



connectivity, monitoring and remote management systems
remote management and communication solutions



PlantVisorPRO

All that you need at a touch

Supervision for refrigeration and air-conditioning

The global solution for system monitoring and management

PlantVisorPRO ensures complete control of the system in all stages of operation:

- Setup: centralized configuration of all the parameters for the instruments installed, unit monitoring on commissioning;
- Daily operation: system interface, data logging, reports, activity scheduling, automatic optimization of operation;
- Maintenance: remote access, alarm management with automatic signals and actions.

PlantVisorPRO is the CAREL monitoring and management system for complete control and optimization of refrigeration and air-conditioning systems. The interface can be customized for displaying and configuring the system.

PlantVisorPRO guarantees remote access to all the devices in the system: the web server function makes internet connection easy.

Due to the importance of its functions and the information managed, the product

guarantees absolute reliability and security of data.

The supervisory system is available as a complete all-in-one Touch solution: the product includes all the field and remote connections required to manage the system, offering a simple and complete interface with built-in touchscreen monitor. Alternatively, the Box version is available for more versatile assembly to suit different requirements.



Energy Saving

Optimization and monitoring of system: performance specific functions to increase system efficiency and analyse trends in energy consumption.



Data analysis

Manual and scheduled creation of detailed and complete graphs and reports on the system variables. For remote analysis of system variables, customizable reports can be scheduled so that the system is under control at all times.



Alarm management

Detection and signalling of all alarm situations, with remote interaction for efficient management of maintenance and service operations.

System interface with remote control



The complete lists of read-only variables and read/write parameters for each controller are available on the PlantVisorPRO interface, so as to control

system status and configure site operation. Global and detailed system views are available for each device.

Device detail



Layout Editor: Customized system graphics

System status and the main variables for each controller can be presented graphically on the customized site layout.

Customization becomes simple and effective using the **Layout Editor** tool or programming with SDK.



CAREL or third party devices can be connected via RS485 lines using the CAREL or Modbus RTU protocol. For connection of pCO programmable controllers, communication over TCP/IP is also supported.

and completely. The Web interface, the same available to the user on the local PlantVisorPRO, allows complete monitoring and configuration of the system: from the office or whatever the user's current location, a simple internet connection allows access to all the system information.

Using PlantVisorPRO, the system can be managed from a remote site simply

For remote control of multiple sites, CAREL

offers dedicated tools for centralized management. PlantVisorPRO allows automatic synchronisation of data and alarms with RemotePRO and RemoteValue, so as to keep the situation on all the systems under control from one single interface.



Device Creator: Custom device integration

For connecting custom pCO applications or controllers that support the ModBus RTU protocol, **Device Creator** allows rapid integration and simple configuration of the interface for supervising the controller in the field.

Alarm management and detailed data analysis



All alarm conditions are detected by PlantVisorPRO, which then notifies the maintenance manager via different channels (email, fax, SMS) or directly on site (printing, alarm relay).

Automatic updates of operating parameters can be configured in response to alarms. Alarm management rules can depend on how serious the alarm is or custom time bands.



List of alarms



Report



Reports and graphs represent the values and trends of all logged variables in the system.

System data are thus easily accessible to the user for analysis based on different needs:

- data are presented on predefined reports in compliance with standards in force;
- maintenance personnel have an

effective tool for analysis in the event of malfunctions, with detailed reports and graphs;

- control of system energy consumption is available at all times, with scheduled reports.

For these purposes, Excel and PDF reports

can be:

- exported to removable memory media;
- saved to a PC via a remote connection;
- periodically printed on a network printer or printer connected directly to PlantVisorPRO;
- periodically sent via email to the person responsible.

Graphs

For accurate analysis of site operation, graphs represent an advanced tool for:

- comparing up to 20 variables
- zooming details over brief periods
- detailed instant information
- customized scales and auto-scale
- rapid selection of groups of variables
- custom colors/backgrounds



Complete management



To program site operation flexibly based on specific needs, the Scheduler is a powerful and effective tool for:

- periodical set points;
- changing parameter settings according to the conditions of other site variables.

For more advanced system management, custom algorithms and logical variables can be used for setting parameter values in the field or evaluating specific operating conditions.

Logical devices and groups also allow

custom site representations, displaying averages, sums or groups of variables sent by the controllers on site.



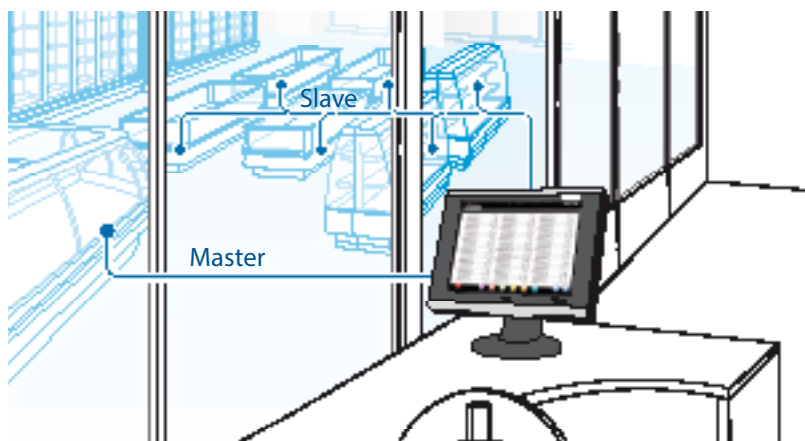
Site protection

Control of variations in critical parameters ensures the system configuration is optimized at all times. Even following undesired variations, the optimum settings can be restored simply and immediately.

