



# mpX

Total connectivity and high efficiency for the complete management of supermarket refrigeration units

# Total refrigeration unit management

MPX is the innovative series of electronic controllers for the management of refrigerated showcases in supermarkets. Developed on platforms that guarantee high flexibility and scalability, this range of products can meet all market demands for this application: from ease of use and installation to highly-efficient performance.

The breadth of the range means the most suitable solution can be guaranteed to meet the needs of the application.

## mpxone medium

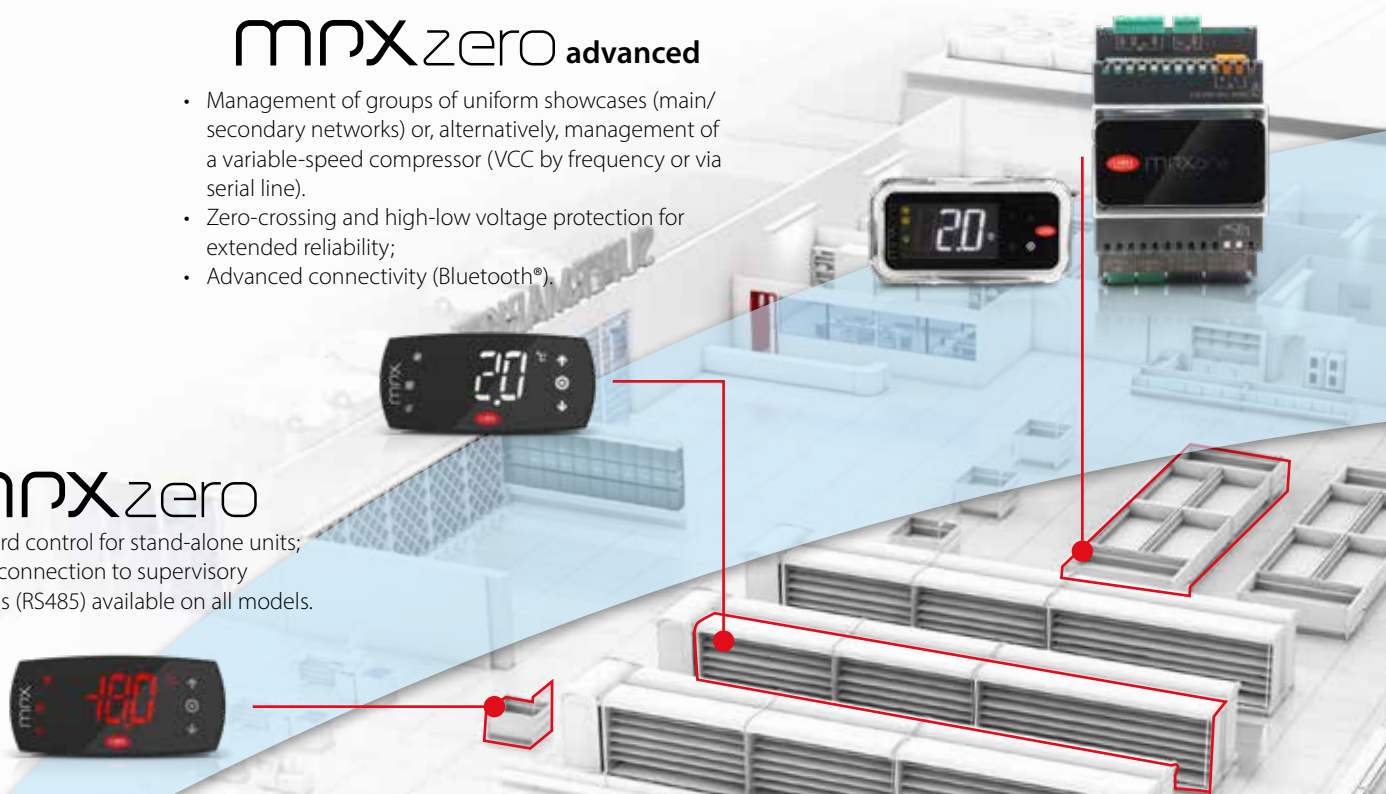
- Advanced control for uniform groups of cabinets (main/secondary networks) with modulating devices (fans, anti-sweat heaters)
- VCC compressor management in frequency mode.
- Possible serial integration of modulating devices such as valve drivers, or modulating fans;
- Easy retrofit from TEV to E<sup>2</sup>V on existing cabinets, using the external EVDice driver (installed directly in the evaporator compartment) or EVDmini for an on-cabinet solution).

