



refrigeration & retail controllers
MPXPRO series

CAREL



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.



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 specific 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



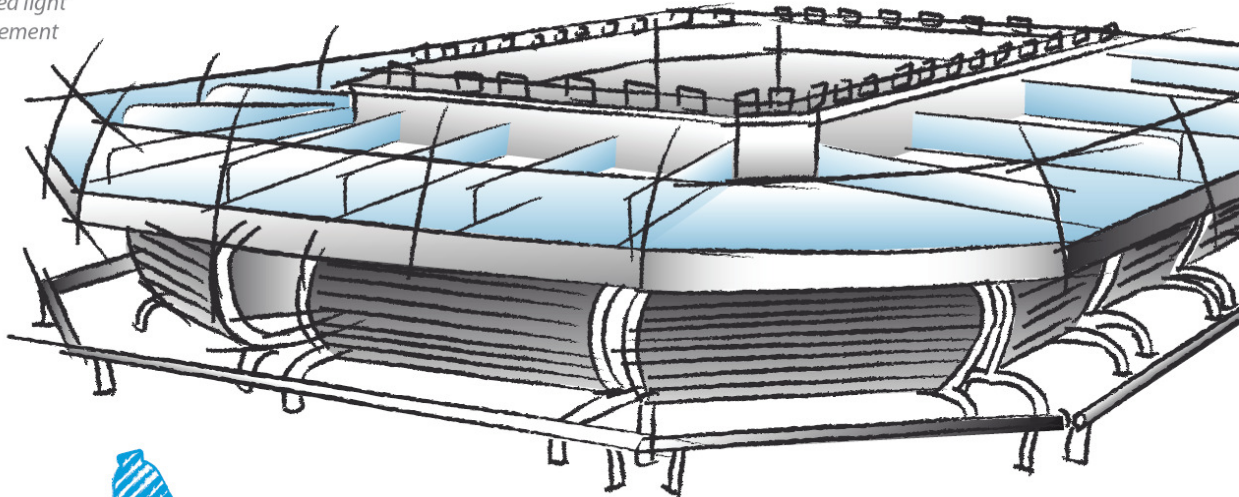
integrated control of CAREL stepper & PWM valves



optimised defrosts



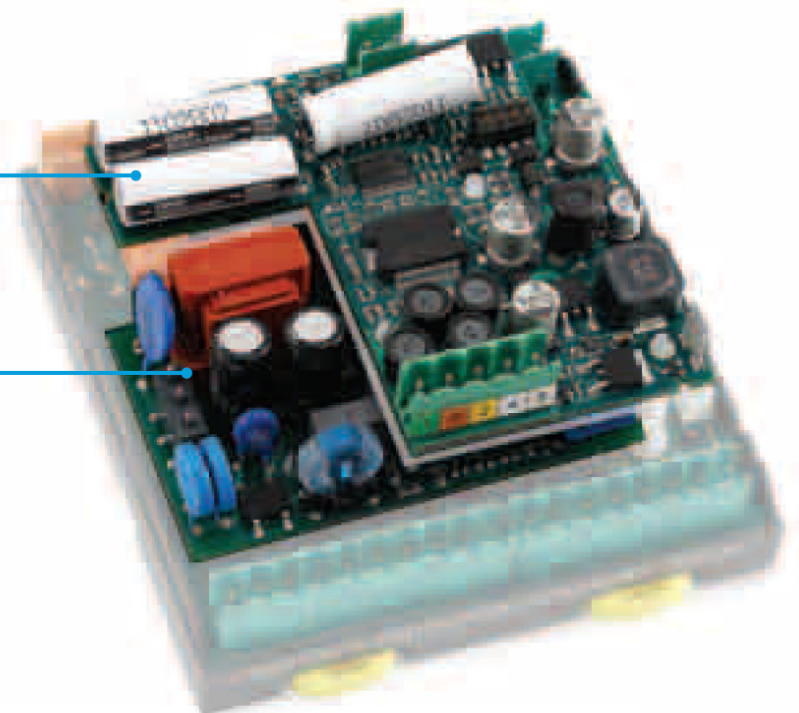
lower anti-sweater heater power consumption



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

1

2



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 **Pre-configurations**
 cabinet LT Six distinct lists of
 cabinet MT 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**
 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.

 **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.

 **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
 that can be configured. The procedure can
 also be synchronised in the master-slave
 network.

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

 **I/O configurability**
 Free association of probes
 to different functions for
 maximum flexibility and
 reduction of costs in your applications.

 **Multiple protocols**
 Compatible with the
 Modbus® RTU protocol.

Platform modularity

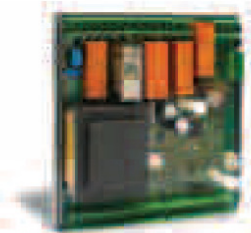
Freedom to choose the most suitable solution for each different application

inventory
optimisation



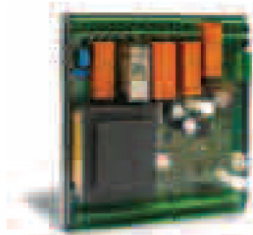
increase in performance

 built-in driver
with Ultracap Tech.



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

- E²V 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).

