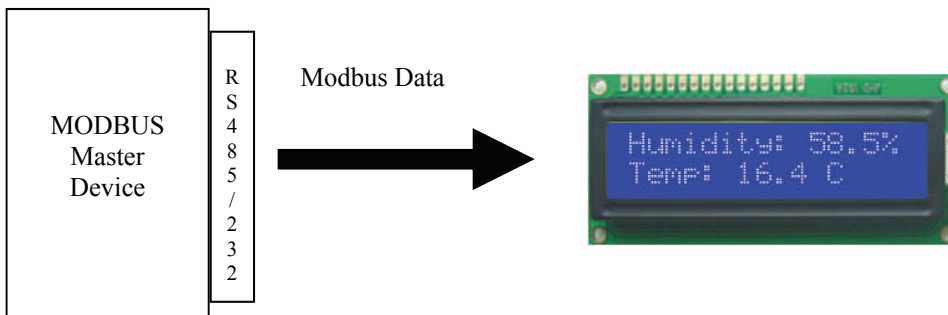


SC1602MBS is a MODBUS slave device that receives data from a Master MODBUS device and display them on the LCD panel.

The LCD is 16 x 2 characters in size and each character place has an unique MODBUS registers address. Writing ASCII text to these registers will cause the text to be displayed on the LCD.

In addition, it has 2 data fields that can be defined on each of the two rows of the LCD screen. These data fields display 16 bits signed or unsigned integers values as it ASCII representation on the LCD screen.

SC1602MBS is available in RS485 or RS232 version.



Features

- 16x2 Characters
- RS485 or RS232 communication port
- MODBUS RTU protocol
- 6 memory spaces for user's define messages
- 1 Transistor Output Port
- 2 Data Fields for 16 bits Signed/Unsigned Integer or 4 Digits BCD Numbers.
- Programmable fixed decimal point for the data fields (dddd.d , ddd.dd , dd.ddd, d.dddd)
- Programmable Slave Address
- Programmable baud rate (9.6, 19.2 , 38.4)
- LCD backlight control.
- Programmable start screen.
- 5 V Input Supply
- MODBUS function code 5,6 and 16

