

Temperature & Humidity LED Display

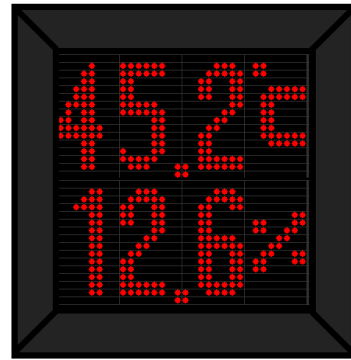
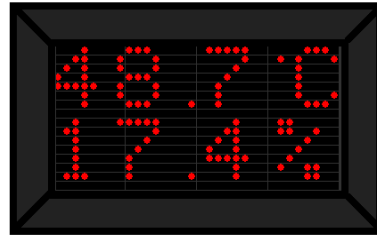
Low Cost & Industrial Grade Cabinets

Kamal & Co

42, Mambalam High Road,
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Description

This module features two displays for monitoring temperature and humidity, making it suitable for environmental monitoring applications. The ambient temperature and relative humidity are measured using a high-performance DHT22 sensor, which outputs calibrated digital signals. The DHT22 sensor utilizes exclusive digital signal collecting techniques and humidity sensing technology, ensuring reliability and stability. Its sensing elements are connected with an 8-bit single-chip computer, and each sensor is temperature compensated and calibrated in an accurate calibration chamber. The calibration coefficients are saved in the form of a program in OTP memory, allowing the sensor to cite coefficients for precise measurements. The DHT22 sensor boasts high precision, capacitive-type humidity sensing, full-range temperature compensation, long transmission distances, calibrated digital signals, and low power consumption.



Product Features

- Utilizes highly accurate, fast, and reliable sensing technology.
- Demonstrates outstanding long-term stability for reliable performance.
- Compact size, facilitating easy installation and providing flexibility in deployment.
- Designed for comprehensive environmental monitoring applications.
- Features a large LED display for real-time data presentation.

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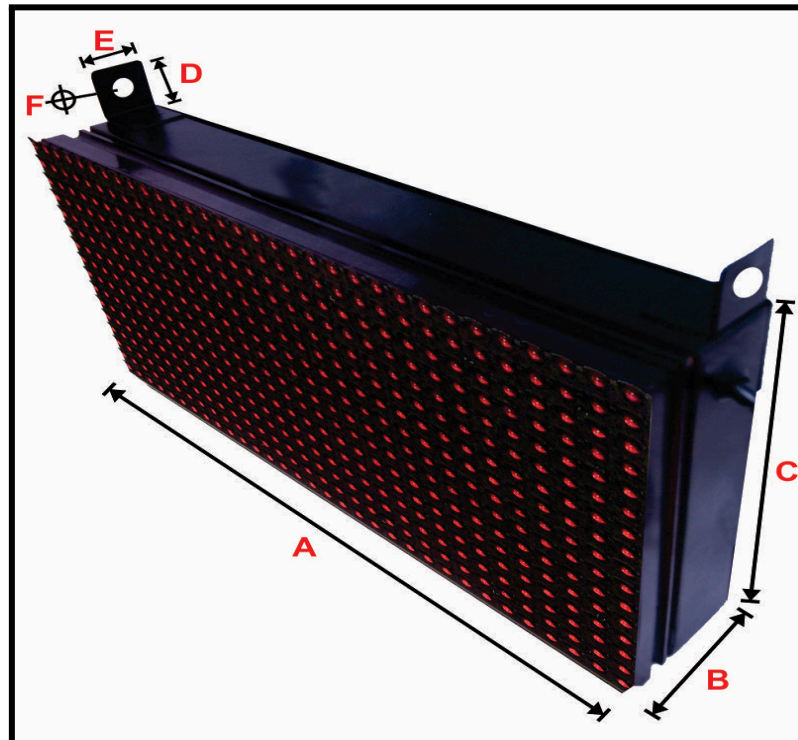
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Notes and Options

- Display Characteristics: All units feature a single-colour display with the default supply in vibrant RED, offering excellent brightness suitable for both indoor and outdoor viewing.
- Colour Customization: Alternative colours are available upon request, incurring an extra cost.
- Outdoor Units: For outdoor applications, the cost increases by 18% over the base price to account for additional specifications.
- Customization Options: Titles and fixed designs can be added to meet specific requirements.
- Power Supply: All units operate on a standard 230V AC mains power source, with the option for 110V available upon separate quotation.
- Mounting Flexibility: Two mounting options are provided - top eye bolts for ceiling suspension and side clamps for secure bolting to supports.


