



*2945 Washington Avenue, St. Louis, MO 63103 USA*  
*Tel/Fax 1-877-783-6774 [www.darwinchambers.com](http://www.darwinchambers.com)*

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# **NQ SERIES**

## **Product Manual**

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## **Important Notes**

**NOTE 1:** Each incubator contains a 12V DC electric fan that is pre-wired to run continuously, a small heater, an over-temp sensor, and a temperature controller with a thermocouple.

**NOTE 2:** Darwin Chambers Co. provides the 12V DC power supply with each portable incubator purchase. The use of any power supply that falls outside of 12V DC  $\pm 10\%$  will void the incubators warranty.

**NOTE 3:** Each incubator has been equipped with an over-temp sensor. The over-temp sensor is intended to provide a fail-safe in the event the temperature excessively deviates. The over-temp sensor has been designed to remove power from the heater at 40°C to prevent the temperature from continually increasing.

## **Warranty**

Darwin Chambers Company, LLC (Darwin Chambers) -- Warrants its products are free from defects in material and workmanship, subject to the conditions and limitations set forth below, for a period of:

- 6 Months Parts and Labor

Darwin Chambers will warranty goods of its manufacture in accordance with details as stated in the original quotation. The original quotation is defined as that which the original purchase order refers to.

Consignee must inspect shipped package(s) thoroughly upon delivery for damage of any kind – any and all damage must be noted on bill of landing. Damage claims are to be made against shipping company unless otherwise directed by Darwin Chambers Company. Failure to inspect shipment(s) upon delivery will result in loss of claim from Shipper and Darwin Chambers Company.

Darwin Chambers will either repair or replace any part of its products that prove defective by reason of improper workmanship or materials, if it may be reasonably established to our satisfaction that Darwin Chambers is at fault for said defect. Any incoming or outbound freight charges incurred for reasons of repair are solely the customer's responsibility. (unless advised otherwise)

Our limited warranty does not cover any damage to the product that results from abnormal mechanical or environmental conditions, abuse, accident, improper installation or maintenance to any part of the equipment by others, misuse, insufficient or excessive electrical supply, natural disaster, or any unauthorized disassembly, repair, or modification.

## **Warranty Continued**

In no event shall Darwin Chambers Company be liable for any consequential damages, incidental damages, special damages, other damages, costs or expenses excepting only the cost or expense of repair or replacement as described above. Products must be used and maintained in accordance with Darwin Chambers Company's product manual. There is no warranty against damage to the product resulting from misuse or failure to comply with directions provided. Users are responsible for the suitability of the products to their application.

This limited warranty covers only replacements for defective Darwin chambers products, as described above. Darwin chambers does not cover under warranty, and is not liable for, any loss of product placed within the portable incubator, or any costs associated with diagnosing the source of system problems or installing, removing, or servicing Darwin Chambers products unless specified herein. In the event of a claim, Darwin Chambers' sole obligation shall be to replace our product with its equivalent or the best possible substitution.



Disclaimer: Darwin Chambers Company only warrants that the parts and assemblies manufactured by it will be as specified and free from defects in materials and workmanship. Darwin Chambers Company makes no other warranties or representations of any kind whatsoever, expressed or implied, except that of title and all implied warranties including any warranty of merchantability and fitness for a particular purpose is hereby disclaimed.

**All products shipped back to Darwin Chambers Company must be decontaminated and labeled as such before we can troubleshoot the defective unit. All non-decontaminated units will be sterilized in house and a \$75 charge per unit will be billed to the customer.**

### **Free Technical Support**

In addition to the Operations Manuals, Darwin Chambers offers free technical support on its products. Please use our support service prior to requesting an RMA or contacting a third party service provider. Darwin Chambers' free technical support is available by phone or fax at 877-783-6774 (US and Canada), or email, at [technicalsupport@darwinchambers.com](mailto:technicalsupport@darwinchambers.com). Replacement requests will ONLY be accepted through Darwin Chambers Company, LLC, directly. Further, Darwin Chambers reserves the right to refuse any returned product that is improperly packaged for shipping. Significantly delayed reporting of any known issues may result in voided warranty.

## Symbol Definitions

<b>Symbol</b>	<b>Definition</b>
	<b>CAUTION Symbol:</b> <i>Appears next to required safety related information in the manual.</i>
	<b>WARNING Symbol:</b> <b>PERSONAL INJURY WARNING:</b> <i>Meaning risk of electrical shock.</i> <i>This symbol warns the user of a potential shock hazard where HAZARDOUS LIVE voltages that could result in serious injury or death.</i>
<b>NOTE</b>	<b>NOTE Symbol:</b> <i>This symbol signifies special advice.</i>

## Key Definitions

**Alarms** – Set parameters designed to alert the user of a temperature deviation to protect the contents of the portable incubator from potential damage.

