



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 EDT2423A TEMPERATURE CONTROLLER

Thank you for choosing ENDA EDT2423A temperature controller.

- 35x77mm size.
- On-Off control.
- Three relay outputs for cooling, defrost and fan control.
- Two NTC probe input for cooling and defrost control.
- Offset point can be entered for NTC input.
- Compressor protection parameters can be entered.
- In case of probe failure, compressor operation can be set to ON, OFF or periodic.
- Selectable smart defrost feature.
- Defrost initiated by evaporator temperature, time dependent or manual operation.
- Lower and upper limits of the set point can be set.
- Defrost time and interval can be adjusted.
- Lower and upper alarm limit can be set to dependent on set point.
- Temperature can be displayed in °C or °F.
- Digital input.
- Transfer device parameter settings with ENDA key - no power-up required.
- RS485 communication features with Modbus RTU protocol (optional).
- CE marked according to European standards.

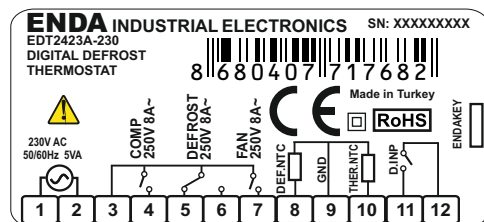


## CONNECTION DIAGRAM



ENDA EDT2423A 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.

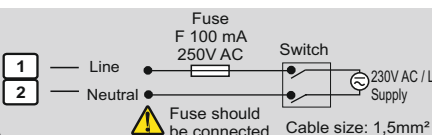
Device must be protected against inadmissible humidity, vibrations, severe soiling and make sure that the operation temperature is not exceeded. The cables should not be close to the power cables or components.



Equipment is protected throughout by **DOUBLE INSULATION**

### NOTE:

SUPPLY:  
184-253V AC  
veya  
10-30V DC /  
8-24V AC  
50/60Hz 5 VA



Vida sikma momenti  
0.4-0.5Nm.

### 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.



Order Code : EDT2423A - ☐ ☐ ☐ - ☐ ☐ ☐

### 1 - Supply Voltage

230.....230V AC

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

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

### 2 - Modbus

RS...Modbus  
(Specified at order)

## ENVIRONMENTAL CONDITIONS

Ambient/storage temperature	0 ... +50°C/-25 ... 70°C (without icing)
Relative humidity	Relative 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; 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 0.1°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

Compressor relay output	For EDT2423A-X-R ; Relay : NO 250V AC, 8A ,1/2hp, 0.37kW 240V AC
Defrosting relay output	For EDT2423A-X-R ; Relay : NO 250V AC, 8A ,1/2hp, 0.37kW 240V AC
Fan relay output	For EDT2423A-X-R ; Relay : NO 250V AC, 8A ,1/2hp, 0.37kW 240V AC
Life expectancy	For EDT2423A-X-R; Without load 30.000.000 switching; 250V AC, 8A (resistive load) 100.000 switching.

## CONTROL

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

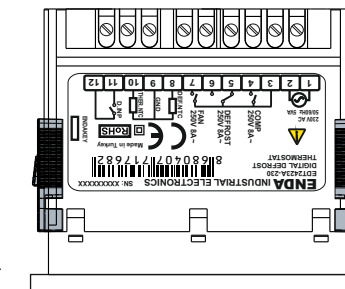
## HOUSING

Housing type	Suitable for flush -panel mounting
Dimensions	W77xH35xD61mm
Weight	Approx. 190g (After packing)
Enclosure material	Self extinguishing plastics.



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

## DIMENSIONS

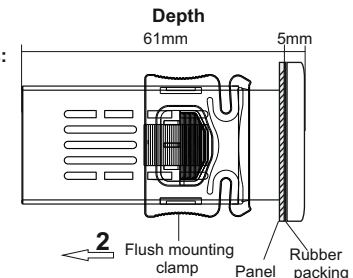


Flush mounting clamp

1

### For 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.

Up to date: 03/09/2022, modification reserved and can be change any time previous notice !

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**°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.


**FAN LED** : While FAN control is in progress, FAN LED lights up if output is active. While waiting for FAN time delay, FAN LED flashes.

**DEFROST LED** : Lights up during DEFROST.

**COMPRESSOR LED** : If compressor output is active, COMPRESSOR LED lights up. While waiting for COMPRESSOR time delay, COMPRESSOR LED flashes.

**SET**  Indicates set point in "Running Mode" and indicates selected set point of parameter in "Programming Mode"



 Provides a transition to the next parameter while in "Programming Mode". Used to increase the value of a parameter. If this key is pressed continuously, parameter value increases rapidly.

