Read this document carefully before using this device. The guarantee will be expired by damages 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.

ENDA ET5011 PID TEMPERATURE CONTROLLER

Thank you for choosing **ENDA ET5011** Temperature Controller

- 54x94mm sized.
- PT100 input.
- Auto calculation for PID parameters (SELF TUNE).

Self tune for automatic PID calculation or manually enter PID parameters if known.

- Soft-Start feature.
- Zero point input shift.
- C1 Relay output.
- Selectable Heating / Cooling control.
- In case of sensor failure, periodically, auto-periodically running or relay state can be selected.
- CE Marked according to European Norms.

CE

RoHS Compliant

Order Code : ET5011-□□ -□□□□□□ -□□
1 2 3

1- Input selection
RT....PT100 input

2- Supply Voltage
230VAC.....230V AC
110VAC.....110V AC
024VAC.....24V AC
SM.....10-30VDC/8-24V AC

3- Kontak akimi seçimi
05.....5A contact output
08.....8A contact output
16.....16A contact output

TECHNICAL SPECIFICATIONS

Input type	Temperature range °C	Temperature range °F	Accuracy
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

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

KEEP AWAY device from exposed to corrosive, volatile and flammable gases or liquids and DO NOT USE the device in similar hazardous locations.

ELECTRICAL CHARACTERISTICS	
Supply	230V AC / 110V AC +%10 -%20, 50/60Hz or 24V AC ±%10, 50/60Hz 10-30V DC / 8-24V AC SMPS
Power consumption	Max. 5VA
Wiring	Power connector: 2.5mm²' screw-terminal, Signal connector: 1,5mm² screw-terminal conenction.
Line resistance	Max. 100ohm
Data retention	EEPROM (minimum 10 years)
EMC	EN 61326-1: 2013
Safety requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)

OUTPUTS	
C1 output	Relay : 250V AC, 8A (for resistive load), Selectable as NO+NC Control output. Relay : 250V AC, 5A / 16A (for resistive load), Selectable as NO Control output.
Life expectancy for relay	Mechanical 5.000.000; Electrical 100.000 operation at 250V AC, 5A (resistive load). Mechanical 30.000.000; Electrical 300.000 operation at 250V AC 8A (resistive load). Mechanical 30.000.000; Electrical 100.000 operation at 250V AC 16A (resistive load).

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	W54xH94xD68mm
Weight	Approx. 190g (after packing)
Enclosure material	Self extinguishing plastics.

Avoid any liquid contact when the device is switched on.
DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents.

sisel
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If SET key is pressed while holding ▲ key, the programming mode is enabled.

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 ▲ key and ▼ key is pressing programming mode is entered.Then SET and ▲ keys are pressing together, data is recorded and running mode is entered.

Programming mode

SET → **Cono.**

C.SLo = Control set point lower limit.(for selected output)
Adjustable between 0 and C.SHi

C.SHi = Control setpoint upper limit.(for selected output)
Adjustable between C.SLo and Upper scale value.

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

C.HYS = Hysteresis of the output.(for selected output)
Adjustable between 1 and 50 °C.
⚠ C. Pb = 0,this parameter is active.

C. ti = Integral time.(for selected output)
Adjustable between 0 and 100.0 minutes.
C. ti = 0.0,integral impact is disable.
⚠ C. Pb parameter is different from "0",this parameter appears.

C. td = Derivative time.(for selected output)
Asjustable between 0.00 and 25.00 minutes.
C. td = 0.0, derivative time is disabled.
⚠ C. Pb parameter is different from"0",this parameter appears.

C. Ct = Period time.(for selected output)
Adjustable between 1 and 250 second.
⚠ C. Pb parameter is different is different from"0",this parameter appears.

C.PSt = The ratio of output power at the setpoint.Adjustable between %0 and %100.

C.EPS = The percentage of faulty sensor selected output power.
Adjustable between %0 and %100.

SSt.S =Sofy 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 Pb = 0, soft start feature will be disabled.

CtYP = Control output type
CtYP. = HEAt means heating control.
CtYP. = CooL means cooling control.

⚠ While the parameter names appear, if ▲ ▼ andkeys are pressed together, returns to the program mode.

SET → **Conf.**

inPt = Input type selection.
Pt.0 = PT100 Decimal,
Pt = PT100,
⚠ This parameter varies when changing parameters.

Unit = The temperature unit.
°C = °C, °F = °F
⚠ (This parameter varies when changing some parameters.)

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

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

FtEC = Function key setting parameter
nonE = Function key is off.
C2SA = The function key with 2.set value is used.
mAnu = Manual mode can be achieved with the function key.
dSPo = Only the temperature display mode is entered with function key.

mSEt = 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. Pb = 0, this parameter is not seen.

SET → **StUn.**

StCo = StCu = Self tune control parameter.
If both SET ▲ keys are pressed ,YES message is displayed on the screen and selftune process is started automatically.
If both SET ▼ keys are pressed, no message is displayed on the screen and selftune process is stopped.

