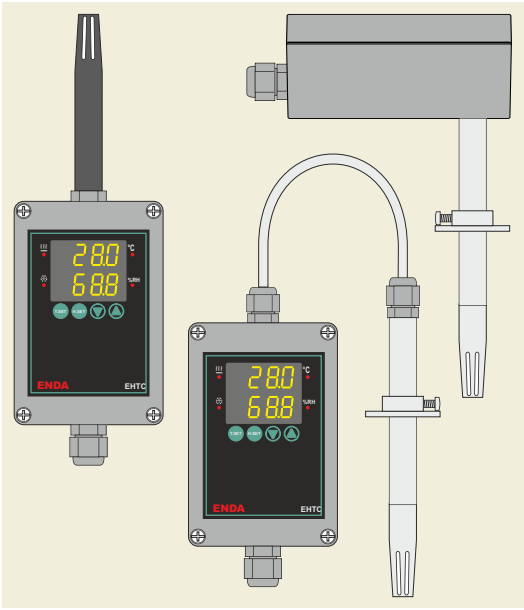
Read this document carefully before using this device. The guarantee will be expired by device demages if you don't attend to the directions in the user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

ENDA EHTC HUMIDITY AND TEMPERATURE CONTROLLER

Thank you for choosing **ENDA EHTC** Relative Humidity and Temperature Controller devices.

* 4-Digits, Primary and Secondary display
* 0 ... 100% RH Humidity measurement
* -40 ... +125°C Temperature measurement
* Relay outputs for Temperature and Humidity control
* Selectable heating or cooling control
* Selectable moistening or drying control
* 0-20mA, 4-20mA, 0-10V or 1-5V output
* PID or ON-OFF temperature control
* PID (SELF TUNE) Feature
* ON-OFF Humidity control
* Temperature units °C or °F
* Buzzer alarm for temperature value
* Cabled, Wall-mounted or duct type installations
* Screw-terminal Connection
* RS485 ModBus communication (Optional)
* CE Marked according to European Norms



ORDER CODE : EHTC - XX - XX - XXX - XX - XX

Product Basic Cone
Humidity and Temperature Control Device

Installation Type	
Wall-mounted	W
Cable connection	CB
Duct mounted	DC

Supply Voltage (Specify at Order)	
90-250V AC	UV
9-30V DC / 7-24V AC	LV

Immersion Length (Specify at Order)	
100	100mm (Wall-mounted)
150	150mm
250	250mm
350	350mm

Relay Output	
BLANK	N/A
2R	2 Relay Outputs

Modbus Selection	
BLANK	N/A
RS	RS485 ModBus (Specify at Order)

RoHS Compliant

CE

SPECIFICATIONS	EHTC-W-xV-100-xx-xx	EHTC-CB-xV-x50-xx-xx	EHTC-DC-xV-x50-xx-xx
Montage Type	Wall-mounted	1,5m. Cable Connection	Duct Mounted
Immersion Length	100mm	150/250/350mm (Specify at order)	
Weight	425gr	150mm 615gr 250mm 665gr 350mm 730gr	150mm 500gr 250mm 550gr 350mm 615gr
Humidity Range	0 ... 100 % RH (Shouldn't be icing and condensation in the ambient)		
Temperature Range	-40.0 ... +125.0°C or -40.0 ... +257.0°F (Shouldn't be icing and condensation)		
Device Operating Temp.	-40 ... +50°C (Shouldn't be icing and condensation)		
Accuracy	±2 % RH (20 ~ 80 % for RH range) ±4 % RH (0 ~ 100 % for RH range) ±0,5°C (for 20 ~ 40°C range) ±1°C (for 0 ~ 70°C range) ±2°C (for -40 ~ 125°C range)		
Response Time	63% Humidity variation for 7 seconds (with 1m/sec airflow at 25°C) 63% Temperature variation for 20 seconds (with 1m/sec airflow at 25°C)		
Control Outputs	Temperature Relay ; 250V AC, 5A (resistive load), NO ::: Humidity Relay ; 250V AC, 5A (resistive load), NO		
Life Expectancy for Relay	Mechanical 5.000.000; Electrical 100.000 operation. 250V AC, 5A (resistive load)		
Analog Outputs	For Humidity and Temperature : 0-20mA DC, 4-20mA DC, 0-10V DC or 1-5V DC can be programmed. (Load resistance Max 500Ω for current outputs)		
Supply	90-250V AC, 50/60Hz or 9-30V DC / 7-24V AC, 50/60Hz (Specify at order)		
Power Consumption	Max. 2VA		
Wiring	2,5mm² and 1,75mm² screw-terminal connections		
EMC	EN 61326-1: 2013		
Safety Requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)		