 Provides a transition to the previous parameter while in "Programming Mode". Used to decrease the value of a parameter. If this key is pressed continuously, parameter value decreases rapidly.

## FRONT PANEL COMMANDS

### 1.Viewing and Changing The set point



While in the running mode, if  key is pressed set point is displayed for 3 seconds. While in this case,the set point is changed with  keys.

### 2.Viewing Defrost Measurement Value





While in the running mode; if   keys are pressed,defrost probe measurement value is displayed for 3 seconds



### 3.Locking and Unlocking Keys





Keys are locked.


Keys are unlocked.

While in the operating mode, if   keys are pressed together among 2 seconds the LOC message is displayed and the keys are locked. If the keys are locked,

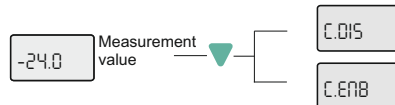
  keys are pressed for 2 seconds again UNL message is displayed and key lock is opened and is returned to the normal way of working. While keys are locked,

if  key is pressed, the set point can be displayed but the value can not be changed. While the keys are locked,  key outside if a key is pressed the LOC message is seen.

### 4.Manual Defrost Process



While in the operating mode, if  key is pressed for 2 seconds the defrost process is started as manual. If D.DUR = 0 ,the manual defrost will also be disabled.

### 5.Activating / Inactivating The Control Outputs





The control ouput becomes inactive.







The control output becomes active.

When in the running mode, if  key is pressed for 2 seconds, C.OIS 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 do control function.

\* When in the running mode, if the control outputs are inactive, OFF message displays periodically.

### 6. Changing Parameter Values





  Keys are pressed together for 2 seconds **L P 1 7** is displayed and the user menu is entered,afterwards first parameter's name is displayed in the user menu.

While a parameter was selected, by pressing to  key parameter's value is displayed, the displayed this parameter can be changed with   keys. When the parameter name is shown, no action is done after 3 seconds or to the  key is pressing again to return to the parameter's name. When the parameter name is shown,   keys are pressed together immediately without waiting to get out of this process.

#### Program mode

**L P 1 7**



#### 7. The Hidden Menu



While in the user menu, if  key is pressed for 7 seconds the **L P 2 7** message is displayed and is entered the hidden menu. Then **UPL** parameter is displayed. Selected the parameter's value, by pressing the  key is displayed and with   keys can be changed. Parameter access and saving functions ,user menu is like. All parameters can be accessed from this menu.

**L P 2 7**

**UPL**

#### 8. Transferring Parameters Between Menus

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

In the user menu   keys are pressed together along the 2 seconds the parameter is removed from the user menu.

When a parameter is displayed in the user menu °F LED lights up in the hidden menu. If the user menu have not any parameter **OP** message is displayed.

**UPL**

**C.FOS**

### ERROR MESSAGES

**PFR**

Means, thermostat probe is broken.

**PSC**

Means, thermostat probe is short circuit.

**PFR2**

Means, thermostat probe is broken.

**---**

Temperature value is higher than the scale.

**---**


Temperature value is lower than the scale.

**PSC2**

Means, thermostat probe is short circuit.

### ALARM SITUATION

**WW**  
**-24.0**  
**AAA**

1.When the alarm situation occurred, the measured value flashes in the indicator and if "SNO" parameter is not "0" is given audible alarm by the device. While there are a audible warning ;  key is pressed, the audible warning will be disabled.


**WW**  
**ER**  
**AAA**

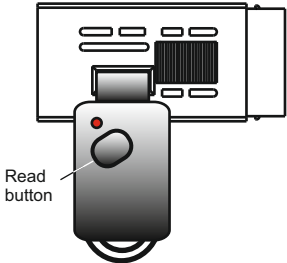


2.External alarm is activated but output's is not affected by this situation.

**WW**  
**SA**  
**AAA**

3.Except that the alarm has been activated and external alarm output relay is active when the show shut down. (off situation).

### FACTORY DEFAULTS

If  key is held down while the device is powered up, **OPRR** message will displayed and factory parameters are restored.

