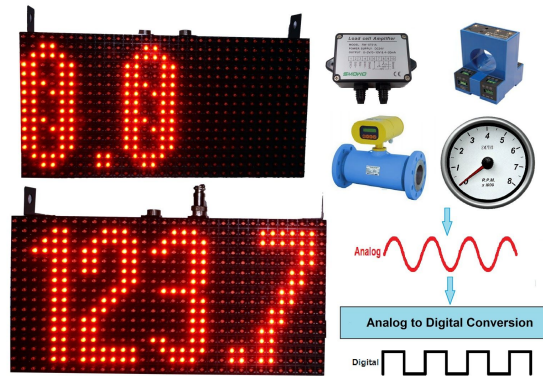


Description

Analog Display board reads an analog signal which can be 4-20 mA, 0-5V or 0-10V, and transforms it to programmed start and end values. Ex. 4mA can correspond to 10 RPM and 20 mA to 1000 RPM etc.



Product Features

- Inputs – 4-20 mA, 0-5V DC , 0-10V DC .
- Resolution: 10 bit ADC (1024 steps for 0-5V).
- Setup via RS232 / RS485 as per our ASCII protocol.
- Accuracy $\pm 1\%$.
- Median / Moving Average filter to smooth the data

Notes and Options.

- All display are in Single colour.
- The Default supply is always in RED colour.
- Other colours on request at extra cost.
- RED colour Brightness is good for viewing both indoors and outdoors.
- For outdoor units – cost increases by 18% on base price.
- Titles and other fixed designs can be added to your specification.
- All units work off 230V AC mains (110V can be quoted for separately)
- Mounting provision
 - #1 – Top eye bolts – you can hang it from ceiling.
 - # 2 – Side clamps – you can bolt it to your supports.

Module Sizes and Models

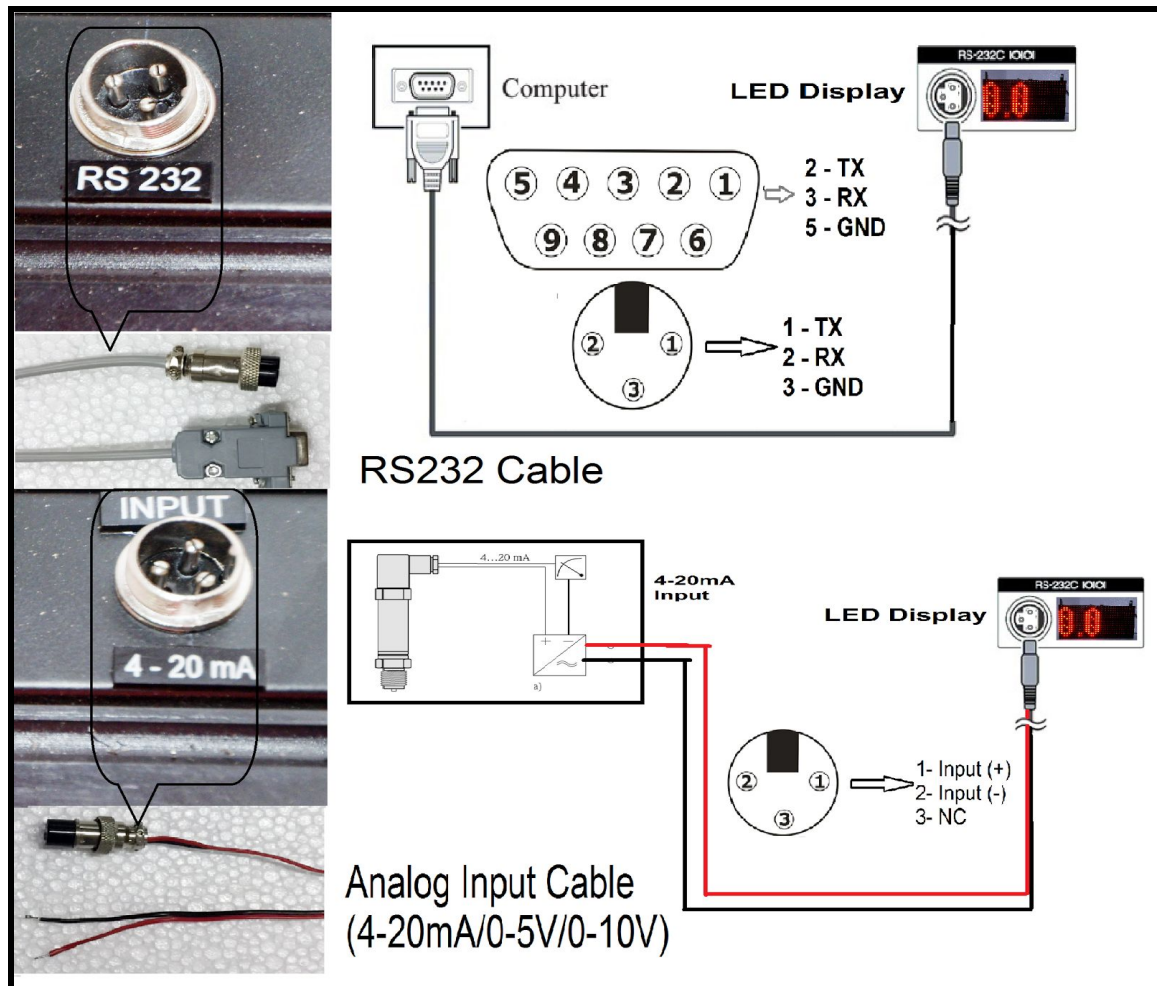
Model	Digit Height (mm)	No of Digits	Height (mm)	Width (mm)	Depth (mm)	Max Power (W)
ECON-IC-AD-11	140	4	160	320	50	35
ECON-IC-AD-12	140	8	160	640	50	65
ECON-IC-AD-23	260	6	320	960	50	185
ECON-IC-AD-24	260	8	320	1280	50	245