ENVIRONMENTAL CONDITIONS	
Ambient/storage temperature	-40 ... +60°C (Shouldn't be icing and condensation in the ambient)
Rated pollution degree	According to EN 60529 : IP65
Height	Max. 2000m

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

HOUSING	
Enclosure material	Self extinguishing plastics

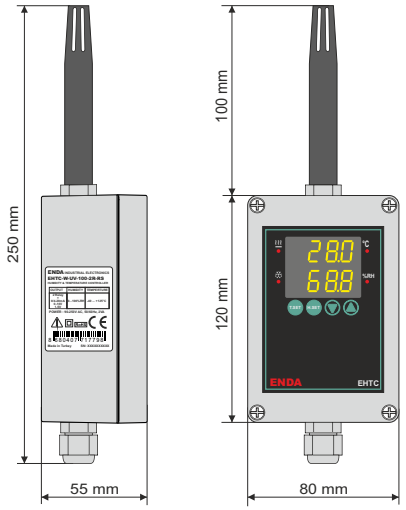
While cleaning the device, solvents (thinner, gasoline, acid etc.) or corrosive materials must not be used.

sisel

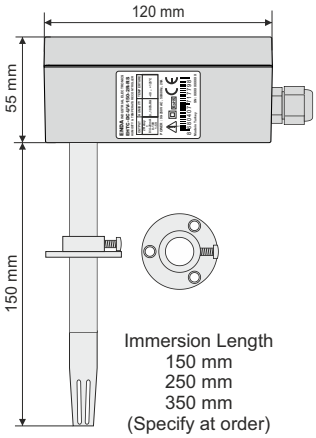
SİSEL MÜHENDİSLİK ELEKTRONİK SAN. VE TİC. A.Ş.
Şerifali Mah. Barbaros Cad. No:18 Y.Dudullu 34775
ÜMRANİYE/İSTANBUL-TURKEY
Tel : +90 216 499 46 64 Pbx. Fax : +90 216 365 74 01
url : www.enda.com.tr