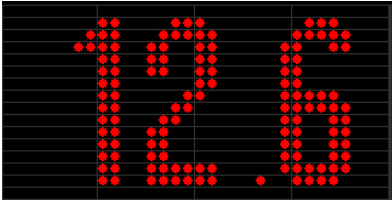




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Low Cost Cabinet Sizes and Models						
Model	Digit Height (mm)	Layout	Height (mm) C	Width (mm) A	Depth (mm) B	Max Power (W)
ECON-T-11	140mm for Temp		160	320	50	35
ECON-RH-11	140mm for RH		160	320	50	35
ECON-TRH-11	70mm for Temp top line and 70mm for RH bottom line		160	320	50	35
ECON-TRH-21	140mm for Temp right side 140mm for RH left side		320	320	50	95

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Technical Specifications	
VOLTAGE	230 VAC 1 PHASE MAIN POWER
OPERATING TEMP	5 TO 55'C
STORAGE TEMP	0 TO 65'C
RELATIVE HUMIDITY	UPTO 95% RH NON CONDENSING
DISPLAY	FULL MATRIX
LED COLOUR	RED
CHARACTERS TABLE	ASCII CHAR. (CODE 30H TO 5 FH)
PROTOCOL	FULL DUPLEX, ASCII CODED, STX-ETX
INTERFACE BY	TEMPERATURE & HUMIDITY SENSOR DHT22 DIGITAL SIGNAL VIA SINGLE BUS
RANGE SETTING	RS232/485 COMMUNICATION TX-RX-GND
DATA TRANSFER RATE	9600 BAUD (8,n,1)
SETUP PARAMETERS STORAGE	IN AN EEPROM - NON VOLATILE MEM
SENSING ELEMENT	POLYMER CAPACITOR
OPERATING RANGE	HUMIDITY 0-100% RH TEMPERATURE -40~80 CELSIUS
ACCURACY	HUMIDITY +-2% RH(Max +-5%RH) TEMPERATURE <+-0.5 CELSIUS
RESOLUTION	HUMIDITY 0.1% RH TEMPERATURE 0.1 CELSIUS
REPEATABILITY	HUMIDITY 1% RH TEMPERATURE 0.2 CELSIUS
LONG TERM STABILITY	+0.5%RH/year
SENSING PERIOD	AVERAGE: 2s
ACCESSORIES	POWER CABLE 1 METER/RS232 CABLE

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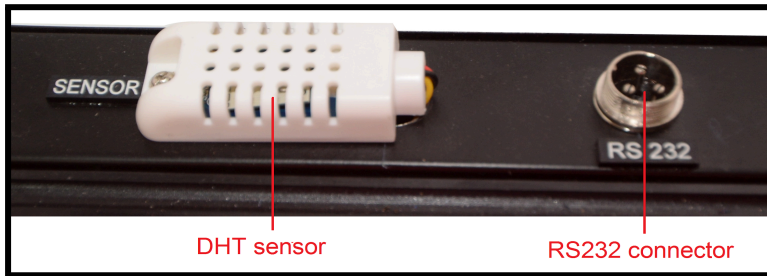
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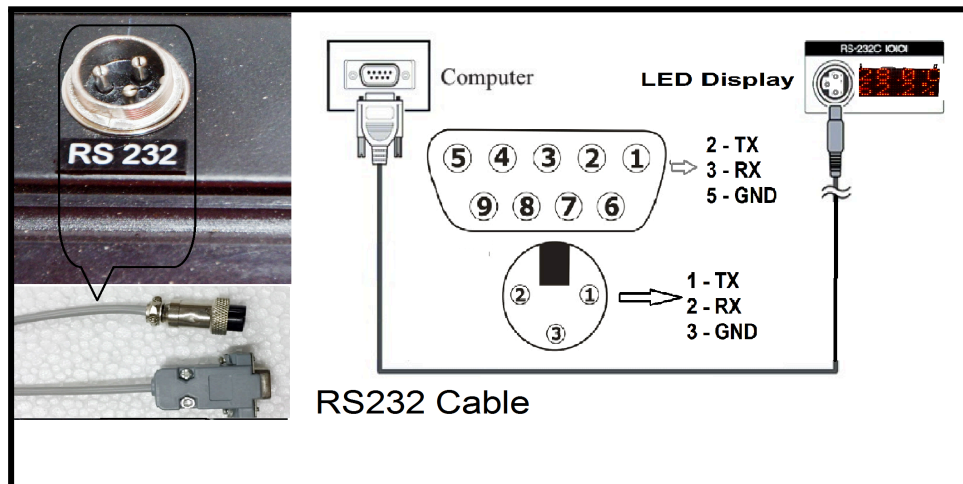
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Electrical Connections.

