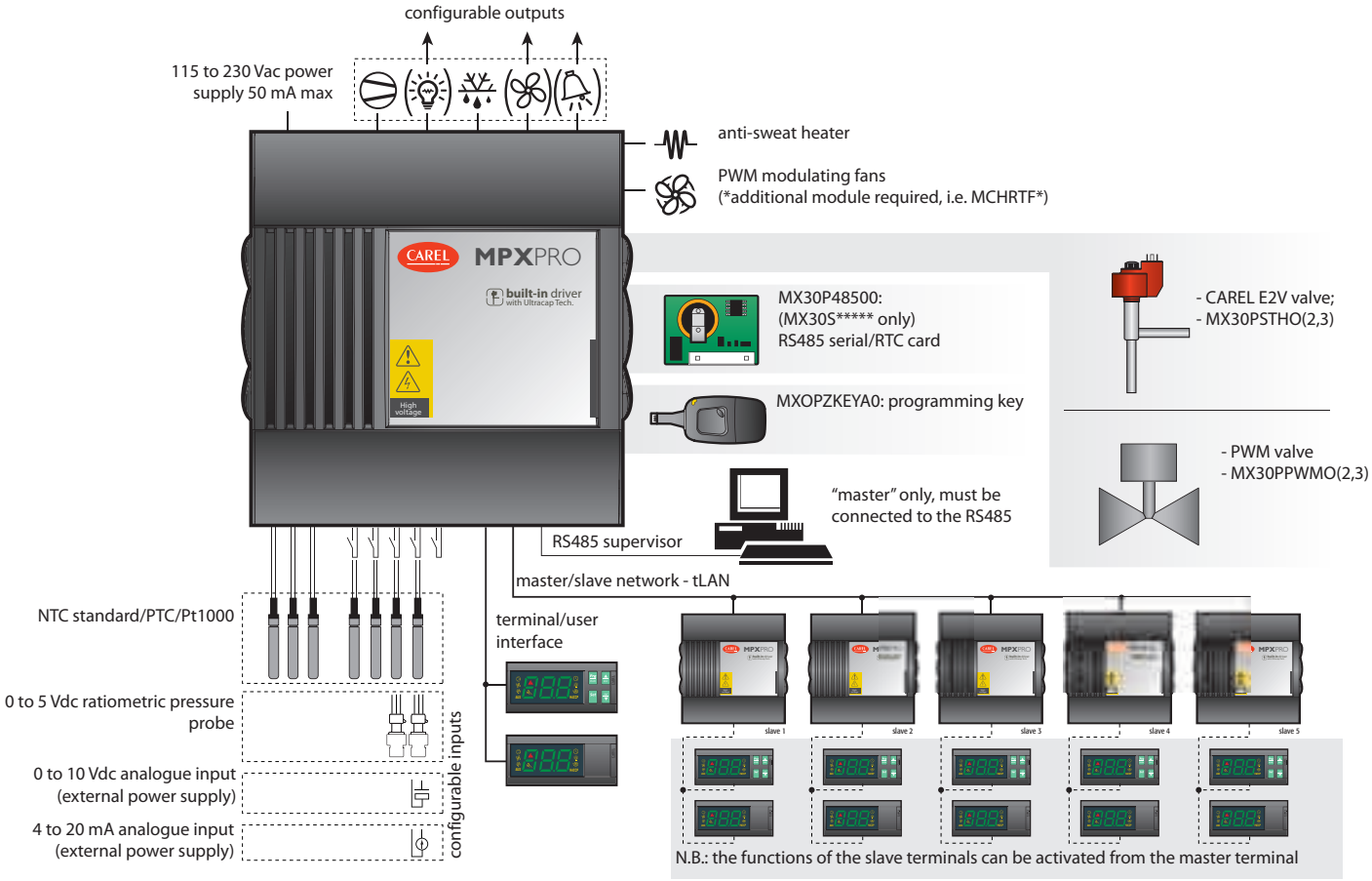
New MPXPRO version for all applications that do not use electronic valves and for protected panel installation (without plastic cover).
Derived from the existing MPXPRO platform, MPXPRO light inherits the main features of stability, sturdiness and power, all at a highly competitive price.

Immediate adaptation of wiring diagrams

The platform can be used for both simple and advanced applications, using EEVs while maintaining the same basic wiring diagram.

Technical specifications

Functional diagram



Standard codes

All codes have a maximum of 8 configurable inputs.
The possible combinations are described below.