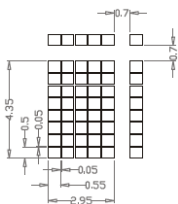
Display Option



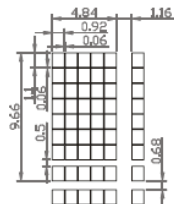
SC1602MBS-YG



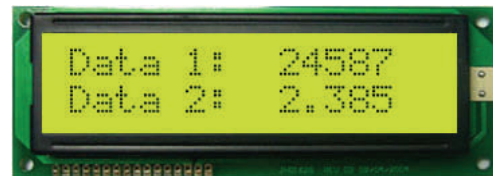
SC1602MBS-B



Standard Size

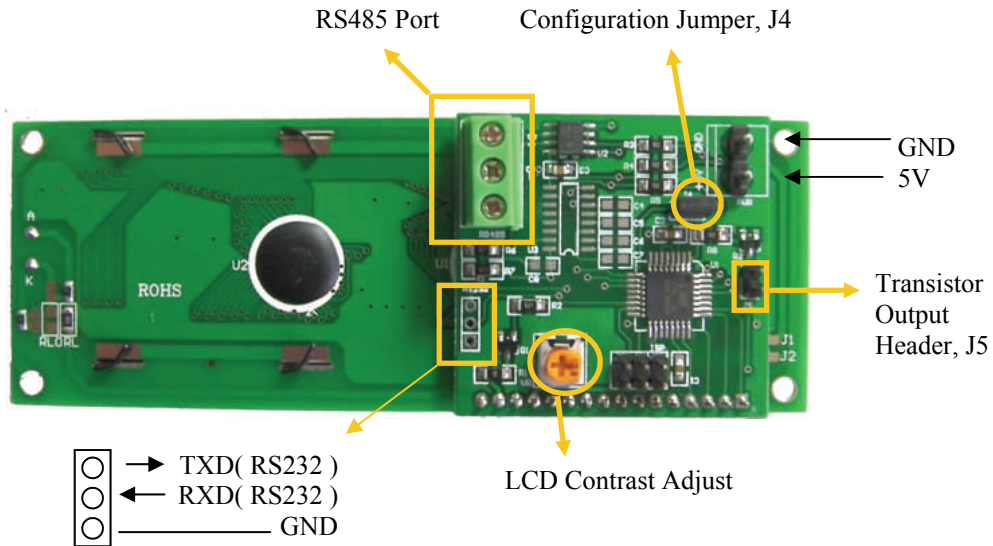
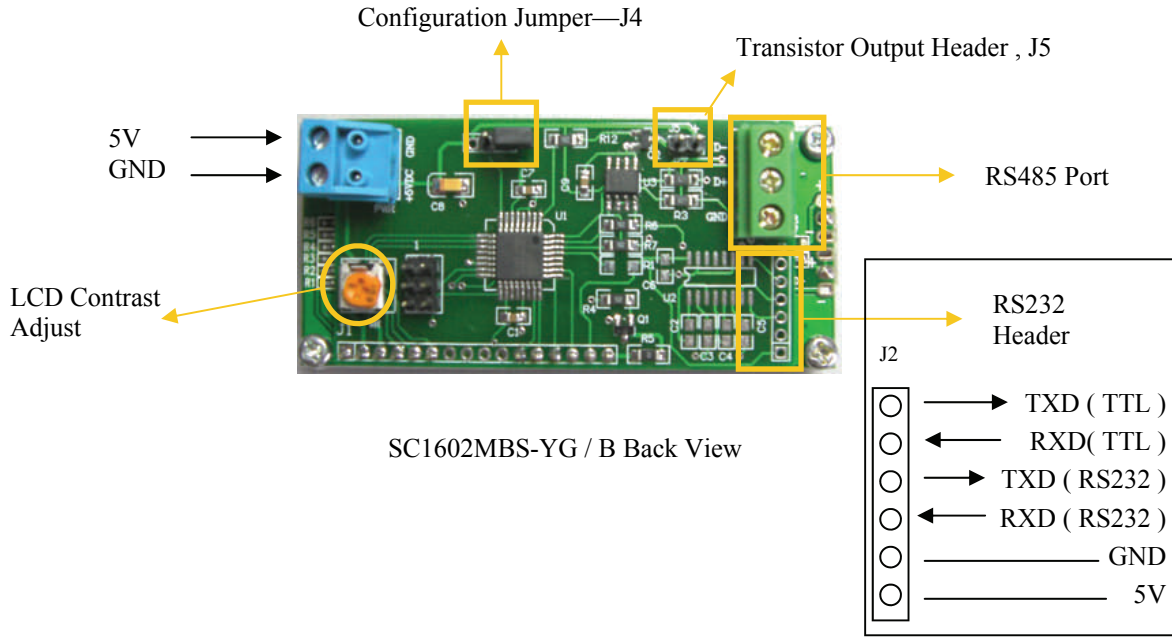


