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 EDT3423A DIGITAL THERMOSTAT

Thank you for choosing **ENDA EDT3423A** 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 operation can be performed to evaporator temperature, time-dependent or manual.
- Lower and upper limits of the set point can be set.
- Defrost time and intervals can be adjusted.
- Lower and upper alarm limit can be set to dependent on set point.
- Temperature unit can be displayed in ° C or ° F.
- Digital input.
- Transfer device parameter settings with ENDAKEY-RF .
- RS485 communication features with Modbus RTU protocol (optional).
- CE Marked according to European standards.

CE RoHS Compliant

Order Code : EDT3423A - ☐☐☐ - ☐ - ☐☐
(1 - 2 - 3)

1 - Supply Voltage
230.....230V AC
110.....110V AC
024.....24V AC
SM.....10-30V DC / 8-24V AC

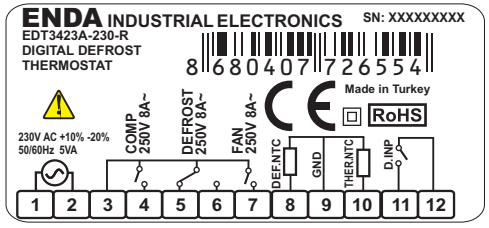
2 - Output
R.....8A Relay Output

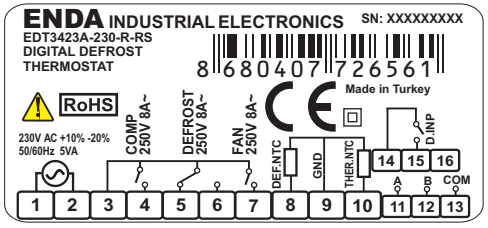
3 - ModBus Selection
RS.....ModBus (Optional)
Blank.....N/A

Specify at order.
Please see page 2 for Modbus Connection Diagram.

CONNECTION DIAGRAM

ENDA EDT3423A 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.

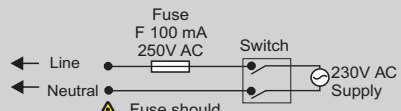




Equipment is protected throughout by **DOUBLE INSULATION**

Holding screw 0.4-0.5Nm.

NOTE:
SUPPLY:
184-253V AC 4VA
50/60Hz



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	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

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 or 24V AC or 110V AC ±%10, 50/60Hz or 10-30V DC / 8-24V AC ±%10 SMPS
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
EMC	EN 61326-1: 2013
Safety requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)

OUTPUTS	
Compressor Relay	NO 250V AC, 8A, 1/2hp 240V AC
Defrosting Relay	NO+NC 250V AC, 8A, 1/2hp 240V AC
Fan Relay	NO 250V AC,8A , 1/2hp 240V AC
Life expectancy	Without load 30.000.000 switching, 250V AC, 8A (resistive load) 100.000 switching.

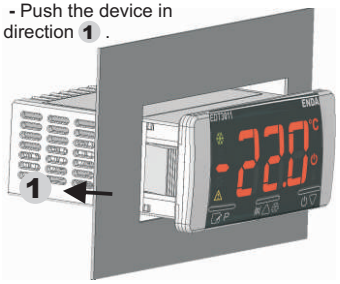
CONTROL	
Control type	Single set-point control
Control algorithm	On-Off control
Hysteresis	Adjustable between 1 ... 20.0°C.

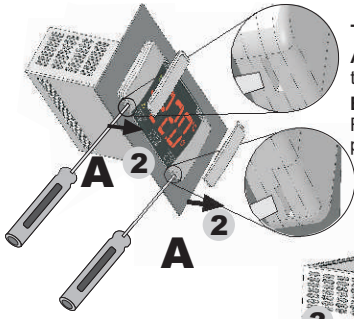
HOUSING	
Housing type	Suitable for flush -panel mounting
Dimensions	W77xH35xD61mm
Weight	Approx. 190g (After packing)
Enclosure material	Self extinguishing plastics.

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.

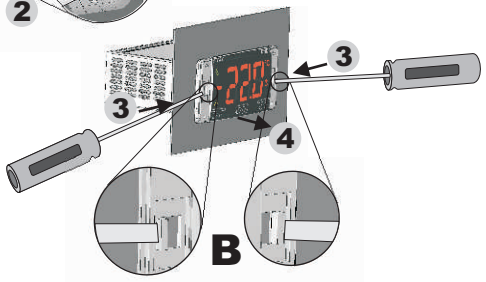
DIMENSIONS

To mounting device ;
- Push the device in direction 1 .