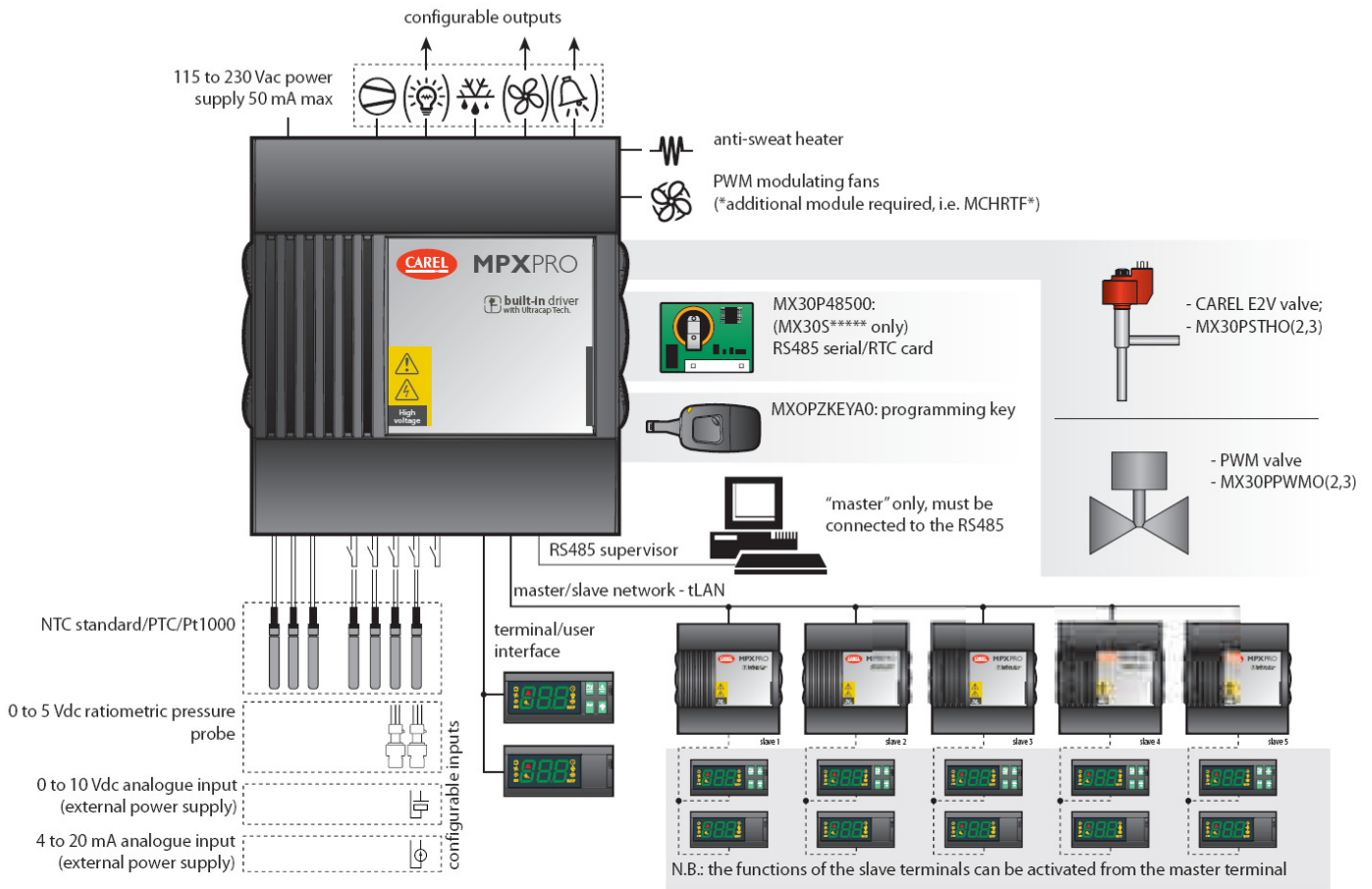
Derived from the existing MPXPRO platform, MPXPRO light inherits the main features of stability, sturdiness and power, all at a highly competitive price.

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 | | | | | | | | | | | | |
| MX10M00E11 | MPXPRO Master basic 20 pcs. | 5 | 5 (3) | 7 | | | | | | | | 230 Vac |
| MX10S00E11 | MPXPRO Slave basic 5 relays 20 pcs. | 5 | 5 (3) | 7 | | | | | | | | 230 Vac |
| MX10S10E11 | 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) |

Application solutions

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

Master showcase or cold room (with E²V)

| Code | Description | Qty |
|------------|---|-----|
| MX30M25H00 | MPXPRO Master full optional, E ² V 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 E ² V electronic expansion valves | 1 |
| E2V**BSF00 | CAREL E ² V electronic expansion valve | 1 |

Slave showcase (with E²V)

| Code | Description | Qty |
|------------|--|-----|
| MX30S25H00 | MPXPRO Slave full optional, E ² V 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 E ² V electronic expansion valves | 1 |
| E2V**BSF00 | CAREL E ² V electronic expansion valve | 1 |

Master showcase or cold room (without E²V)

| Code | Description | Qty |
|------------|---|-----|
| MX30M21H00 | MPXPRO Master full | 1 |
| IR00UGC300 | MPXPRO terminal with keypad (green LEDs, buzzer, IR, commissioning connector) | 1 |
| NTC060HP00 | Temperature probe inside the case | 3 |

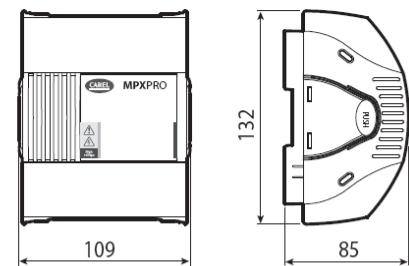
Slave showcase (without E²V)

| Code | Description | Qty |
|------------|--|-----|
| MX30S21H00 | MPXPRO Slave full | 1 |
| IR00XGC300 | MPXPRO display (green LEDs, buzzer, IR, commissioning connector) | 1 |
| NTC060HP00 | Temperature probe inside the case | 3 |

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 |

Dimensions (mm)



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