D - KFDCH00305-10EN
Date: May 2010
Oversedes: **NONE**

Functional Description

PlantWatchPro

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This product uses semiconductors that may be damaged by electrostatic discharge (ESD). When handling, care must be taken so that the devices are not damaged. Damage due to inappropriate handling is not covered by warranty.

WARNING: separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance.
Never run power cables (including the electrical panel wiring) and signal cables in the same conduits.

Before performing any operations, check that the PlantWatchPRO box contains:

1. the two plastic faceplates (top and bottom);
2. the user manual;
3. the device itself;
4. four screws (already inserted in position);
5. the terminals (six, already connected to the board);
6. two resistors (inside the case).

For all details on installation and low level operations of the system please refer to the User Manual annexed to the panel and provided by the manufacturer of the control.

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I. Introduction

I.A. The new PC-FREE solution for monitoring and remote management

PlantWatchPRO is the new PC-free solution ideal for compact systems where the management and control requirements are the same as in large installations.
It is a compact solution featuring a 10" graphic colour display with touch screen function, optional internal PSTN modem (or access to GSM), 3 relays for signalling alarms, LAN/Ethernet connection and configurable internal WEB server.

PlantWatchPRO manages up to 100 controllers connected on a serial line.
It can be connected to every device that uses the Modbus® or CAREL/Local communication protocols.

PlantWatchPRO is able to send SMS (by GSM kit) and e-mails (through internet connection). Other functions include: scheduler, user configuration, alarm and event management, management of defrosts, data export to a USB pendrive.
There is also a proximity sensor that switches on the display and shows system data when the user approaches the product, avoiding the need to open the plastic cover.
PlantWatchPRO is a product of large configurability, able to expand its features by plug&play accessories.

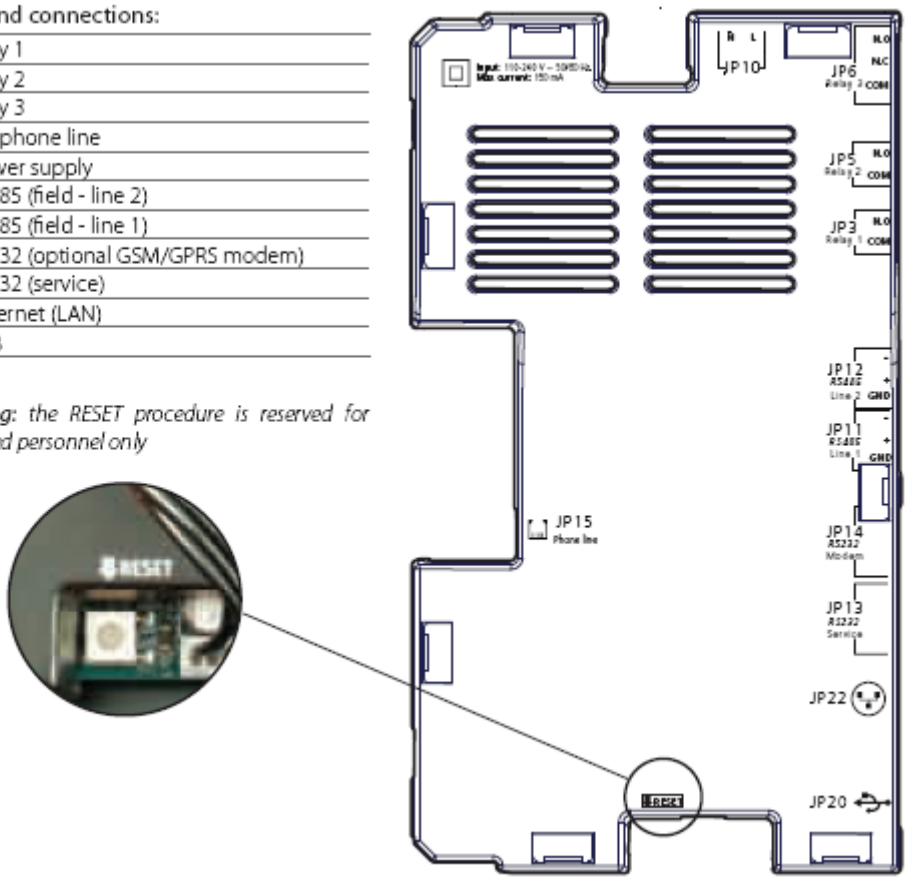
Figure 1.I PlantWatchPro

Figure 2.I System Layout

Terminals and connections:

