

pCO sistema

... communication



CAREL
Technology & Evolution

pCO sistema



... communication

pCO sistema is the result of CAREL's years of experience in the design and manufacture of controllers for HVAC/R units.

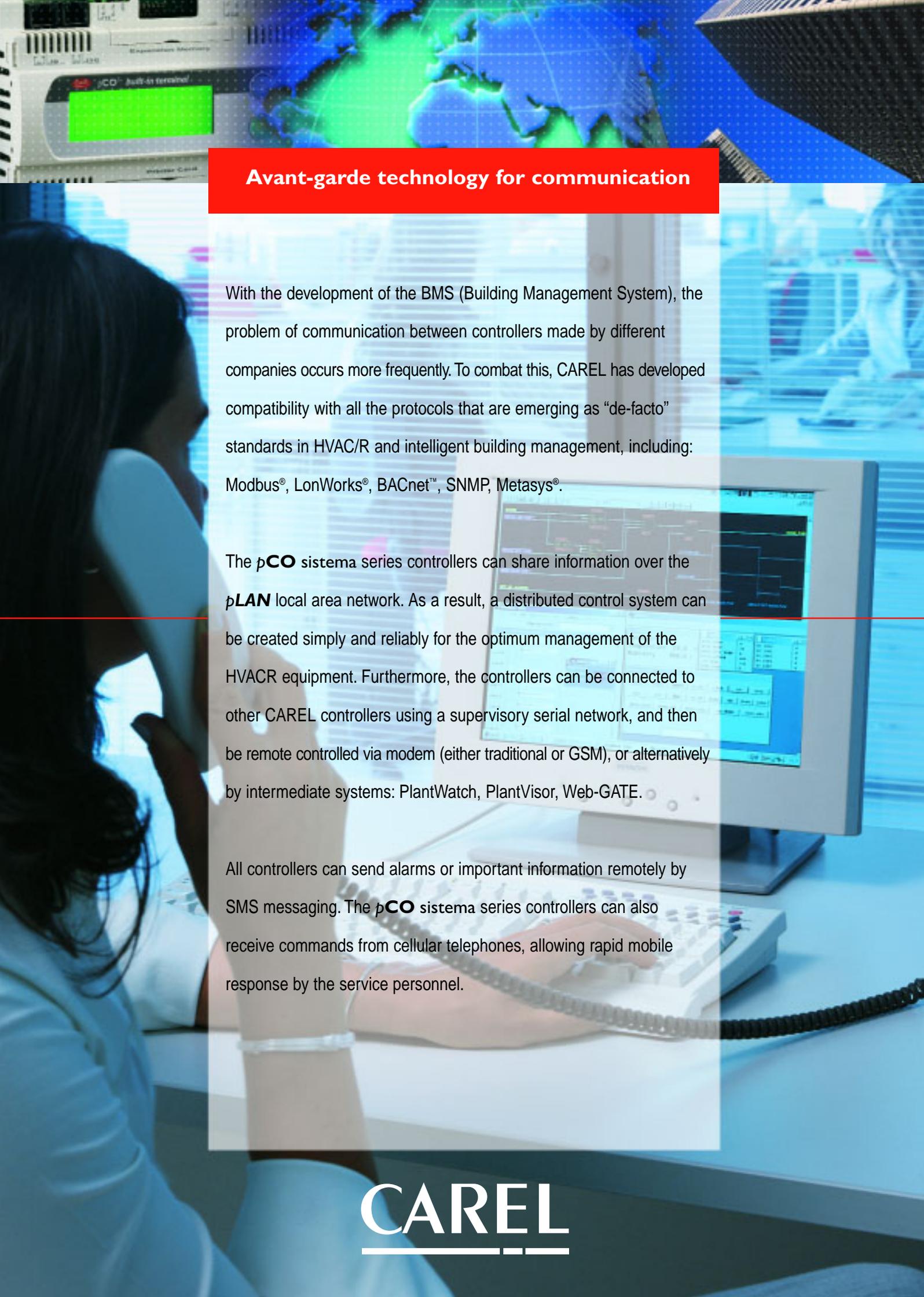
The system consists of everything required by OEMs working in HVAC/R in a control system: programmable controllers, user interfaces, software development tools for specific programming applications, gateways and communication interfaces, and remote management systems. pCO sistema is powerful yet flexible, can be easily interfaced to more widely used Building Management Systems, and can even be integrated into proprietary supervisory systems.

