ENDA EHTC7425A HUMIDITY AND TEMPERATURE CONTROLLER User Guide

Contents

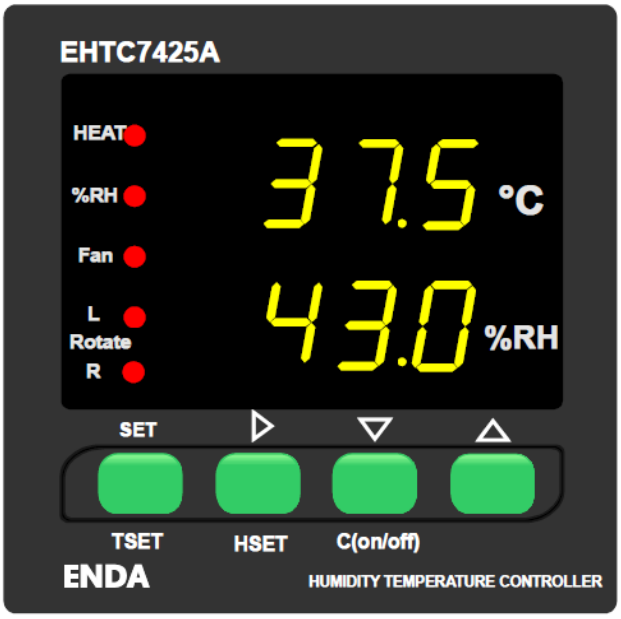
ENDA

ENDA EHTC7425A HUMIDITY AND TEMPERATURE CONTROLLER

- Read this document carefully before using this device. The guarantee will be expired by damaging of the device 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 EHTC7425A HUMIDITY AND TEMPERATURE CONTROLLER

- 72 x mm sized.
- Dual 4 digit display
- 0/4-20mA, 0-10V, 1- 5V analog or digital input (Specify at Order).
- Heating or cooling control selection.
- PID, On-Off Temperature control selection.
- PID Auto-calculation (SELF TUNE).
- Humidification or drying control selection.
- Internal supply output for sensor.
- Time and temperature-dependent fan relay output selection.
- 2 Relay outputs with time setting for incubation operations.
- Adjustable buzzer alarm feature for measurement values.
- CE marked according to European Norms.



CE RoHS Compliant

Order Code : EHTC7425A - □□ - □□□ - □□ - □□□

1 2 3 4

1. **Input**
   AS….. ..Analog Input
   DS….. .Digital Input
   Sensor must be ordered separately.
2. **Supply Voltage**
   230……230V AC
   110…….110V AC
   SM……..10…30V DC
   8…24V AC
3. **Mod Bus**
   Blank……N/A
   RSI……Mod Bus
   Specify at Order).
   Please see page 6 for Modbus Connection Diagram.
4. **SSR**
   Blank……N/A
   SSR……Mod Bus
   Applies to the heat output)

TECHNICAL SPECIFICATIONS

ENVIRONMENTAL CONDITIONS	
Ambient/stroge temperature	0 ... +50°C/-25 ... 70°C (Without icing)
Max. Relative humidity	80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% 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%, 50/60Hz or 10...30V DC / 8...24V AC
Power consumption	Max. 7VA
Wiring	2.5mm² screw-terminal connections
Temperature input range	0~20mA / 0~10V can be selected for analog output sensors. Temperature range for digital output Enda Sensor is -40~125°C
Humidity input range	0~20mA / 0~10V can be selected for analog output sensors. Humidity range for digital output Enda Sensor is 0~100 RH
EMC	EN 61326-1: 2013
Safety requirements	EN 61010-1: 2010 (pollution degree 2, overvoltage category II)

INPUTS				
	Input Type	Measurement Range	Measurement Accuracy	Input Resistance
AS	0-20mA 4-20mA	-40.0....125.0 °C 0....100 %RH	±%0,5 (Full scale)	Approx. 10Ω
	1-5V 0-10V			Approx. 100kΩ
DS	EHTD-CB-100			----------

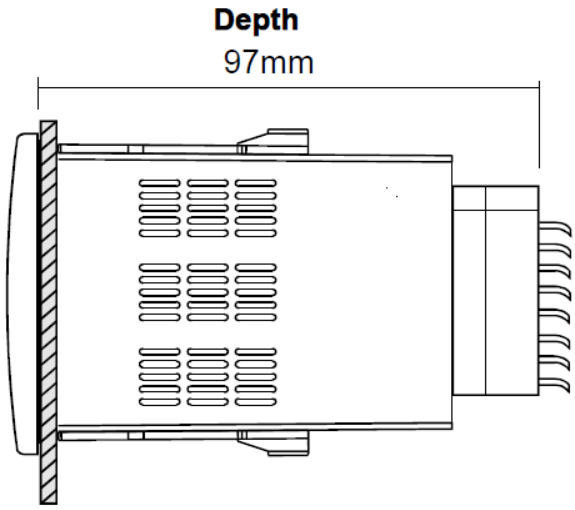
⚠ **When the device is in current measurement mode, the input impedance is 10Ω. Therefore voltage input should not be connected to the device while in current mode. Otherwise the device will deteriorate. If it is necessary to switch from the voltage measurement mode to the current measurement mode while the device is running, It must be removed and then changed to one of the input type current measurement modes.**

OUTPUT	
Sensor Supply	15VDC , Max. 50mA
Life expectancy for relay	30.000.000 Switching for no-load operation; 300.000 switching for 10A resistive load at 250VAC.
SSR Output	Max. 12VDC 30mA.

