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, flexibility, 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!

NEW

Smooth Lines control

New electronic expansion valve control optimizes evaporator management, continuously modulating capacity, to ensure maximum stability of showcase operation. Together, with the floating suction with smooth lines on PlantVisorPRO, help to reduce energy consumption.

Energy saving

MPXPRO includes several features to optimize showcase or cold room operations 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.

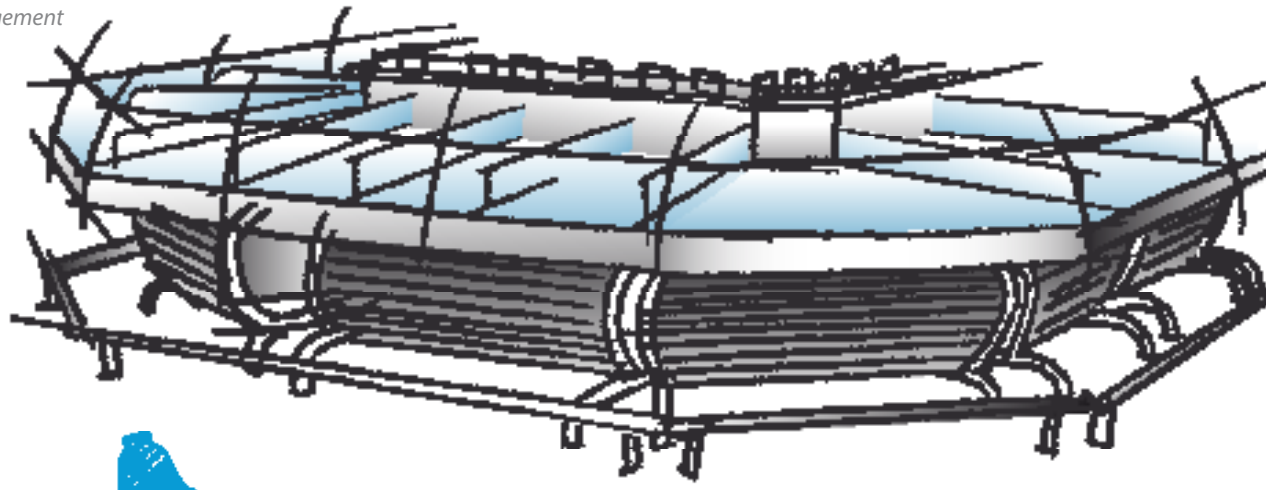
Performance

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

MPXPRO is complete with functions and commissioning tools to simplify use and configuration.

