

CAREL



e-dronic solutions

T e c h n o l o g y & E v o l u t i o n

Chillers and fan coils: bringing two worlds together



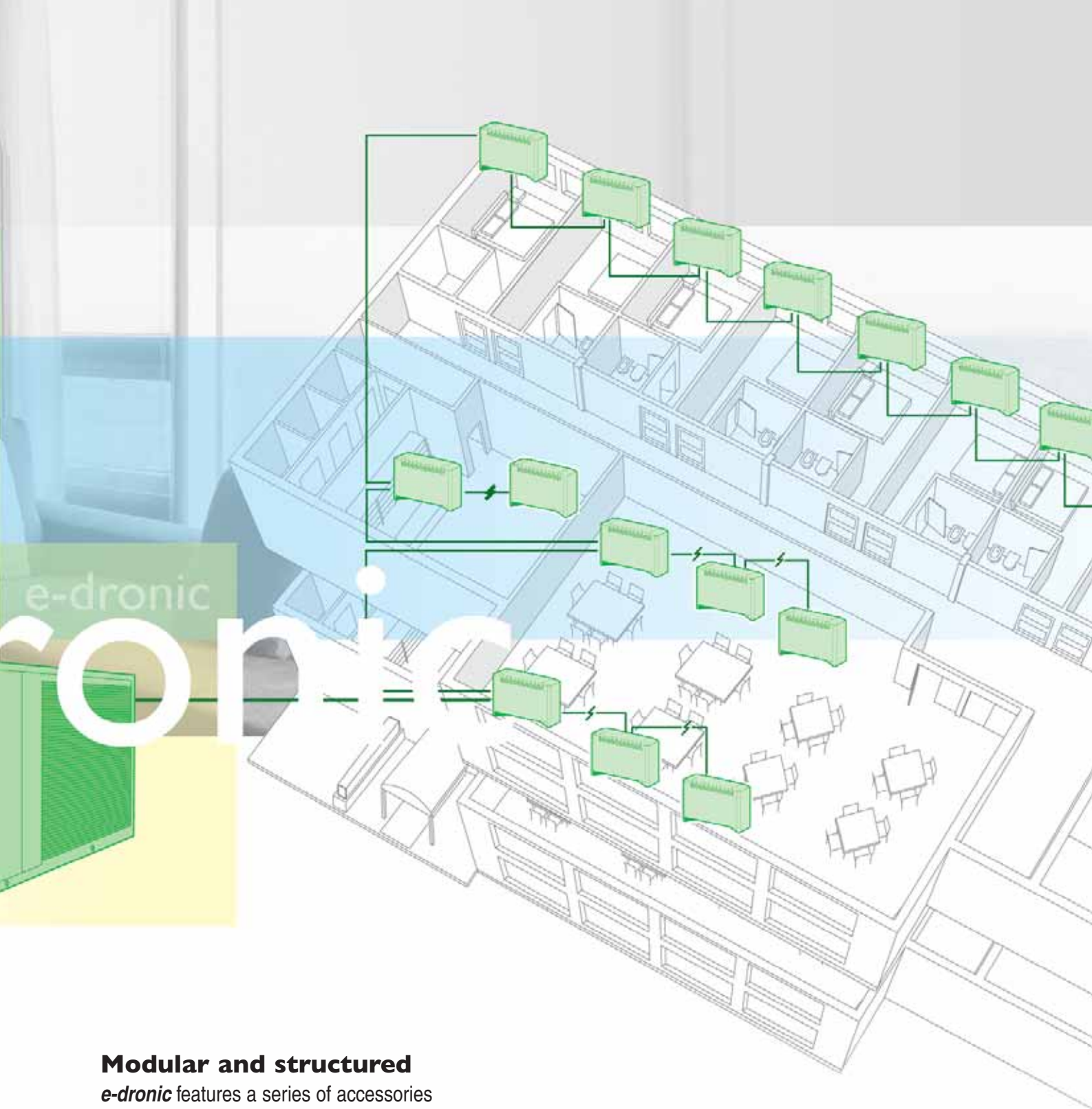
Integrated communication between chillers and fan coils is an increasingly important requirement for the manufacturers of these air-conditioning units; nonetheless, the market still does not offer suitable solutions.

CAREL has taken up the challenge of joining and combining these two different elements, offering its customers a solution that is easy to manage, ensures increased ambient comfort and considerable energy savings.

CAREL thus presents **e-dronic**, a system of user interfaces, I/O boards and accessories for the management and control of chiller/fan coil systems.

e-dronic is compatible with the already established pCO platform, and exploits its advantages in terms of flexibility.

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Modular and structured

e-dronic features a series of accessories and options that can be installed directly in the field, with the local network connector as standard on each fan coil board

Flexible

e-dronic can be structured in different ways, which when combined together satisfy a wide range of needs.

Integration

e-dronic can communicate using the most commonly-used protocols on the market.