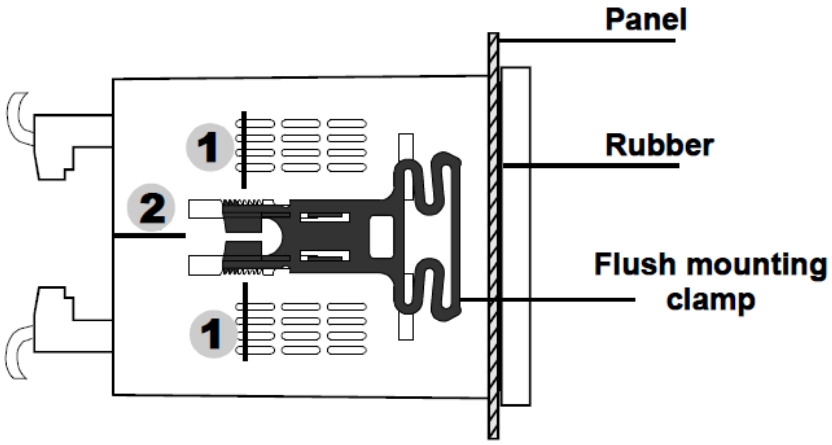
HOUSING	
Housing type	Suitable for flush-panel mounting according to DIN 43 700.
Dimensions	W72xH72xD97mm
Weight	Approx. 350g (after packing)
Enclosure Material	Self extinguishing plastics

⚠ **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.

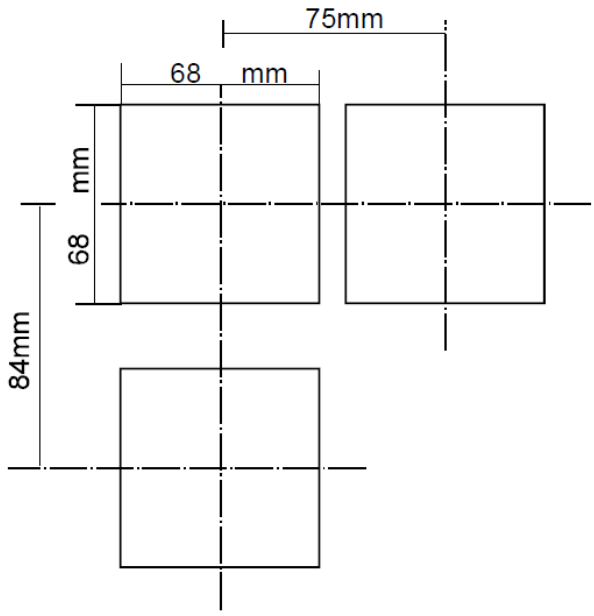
DIMENSIONS



1. To removing the device from panel : – While pressing both side of the device in direction **1** and push it in direction **2**



Panel cut-out

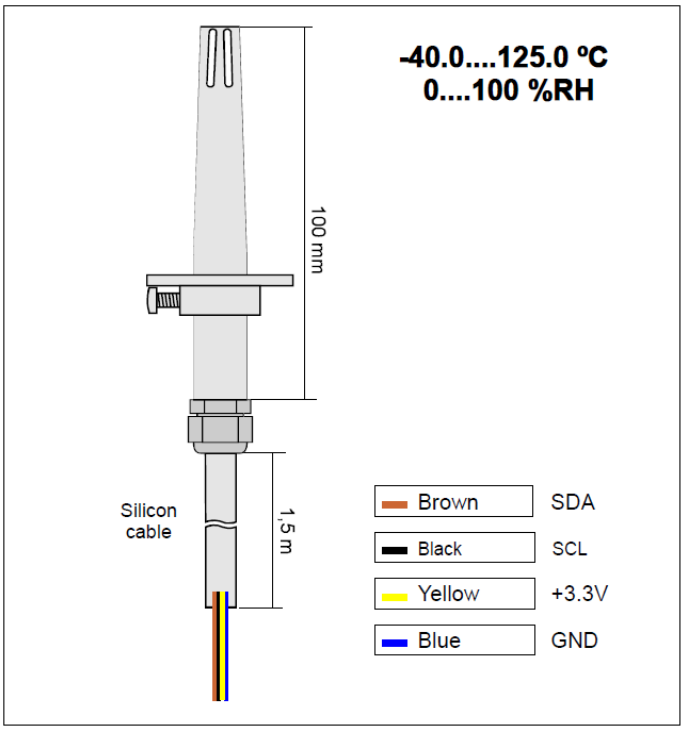


NOTE:-

1. While panel mounting, additional distance is required for connection cables.
2. Panel thickness should be maximum **10mm**
3. If there is no 90mm free space at back side of the device, it would be difficult to remove it from the panel.

SENSOR (Must be ordered separately)

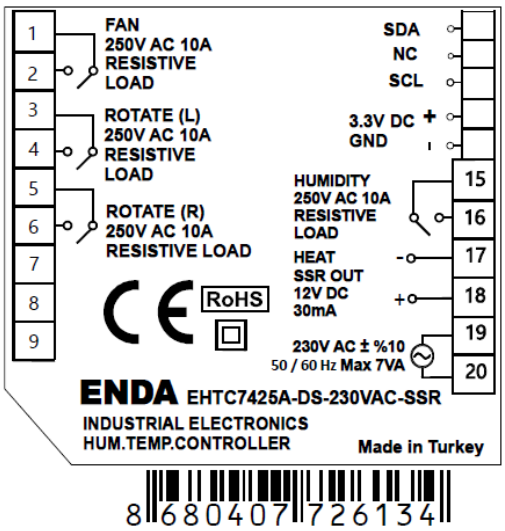
EHTD-CB-100 Digital Output Humidity Temperature Sensor

