

ETN Series

Enviro Technologies New Series product User manual



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Introduction

ETN Series System is microcontroller based electronic device which is specially design for measuring Differential pressure, with Temperature and Humidity as per required by user. Device measures Differential pressure, Temperature and Humidity. Configuration of device as per user requirement.

Device has 7segment displays to show all its parameter data and process value which is easily readable form long distance. Device shows Pressure, Temperature and Humidity parameter as per user requirement. Device has inbuilt buzzer for any alarm and memory limit violation which is configurable. 4 key for setting user define device parameter. Device can store all its data in his memory which can be letter downloaded from PC software at any time (for storage device only). Device also has provision for external parallel display device which can be mounted away from main device for monitoring (As per user requirement).

Applications:-

- Pharmaceutical industry
- Room Monitoring System for HVAC
- Clean Room Mapping

Specification and features

Sr. No.	Specifications	Description
1	Channel No.	3 Channel 1. Inbuilt/External Differential pressure sensor (Factory Settable) 2. Inbuilt/External Temperature Sensor (Factory Settable) 3. Inbuilt/External Humidity Sensor (Factory Settable)
2	Channel Input Type	Channel 1(Factory Settable) 1. Inbuilt Differential Pressure sensor range as per factory settable 2. External differential sensor input (0 to 5Vmax), 0mA to 20mA, 4mA to 20mA, RS-485 based sensor. Channel 2 (Factory Settable) 1. Inbuilt Temperature Sensor range 0.0 °C to 100.0 °C 2. External Temperature PT-100 sensor range -90.0°C to 390.0°C 3. External Temperature sensor input 0 to 5Vmax, 0mA to 20mA, 4mA to 20mA (Range depends on Sensor) 4. RS-485 based sensor. Channel 3 (Factory Settable) 1. Inbuilt Humidity Sensor range 0.0 to 100.0% RH 2. External Humidity 0.0 to 100.0% RH 3. External Humidity sensor input 0 to 5Vmax, 0mA to 20mA, 4mA to 20mA (Range depends on Sensor) 4. RS-485 based sensor.
3	Channel Accuracy/Resolution	Channel 1 1. Accuracy:- 1. Inbuilt Differential Pressure sensor accuracy 3% of Full Scale. 2. External differential pressure sensor accuracy depends on range and sensor. 2. Resolution:- 1. Inbuilt Differential Pressure sensor resolution 1 Pascal / 0.1mmWC 2. External differential sensor resolution depends on range and sensor resolution. Channel 2 1. Accuracy:- 1. For Inbuilt Temperature sensor accuracy 0.3°C. 2. For External PT-100 sensor accuracy +/-0.3°C. For other sensor it is depend on sensor.

			<p>2. Resolution:- For Inbuilt Temperature sensor resolution 0.1°C. For External PT-100 Sensor resolution 0.1°C.</p> <p>Channel 3</p> <p>1. Accuracy:- For Inbuilt Humidity sensor accuracy +/-3% RH. For External Humidity sensor accuracy is depends on sensor.</p> <p>2. Resolution:- For Inbuilt Humidity sensor resolution 0.1 % RH. For External Humidity sensor resolution is depends on sensor.</p>
4	Digital Input	:	Digital input can be configured for Acknowledgement or Door input status with event or as digital sensor input.
5	Relay	:	Configurable Potential free relay output with rating for 120VAC with 1Amp and 24VDC 1Amp. (User define NO/NC jumper setting)
6	Inbuilt Buzzer	:	Multifunction Configurable inbuilt buzzer with mute option.
7	Time and Date	:	Display Real Time Clock.
8	Communication	:	RS-485 Communication for downloading data.
9	External Slave Display	:	External Slave monitoring display with RS-485 Communication. (Optional)
10	Air Nozzles	:	2 Air nozzles for differential pressure measurement with standard ¼ inch air pipe fitting. Provision of front air nozzle. (Factory settable connectivity)
11	Enclosure	:	Flush mount, with front SS304 Material, and back MS powder coated.
12	Device Fitting	:	Flush mount fitting.
13	Device Rating	:	24VDC, 100mAmp.
14	Operating Temperature	:	0°C to 50°C
15	Size	:	210mm X 210mm plate dimension, Device depth 32mm and Size: - 150mm X 170mm back cabinet.

Sr. No.	Feature	Description
1	Type	Microcontroller based Electronic device with DP, Humidity and Temperature monitoring and logging, configurable digital input, potential free relay output.
2	Display	7 Segment bright LED display for better visibility.
3	Keypad	4 menu operated tactile switch/touch keypad
4	LED indicator	Different LED indication for Parameter Unit, Lower and Upper Alarm, digital input indication, Tx/Rx indication,
5	Device ID	Device ID can be selected from 1 up to 128.
6	Logging Interval	Logging Interval from 1min to 255min. (Default 1min) in case of storage device.
7	Storage Capacity	Up to 10000 Transaction with 3 channel information. (For storage device.)
8	Unit selection	Unit can be selected for temperature and pressure. (Depends on device model)
9	Alarm setting	Set Value, Alarm band setting, Upper, Lower, sensor fails and both alarm.
10	Air Nozzles	2 Air nozzles for differential pressure measurement with standard ¼ inch air pipe fitting. Provision of front air nozzle. (Factory settable connectivity)
11	Relay	Multifunction Configurable potential free relay output for different channel and alarm condition.
12	Buzzer	Multifunction Configuration Inbuilt buzzer for different alarm.
13	Min/Max Reading	Channel Min and Max process value can be view through menu, Min Max reset provision.
14	Digital Input	Digital input can be configured for Acknowledgement Or Door input status. Acknowledgement and door detection event can be store with time stamps.
15	Admin / Calibration login	Password protected Admin and Calibration parameter.
16	Communication	Proprietary protocol used for communication through RS485. (In case of storage device)

17	Slave Display	:	Slave display can be connected for external monitoring display.(Factory settable As per order)
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1. ALARM INDICAITON (As per model selected)			
• HI	:	Upper Alarm for respective channel	
• LO	:	Lower Alarm for respective channel	
2. UNIT INDICATION			
• °C	:	Degree Centigrade	
• °F	:	Degree Fahrenheit	
• %RH	:	Humidity	
• Pa	:	Pascal	
• mmWC	:	Millimeter of water	
3. SEVEN SEGMENT DISPLAY (ROW1)			
• PV	:	Display Process value with decimal points	
• Menu	:	GUI menu parameter display	
4. SEVEN SEGMENT DISPLAY(ROW2)			
• PV	:	Display Process value with decimal points	
• Menu	:	GUI menu sub parameter display	
5. SEVEN SEGMENT DISPLAY(ROW3)			
• PV	:	Display Process value with decimal points	

Front View of device:



Indication Details:

Alarm Indication

- **HI** : Upper Alarm for respective channel
- **LO** : Lower Alarm for respective channel

Unit Indication

- **Pa** : Pascal
- **mmWC** : millimetres of water
- **°C** : Degree Centigrade.
- **F** : Degree Fahrenheit.
- **%RH** : Humidity

Seven Segment Display (ROW 1)

- Main menu name while UI access.
- Process Value

Seven Segment Display (ROW2)

- Display Process Value with decimal Point
- Sub menu parameter while UI access.