DIMENSIONS

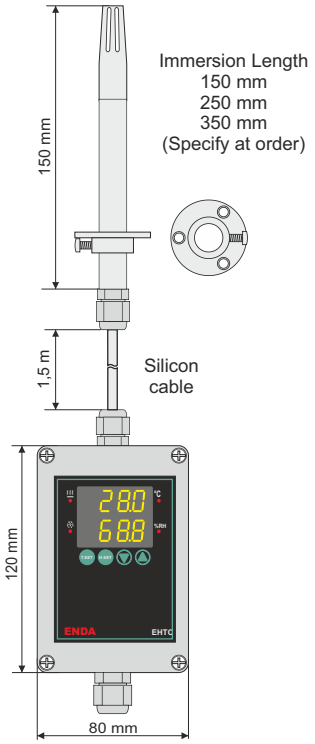
EHTC-W-xV-100-xx-xx
WALL-MOUNTED



EHTC-DC-xV-x50-xx-xx
DUCT TYPE

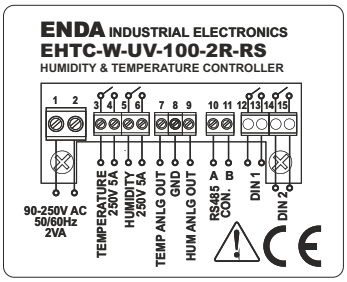


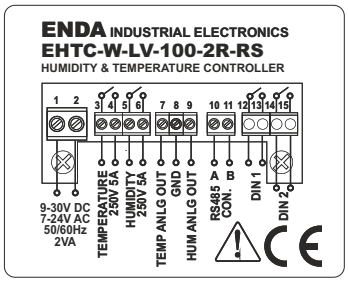
EHTC-CB-xV-x50-xx-xx
CABLED TYPE

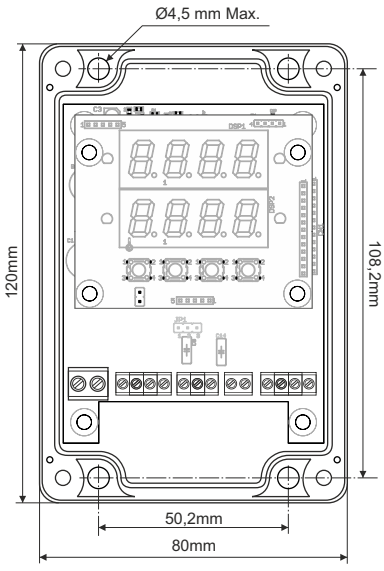


CONNECTION DIAGRAM / INSTALLATION

ENDA EHTC Series humidity and temperature controller devices are intended for wall-mounted or duct type installations. 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. Make sure that the operation temperature is not exceeded. The cables should not be close to the power cables or components.



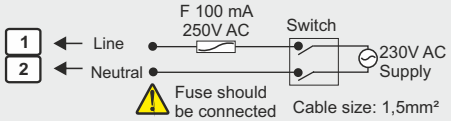




NOTE:

SUPPLY:

184-253V 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.

Equipment is protected throughout by DOUBLE INSULATION.

Holding screw 0.4-0.5Nm

ENDA INDUSTRIAL ELECTRONICS
EHTC-W-UV-100-2R-RS
HUMIDITY & TEMPERATURE CONTROLLER

OUTPUT	HUMIDITY	TEMPERTURE
2 Relay + 0/4-20mA 0-10V 1-5V	0...100%RH	-40 ... +125°C

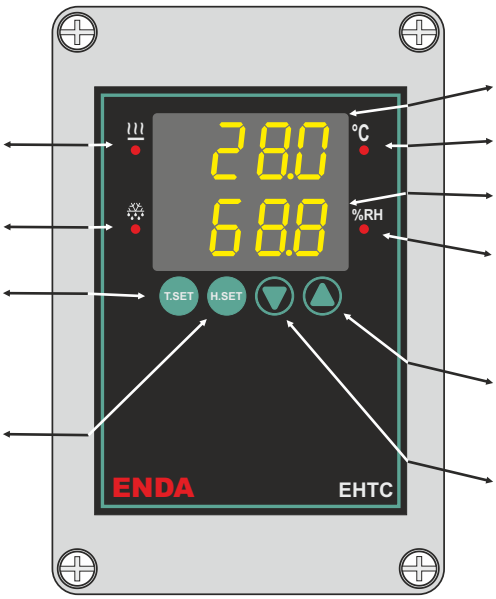
POWER : 90-250V AC, 50/60Hz, 2VA

8 680407 717798

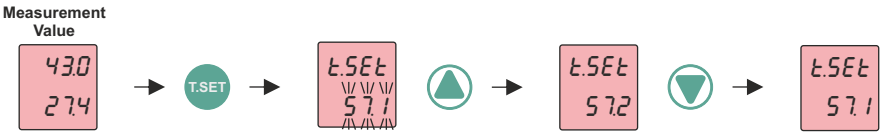
Made in Turkey SN: XXXXXXXXXX

For the best measurement, device must be mounted to where the air flow exist and measurement part must turned to down.