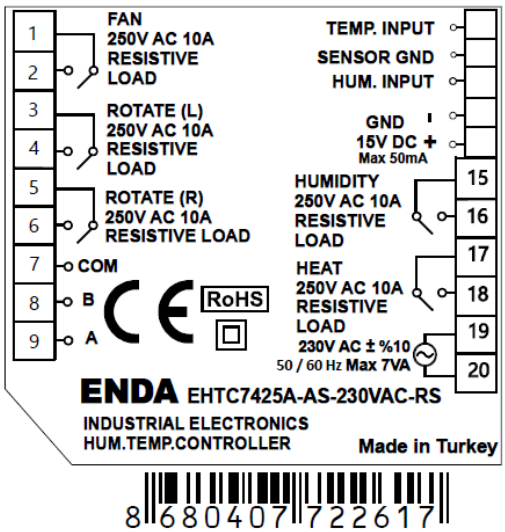


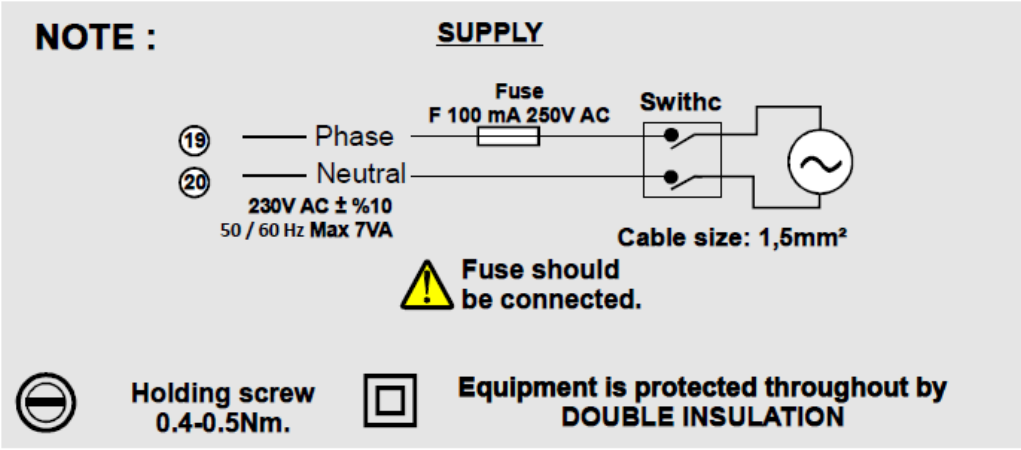
EHTD-CB-100 (Used with EHTC7425A-DS-XX)

Sensor	Measuring Range	Device to be used
EHTD-CB-100	-40.0....125.0 ºC 0....100 %RH	EHTC7425A-DS-XX
ESHT-102-XX	-40.0....60.0 ºC 0....100 %RH	EHTC7425A-AS-XX
ESHT-102-W-XX ESHT-102-CB-XX ESHT-102-DC-XX EHTS-W-UV-XX EHTS-W-LV-XX EHTS-CB-UV-XX EHTS-CB-LV-XX EHTS-DC-UV-XX EHTS-DC-LV-XX EHTC-W-UV-XX EHTC-W-LV-XX EHTC-CB-UV-XX EHTC-CB-LV-XX EHTC-DC-UV-XX EHTC-DC-LV-XX	-40.0....125.0 ºC 0....100 %RH	

INSTALLATION





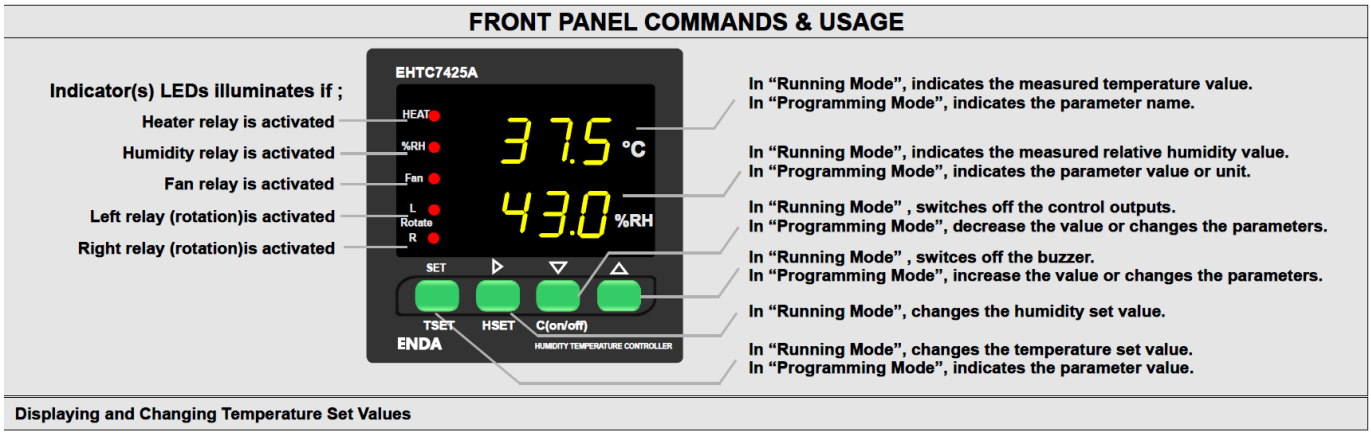


Note :-

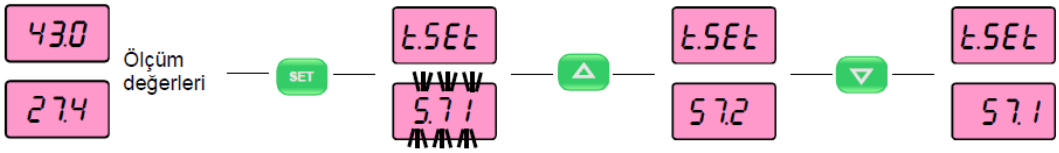
1. Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
2. In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

ENDA EHTC725A is intended for installation in control panels. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of then cables that are connected to the device must be free of energy. The device must be protected against inadmissible humidity, vibrations, severe soiling. Make sure that the operation temperature is not exceeded. All input and output lines that are not connected to the supply network must be laid out as shielded and twisted cables. These cables should not be close to the power cables or components. The installation and electrical connections must be carried on by a qualified staff and must be according to the relevant locally applicable regulations.

