



Please read this document carefully before using this product. The guarantee will be invalidated if the device is damaged by not following instructions detailed in the manual. The company shall not be responsible for any damage or losses however caused, which may be experienced as a result of the installation or use of this product.

# ET5412 TEMPERATURE CONTROLLER

Thank you for choosing ET5412 temperature controller.



RoHS  
Compliant



- \* 54x94mm sized.
- \* On-Off control.
- \* Relay output for cooling or heating control.
- \* Relay output for Alarm
- \* Single NTC probe input.
- \* Offset value can be entered for NTC probe.
- \* In the case of probe failure, output state can be selected as on, off or periodical running.
- \* Upper and lower limits of the setpoint can be adjusted.
- \* Upper and lower alarm limits can be adjusted to dependent on the setpoint value.
- \* Temperature unit can be selected as °C or °F.
- \* Communication feature over RS485 ModBus protocol (optional).
- \* CE marked according to European Norms.

ORDER CODE : ET5412-□□□ - □□□ - □□

### 1 - Supply Voltage

- 230.....230V AC
- 110.....110V AC
- 24 .....24V AC/DC
- 12 .....12V AC/DC
- SM.....9-30V DC/7-24V AC

### 3-Out

- Boş.... 8A Relay Out
- P..... 20A Relay Out

### 3 - ModBus

- RS.....ModBus (Optional)



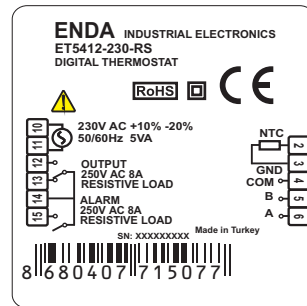
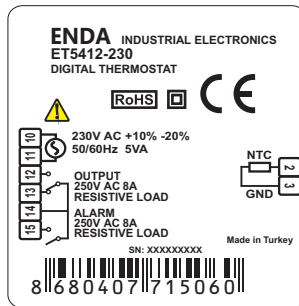
ENDA ET5412 is a rail mounted device. Make sure that the device is used only for intended purpose. The electrical connections must be carried out by a qualified staff and must be according to the relevant locally applicable regulations. During an installation, all of the cables that are connected to the device must be free of electrical power. The device must be protected against inadmissible humidity, vibrations, severe soiling and make sure that the operation temperature is not exceeded. The cables should not be close to the power cables or components.

## CONNECTION DIAGRAM

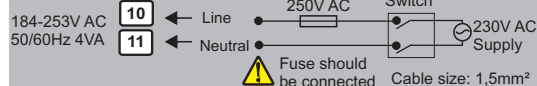


Equipment is protected throughout by  
DOUBLE INSULATION

Holding screw  
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.

## ENVIRONMENTAL CONDITIONS

Ambient/storage temperature	0 ... +50°C/-25 ... 70°C (without icing)
Relative humidity	Max. humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
Protection class	According to EN60529; Front panel : IP65 Rear panel : IP20
Height	Max. 2000m



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

## ELECTRICAL CHARACTERISTICS

Supply voltage	230V AC +10% -20%, 50/60Hz ; 12V AC/DC ± %10 or 24V AC/DC ±%10
Power consumption	Max. 5VA
Connection	2.5mm² screw-terminal connections
Scale	-60.0 ... +150.0°C (-76.0 ... +302.0°F)
Sensitivity	0.1°C (Can be chosen as 0.1°C or 1°C.)
Accuracy	±1°C
Time accuracy	±%1
Display	4 digits, 12.5mm, 7 segment LED
EMC	EN 61326-1: 2013
Safety requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)

## OUTPUTS

Relay output	For ET5412-X-R ; Relay: NO+NC 250V AC, 8A (for resistive load), 1/2hp 240V AC (for inductive load)
Life expectancy for relay	For ET5412-X-R ; Without load 30.000.000 mechanical; 250V AC, 8A resistive load 100.000 electrical operation.

## CONTROL

Control type	Single set-point control
Control algorithm	On-Off control
Hysteresis	Adjustable between 1 ... 20.0°C.