**Hysteresis** – A lag or differential used to control the switching on/off of components.

**Set Point (SP)** – The user-determined set point of the environmental chamber.

## Introduction

Darwin Chamber's Company's NQ Series portable incubators consists of models NQ7P, NQ16P, NQ30P and NQ55P. The NQ Series model utilizes effective control of temperature through the use of a micro heater and a digital controller. The NQ Series portable incubators are affordable, accurate, and easy to transport.

## Electrical Connections

The NQ Series consists of portable incubators which are flexible by design, have the ability to be powered by both AC and DC voltage. The basic NQ Series utilizes a 12 Volt DC circuit automotive plug that connects to a redundant power port.



12 Volt DC Automotive Circuit and Port.

**NOTE:** *Operation of the NQ Series incubators with a power supply outside 12.0V DC  $\pm$ 10% may damage the incubator and void the warranty.*



With the AC/DC power converter, the NQ Series portable incubators have the ability to be powered through a typical 120 volt electrical outlet.

The plug must be inserted into a matching outlet that has been properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided; if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in risk of electric shock. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment grounding conductor to a live terminal.



100-240V~, 1.3A, 50-60Hz, AC INPUT



## **INCUBATOR OPERATION – CONTROLLER**

### **To Change Temperature**

1. Press the SET button. SP (Set Point) should appear on the display.
2. Press the SET button again. The current SP parameter will be displayed.
3. Press the Up and Down arrows to manually adjust the desired SP value.
4. Press SET and DOWN at the same time to quit programming, or wait one minute and the display will automatically exit programming mode.

**Note:** *The SP value can only be modified to a value that exists within the lower value for SP (r1) and higher value for SP (r2).*

### **To Add a Parameter Access Code/ Change Access Code Parameters**

**See Attached**

### **Alarm/Error Messages**

In the event of alarm or error condition, the display error messages are activated. When the temperature is out of the set parameter, the red dot below the “OUT” on the LCD will appear. This light will remain lit until the temperature is back into its set point. If the display shows (3) red lines or reads “PFA” the temperature sensor could be broken. Please call technical support at 877-783-6774. Please be aware the unit may need to be shipped back to Darwin Chambers for troubleshooting or repair.

### **Controller Parameter Settings**

The factory preset controller parameter values are typically sent with the owner’s documentation. However, if this information is missing, or if it has been lost or misplaced, please contact Darwin Chambers Company at 877-783-6774 or you can send an email to [technicalsupport@darwinchambers.com](mailto:technicalsupport@darwinchambers.com).

### **Cleaning**

Darwin Chambers Company suggests the portable incubator be cleaned both inside and outside with a solution of mild germicidal soap and warm water. Use baking soda and water to remove tough stains. Odors can best be removed with a diluted solution of chlorine bleach and water. For sterilization, Darwin Chambers Co. recommends the use of isopropyl alcohol. Always air dry with the lid open before storing.

## **Troubleshooting**

### **No display on controller**

Check the green LED power light on the power supply to make sure it is lit. If it is not, make sure the power supply is plugged into a 120V AC outlet.

If the outlet is a GFCI, make sure the outlet does not require being reset.

Check the supply panel breaker.

Check the fuse in the automotive power jack (Fig. 2) to make sure it is not blown.

Check to ensure power cord is inserted into one of the power cord jacks (Fig. 3).

If unit fails to display contact Darwin Chambers Company for technical support.

### **No green LED light on power supply**

If power supply light fails to show green LED light contact Darwin Chambers Company for technical support.

### **Cannot get temperature above 40°C**

Over-temp switch installed will not allow temperatures to exceed 40°C.

### **Preset SP cannot be adjusted below 36°C or above 38°C**

The controller has been preset to limit usage outside of the effective operation range of 36°C to 38°C

### **The incubator will not hold a steady temperature**

**NOTE:** It is normal for the temperature to fluctuate to a few degrees °C less than the SP before the temperature begins to rise again. This is due to the reaction time of the controller to begin calling for heat after the SP has been reached.

If a temperature closer to your intended SP is required and a variation of  $\pm 1^{\circ}\text{C}$  is acceptable, then you should set the SP  $1^{\circ}\text{C}$  higher than the value you are attempting to reach.

Check to be sure the fan intake and plenum exhaust on the interior are not blocked.