FRONT PANEL COMMANDS & USAGE

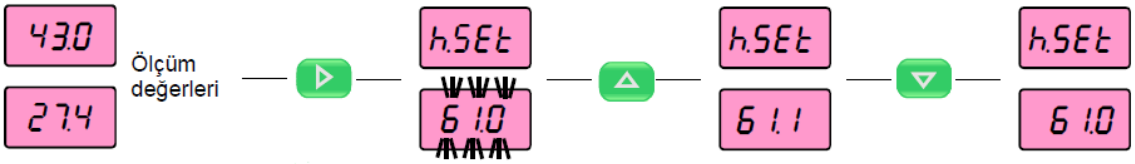


Displaying and Changing Temperature Set Values



- During “Running Mode”, if SET key is preset, temperature setpoint value flashes for 3 seconds. While flashing, by pressing △ and ▽ keys, temperature value can be changed
- If no key is pressed for 3 seconds or if one of the set keys is pressed again, adjusted set value is saved and the “Running Mode” is entered.

Displaying and Changing Humidity Set Values



- During “Running Mode”, if ▷ key is preset, humidity setpoint value flashes for 3 seconds. While flashing, by pressing △ and ▽ keys, humidity set value can be changed
- If no key is pressed for 3 seconds or if one of the set keys is pressed again, adjusted set value is saved and the “Running Mode” is entered.

Locking & Unlocking Keypad

- During “Running Mode”, if 

and  keys are pressed together for 2 seconds, L o c message is displayed and the keypad locked. While keypad is locked, if 

and  keys are pressed together for 2 seconds,
- u n L message is displayed and the keypad unlocked and “Running Mode” is entered. While keypad is locked, if one of the key is pressed, L o c message is displayed. During keypad locked, temperature and humidity set values can be displayed but can not be changed.

Activating / Deactivating Control Outputs

- During “Running Mode”, if  key is pressed for 2 seconds,C.d,5 message displayed and the control outputs become deactivated and device works as an indicator.
- While control outputs deactivated, by pressing  key for 2 seconds, C.E n B message displayed and device continues to control functions.

Stopping Buzzer Alam

- When an alarm condition occurs, an audible alarm is triggered. By pressing  key, buzzer alarm can be turned off.

Default Settings

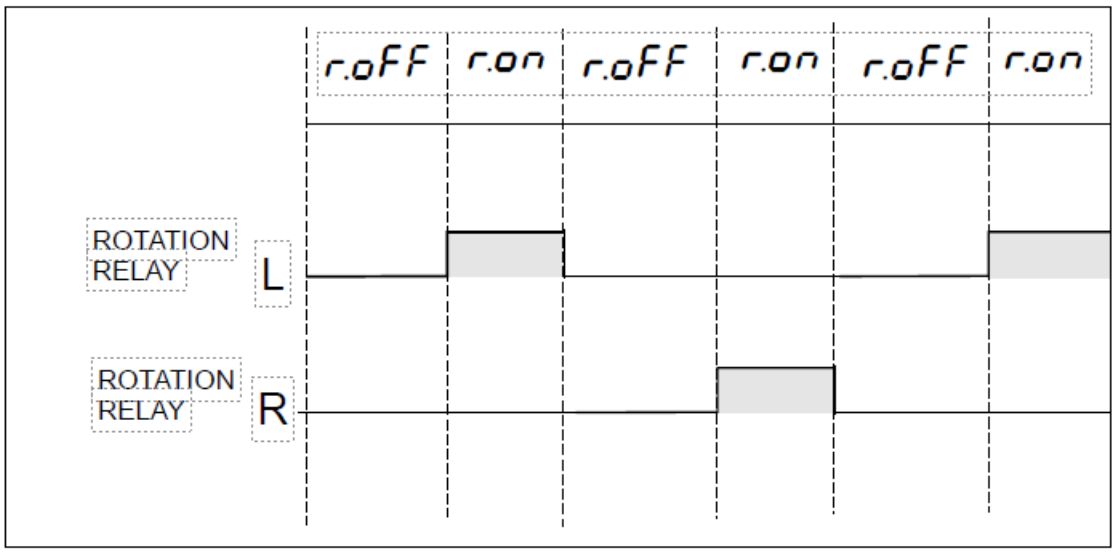
- Powered on device by pressing  key d. p a r message appears on display and device reset to default settings.

Displaying Revision Number

- If 

keys are pressed together in “Running Mode”, revision number r.001 appears on display.

ROTATION OUTPUT GRAPHICS



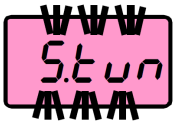
- Rotation process runs sequentially for left and right directions, Rotation process runs consecutively as opened until open duration time(r.on)and closed until close duration time (r. o f F)

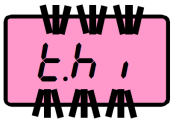
Error – Warning – Alarm Definitions

- 

Sensor Failure. Check the sensor connection. The audible warning is activated. Temperature and humidification outputs are disabled. Analog outputs are zero.
- 

Temperature Alarm. Audible warning is activated. Current temperature flashes.Outputs are disabled when the upper limit is exceeded.
- 

Humidification Alarm. Audible warning is activated. Current humidity flashes.Outputs are disabled when the upper limit is exceeded.
- 

Self tune menu has been entered.
- 

During self tune menu, indicates that the measured temperature value is greater than 60% of the set value. In this case, self tune process can not be started.
- 