When the self tune begins, Pidt. message and measurement value are shown alternately.
After the completion of the self tune process, StCo. parameter is automatically changed to no 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 tEHi 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, StCo parameter is changed to no and ▼ key is pressed.

SET → **SEcu.**

SCod = Security menu access code.
It should be 2011.

Co.Sc. = Parameters of Cono. menu security access level code.
nonE = Invisible.
PYES = Modification can be done.
P. no = Only visible.

Cn.Sc. = Parameters of Conf. menu security access level code.
nonE = Invisible.
PYES = Modification can be done.
P. no = Only visible.

St.Sc. = Parameters of Stun. menu security access level code.
nonE = Invisible.
PYES = Modification can be done.

dEFP = Parameters of Conf. menu security access level code.
no = Parameter settings are not change.
YES = Parameter setting will be restored.

ERROR MESSAGES

PFA	Sensor is broken
----	Temperature value is higher than the value
----	Temperature value is lower than the scale
PSC	PT100 sensor is short circuit

DEFAULT PARAMETERS

Set parameters

C.SEt	400

Control output parameters

	Pt100 giriş
C.SLo	-200
C.SHi	600
C. Pb	0
C.HYS	2
C. ti	40
C. td	100
C. Ct	20
C.PSt	0
C.EPS	0
SSt.S	0
CtYP	HEAt

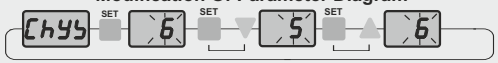
Configuration parameters

	Pt100 giriş
inPt	Pt
Unit	°C
FLtr	25
oFFS	0
FtEC	nonE
mSEt	50

Security parameters

	Pt100 giriş
Co.Sc.	PYES
Cn.Sc.	PYES
St.Sc.	PYES
dEFP	no

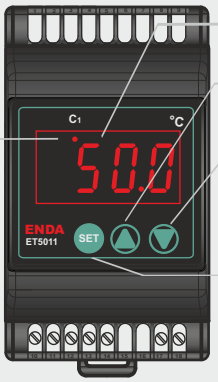
Modification Of Parameter Diagram



When holding SET key, the value of parameter flashes and using ▼ ▲ keys the requested value can be adjusted.

If ▲ 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) Measurement value and set value indicator Running mode)
Parameter name and value (Programming mode)

(2) Value increment key (Programming mode)
If only this key is pressed in normal operation,software version number is seen. (F.F.E.C. parameter processing)

(3) Value decrement and parameter selection key (Programming mode).

(4) Control set selection key (Running mode)
Parameter set key (Programming mode)

(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	Control outputs 1 digits red LED

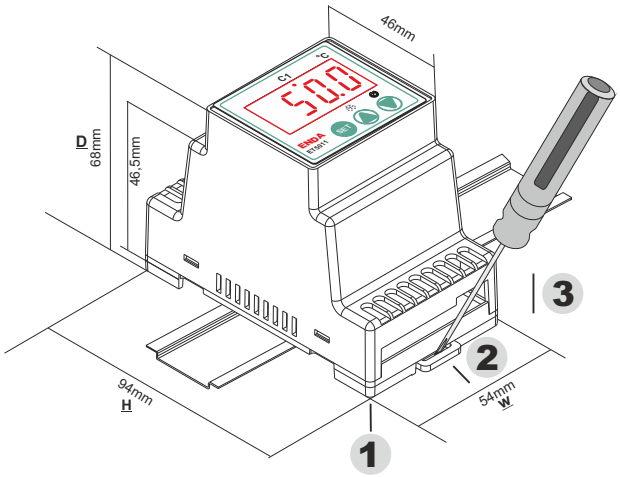
DIMENSIONS

Mounting the device to the rail :

Push the device in direction **1** and provide to keep it locked on the rail.

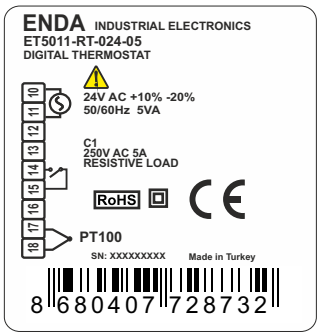
Removing the device from rail ;

Push the rail lock on the device in direction **2** with a screwdriver and pull the device in direction **3**.



CONNECTION DIAGRAM

ENDA ET5412A Series are rail mounted devices. Make sure that the device is used only for the intended purpose. The electrical connections must be carried out by qualified staff and must be according to the relevant locally applicable regulations. During 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 and make sure that the operating temperature is not exceeded. The cables (signal, data, sensor, etc.) 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.

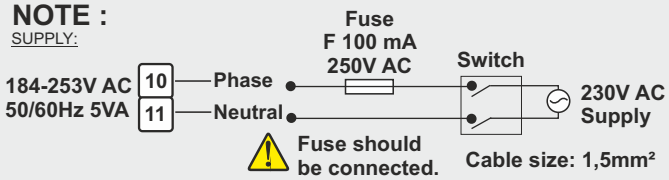


Cihazın tümünde ÇİFT YALITIM vardır.

Vida sıkma momenti 0.4-0.5Nm.

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.

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