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.

ENDA EDT2411A DIGITAL THERMOSTAT

Thank you for choosing **ENDA EDT2411A** temperature controller.

- 35x77mm.
- On-Off control.
- Relay output for cooling or heating control.
- Single NTC probe input.
- Offset value can be entered for NTC input.
- Compressor protection parameters can be set.
- In case of probe failure, output status can be set to ON, OFF or periodic.
- Upper and Lower setpoint value limits can be adjusted.
- Selectable “Smart Defrost” feature.
- Defrosting duration and intervals can be adjusted.
- 6 Different warning tone selections.
- Lower and upper alarm limit can be adjusted to depending on set value.
- Temperature unit can be selected °C or °F.
- Digital input ;
  - External alarm
  - Initiate defrost
- Transfer device parameter settings with ENDAKEY
  - No power-up required.
- RS485 ModBus protocol communication feature (optional).
- CE marked according to European Norms.

Order code : EDT2411A - ☐☐☐ - ☐☐ - ☐☐

1 - Supply Voltage

230.....230V AC

UV.....90-250V AC (Valid for RS orders)

LV.....10-30V DC / 8-24V AC

2-Output

20.....20A Relay output

08.....08A Relay output

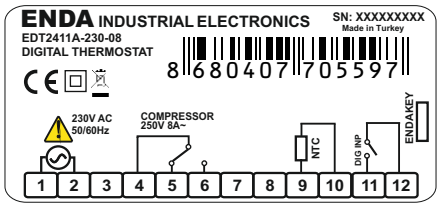
3 - Modbus

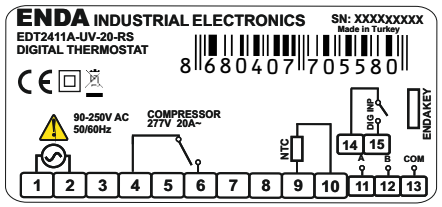
RS..... Modbus (Specify at order)

CE RoHS Compliant

CONNECTION DIAGRAM

ENDA EDT2411A is intended for installation in control panels. 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.





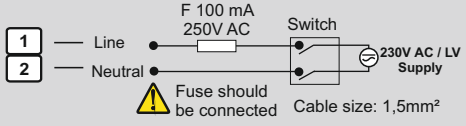
Equipment is protected throughout by DOUBLE INSULATION.

Holding screw 0.4-0.5Nm

NOTE:

SUPPLY:

184-253V AC veya 10-30V DC/ 8-24V AC 50/60Hz 4VA



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.

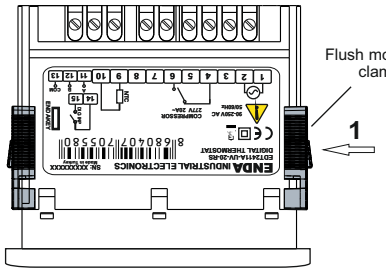
Up to date: 07.06.2023, modification reserved and can be change any time previous notice !

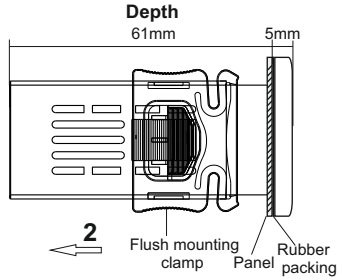
ENVIRONMENTAL CONDITIONS	
Ambient / Storage Temperature	0 ... +50°C/-40 ... 85°C (without icing)
Relative Humidity	Max. humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
Protection Class	According to EN60529; Front panel : IP65, Rear panel : IP20
Height	Max. 2000m
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 Voltage	230V AC +%10-%20, 50/60Hz ; 10-30V DC / 8-24V AC SMPS; 90-250V AC (Valid for RS orders)
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 selected as 0.1ºC or 1ºC.)
Accuracy	±1°C
Time Accuracy	±1%
Display	4 digits, 12.5mm, 7 segment LED (V2 Code : Blue Display)
EMC	EN 61326-1: 2013
Safety Requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)
OUTPUTS	
Relay Output	For EDT2411A-X-08 ; Relay : NO+NC 250V AC,8A (resistive load), 1/2HP, 0.37KW 240V AC (inductive load) For EDT2411A-X-20 ; Relay : NO 277V AC,20A (resistive load), 1/2HP, 0.37KW 250V AC (inductive load)
Life Expectancy for Relay	For EDT2411A-X-08 ; Without load 30.000.000 mechanical; 250V AC, 8A resistive load 100.000 electrical operation. For EDT2411A-X-20 ; Without load 10.000.000 switching; 277V AC,20A (for 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	Suitable for flush -panel mounting
Dimensions	W77xH35xD61mm
Weight	Approx. 190g (After packing)
Enclosure Material	Self extinguishing plastics.
Avoid any liquid contact while the device is switched on. DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents.	