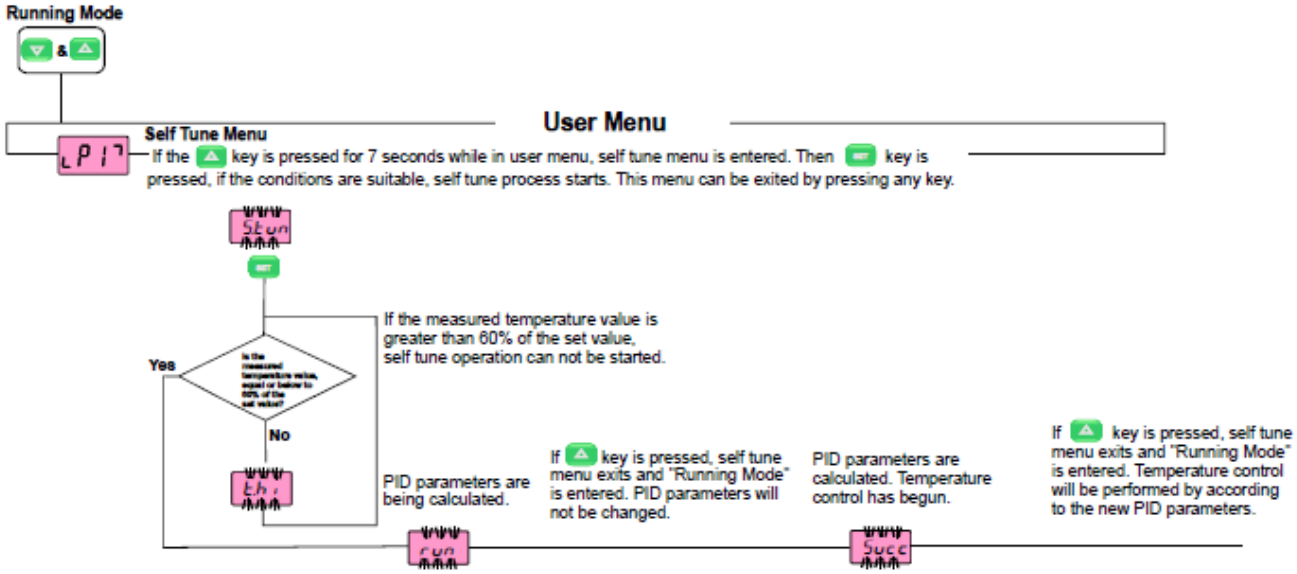
Self tune process is running.

- 

Self tune process has been successfully completed.

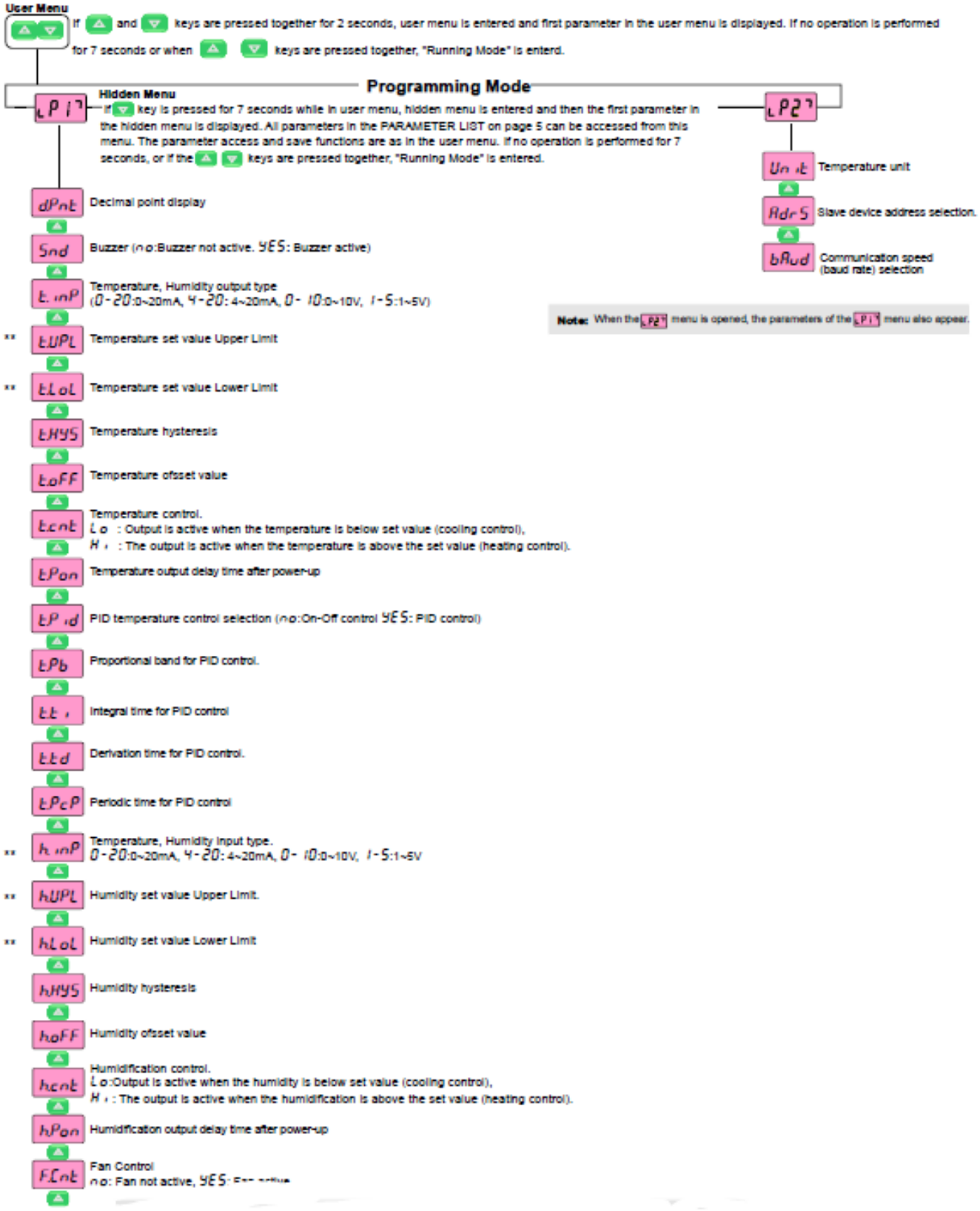
SELF TUNE OPERATION

- In order to start the Self-tune operation, t.Pid parameter must be set to YE5 .



