ID 400 DP
controller for refrigeration units on display 3 digit + sign and decimal point

eliwell by Schneider Electric

GENERAL DESCRIPTION

The ID400 is a microprocessor-based digital device used for the control of refrigeration units. It is particularly suitable for applications on "static" units at low or normal temperature.
It has a relay output that controls the compressor and an NTC probe input that controls cell temperature. Defrosting is effected by simply shutting down the compressor. A series of alphanumeric parameters is used to configure the instrument according to the application. The ID 400 is supplied in the ELIWELL standard 32x74 format.

LED

Compressor	Defrosting	Alarm
•ON when compressor is on; •blinking for delay, protection or enabling blocked.	•ON when defrosting is in progress; •blinking when activated.	•ON for active alarm; •blinking when a silenced alarm is still present.

BUTTONS

Scrolls through the menu items UP button
Increases value
of displayed parameters
Press for at least 5 seconds to
enable manual defrost

UP

DOWN button
Scrolls through the menu items
Decreases value of
display parameters.

DOWN

FNC

fnc button
ESC function (quit one level of the current menu)
Set button Press once to access Set Point setting.

set

SET

Press for at least 5 seconds to access the programming menu parameters
Confirms command and set values.

PROGRAMMING MENU

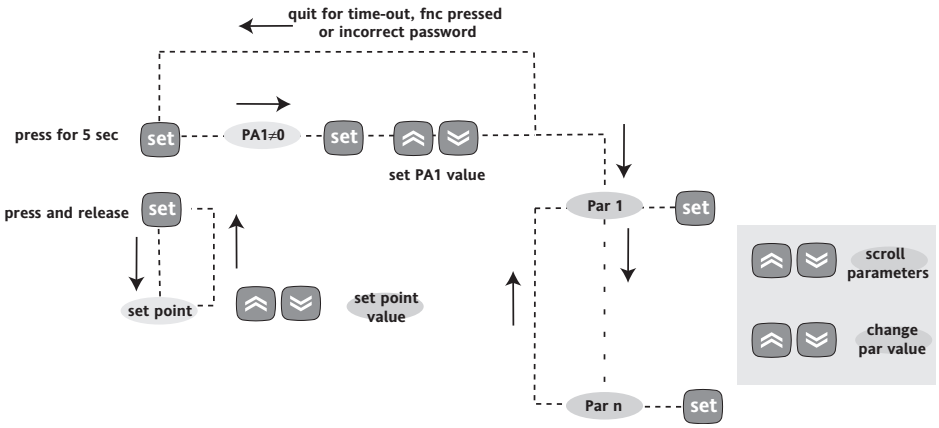
To access the Programming menu, hold the "set" button for more than 5 seconds.

The parameters can be protected by a PASSWORD (defined by parameter PA) If the PASSWORD is enabled, the label "PA" will appear when you access the Programming Menu; press the "set" button and the value "0" will appear; enter the password using the "UP"/"DOWN" buttons and press the "set" button again. This allows you access to the parameters. The first that appears is "dF".

Use the "UP" and "DOWN" buttons to scroll through the parameters. When you reach the one you want to change, press the "set" button and set the required value using the "UP" and "DOWN" buttons. To store the new parameter value, press the "set" button.

NOTE: We strongly recommend that you switch the instrument off and on again each time parameter configuration is changed in order to prevent malfunctioning of the configuration and/or ongoing timings (**compulsory for selection of probe type and count parameters**).
Setting the set point
If you press the 'set' button and release it immediately, the set point value can be selected using the UP' and 'DOWN' buttons. Press and release the 'set' button again or press the 'Fnc' button to go back to the main menu level. The set point setting folder is also closed when the time-out elapses.

PROGRAMMING MENU



FUNCTIONS

DEFROST CONTROL

The defrost cycle can be activated manually using the keyboard or automatically at set intervals.

DEFROST MODE

The compressor remains off for the duration of defrosting. Defrosting terminates only when the time out set with parameter **dE** (defrost time out) expires.

MANUAL DEFROSTING

Press the "UP" button to activate the defrost cycle manually.
If parameter **Od** is set to a value that is not 0 the cycle does not start, the request is ignored and the display will flash three times to indicate that defrosting is not possible.

AUTOMATIC DEFROSTING

The defrost cycle is programmed to start at set intervals determined by the value of parameter **dt**. If parameter **dt** is set at 0 the defrost cycle cannot be activated. If **dt** is higher than 0 then the time interval between defrosting can be counted depending

on the device working hours
NOTE: If the manual defrost is already activated, the automatic defrost request will be cancelled.