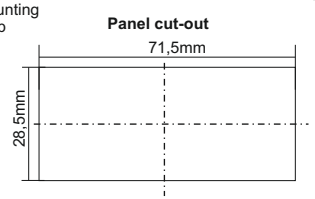
DIMENSIONS

To removing mounting clamps:

- Push the flush-mounting clamp in direction **1** as shown in the figure below.Then,pull out the clamp in direction **2** .







Note:

1) Panel thickness should be maximum 7mm.

2) If there is no 60mm free space at the back side of the device,it would be difficult to remove it from the panel.

°F FAHRENHEIT LED : In parameter value or the measured temperature value **"°F"** unit while this LED lights up. In the hidden menu at the same time the user menu parameter is shown the LED lights up.

HEATING LED : Heating is being checked; while the output is active, the LED lights.

DEFROST LED : With the defrost lights up.

COMPRESSOR LED : If compressor output is active, this LED lights up. While these compressor delays expected, this LED flashes.

SET — In "Running Mode", indicates the set value.
In "Programming Mode", indicates the selected parameter value.

▲ 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 "Programming Mode", provides the transiton to the previous parameter. If parameter is being adjusted, it decreases parameter's value. Constantly holding this key,the parameter value rapidly decreases.

FRONT PANEL COMMANDS

1. Viewing and Changing The Set Value

-24.0 Measurement value — SET — -30.0 — ▼ — -29.9 — ▲ — -30.0

While in "Running mode", if SET key is pressed set value is displayed for 3 seconds. While in this case, the set value is changed with ▼▲ keys.

2. Locking and Unlocking Keys

-24.0 Measurement value — SET ▼

- LOC — Keys are locked.
- UNL — Keys are unlocked.

While in "Running Mode", if SET ▼ keys are pressed together for 2 seconds, LOC message is displayed and the keys are locked. If the keys are locked SET ▼ keys are pressed for 2 seconds again, UNL message is displayed and keys are unlocked. While keys are locked and if SET key is pressed, set value can be displayed but can not be changed. While the keys are locked and if any key is pressed **(except SET key)**, LOC message appears.

3. Manuel Defrost Process

While in the "Running Mode", if ▲ key is pressed for 2 seconds, defrost process starts manually. If D.DUR parameter is 0 , manual defrost will be inactive.

4. Activating / Inactivating The Control Outputs

-24.0 Measurement value — ▼

- C.DIS — The control ouput becomes inactive.
- CENB — The control output becomes active.

* When in the "Running Mode", if the control outputs are inactive, OFF message appears periodically.

When in the "Running mode", if ▼ key is pressed for 2 seconds, C.DIS message is displayed and control outputs becomes to the inactive position, the device works as the indicator. When the control outputs are disabled; if ▼ key is pressed for 2 seconds C.ENB is disabled and the device continues to control function.

5. Changing Parameter Values

If ▲▼ keys are pressed together for 2 seconds LP1 is displayed and "User Menu" is entered, then first parameter's name is displayed in the user menu.

While a parameter is selected, by pressing SET key, parameter value can be displayed. This parameter can be changed with ▼▲ keys. If no operation performed for 3 seconds or during this time, SET key is pressed while parameter value displayed, parameter name will be displayed again. While parameter name displayed, if by pressing together ▼▲ keys, "Running Mode" is entered.