Site calendar

A user-friendly and easily configurable calendar can be used to schedule centralized functions, such as:

- switch on lights
- adjust set points
- start boilers
- start defrost



Dewpoint propagation

To reduce consumption of anti-sweat heaters, CAREL controllers can optimize the on/off duty cycle. The propagation module shares the values from a Master device with all other Slave devices in the same group, so as to reduce the need for components and thus installation costs.

Consumption under control



System consumption is analyzed using simple and effective tools. Reports and graphs illustrate the performance of

each unit and the trend in site energy consumption so as to define the best system configuration and highlight the real

energy savings that can be achieved by adopting new CAREL applications or tools for optimising energy consumption.

KPI: performance indicator

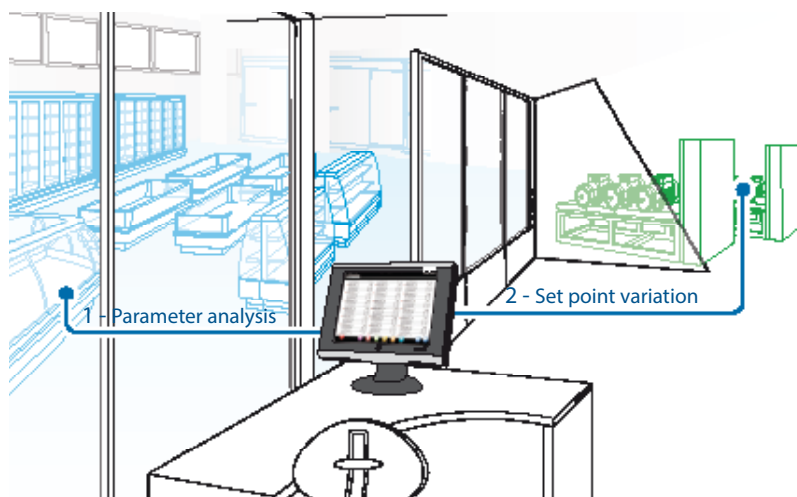
The control capacity of each device (or group of devices) can be analyzed on tables and graphs that clearly and effectively indicate operating percentages and times when critical system temperature thresholds are exceeded.

Energy

Statistical analysis of site energy consumption is presented on graphs and reports. The user can easily identify the areas of highest consumption and check the trend in consumption over time.



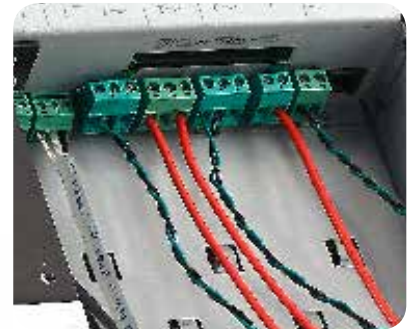
Floating Suction Pressure Control
For Retail installations with controllers and PlantVisorPRO, system energy consumption can be optimised using the Floating Suction Pressure Control algorithm. The CAREL system guarantees savings by varying the compressor rack set point based on the parameters of the controllers in the field. Real installations have demonstrated savings exceeding 15% by using this algorithm in the field.



Secure connection

The supervisory system is a critical component of the system.
For this reason, the PlantVisorPRO technical specifications include mechanical

solutions and redundant SW checks to ensure reliability 24 hours a day, 7 days a week, with data access only available to authorised personnel.



- direct field and remote connection;
- connections protected in closed compartments with cables secured to avoid unintentional disconnection.



Indicator lights on the front panel to ensure system operation is always under control.



- **Guardian PRO** to check correct operation of notification channels and system performance in terms of CPU usage and memory space;
- **WatchDOG** to check correct operation of the operating system the supervisor is running on;
- multiple notification channels to ensure critical information always reach the relevant personnel;
- sign-of-life to be sure of correct connection at all times.




- **HTTPS** protocol, encrypted version of the standard HTTP protocol, for transferring data from PlantVisorPRO local to a remote PC via WEB. HTTPS is used to ensure secure data transfer over the web, and thus prevent interception by unrecognized third parties;
- secure **VPN** connection for direct access to all the VNC system maintenance services and FTP file transfer.



profiles available to customize functions and access rights for each user. Each user is assigned a profile and when accessing the system using their personal login and password, will only be able to read and write the data that the system administrator has previously defined.

Complete offering

Hardware

Product	Code	Description
	PP2US00XE0	PLANTVISORPRO2 BOX STANDARD (90 devices)
	PP2US00XP0	PLANTVISORPRO2 BOX HYPER (300 devices)
	PP2US00TE0*	PLANTVISORPRO2 TOUCH STANDARD (90 devices)
	PP2US00TP0*	PLANTVISORPRO2 TOUCH HYPER (300 devices)

* PlantVisorPRO 2 touch standard NEMA 4x enclosure

Software

	PP2STGRP00 Green Retail	PP2STSFP00 Safety	PP2STEXP00 Extended	PP2STENP00 Energy	PP2STSVP00 Saving
Floating Suction Pressure Control					
Dew Point Broadcast					
KPI					
Energy					
RemotePRO connectivity					
Parameters Control					
Modbus slave					
Variables Logic					
AlgorithmPRO					

The CAREL offering also includes the sale of optimized kits for typical retail and HVAC applications. These kits consist of the basic embedded solution and the recommended software package for the specific application.

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