DIAGNOSTICS

PROBEALLARM

An error condition in probe (thermostat control) causes the following: E1 code appears on display

MAXIMUM AND MINIMUM TEMPERATURE ALARM

If an alarm condition occurs and alarm exclusion times are not running (see alarm exclusion parameters), the alarm icon lights up permanently. This type of alarm does not affect the regulating in progress.
Alarms are considered as absolute (default) values or as values related to the Set point (the distance from the Set point itself) depending on the At parameter. If the alarms are relative (At=1), parameter HA is set to positive values and LA to negative values

MECHANICAL ASSEMBLY

The unit has been designed for panel-mounting: Drill a 71x29 mm hole, insert the device and fix it in place with the specially supplied brackets.
The unit operates correctly with an ambient temperature range of between -5 and 55 °C. Units must not be installed in excessively humid and/or dirty locations. Always make sure that the area next to the instrument cooling slits is adequately ventilated.

ELECTRICAL WIRING

For the power supply and relay output, the device is equipped with Faston connectors for the electrical cables with a maximum diameter of 2.5mm2: for terminal capacity, see the label on the instrument. Do not exceed the maximum current allowed. For higher loads, use a suitable contactor.
Make sure that the power voltage complies with the device voltage. Probe have no connection polarity and can be extended using an ordinary bipolar cable (note that if probes are extended this has an effect on the electromagnetic compatibility (EMC) of the instrument: special care must be used when wiring). The power supply probe cable should be kept separate from the power cables.

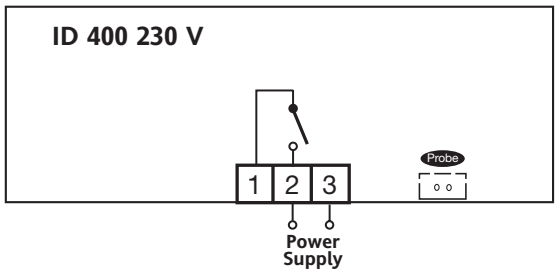
TECHNICAL DATA

Casing: PC+ABS UL94 V-0 resin plastic body, polycarbonate front, thermoplastic resin buttons.
Dimensions: front 74x32 mm, 30 mm depth.
Mounting: panel-mounting with drilling template 71x29 mm.
Connections:
-3-way 6.3mm FASTON connectors for relays and power supply
-2-way quick connector for NTC probe input
Operating temperature: -5…55 °C.
Storage temperature: -25…85 °C.
Operating and storage ambient humidity: 10…90 % RH (non-condensing).
Display range: –50.0…99.0, on display 3 digits + sign (see parameter nt to set digital point).
Analogue inputs: 1 NTC input.
Digital outputs: 1 relay output 5A 1/4 Hp 250 V~ SPST
Supply frequency: 50Hz/60Hz
Supply voltage: 230V~,115V~ and 24V~.

NOTE: check the power supply specified on the instrument label.

NOTE: The technical characteristics in this document concerning measurements (range, accuracy, resolution, etc.) refer to the instrument in the strictest sense and not to any accessories provided such as probes, for example. This means, for example, that an error introduced by the probe is added to any error that is characteristic of the instrument.

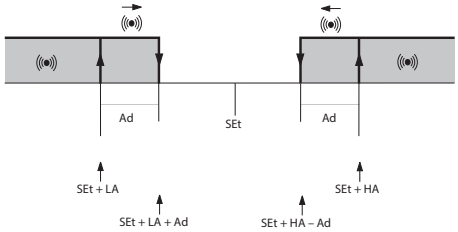
CONNECTION

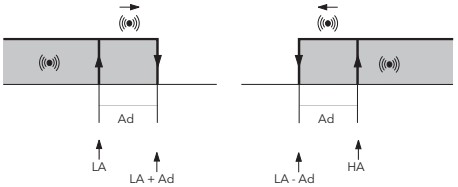


TERMINALS

1-2	Compressor relay output
2-3	Powersupply 230V~
Probe	Quick connector for NTC probe