FRONT PANEL OPERATING INSTRUCTIONS



Displaying and Changing Temperature Set Value

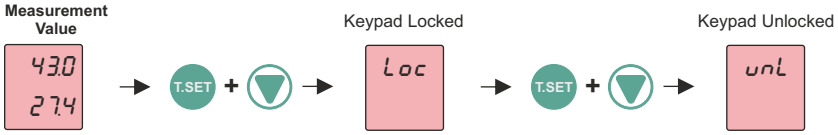


During "Running Mode", if T.SET key is preset, temperature setpoint value flashes for 3 seconds. While flashing, by pressing ▼ and ▲ keys, temperature set value can be changed. If no key is pressed for 3 seconds or if one of the set keys is pressed again, adjusted set value is saved and the "Running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

Displaying and Changing Humidity Set Value

During "Running Mode", if H.SET 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 T.SET and ▼ keys are pressed together for 2 seconds, Loc message is displayed and the keypad locked. While keypad is locked, if T.SET and ▼ keys are pressed together for 2 seconds, unL message is displayed and the keypad unlocked and "Running Mode" is entered.
While keypad is locked, if one of the key is pressed, Loc 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.dIS 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.Enb 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, dPAr message appears on display and device reset to default settings.

Displaying Revision Number

If T.SET ▼ ▲ keys are pressed together in "Running Mode", revision number r.001 appears on display.

Error - Warning - Alarm Definitions

SErr	Sensor Failure. Check the sensor connection. The audible warning is activated. Temperature and humidification outputs are disabled. Analog outputs are zero.
tALr	Temperature Alarm. Audible warning is activated. Temperature output is disabled.
HALr	Humidification Alarm. Audible warning is activated. Humidification output is disabled.
Stun	Self tune menu has been entered.
t.H !	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.
run	Self tune process is running.
Succ	Self tune process has been successfully completed.

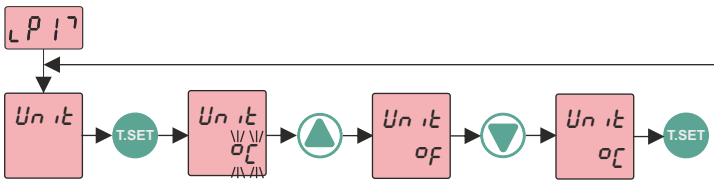
PROGRAMMING THE DEVICE

Running Mode

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 T.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 T.SET and ▼ keys are pressed together for 2 seconds in the user menu, parameter is removed from user menu. While navigating on the parameters in hidden menu, if the % (%) symbol is illuminates on parameter, It indicates that the parameter is also available on the user menu.

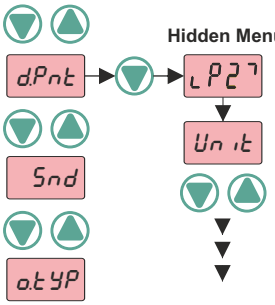
If ▼ and ▲ keys are pressed together for 2 seconds, user menu is entered and first parameter in the user menu is displayed.
If no operation is performed for 7 seconds or when ▼ ▲ keys are pressed together, "Running Mode" is enterd.

User Menu



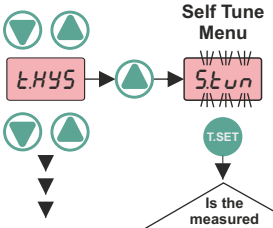
During a parameter settings, by pressing this key or no operation is performed for 3 seconds, it returns to the adjusted current parameter's name.