Seven Segment Display (ROW3)

- Process Value

Keypad Functions:

There are four operation keys used and there description as follows:

KEY	Description
SEL	<ul style="list-style-type: none"> • To enter into main Menu. • Press this key two times to exit from main menu. • This key used for exit from parameter setting.
INC	<ul style="list-style-type: none"> • To Scroll the menu parameter • Increments numerical data for parameter setting. • To fast increment press key for 3 sec it will increment automatically by one, • Further pressing of key for 8-10 sec will increment count by 10. • If Key pressed for more than 3 sec in channel display mode then Channel Maximum value will get displayed.
DEC	<ul style="list-style-type: none"> • Scroll the menu parameter • Decrements numerical data for parameter setting. • To fast decrement press key for 5 sec it will decrement automatically by one, further pressing of key will decrement count by 10. • If Key pressed for more than 3 sec in channel display mode then Channel Maximum value will get displayed.
ENTER	<ul style="list-style-type: none"> • To enter into menu or parameter. • To set selected values • To take alarm acknowledgement from key while in process value display.

Display Modes:

There are following Display modes available:-

- 1) User Menu Display mode.
- 2) Special Key Function Display Mode.

Details of Display modes:

1>User Menu Display mode

- This mode is accessed using Admin or Calibration login.
- User can navigate through different User menus to Enable/Disable different Functionality.

2>Special Key Function Display Mode.

- Special Key Functionality only accessed in Channel Display mode
- Following are Special Key Function:
 - ❖ Channel minimum and maximum value display
 - Channel minimum value displayed by pressing Decrement key more than 3 seconds. In this case displayed channel Minimum value gets displayed of respective channel.
 - Channel maximum value displayed by pressing Increment key more than 3 seconds. In this case displayed channel Minimum value gets displayed of respective channel.
 - ❖ Channel alarm acknowledgment
 - If ENTER key pressed Acknowledgment of alarm channel taken.

Channel Alarm Types

- Alarm for particular channel set via two parameter as follows :
 - Set point
 - Hysteresis Band
- Depending upon Alarm Parameter setting and Channel Reading following Alarm Condition can be occurred.

SR. No.	Alarm Type	Description
1	High	When Channel reading goes beyond Alarm Set Point + Hysteresis
2	Low	When Channel reading goes below Alarm Set Point + Hysteresis
3	ORNG(over range)	When Channel reading goes beyond Channel Sensor range
4	URNG(under range)	When Channel reading goes below Channel Sensor range
5	OPEN	When Sensor get open(Disconnected from unit)

Alarm Concept with Example:

SR. NO.	Set Point	Hysteresis	Channel Process Value	Alarm Raised
1	30.0 °C	5.0 °C	32.5 °C	No Alarm(Normal Condition)
2	30.0 °C	5.0 °C	37.2 °C	High Alarm(Process value goes beyond 30.0 °C + 5.0°C)
3	30.0 °C	5.0 °C	22.3 °C	Low Alarm(Process value goes Below 30.0 °C - 5.0°C)
4	30.0 °C	5.0 °C	Lower than 0°C	Under range Alarm(Process value goes Below 30.0 °C - 5.0°C)
5	30.0 °C	5.0 °C	Greater than 100.0 °C	Over range Alarm(Process value goes Below 30.0 °C - 5.0°C)