If unit fails to hold temperature contact Darwin Chambers Company for technical support.

### **Fuse constantly blows on power cord automotive jack while plugged into incubator**

Contact [parts@darwinchambers.com](mailto:parts@darwinchambers.com) to order a replacement power supply.



## **Battery Pack Option**

The battery is a completely sealed unit and requires no maintenance. It is located on the rear or side of the incubator in a secure metal compartment. The battery is protected by an inline fuse inside the metal compartment which can easily be replaced if the fuse is blown. Simply unscrew the (4) screws that hold the lid in place, and locate the fuse holder. The battery power option should allow for up to 16 hours of run time when the battery has been fully charged prior to use. It should never be used when other power sources are plugged into the unit (vehicle power source or AC/DC power cord).

The battery charger is a small compact unit and can be used with any 120VAC power source. Simply plug the 120VAC into a wall outlet and attach the charger cord to the battery. The charger has an LED light indicator, RED is charging, GREEN is fully charged.

**\*Charging your battery: The battery pack cannot be used when charging the battery. You can however, have the incubator plugged into the wall outlet at that time, but the power source to the battery must remain unplugged until the battery is fully charged.**

Unless directed by a Darwin Chambers employee, the battery compartment lid should not be removed. When the battery is exposed, a “safety hazard is present”. Be sure to wear safety eye protection when removing the battery lid. Improper handling of the battery may cause damage to the incubator and can possibly cause damage to the person or persons nearby.

## **Contact Information**

### **Parts**

For a copy of the most current Spare Parts List, please contact the Darwin Chambers Co. Parts Department at: [parts@darwinchambers.com](mailto:parts@darwinchambers.com).

### **Company Details**

#### **Darwin Chambers Company**

2945 Washington Avenue

St. Louis, MO 63103

Phone / Fax: 1-877-7-TEMP-RH

Alternate Phone: 314-534-3111 Ext: 220

Email: [sales@darwinchambers.com](mailto:sales@darwinchambers.com)

Please visit our website at: <http://www.darwinchambers.com>

### **Technical Support**

[technicalsupport@darwinchambers.com](mailto:technicalsupport@darwinchambers.com) or call 1-877-783-6774



Read this document carefully before using this device. The guarantee will be expired by damaging of the device if you don't attend to the directions in the user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

## CAL ET2011 PID TEMPERATURE CONTROLLER

Thank you for choosing CAL ET2011 temperature controller.

- \* 77 x 35mm sized.
- \* Selectable dual setpoint.
- \* Selectable thermocouple types or PT100 input. (Specify at order).
- \* Automatic calculation of PID parameters. (SELFTUNE).



Selftune for automatic PID calculation or manually enter PID parameters if known.

- \* Soft-Start feature.
- \* Zero point input shift.
- \* C/A2 Relay output programmable as alarm or control output.
- \* Selectable SSR control output.
- \* Selectable heating/cooling control.
- \* In the case of sensor failure, manual control can be selected.
- \* CE marked according to European Norms.



**RoHS**  
Compliant

### TECHNICAL SPECIFICATIONS

Input type	Temperature range		Accuracy
	°C	°F	
PT100 Resistance thermometer EN 60751	-99.9...300.0 °C	-99.9...543.0 °F	± 0,5% (of full scale) ± 1 digit
PT100 Resistance thermometer EN 60751	-200...600 °C	-328...1112 °F	± 0,5% (of full scale) ± 1 digit
J (Fe-CuNi) Thermocouple EN 60584	0... 600°C	+32... +1112°F	± 0,5% (of full scale) ± 1 digit
K (NiCr-Ni) Thermocouple EN 60584	0...1300°C	+32... +2372°F	± 0,5% (of full scale) ± 1 digit
T (Cu-CuNi) Thermocouple EN 60584	0... 400°C	+32... +752°F	± 0,5% (of full scale) ± 1 digit
S (Pt10Rh-Pt) Thermocouple EN 60584	0...1700°C	+32... +3092°F	± 0,5% (of full scale) ± 1 digit
R (Pt13Rh-Pt) Thermocouple EN 60584	0...1700°C	+32... +3092°F	± 0,5% (of full scale) ± 1 digit

#### ENVIRONMENTAL CONDITIONS

Ambient/storage temperature	0 ... +50°C/-25... +70°C (with no icing)	
Max. Relative humidity	80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% at 40°C.	
Rated pollution degree	According to EN 60529	Front panel : IP65 Rear panel : IP20
Height	Max. 2000m	



Do not use the device in locations subject to corrosive and flammable gases.