Large Character Size



SC1602MBS-LC-YG
Large Characters Version - Double in
Character Size

Connecting the LCD



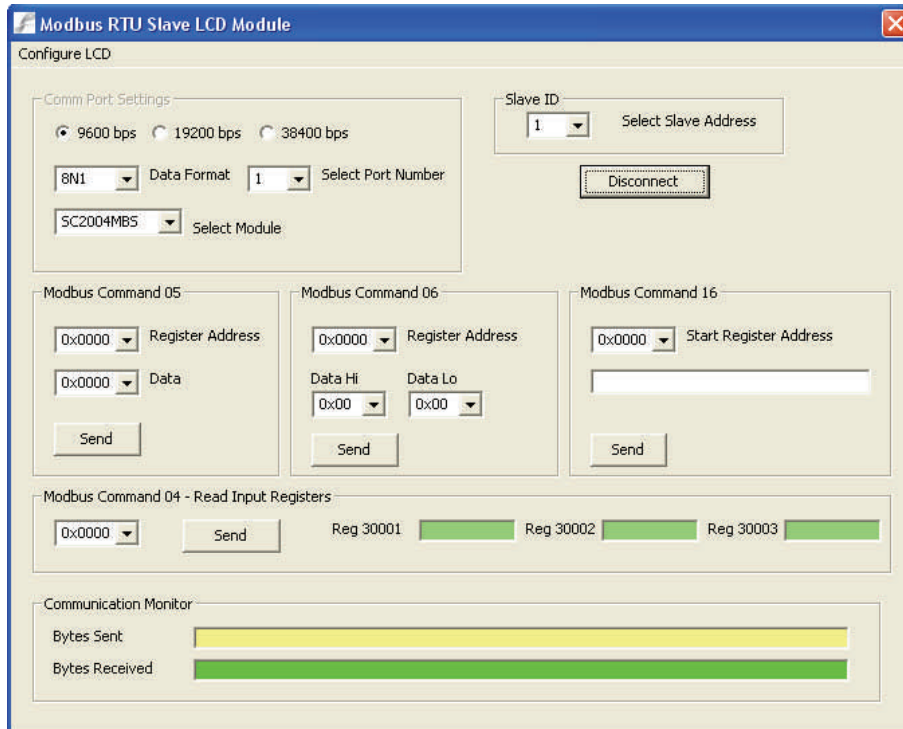
Configure the LCD

You need to download the software MODBUSSlaveLCD from our website at www.siliconcraft.net/download.htm in order to configure the LCD. This software is also a MODBUS master simulator which you can test the LCD by sending the MODBUS command to it.

At the configuration window, you can set the LCD address, the baud rate , the start page and the data fields parameters.

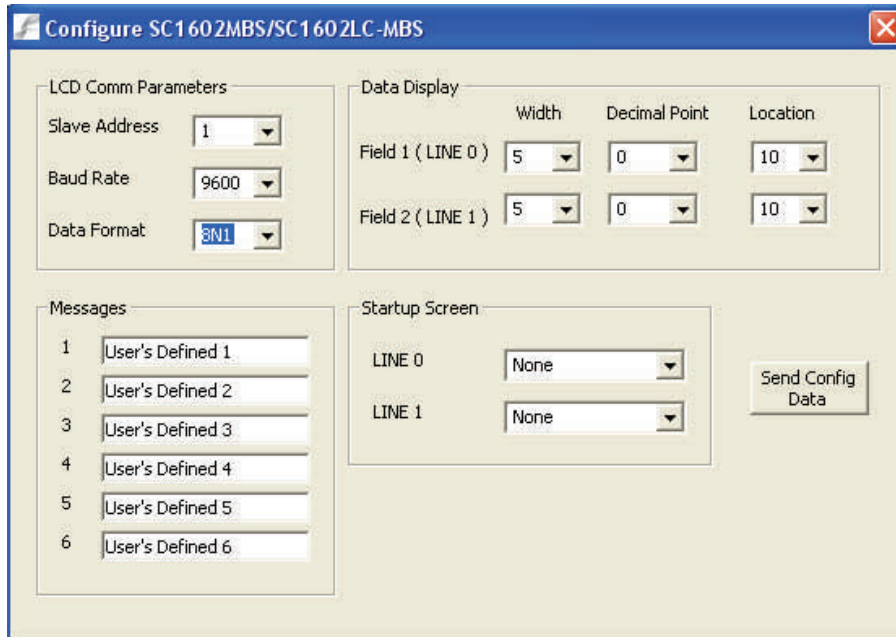
To configure the LCD , install MODBUSSlaveLCD software, close J4 jumper on the back of the LCD, connect the power and the communication port to the Computer running MODBUSSlave software.

When you turn on the power to the LCD, the first row should display “ **SETTING MODE** ”.



Select SC1602MBS and the correct COM port number, then click on “Connect” button.