Today, not only is the quality and the reliability of the instruments important, but also the external connectability they can provide.

CAREL has always designed its controls to communicate with other systems, and has constantly followed the evolution of technology in the communications sector.

For this reason, CAREL controllers can now:

- be integrated into systems consisting of instruments made by different manufacturers;
- be managed remotely via modem or Internet using a standard browser;
- inform authorized personnel of any alarm condition by SMS messaging.



Avant-garde technology for communication

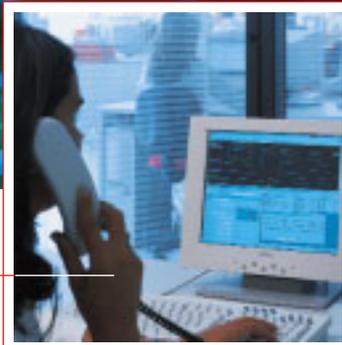
With the development of the BMS (Building Management System), the problem of communication between controllers made by different companies occurs more frequently. To combat this, CAREL has developed compatibility with all the protocols that are emerging as “de-facto” standards in HVAC/R and intelligent building management, including: Modbus®, LonWorks®, BACnet™, SNMP, Metasys®.

The **pCO** sistema series controllers can share information over the **pLAN** local area network. As a result, a distributed control system can be created simply and reliably for the optimum management of the HVACR equipment. Furthermore, the controllers can be connected to other CAREL controllers using a supervisory serial network, and then be remote controlled via modem (either traditional or GSM), or alternatively by intermediate systems: PlantWatch, PlantVisor, Web-GATE.

All controllers can send alarms or important information remotely by SMS messaging. The **pCO** sistema series controllers can also receive commands from cellular telephones, allowing rapid mobile response by the service personnel.

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Serial communication and remote management



pLAN The **pCO** sistema controllers can be connected together across a **pLAN** network, allowing distributed control of the installation to be created simply and reliably. Like all CAREL controllers, **pCO** sistema controllers can be connected into a supervisory network for management from local or remote positions (remote management), with the following multitude of solutions.

PlantVisor

This is the latest generation "WEB based" supervisory software. It allows refrigeration and air-conditioning systems to be monitored and controlled using a simple Internet browser: the pages displayed on the PC are in HTML format, the language of the worldwide web. PlantVisor is designed to communicate externally with more than one protocol, including CAREL and SNMP.



PlantWatch

For smaller systems with the same management and control requirements as larger installations, PlantWatch offers the complete and integrated solution for all monitoring and remote management needs.



PlantWatch, a versatile data recorder for the controllers connected in a supervisory network, is also:

- an excellent monitoring system. In the event of alarms, it can send faxes, SMS messages, call a remote security center, etc.;
- an exceptional instrument for remote control.

Using a traditional or GSM modem, it can display and modify all of the parameters in the system.

Direct modem

The **pCO** sistema series controllers can all be connected directly to a traditional or GSM modem.

They can thus be controlled directly by remote stations, without requiring the use of a gateway or an intermediate system.



pCO Web

This is a board for the **pCO** sistema controllers that interfaces the latter with the emerging protocols (BACnet™ and SNMP) in HVAC, and is based on both the physical Ethernet™ and EIA-485 standards.

This therefore allows connection to the following networks:

- SNMP v1, v2, v3 networks;
- BACnet™ Ethernet™, BACnet™/IP, BACnet™ MS/TP networks;
- LANs or the Internet.

With the web server capabilities of pCO Web, the user can download, via FTP, the HTML pages relating to the specific application and then use a browser for the remote management of the installation.

(*) Available from mid 2004



Web-GATE

Thanks to this gateway with "WEB server" capability, all CAREL controllers can now be connected to a 10 Mbps Ethernet™ local network.



The following functions are therefore possible:

- display the parameters and the data from the controller using a standard Internet browser on any PC connected to the local network or the Internet;
- send the data to a supervisor PC connected to the network that is able to handle the SNMP protocol.