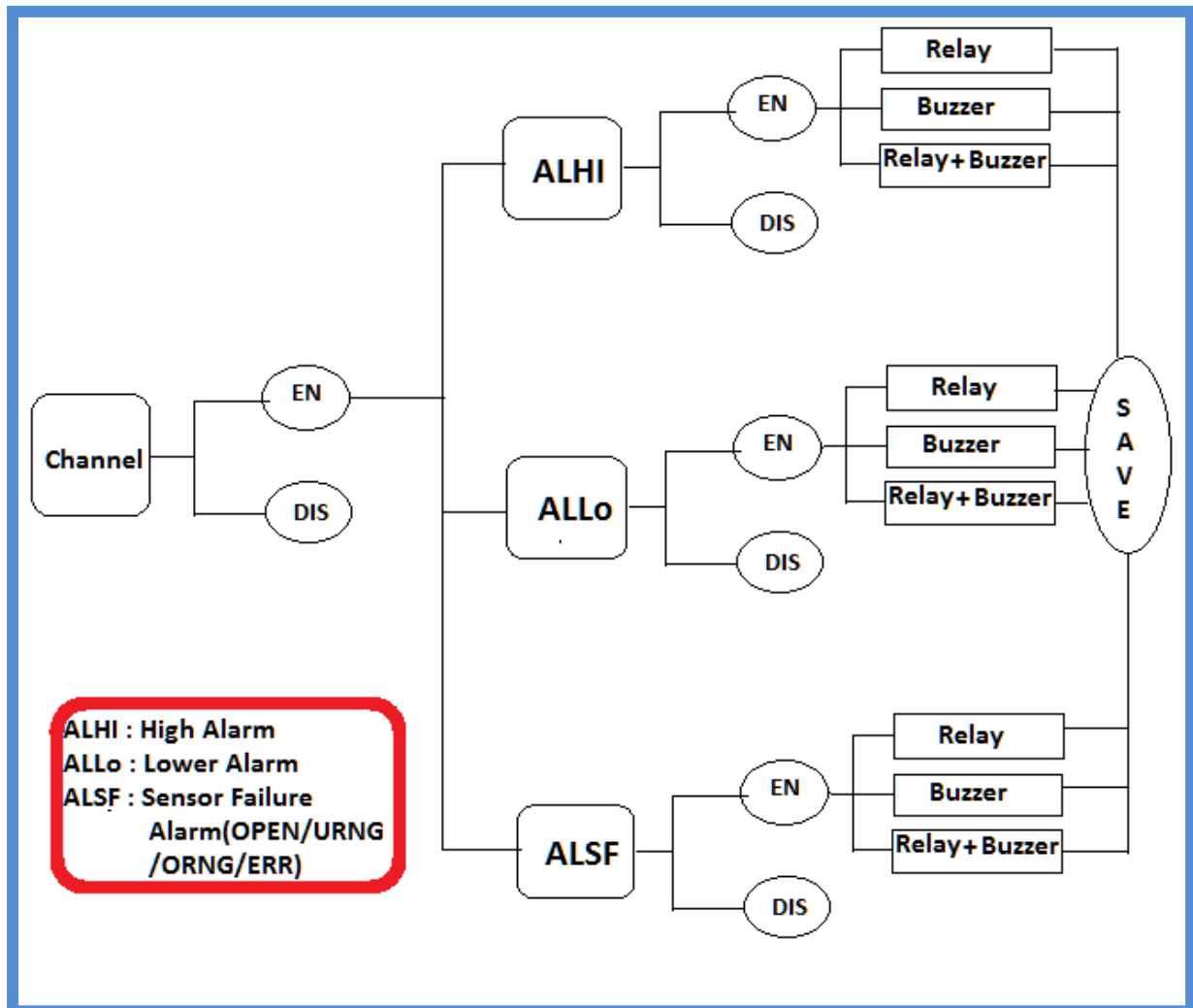
Output Configuration

Following output configuration available:

- Potential free relay
- Internal buzzer

Flowchart for Channel output configuration.

As shown in following image, mention configuration applicable for each channel.



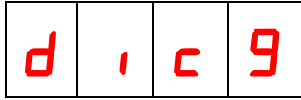
Alarm Snooze time

When particular channel acknowledgment taken, then after settable snooze time channel again raise output selection i.e. buzzer/Relay.

Input Configuration

There is provision for one digital input which can be configured for input.

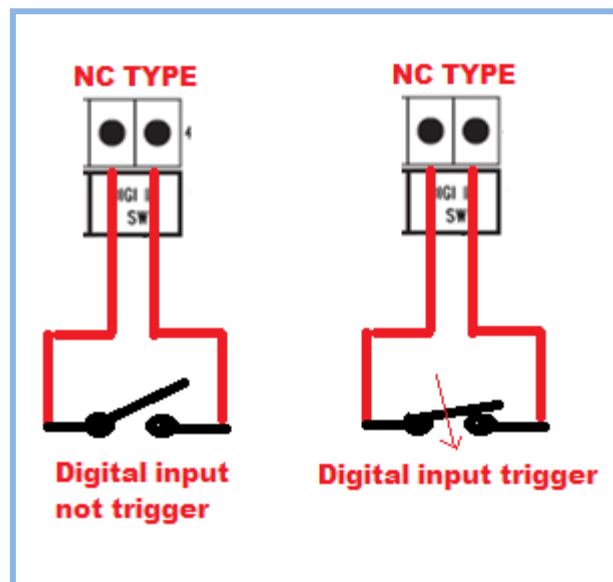
Digital input can be configured from Digital Input Configuration.



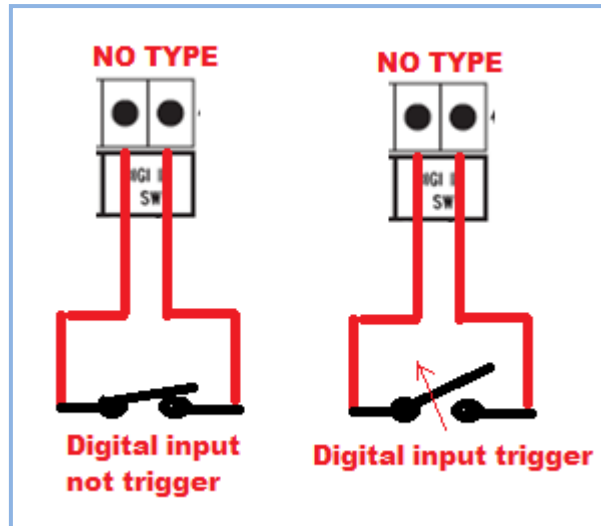
In this menu there are two types of contacts available.

1. NC type.
2. NO type.

When digital input selected as **NC type**, digital input trigger only when contacts get **shorted** as shown in following figure.



When digital input selected as **NO type**, digital input trigger only when contacts get **open** as shown in following figure.



Keypad Menu

Keypad menu and there display on row with description as follows: (Below description will be as per model selected)

SR. NO.	ROW 1 Display	Description	Applicable Model Code
1	A d L 9	To Access the menu of unit.	Storage/MODBUS/Indication
2	A L [H	To set Set-Point and Hysteresis for each channel.	Storage/MODBUS/Indication
3	r L [9	To set relay/inbuilt buzzer alarm status (enable/disable) for channel and relay/inbuilt buzzer assign for channel.	Storage/MODBUS/Indication
4	A L - d	Set Alarm delay for DP channel	Storage/MODBUS/Indication
5	A L - S	Set Alarm Snooze delay time	Storage/MODBUS/Indication
6	U n , t	To set unit for each channel.	Storage/MODBUS/Indication
7	r - H L	Reset Minimum and Maximum value for all channels.	Storage/MODBUS/Indication
8	d , c 9	Set Digital Input Configuration	Storage/MODBUS/Indication
9	i n t r	To set interval for storage of readings (for all channel Enable)	Storage

10	r	-	P	[	To reset all memory.	Storage
11	d	S	U	n	To set Device ID of system.	Storage/MODBUS/Indication
12	L	-	b	2	To set buzzer for menu keys & PC memory.	Storage/MODBUS/Indication
13	r	S	Y	S	Reset system parameter to factory default	Storage/MODBUS/Indication
14		d	t	t	To set date and time of device.	Storage/MODBUS/Indication
15		r	t	c	24hr or 12hr(as per model no number)	Storage/MODBUS/Indication
16		A	d	,	To set admin ID and Password if login with admin ID.	Storage/MODBUS/Indication
17	P	r	t	S	To select Enviro proprietary and Modbus protocol.	MODBUS
18	I	n	F	o	System Information	Storage/MODBUS/Indication
19	b	A	[	-	Go to Channel Display mode.	Storage/MODBUS/Indication

To represent particular channel on display, following character used.

Display				Channel Description
		d	P	Differential Pressure Channel
			t	Temperature Channel
		r	H	Humidity Channel

Procedure to access different menu functions:

Admin Login

This function is used to access various Menu of ETN series device. User must login first to access different menus. For admin log in valid Admin User ID and Password is required, provided by manufacturer.

