

plug-in electronic digital thermostat for heating or cooling applications



Installation manual

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**READ AND SAVE
THESE INSTRUCTION**

CAREL
Technology & Evolution



We wish to save you time and money!

We can assure you that the thorough reading of this manual will guarantee correct installation and safe use of the product described.

IMPORTANT WARNINGS



BEFORE INSTALLING OR OPERATING ON THE APPLIANCE, CAREFULLY READ THE INSTRUCTIONS IN THIS MANUAL.

This equipment has been designed to operate without risks for the specific purpose only if:

- the installation, operation and maintenance are performed according to the instructions in this manual;
- the environmental conditions and supply voltage fall within the values indicated here below;

Any other use or changes which have not been previously authorised by the manufacturer, are considered improper.

Liability for injuries or damage caused by improper use lies exclusively with the user. Note that voltage is present in some electrical components of this instrument, thus all the service or maintenance operations must be performed by expert and skilled personnel only, aware of the necessary precautions to be taken. Before accessing the internal parts, disconnect the power supply.

Disposal of the parts of the controller:

The controller is made up of metal and plastic parts. All these components must be disposed of according to the local legislation in force.



The CE mark confirms the quality and the safety of the plug-in series, guaranteed by the CAREL ISO 9001 certified design and production system.



INFORMATION FOR USERS ON THE CORRECT HANDLING OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

In reference to European Union directive 2002/96/EC issued on 27 January 2003 and the related national legislation, please note that:

1. WEEE cannot be disposed of as municipal waste and such waste must be collected and disposed of separately;
2. The public or private waste collection systems defined by local legislation must be used. In addition, the equipment can be returned to the distributor at the end of its working life when buying new equipment.
3. The equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
4. The symbol (crossed-out wheeled bin) shown on the product or on the packaging and on the instruction sheet indicates that the equipment has been introduced onto the market after 13 August 2005 and that it must be disposed of separately;
5. In the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.

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INTRODUCTION

The new plug-in family for heating or cooling is made up of a new series of microprocessor electronic controllers with LED display, designed for the management of one or more control steps, from -50 °C to 150 °C.

A range of models is available, providing the best solution for all applications, at the most competitive price.

The plug-in family builds on the experience and success of the previous product ranges, such as the IR32 Universal, with the aim of offering an increasingly simple and economical product for temperature control requirements.

The main characteristics are:

- display in degrees (Centigrade or Fahrenheit), using display with two digits and a half and minus sign;
- complete range with models featuring 1, 2, 3 relays;
- ergonomic three-button keypad;
- possibility to manage two independent set points with two control probes and two relays (dual thermostat function).

Furthermore, new functions and characteristics have been introduced:

- probe inputs for NTC or PTC (depending on the models);
- display of operating status (active control outputs and second probe display), using a clearly visible and easily recognisable signal, thanks to the three buttons with back-lighting;
- highly-efficient red LED display;
- innovative fastening: from the front panel, using two screws in the TOP versions;
- front frames in various colours, customised upon request;
- quick programming, using hardware key, when the instrument is not powered (in the TOP versions);
- possibility to modify the list of parameters, selecting each parameter as a frequently-used or password-protected parameter;
- electrical connections using removable (screw or crimped) or fixed screw connectors;

1. General characteristics

1.1 Models available

The various models are differentiated according to the following functions and performance:

- operating mode and number of inputs and outputs for versions V, W, Z;
- complete versions (hereafter: **Top**) with serial connection, status LED, fastening from front panel, removable terminals;
- compact versions (hereafter: **Eco**) with fixed terminals and fastening only using rear bracket, and without serial connection;
- the power supply can be one of the following: 230 Vac, 115 Vac or 12 Vac/Vdc;
- the field of measurement: from -50 to +90 °C (-50 to 127 °F) with resistive NTC probe;
- the field of measurement: from -50 to +150 °C (-50 to 127 °F) with resistive PTC probe;
- digital input from free contact: in models where featured it is an alternative to the second probe;
- relay outputs: available with three different current ratings, 5 A, 8 A and 12 A (for resistive load);

PJ32V

This represents the ideal solution for the management of applications that require simple temperature control of the connected device (compressor, heaters, valves, etc) .