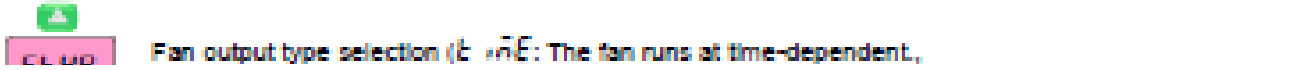
PROGRAMMING THE DEVICE (1/2)

Device has two menus as user and hidden menu. User menu is the frequently used parameters and the hidden menu is where all parameters are found. Menus can be transferred between parameters. If SET and keys are pressed together for 2 seconds in the hidden menu, the parameter is transferred to the user menu. Up to 10 parameters can be transferred to the user menu in this way. If SET and keys are pressed together for 2 seconds in the user menu, parameter is removed from user menu.



The marked parameters are valid only for the humidity temperature sensor model with analogue input.

PROGRAMMING THE DEVICE (2/2)



tEmP: The fan runs at temperature-dependent.)

Fan temperature control
(Lo : The fan will be activated when the temperature value below the setpoint. ,
YES : The fan will be activated when the temperature value above the setpoint).

Fan setpoint value.

Fan hysteresis value.

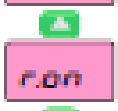
Fan alarm setpoint value.

Fan alarm hysteresis.

Fan ON time duration.

Fan OFF time duration.

Rotating Control (no: Rotating not active, YES: Rotating active)



Rotating ON time duration

Rotating OFF time duration.

Alarm message display delay time after power up

Temperature alarm configuration (AbS : Absolute alarm, rEF : Relative alarm)
AbS: Alarm values are AtLo and AtH ,
rEF: Alarm values are AtLo = tSEt - AtLo and AtH , = tSEt+AtH ,

Temperature upper level alarm (If AttP is changed, this parameter must be re-programmed).

Temperature lower level alarm (If AttP is changed, this parameter must be re-programmed)

Temperature alarm hysteresis

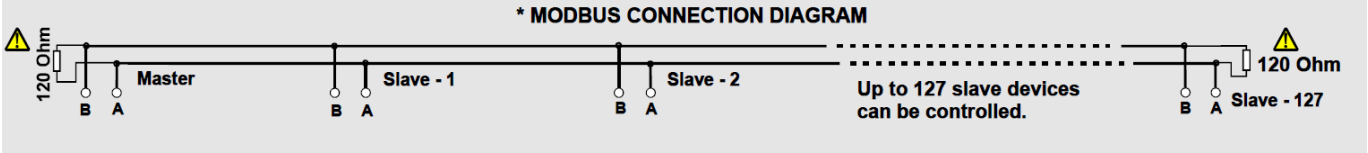
Humidity alarm configuration (AbS : Absolute alarm, rEF : Relative alarm)
AbS: Alarm values are AhLo and AhH ,
rEF: Alarm values are AhLo = tSEt - AhLo and AhH , = hSEt+AhH ,

Humidity upper level alarm. (If AhtP is changed, this parameter must be re-programmed)

Humidity lower level alarm.(If AhtP is changed, this parameter must be re-programmed)

Humidity alarm hysteresis.

MODBUS CONNECTION



- 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.

PARAMETER LIST

PARAMETER LIST					
CONFIGURATION PARAMETERS		**Minimum**	**Maximum**	**Unit Type**	**Default**
Unit	Temperature unit OFF=**°C**,ON=**°F**	**°C**	**°f**		**°C**
d.pnt	Decimal indication OFF=**no,** ON=**YE5**	**no**	**YE5**		**no**
5nd	Buzzer OFF=**no,** ON=**YE5**	**no**	**YE5**		**no**
TEMPERATURE CONTROL PARAMETERS					
t.inp	Temperature, input type (:**0**0**–**~2**2**0**0**mA, **4**4**–**~2**2**0**0**m**:** A, :**0**0**–**~1**1**0**0**V, :1**1**~5**–**V**5**) Only available in humidity temperature sensor models with analog output.	**0-20**	**1-5**	**mA / V**	**0-20**
t.upl	Temperature Upper Limit. Only available in humidity temperature sensor models with analog output.	**t.Lol**	**125**	**°C / °F**	**60**
t.Lol	Temperature Lower Limit. Only available in humidity temperature sensor models with analog output.	**-40**	**t.upl**	**°C / °F**	**-40**

t.Hy 5	Temperature hysteresis	**1**	**20**	**°C / °F**	**2**
t.oF F	Temperature of set value	**-20**	**20**	**°C / °F**	**0**
t.cnt	Temperature control. **Lo** :Output is active when the temperature is below set value (cooling control), **Hi** : The output is active when the temperature is above the set val ue (heating control).	**LO**	**Hi**		**Hi**
t.Po n	Temperature output delay time after power-up	**00:00**	**99:00**	**min:se c**	**1:00**
t.Pid	PID temperature control selection (:**n**O**o**n-Off control **YE**P**5**I**:** D control)	**no**	**YE5**		**no**
t.pb	Proportional band for PID control	**0**	**100**	**%**	**14**
t.ti	Integral time for PID control	**00:00**	**99:00**	**min:se c**	**1:56**
t.td	Derivation time for PID control.	**00:00**	**99:00**	**min:se c**	**0:35**
t.Pc p	Periodic time for PID control	**00:00**	**02:00**	**min:se c**	**0:20**
HUMIDIFICATION CONTROL PARAMETERS					
h.in p	Humidity input type (:**0**0**–**~2**2**0**0**mA, **4**4**–**~2**2**0**0**m**:** A, :**0**0**–**~1**1**0**0**V, :1**1**~5**–**V**5**) Only available in humidity temperature sensor models with analog output.	**0-20**	**1-5**	**mA / V**	**0-20**