SMS, short message service

The **pCO** sistema controllers feature the capacity to communicate important information directly by SMS (text) messages. Simply connect a GSM modem and the **pCO** sistema series controllers are able not only to send alarms and information, but also to receive commands via SMS that authorised personnel can use to reset any alarms or perform the required operations, without having to travel to the site of the installation.

The other CAREL controllers can also send SMS messages, via the PlantWatch and PlantVisor supervisor systems.



BMS interface

The CAREL controllers can be connected to the BMS in the following ways:

- directly thanks to the ability of the **pCO sistema** series controllers to select the protocol used;
- using a gateway that converts the CAREL proprietary protocol to the protocol used by the BMS;
- integrating the driver for the management of the CAREL proprietary protocol into the BMS.

The following popular protocols and systems are used by the CAREL controllers to ensure connectivity to the other systems:

Modbus®

Introduced in the 1970s and now one of the most widely-used BMS protocols. **pCO sistema** controllers can communicate directly in Modbus® protocol.

Like all CAREL controllers, **pCO sistema** can also be connected to a Modbus® system using a gateway.

Type of supported protocol: Modbus® slave, RTU mode; RS485 and RS232 communication standard.

LONWORKS®

With millions of devices installed world wide, the LonWorks® system, developed by Echelon®, is one of the dominant solutions on the market for the automation and control of industries, offices, homes and transport. The **pCO sistema** controllers are LonWorks® compatible, using a special serial board. Electrical supported standards: FTT10. CAREL is a LonMark® Partner.



This is the protocol designated in 1995 by ASHRAE (American Society of Heating, Refrigerating and Air-conditioning Engineers) as the organization's official protocol. CAREL provides a gateway through which all CAREL controllers can interface to BACnet™ systems. Types of supported protocol: BACnet™, Point-To-Point and RS232 communication standard.

- BACnet™ Ethernet™ ISO8802-2 over 8802-3*
- BACnet™/IP*
- BACnet™ MS/TP; EIA-485* communication standard
- BACnet™ PTP; EIA-232 communication standard

(*) Available from mid 2004

Third Party Protocols

CAREL can provide numerous gateways for interfacing its controls to proprietary supervisory systems.



TREND is a building Automation System very widespread in the Anglo-Saxon countries and in general in Europe. The controllers of **pCO sistema** are TREND compatible, through the proper serial card. TREND deals with the configuration and the supply of the interface card. TREND can be contacted directly on tel.+44 (0)1403211888.



METASYS® is the building automation system developed by Johnson Controls.

Johnson itself handles the implementation of the software to control the interfaced devices into its system.



OPC is an industrial standard created by a consortium of companies, in collaboration with Microsoft®, to standardise the drivers for proprietary devices. Using the CAREL OPC server, any Windows® OPC client application (SCADA, supervisors, management software, etc.) can communicate with all CAREL devices in user-friendly OPC mode, without requiring a gateway.

DLL

CAREL can provide developers and system integrators with DLLs (Dynamic Link Libraries) for 16- and 32-bit Windows® applications. Technically, a DLL is a compiled file that contains a series of functions for use by any other server process. In particular, the CAREL DLLs contain the software routines that allow the integration of communication with all CAREL instruments into the application, without needing to know the protocol used.

SNMP

SNMP (Simple Network Management Protocol) is a protocol for the management of TCP/IP networks (the protocol that the internet is based on), established in 1988 on the specifications of the IAB (Internet Administration Board), the body that supervises the internet protocol. The **pCO sistema** controllers can be connected to a 10 Mbps Ethernet™ network and communicate with systems that use the SNMP protocol via pCOWeb, and with all the other CAREL controllers via the Web-GATE.

TCP-IP

CAREL has focussed significant attention on ensuring the **pCO sistema** controllers the capability of connecting directly to Ethernet™-TCP/IP networks. Management of the protocol used for the internet means that the network infrastructure already existing in buildings can be exploited, and standard software tools, such as Internet Explorer, can be used for the remote management of the installation. Immediate access to the data of the installation from anywhere is now a reality.

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