Modbus Slave Board

Kamal & Co

Low Cost & Industrial Grade Cabinets

**42, Mambalam High Road,
T Nagar, Chennai,600017**
sales@factorydisplay.com

Description

The Modbus Slave LED board serves as an interface for PLCs and other automation devices, enabling the display of integer and floating-point values over Modbus communication. Acting as a slave on the RS485 Bus, the LED Board allows users to set the baud rate and slave ID using the provided ASCII protocol. Writing to the Integer register displays an integer value, while writing to the floating-point register displays a floating-point value, facilitating the display of various data types on the LED Board.

For further information regarding Modbus Master Boards (Modbus TCP using Ethernet), please contact our sales team.
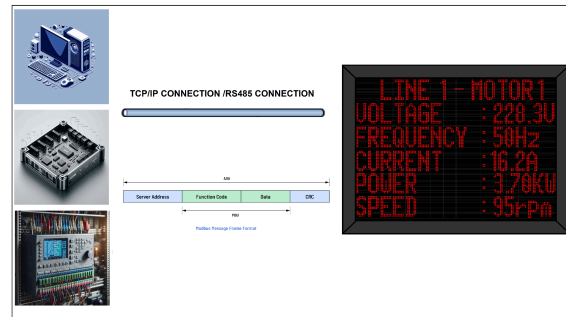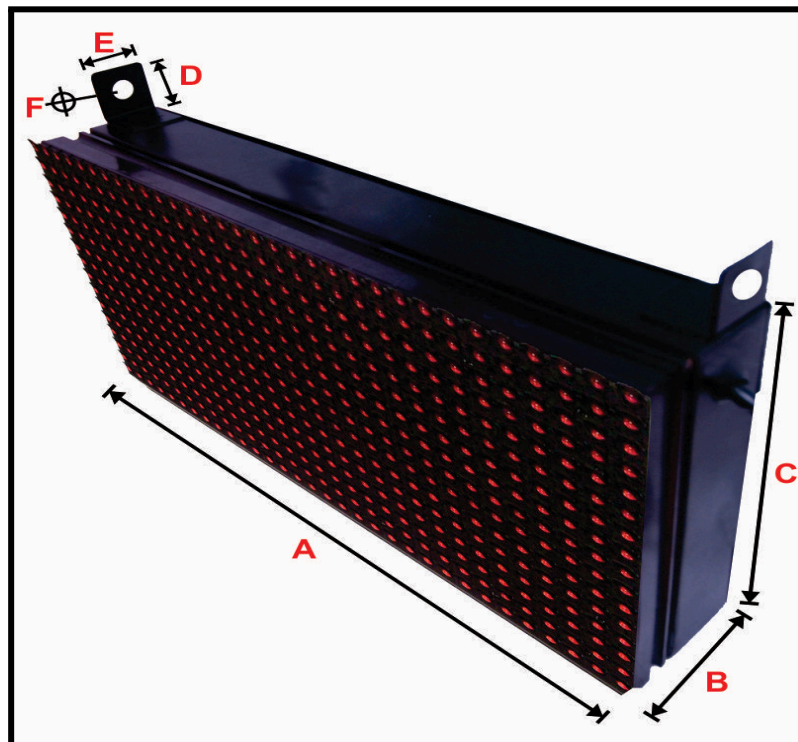

Product Features

- Implements a Modbus RS485 Interface for seamless communication.

- Functions in Modbus Slave Mode, enabling PLCs to write and control the display.

- Incorporates two 16-bit registers, with one dedicated to Integer Display and the other reserved for Floating Point representation.

- The RS485 setup adheres to a specific ASCII protocol, ensuring efficient and standardized communication.

- Empowers real-time display of formatted messages when data is written from a PC or PLC, enhancing monitoring capabilities.

- All units are designed to operate efficiently with 230V AC mains power, and for flexibility, a 110V option can be provided, quoted separately based on requirements.