smooth lines control

integrated light management



night mode for energy saving

fan speed modulation

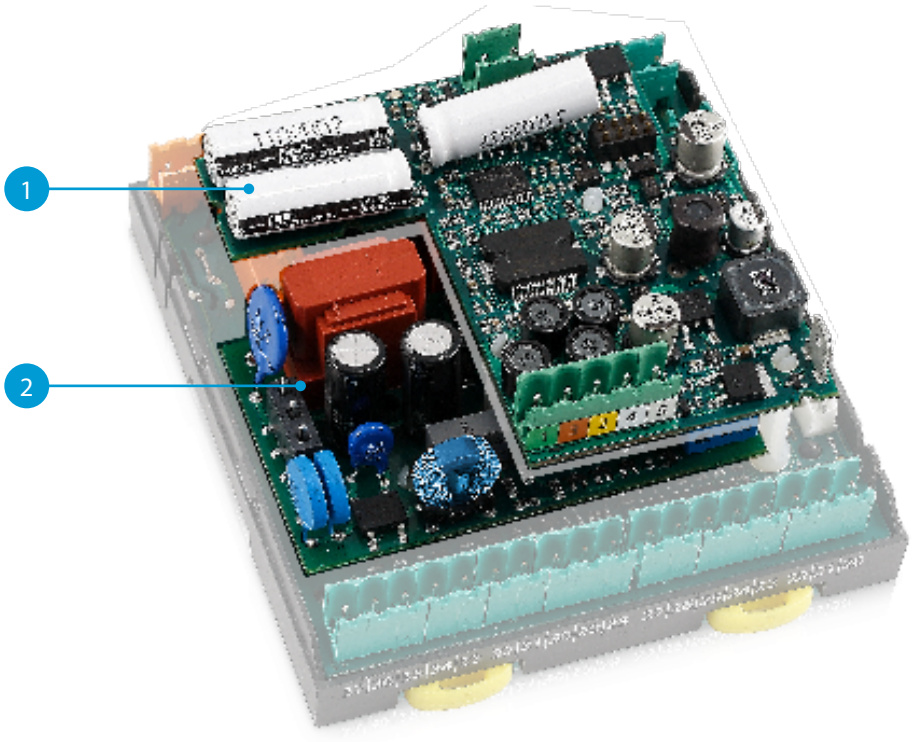
alarm management on dedicated probes

integrated control of CAREL stepper & PWM valves

optimized defrosts

lower anti-sweather heater power consumption

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



No more external transformer

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

No more solenoid valves

The use of ultra cap technology ensures the expansion valve is closed even when the controller is not powered. Eliminated the need for shut-off solenoide valves.

1 *CAREL E2V stepper valve driver board*

2 *switching power supply board*

Energy saving

Many features to optimize power consumption

EEV

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

- optimized 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 operating conditions. Dedicated outputs for DC fans (0 to 10 Vdc).

Defrost optimization

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 functions and too improve ease of use

Remote control

Interaction with the MPXPRO:

- 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 parameter. Direct connection from instrument to PC via RS485 or tLAN; programming key. 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.

ols to make to

Performance

Innovative and highly flexible algorithms to satisfy market requirements

Pre-configurations

cold room
cabinet LT
cabinet MT

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.

Master-Slave network

S1 S2 S3 S4 S5 M

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

NEW

Smooth lines control

New electronic expansion valve control continuous algorithm for more stable operating trends and smoothing the typical graphs representing on/off operation.

Parameter visibility

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

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.

Advanced hot gas defrost

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

Valve distance

The maximum allowable distance for connecting the EEV has been increased to 164 ft, with appropriate wiring.

I/O configurability

Free association of probes to different functions for maximum flexibility.