- Install the display panel on a wall using the brackets provided at the back.
- Power up the unit after completing the installation.
- Temperature and humidity readings will be displayed according to the model number.



Configuration Protocol. (For Logging - This feature is OPTIONAL and does not come with the default board.)



- ❖ Connect the display to a PC for calibration and adjusting log intervals.
- ❖ Use an RS232 cable to connect the unit to the computer's serial port, or utilize a USB to serial adapter like USB to RS232 or USB to RS485 adapter.
- ❖ Connect the RS232 or RS485 to the board, and employ a terminal program such as Hyperterminal, TeraTerm, Putty, or RealTerm.
- ❖ Ensure the board uses a 9600 8,n,1 setting for communication.

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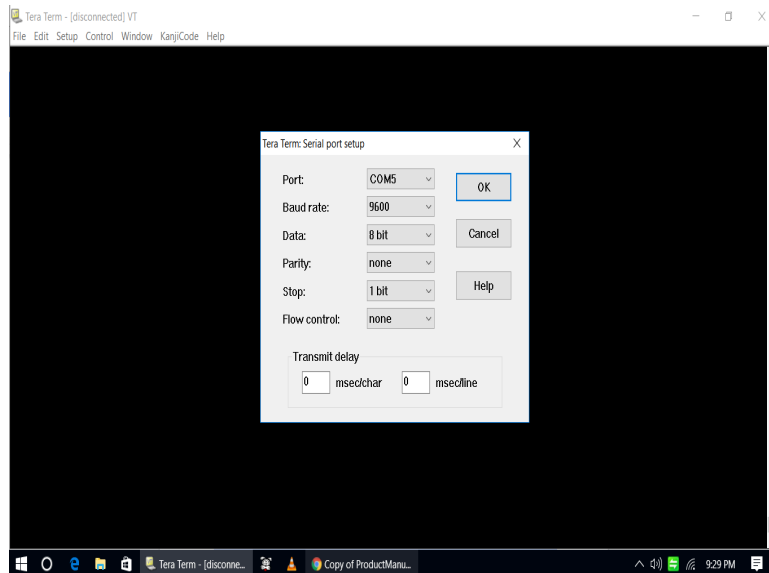
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❖ In the terminal program, configure:

- Communication port number.
- Baud rate as 9600 Baud.
- Data as 8 Bit.
- Parity as none.
- Stop bit as 1 Bit.



In the serial port Send the following packets for Setup.

Packet Format

Start of Packet SOP => [
End Of Packet EOP =>]

[**ID** **Command** **Data** **CRC**]

ID (2 chars) is the ID of the board default is 01

Command (1 char) is the command character which defines the function.

Data (n chars) is the data associated with the command.

CRC (2 chars) is the CRC for the data packet. To ignore CRC provide XX.