#### ELECTRICAL CHARACTERISTICS

Supply	230V AC +%10 -%20, 50/60Hz or 24V AC %±10, 50/60Hz
Power consumption	Max. 5VA
Wiring	Power connector: 2.5mm <sup>2</sup> screw-terminal, Signal connector: 1,5mm <sup>2</sup> screw-terminal connection.
Line resistance	Max. 100ohm
Data retention	EEPROM (minimum 10 years)
EMC	EN 61326-1: 2006
Safety requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)

#### OUTPUTS

C/A2 output	Relay : 250V AC, 8A (for resistive load), Selectable as NO+NC Control or Alarm2 output. Relay : 250V AC, 16A (for resistive load), Selectable as NO Control or Alarm2 output.
SSR output	Max 20mA 12Volt (as control output)
Life expectancy for relay	Without load 30.000.000 mechanical operation; 250V AC, on the 8A resistive load 100.000 electrical switching

#### CONTROL

Control type	Single set-point and alarm control
Control algorithm	On-Off / P, PI, PD, PID (selectable)
A/D converter	12 bit
Sampling time	100ms
Proportional band	Adjustable between 0% and 100%. If Pb=0%, On-Off control is selected.
Control period	Adjustable between 1 and 250 seconds
Hysteresis	Adjustable between 1 and 50°C/F
Output power	The ratio of power at a set point can be adjusted between 0% and 100%

#### HOUSING

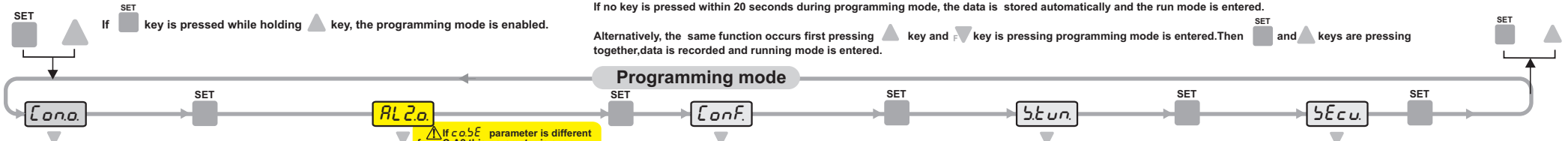
Housing type	Suitable for flush-panel mounting according to DIN 43 700.
Dimensions	W77xH35xD71mm
Weight	Approx. 200g (after packing)
Enclosure material	Self extinguishing plastics.



While cleaning the device, solvents (thinner, benzene, acid etc.) or corrosive materials must not be used.

Entering from the programming mode to the run mode:  
If no key is pressed within 20 seconds during programming mode, the data is stored automatically and the run mode is entered.

Alternatively, the same function occurs first pressing  $\blacktriangle$  key and  $\blacktriangledown$  key is pressing programming mode is entered. Then  $\square$  and  $\blacktriangle$  keys are pressing together, data is recorded and running mode is entered.



**C.S.L.o.** C.S.L.o = Control set point lower limit.(for selected output)  
Adjustable between 0 and C.S.H.i.

**C.S.H.i.** C.S.H.i = Control setpoint upper limit.(for selected output)  
Adjustable between C.S.L.o and Upper scale value.

**C.P.b.** C.P.b = Proportional band.(for selected output)  
Adjustable between %0.0 and %100.0.  
C.P.b = %0.0, On-Off control is selected.

**C.H.Y.S.** C.H.Y.S = Hysteresis of the output.(for selected output)  
Adjustable between 1 and 50 °C.  
▲ C.P.b = 0, this parameter is active.

**C.I.t.i.** C.I.t.i = Integral time.(for selected output)  
Adjustable between 0 and 100.0 minutes.  
C.I.t.i = 0.0, integral impact is disable.  
▲ C.P.b parameter is different from "0", this parameter appears.

**C.t.d.** C.t.d = Derivative time.(for selected output)  
Adjustable between 0.00 and 25.00 minutes.  
C.t.d = 0.0, derivative time is disabled.  
▲ C.P.b parameter is different from "0", this parameter appears.

**C.C.t.** C.C.t = Period time.(for selected output)  
Adjustable between 1 and 250 second.  
▲ C.P.b parameter is different from "0", this parameter appears.

**C.P.S.t.** C.P.S.t = The ratio of output power at the setpoint. Adjustable between %0 and %100.

**C.E.P.S.** C.E.P.S = The percentage of faulty sensor selected output power. Adjustable between %0 and %100.

**S.S.t.S.** S.S.t.S = Soft starter timer set value  
This parameter indicates the time to reach set point value when the device is first energised.  
Adjustable between 0 and 250 minutes.  
If 0 is selected, soft start feature will be enable and the device reaches set point value quickly.  
▲ Setting P.b = 0, soft start feature will be disabled.