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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.
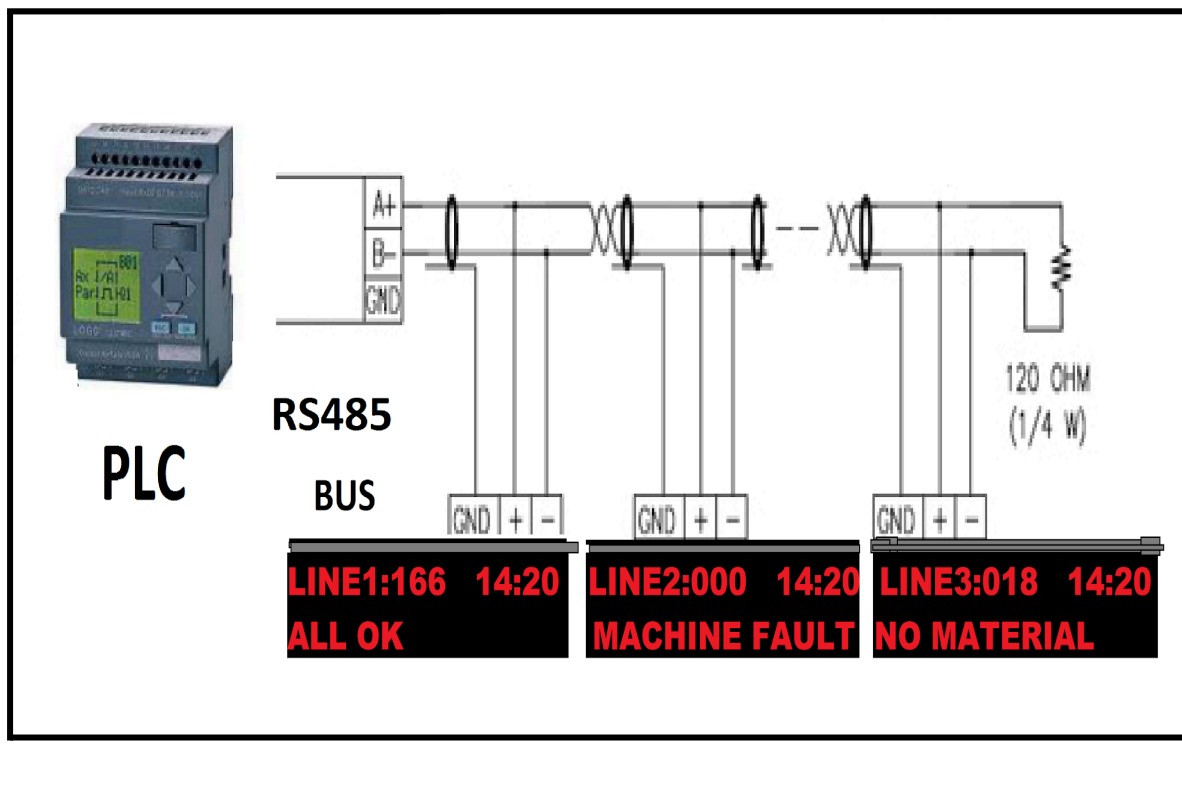
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Low Cost cabinet Sizes and Models						
Model	Digit Height (mm)	**No. Of Characters/ Digits per screen**		Height (mm)	Width (mm)	Depth (mm)
		140mm high	**70mm high**	C	A	B
ECON-MODBUS-SLAVE-11	**One line of 140mm OR Two lines of 70mm**	4	10	160	320	50
ECON-MODBUS-SLAVE-12		8	20	160	640	50
ECON-MODBUS-SLAVE-13		12	30	160	960	50

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	MODBUS SLAVE PROTOCOL
INTERFACE BY	RS485 COMMUNICATION D+,D- ,GND
DATA TRANSFER RATE	9600 BAUD (8,n,1)
DEVICE LIMIT	MAX 32 DEVICES
OPERATING MODE	SLAVE MODE
DATA TYPE	INTEGER AND FLOAT
ACCESSORIES	POWER CABLE 1 METER

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Electrical Connections.

Hardware Installation for RS485 bus

- Establish the connection by connecting the RS485 Converter to the PC.
- Ensure proper network integrity by connecting a 120-ohm resistor at the Converter's Tx+ & Tx- pins and the end Clock's D+ and D- pins, adhering to the wiring diagram (Critical step).
- Interconnect all units as slaves in a looping configuration as illustrated in the diagram, connecting Tx+ to D+ and Tx- to D-.
- Employ a 2-core twisted pair cable with a shield for optimal performance, or alternatively, use a Communication Cable CAT5 or CAT6 with a shield. Ground one end of the shield to enhance signal integrity.

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MODBUS Testing

The led board can also be used with modbus.

Use Function 03 -> Write Single register to write to Each Register.