Program Mode

LP1 — UPL — ▲ ⋮ ▲ — HYS

LP2 — UPL — ▲ ⋮ ▲ — C.FOS

6. The Hidden Menu

While in "User Menu", if ▼ key is pressed for 7 seconds the LP2 message is displayed and hidden menu is enterd and then UPL parameter is displayed. Selected the parameter's value can be displayed by pressing SET key and can be changed with ▼▲ keys. Parameter accessing and saving functions can be performed like a "User Menu". All parameters can be accessed from this menu.

7. How can we to transfer parameter between menus?

If SET ▼ keys are pressed together for 2 seconds; parameter is transferred to the user menu. In this way up to 8 parameters can be transferred to the "User Menu".

In "User Menu" if SET ▼ keys are pressed together for 2 seconds, parameter is removed from "User Menu. When a parameter is displayed "User Menu", °F LED lights up in hidden menu. If there is no parameter in "User Menu", NP message is displayed.

ERROR MESSAGES

- PFA — No communication with thermostat sensor. (Sensor and/or cable broken or not connected)
- PSC — Thermostat probe or connection line short-circuited.
- - - - — Temperature value is higher than the scale.
- _ _ _ _ — Temperature value is lower than the scale.

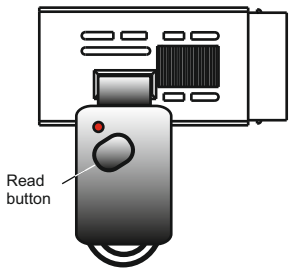
ALARM SITUATION

1. -24.0 — Measurements shown flashes when the alarm condition occurs and if SND parameter is not 0 , audible warning is heard.
   While warning, by pressing ▲ key, audible warning can be temporarily disabled.
2. EA — External alarm is active but the outputs are unaffected.
3. SA — External alarm is active and in this state, specifies that the relay outputs are turned off (off state).
   While warning, by pressing any key, audible warning can be temporarily disabled.

FACTORY SETTINGS

If ▼ key is held down while the device is powered up, D.PAR message appears and factory parameters restored.

ENDAKEY PARAMETER TRANSFER



TRANSFERRING THE PARAMETERS FROM ENDAKEY TO DEVICE

While in "Running Mode", if ▼ key on device or "Read" button on "ENDAKEY" is pressed, "dL'' message appears on display and parameters are read and transferred to the device. If the parameter transfer is successful, the " rEF " message appears and the device begins to work with the loaded parameter values. If the parameters are wrong, incorrect or " ENDAKEY " is faulty, " Err " message appears. Parameters will not be changed on device.

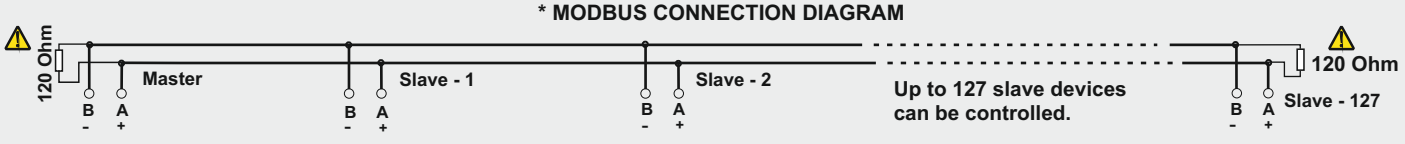
TRANSFERRING THE PARAMETERS FROM DEVICE TO ENDAKEY

While in "Running Mode", if ▲ key is pressed on device, "UL'' message appears on display and parameters are read and transferred to the device. If process success, " SUC " message appears. In case of failure, " Err" message appears. Parameters will not be changed on device.

NOTE 1 : No power-up required for transfering the parameter by using "ENDAKEY". For long battery life, "ENDAKEY" must be disconnected from device after the transferring process.
NOTE 2 : Please specify at order "ENDAKEY" if required.