ENDAKEY PARAMETER TRANSFER					
		<b>TRANSFERRING THE PARAMETERS FROM ENDAKEY TO DEVICE</b>  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.			
		<b>TRANSFERRING THE PARAMETERS FROM DEVICE TO ENDAKEY</b>  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 succes, "SUC" message appears. In case of failure, "Err" message appears. Parameters will not be changed on device.  <b>NOTE 1</b> : No power-up required for transferring the parameter by using "ENDAKEY". For long battery life, "ENDAKEY" must be disconnected from device after the transferring process. <b>NOTE 2</b> : Please specify at order "ENDAKEY" if required.			
CONTROL PARAMETERS		MIN.	MAX.	UNIT	DEF. SET
UPL	The upper limit of the set point	-60.0	UPL	°C	150
LQL	The lower limit of the set point	LQL	50.0	°C	-60
HYS	Switch hysteresis for compressor (hysteresis)	0.1	20.0	°C	2
OFF	The offset point for the refrigeration	-20.0	20.0	°C	0
CONFIGURATION PARAMETERS					
UNIT	Temperature unit (Devices with part code suffix 'F' have deg F as the default '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
D.INP	Digital input types. NO:Digital input unused. ER: External alarm. ER message flashes in the display. Output unchanged. SR: Important external alarm. SR message flashes in the display. Relay output is turned off. HC: Control type. CTYP parameter is changed.( If HE = CO, If CO = HE ) DF: Defrost operation is started .	NO	DF		NO
DDI	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
SLOC	While keylock active, the set value is changed. NO: Set value is not changed. YES: Set value is changed.	NO	YES		NO
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.TYP	Defros type selection ( ELC : electric defrost (compressor is switched off), GAS : hot gas (compressor is ON))	ELC	GAS		ELC
D.STP	Defrost stop temperature ( If evaporator temperature is greater than this value, defrost will not work)	-60.0	150.0	°C	20
D.DUR	Defrost duration ( If D.DUR=0 , automatic and manual defrost are disabled.)	0:00	99:00	min:sec	1:00
D.INT	The time between 2 consecutive defrosts.	1:00	99:00	hr:min	1:00
D.DSP	During defrost,display configuration (RE= Real temperature is displayed during defrost. LC= The temperature which is measured before defrost is displayed during defrost.	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	Defrosting process begins with energy (NO=Defrost process doesn't start when,the energy comes. YES=Defrost process starts when the energy comes.)	NO	YES		NO
D.DPO	Delay time for defrosting after power is on.	0:00	99:00	min:sec	1:00
D.DRT	Dripping (discharge) time	0:00	99:00	min:sec	2:00
ALARM CONTROL PARAMETERS					
A.UPL	Limit for upper alarm level. When A.TYP is changed, AUPL should be readjusted.	A.LQL	150.0	°C	150
A.LQL	Limit for lower alarm level. When A.TYP is changed, ALQL 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.LQL and A.UPL .) (REF = Relative alarm. Alarm values are SET-A.LQL and SET+A.UPL.) NOTE: Upper and Lower alarm level variables are determined according to the " A.TYP " parameter. If A.TYP = ABS , A.LQL and A.UPL. If A.TYP = REF, LQL = SET-A.LQL 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	0:10
FAN CONTROL PARAMETERS					
F.CON	Fan operates with thermostat .(NO=Fan runs independently from thermostat.,YES=Fan operated with thermostat.	NO	YES		YES
F.STP	Fan stop temperature.	-60.0	150.0	°C/°F	1
F.HYS	Fan differential.	0.1	20.0	°C/°F	2
F.CST	Fan operations when compressor stop. (NO= Fan holds its status, YES= Fan stops with compressor.)	NO	YES		YES
F.DST	Fan operation during defrost process.(NO=Fan holds its status, YES= Fan stops during defrost process.)	NO	YES		YES
F.PON	Required delay time for fan to be powered up.	00:00	99:00	min:sec	1:00
F.STD	Required delay time for fan to be powered up after defrost.	00:00	99:00	min:sec	3:00
F.CTR	Fan control depending on room temperature. (NO=If evaporator temperature over FSTP value, fan does not run. YES=If difference between room temperature and the temperature of the evaporator temperature is below from FSTP value, fan stops. If the room temperature and evaporator temperature differences greater than FSTP + F.HYS , fan runs again.	NO	YES		NO
MODBUS COMMUNICATION PARAMETERS					
ADDRS	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 :19.20 )	OFF	19.20	bps	9600