Displaying 16 bit Integers - Register Length = 1 => Byte Length =2

Send number to addr 0 to display as unsigned
Send number to addr 1 to display as signed

1)   Address   40001 (0)   -> Unsigned 16 Bit Number
1)   Address   40002 (1)   -> Signed 16 Bit Number

Displaying 32 bit Integers - Register Length = 2 => Byte Length =4
Send number to addr 4 to display as long integer (32bits)

Displaying 32 bit floats - Register Length = 2 => Byte Length =4

Use Function 16 -> Write Multiple register
Address => 40001 Address (0) -> Register Length (2) -> Float

Displaying 64 bit double - Register Length = 4 => Byte Length = 8
Address => 40001 Address (0) -> Register Length (4) -> Double

The RS232 / RS485/LAN 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
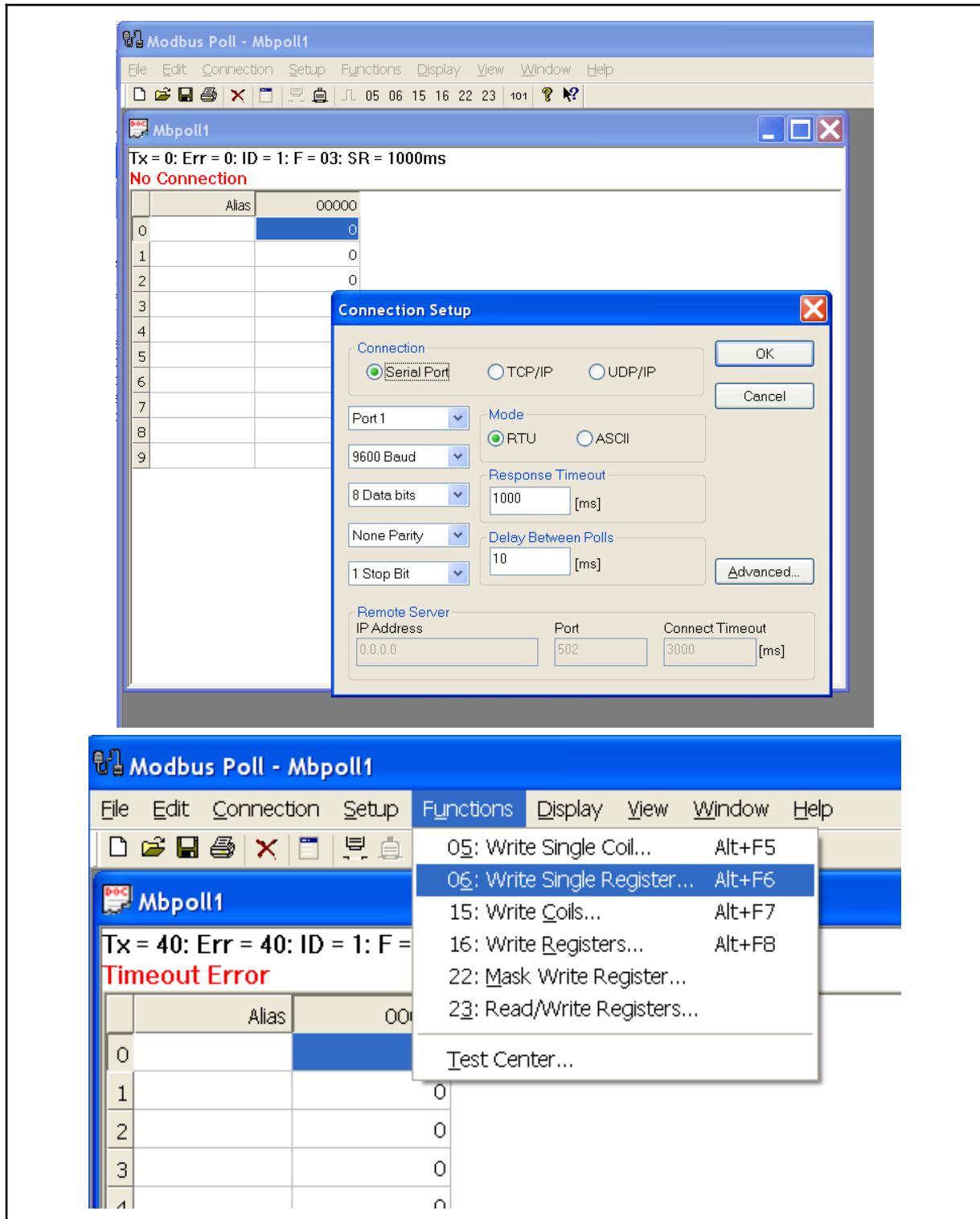**Command** (1 char) is the command character which defines the function.
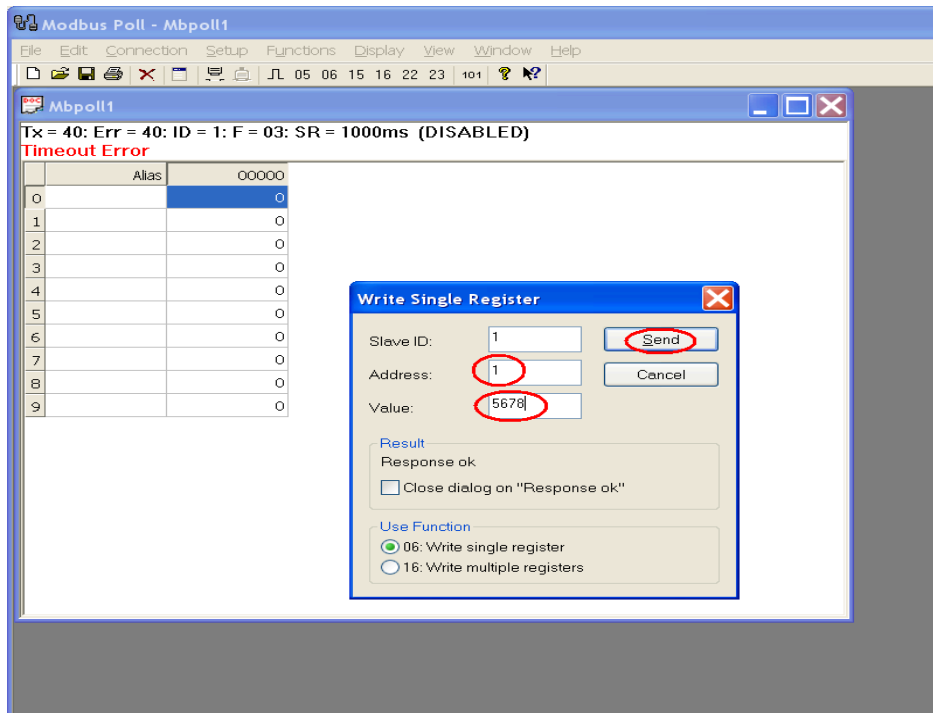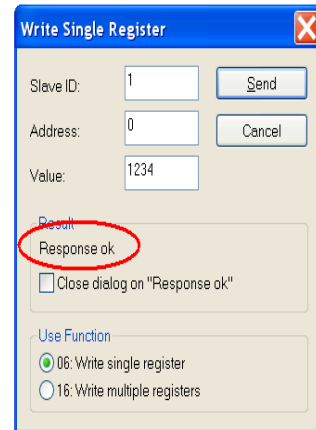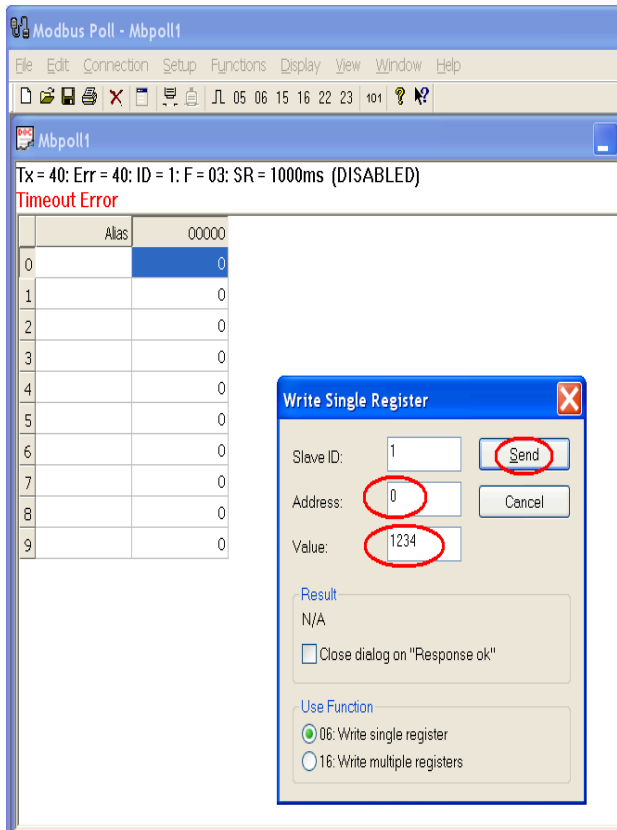**Data** (n chars) is the data associated with the command.
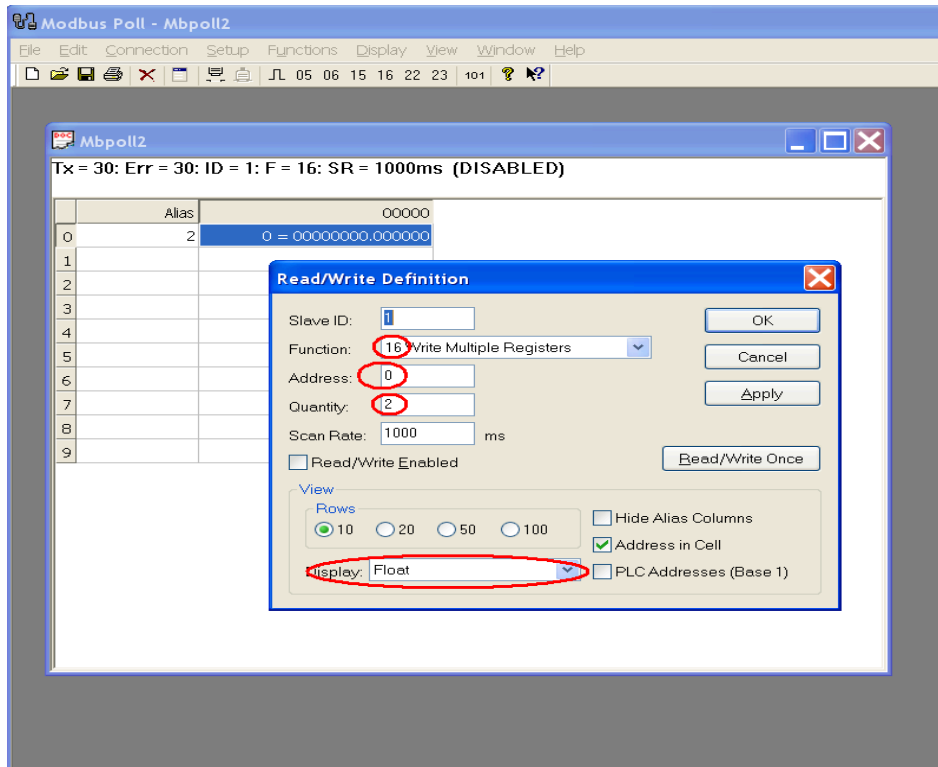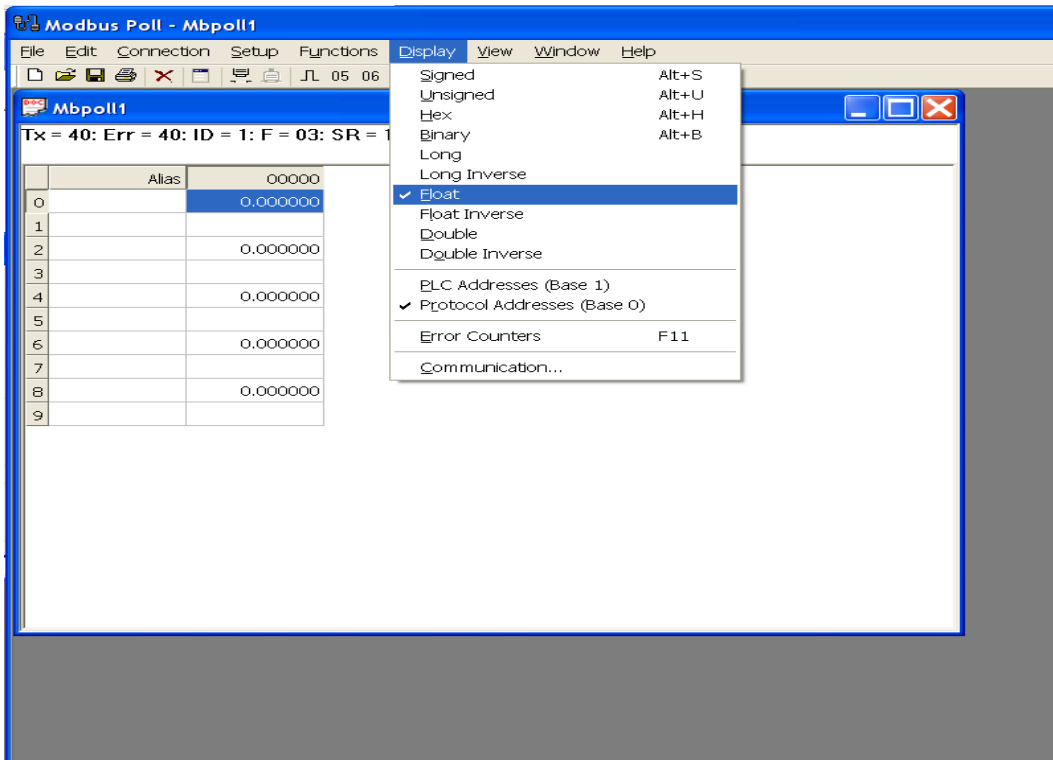**CRC** (2 chars) is the CRC for the data packet. To ignore CRC provide XX.