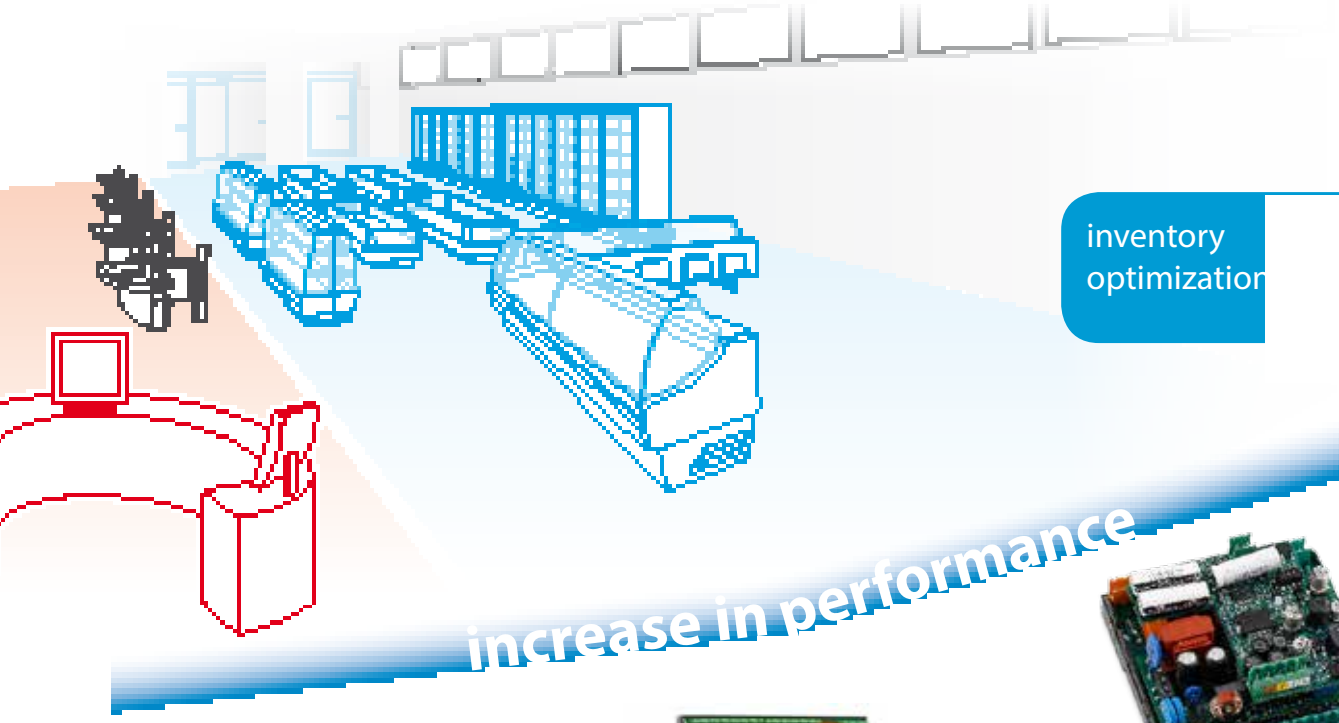
Multiple protocols

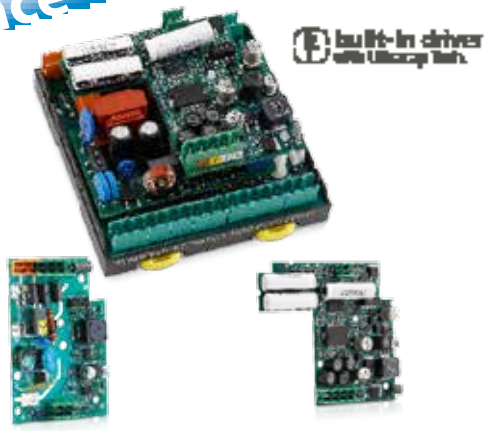
MB

Compatible with the Modbus® RTU protocol.

Platform modularity

Freedom to choose the most suitable solution for different applications





MPXPRO light

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

MPXPRO full

- EEV drivers can be installed independently;
- 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%)

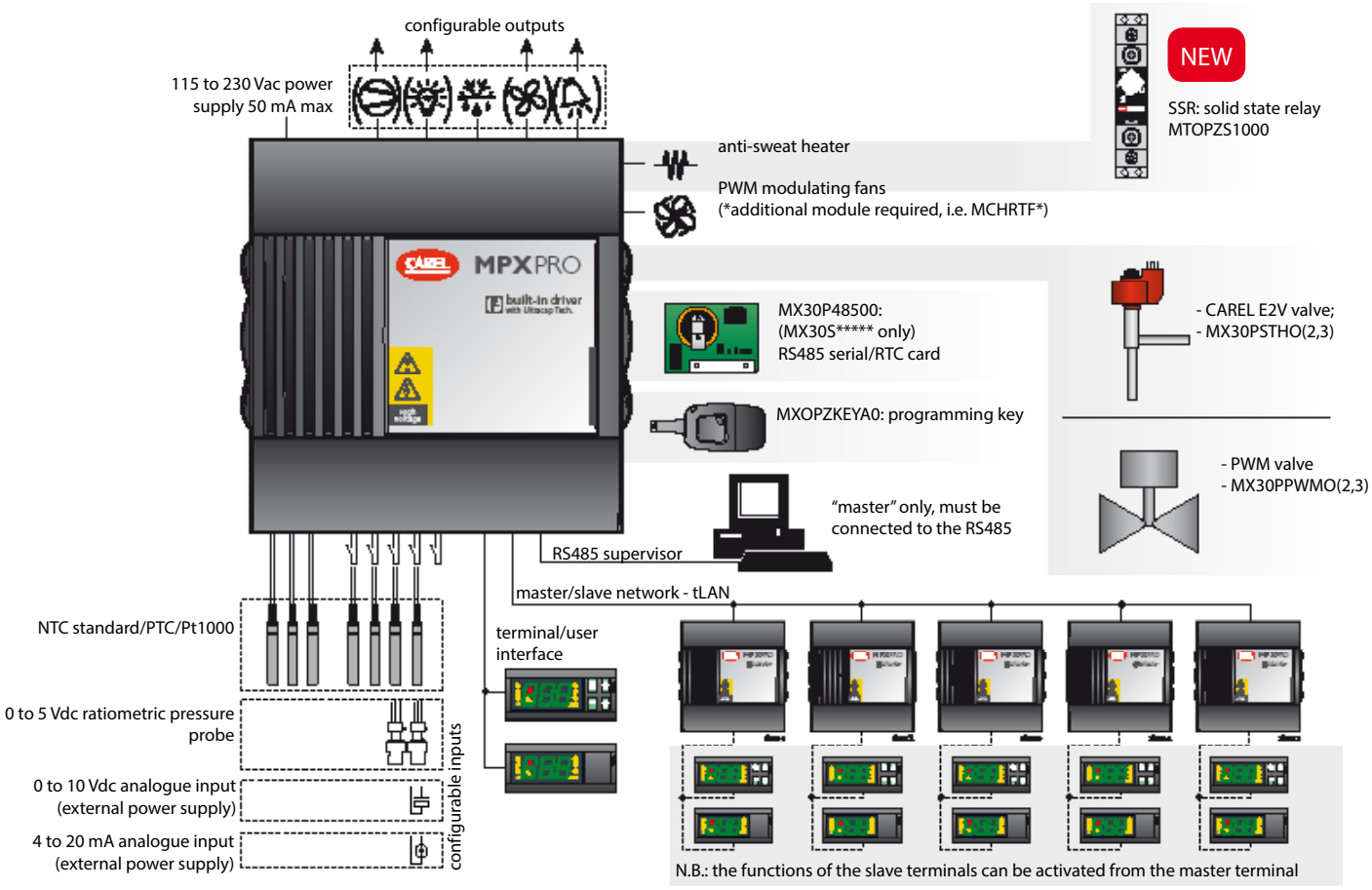
New MPXPRO version for all applications not using electronic valves and for protected panel installation (without plastic cover).
Derived from the existing MPXPRO platform, MPXPRO light inherits the main features of stability, sturdiness and power, all at a highly competitive price.