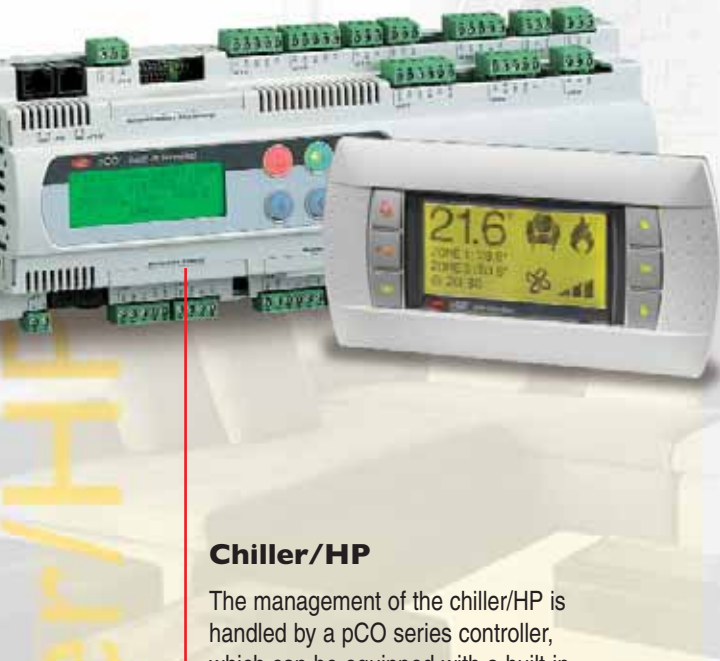
Reliable

The communication protocol adopted for *e-dronic* is used to configure the system so as to maintain a high level of efficiency even in the event of malfunctions with the network or the controllers.

Advanced

e-dronic features different levels of control, using a simple and functional interface, and allows a high level of customisation, thanks to the programming flexibility of the pCO platform.

System components



Chiller/HP

The management of the chiller/HP is handled by a pCO series controller, which can be equipped with a built-in, graphic or semi-graphic user interface. The considerable flexibility of this instrument is ensured by the possibility to choose from a wide range of standard and customisable software applications.



Remote control

IR remote control fitted with LCD and 13 buttons for local or zone programming.



acqua

LCD user interface with icons and 8 buttons for local or zone control.

Main board

I/O board for controlling the fan speed and the local zone network. Fitted for connection to a valve board, serial board and IR receiver.

Valve board

Board that manages the hot and cold water valves, as well as other functions, such as enabling the boilers, chillers and heat pumps.



Area controller

The area controller is fitted with a user-friendly and elegant graphic interface, and can act as the gateway to BMS or other communication protocols. It is based on the pCO platform and fully exploits the characteristics of these controllers in terms of flexibility and programmability.



CANbus board

Microprocessor serial board for hydronic networks with advanced functions

RS485 board

Microprocessor RS485 serial board for CAREL or Modbus® network.