**C.t.Y.P.** C.t.Y.P = Control output type  
C.t.Y.P = HEAt means heating control.  
C.t.Y.P = COOL means cooling control.

While the parameter names appear, if  $\blacktriangle$  and  $\blacktriangledown$  keys are pressed together, returns to the program mode.

**A.L.2.o.** A.L.2.o = Alarm2 set value lower limit.  
Adjustable between 0 and A.2.S.H parameter value.

**A.2.S.H.** A.2.S.H = Alarm2 set value upper limit.  
Adjustable between A.2.S.L parameter value and upper scale value.

**A.2.H.Y.** A.2.H.Y = Hysteresis of the Alarm2 output.  
Adjustable between 1 and 50 °C.

**A.2.E.P.** A.2.E.P = Function of Alarm2 type.  
Four kinds of functions can be selected.  
i.n.d.E = Independent alarm (Independent)  
d.E = Deviation  
b.A.n.d = Band alarm (Band)  
b.A.n.i = Band with inhibition

**A.2.S.E.** A.2.S.E = The state of Alarm2 output.  
H = If A2 output is above the set value. (on)  
Lo = If A2 output is above the set value. (off)

**A.2.E.r.** A.2.E.r = State of Alarm2 output in the case of sensor failure.  
on = A2 output is probe failure (on).  
off = A2 output is probe failure (off).

**i.n.P.t.** i.n.P.t = Input type selection.  
F.E.c.n = J type, i.n.c.n.R = K type, c.o.c.n = T type, P.I.D.r = S type, P.I.R = R type thermocouple selection.  
▲ This parameter varies when changing some parameters.

**U.n.i.t.** U.n.i.t = The temperature unit.  
o.F = °C, o.F = °F  
▲ (This parameter varies when changing some parameters.)

**F.L.t.r.** F.L.t.r = Coefficient of digital filter.  
Filter for display value.  
Adjustable between 1 and 200. If this parameter is 1, the filter run most quick. If the parameter is 200, the filter run most slow. The value of parameter should be increased in interference.

**C.o.S.E.** C.o.S.E = Control output selection  
C-A2 = CIA2 (Relay) output selection  
SSR = SSR output selection

**o.F.F.S.** o.F.F.S = Offset value.  
Offset value is added to the measurement value.  
Adjusted between -100 and +100°C. The normal value is 0.

**F.F.E.C.** F.F.E.C = Function key setting parameter  
n.o.n.E = Function key is off.  
C.2.S.R = The function key with 2.set value is used.  
M.A.n.u = Manual mode can be achieved with the function key.  
d.S.P.o = Only the temperature display mode is entered with function key.

**n.S.E.t.** n.S.E.t = The percentage of manual output parameter.  
Adjustable between %0 and %100.  
This parameter allows manual adjustment of the output power when the manual output selection.  
▲ C.P.b = 0, this parameter is not seen.

**S.t.C.o.** S.t.C.o = Self tune control parameter.  
If both  $\square$  and  $\blacktriangle$  keys are pressed, Y.P.S message is displayed on the screen and selftune process is started automatically.

If both  $\square$  and  $\blacktriangledown$  keys are pressed, n.o message is displayed on the screen and selftune process is stopped.

When the self tune begins, P.i.d.t. message and measurement value are shown alternately.

After the completion of the self tune process, S.t.C.o. parameter is automatically changed to n.o and the device returns to working mode. If the measured temperature is higher than 90% of the set value at the beginning of the self tune process, then t.E.H.i. message is shown alternately and the measured temperature is waited to go below %60 of the set value. After that, self tune operation is started automatically. If it is intended to abort the self tune process, S.t.C.o. parameter is changed to n.o and  $\blacktriangledown$  key is pressed.

**S.C.o.d.** S.C.o.d = Security menu access code.  
It should be 2011.

**C.o.S.c.** C.o.S.c = Parameters of C.o.n.o. menu security access level code.  
n.o.n.E = Invisibile.  
P.Y.E.S = Modification can be done.  
P.n.o = Only visible.

**A.2.S.c.** A.2.S.c = Parameters of A.L.2.o. menu security access level code.  
n.o.n.E = Invisibile.  
P.Y.E.S = Modification can be done.  
P.n.o = Only visible.