Then, click on “Configure LCD” menu to open the configuration window.



At the configuration window, set your desired parameters and click “Send Config Data” to send the configuration data to the LCD.

If this is done correctly, LCD should display “**SETTING DONE**” Message on the second row.

Turn off the power and remove jumper on J4.

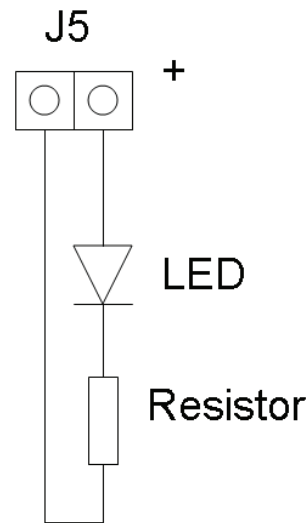
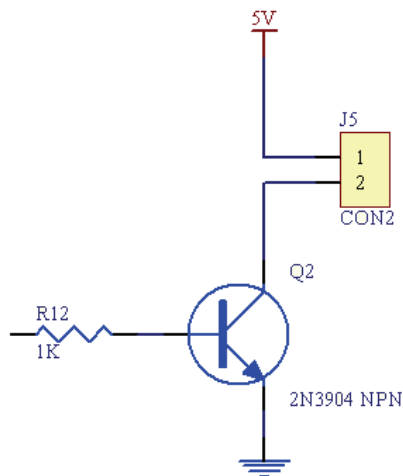
The LCD should have the new setting.

Modbus Command 05 (Force Single Coil)

Use MODBUS command 5 to

- Turn on or off the LCD backlight
- Turn on or off the transistor output at header J5

Register Address	Data Value	Action
0x0000	0x0000	Turn Off LCD Backlight
0x0000	0xFF00	Turn On LCD Backlight
0x0001	0x0000	Turn Off Output
0x0001	0xFF00	Turn On Output



Maximum Sink Current : 200mA

Modbus Command 06 (Preset Single Register)

Data Field is the area where the LCD will displays the integer or BCD data it received. One data field is available on each row.

User's can configure the width of the data field, it start location on each row and decimal point location.

Data width of the data field is the maximum digit to be displayed. For example , it data field width is set to 3 and the received data is 1024 , then only "024 " is displayed.

Start location is the column number where the most significant digit to be displayed. 0 is the left most column

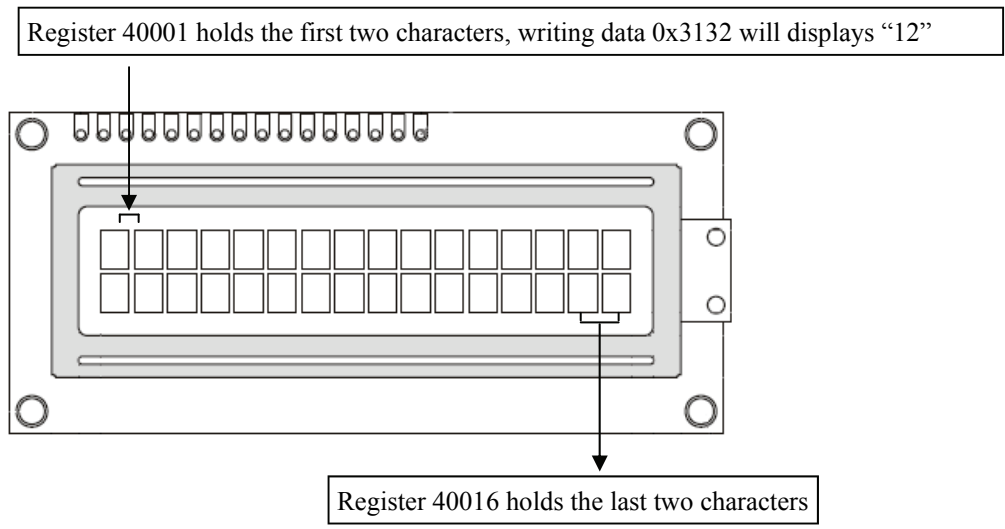
Decimal point will be inserted is configured. For example , is decimal point is set to 1 and received data is 100 then 10.0 is displayed.