Default Admin login ID is 10 and Password is 1.

Following Steps to be executed for Admin Login.0

- Go to Admin Login menu using "SEL" key.

A	d	L	9

- Use ENT key to continue. It will ask for Admin User ID, Using "INC"/ "DEC" key set Admin User ID as 10.

		1	d
		1	0

- Then again Press "ENTER" key to set Password. Use "INC"/ "DEC" key set password to value as 1.
Press "ENTER" to login. For successful login following window will displayed.

P	A	S	S
			1

- Press "ENTER" to login.
- If the ID and Password is correct then ETN series display shows message as follow:-

Admin login

A	d	L	9
A	d	-	o

After Successful login press SEL key once and use INC/DEC key to select required menu.

For any incorrect ID or Password entered, ETN series display shows message as

Admin login

A	d	L	9
F	A	I	L

- To exit from Admin Login function press “SEL” key twice
- To log out just go to Admin Login module once again and press “ENT” key.

NOTE: If any key is not press within 60 sec during Admin mode then you will exit from Admin mode. To enter in to Admin/Calibration mode again you must Login by using Admin Login Menu else message will be displayed “Need Admin Login” as follows:

A	d	L	9

After successful login following menus will be accessed. Operational steps described below:

SR No	Description	Key to be pressed	Display	Action	Note
1	To set Alarm Set-Point and Hysteresis for each channel. <i>ADMIN LOGIN</i>	ENT	A L [H	Enter into Set Point and Hysteresis menu	
			d P		
		INC/DEC	A L [H	Select Channel	
			d P		
			r h		
			d i		
ENT	S t P t	Current set point for selected channel displayed.	Set point Maximum & Minimum value depends upon sensor which is configured.		
	2 9				

		INC/DEC	S	Y	S	t	Change set point.	For digital Input Channel user can select High/Low set point.		
					2	5				
		ENT	H	Y	S	t	Current hysteresis for selected channel displayed	Alarm Hysteresis range. Min: 0 (no decimal) 0.0 (single point) Max : 200 (no decimal) 20.0 (single point) For Digital Input Channel This selection disabled.		
					1	0				
		INC/DEC	H	Y	S	t	Change hysteresis.	After save message displayed press INC/DEC key to select next channel. Press SEL key once to access further menu or to exit to normal screen press SEL key twice.		
					1	2				
		ENT	H	Y	S	t	Selected Alarm set point and hysteresis for channel saved.			
			S	A	U	E				
2	Relay & Internal Buzzer Configuration	ENT	r	L	[	9	Enter into Channel Relay Configuration menu.		
					d	P				
	ADMIN LOGIN	INC/DEC	r	L	[	9	Press INC/DEC channel to scroll to particular channel. Press ENT to select the channel.	<i>Select desirable channel by INC/DEC key. Channel Displayed depends upon Model Number.</i>	
						d			P	
									t	
						r			h	
					d	,				
		ENT	r	L	[	9	Current Status of Selected channel for Alarm Enable/Disable displayed.	If Enable selected, then further option get displayed.	
					E	n				
		INC/DEC	r	L	[	9	Use INC/DEC to Enable/Disable		

				d	,	5	channel for Alarm configuration.	
		INC/DEC	r	L	[9	If channel is enabled than Choose the alarm condition from the menu. i.e. 1.upper alarm 2.lower alarm 3. Sensor failure. ALHi Upper alarm ALLo Lower alarm ALSFi Sensor failure.	For all channels you can choose the 3 alarm condition. Sensor Failure alarm condition comes under following: 1>Sensor Under range 2>Sensor Over range 3>Sensor open (Sensor Not Connected.)
			A	L	H	,		
			A	L	L	o		
			A	L	S	F		
		ENT	r	L	[9	Current Status of Selected channel Alarm Parameter Enable/Disable displayed.	There is Enable/Disable Setting for each Alarm Condition: ALHi Upper alarm ALLo Lower alarm ALSFi Sensor failure.
					E	n		
		ENT	r	L	[9	If Channel Parameter Disable selected then selected channel parameter disable for configuration.	If Disable option selected then selected parameter disable for selected channel.
			S	A	u	E		
		INC/DEC	r	L	[9	If Channel Enable then select following option displayed for output to be configured for channel. RLBZ Relay + Buzzer r1 Relay Bz Buzzer	To Configured different channel press SEL key once.
			r	L	b	2		
					r	L		
					b	2		
		ENT	r	L	[9	Save the changes.	
			S	A	u	E		

3	Set Alarm delay for DP channel <i>ADMIN LOGIN</i>	ENT	A	L	-	d	Current DP channel alarm delay Displayed.	
						1		
		INC/DEC	A	L	-	d	Change alarm delay time	Alarm Delay Range : 0 : Disable Min : 1 seconds Max : 9999 seconds
				2				
		ENT	A	L	-	d	Selected DP channel alarm delay saved	Press SEL key once to access further menu or to exit to normal screen press SEL key twice.
			S	A	u	E		
4	Set Alarm Snooze delay for DP channel	ENT	A	L	-	S	Alarm Snooze delay time displayed.	
						1		
		INC/DEC	A	L	-	S	Change Alarm Snooze delay	Alarm Delay Range : 0 : Disable Min : 1 seconds Max : 9999 seconds
				2				
		ENT	A	L	-	S	Alarm Snooze delay time Saved.	Press SEL key once to access further menu or to exit to normal screen press SEL key twice.
			S	A	u	E		
5	Channel Unit Selection <i>DMIN LOGIN</i>	ENT	U	n	i	t		
					d	P		
		INC/DEC	U	n	i	t	Select Channel	Select desirable channel by INC/DEC key. <i>Channel Displayed depends upon Model Number.</i>
					d	P		
						t		
				r	h			
		ENT	U	n	i	t		

			d	E	9	[
		INC/ DEC	U	n	l	t	Change Channel Unit	There are total five units out of which suitable unit selected depend on channel type.
			d	E	9	[		UNIT 1 : degree Centigrade (Temperature Channel)
			d	E	9	F		UNIT 2 : degree Fahrenheit(Temperature Channel)
					r	H		UNIT 3 : % Relative Humidity(RH)
					P	A		UNIT4: Pascal(Pressure)
					ī	ī		[	UNIT 5 : millimetre of water(Pressure)
		ENT	U	n	l	t	Selected unit for channel saved.	After save message displayed press INC/DEC key to select next channel. Press SEL key once to access further menu or to exit to normal screen press SEL key twice.
			S	A	v	E		
6	Reset Minimum and Maximum value for all channels. <i>ADMIN LOGIN</i>	ENT	r	-	H	L	Enter to Menu	Reset by user/day option will reset Minimum/Maximum value of all Channels.
			U	S	E	r		
		INC/ DEC	r	-	H	L	Select Reset Min/Max of all channel by two way: 1>Reset Now 2>Reset By Day automatically.	
			U	S	E	r		
				d	A	y		
		ENT	U	S	E	r	If reset by USER option selected then All Channels Min/Max reset.	
					d	n		