JP3	relay 1
JP5	relay 2
JP6	relay 3
JP15	telephone line
JP10	power supply
JP12	RS485 (field - line 2)
JP11	RS485 (field - line 1)
JP14	RS232 (optional GSM/GPRS modem)
JP13	RS232 (service)
JP22	Ethernet (LAN)
JP20	USB

Warning: the RESET procedure is reserved for qualified personnel only



I.B. Key and Product Codes – Base Supervisor

Figure 3.I PlantWatch PRO Accessories

1	PlantWatchPRO (EKPWPRO or EKPWPROM)
2	PostScript-enabled USB printer (provided by the Customer)
3	PSTN analogue modem (already built-in, EKPWPROM only)
4	USB memory key (provided by the Customer)
5	PC (via LAN or internet, provided by the Customer)
6	3 relay outputs
7	Customer Site layout: Modbus® RTU protocol line
8	Customer Site layout: CAREL/local protocol line

9	Optional GSM/GPRS modem connection kit
10	Optional GSM/GPRS modem (EKGSMOD) • *required to be able to use all the SMS functions;* • *modems different from the recommended one will not guarantee correct operation of the appliance and technical service*

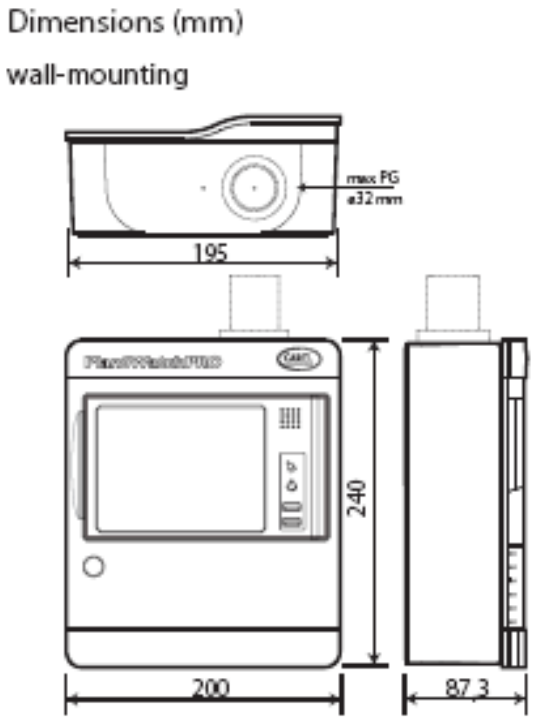
I.C. Additional Codes – Retrofit Manager