- All V models use one control probe only (S1) and feature a relay with changeover contacts for the control of the actuator.
- In some models (PJ32V00, PJ32V0P or PJ32V0H) the second probe can be connected to display the temperature (thermometer function); this probe has no influence on control.
- Models PJ32V0P and PJ32V6P use a relay with changeover contact, 12 A resistive. Model PJ32V0H uses a normally open relay, 16 A resistive, 2 HP. For all the other models, the normally open relay is 8A resistive.
- Both the **Top** and **Eco** versions are available, 230 Vac, 115 Vac e 12 Vac/Vdc.

PJ32W

These have been designed for the management of applications where a number of loads need to be controlled or the dual thermostat function is required.

- The W models feature two probe inputs for the temperature control function
- Two relay outputs are available for controlling the actuator; the relays used in models PJ32W00 and PJ32W10 are 8 A resistive, while in models PJ32W0H and PJ32W6H, OUT1 is associated with a 5A changeover relay, and OUT2 uses a normally open relay, 16 A resistive, 2 HP

PJ32Z

This represents the most complete solution. These models feature three relays, for complete control of up to two actuators and one alarm output. The 3 relays (8, 5 and 5 A resistive) can be fitted inside a compact container in the versions that feature the 230 Vac or 115 Vac power supply transformer, without affecting the performance or the reliability of the product.

- There are two probe inputs for the temperature control function.
- There are three outputs: relay output 1: 8 A resistive, output 2 and alarm output: 5 A resistive.

1.2 Characteristics

Power supply

The plug-in can be powered in accordance with the models at: 230 Vac or 115 Vac (using an internal transformer), or at 12 Vac/Vdc.

Aesthetics and ergonomics

The LED signals are clearly visible, thanks to the backlighting of the three buttons. The front panel frame can be customised both in terms of colour and indications.

LED display

The temperature and the parameter settings are displayed by '**two and a half digits**'. For the temperature values, the field of display is from $-50\text{ }^{\circ}\text{C}$ to $+150\text{ }^{\circ}\text{C}$ or from $-50\text{ }^{\circ}\text{F}$ to $+127\text{ }^{\circ}\text{F}$.

Alarm buzzer

The controls with one relay only can be fitted as standard with a buzzer for signalling alarms.

Multifunction input

The digital input, when present, can be used to change the set point or to manage serious alarms which require the immediate (e.g. high pressure) or delayed (e.g. low pressure) shutdown of the unit.

Connections

The economical versions (**Eco**) maintain the traditional fixed terminals, while the complete versions (**Top**) use removable terminals. The latter significantly simplify the installation and maintenance of the unit.

Relay outputs

There are, according to the model, up to three relays for the control of **two regulation outputs** and **alarm signal**. When more than one relay is fitted, the common of all the relays is connected and is available on just one terminal.

Multifunction output

The alarm relay output, when present, can be set using a parameter to be normally activated or normally deactivated. In the models with two relays, output 2 (**out2**) can be configured by parameter as a second regulation output or as alarm signal relay.

Keypad and parameter protection

The keypad can be disabled to avoid tampering by unauthorised persons.

Serial connection

The Top versions feature the connection of a parameter copy key that allows the parameters to be duplicated and configured.

Display of the second probe

In the models with two probes, only the measurement of the second probe can be displayed.

Fastening

The fastening method used for the economical models (**Eco**) uses a rear-panel fastening bracket, while all the other versions (**Top**) also feature the possibility of fastening **from the front panel**, using two screws.

Electromagnetic compatibility

The plug-in series conforms to EU standards on electromagnetic compatibility:

- for appliances for domestic use EN55014-2 and EN55014-1;
- for residential, commercial and light industrial environments EN50082-1 and EN50081-1;
- for industrial environments EN50082-2 and EN50082-1 ;
- regarding safety, it conforms to standards EN60730-1 and EN60730-2-9.

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