		ENT	d	A	y	If reset by day option selected then Current Status of reset by day displayed.		
				E	n			
		INC/DEC	d	A	y	Enable/Disable Setting.		
			d	,	5			
		ENT	d	A	y	Save Setting.		
			S	A	u			E
7	<p>Digital I/P configuration.</p> <p><i>(Accessible in all Model Numbers)</i></p> <p>ADMIN LOGIN</p>	ENT	d	,	[	9	Digital I/P settings.	
			A	c	̄	̄		
		INC/DEC	d	,	[	9	INC/DEC to select from the menu	Digital Input can be configured for following one at a time :
			A	c	̄	̄		Alarm Acknowledgment.
			d	o	o	r		Door Input for DP Channel
			S	E	n			Digital Input Sensor
			d	,	5			Disable
		ENT	d	,	[	9	If Digital Input configuration Enable then Current Status displayed.	
				n	c			
		INC/DEC	d	,	[	9	Select from the menu	Input type
					n	c		Normally Close type Contacts.
					n	o		Normally Open type Contacts.

		ENT	d	,	[9	If anyone is selected then it will ask to save. ENT to save.	
			S	A	u	E		
		ENT	d	,	[9		Mute & Dot timer Range : 0 : Disable Min : 1 seconds Max : 9999 seconds
			d	o	o	r		
		ENT	d	,	[9	Again it will ask for NC or NO. SELECT required.	
					n	c		
		ENT		d	o	t	Select the door open time in seconds.	
						7		
		ENT		d	o	t	ENT to save the data.	
			S	A	u	E		
		ENT	d	,	[9	ENT to select the menu to disable digital I/P.	
				d	,	5		
		ENT	d	,	[9	ENT to save the settings.	
			S	A	u	E		
8	To set interval for storage of readings (for all channel Enable)	ENT	1	n	t	r	Current Interval for channel data storage displayed	
						1		
		INC/DEC	1	n	t	r	Change Time interval	Time interval Range : Min : 1 min Max : 255 min
						2		
		ENT	1	n	t	r	Selected Time interval saved	Press SEL key once to access further menu

			S	A	u	E		or to exit to normal screen press SEL key twice.
9	To reset all memory. <i>ADMIN LOGIN</i>	ENT	r	-	P	[	Device ask for reset all PC memory	
			r	A	L	L		
		ENT	r	-	P	[	Device ask for confirm to reset PC.	
				y	E	S		
		INC/DEC	r	-	P	[	To select weather to reset PC memory. (YES/NO)	For "no" option selected □□□□ (select other menu) displayed. Press SEL key once to access further menu or to exit to normal screen press SEL key twice.
					n	o		
		ENT	r	-	P	[	PC memory reset.	
					d	n		
10	To set Device ID of system. <i>ADMIN LOGIN</i>	ENT	d	S	U	n	Current Device ID displayed.	
						1		
		INC/DEC	d	S	U	n	Change device ID	Device ID range : Min : 1 Max : 128
						3		
		ENT	d	S	U	n	Selected device ID saved.	Press SEL key once to access further menu or to exit to normal screen press SEL key twice.
			S	A	u	E		
11	To set buzzer for menu keys & PC	ENT	L	-	b	2	Enter into buzzer configuration menu.	
			E	-	U	1		

	memory.		L	-	b	2		Different Buzzer Configuration :
	<i>ADMIN LOGIN</i>	INC/DEC	E	-	U	1	Navigate through different buzzer configuration.	Enable Keypad buzzer
			E	-	P	C		Enable PC memory high buzzer
			E	-	U	P		Enable Keypad buzzer & PC memory buzzer.
			b	d	,	S		Disable all buzzer configurations.
			L	-	b	2		Save selected settings.
	S	A	u	E				
12	Reset system parameter to factory default.	ENT	r	S	y	S	Device ask for reset all system settings and configuration.	
			r	A	L	L		
		ENT	r	S	y	S	Device ask for confirm to reset.	
				y	E	S		
		INC/DEC	r	S	y	S	To select weather to reset.(YES/NO)	For “no” option selected SELF (select other menu) displayed. Press SEL key once to access further menu or to exit to normal screen press SEL key twice.
					n	o		
ENT	r	S	y	S	System and configuration Reset.			
			d	n				
13	Set date and time.	ENT		d	t	t	Set date and time.	Press DEC key to go to month or year from day.
		ENT			d	d	Change date by pressing INC key.	Press INC key to change the date, month, year or time.
					2	7		

		DEC			11	11	Change month by pressing INC key
					1	0	
		DEC			4	4	Change year by pressing INC key
					1	4	
		DEC			h	h	Change hour by pressing INC key
					1	0	
		DEC			11	11	Change minute by pressing INC key
					1	1	
		DEC			u	d	ud is week of the day if 0 equals Sunday, then 1 equals Monday, and so on.
						1	
		ENT			u	d	Save the changes.
			5	A	u	E	
14	Set Time format	ENT			r	t	Current time format display
		INC/DEC			r	t	
		ENT	1	2	h	r	12 hour time format
			2	4	h	r	24 hour format
			2	4	h	r	Save selected time format

			S	A	u	E			
15	To set admin ID and Password if login with admin ID. <i>ADMIN LOGIN</i>	ENT	A	d	,		Enter into Admin ID and password change menu	ID and Password Range: 0 to 255.	
		ENT			,	d	Display current ID		
							0		
		INC/DEC				,	d		Change ID.
							1		
		ENT	P	A	S	S			Display Current Password
							3 0		
INC/DEC	P	A	S	S		Change Current Password.			
					2 2				
ENT	P	A	S	S		Save Selected ID and Password.			
	S	A	u	E					
16	Protocol Selection. <i>ADMIN LOGIN</i>	ENT	P	r	t	S	Current Selected protocol displayed		
				E	n	u			

		INC/D EC	P	r	t	S		
				ī	o	d	Modbus Protocol selection	
				E	n	u	Enviro Protocol Selection	
		ENT		ī	o	d	Save Protocol selection	
			S	A	u	E		
17	To get System Software and hardware version. <i>ADMIN LOGIN</i>	ENT/ INC/ DEC	I	n	F	o	Software Version Displayed Hardware Version Displayed PC memory used	

Special Short key events

❖ Channel alarm acknowledgment

➤ If ENTER key pressed then Acknowledgement of alarm channel taken.