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
PROTOCOL	FULL DUPLEX, ASCII CODED, STX-ETX
INTERFACE BY	4-20 mA CURRENT LOOP , 0-5V , 0-10V
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
ADC RESOLUTION	10bit
ACCURACY	± 1%
AVERAGING	MOVING AVERAGE/MEDIAN
ACCESSORIES	POWER CABLE 1 METER RS232 CABLE ANALOG(4-20mA) INPUT CABLE

Electrical Connections.

Connection Details



Connect the 4-20ma current loop /0-5v DC/0-10v DC to the analog input cable.

Make sure the polarity of the wires is connected correctly. RED colour of the input cable to the "Positive" of the Current/Voltage input and Black colour to the "Negative" terminal of the Current/Voltage input .

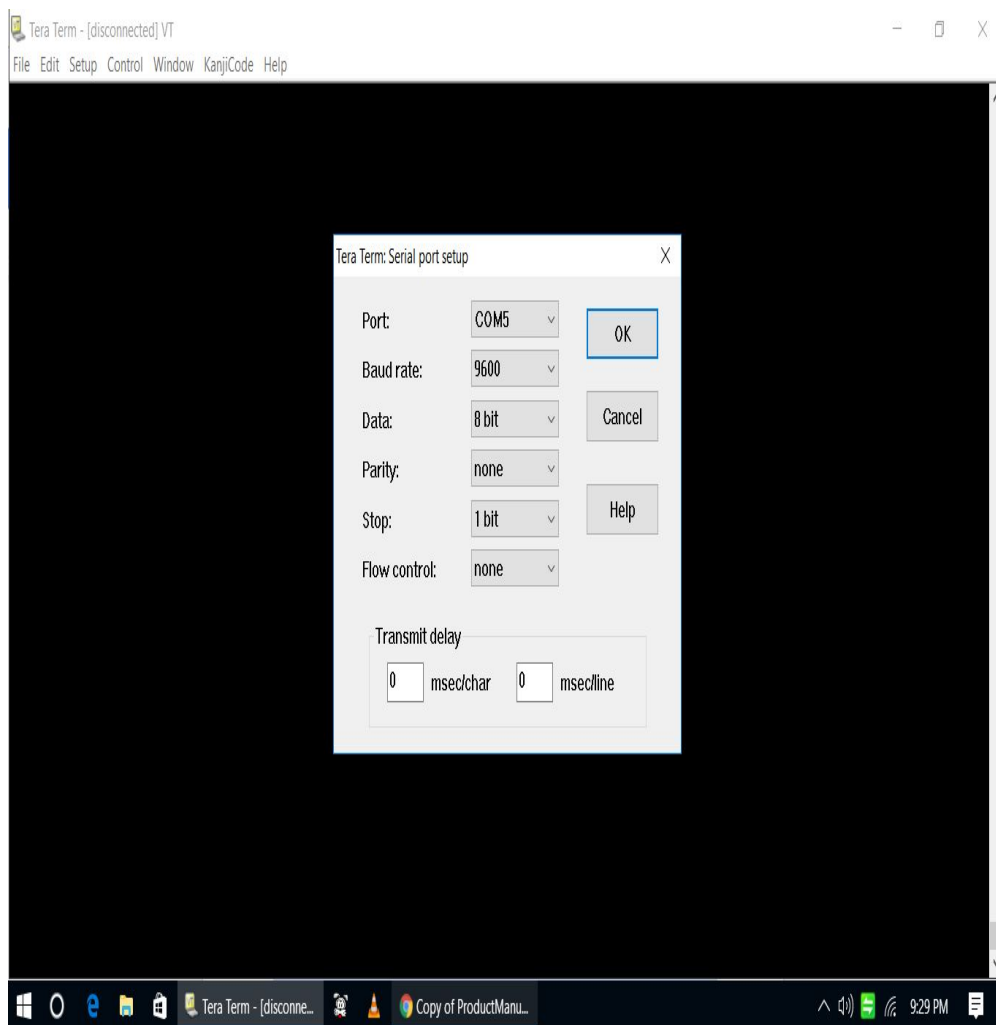
Connect the unit to serial port of computer through RS232 cable or connect the unit to computer through USB to serial adapter like USB to RS232 adapter or USB to RS485 adapter.