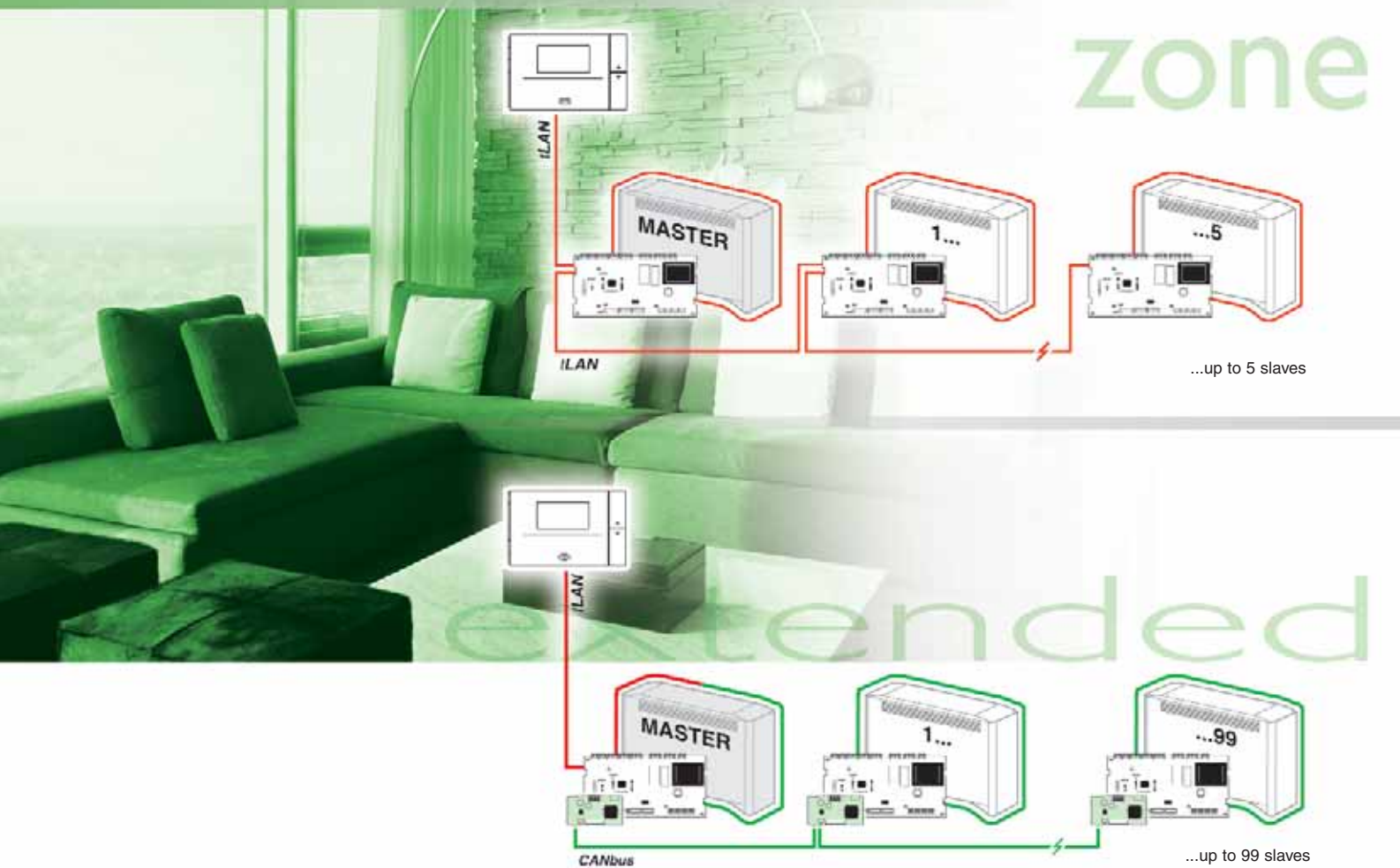
IR receiver

Receiver board for the IR remote control.

area controller

fan coil

Broadcast



...zone

Zone broadcast is the typical solution for single offices and small shops that require a limited number of fan coils per zone, and where the zones do not necessarily need to communicate with one another or with a centralised supervisory system.

The tLAN network standard is used on the serial connection between the fan coils. This protocol is used in a mono-directional way, so as to ensure simple installation, that is, the master fan coil controls and the others operate accordingly. Consequently, installation can be performed without having to set the addresses.

- 1 fan coil with master function
- max. 5 fan coils with slave function connected to the master
- max. 30 m between master fan coil and the last slave
- max. 30 m between master fan coil and user terminal
- slave fan coil without user terminal

...extended

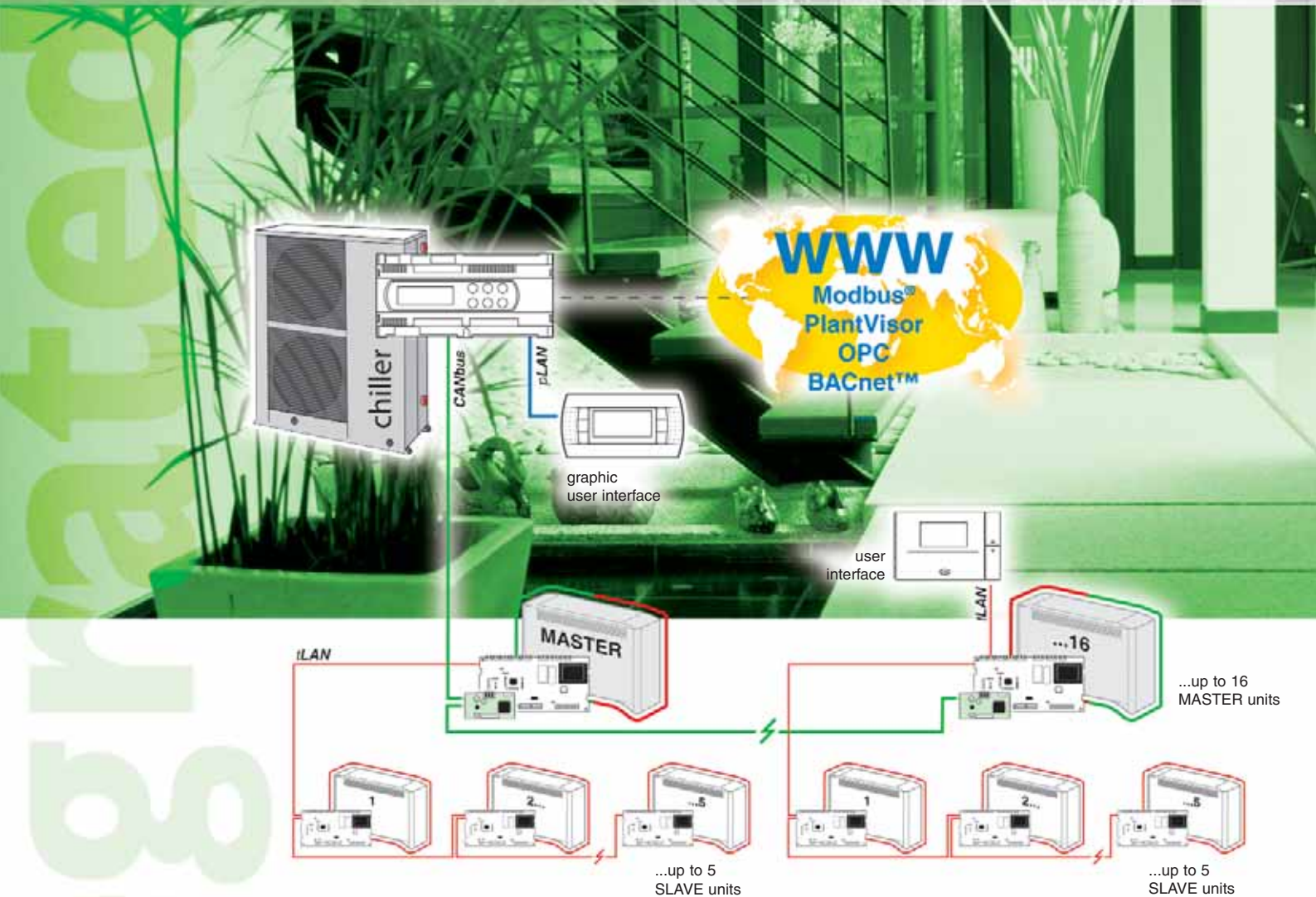
The extended broadcast is used whenever the simple installation and auto-configuration of the broadcast system is required, however greater performance is needed in terms of distance to be covered and the maximum number of fan coils to be installed.