## mpxzero advanced

- Management of groups of uniform showcases (main/secondary networks) or, alternatively, management of a variable-speed compressor (VCC by frequency or via serial line).
- Zero-crossing and high-low voltage protection for extended reliability;
- Advanced connectivity (Bluetooth®).

## mpxzero

- Standard control for stand-alone units;
- Direct connection to supervisory systems (RS485) available on all models.



### Connectivity

Easy integration into BMS systems, management of M/S networks and field devices via Fieldbus serial, NFC and Bluetooth wireless technology for immediate interaction with the refrigeration units.



### High efficiency

Energy savings through advanced logic and control of modulating devices, now also available for more simple and compact applications.



### Optimal food preservation and HACCP compliance

Stabilisation of the storage temperature preserves the quality of food. Certified best practice for food safety.

## Benefits of MPXone Medium + EVDice

**+** Complete serial communication between the showcase controller and the valve driver (just one device is connected to the supervisor).

**+** EVDice (expansion valve) specifically developed to operate in the evaporator compartment (IP65/IP67) thanks to a special resin coating.

**+** Optimal cabinet control, based on evaporator operating conditions (smooth lines).

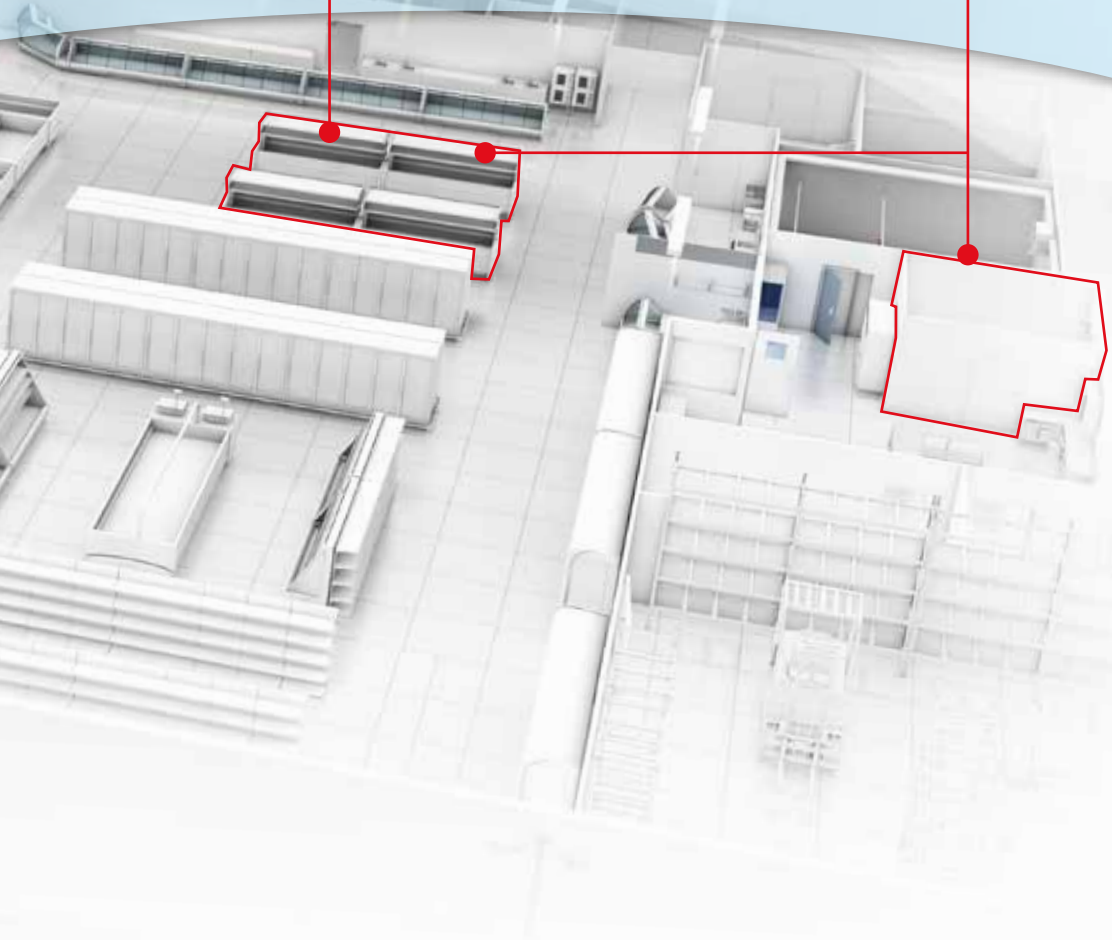


## mpxone advanced

- Integrated management of a CAREL E<sup>2</sup>V unipolar stepper valve (with optional Ultracap technology), 0-10V valve or PWM (via external SSR).
- VCC compressor management in frequency mode.
- Oil recovery procedure when integrated with Hecu or pRack.
- "Flooded" evaporator operating mode (low superheat), via serial control or digital input.

## MPXPRO

- Integrated control of E<sup>2</sup>V bipolar valves (with built-in Ultracap technology) or PWM valves;
- Exceptional flexibility ensured by a modular approach and compact size.



# Platform modularity

The entire range features the most advanced control logic, from direct connection to supervisory systems to the management of synchronised actions between uniform groups of cabinets.



Extreme flexibility in the I/O configuration.