Trailing zeros will be automatically blanked off.

There are a total of 2 data fields one on each row.

Displaying ASCII Text

Holding registers 40001 to 40016 hold the ASCII characters to be displayed. Each registers hold two ASCII characters



Modbus Command Example , display " 12 " at the first two locations.

Query

[Slave ID] [0x06] [0x00] [0x00] [0x31] [0x32] [CRC Hi] [CRC Lo]

Response

[Slave ID] [0x06] [0x00] [0x00] [0x31] [0x32] [CRC Hi] [CRC Lo]

Display Integer/BCD Number

Registers 40017 to 40018 hold the Unsigned integer value for data field 1 to 2. Writing integer data to these registers will result the data to be displayed.

Signed integer is held in registers 40019 to 40020. The “ - “ sign is inserted at the most significant digits if the value is negative

4 Digits BCD data is held in registers 40021 to 40022

<u>Register Address</u>	<u>Data Field</u>
0x0010 (40017)	row 0—Unsigned Integer
0x001A (40018)	row 1— Unsigned Integer
0x001B (40019)	row 0—Signed Integer
0x001C (40020)	row 1— Signed Integer
0x001D (40021)	row 0—BCD
0x001E (40022)	row 1— BCD

Display “16442” (0x403A) on data field row 0 command example.

Query

[Slave ID] [0x06] [0x00] [0x10] [0x40] [0x3A] [CRC Hi] [CRC Lo]

Response

[Slave ID] [0x06] [0x00] [0x10] [0x40] [0x3A] [CRC Hi] [CRC Lo]

Display “-453” (0xFE3B) on data field row 1 command example.

Query

[Slave ID] [0x06] [0x00] [0x1B] [0xFE] [0x3B] [CRC Hi] [CRC Lo]

Response

[Slave ID] [0x06] [0x00] [0x1B] [0xFE] [0x3B] [CRC Hi] [CRC Lo]

Erasing the LCD Screen

Writing to register 40023 erase the LCD screen.

User's Defined Messages

SC1602MBS provides 6 memory spaces, each 16 characters wide for storing user's defined messages.

The messages is saved onto the EEPROM using MODBUSslaveLCD software

Modbus Command 16 (Preset Multiple Registers)

Use Modbus command 16 to send long ASCII string to the LCD.

Registers 40001 to 40016 holds the ASCII characters to be displayed.