The extended broadcast system is developed by simply installing the optional CANbus board on all the fan coil controllers.

Typical applications are in the long hallways of a hotel, in hospitals or large open-space offices.

- 1 fan coil with master function
- max. 99 fan coils with slave function connected to the master
- max. 1000 m between master fan coil and the last slave
- max. 30 m between master fan coil and user terminal
- slave fan coil without user terminal

e-drobus hybrid integrated...



The integrated hybrid e-drobus is a master/slave system that is ideal for installations that require a master in every zone, connected to a number of slaves to support the temperature control action of the master. Typical applications are in homes in which the different zones (living room, bedroom, kitchen) are managed by different master/slave systems.

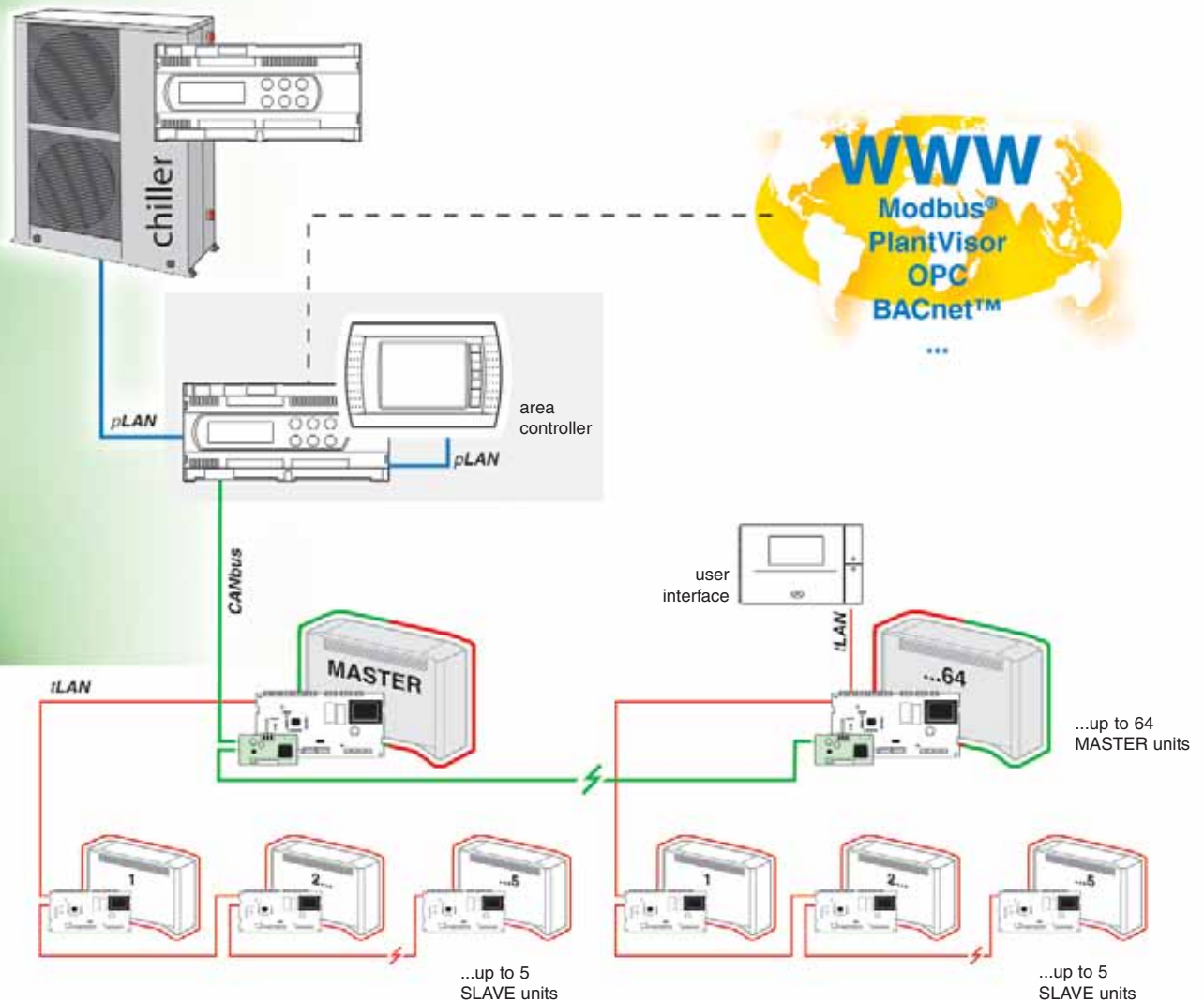
The integrated hybrid e-drobus system uses the CANbus protocol for the connection between the master fan coils and the tLAN for the master/slave connection.