Possibility to associate probes to functions directly on the controller, without having to change the physical channel.

- coldroom
- cabinet LT
- cabinet MT

Diversified management of parameter configurations:

- standard, using pre-sets embedded directly on the controller.
- advanced, with unlimited saving of configurations on mobile devices and/or in the cloud.



High level of security, guaranteed by:

- user profiling and passwords;
- parameter visibility configurable by the OEM for each type of user;
- possibility to deactivate wireless channels directly on the supervisor.



Extended control possibilities:

- differential control temperature management;
- defrost and day/night scheduling;
- internal air flow control with fixed or modulating activation.



Field connectivity always available:

- connection to supervisory systems using the built-in BMS port;
- control of external devices via Fieldbus serial port.



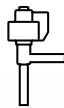
Synchronised actions between uniform groups of cabinets, including:

- defrost synchronisation;
- light management;
- probe sharing.

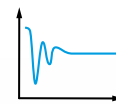


Extremely compact electronic controllers, available in different versions:

- panel mounting
- DIN rail mounting with remote user interface



Integrated management of CAREL E<sup>2</sup>V electronic expansion valves (unipolar or bipolar) or PWM valves, for self-adaptive optimisation of operating conditions and maximisation of evaporator efficiency.



Advanced control algorithms to stabilise the control temperature, for optimal food preservation and reduced energy consumption.



Advanced connectivity (NFC, Bluetooth®)



Panel mounting without screws

Capacitive touch screen

Multicolour icons

High contrast

Backlit buttons

Wide angle of visibility

The cutting-edge in user interfaces for the latest generation controllers



APPLICA



### Mobile application for a new user experience

NFC and Bluetooth® wireless communication revolutionise interaction with the refrigerated cabinets.

Using APPLICA, a dedicated app, the traditional user interface is available on any mobile device (smartphone, tablet), extending functionality and usability.