Figure 4.I Retrofit Manager Accessories

1	Optional I/O Module to allow the monitoring of Third Party units (EKPWPROEXT)
2	Optional Digital Sequencer (EKDDSP)

I.D. Dimensional Layout

Figure 5.I Dimensions



I.E. Technical Specifications and System Warnings

Power supply	110 to 240 V ~ 50/60 Hz
Power input	6.7 W (typ), 9 W (max)
Operating conditions	5T50 °C, 20 to 80 % rH
Storage conditions	-20T60 °C, 20 to 80 % rH
Index of protection	IP65
Display resolution	240 x 320 pixels
Type of LCD	5.7" TFT, (12 o'clock), 262144 colours
Other board functions	RTC, Watchdog (1000 ms), JTAG
Digital outputs	2 N.O. relays, 5 A 30 Vdc / 250 Vac,
	1 N.O. relays, 6 A 250 Vac,
Serial ports	2 RS232 serial ports on RJ45 connector
	2 RS485 serial ports, master, hd, opto-isolated, 19200 bps
	1 RS485 serial port, master, hd, opto-isolated, 19200 bps
Digital inputs	2 opto-isolated inputs at max. 300 baud
Backlighting	White LEDs
Buzzer	Max 80 dB at 10 cm
USB ports	2 standard HOST ports, type A connector, on front
	1 standard HOST port, type A connector, internal
Internal modem	Socket Modem, PSTN V.34/33.6K data rate
Internal battery (*)	Lithium model CR2032, 3V
Internal fuse (**)	F1 1.25 A
Electromagnetic compatibility	CEI EN 60950
	CEI EN 55022
	CEI EN 55024
Environmental pollution	Conforms to RoHS directive
Cover material	Transparent polycarbonate
Chassis material	Plastic

Warning:

- *(*) If necessary, replace exclusively with an identical or compatible type.*
  Danger of explosion if an incorrect type of battery is used. *Dispose of used batteries according to the instructions*
- *(**) Only replace with an identical or compatible type.* ***Even when the fuse blows some parts of the system are still live and may represent a danger during maintenance.***
- *This is a class A product. In domestic environments it may cause radio frequency disturbance. In this event the user may need to adopt adequate measures;*
- *This equipment shall not be set up to make automatic calls to the Telecom Emergency Service;*
- *The call log incorporated in this equipment does not record all answered calls. The call log, therefore may not agree with the Telecom account which may include calls not shown on the log;*
- *Do not set more than ten call attempts to the same number within any 30 minute period;*
- *This equipment must not to be used in any circumstances which may constitute a nuisance to other Telecom Customers.*

II. Panel Options and Features

The following section describes all the general features of the PlantWatchPRO. For details on the installation and the operations of the system please refer to the User Manual annexed to the panel and provided by the manufacturer of the control.

II.A. Plant Monitor and Unit Datalogger

This is the basic feature of the panel. PlantWatchPRO can easily work as a passive supervisor: it is able to monitor up to 100 datapoints even on the same number of separate controllers. It is usual to designate few points per controller on a limited system (a.e. 2 points on no more than 50 units, 4 points on 25 and so on)

II.A.1 Plant Monitoring

The PlantWatchPRO system allows the user to monitor through the color screen a list of main parameters (in numeric format), or to go into the details of a single unit connected. This can be done for all the systems able to communicate in Carel or Modbus RTU protocol.

II.A.2 Graph Trend Analisys

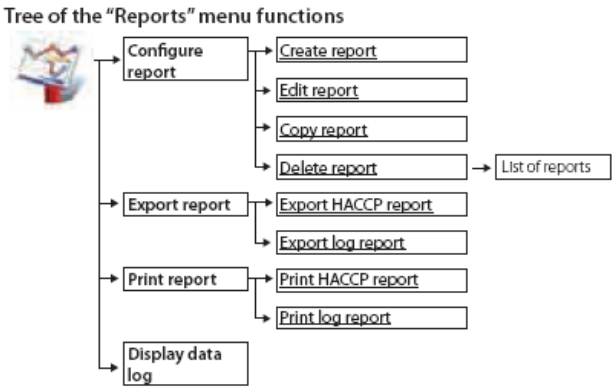
All parameters can be reported in graphic format for trend analisys, and revert on Customer printers.

Figure II.1 Graph Trend

II.A.3 Data Logging

Collected data can be logged in internal memory: sampling times and variables to be included in the logged reports can be decided and changed, all the results can be displayed, re-printed, or transferred through internet or just copied on USB pendrive by ports on the front panel.

Figure II.2 Datalog Report options tree at Menu Level



II.A.4 High Level Interface and Remotation Unit

The PlantWatchPRO can be used as a very comfortable gateway for remote access to the fieldsite: onscreen control of the site, Carel and Modbus communications and even both on separate lines, RS232 and modem serial ports, builtin line modem a/o std connected GSM/GPRS modem, ethernet connection, builtin webserver with a preprogrammed full screen interface to allow the control of PlantWatchPRO directly via Internet Explorer from everywhere. Morevoer up to 3 USB ports for local access and connection are available.