Hidden Menu

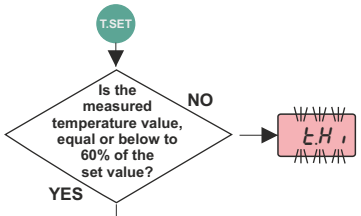


If ▼ key is pressed for 7 seconds while in user menu, hidden menu is entered and then the first parameter in the hidden menu is displayed. All parameters in the PARAMETER LIST on page 5 can be accessed from this menu. The parameter access and save functions are as in the user menu. If no operation is performed for 7 seconds, or if the ▼ ▲ keys are pressed together, "Running Mode" is entered.

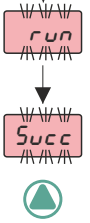
Self Tune Menu



If the ▲ key is pressed for 7 seconds while in user menu, self tune menu is entered. Then T.SET key is pressed, if the conditions are suitable, self tune process starts. This menu can be exited by pressing any key.



If the measured temperature value is greater than 60% of the set value, self tune operation can not be started.



PID parameters are being calculated.
If ▲ key is pressed, self tune menu exits and "Running Mode" is entered. PID parameters will not be changed.

PID parameters are calculated. Temperature control has begun.
If ▲ key is pressed, self tune menu exits and "Running Mode" is entered. Temperature control will be performed by according to the new PID parameters.

PARAMETER LIST

CONFIGURATION PARAMETERS		EN AZ	EN ÇOK	BİRİM	BAŞLANGIÇ
Unit	Temperature unit	°C	°F		°C
d.Pnt	Decimal point display	no	YES		no
Snd	Buzzer (no:Buzzer not active. YES: Buzzer active)	no	YES		no
otYP	Temperature, Humidity output type (0-20:0~20mA, 4-20: 4~20mA, 0- 10:0~10V, 1-5:1~5V)	0-20	1-5	mA / V	0-20
TEMPERATURE CONTROL PARAMETERS					
t.uPL	Temperature set value Upper Limit	t.LoL	125	°C / °F	125
t.LoL	Temperature set value Lower Limit	-40	t.uPL	°C / °F	-40
t.HYS	Temperature hysteresis	1	20	°C / °F	2
t.oFF	Temperature ofsset value	-20	20	°C / °F	0
t.cnt	Temperature control. Lo:Output is active when the temperature is below set value (cooling control), Hı : The output is active when the temperature is above the set value (heating control).	Lo	Hı		Hı
t.Pon	Temperature output delay time after power-up	00:00	99:00	min:sec	1:00
t.P id	PID temperature control selection (no:On-Off control YES: PID control)	no	YES		no
t.Pb	Proportional band for PID control	0	100	%	14
t.t ı	Integral time for PID control	00:00	99:00	min:sec	1:56
t.td	Derivation time for PID control	00:00	99:00	min:sec	0:35
HUMIDIFICATION CONTROL PARAMETERS					
h.uPL	Humidity set value Upper Limit	h.LoL	100	%RH	100
h.LoL	Humidity set value Lower Limit	0	h.uPL	%RH	0
h.HYS	Humidity hysteresis	1	20	%RH	2
h.oFF	Humidity ofsset value	-20	20	%RH	0
h.Cnt	Humidification control. Lo:Output is active when the humidity is below set value (cooling control), Hı : The output is active when the humidification is above the set value (heating control).	Lo	Hı		Hı
h.Pon	Humidification output delay time after power-up	00:00	99:00	min:sec	1:00
ALARM PARAMETERS					
A.Pon	Alarm message display delay time after power up	00:00	99:00	min:sec	1:00
A.tcP	Temperature alarm configuration (Abs : Absolute alarm, rEF : Relative alarm) Abs: Alarm values are A.tLo and A.tHı rEF: Alarm values are A.tLo = t.SEt - A.tLo and A.tHı = t.SEt+A.tHı	Abs	rEF		Abs
A.tHı	Temperature upper level alarm (If A.tP is changed, this parameter must be re-programmed)	A.tLo	125	°C / °F	125
A.tLo	Temperature lower level alarm (If A.tP is changed, this parameter must be re-programmed)	-40	A.tHı	°C / °F	-40
A.tHS	Temperature alarm hysteresis	1	20	°C / °F	2
A.hcP	Humidity alarm configuration (Abs : Absolute alarm, rEF : Relative alarm) Abs: Alarm values are A.hLo and A.hHı rEF: Alarm values are A.hLo = t.SEt - A.hLo and A.hHı = h.SEt+A.hHı	Abs	rEF		Abs
A.hHı	Humidity upper level alarm. (If A.hcP is changed, this parameter must be re-programmed)	A.hLo	100	%RH	100
A.hLo	Humidity lower level alarm.(If A.hcP is changed, this parameter must be re-programmed)	0	A.hHı	%RH	0
A.hHS	Humidity alarm hysteresis.	1	20	%RH	2
MODBUS COMMUNICATION PARAMETERS					
Adr S	Slave device address selection	1	247		1
bAud	Communication speed (baud rate) selection	oFF	19.20	Bps	9600