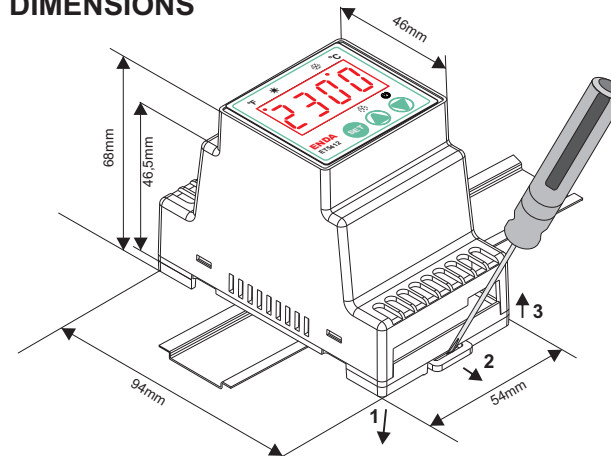
## HOUSING

Housing type	Mounted to TH35 type rail that is in accordance with EN60715 standarts
Dimensions	W54xH94xD68mm
Weight	Approx. 190g (After packing)
Enclosure material	Self extinguishing plastics.



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

## DIMENSIONS



To mounting the device to the panel;  
Push the device in direction 1 , the rails  
provide the key to keeping the rail.

To removing the device from rail;  
Push the rail lock in direction 2 with a  
screwdriver and pull the device in  
direction 3.



SİSEL MÜHENDİSLİK ELEKTRONİK SAN. VE TİC. A.Ş.  
Şerifali Mah. Barbaros Cad. No:18 Y.Dudullu 34775  
ÜMRANİYE/İSTANBUL-TURKEY  
Tel : +90 216 499 46 64 Pbx. Fax : +90 216 365 74 01  
url : www.enda.com.tr



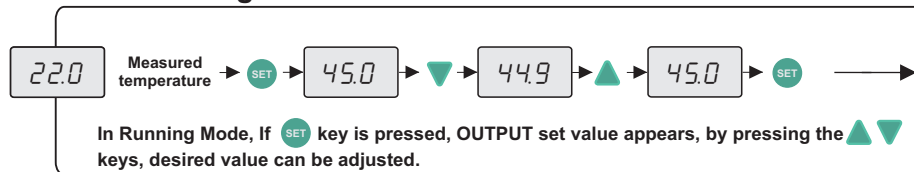
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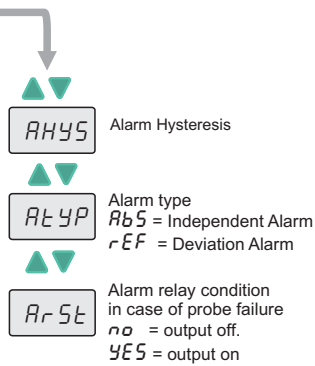
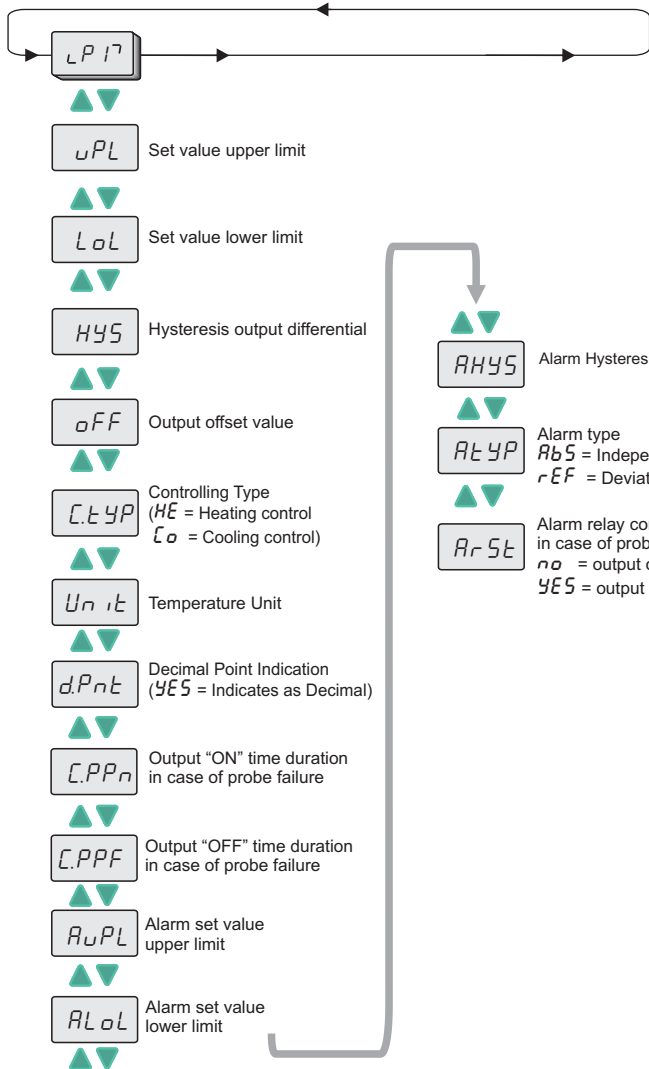
- °F **FAHRENHEIT LED** : In parameter value or the measured temperature value "°F" unit while this LED lights up.
  - ★ **HEATING LED** : Heating is being checked; while the output is active, the LED lights.
  - ALR **ALARM LED** : If alarm output is active, this LED lights up.
  - ❄ **COOLING LED** : If compressor output is active, this LED lights up.
- While in programming mode, provides the transition to the previous parameter. If parameter is being adjusted, it decreases parameter's value. Constantly holding this key, the parameter value rapidly decreases.
- While in programming mode, provides the transition to the next parameter. If parameter is being adjusted, it increases parameter's value. Constantly holding this key, the parameter value rapidly increases.
- While in the operating mode set value, while in the programming mode shows selected parameter's value.

