

PROTOCOL CONVERTER  
MODBUS RTU TO RTU  
FLOATING POINT FORMAT CONVERSION

MODEL : SS-RTU-FL

User Manual

DOCUMENTED BY

ISEP

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## 1 Introduction

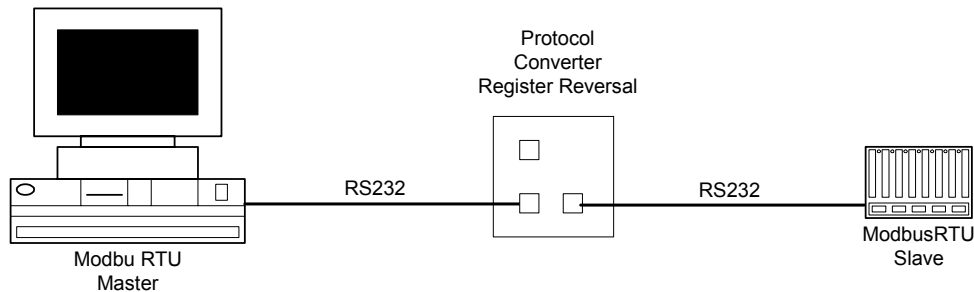
Some DCS system with modbus serial port are unable to read floating point value correctly as normal PLC uses Modicon Float format while the DCS may interpret using IEEE32 bits floating point.

The function of this converter is to convert Modicon Floating point format to IEEE 32 bit floating point format and vice-versa. This is achieved by swapping the holding register position.

## 2 System Configuration

Converter is user configurable. The HyperTerminal of a PC connected to port 2 can be used to configure the Serial port baud rate, data bit and parity. The configured settings is applicable to both port 1 and port 2.

The Modbus Master is connected to port 1 and the slave connected to port 2.



## 3 Configuration Set-Up

The Converter is designed to sit on a 35 mm DIN Rail. There are two serial ports and one Ethernet port on the Converter.

- PORT 1:**      **Communication port**
- PORT 2:**      **Configuration port**
- LAN:**         **Ethernet port (For diagnostics)**

To enter the configuration values or to see the existing configuration, connect a PC to the Configuration port (port 2) of the Converter and open the HyperTerminal. **Hyper Terminal should be connected at 19,200 baud, 8 data bits, 1 stop bit and parity None.** Once the HyperTerminal is connected to port 2, power off and on the converter, the HyperTerminal displays the factory settings of the following parameters:

**IP address = 090.000.000.190**  
(IP address of the Converter)

**Baud-rate = 019200**  
**Data-bit = 8**

**Parity = N** (None)

**Mode = F** (Always F for this converter)

Converter then asks if the user wants to change any configuration or use the existing one.

**Do you wish to continue configuration?**

**Press “Y” or “y” and wait for few seconds until the Converter enters into configuration mode. DO not enter “Enter Key” after pressing “Y” or ”y” on the keyboard.**

**If the user doesn’t wish to change any configuration simply enter “any key“ other than “Y” or “y” to exit out of configuration mode.**

Once in the configuration mode, Converter requests for the following values:

User can enter the corresponding new values followed by “Enter Key” or simply enter the “Enter Key “ to use the existing values

**Enter the IP address.(xxx.xxx.xxx.xxx followed by Enter Key)**

**(e.g. “090.000.000.180” followed by “Enter Key”).**

**Enter the baud rate.**

**Please use 6 digits to enter baud rate followed by “Enter Key”.**

**(e.g. “019200” followed by “Enter Key”)**

(Valid baud rates are 300,1200,2400, 9600,19200,38400,57600,115200).

**Enter the Data bit.**

**Please enter “8” or “7” followed by “Enter Key”.**

**Enter the Parity.**

**Please use 1 Capital letter to enter Parity.**

**(e.g. “E” for Even, “O” for Odd & “N” for None followed by “Enter Key”).**

Once the user finishes the configuration, the Converter will prompt again if the user wishes to continue the configuration to correct any of the values.

**Do you wish to continue the configuration?**

**Enter “any key“ other than “Y” or “y” to exit out of configuration mode.**

**Converter then displays the last entered values**

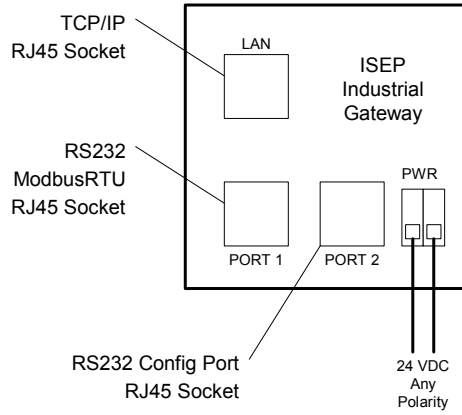
## 4 Overview of Communication Process

The converter listen at port 1 for any request from the modbus master and repeat the request on port 2 which should be connected to a modbus slave. When port 2 received a reply, it will repeat the reply via port 1 back to the modbus master.

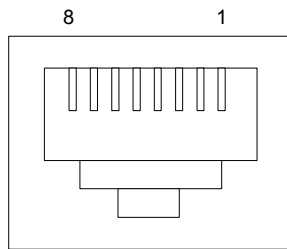
When the reply is for modbus function code 03 (Holding Register). The converter will swapped the position of the odd and even register, re-generate the CRC before replying back via port 1. In this way, modicon float format can be converted to IEEE32bit float and vice-versa.

**Note: The modbus RTU master must poll an even number of holding registers, if not the converter will not activate the register swapping.**

## 5 Connections Diagrams

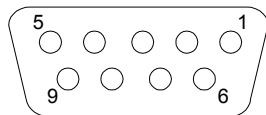


Pin assignment for Port 1 and Port 2 are as follows:



Pin	Description
1	Tx
8	Rx
4	Logic Gnd

The pin description for the RS232 D9 pin test cable is shown below.



Pin	Description	
2	Tx	(To PC comport Rx, pin 2)
3	Rx	(To PC comport Tx, pin 3)
5	Logic Gnd	

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