This means that the optional CANbus board only needs to be installed where it is really required.

The pCO controller manages both the chiller/HP and the fan coils, optimising comfort and running costs. In this way, the chiller user terminal also acts as an interface for the hydronic system.

- 1 pCO controller
- 1 or more user terminals for the pCO controller (acts as the interface for both the chiller and the hydronic system)
- 1 fan coil with master function for each zone (up to 16 zones)
- max. 5 fan coils with slave function in each zone connected to each master
- max. 1 local terminal for each master fan coil

...and hybrid extended



- 1 pCO controller dedicated to the chiller/HP
- 1 pCO controller dedicated to the hydronic system (area controller)
- 1 user terminal for the pCO area controller
- 1 fan coil with master function for each zone (up to 64 zones)
- max. 5 fan coils with slave function in each zone connected to each master
- max. 1 local terminal for each master fan coil

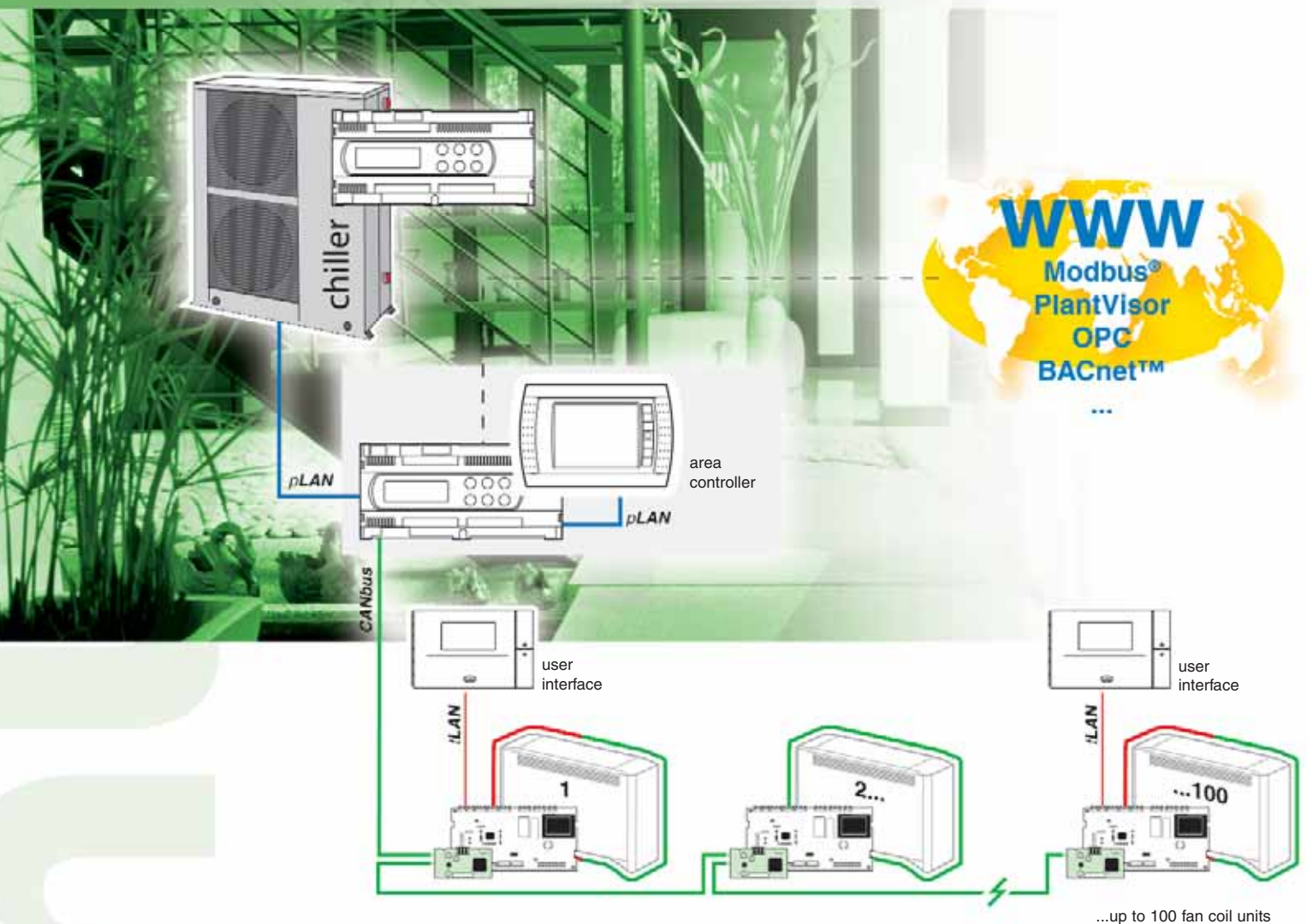
The hybrid e-drobus system can be enhanced and extended by adding a further pCO controller dedicated exclusively to the management of the fan coils/chiller system.