Code	Description	Digital inputs (max)	Digital outputs*	Analogue inputs				Analogue outputs		EEV Driver		power supply
					PTC/Pt1000 (max)	0.5-4.5 Vdc ** (max)	4-20 mA/ 0-10 Vdc (max)***	PWM 12 Vdc	0-10 Vdc	CAREL EEV	PWM	
Light versions												
MX10M00EI11	MPXPRO Master basic 20 pcs.	5	5 (3)	7								230 Vac
MX10S00EI11	MPXPRO Slave basic 5 relays 20 pcs.	5	5 (3)	7								230 Vac
MX10S10EI11	MPXPRO Slave basic 3 relays 20 pcs.	5	3 (1)	7								230 Vac
Full versions												
MX30M21H(O,R)0	MPXPRO Master full optional	5	5 (3)	7	7	2	1	•	o	o	o	115 to 230 Vac
MX30S21H(O,R)0	MPXPRO Slave full optional 5 relays	5	5 (3)	7	7	2	1	•	o	o	o	115 to 230 Vac
MX30S31H(O,R)0	MPXPRO Slave full optional 3 relays	5	3 (1)	7	7	2	1	•	o	o	o	115 to 230 Vac
Versions with built-in EEV driver												
MX30M25H(O,R)0	MPXPRO Master full optional, E2V driver	5	5 (3)	7	7	2	1	•	•	•		115 to 230 Vac
MX30S25H(O,R)0	MPXPRO Slave full optional, E2V driver	5	5 (3)	7	7	2	1	•	•	•		115 to 230 Vac
MX30M24H(O,R)0	MPXPRO Master full optional, PWM driver	5	5 (3)	7	7	2	1	•	•		•	115 to 230 Vac
MX30S24H(O,R)0	MPXPRO Slave full optional, PWM driver	5	5 (3)	7	7	2	1	•	•		•	115 to 230 Vac

o : option not present but can be installed;
• : option installed;
* : The number in brackets indicates the number of relays with changeover contacts;
**: The software only manages one ratiometric evaporation pressure probe;
*** : Active 0 to 10 Vdc and 4 to 20 probes cannot be powered directly from MPXPRO, they require an external power supply.

All codes feature the plug-in screw connector kit inside the packaging, except for the light versions.

Options

Code	Description
MX30P48500	RS485 serial card and RTC clock (slave only)
MX30PSTH0 (2, 3)	CAREL E2V stepper driver option and 0 to 10 Vdc output
MX30PPWM0 (2, 3)	PWM driver option and 0 to 10 Vdc output
IROPZTLN00	Converter for MPXPRO commissioning connector (USB-tLAN)
IROPZPRG00	Converter for MPXPRO programming key (USB-I2C)
MXOPZKEYA0	Programming key for MPXPRO (230 Vac)
IRTRMPX000	IR remote control for MPXPRO

User terminals

Code	Description
IR00UGC300	MPXPRO terminal with keypad (green LEDs, buzzer, IR, commissioning conn.)
IR00XGC300	MPXPRO display (green LEDs, buzzer, IR, commissioning connector)
IR00UG6300	MPXPRO terminal with keypad (green LED, no options, neutral)
IR00XG6300	MPXPRO display (green LEDs, no options, neutral)

Technical specifications

Power supply	230, 110 to 230 Vac depending on the model, 50/60 Hz
Input current	11.5 VA, 50 mA max.
Storage conditions	-10T50 °C, <90% rH non-cond.
Operating conditions	-20T70 °C, <90% rH non-cond.
Installation	DIN rail
Index of protection	IP00

Application solutions

Below are the codes recommended by CAREL for different types of applications.

Master showcase or cold room (with E²V)

Code	Description	Qty
MX30M25HO0	MPXPRO Master full optional, E²V driver	1
IR00UGC300	MPXPRO terminal with keypad (green LEDs, buzzer, IR, commissioning connector)	1
NTC060HP00	NTC temperature probe inside the display case	3
NTC060HF01	NTC suction temperature probe for superheat	1
SPKC005310	Cable for pressure probe	1
SPKT0013R0	Ratiometric pressure probe -1 to 9.3 bars	1
E2VCABS600	Cable for CAREL E²V electronic expansion valves	1
E2V**BSF00	CAREL E²V electronic expansion valve	1

Slave showcase (with E²V)

Code	Description	Qty
MX30S25HO0	MPXPRO Slave full optional, E²V driver	1
IR00XGC300	MPXPRO display (green LEDs, buzzer, IR, commissioning connector)	1
NTC060HP00	NTC temperature probe inside the showcase	3
NTC060HF01	NTC suction temperature probe for superheat	1
E2VCABS600	Cable for CAREL E²V electronic expansion valves	1
E2V**BSF00	CAREL E²V electronic expansion valve	1

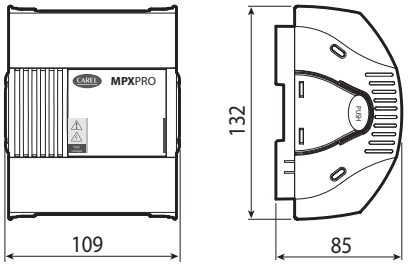
Master showcase or cold room (without E²V)

Code	Description	Qty
MX30M21HO0	MPXPRO Master full	1
IR00UGC300	MPXPRO terminal with keypad (green LEDs, buzzer, IR, commissioning connector)	1
NTC060HP00	Temperature probe inside the case	3

Slave showcase (without E²V)

Code	Description	Qty
MX30S21HO0	MPXPRO Slave full	1
IR00XGC300	MPXPRO display (green LEDs, buzzer, IR, commissioning connector)	1
NTC060HP00	Temperature probe inside the case	3

Dimensions (mm)



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