Command	Description	Example

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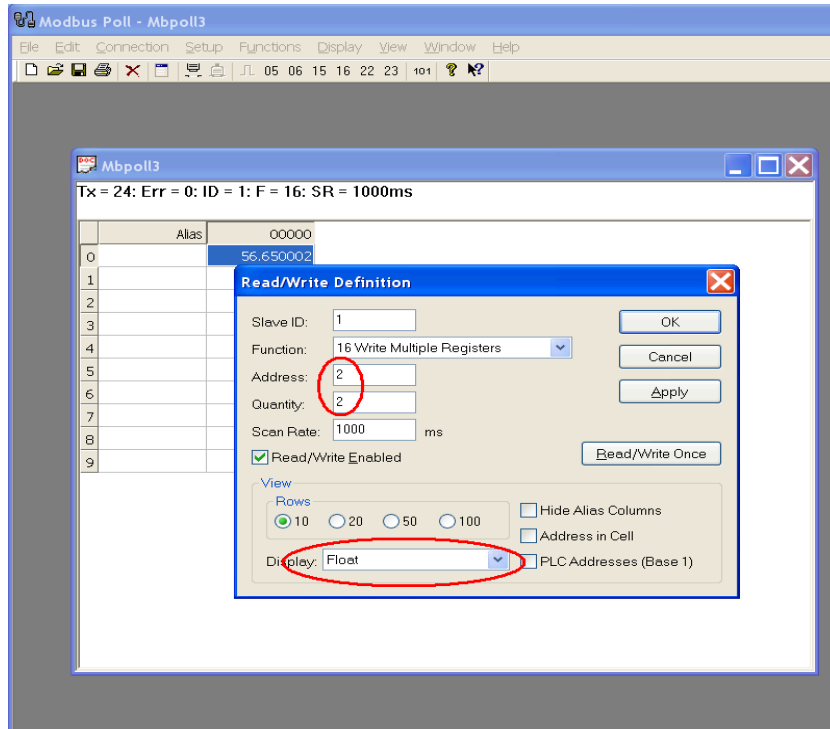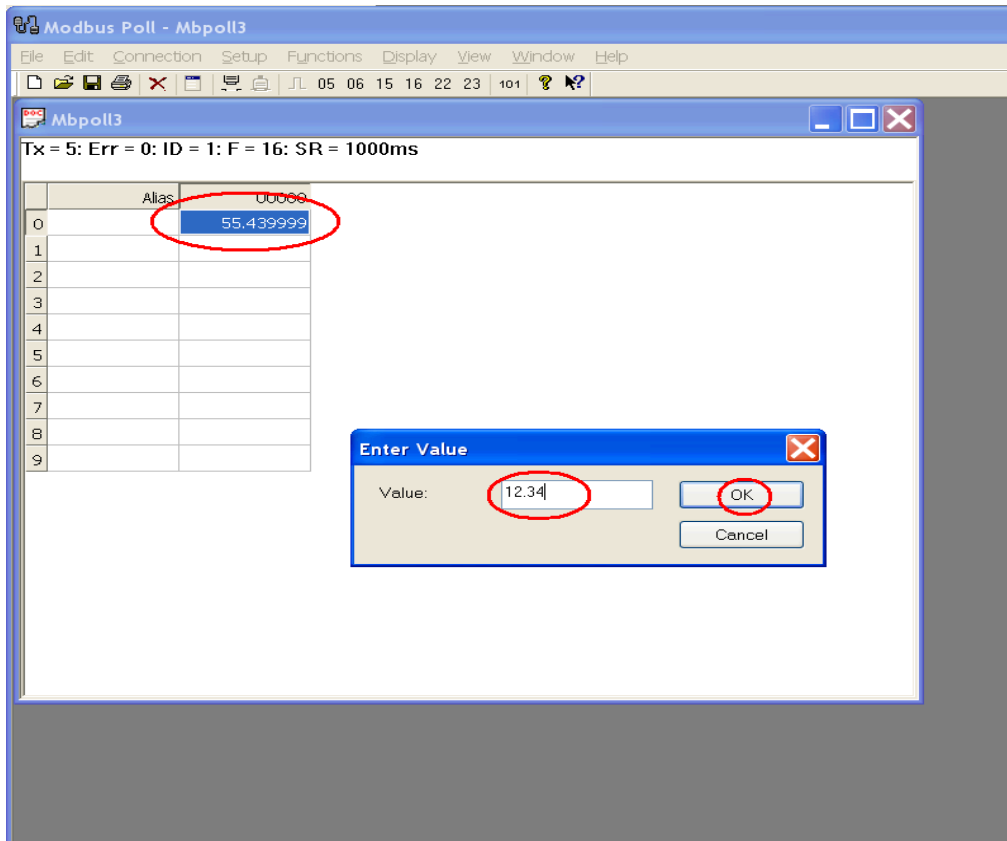
Set Device ID	This command sets the device ID when multiple devices are connected. Default device will be 01.	**[ID ZD DD CRC]** DD-01234567890123456789 Ex: **[01ZD02XX]** **[01ZD10XX]**
Set Brightness	This command is used to set the brightness of the led display.Where Brightness can be from 0-9.	**[ID ZH N CRC]** Ex: To set minimum brightness **[01ZH1XX]**
Set Number of Decimal Points to display	This command is used to set the number of decimal points to the display in modbus data.	**[ID D D CRC]** D-0123456789 Ex: To set two decimal points **[01D2XX]**
Set Number of Digits to display	This command is used to set the number of digits to the display in modbus data.	**[ID F D CRC]** D-0123456789 Ex: To set four digits to display **[01F4XX]**
Set Display Leading zero	This command is used to set the leading zero in the display	**[ID E D CRC]** Ex **To set leading zero off** **[01E0XX]** **To set leading zero on** **[01E1XX]**
Set Display Type	This command is used to set the display type UNSIGNED INT16 - 1 SIGNED INT16 - 2 LONG32 - 3 FLOAT - 4 DOUBLE - 5	**[ID Y D CRC]** D-12345 Ex: **[01E1XX]**