ENDA EHTC 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.SEt	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.tH1	R / W
0004d	0x0004	word	Temperature lower level alarm	A.tLo	R / W
0005d	0x0005	word	Temperature hysteresis	t.HyS	R / W
0006d	0x0006	word	Temperature ofsset value	t.oFF	R / W
0007d	0x0007	word	Temperature alarm hysteresis	A.tHS	R / W
0008d	0x0008	word	Humidity set value	h.SEt	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.HyS	R / W
0012d	0x000C	word	Humidity ofsset value	h.oFF	R / W
0013d	0x000D	word	Humidity upper level alarm	A.hH1	R / W
0014d	0x000E	word	Humidity lower level alarm	A.hLo	R / W
0015d	0x000F	word	Humidity alarm hysteresis	A.hHS	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
0018d	0x0012	word	Alarm message display delay time after power-up	A.Pon	R / W
0019d	0x0013	word	Integral time for temperature PID control	t.t1	R / W
0020d	0x0014	word	Derivation time for temperature PID control	t.td	R / W
0021d	0x0015	word	Proportional band for temperature PID control	t.Pb	R / W
0022d	0x0016	word	Temperature, Humidity output type (0:0-20, 1:4-20, 2:0- 10, 3: 1-5)	o.tyP	R / W

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)	- -	R
0001d	0x0001	word	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 parameters for a period of “mm:ss” type ones in seconds, ”hh:mm” while those species defined in minutes.

1.3 COILS

Coil Addresses		Data Type	Data Content	Parameter Name	Read / Write Permission
Decimal	Hex				
00d	0x00	Bit	Temperature unit OFF=°C,ON=°F	Un it	R / W
01d	0x01	Bit	Decimal indication OFF=no, ON=YES	d.Pnt	R / W
02d	0x02	Bit	Buzzer OFF=no, ON=YES	Snd	R / W
03d	0x03	Bit	Temperature control OFF = Lo, ON = Relative alarm H1	t.cnt	R / W
04d	0x04	Bit	Humidity control OFF = Lo, ON = Relative alarm H1	h.cnt	R / W
05d	0x05	Bit	Temperature alarm configuration OFF = Abs, ON = Relative alarm rEF	A.tEP	R / W
06d	0x06	Bit	Humidity alarm configuration OFF = Abs, ON = Relative alarm rEF	A.hEP	R / W
07d	0x07	Bit	PID temperature control selection OFF = YES, ON = no	t.P id	R / W

1.4 DISCRATE INPUTS

Discrate Inputs Addresses		Data Type	Data Content	Parameter Name	Read / Write Permission
Decimal	Hex				
0000d	0x0000	Bit	Temperature relay output status (0=OFF; 1=ON)	- -	R
0001d	0x0001	Bit	Humidification relay output status (0=OFF; 1=ON)	- -	R
0002d	0x0002	Bit	Digital input 1, input status (0=OFF; 1=ON)	- -	R
0003d	0x0003	Bit	Digital input 2, input status (0=OFF; 1=ON)	- -	R