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
MTOPZS1000	Solid state relay , 10A, DIN rail

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	14T122F, <90% rH non-cond.
Operating conditions	-4T158F, <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
PT1060HP01	PT1000 temperature probe inside the display case	3
PT1060HF01	PT1000 suction temperature probe for superheat	1
SPKC005310	Cable for pressure probe	1
SPKT0011S0*	Ratiometric pressure probe -14.5 to 135 psig	1
SPKT00B1S0*	Ratiometric pressure probe 0 to 653 psig	1
E2VCABS600	Cable for CAREL E²V electronic expansion valves	1
E2V**BWB00	CAREL E²V electronic expansion valve -3/8" - 1/2" ODF	1

* depending on type of application, verify the working conditions before

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
PT1060HP01	PT1000 temperature probe inside the display case	3
PT1060HF01	PT1000 suction temperature probe for superheat	1
E2VCABS600	Cable for CAREL E²V electronic expansion valves	1
E2V**BWB00	CAREL E²V electronic expansion valve -3/8" - 1/2" ODF	1

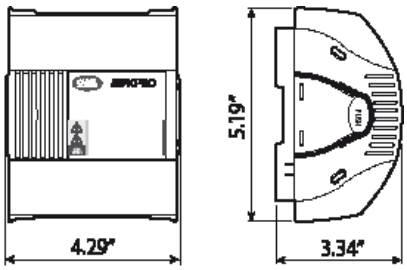
Master showcase or cold room (without E²V)

Code	Description	Qty
MX30M21HO0	MPXPRO Master full	1
IR00UGC300	MPXPRO terminal with keypad (green LEDs, buzzer, IR, commissioning connector)	1
PT1060HP01	PT1000 temperature probe inside the display case	3

Slave showcase (without E²V)

Code	Description	Qty
MX30S21HO0	MPXPRO Slave full	1
IR00XGC300	MPXPRO display (green LEDs, buzzer, IR, commissioning connector)	1
PT1060HP01	PT1000 temperature probe inside the display case	3

Dimensions (mm)



+30U240641 - 3.0 - 01.10.2012

Headquarters ITALY

CAREL INDUSTRIES Hqs.
Via dell'Industria, 11
35020 Brugine - Padova (Italy)
Tel. (+39) 0499 716611
Fax (+39) 0499 716600
carel@carel.com

Sales organization

CAREL Asia - www.carel.com
CAREL Australia - www.carel.com.au
CAREL China - www.carel-china.com
CAREL Deutschland - www.carel.de
CAREL France - www.carelfrance.fr
CAREL Iberica - www.carel.es
CAREL India - www.carel.in
CAREL HVAC/R Korea - www.carel.com
CAREL Russia - www.carelrussia.com
CAREL South Africa - www.carelcontrols.co.za
CAREL Sud America - www.carel.com.br
CAREL U.K. - www.careluk.co.uk
CAREL U.S.A. - www.carelusa.com

Affiliates

CAREL Czech & Slovakia - www.carel-cz.cz
CAREL Korea (for retail market) - www.carel.co.kr
CAREL Ireland - www.carel.com
CAREL Thailand - www.carel.co.th
CAREL Turkey - www.carel.com.tr