- If ▲▼ keys are held down for 3 seconds, **Programming Mode** is entered.
- If ▲▼ keys are pressed, **Running Mode** is entered.

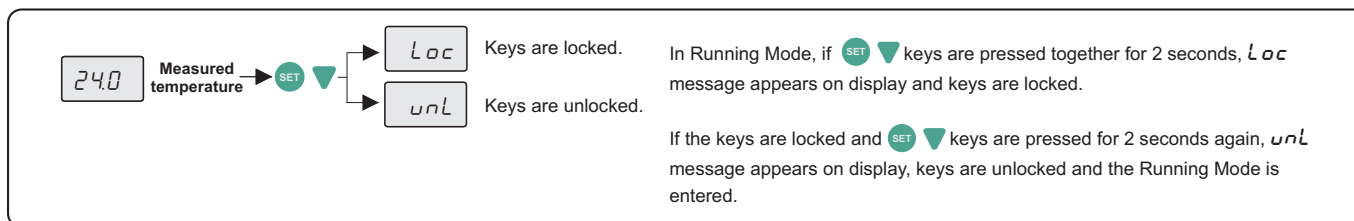
### Running Mode



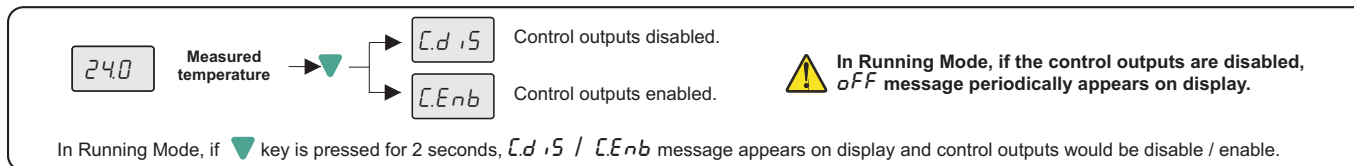
### Programlama modu



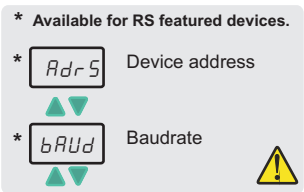
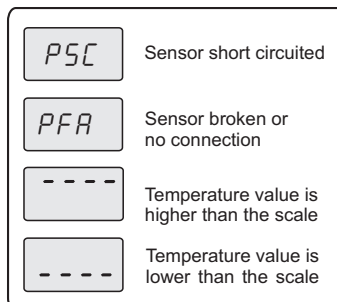
### Locking - Unlocking Keys



### Activating / Inactivating Control Outputs



### Error Messages



### PARAMETER TABLE

LP17 Menu Parameters	Min	Max.	Unit	Start Value
uPL Upper limit for set value	LoL	1500	°C	150
LoL Lower limit for set value	-600	uPL	°C	-60
HYS Hysteresis output differential	0.1	200	°C	2
oFF Output offset value	-200	200	°C	0
CLYP Control type (HEAT = Heating control, COOL = Cooling control).	HEAT	COOL		HEAT
Unit Temperature Unit	°C	°F	°C	
dPnt Decimal point indication (YES = Indicates as Decimal. 22.3°C) (no = Indicates as Integer numeric (Non-Decimal) 22°C)	no	YES		no
CLPPn ON Time for the output in case of Probe Failure.	0:00	99:00	min:sec	0:00
CLPPF OFF Time for the output in case of Probe Failure.	0:00	99:00	min:sec	1:00
RuPL Upper limit for Alarm set value	RLol	1500	°C	150
RLol Lower limit for Alarm set value	-600	RuPL	°C	-60
RHYS Hysteresis Alarm differential	0.1	200	°C	2
RLYP Alarm configuration If RLYP = RbS ; RLol and RuPL If RLYP = rEF ; LoL = SET - RLol and RuPL	RbS	rEF		RbS
RrSt Alarm relay condition in case of probe failure	no	YES		no
* AddrS Device address	1	247		1
* bAUD Baudrate	oFF	19200		9600