# ENDA EDT2423A DIGITAL THERMOSTAT MODBUS PROTOCOL ADDRESS MAP

## 1.1 HOLDING REGISTERS

Holding Register Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x0000	word	Set point	SET	Read / Write
0001d	0x0001	word	Set point upper limit	UPL	Read / Write
0002d	0x0002	word	Upper level alarm	R.UPL	Read / Write
0003d	0x0003	word	Set point lower limit	L.LL	Read / Write
0004d	0x0004	word	Lower level alarm	R.L.LL	Read / Write
0005d	0x0005	word	Offset cooling value	OFF	Read / Write
0006d	0x0006	word	Cooling differential	HYS	Read / Write
0007d	0x0007	word	Alarm differential	R.HYS	Read / Write
0008d	0x0008	word	Digital input types .0=00;1=0A;2=5A;3=0F	SND	Read / Write
0009d	0x0009	word	Digital input delay	D.INP	Read / Write
0010d	0x000A	word	Delay time for the compressor after power is on.	DDI	Read / Write
0011d	0x000B	word	Delay time required for the compressor to restart following a stop.	C.PON	Read / Write
0012d	0x000C	word	On time for the compressor output in the case of probe failure	C.FOS	Read / Write
0013d	0x000D	word	Off time for the compressor output in the case of probe failure	C.PPN	Read / Write
0014d	0x000E	word	Defrost stop temperature	C.PPF	Read / Write
0015d	0x000F	word	Defrost duration	D.DUR	Read / Write
0016d	0x0010	word	The time between 2 consecutive defrosts.	D.INT	Read / Write
0017d	0x0011	word	Delay time for defrosting after power is on.	D.DPO	Read / Write
0018d	0x0012	word	After the cooling process of cooling start-up delay	D.DRE	Read / Write
0019d	0x0013	word	Dripping (discharge) time	DDRT	Read / Write
0020d	0x0014	word	Time delay to display alarm message after alarm is on.	R.DFL	Read / Write
0021d	0x0015	word	Time delay to display alarm message after power is on.	R.DPO	Read / Write
0022d	0x0016	word	Fan stop temperature.	F.STP	Read / Write
0023d	0x0017	word	Fan differential.	F.HYS	Read / Write
0024d	0x0018	word	Required delay time for fan to be powered up.	F.PON	Read / Write
0025d	0x0019	word	Required delay time for fan to be powered up after defrost.	F.STD	Read / Write

## 1.2 INPUT REGISTERS

Input Register Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x0000	word	Measured ambient, temperature value (°C / °F)	--	Read
0001d	0x0001	word	Measured defrost sensor, temperature value (°C / °F)	--	Read
0002d	0x0002	word	All controls output status	--	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.

\*All outputs will be displayed in the word as compressor (0.bit) defrost (1.bit) fan (2.bit).

## 1.3 DISCRATE INPUTS

Discrete Inputs Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x0000	bit	Compressor output status (0=OFF; 1=ON)	--	Read
0001d	0x0001	bit	Defrost output status (0=OFF; 1=ON)	--	Read
0002d	0x0002	bit	Fan 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	Temperature unit. OFF = °C , ON = °F	UNIT	Read / Write
01d	0x01	Bit	Decimal point . OFF=00 ON=45	D.PNT	Read / Write
02d	0x02	Bit	Digital input polarity. OFF = 0L ON = 0P	DPO	Read / Write
03d	0x03	Bit	Smart Defrost selection. OFF = 00 , ON = 45	D.SMT	Read / Write
04d	0x04	Bit	Defrost type selection OFF = 0LC , ON = 6A5	D.TYP	Read / Write
05d	0x05	Bit	During defrost, display configuration. OFF = 0C , ON = RE	D.DSP	Read / Write
06d	0x06	Bit	Defrosting process begins with energy. OFF = 00 , ON = 45	D.PON	Read / Write
07d	0x07	Bit	Alarm configuration. OFF = A85 , ON = Relative alarm REF	R.TYP	Read / Write
08d	0x08	Bit	Fan operates with thermostat. OFF=00 , ON=45	F.CON	Read / Write
09d	0x09	Bit	Fan operations when compressor stop. OFF=00 , ON=45	F.CST	Read / Write
10d	0x0A	Bit	Fan operation during defrost process. OFF=00 , ON=45	F.DST	Read / Write
11d	0x0B	Bit	Fan control depending on room temperature. OFF=00 , ON=45	F.CTR	Read / Write
12d	0x0C	Bit	While the keys are locked , set value is adjustable. OFF = 00 , ON = 45	SLOC	Read / Write
13d	0x0D	Bit	The keylock active / inactive. OFF= inactive , ON= active	--	Read / Write
14d	0x0E	Bit	Starting manual defrost or stopping manual defrost. OFF= stopping , ON= starting	--	Read / Write
15d	0x0F	Bit	Control outputs active / inactive. OFF= active , ON= inactive	--	Read / Write
16d	0x010	Bit	The factory setting is loaded. ON= The factory setting is loaded.	--	Read / Write

\* For Coil at a time should be maximum 16 bit reading / writing.