Use the Modbus software to check the unit with following images
Set the connection details like Port,Baud rate,Word length,Parity,Start & Stop bit etc..
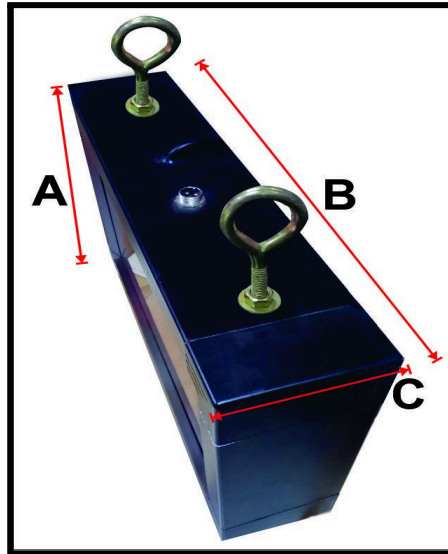Set the Modbus protocol type.

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Industrial Grade cabinet Models and Dimensions

All Units in mm

Model No	A Height (mm)	B Width (mm)	C Depth (mm)	Max Power (W)
IC-MODBUS-SLAVE-11	250	410	93	35
IC-MODBUS-SLAVE-12	250	730	93	65
IC-MODBUS-SLAVE-13	250	1050	93	95
IC-MODBUS-SLAVE-14	250	1370	93	125
IC-MODBUS-SLAVE-22	410	730	93	125
IC-MODBUS-SLAVE-23	410	1050	93	185
IC-MODBUS-SLAVE-24	410	1370	93	245

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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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Important Notice