If ENTER press in Channel Display mode then following screen displayed.

A	L	C	H
1.		3.	

As shown above, channel 1 and 3 acknowledgments taken represented by dot near channel number. While Channel 2 in normal condition (no alarm).

Meaning of 1 and 3 in above display.

1: channel 1
3: channel 3

2: channel 2

After Acknowledgement taken, display return to channel display mode.

Modbus register map

Address	Read Write Access	Parameter		No of bytes	Note
		Parameter Name	Channel No		
40001	READ/WRITE	Process Value	Channel 1	2	1>In case of temperature and Pressure process value in selected units # Temperature : °C or °F # Pa or mmWc 2>In case of Digital Input 0 : Low 1 : High
40002	READ/WRITE	Process Value	Channel 2	2	
40003	READ/WRITE	Process Value	Channel 3	2	
40004	READ/WRITE	Process Value	Channel 4	2	
40013	READ/WRITE	Alarm Set Point	Channel 1	2	
40014	READ/WRITE	Alarm Hysteresis	Channel 1	2	
40015	READ/WRITE	Alarm Set Point	Channel 2	2	
40016	READ/WRITE	Alarm Hysteresis	Channel 2	2	
40017	READ/WRITE	Alarm Set Point	Channel 3	2	
40018	READ/WRITE	Alarm Hysteresis	Channel 3	2	
40019	READ/WRITE	Alarm Set Point	Channel 4	2	
40020	READ/WRITE	Alarm Hysteresis	Channel 4	2	
40021	READ	Alarm Status	Channel 1	2	Alarm Status 0 : No alarm 1 : Upper Alarm 2 : Lower 5 : URNG 6 : ORNG 7 : OPEN
40022	READ	Alarm Status	Channel 2	2	
40023	READ	Alarm Status	Channel 3	2	
40024	READ	Alarm Status	Channel 4	2	
40029	READ/WRITE	Channel Unit	Channel 1	2	0 : for °C(Centigrade) 1 : °F(Fahrenheit) 2 : %RH 3 :PA 4 :mmWC 5 :Digital input Channel unit depends upon type of channel
40030	READ/WRITE	Channel Unit	Channel 2	2	
40031	READ/WRITE	Channel Unit	Channel 3	2	
40032	READ/WRITE	Channel Unit	Channel 4	2	
40033	READ/WRITE	DD	-	2	DD : Date MM : Month YY : Year HH : Hour MM : Minutes SS : Second WOD : Week of the day 0: Sunday, 1: Monday and so on. Time setting in 24 hour format
40034	READ/WRITE	MM	-	2	
40035	READ/WRITE	YY	-	2	
40036	READ/WRITE	HH	-	2	
40037	READ/WRITE	MM	-	2	
40038	READ/WRITE	SS	-	2	
40039	READ/WRITE	WOD	-	2	

40048	READ/WRITE	RUAR	Channel 1	2	128: no selection 1:Relay 17: Buzzer 33: Relay+Buzzer
40049	READ/WRITE	RLAR		2	
40050	READ/WRITE	RSFR		2	
40051	READ/WRITE	RUAR	Channel 2	2	
40052	READ/WRITE	RLAR		2	
40053	READ/WRITE	RSFR		2	
40054	READ/WRITE	RUAR	Channel 3	2	
40055	READ/WRITE	RLAR		2	
40056	READ/WRITE	RSFR		2	
40057	READ/WRITE	RUAR	Channel 4	2	
40058	READ/WRITE	RLAR		2	
40059	READ/WRITE	RSFR		2	
40060	READ/WRITE	Acknowledgement	-	2	When write to 1 Acknowledgement taken when Read bitwise Status 1 : for Acknowledgement taken. Status 0 : no Acknowledgement taken. CH4 | CH3 | CH 2| CH 1

Modbus register details

Register address	40001 to 40004
------------------	----------------

Details

This register provides process value details of respective channels.

Following are special case of process value data to indicate sensor failure state as follows:

Register data in hex	Description
0x4000	URNG(Sensor Under range condition)
0x4001	ORNG(Sensor Over range condition)
0x4002	OPEN(Sensor Open condition)

Example

1> In case of Pressure channel, we can read following address.

Register address	Use
40001	To read Process value of DP channel
40029	To read unit of DP channel

Following table demonstrates Pressure channel real value calculation.

Register address	Register data after read	Data to be predicted
40001	25	Pressure value 25
40029	3	Pressure unit is Pascal

In above case Real value of pressure is 25 Pascal.

2>In case of Pressure channel, we can read following address.

Register address	Use
40001	To read Process value of DP channel
40029	To read unit of DP channel

Following table demonstrates Pressure channel real value calculation.

Register address	Register data after read	Data to be predicted
40001	35	Pressure value 35
40029	4	Pressure unit is mmWC

In above case Real value of pressure is 3.5 Pascal without decimal point.

3>In case of Temperature channel, we can read following address.

Register address	Use
40002	To read Process value of temperature channel
40030	To read unit of temperature channel

Following table demonstrates Temperature channel real value calculation.

Register address	Register data after read	Data to be predicted
40002	285	Process value 285
40030	0	Temperature unit is °C

In above case Real value of pressure is 28.5 °C with one decimal point.

Register address	400013 to 40020
------------------	-----------------

Details

- These register used to read/write Channel alarm set point and hysteresis.
- Read procedure for Set point as same as Process value read except address change.
- Write procedure to Set point of particular channel required as follows:-
Decimal point and Unit of channel must consider before writing data.
For Hysteresis range is 0 to 200.