Figure II.3 Access on Remote PC to PlantWatchPRO by Internet Explorer or equivalent browser

II.B. Alarm & Event Handling – Action Scheduler

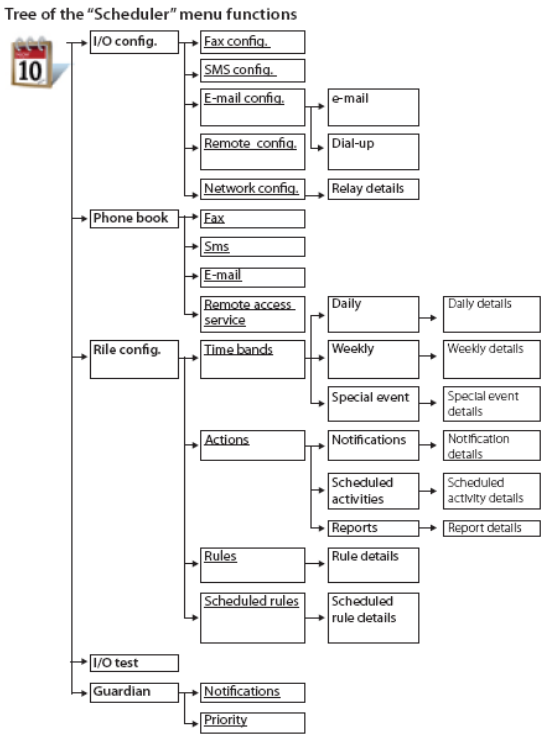
The PlantWatchPRO can also act as active supervisor, mainly as an Alarm station: this happens based on the definition of special conditions, related rules and corresponding actions.

II.B.1Alarm and Event definition

The PlantWatchPRO allows to define and configure special situations related to the PlantWatchPRO hardware, the system sensors or even single connected unit, as an Alarm or a Special Event. It allows also to define the sampling time to check and wait for these situations. Of course Alarms and Events can be stored, displayed, printed or transferred manually as previously explained for datalogs.

II.B.2Action Scheduler

Figure II.4 Scheduler Options Menu



PlantWatchPRO can also re-act in automatic to an Alarm or Event defined situation. Based on the rules introduced in the Rule section, the system will decide to change the status of some of its 3 output relays, or to follow the configured priority list of alert communications, by sending messages on the available lines (emails, calls to special numbers, fax messages, SMS and printouts) based on the set scheduled sequence and until the elimination of the Alarm or the Event, or the max repeat time has been reached.

II.C. Retrofit Manager

PlantWatchPRO can work as a base station of a retrofit control and communication system, to provide centralized information, print, store and transmit this information on remote lines.

II.C.1Input Output Module (IOM)

The I'I/O module is necessary to connect the PlantWatch PRO to a chiller with Thirdy Party controller; this is provided with its own entering and leaving water temperature sensor, access 4-20mA, digital inputs for on/off, alarm and flow status.

Figure II.5 IOM Module

II.C.2Digital Sequencing Panel (DSP)

Every unit monitored by the PlantWatch PRO can be also automatically started/stopped in sequence through the connection with the Daikin Digital Sequencing Panel (EKDDSP): this panel is indeed a step inserter that switches ON/OFF the units (chiller or heat pump) based on the set point and the working hours of each unit.

Figure II.6 Digital Sequencing Panel

III. Daikin Profiles

III.A. Standard Profiles

PlantWatchPRO is prebuilt by the manufacturer with a set of standard controller profiles. These profiles can be used as a base to create new customized profiles just by eliminating or modifying variables in the profiles.

This list of standard profiles is periodically updated by the manufacturer by adding new profiles in its standard libraries. An easy-to-use procedure by USB pendrive allows everyone to transfer these updates on his PlantWatchPRO (see also the Manufacturer User Manual).

III.B. Daikin Profiles

PlantWatch PRO is provided with all the required Daikin chiller profiles already uploaded.

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