h.upl	Humidity Upper Limit. Only available in humidity temperature sensor models with analog output.	**h.Lol**	**100**	**%RH**	**100**
h.Lol	Humidity Lower Limit. Only available in humidity temperature sensor models with analog output.	**0**	**h.upl**	**%RH**	**0**
h.Hy5	Humidity hysteresis	**1**	**20**	**%RH**	**2**
h.oFF	Humidity of sset value	**-20**	**20**	**%RH**	**0**
h.cnt	Humidification control. **Lo**: Output is active when the humidity is below set value (cooling control), **Hi** : The output is active when the humidification is above the set value (heating control).	**LO**	**Hi**		**Hi**
h.Pon	Humidification output delay time after power-up	**00:00**	**99:00**	**min:sec**	**1:00**
FAN CONTROL PARAMETERS					
F.Cnt	Fan Control (:**n** F**o**an not active, **Y**:**E**F**5**an active)	**nO**	**YE5**		**YE5**
FtYP	Fan output type selection (:**t** T**i**h**m**e**E**fan runs at time-dependent., **tEmp**: The fan runs at temperature-dependent.)	**timE**	**tEmp**		**tEmp**
F5Et	Fan setpoint value	**-40**	**125**	**°C / °F**	**38**

F5tA	Fan temperature control (**L**: T**o t**he fan will be activated when the temperature value below t he setpoint. , **YE5** : The fan will be activated when the temperature value above the setpoint).	**Lo**	**Hi**		**Hi**
FHY 5	Fan hysteresis value	**1**	**20**	**°C / °F**	**1**
F.on	Fan ON time duration.	**00:00**	**99:00**	**hr:min**	**1:00**
F.oF F	Fan OFF time duration.	**00:00**	**99:00**	**hr:min**	**1:00**
F.t5 P	Fan alarm setpoint value.	**t.lol**	**t.uPL**	**°C / °F**	**50**
F.A H5	Fan alarm hysteresis.	**1**	**20**	**°C / °F**	**2**
RIGHT – LEFT Rotating CONTROL PARAMETERS					
r.Cn t	Rotating Control (:**n** R**o**tating not active, **Y**:**E**R**5**otating active)	**nO**	**YE5**		**YE5**
r.on	Rotating ON time duration.	**00:00**	**99:00**	**min:se c**	**1:00**
r.oF F	Rotating OFF time duration.	**00:00**	**99:00**	**hr:min**	**1:00**
ALARM PARAMETERS					

A.Pon	Alarm message display delay time after power up	**00:00**	**99:00**	**min:sec**	**1:00**
A.ttp	Temperature alarm configuration **(AB5** : Absolute alarm, **rEF** : Relative alarm) **A.b5:** Alarm values are **AtLo** and **AtHi** **rEF:** Alarm values are **AtIo** = **t.5Et–A.tIo** and **A.tHi** = **t.5Et+A.tHi**	**Ab5**	**rEF**		**Ab5**
A.tHi	Temperature upper level alarm (If **AttP** is changed, this parameter must be re-programmed).	**A.tLo**	**125**	**°C / °F**	**125**
A.tIo	Temperature lower level alarm (If **AttP** is changed, this parameter must be re-programmed)	**-40**	**A.tHi**	**°C / °F**	**-40**
A.tH5	Temperature alarm hysteresis	**1**	**20**	**°C / °F**	**2**
A.htp	Humidity alarm configuration **(AB5** : Absolute alarm, **rEF** : Relative alarm) **A.b5:** Alarm values are **A.hLo** and **A.hHi** **rEF:** Alarm values are **A.hIo** = **t.5Et–A.hIo** and **A.hHi** = **h.5Et+A.hHi**	**Ab5**	**rEF**		**Ab5**
A.hHi	Humidity upper level alarm. (If **A.htP** is changed, this parameter must be re-programmed)	**A.hLo**	**100**	**%RH**	**100**
A.hIo	Humidity lower level alarm.(If **A.htP** is changed, this parameter must be re-programmed)	**0**	**A.hHi**	**%RH**	**0**
A.hH5	Humidity alarm hysteresis.	**1**	**20**	**%RH**	**2**

MODBUS COMMUNICATION PARAMETERS					
Adr5	Slave device address selection	**1**	**247**		**1**
baud	Communication speed (baud rate)selection	**OFF**	**19.20**	**Bps**	**9600**

ENDA EHTC7425A HUMIDITY AND TEMPERATURE CONTROLLER MODBUS ADDRESS MAP

1.1 HOLDING REGISTERS

Holding Register Addresses		**Data Type**	**Data Content**	**Parameter Name**	**Read / Write Permission**
Decimal	**Hex**				
0000d	0x0000	word	Temperature set value	**t.5Et**	R / W
0001d	0x0001	word	Temperature set value Upper Limit	**t.uPL**	R / W
0002d	0x0002	word	Temperature set value Lower Limit	**t.LoL**	R / W
0003d	0x0003	word	Temperature upper level alarm	**A.tHi**	R / W
0004d	0x0004	word	Temperature lower level alarm	**A.tlo**	R / W