**C.n.S.c.** C.n.S.c = Parameters of C.o.n.f. menu security access level code.  
n.o.n.E = Invisibile.  
P.Y.E.S = Modification can be done.  
P.n.o = Only visible.

**S.t.S.c.** S.t.S.c = Parameters of S.t.u.n. menu security access level code.  
n.o.n.E = Invisibile.  
P.Y.E.S = Modification can be done.

**d.E.F.P.** d.E.F.P = Parameters of C.o.n.f. menu security access level code.  
n.o = Parameter settings are not change.  
Y.E.S = Parameter setting will be restored.

### DEFAULT PARAMETERS

Set parameters	Control output parameters		Alarm2 output parameters		Configuration parameters		Self tune parameters		Security parameters	
	TC input	PT100 input	TC input	PT100 input	TC input	PT100 input	TC input	PT100 input	TC input	PT100 input
C.S.L.o	0	-200	A.2.S.L	0	-200	i.n.P.t	F.E.c.n	P.t	A.2.E.r	n.o
C.S.H.i		600	A.2.S.H		600	U.n.i.t		o.F	C.o.S.c	P.Y.E.S
C.P.b		0	A.2.H.Y		2	F.L.t.r		25	A.2.S.c	P.Y.E.S
C.H.Y.S		2	A.2.E.P		i.n.d.E	C.o.S.E		C-A2	S.t.S.c	P.Y.E.S
C.I.t.i		4.0	A.2.S.E		H.i	o.F.F.S		0	d.E.F.P	n.o
C.t.d		1.00	A.2.E.r		o.n	F.F.E.C		n.o.n.E		
C.C.t		20				n.S.E.t		50		
C.P.S.t		0								
C.E.P.S		0								
S.S.t.S		0								
C.t.Y.P		HEAt								

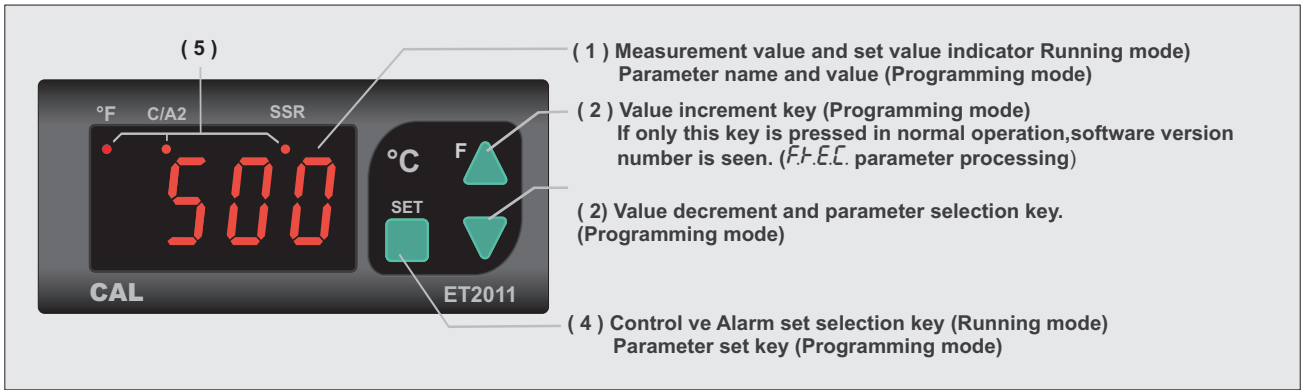
### Modification Of Parameter Diagram



When holding  $\square$  key, the value of parameter flashes and using  $\blacktriangledown$  and  $\blacktriangle$  keys the requested value can be adjusted.