		Min.	Max.	UNIT	DEFAULT VALUE
CONTROL PARAMETERS					
uPL	Upper limit for setpoint	-60.0	uPL	°C	150
LoL	Lower limit for setpoint	LoL	150.0	°C	-60
HYS	Differential cooling (hysteresis)	0.1	20.0	°C	2
oFF	Offset value for cooling	-20.0	20.0	°C	0
CONFIGURATION PARAMETERS					
C.TYP	Control type selection (HE = (*) heating control is selected, CO = Cooling control is selected.) Defrost control is disabled if the CTYP parameter is set to HE .	CO	HE		CO
UNIT	Temperature unit	C	F		C
dPNT	Decimal point (nO= decimal point isn't shown 22°C,YES=decimal point is shown 22.3°C.)	nO	YES		nO
SnO	Buzzer type selection. Six different sounds can be selected. The alarm sound will be disabled when set to 0.	0	6	0	
d.InP	Digital input types. nO : Digital input not used. EA: External alarm, EA message flashes on the display. Output is not affected. SA: Important external alarm. SA message flashes on the display, relay output is switched off. HC: Control type selection; CTYP parameter will be switched to the HE or CO when this parameter is changed. DF: Defrost operation starts.	nO	DF		nO
doI	Digital input delay. The period of the digital inputs to be active.	0:00	99:00		0:00
dPo	Digital input polarity. CL = While a digital input contact is closed,it is activated. OP= While a digital input is opened, it is activated.	CL	OP		CL
COMPRESSOR PROTECTION PARAMETERS					
C.PoN	Delay time for the compressor after power is on.	0:00	99:00	min:sec	1:00
C.FoS	Delay time required for the compressor to restart following a stop.	0:00	99:00	min:sec	1:00
C.PPn	On time for the compressor output in the case of probe failure.	0:00	99:00	min:sec	0:00
C.PPF	Off time for the compressor output in the case of probe failure	0:00	99:00	min:sec	1:00
DEFROST CONTROL PARAMETERS					
d.SMT	Smart Defrost selection (nO : Defrost counter (between 2 defrost duration) decrease irrespective of d.INT status of the compressor. YES : Defrost counter decreases as long as compressor work.).	nO	YES		nO
d.dUR	Defrost duration (If d.dUR = 0 selected, automatic and manual defrost is disabled).	0:00	99:00	min:sec	1:00
d.INT	Time between 2 consecutive defrosts.	0:00	99:00	hr:min	1:00
d.dSP	Display configuration in defrosting process (rE : Real temperature is displayed during defrost. (Lc : During a defrosting process, last measured temperature value is displayed before the defrosting process. This value remains constant until the end of defrosting.	Lc.	rE		Lc.
d.dRE	Delay time for display real temperature after defrost is over.	0:00	99:00	min:sec	1:00
d.PoN	Defrost process with power. (nO = Defrost process is not started when power-up. YES = Defrost process starts when power-up).	nO	YES		nO
d.dPo	Delay time for defrosting after power-up.	0:00	99:00	min:sec	1:00
ALARM CONTROL PARAMETERS					
A.uPL	Limit for upper alarm level. When A.TYP is changed, AUPL should be readjusted.	A.LoL	150.0	°C	150
A.LoL	Limit for lower alarm level. When A.TYP is changed, A.LoL should be readjusted.	-60.0	A.uPL	°C	-60
A.HYS	Hysteresis alarm	0.1	20.0	°C	2
A.TYP	Alarm configuration. (ABS = Independent alarm. Alarm values are A.LoL and A.UPL .) (REF = Relative alarm. Alarm values are SET-A.LoL and SET+A.UPL.) NOTE: Upper and Lower alarm level variables are determined according to the " A.TYP " parameter. If A.TYP = A.BS , A.LoL and A.UPL. If A.TYP = REF, LoL = SET-A.LoL and A.UPL.	ABS	REF		ABS
A.dFL	Time delay to display alarm message after alarm is on.	0:00	99:00	min:sec	0:00
A.dPo	Time delay to display alarm message after power is on.	0:00	99:00	hr:min	0:0
MODBUS COMMUNICATION PARAMETERS					
AdrS	Modbus slave device address for device	1	247		1
BAUd	Modbus communication speed (Baud rate, 0 : oFF, 1 :1200, 2 : 2400, 3 : 4800, 4 : 9600, 5 :19.200)	oFF	19.20	bps	9600