MAX/MIN TEMPERATURE ALLARMs





	Temperature expressed in relation to set point (par At=1)	Temperature expressed as an absolute value (par At=0)
Minimum temperature alarm	Temp. ≤ **Set + (-LA)**	Temp. ≤ **LA** (**LA** with sign)
Maximum temperature alarm	Temp. ≥ **Set + (+HA)**	Temp. ≥ **HA** (**HA** with sign)
Minimum temperature alarm back swing	Temp. ≥ **Set + LA + Ad** o ≥ **Set - |LA| + Ad**	Temp. ≥ **LA + Ad**
Maximum temperature alarm back swing	Temp. ≤ **Set + HA - Ad**	Temp. ≤ **HA - Ad**
	*** if LA is negative, Set + LA < Set** **** if HA is negative, Set + HA < Set**	

PARAMETER TABLE

Par	DESCRIPTION	RANGE	DEFAULT	U.M.
SP	Set point with range falling between the minimum LS set point and the maximum HS set point. The set point value is in the machine status menu	LS...HS	20	°C/°F
dF	Relay compressor tripping differential. The compressor stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at temperature value equal to the Setpoint plus the value of the differential. **Note**: the value 0 cannot be assumed.	0.1...30.0	2.0	°C/°F
HS	Maximum set point value	LS...99.0	99.0	°C/°F
LS	Minimum set point value	-50.0...HS	-50.0	°C/°F
HC	If set to H, the controller operates in heating mode. If set to C, the controller operates in cooling mode.	H/C	C	flag
dn	Delay time in activating the compressor relay after switch-on of instrument	0...10	0	min
di	Delay between switch-ons; the indicated time must elapse between two successive switch-ons of the compressor.	0.99	0	min
Od	Delay time in activating the outputs after switch-on of the instrument or after a power failure.	0...99	0	min
dt	Interval between the start of two successive defrosting operations. **0**=disabled	0...99	6	ore
dE	Defrosting time-out; determines duration of defrosting.	1...99	30	min
At	Alarm type. Parameter "HA" and "LA" modes, as temperature absolute values or as differential compared to the Setpoint. **0** = absolute value; **1** = relative value.	0/1	0	flag
Ad	Alarm differential. Alarm differential.	1.0...50.0	2.0	°C/°F
HA	Maximum alarm. Temperature limit (whose absolute or relative value status is controlled by "At") below which the alarm is activated.	LA...99.0	50.0	°C/°F
LA	Minimum alarm. Temperature limit (whose absolute or relative value status is controlled by "At") below which the alarm is activated.	-50.0...HA	-50.0	°C/°F
tA	Temperature Alarm Override. Temperature alarm signal delay time.	0...99	0	min
PA	Password (blocks activations and parameter changes)	0...99	0	num
CL	Probe Calibration. Positive or negative temperature value added to the value read by probe.	-12.0...12.0	0.0	°C/°F
dL	Defrost display Lock. Viewing mode during defrosting. **0** = shows the temperature read by the probe; **1** = locks the reading on the temperature value read by thermostat probe when defrosting starts; **2** = displays the label "dF" during defrosting.	0/1/2	0	num
dr	display read-out. Select °C or °F for displaying the temperature read by the probe. . **0**= °C; **1**= °F.	0/1	0	flag
nt	number display type. View with decimal point. **y**= yes; **n**= no	n/y	y	flag
rE	Firmware Release	0...99	0	num
tb	Map Code	0...99	1	num

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell Controls S.r.L. shall not be liable for any damages deriving from:

- installation/use other than that prescribed and, in particular, which does not comply with the safety standards specified in the regulations and/or those given herein;
- use on boards which do not guarantee adequate protection against electric shock, water or dust when assembled;
- use on boards which allow dangerous parts to be accessed without the use of tools;
- tampering with and/or alteration of the product;
- installation/use on boards that do not comply with the standards and regulations in force.

DISCLAIMER

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CONDITIONS OF USE

Permitted use

For safety reasons the instrument must be installed and used in accordance with the instructions supplied.
Users must not be able to access parts with dangerous voltage levels under normal operating conditions.
The device must be suitably protected from water and dust depending on the specific application and only be accessible using special tools (except for the front keypad).
The device is ideally suited for household use and/or similar use in the refrigeration sector and has been tested with regard to safety in accordance with the European harmonized reference standards.
It is classified as follows:

- for its construction, as an automatic electronic control device to be independently mounted;
- for its automatic operating features, as a 1 B-type operated control type device;
- as a Class A device in relation to the category and structure of the software.

Unpermitted use

The use of the unit for applications other than those described above is forbidden.
It should be noted that the relay contacts supplied with the device are functional and therefore exposed to potential faults. Any protection devices required to comply with product requirements or dictated by common sense due to obvious safety reasons should be installed externally.

DISPOSAL:
The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal

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