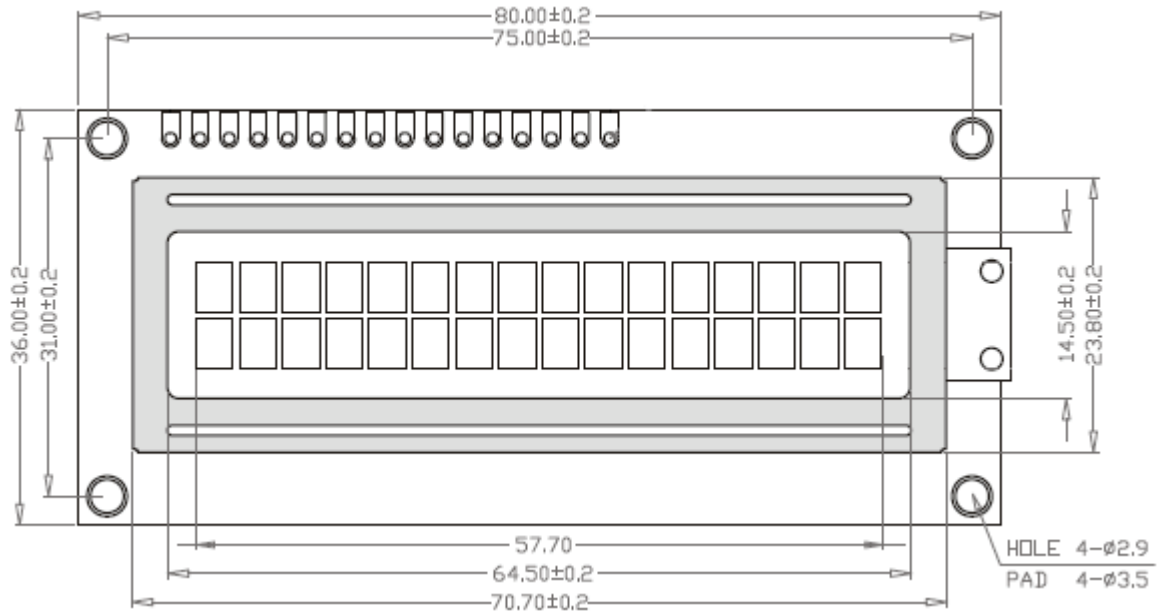
The Start Screen

The saved messages can be made to be displayed at Power up using the configuration Software.