* MODBUS CONNECTION DIAGRAM



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

**** Applies to devices with Modbus function.***

ENDA EDT2411A 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	--	Read / Write	-20
0001d	0x0001	word	Set point upper limit	UPL	Read / Write	150
0002d	0x0002	word	Upper level alarm	A.UPL	Read / Write	150
0003d	0x0003	word	Set point lower limit	LOL	Read / Write	-60
0004d	0x0004	word	Lower level alarm	A.LOL	Read / Write	-60
0005d	0x0005	word	The offset value for the cooling	OFF	Read / Write	0
0006d	0x0006	word	Cooling hysteresis	HYS	Read / Write	2
0007d	0x0007	word	Switch hysteresis for alarm	A.HYS	Read / Write	2
0008d	0x0008	word	Type of buzzer sound	SND	Read / Write	0
0009d	0x0009	word	Digital input types .0=NO;1=EA;2=SA;3=HC;4=OF	D.INP	Read / Write	NO
0010d	0x000A	word	Digital input delay	DDI	Read / Write	0:00(0 sec)
0011d	0x000B	word	Delay time for the compressor after power is on.	C.PON	Read / Write	1:00(60 sec)
0012d	0x000C	word	Delay time required for the compressor to restart following a stop.	C.FOS	Read / Write	0:00(0 sec)
0013d	0x000D	word	On time for the compressor output in the case of probe failure	C.PPN	Read / Write	0:00(0 sec)
0014d	0x000E	word	Off time for the compressor output in the case of probe failure	C.PPF	Read / Write	1:00(60 sec)
0015d	0x000F	word	Defrost duration	D.DUR	Read / Write	1:00(60 sec)
0016d	0x0010	word	The time between 2 consecutive defrosts.	D.INT	Read / Write	1:00(60 min)
0017d	0x0011	word	Delay time for defrosting after power is on.	D.DPO	Read / Write	1:00(60 sec)
0018d	0x0012	word	After the cooling process of cooling start-up delay	D.DRE	Read / Write	1:00(60 sec)
0019d	0x0013	word	Time delay to display alarm message after alarm is on.	A.DFL	Read / Write	0:00(0 sec)
0020d	0x0014	word	Time delay to display alarm message after power is on.	A.DPO	Read / Write	0:10(10 min)

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)	--	Read

* Holding and Input Register parameters of type integer, those “signed integer” is defined as the decimal port of and associated with these parameters. (So,”14.0” is a parameter value of “140” will be read in). Relevant parameters for a period of “mm:ss” type ones in seconds, ”hh:mm” while those species defined in minutes.

1.3 DISCRETE INPUTS

Discrete Input Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x0000	Bit	Control output status (0=OFF; 1=ON)	--	Read

1.4 COILS

Coil Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
00d	0x00	Bit	Control type selection. OFF = CO ON = HE	C.TYP	Read / Write
01d	0x01	Bit	Temperature unit. OFF = °C , ON = °F	UNIT	Read / Write
02d	0x02	Bit	Decimal point . OFF=NO ON=YES	D.PNT	Read / Write
03d	0x03	Bit	Digital input polarity. OFF = CL ON = OP	DPO	Read / Write
04d	0x04	Bit	Smart Defrost selection. OFF = NO , ON= YES	D.SMT	Read / Write
05d	0x05	Bit	Display configuration during defrost. OFF = LC , ON = RE	D.DSP	Read / Write
06d	0x06	Bit	Defrost process is started by power-up. OFF = NO , ON = YES	D.PON	Read / Write
07d	0x07	Bit	Alarm configuration. OFF = ABS , ON = Relative alarm REF	A.TYP	Read / Write