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Command	Description	Example
Set Log Interval In Mins	This command sets the data logging interval in minutes	[ID ZL MM CRC] Ex: To set log interval 5min [01ZL05XX]
Dump Temperature Humidity Logs	This command dumps temperature and humidity data values in the serial monitor	[ID ZM CRC] Ex: [01ZMXX]
Erase Temperature Humidity Logs.	This command erases temperature and humidity data values in the serial monitor..	[ID ZN CRC] Ex: [01ZNXX]
Set DHT Read Interval	This commands decides the data read interval in seconds from the DHT sensor.The display will refresh the readings according to this set time interval.	[ID ZC DD CRC] Ex: For data read Interval 1 sec [01D01XX]
Set Brightness	This command is used to set the brightness of the led display.Where Brightness can be from 0-9.	[ID B N CRC] Ex: To set minimum brightness [01B1XX]
Advanced Commands (Do Not use without knowing what they do.)		
Set Temperature calibration adjust	This command is used to adjust the Temperature data calibration.	[ID ZI +DDD CRC] [ID ZI - DDD CRC] Ex: [01ZI123XX]
Set Humidity calibration adjust	This command is used to adjust the Humidity data calibration.	[ID ZJ +DDD CRC] [ID ZJ - DDD CRC] Ex: [01ZJ123XX]

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CRC Calculation

The CRC is the ASCII Encoded HEX

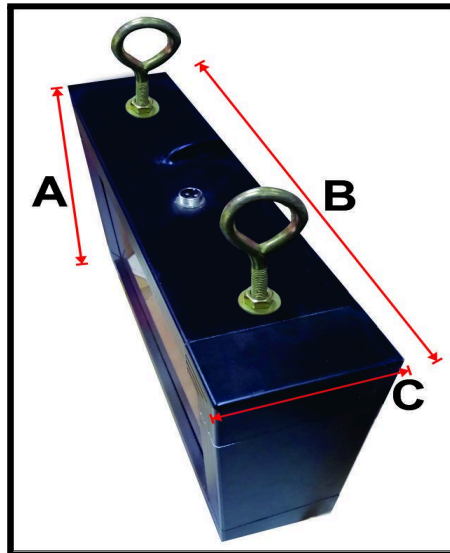
Ex:

CRC is calculated by XORing all the characters from ID to end of data. STX character [is not included in the CRC.

[01E2000.0169]

```
byte i, CalcCRC=0;
for(i=1;i<PacketLen-2;i++)
{
  CalcCRC = CalcCRC ^ InputText[i];
}
```

Industrial Grade Cabinet Models and Dimensions



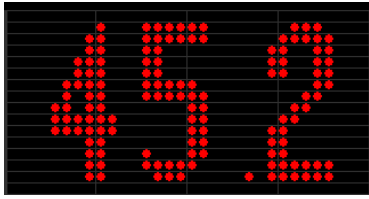
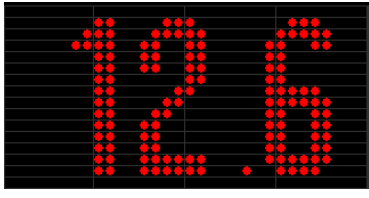

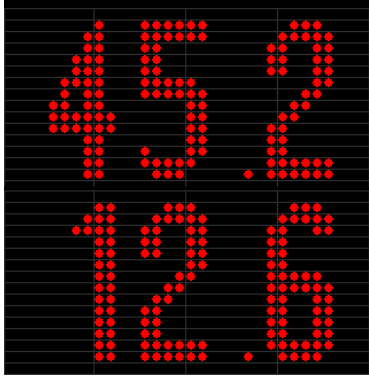
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All Units in mm

Model No	LAYOUT	A Height (mm)	B Width (mm)	C Depth (mm)	Max Power (W)
IC-T-11		250	410	93	35
IC-RH-11		250	410	93	35
IC-TRH-11		250	410	93	35
IC-TRH-21		410	410	93	65

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Heavy Duty Cabinet

- ❑ The Heavy Duty Cabinets make the LED board more durable and robust.
- ❑ The cabinets are made from extruded aluminium profiles and moulded corners for better appearance.
- ❑ The front filter used is Perspex / LEXAN ® sheets for UV and robust.
- ❑ The hanging hooks are also heavy and suited for mounting from your support structure.

Contact Information

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