# ENDA ET5412 DIGITAL THERMOSTAT MODBUS PROTOCOL ADDRESS MAP

## 1.1 HOLDING REGISTERS

Holding Register Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission	Status Value
Decimal	Hex					
0000d	0x0000	word	Set value	--	Readable/Writeable	45
0001d	0x0001	word	Set point value upper limit	<i>uPL</i>	Readable/Writeable	150
0002d	0x0002	word	Alarm set point value upper limit	<i>RUPL</i>	Readable/Writeable	-60
0003d	0x0003	word	Set point value lower limit	<i>LoL</i>	Readable/Writeable	
0004d	0x0004	word	Alarm set point value lower limit	<i>RLoL</i>	Readable/Writeable	
0005d	0x0005	word	Offset value	<i>oFF</i>	Readable/Writeable	0
0006d	0x0006	word	Output hysteresis	<i>HY5</i>	Readable/Writeable	0
0007d	0x0007	word	Alarm output hysteresis	<i>RHY5</i>	Readable/Writeable	0
0008d	0x0008	word	ON Time for the output in case of Probe Failure.	<i>CPPn</i>	Readable/Writeable	0:00(0 sec)
0009d	0x0009	word	OFF Time for the output in case of Probe Failure.	<i>CPPF</i>	Readable/Writeable	1:00(60 sec)
0010d	0x0010	word	Address value	<i>AdRS</i>	Readable/Writeable	1
0011d	0x0011	word	Baudrate (0=Off;1=1200;2=2400; 3=4800; 4=9600; 5=19200)	<i>bAUd</i>	Readable/Writeable	9600

## 1.2 INPUT REGISTERS

Input Register Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x0000	word	Measured temperature value (°C / °F)	--	



Temperature value is read as "Input Register" parameter and this value with decimal part defined as a signed integer. (That is "23.5 °C" temperature will be at "235" value).

## 1.3 DISCRETE INPUTS

Discrete Input Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x00	Bit	Control output state (0 = OFF ; 1 = ON)	--	Read only
0001d	0x01	Bit	Alarm output state (0 = OFF ; 1 = ON)	--	Read only

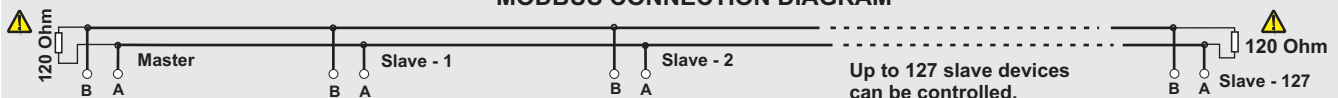
## 1.4 COILS

Coil Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission	Status Value
Decimal	Hex					
00d	0x00	Bit	Control type selection. OFF=Cooling control ( <i>Co</i> ) ON=Heating control ( <i>HE</i> )	<i>CLYP</i>	Readable/Writeable	<i>Co</i>
01d	0x01	Bit	Temperature unit. OFF = °C , ON = °F	<i>Unit</i>	Readable/Writeable	<i>oC</i>
02d	0x02	Bit	Decimal point . OFF = <i>no</i> , ON = <i>YES</i>	<i>dPnt</i>	Readable/Writeable	<i>no</i>
03d	0x03	Bit	Alarm configuration OFF = <i>Ab5</i> ON = <i>rEF</i>	<i>ALYP</i>	Readable/Writeable	<i>Ab5</i>
04d	0x04	Bit	Alarm relay condition in case of probe failure OFF = <i>no</i> ON = <i>YES</i>	<i>AR5t</i>	Readable/Writeable	<i>no</i>

## MODBUS COMMUNICATION PARAMETERS

<i>AdRS</i>	Device address for RS485 network connection. Adjustable between 1-247.	1	247	-	1
<i>bAUd</i>	Baudrate (0=Off;1=1200;2=2400; 3=4800; 4=9600; 5=19200)	<i>oFF</i>	19.20	-	9600

### \* MODBUS CONNECTION DIAGRAM



Termination should be accomplished by attaching 120 Ohm resistors to the start and at the end of the communication

\* Applies to devices with Modbus function.