The chiller controller and the area controller exchange data via the pLAN, while the fan coils are connected via the CANbus network.

As in the previous versions, master/slave communication takes place via the tLAN.

The extended hybrid e-drobus can manage a maximum of 64 master x 5 slave each for a total of 384 fan coils. Each master fan coil can manage a user terminal, via tLAN.

multimaster e-drobus



One special application of the e-drobus system uses the CANbus network to connect the master fan coils and the slaves on the same communication line.

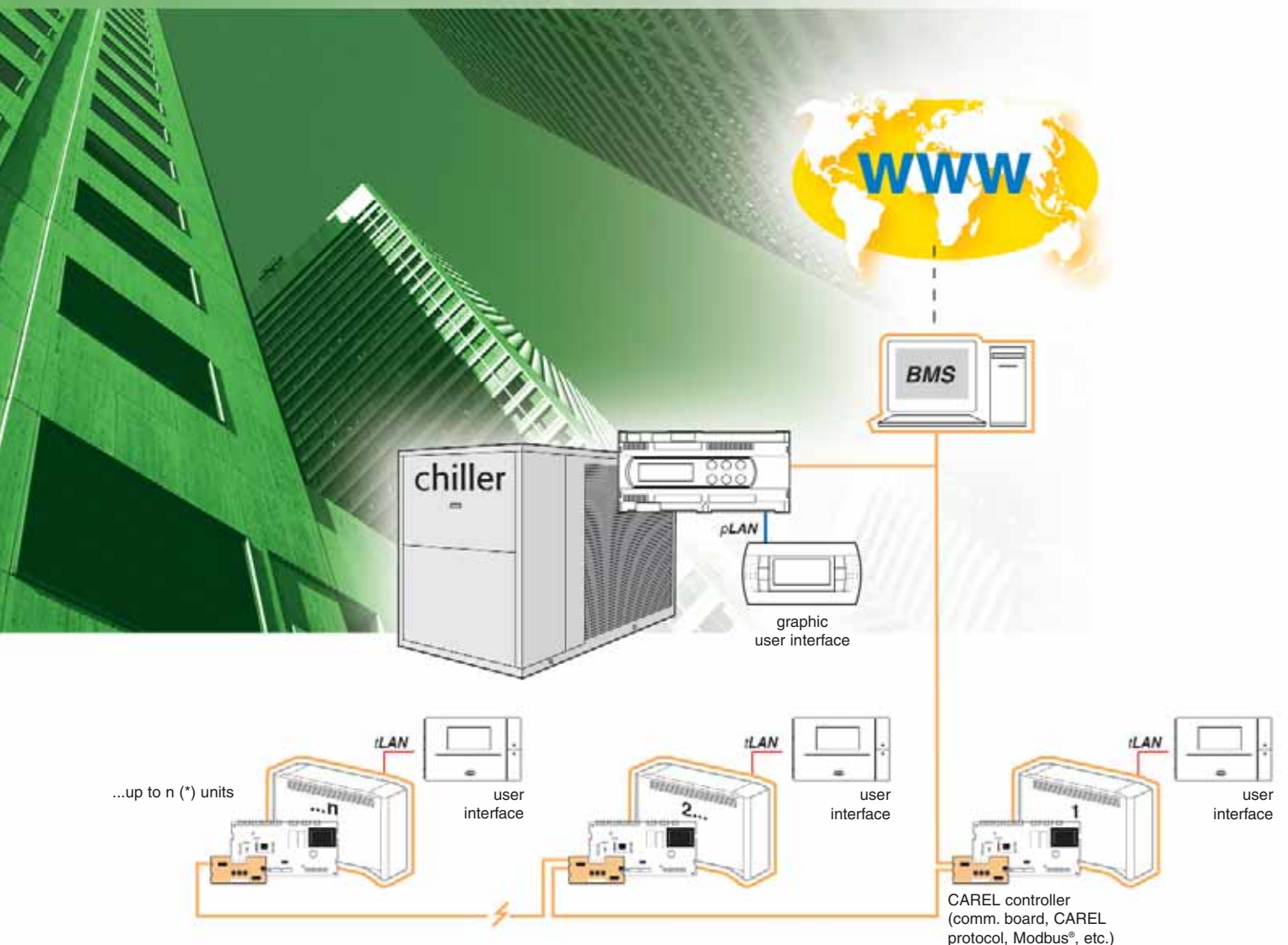
The fan coils must be configured as master or slave via software.