Register address	40021 to 40024
------------------	----------------

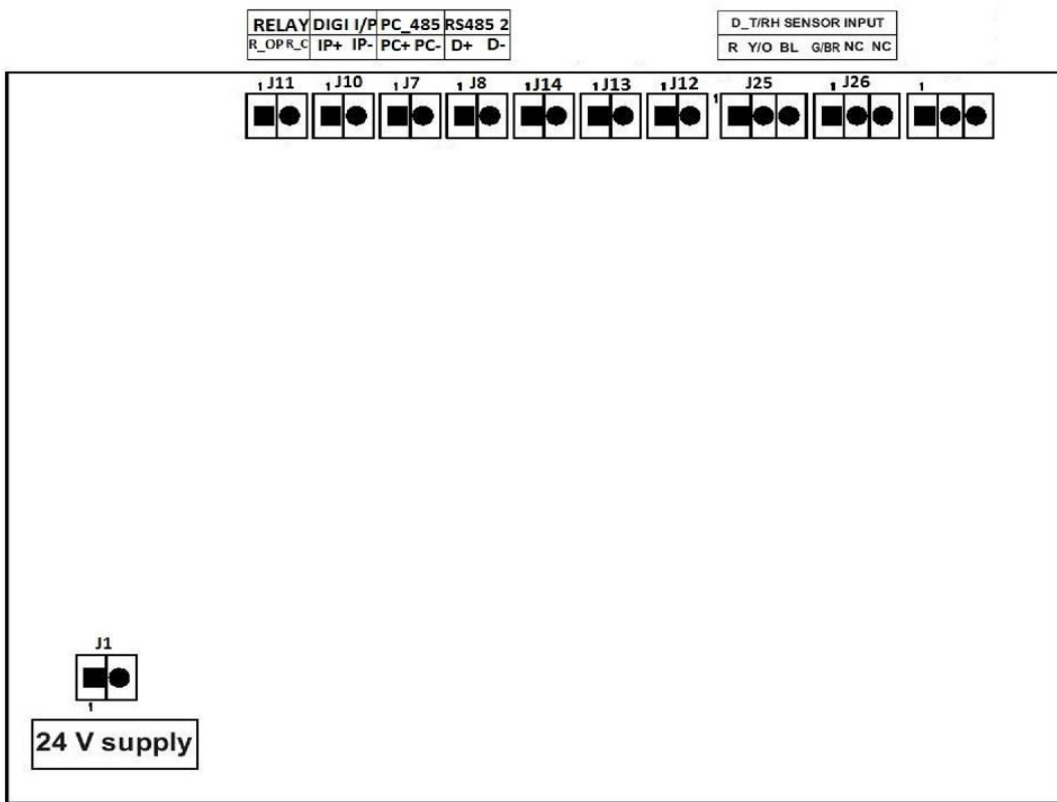
Details

Alarm Status represents current status of particular channel.

Details regarding alarm status as follows:-

Alarm Bit	:	Alarm Type	Description
0	:	No Alarm	Normal Condition
1	:	Upper Alarm	Upper alarm Condition
2	:	Lower Alarm	Lower alarm Condition
5	:	URNG	Sensor Under range condition
6	:	ORNG	Sensor Over range condition
7	:	OPEN	Sensor Open condition

Connector Connection Details



Digital I/P

Digital I/P are a potential free input just connect the switch to it & do not connect supply to it.

Power Supply: 24Volt		
Pin No.	Legend	Description
1	+	Positive
2	-	GND

RS485 1:

PC COMMUNICATION		(RS 485 1)
Pin No.	Legend	Description
1	PC+	For communication with PC.
2	PC-	

RS485 2:

(RS 485 2)		
Pin No.	Legend	Description
1	D+	To connect Remote Display.
2	D-	

Relay		
Pin No.	Legend	Description
1	R_C	Relay can be used as NC or NO contacts by jumper settings.
2	R_OP	

Pressure Sensor pipe connection (as per model requirement):

Pressure pipes connection		
Nozzle	Legend	Description
1	P+	Connect pipe.
2	Air pressure dome nozzle	



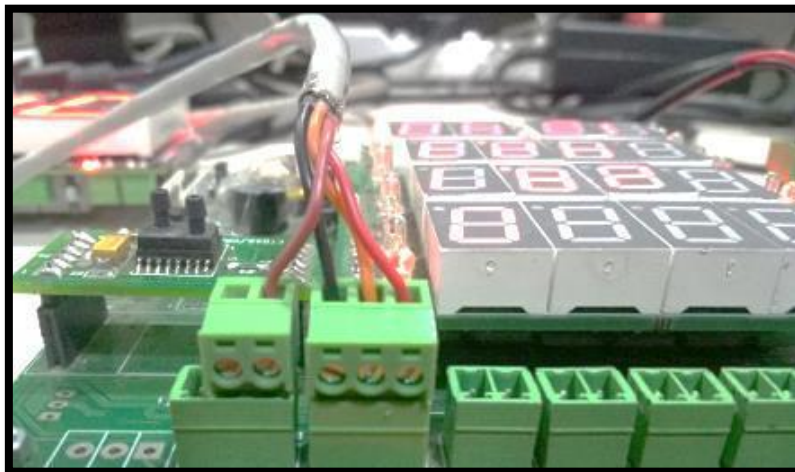
Digital Temperature Humidity Connection Details (as per model requirement)

- For connector used:

Digital Inbuilt Temperature + RH Connection Details.	
Legend	Description
J25_1	YELLOW/ORANGE
J25_2	RED
J25_3	GREEN/BROWN
J26_1	BLACK

NOTE: Connect Sensor cable as shown above table colour code to avoid any damage to sensor.

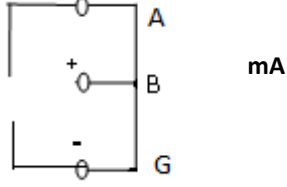
THIS IMAGE ONLY FOR REFERENCE



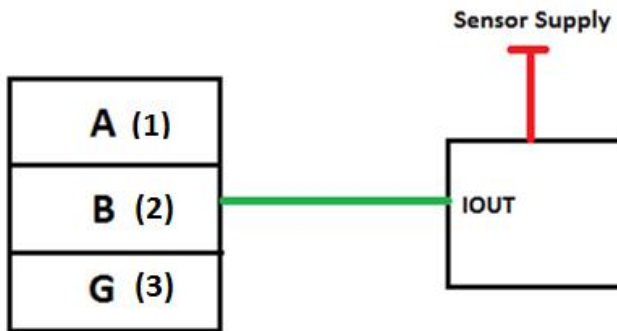
- PT100 sensor Connection Details (as per model no):

RTD (PT-100) sensor connection		LEGEND	DESCRIPTION	
(J25) PIN NO.				
1	A	RED		
2	B	WHITE		
3	G	WHITE		