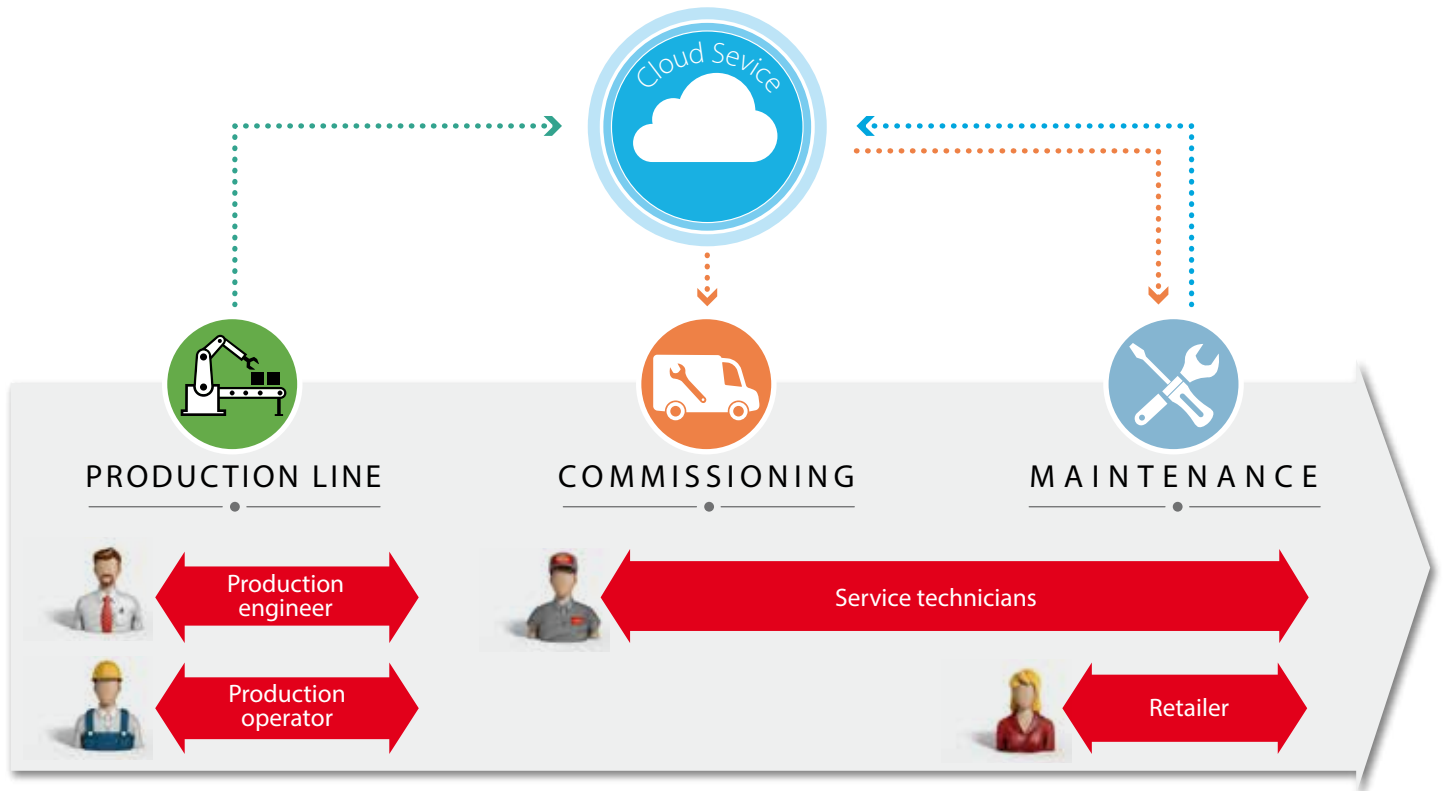
Available for Android and iOS, designed to simplify commissioning and maintenance work.

Links to tutorial videos on how to connect the device and basic product configuration simplify the work of technical personnel in the field.



# Total connectivity solutions

A complete system architecture allows the units to be managed throughout their entire life cycle: from production and installation through to maintenance. File hosting and sharing services simplify interaction between users in different locations, allowing access to constantly updated documentation and configuration files.



- ✓ Writing of specific unit information (production date, serial number, type).
- ✓ Complete unit configuration and end-of-line testing.
- ✓ Definition of user profiles, passwords and corresponding parameter visibility.
- ✓ Creation of documentation package to be uploaded to the cloud, where it is then available to users in the field.