This type of configuration is used to effectively and competitively manage flexible spaces, allowing the layout of the network and the relationships between master and slaves to be configured simply via software.

- 1 pCO controller dedicated to the chiller/HP
- 1 pCO controller dedicated to the hydronic system (area controller)
- 1 user terminal for the pCO area controller
- max. 64 master fan coils + 36 slave fan coils on the same communication line
- max. 1 local terminal for each fan coil (both master and slaves)

e.drobus multimaster

Open solution



Usually, the management of large buildings (banks, office buildings, shopping centres) is centralised using a BMS that controls the lighting, security, heating and air-conditioning systems.

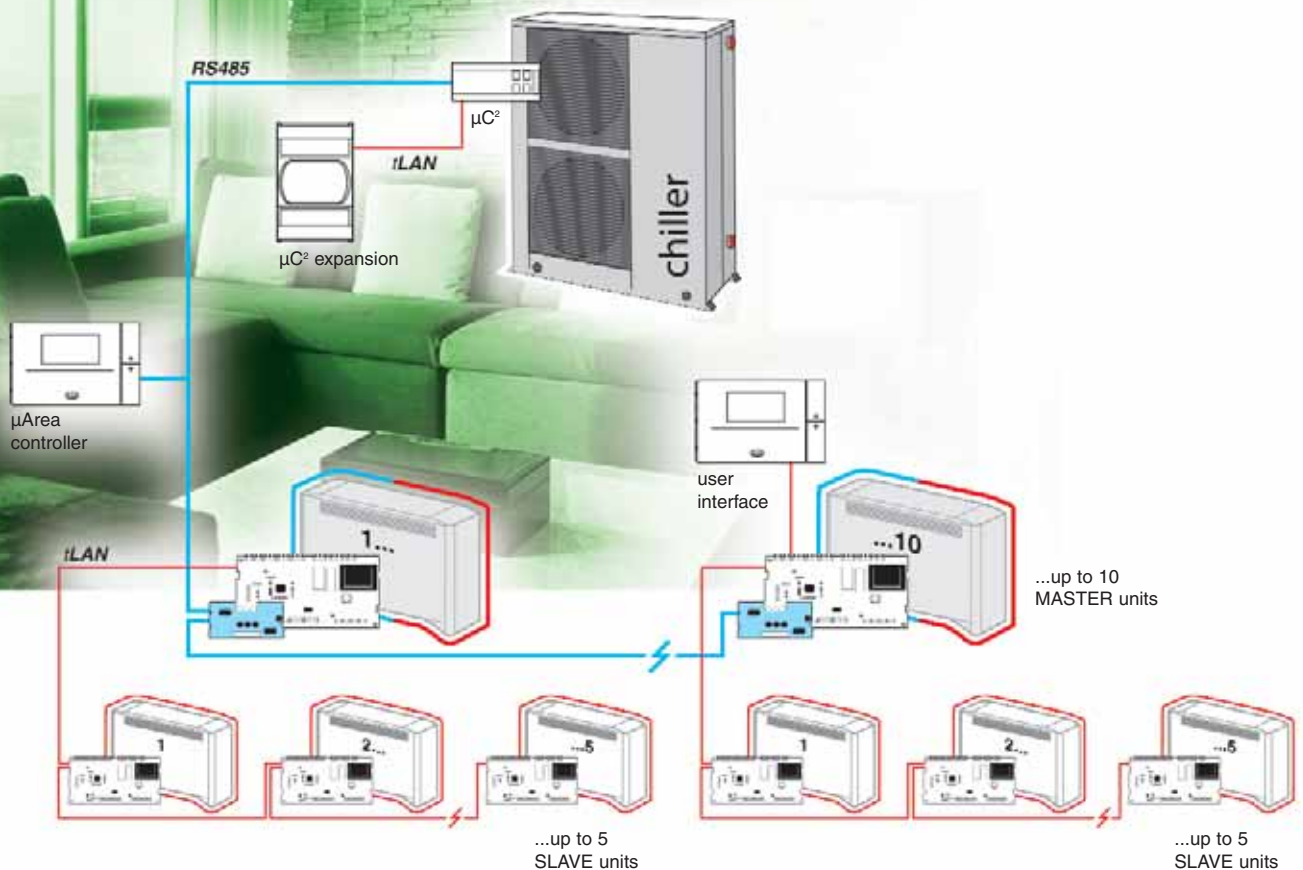
These systems feature a centralised interface, a communication network and control devices.