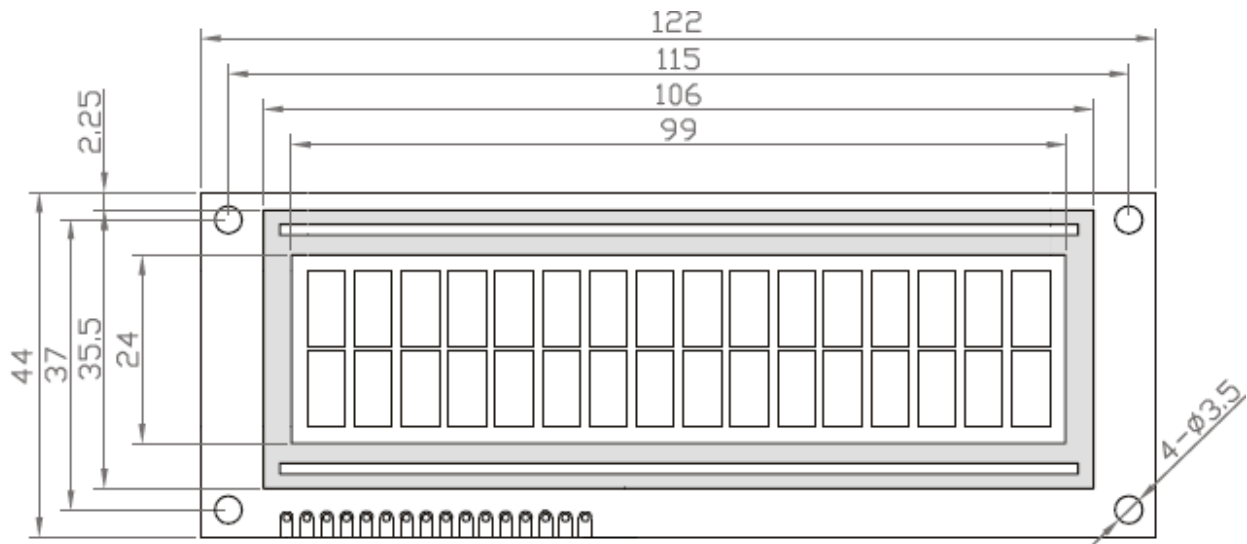
Registers Summary

<u>Register Address</u>	<u>Data Value</u>	<u>Function</u>
0x0000 (40001)	2 Bytes ASCII	LCD row 0 , column 0-1
0x0001 (40002)	2 Bytes ASCII	LCD row 0 , column 2-3
0x0002 (40003)	2 Bytes ASCII	LCD row 0 , column 4-5
0x0003 (40004)	2 Bytes ASCII	LCD row 0 , column 6-7
0x0004 (40005)	2 Bytes ASCII	LCD row 0 , column 8-9
0x0005 (40006)	2 Bytes ASCII	LCD row 0 , column 10-11
0x0006 (40007)	2 Bytes ASCII	LCD row 0 , column 12-13
0x0007 (40008)	2 Bytes ASCII	LCD row 0 , column 14-15
0x0008 (40009)	2 Bytes ASCII	LCD row 1 , column 0-1
0x0009 (40010)	2 Bytes ASCII	LCD row 1 , column 2-3
0x000A (40011)	2 Bytes ASCII	LCD row 1 , column 4-5
0x000B (40012)	2 Bytes ASCII	LCD row 1 , column 6-7
0x000C (40013)	2 Bytes ASCII	LCD row 1 , column 8-9
0x000D (40014)	2 Bytes ASCII	LCD row 1 , column 10-11
0x000E (40015)	2 Bytes ASCII	LCD row 1 , column 12-13
0x000F (40016)	2 Bytes ASCII	LCD row 1 , column 14-15
0x0010 (40017)	Unsigned Int.	Unsigned Integer at row 0
0x0011 (40018)	Unsigned Int.	Unsigned Integer at row 1
0x0012 (40019)	Signed Int.	Signed Integer at row 0
0x0013 (40020)	Signed Int.	Signed Integer at row 1
0x0014 (40021)	2 Bytes BCD	4 Digits BCD at row 0
0x0015 (40022)	2 Bytes BCD	4 Digits BCD at row 1
0x0016 (40023)	Any	Erase Screen
0x0017 (40024)	0 to 5	Predefine Message at row 0
0x0018 (40025)	0 to 5	Predefine Message at row 1

Mechanical Dimension (millimeter)



Standard Size Version



Large Characters Version

Specification

Power Supply: min 4.5VDC max 5.5VDC (5.0VDC nominal)
Current Consumption: 100mA typical (Standard Size Version)
 250mA typical (Large Character Version)
Operating Temperature: 0°C to 50°C
Connection: Screw terminals accept 12 to 26 AWG
Non Volatile Memory Write Cycle: Min 100,000
Non Volatile Memory Data Retention: Min 100 years
Output Maximum sink current: 200mA

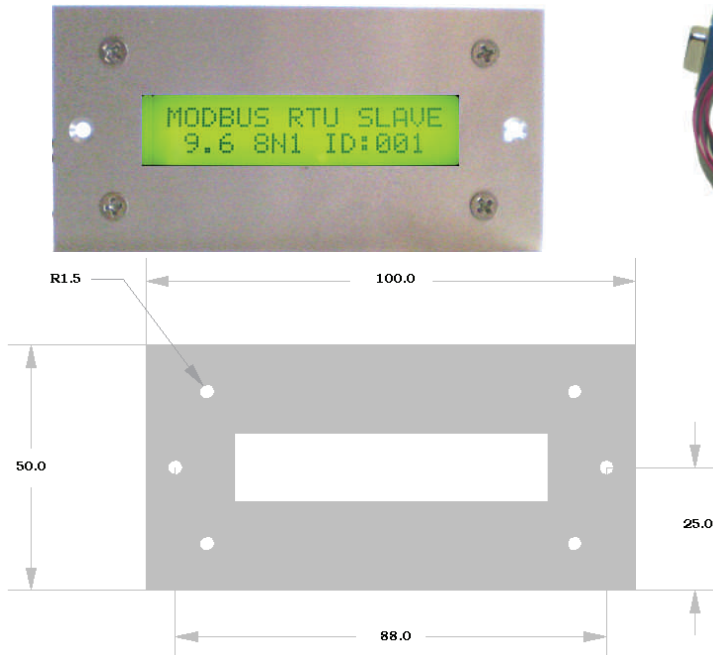
LCD

View Angle: 6 o'clock
Characters: 16 x 2
View Area: 64.5mm x 13.8mm (Standard Size Version)
 99 mm x 24 mm (Large Character Version)
Backlight: Yellow Green or Blue LED

Available Accessories (Sold Separately)

Aluminum Front Panel Mounting Plate

RS232 cable , DB9 Female to P1 Header



Optional Accessories (IP 65 Enclosure)

ABS IP65 Enclosure with mounting kits