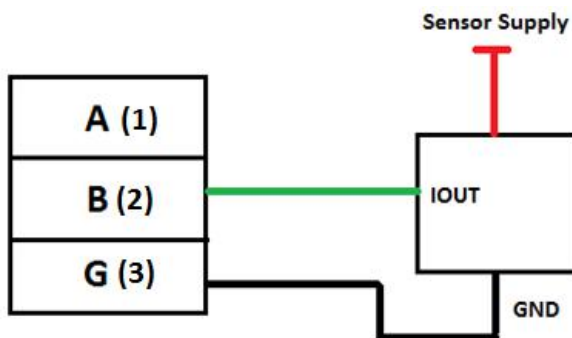
• **4-20mA Sensor Connection details (as per model no) :**

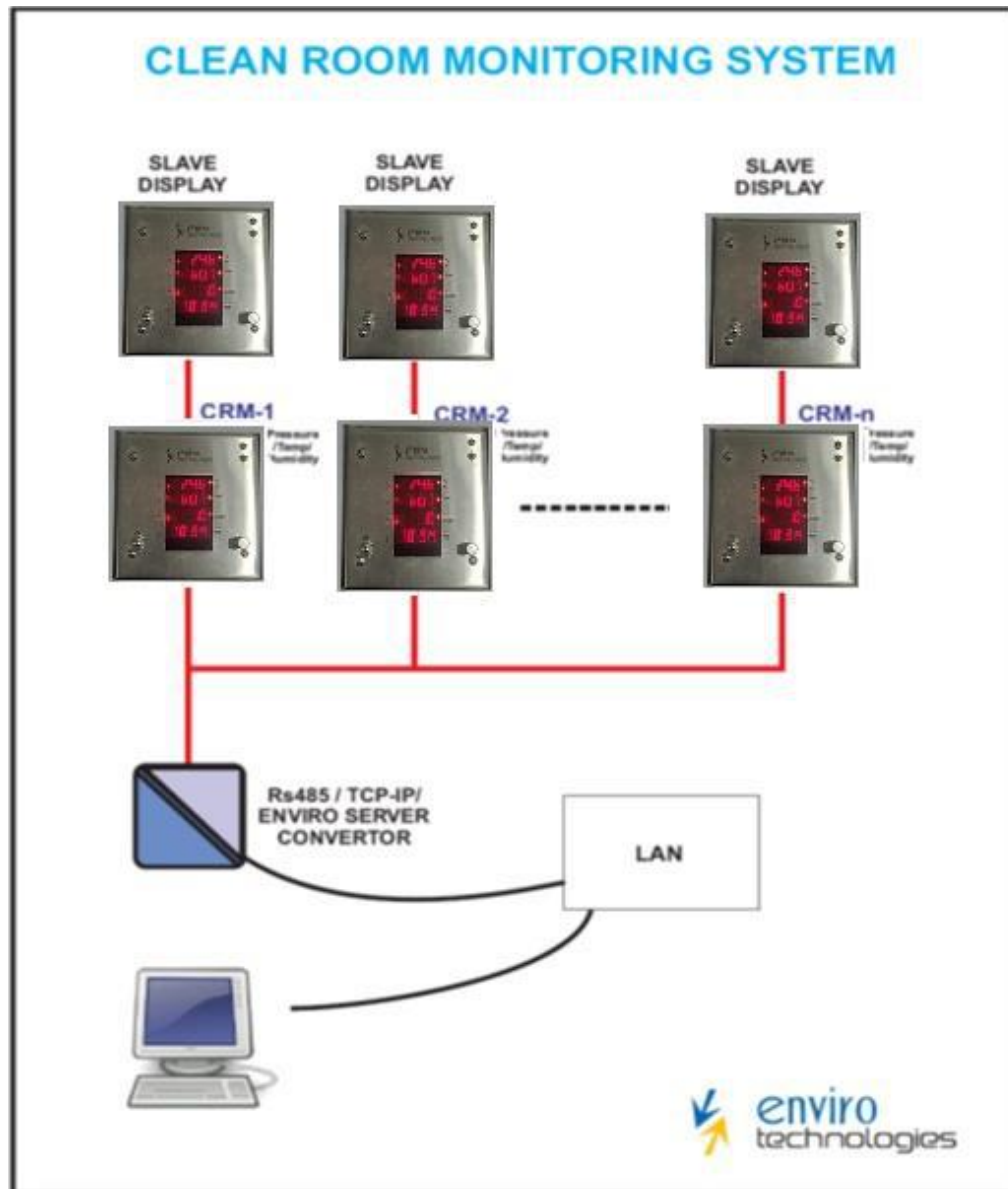
(4 to 20 mA) Sensor Connection		DESCRIPTION	
PIN NO.	LEGEND		
1	A	SENSOR SUPPLY(12/5V) No provision for 24V sensor supply.	
2	B	SENSOR SIGNAL 4 to 20 mA	
3	G	GROUND	

1> Retransmission 2 wire type.



2> Retransmission 3 wire type.





Installation Note:

While installing this system one must take care of following points:

- All cables connecting to ETN series device must lie separately; they should not mix up with high voltage & high current cables (like Motor; compressor; contactor; Heater etc.
- There should be a proper insulation for sensor wires to avoid noise interrupt.
- RS-485 converter with cable is use for PC communication.
- Cable specification for RS-485 => 14/36; 22AWG; 2 core shielded twisted cable.
- T+RH sensor Cable length: 100metre MAX.
- 4 to 20mA sensor cable length: 70 meter max (keep as short as possible.)

Troubleshooting Chart

Following are few troubles shooting point which will guide for rectifying problem while dealing with ETN series device.

No	Problem	Probable solutions
1.	Display Doesn't show reading of any Channel.	1. Set ETN series device display mode properly. 2. Check particular channel is enabled properly. 3. Check all sensor pins are connected properly.
2.	Sensor connections	4. Temperature and Humidity sensor connections has been given on sticker itself .Do the sensor pin connections properly to avoid sensor burning problems.
3.	Buzzer does not works	5. Enable the buzzer in buzzer settings.
4.	Date and time is changed after reset.	6. Set the date and time from Menu. 7. Check internal battery (change if required).
5.	Remote display does not show reading.	8. Check RS-485 wire connection (D+ & D-).
6.	Relay is not working.	9. Check settings in Relay configuration menu.
7.	Acknowledgment from digital I/P are not working.	10. Select Acknowledgment from Digital configuration menu. 11. Check DIGI IN wire connection.
8.	Buzzer does not beep after door open.	12. Check the mute time in digital I/P configuration menu.
9.	Does not show memory full indication for 70% or more.	13. Check the buzzer settings in the menu and select the required one. (eg E-PC or E-UP).
10.	Buzzer does not beeps on Alarm condition	14. Check the Relay configuration settings & select the required one eg. (BZ ONLY OR RELAY+BZ