- ✓ Extensive I/O configurability directly on the smartphone, without the need to change the wiring.
- ✓ Direct management of control outputs via mobile device.
- ✓ Commissioning wizard.
- ✓ Immediate retrieval of default configurations and simple unit fine-tuning.

- ✓ Retrieval of logs from the controller (temperatures, alarms and events).
- ✓ Real-time display of operating conditions.
- ✓ Cloud/email sharing of configurations, alarm lists and log reports.
- ✓ Immediate access to the most up-to-date documentation in multimedia format.

## Simplified interaction

The tools and dedicated apps developed simplify the daily tasks of manufacturers, installers and maintenance personnel.



### Sparkly

Command-line tool that can be integrated into a higher level system for complete configuration and testing of the unit directly on the production line.



### Spark

Stand-alone software released under license for creating unit parameter lists on a PC (even offline) and pre-programming the devices.

# Connectivity for local and remote monitoring of all types of system

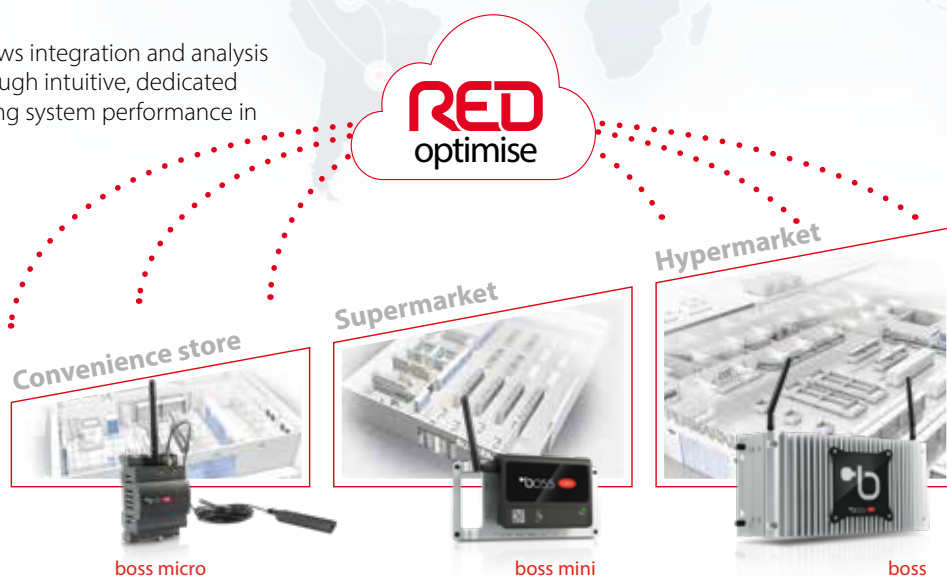
The extensive connectivity of the MPX range also covers solutions for local and remote management.

## RED optimise

The CAREL digital services cloud portal allows integration and analysis of multi-site information and provides, through intuitive, dedicated dashboards, useful information for improving system performance in terms of energy consumption and control.

## BOSS<sub>range</sub>

A wide range of local supervisors with features available for the management and interaction between the different users of the system, so as to optimise the thermodynamic conditions and energy consumption. The boss family covers all system sizes, from convenience stores to large hypermarkets.