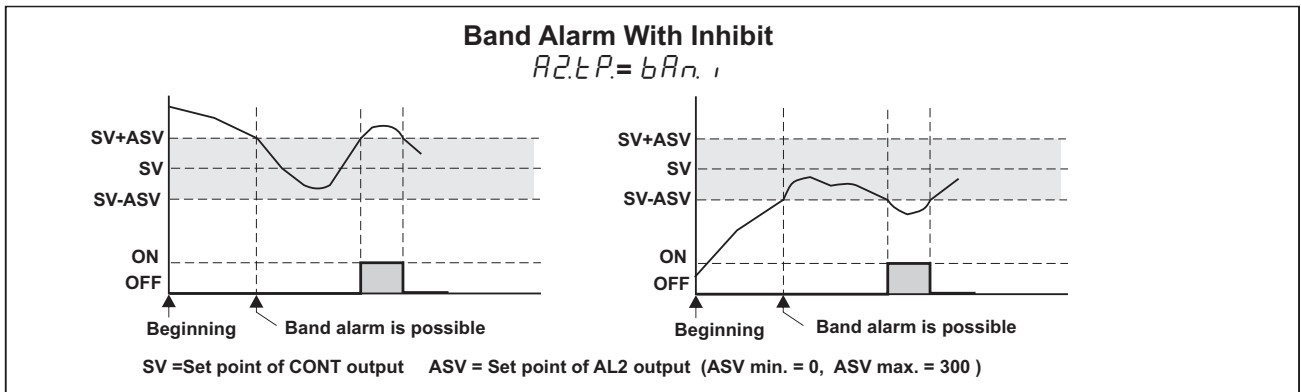
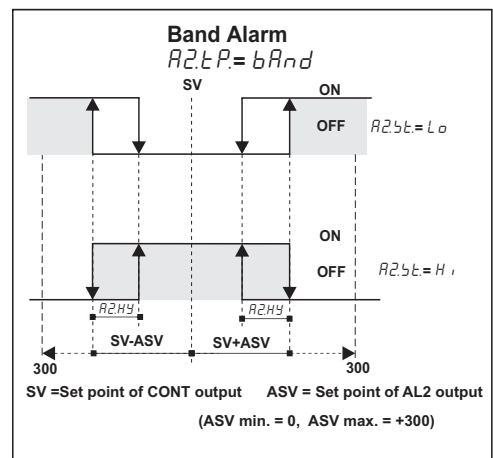
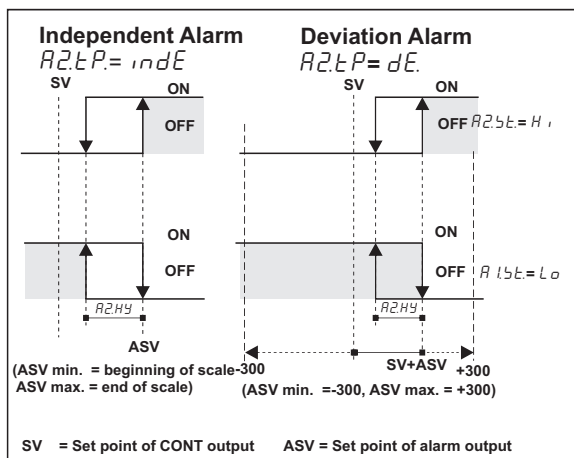
If  $\blacktriangle$  key is pressed and held 0.6 seconds, the value of the selected parameter changes rapidly. If waited enough, the value increases 100 at each step. After 1 second following the release of the key, initial condition is returned. The same procedure is valid for the decrement key.

# TERMS

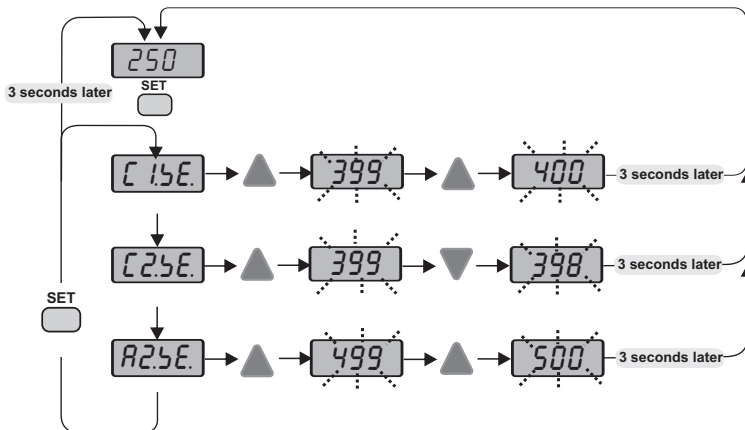


(1) PV and SV display	7 segment, 4 digits red LED display
Character heights	12 mm
(2),(3),(4) Keypad	Micro switch
(5) State indicator	For control, Alarm1 and SSR outputs 3 digits red LED

## ALARM2 OUTPUT TYPES



## MODIFICATION OF CONTROL AND ALARM SET POINTS



**ERROR MESSAGES**

- PFR** Sensor is broken
- Temperature value is higher than the value
- Temperature value is lower than the scale
- P5C** PT100 sensor is short circuit