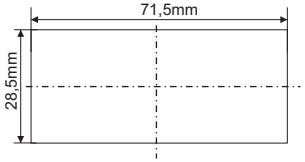


To removing the device from panel :
A - Remove the side covers by lifting them with a flat screwdriver in direction 2
B - Push the clamps in the direction 3 . Remove the device from the panel by pulling in direction 4 .



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.

Panel cut-out



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EDT3423A-EN-01-201214

FRONT PANEL COMMANDS

1. Viewing and Changing The set point

-24.0 Measurement value → [P] → -30.0 → ▼ → -29.9 → ▲ → -30.0

If [P] key is pressed for 3 seconds in "Running Mode", setpoint value is displayed and it can be changed by using ▼▲ navigation keys.

2. Viewing Defrost Measurement Value

-24.0 Measurement value → [P]▲ → -9.0

By pressing [P] and ▲ keys together for 3 seconds in "Running Mode", defrosting sensor (probe) measurement value will be displayed.

3. Locking / Unlocking the Keys

-24.0 Measurement value → [P]▼ → LOC Locked. / UNL Unlocked

To locking or unlocking the keypad, [P]▼ keys are pressed together for 2 seconds. LOC or UNL message will appears for valid status.
During LOC status, just the setpoint value will appear if the [P] key is pressed.

4.Manual Defrost Process

By pressing to ▲ key for 2 seconds in "Running Mode", the defrost process will start or stop manually.
The defrosting process will be disabled if the d3 parameter (d.dur) is set to 0 .

5.Manually Switching On or Off

Make sure the keypad is not locked before performing the following operation.

If ▼ key is pressed for 2 seconds during the "Running Mode", the display indicator switched off, temperature measurement and controls are not performed and outputs are disabled. While in this status, by pressing to ▼ key for 2 seconds again, the current operation can be resumed.

6. Changing Parameter Values

If ▼▲ keys are pressed together for 2 seconds, LP1 message appears and the user menu is entered, and the first parameter of the user menu is displayed. The parameter value can be displayed by pressing [P] key and can be changed by using ▼▲ navigation keys.
If no operation is performed for 3 seconds while a parameter value displayed or by pressing to [P] key, the parameter name will be re-displayed.
If ▼▲ keys are pressed together while the parameter name displayed, "Running Mode" is entered immediately.

Programming Mode

LP1 → r2 … r0

7. The Hidden Menu

If ▼ is pressed for 7 seconds, LP2 message appears and the hidden menu is entered, and r2 parameter is displayed.
The parameter value can be displayed by pressing [P] key and can be changed by using ▼▲ navigation keys.

LP2 → r2 … C2

8. Transferring Parameters Between Menus

By pressing to [P]▼ keys together for 2 seconds, the parameter can be transferred to user menu. Up to 8 parameters can be transferred.

If [P]▼ keys are pressed for 2 seconds, parameter will be removed from user menu.
If no parameter is stored in the user menu, nP message will be 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.
PF2	No communication with defrost sensor. (Sensor and/or cable broken or not connected)	PS2	Defrost probe or connection line short-circuited.	_ _ _ _	Temperature value is lower than the scale.

Note : ⚠ The warning led ⚠ on the device will blink in case of an error condition.

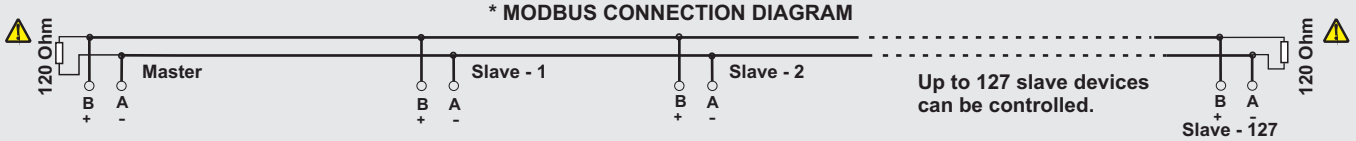
ALARM SITUATION

-24.0 (flashing)	Measurement value flashes in case of an alarm.	EA	External alarm is active but the outputs are not affected.	SA	External alarm is active and the relay outputs are in OFF situation.

FACTORY DEFAULTS

Power-up the device by pressing and holding down the ▼ key for factory defaults. dPr message will be displayed if the operation success.