## Technical data

Caratteristiche	MPXzero	MPXzero advanced	MPXone medium	MPXone advanced	MPXPRO
Models					
Power supply	115 to 230 Vac	115 to 230 Vac	24 Vac/Vdc	115 to 230 Vac	115 to 230 Vac
Analogue inputs	3 (2)	3 (2)	6	8	7 (3)
Analogue outputs	-	2 (PWM/0-10V) available only in the VCC version with frequency control mode	2 (also for VCC compressors in frequency mode)	2 (also for VCC compressors in frequency mode)	2
Digital inputs	1 (2)	1 (2)	5	5	1 (5)
Digital outputs	3	4	4	4	5
Type of digital outputs	2HP, 8A, 5A	2HP, 8A, 5A, 5A	16A, 8A, 5A, 5A	16A, 8A, 5A, 5A	6A, 10A(1HP), 10A, 6A, 6A
Local network management	-	Up to 6 devices	Up to 10 devices	Up to 10 devices	Up to 6 devices
Connectivity	NFC	NFC, Bluetooth®	NFC, Bluetooth®	NFC, Bluetooth®	IR remote control only
Serial ports	1BMS	1 BMS 1 Fieldbus/VCC	1BMS 1Fieldbus	1BMS 1Fieldbus	1BMS 1 Fieldbus (tLAN)
RTC	6 months	6 months	6 months	6 months	6 months
Connectors	All removable	Removable, JST	Microfit and removable	Microfit and remov.	All removable
Driver valvola	TEV	TEV	E <sup>2</sup> V external driver (EVDmini, EVDice)	CAREL E <sup>2</sup> V UNIPOLAR driver (built-in), PWM (external SSR)	CAREL E <sup>2</sup> V BIPOLAR driver, PWM (built-in)
Ultracap	N/A	N/A	On external driver	External device (4 DIN)	Incorporated

## Available versions

Part number	Description
<b>MPXzero - Controller</b>	
S0MPSS3R02S0333	MPXzero, 115-230Vac, 2HP 8A 5A, NFC, RTC, BMS, red LED
S0MPSA4R03SA000	MPXzero, 115-230Vac, 2HP 8A 5A 5A, NFC, RTC, BMS, Fieldbus, white LED
S0MPSA4B03S0274	MPXzero, 115-230Vac, 2HP 8A 5A 5A, NFC, Bluetooth®, RTC, BMS, Fieldbus, white LED
S0MPSA4R06S0319	MPXzero, 115-230Vac, 2HP 8A 5A 5A, NFC, RTC, BMS, 2AO, white LED
S0MPSA4B04S0320	MPXzero, 115-230Vac, 2HP 8A 5A 5A, NFC, Bluetooth®, RTC, BMS, VCC Serial, white LED
<b>MPXone - Controller</b>	
S1M0004W0B060	MPXone Basic, 24Vac/dc, 16A 8A 5A 5A, NFC, RTC, BMS, Fieldbus, white LED
S1M0006W0B070	MPXone Medium, 24Vac/dc, 16A 8A 5A 5A, NFC, RTC, BMS, Fieldbus, 2AO, white LED
S1M0006B0B080	MPXone Medium, 24Vac/dc, 16A 8A 5A 5A, NFC, Bluetooth®, RTC, BMS, Fieldbus, 2AO, white LED
S1M0007N0B110	MPXone Medium DIN, 115-230Vac, 16A 8A 5A 5A, RTC, BMS, Fieldbus, 2AO
S1M0009N0B120	MPXone Advanced DIN, 115-230Vac, 16A 8A 5A 5A, RTC, BMS, Fieldbus, 2AO, unipolar E <sup>2</sup> V
<b>MPXone - User interface</b>	
AX3000PS20020	User interface, NFC, keypad, buzzer, white LED
AX3000PS20030	User interface, NFC, Bluetooth®, keypad, buzzer, white LED
AX3000PS20X10	Repeater display, white LED
S00HSA0N00S0700	User interface, NFC, touch screen, white LED *
S00HSA0B07S0564	User interface, NFC, Bluetooth®, touch screen, white LED *
<b>MPXPRO - Controller</b>	
MX30*21HO0	MPXPRO, 115-230Vac, 10A 10A 6A 6A 6A, RTC, BMS, Fieldbus
MX30*24HO0	MPXPRO, 115-230Vac, 10A 10A 6A 6A 6A, RTC, BMS, Fieldbus, 2AO, PWM
MX30*25HO0	MPXPRO, 115-230Vac, 10A 10A 6A 6A 6A, RTC, BMS, Fieldbus, 2AO, bipolar E <sup>2</sup> V
<b>MPXPRO - User interface</b>	
IR00UGC300	User interface, green LED, keypad, buzzer, commissioning, IR
IR00XGC300	Repeater display, green LED, buzzer, commissioning, IR

**Notice:** these products are also available in multi-pack versions.

\* HMI display can only be used with MPXone DIN Medium and Advanced versions.

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