CAREL offers a fan coil control system that is compatible with the main protocols used in the most common BMS.

- 1 pCO controller dedicated to the chiller/HP
- max. n fan coil units connected by BMS (*)
- max. 1 local terminal for each fan coil connected in tLAN
- RS485 communication board for fan coils (CAREL or Modbus® protocol)

(*) The maximum number of units supported depends on the features of the BMS used.

μe-dronic



μe-dronic is the typical solution for small installations (homes, shops, small offices) where the chiller/HP can be controlled by a μC² controller.

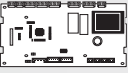

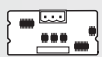
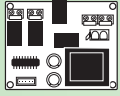
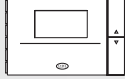
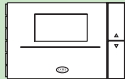


Up to 10 master fan coils can be connected, each with a maximum of 5 slaves, on a RS485 network managed by a simple zone controller.

The new μArea controller coordinates the small hydronic installation using a common reference set point, defining the operating time bands and coordinating the heating/cooling requirements.

- 1 μC² controller
- 1 μArea controller
- max. 10 fan coil units with master function connected in an RS485 network
- max. 5 slave fan coils for each master
- max. 1 local terminal for each master fan coil

μe-dronic

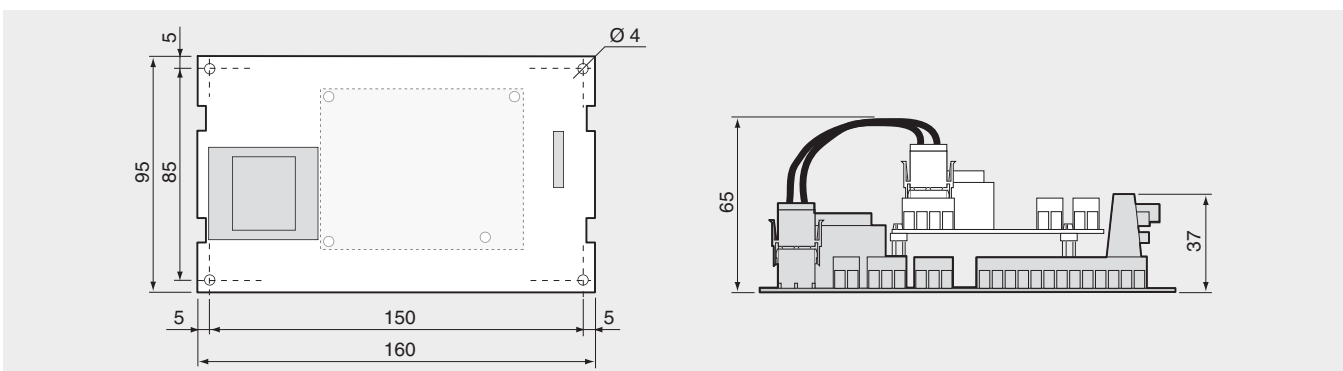
Summary table

Code	Description	Characteristics	Network connection	Broadcast		e-drobus			Open solutions	µe-dronic
				zone	extended	integrated	extended	multimaster		
HYFC** 	e-drofan fan coil controller	<ul style="list-style-type: none"> - 3 fan speeds - 3 temperature sensors - 3 digital inputs - power supply: 230 Vac - parameter programming key - remote user terminal (30 m) with built-in temperature probe 	iLAN for Broadcast networks 1 master + 5 slave	●	●	●	●	●	●	
HYSC00F0C0 	CANbus board	–	CANbus multimaster protocol		●	●	●	●		
HYSC00F0P0 	RS485 board	–	<ul style="list-style-type: none"> - Modbus® - CAREL protocol 						●	
HYVC** 	Valve board	<ul style="list-style-type: none"> - 4 network digital outputs for: - ON/OFF hot water valves - ON/OFF cold water valves - boiler signal - chiller signal 	–	○	○	○	○	○	○	
HYP A001** 	acqua LCD terminal	<ul style="list-style-type: none"> - fan speed mode configuration - ON/OFF - timer - sleep/economy - set point - built-in temperature probe - fan coil control param. configuration 	iLAN (30 m from the fan coil)	○	○	○	○	○	○	
MCH2* 	µArea controller	<ul style="list-style-type: none"> - built-in temperature and humidity probe - master of 1 µC² up to 10 fan coils master 	RS485 CAREL protocol							
HYHS001** 	Remote control	<ul style="list-style-type: none"> - fan speed mode configuration - ON/OFF - timer - sleep/economy - set point - fan coil control param. configuration 	IR connection	○	○	○	○	○	○	
PSOPZKEY* 	programming key	parameter upload/download	–	○	○	○	○	○	○	

● required for the implementation of the system

○ optional

Dimensions of the e-drofan fan coil controller (mm)



summarizing table

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