* 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.*

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TRANSFERRING THE PARAMETERS

Parameter Transfer from Device to ENDAKEY-RF.
By pressing the [edit] key for 6 seconds continuously, Hrd message appears and the device waits for reading ENDAKEY-RF. By touching with the ENDAKEY-RF to top of the left corner 1 of the device and by pressing to button on the ENDAKEY-RF, parameters will be transferred to the ENDAKEY-RF. If the parameter transfer is successful, Suc message appears on the display.

Parameter Transfer from ENDAKEY-RF to Device.
By touching with the ENDAKEY to top of the left corner 1 of the device and by pressing to button on the ENDAKEY, parameters will be transferred to the device. If the parameters transferred successfully, KYE and Suc message appears on display.

Move **ENDAKEY-RF** towards the top left of the device in direction 1

⚠ **- Please specify at order "ENDAKEY-RF" if required.**

CONTROL PARAMETERS		MIN.	MAX.	UNIT	DEF. SET
r0	Cooling hysteresis.	0.1	20.0	°C	2
r1	Lower limit for setpoint value.	-60.0	150.0	°C	-60
r2	Upper limit for setpoint value.	-60.0	150.0	°C	150
o1	Offset value for cooling.	-20.0	20.0	°C	0
CONFIGURATION PARAMETERS					
P1	Decimal point (no= decimal point not added, ie 22°C, YES=decimal point added, ie 22.3°C.)	°C	°F		°C
P2	Temperature unit (Devices with part code suffix 'F' have deg F as the default 'Unit').	no	YES		no
i1	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
i3	Digital input delay. The period of the digital inputs to be active.	0:00	99:00		0:00
i5	Digital input types. nd:Digital input unused. EA: External alarm. EA message flashes in the display. Output unchanged. SA:Important external alarm.SA message flashes in the display.Relay output is turned off. dF:Defrost operation is started.	nd	dF		nd
LP	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					
C0	Delay time for the compressor after power is on.	0:00	99:00	min:sec	1:00
C2	Delay time required for the compressor to restart following a stop.	0:00	99:00	min:sec	1:00
C4	Off time for the compressor output in the case of probe failure	0:00	99:00	min:sec	1:00
C5	On time for the compressor output in the case of probe failure.	0:00	99:00	min:sec	0:00
DEFROST CONTROL PARAMETERS					
d0	The time between 2 consecutive defrosts.	1:00	99:00	hr:min	1:00
d1	Defros type selection (ELC : electric defrost (compressor is switched off), GAS : hot gas (compressor is ON))	ELC	GAS		ELC
d2	Defrost stop temperature (If evaporator temperature is greater than this value, defrost will not work)	-60.0	150.0	°C	2.0
d3	Defrost duration (If d.dur=0 , automatic and manual defrost will be disabled.)	0:00	99:00	min:sec	1:00
d4	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
d5	Delay time for defrosting after power is on.	0:00	99:00	min:sec	1:00
d6	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.
d7	Dripping (discharge) time	0:00	99:00	min:sec	2:00
d8	Smart Defrost selection (no : Defrost counter (between 2 defrost duration) decrease irrespective of status of the compressor. YES : Defrost counter decreases as long as compressor work).	no	YES		no
d9	Delay time for display real temperature after defrost is over.	0:00	99:00	min:sec	1:00
ALARM CONTROL PARAMETERS					
A1	Limit for lower alarm level. When A2 is changed, it should be readjusted.	-60.0	A4	°C	-60
A2	Alarm configuration. (Abs = Independent alarm. Alarm values are A1 and A4 .) (rEF = Relative alarm. Alarm values are SEt-A1 and SEt+A2.) NOTE: Upper and Lower alarm level variables are determined according to the " A.tyP " parameter. If A1 = Abs , A1 and A4. If A2 = rEF, r1 = SEt-A1 and A4.	Abs	rEF		Abs
A3	Hysteresis alarm	0.1	20.0	°C	2
A4	Limit for upper alarm level. When A2 is changed, it should be readjusted.	A1	150.0	°C	150
A6	Time delay to display alarm message after power is on.	0:00	99:00	hr:min	0:10
A7	Time delay to display alarm message after alarm is on.	0:00	99:00	min:sec	0:00
FAN CONTROL PARAMETERS					
F0	Fan operates with thermostat .(no=Fan runs independently from thermostat.,YES=Fan operated with thermostat.	no	YES		YES
F1	Fan stop temperature.	-60.0	150.0	°C/°F	1
F2	Fan operation during defrost process.(no=Fan holds its status, YES= Fan stops during defrost process.)	no	YES		YES
F3	Required delay time for fan to be powered up after defrost.	00:00	99:00	min:sec	3:00
F4	Fan differential.	0.1	20.0	°C/°F	2
F5	Fan operations when compressor stop. (no= Fan holds its status, YES= Fan stops with compressor.)	no	YES		YES
F6	Required delay time for fan to be powered up.	00:00	99:00	min:sec	1:00
F7	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 F.StP 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					
H1	Modbus slave device address for device	1	247		1
H2	Modbus communication speed (Baud rate, 0 : oFF, 1 : 1200, 2 : 2400, 3 : 4800, 4 : 9600, 5 : 19.20)	oFF	19.20	bps	9600