0005d	0x0005	word	Temperature hysteresis	**t.HY5**	R / W
0006d	0x0006	word	Temperature of set value	**t.off**	R / W
0007d	0x0007	word	Temperature alarm hysteresis	**A.tH5**	R / W
0008d	0x0008	word	Humidity set value	**h.5Et**	R / W
0009d	0x0009	word	Humidity set value Upper Limit	**h.upl**	R / W
0010d	0x000A	word	Humidity set value Lower Limit	**h.lol**	R / W
0011d	0x000B	word	Humidity hysteresis	**h.Hy5**	R / W
0012d	0x000C	word	Humidity of set value	**h.off**	R / W
0013d	0x000D	word	Humidity upper level alarm	**a.hHi**	R / W
0014d	0x000E	word	Humidity lower level alarm	**a.hlo**	R / W
0015d	0x000F	word	Humidity alarm hysteresis	**a.hH5**	R / W
0016d	0x0010	word	Temperature output delay time after power-up	**t.pon**	R / W
0017d	0x0011	word	Humidity output delay time after power-up	**h.pon**	R / W

0018 d	0x00 12	wo rd	Fan setpoint value.	**F5Et**	R / W
0019 d	0x00 13	wo rd	Fan hysteresis.	**FHY5**	R / W
0020 d	0x00 14	wo rd	Fan alarm setpoint value.	**Ft5p**	R / W
0021 d	0x00 15	wo rd	Fan alarm hysteresis.	**FAH5**	R / W
0022 d	0x00 16	wo rd	Fan ON time duration.	**f.on**	R / W
0023 d	0x00 17	wo rd	Fan OFF time duration.	**F.oF F**	R / W
0024 d	0x00 18	wo rd	Rotating ON time duration.	**r.on**	R / W
0025 d	0x00 19	wo rd	Rotating OFF time duration..	**r.oFF**	R / W
0026 d	0x00 1A	wo rd	Alarm message display delay time after power-up	**A.Po n**	R / W
0027 d	0x00 1B	wo rd	Integral time for PID control	**t.ti**	R / W
0028 d	0x00 1C	wo rd	Derivation time for PID control.	**t.td**	R / W
0029 d	0x00 1D	wo rd	Temperature input type (0:**0-20**, 1:**4-20**, 2:**0-10**, 3:**1-5**)	**t.inp**	R / W
0030 d	0x00 1E	wo rd	Humidity input type (0:**0-20**, 1:**4-20**, 2:**0-10**, 3:**1-5**)	**h.inp**	R / W

0031 d	0x00 1F	wo rd	Proportional band for PID control	**t.pb**	R / W
0032 d	0x00 2A	wo rd	Periodic time for PID control	**t.pcp**	R / W
0033 d	0x00 21	wo rd	Address selection for slave device.	**Adr5**	R / W
0034 d	0x00 22	wo rd	Baud Rate	**bAud**	R / W

1.2 INPUT REGISTERS

Input Register Addresses		**Data Type**	**Data Content**	**Parameter Name**	**Read /Write Permisson**
Decimal	**Hex**				
0000 d	0x00 00	wo rd	Measured temperature value (°C / °F)	**—**	R
0001 d	0x00 01	wo rd	Measured humidity value (%RH)	**—**	R

* 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 param eters for a period of “mm : ss” type ones in seconds, ”hh :mm” while those species defined in minutes.

1.3 COILS

Coil Addresses	**Data Ty**	**Data Content**	**Parameter Na**	**Read /Write Permisson**

Decimal	Hex	pe		me	
00d	0x00	bit	Temperature unit OFF=°**C**,ON=°**F**	**Unit**	R / W
01d	0x01	bit	Decimal indication OFF=**no,** ON=**YE5**	**D.PNt**	R / W
02d	0x02	bit	Buzzer OFF=**no,** ON=**YE5**	**5nd**	R / W
03d	0x03	bit	Temperature control OFF = **lo,** ON = Relative alarm **Hi**	**t.cnt**	R / W
04d	0x04	bit	Humidity control OFF = **lo,** ON = Relative alarm **Hi**	**h.cnt**	R / W
05d	0x05	bit	Fan Control (:**n** F**o**an not active, **Y**:**E**F**5**an active)	**F.cnt**	R / W
06d	0x06	bit	Fan output type selection (OFF = **time**, ON = **tEmp**)	**F.tYP**	R / W
07d	0x07	bit	Fan temperature control (OFF = **Lo**, ON = **Hi**)	**F.5tA**	R / W
08d	0x08	bit	Rotating Control (:**n**R**o**tating not active, **Y**:**E**R**5**otating active)	**r.cnt**	R / W
09d	0x09	bit	Temperature alarm configuration OFF = **Ab5,** ON = Relative alarm **rEF**	**a.ttp**	R / W
010d	0x0A	bit	Humidity alarm configuration OFF = **Ab5,** ON = Relative alarm **rEF**	**a.htp**	R / W
011d	0x0B	bit	PID temperature control selection OFF = **yE5,** ON = **no**	**t.pid**	R / W

1.4 DISCRATE INPUTS

Discrate Inputs Addresses	Data Ty	Data Content	Parameter Na	Read /Write Permi

Decimal	Hex	pe		me	sson
0000 d	0x0000	bit	Temperature relay output status (0=OFF; 1=ON)	—	R
0001 d	0x0001	bit	Humidification relay output status (0=OFF; 1=ON)	—	R
0002 d	0x0002	bit	Fan relay output status (0=OFF; 1=ON)	—	R
0003 d	0x0003	bit	Right Rotating relay output status (0=OFF; 1=ON)	—	R
0004 d	0x0004	bit	Left Rotating relay output status (0=OFF; 1=ON)	—	R

Documents / Resources

	ENDA EHTC7425A HUMIDITY AND TEMPERATURE CONTROLLER [pdf] User Guide HUMIDITY AND TEMPERATURE CONTROLLER, EHTC7425A

References

- Elektronik - Elektroniknet
- SURAN Industrieelektronik | Home