Use the terminal programs like Hyperterminal, TeraTerm, RealTerm or Putty software to send the

protocol setting to the board via RS232/RS485 communication.

In the terminal program set 9600,8,n,1 setting

Set your communication port no,
Set Baud rate as 9600 Baud
Set Data as 8 Bit
Set Parity as none
Set Stop bit as 1 Bit



Configuration Protocol.

The RS232 / RS485 should be connected to the board and a terminal program like Hyperterminal, TeraTerm, putty or RealTerm should be used. The Board uses 9600 8,n,1 Setting.

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.

Command	Description	Example
Set Start Value	This command sets the Starting Value corresponding to 4mA / 0 V	[ID S DDDD.DD CRC] Ex: [01S0.0XX] [01S50.0XX]
Set End Value	This command sets the End Value corresponding to 20mA / 5 V / 10V	[ID E DDDD.DD CRC] Ex: [01E120.0XX] [01E250.0XX]
Set Number of Digits to display	This commands decides the total number of digits the board will display.	[ID F D CRC] Ex: 9999 To display 4 Digits [01F4XX]
Set Number of Fraction points to display	This commands decides the total number of fraction points the board will display.	[ID D D CRC] Ex: 9999.9 To display 1 fraction point [01D1XX]
Set Measurement Delay between measurements	This allows delay between measurements in ms.	[ID J ddd CRC] Ex: 1000 ms delay between measurements:

		[01J1000XX]
Set Filter Type	This allows the board to a filter for analog. If N=0 then No Filter is used so you will see the noise data also. If N=1 then Median Filter is used. If N=2 then Moving Average Filter is used.	[ID K N CRC] Ex: For median filter [01K1XX]
Set Avg Count	This sets the number of readings the Filter uses to average the data. NN can be 00-16.	[ID L NN CRC] Ex:[01L16XX] Will set the Filter to use 16 values.Till the 16 values are accumulated,the board will show the raw unfiltered values.
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]
Set Font	This command is used to set the Font of the led display.Where Font can be from 1-5 (By default only Font 3 is supported)	[ID H N CRC] Ex: To set the first Font [01H1XX]
Set Text Y Offset	This allows positioning the text on the Y Axis.	[ID I Y CRC] Ex:[01I5XX]
Advanced Commands (Do Not use without knowing what they do.)		
Set Resistor Value	This command is used to adjust the Output Value as per input value by setting the resistor value .Default resistor value will be 250 ohms.Increase the Resistor value to Decrease the Output Value increments.Decrease the Resistor value to Increase the Output Value increments.	[ID G DDDD.DD CRC] Ex: [01G250.00XX]
Set Calc Type.	This command is used to the set the calculation type.Calc Type =1 is for 4-20ma measurement with 250 ohm Shunt (can also be used for 1-5v) Calc Type =2 is for 0-5V measurement	[ID C D CRC] Ex: calc Type 1 for 4-20mA [01C1XX]

	(can also be used for 0-10V with two 250 ohms voltage divider network)	Calc type 2 for 0-5V/0-10V [01C2XX]
To Dump current settings	This command is used to check the current settings.	[ID ZZ CRC] Ex: [01ZZXX]

CRC Calculation

The CRC is the ASCII Encoded HEX

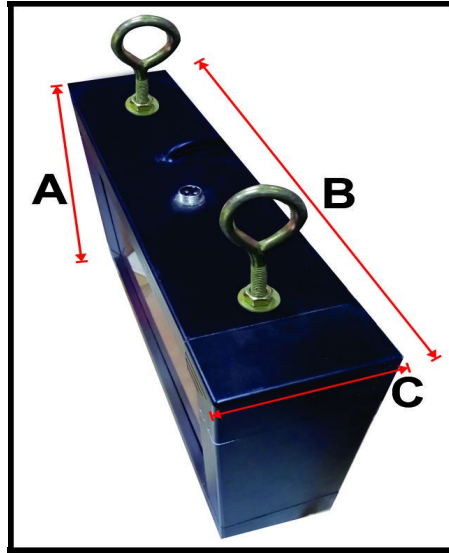
Ex:

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];
}
```

Dimensions



All Units in mm

Model No	A	B	C
ECON-IC-AD-11	250	410	93
ECON-IC-AD-12	250	730	93
ECON-IC-AD-23	410	1050	93
ECON-IC-AD-24	410	1370	93

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.

**Low Cost & Industrial Grade
Cabinets**

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