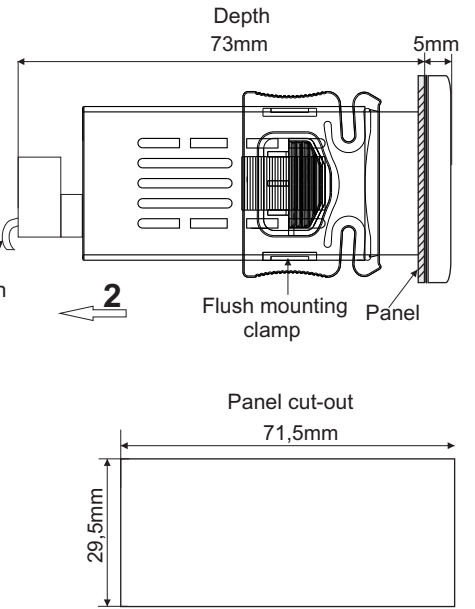
F.F.E.C. parameter, is set to the C25R parameter, this parameter is displayed.

C25E parameter is set to the output of SSR, this parameter is seen.

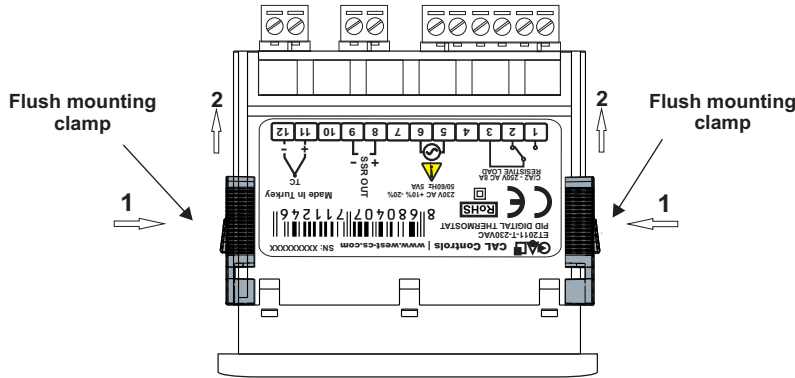
# DIMENSIONS



**For removing mounting clamps ;**  
 - Push flush mounting clamps in direction 1 as shown in the figure below.  
 Then pull out the clamps in direction 2 .



**Note :**  
 1) Panel thickness should be maximum 7mm.  
 2) If there is no 60mm free space at back side of the device, it would be difficult to remove it from the panel.



**Order Code :** ET2011---

**1- Input selection**  
 RT....PT100 input  
 T....TC input

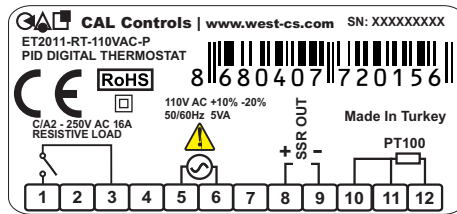
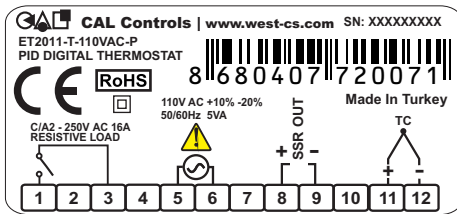
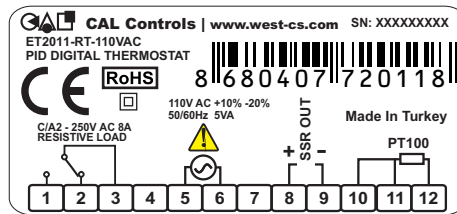
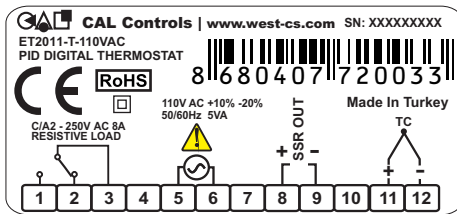
**2 - Supply Voltage**  
 230VAC...230V AC  
 110VAC....110V AC  
 024VAC.....24V AC  
 SM.....9-30V DC / 7-24V AC

**3- Contact current selection**  
 None.....8A contact output  
 P....16A contact output

# CONNECTION DIAGRAM



CAL ET2011 is intended for installation within control panels. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of the cables that are connected to the device must be free of electrical power. The device must be protected against inadmissible humidity, vibrations, severe soiling. Make sure that the operation temperature is not exceeded. All input and output lines that are not connected to the supply network must be laid out as shielded and twisted cables. These cables should not be close to the power cables or components. The installation and electrical connections must be carried out by a qualified staff and must be according to the relevant locally applicable regulations.



Holding screw  
0.4-0.5Nm

Equipment is protected throughout  
by DOUBLE INSULATION.

**NOTE :**  
 SUPPLY:



**Note** 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.  
 2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.