⚠ *Please see page 2 for Modbus Connection Diagram.*

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ENDA EDT3423A 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	Setpoint value	SEt	Read / Write
0001d	0x0001	word	Setpoint value for upper limit	r2	Read / Write
0002d	0x0002	word	Upper level alarm	A4	Read / Write
0003d	0x0003	word	Setpoint value for lower limit	r1	Read / Write
0004d	0x0004	word	Lower level alarm	A1	Read / Write
0005d	0x0005	word	Offset cooling value	o1	Read / Write
0006d	0x0006	word	Cooling differential	r0	Read / Write
0007d	0x0007	word	Alarm differential	A3	Read / Write
0008d	0x0008	word	Defrost stopping temperature	d2	Read / Write
0009d	0x0009	word	Fan stopping temperature	F1	Read / Write
0010d	0x000A	word	Fan differential.	F4	Read / Write
0011d	0x000B	word	Digital input types .0=nd ; 1=EA ; 2=SA ; 3=dF	i5	Read / Write
0012d	0x000C	word	Delay time duration for Digital input.	i3	Read / Write
0013d	0x000D	word	Delay time duration for the compressor on power-up.	C0	Read / Write
0014d	0x000E	word	Delay time duration for the compressor restart after the stop.	C2	Read / Write
0015d	0x000F	word	Compressor output ON-state time duration in case of probe failure.	C5	Read / Write
0016d	0x0010	word	Compressor output OFF-state time duration in case of probe failure.	C4	Read / Write
0017d	0x0011	word	Defrost duration.	d3	Read / Write
0018d	0x0012	word	The time between 2 consecutive defrosts.	d0	Read / Write
0019d	0x0013	word	Defrost start delay time after the defrost end.	d5	Read / Write
0020d	0x0014	word	Real temperature displaying delay time, after the defrost end.	d9	Read / Write
0021d	0x0015	word	Dripping (discharge) time	d7	Read / Write
0022d	0x0016	word	Time delay to display alarm message after alarm is on.	A7	Read / Write
0023d	0x0017	word	Fan differential.	A6	Read / Write
0024d	0x0018	word	Required delay time for fan to be powered up.	F6	Read / Write
0025d	0x0019	word	Required delay time for fan to be powered up after defrost.	F3	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

Discrate 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	P2	Read / Write
01d	0x01	Bit	Decimal point . OFF= no , ON= YES	P1	Read / Write
02d	0x02	Bit	Digital input polarity. OFF = cL , ON = oP	i1	Read / Write
03d	0x03	Bit	Smart Defrost selection. OFF = no , ON= YES	dB	Read / Write
04d	0x04	Bit	Defrost type selection OFF = ELC , ON = GAS	d1	Read / Write
05d	0x05	Bit	During defrost, display configuration. OFF = Lc , ON = rE	d6	Read / Write
06d	0x06	Bit	Defrosting process begins with energy. OFF = no , ON = YES	d4	Read / Write
07d	0x07	Bit	Alarm configuration. OFF = Abs , ON = Relative alarm rEF	A2	Read / Write
08d	0x08	Bit	Fan operates with thermostat. OFF = no , ON = YES	F0	Read / Write
09d	0x09	Bit	Fan starts when compressor stop. OFF = no , ON = YES	F5	Read / Write
10d	0x0A	Bit	Fan operation during defrost process. OFF = no , ON = YES	F2	Read / Write
11d	0x0B	Bit	Fan control depending on room temperature. OFF = no , ON = YES	F7	Read / Write
12d	0x0C	Bit	While the keys are locked , set value is adjustable. OFF = no , ON = YES	LP	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

* Up to 16 bits can be read and/or written to the coil at one time.

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