



Integrated Systems Engineering & Products

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MODBUS RTU GATEWAY

MODEL : GW-502-RTU

User Manual

Rev 1.1

DOCUMENTED BY

ISEP

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## MODBUS GATEWAY USER MANUAL

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## 1.0 Overview

Problem:

- A) Some DCS and Data Acquisition System may have Modbus RTU serial port but are unable to be configured to poll more than one Node ID on the same serial port.
- B) Some DCS and Data Acquisition System have only one Modbus RTU serial port but need to poll to more than one network.

The Modbus Gateway is the solution. The function of the Gateway is to map multiple slaves ID into a single data block as a single slave ID. The whole system consist the Gateway and 3 x slave units (Net 1 to Net 3). Each slave unit supports one Modbus RTU network.

Each network can have up to maximum 40 modbus slave devices. (or rather 40 poll record for each network).

Supported Function Code : FC03 (Holding registers) & FC04 (Input Registers)

Mapping area: 40001 to 42000 (or 30001 to 32000)

Diagnostic address : 49001 to 49120

49001 to 49040 correspond to the comms status of 40 poll records for network 1.

49041 to 49080 correspond to the comms status of 40 poll records for network 2.

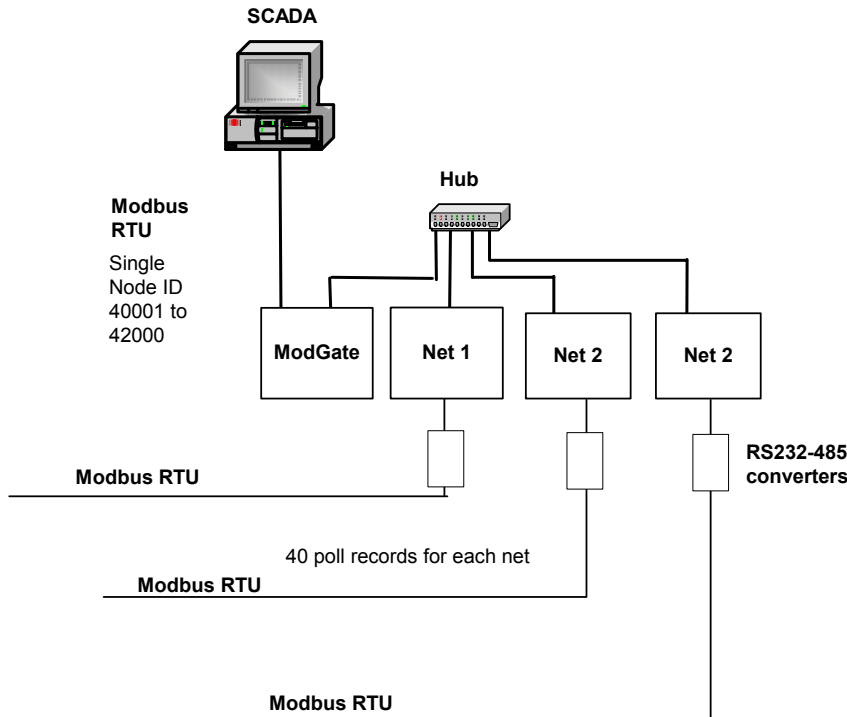
49081 to 49120 correspond to the comms status of 40 poll records for network 3.

“0” means comms OK

“1” means not polling

“2” means comms failure

## ModGate Overview



### 2.0 Slave Node ID & Poll record settings:

Connect the Gateway port 2 to a PC running HyperTerminal at 19200, 8, None. A message will appear for 5 seconds: “Do you wish to change Configuration?”

Press “Y” and wait.

Next, it will ask you to enter IP address. Just ignore by pressing enter. Carry on until you see “Enter Slave Node\_ID”

Key in the required node ID. Eg. for node ID 2, key in 002 followed by enter key.

After which, the message “ Send Net1 poll record” will appear. If you do not wish to change the poll record, just wait 10 seconds to go to next message of just power cycle.

### 3.0 Poll Record settings

Follow the above procedure until you reached this message “Send Net1 poll record”. You’ll have about 10 seconds to send the poll record file.

Select “Transfer” from the HyperTerminal menu and select “Send Text File” and send out the pre-defined poll record file. Be careful not to press any key during this process.

Poll records determine let the Gateway knows what to poll and where to put the data. It is stored as a text file with exactly 964 characters including CR. **When editing, make sure that the characters location is not shifted or deleted.**

The first 3 characters tell the Gateway how many poll records to execute. Maximum value is 40. The next 40 lines are the poll record details. Each line consists of 7 fields separated by commas.

The first field of the line is the Node\_ID of the slave devices.

The 2<sup>nd</sup> field is the FC. (Valid entries are 03 for Holding Register and 04 for Input Register) **Note that Holding and Input register shared the same data.**

The 3<sup>rd</sup> field is the starting address. (Note that 0000 means 40001 or 30001. This is a 4 characters field)

The 4<sup>th</sup> field is the number of register to poll (Max allowed is 125)

The 5<sup>th</sup> field is the time out

The 6<sup>th</sup> field is the retry

The 7<sup>th</sup> field is the Destination Offset. (eg. 0000 means the polled data will be placed starting at 40001. This is also a 4 char field)

#### 4.0 Sample of the poll record.

040  
001,003,0000,020,001,002,0000  
002,003,0000,020,001,002,0020  
003,003,0000,020,001,002,0040  
004,003,0020,020,001,002,0060  
005,003,0000,020,001,002,0080  
006,003,0000,020,001,002,0100  
007,003,0000,020,001,002,0120  
008,003,0020,020,001,002,0140  
009,003,0000,020,001,002,0160  
010,003,0000,020,001,002,0180  
011,003,0000,020,001,002,0200  
012,003,0020,020,001,002,0220  
013,003,0000,020,001,002,0240  
014,003,0000,020,001,002,0260  
015,003,0000,020,001,002,0280  
016,003,0020,020,001,002,0300  
017,003,0000,020,001,002,0320  
018,003,0000,020,001,002,0340  
019,003,0000,020,001,002,0360  
020,003,0020,020,001,002,0380  
021,003,0000,020,001,002,0400  
022,003,0000,020,001,002,0420  
023,003,0000,020,001,002,0440  
024,003,0020,020,001,002,0460  
025,003,0000,020,001,002,0480  
026,003,0000,020,001,002,0500  
027,003,0000,020,001,002,0520  
028,003,0020,020,001,002,0540  
029,003,0000,020,001,002,0560  
030,003,0000,020,001,002,0580  
031,003,0000,020,001,002,0600  
032,003,0020,020,001,002,0620  
033,003,0000,020,001,002,0440  
034,003,0020,020,001,002,0460  
035,003,0000,020,001,002,0480  
036,003,0000,020,001,002,0500  
037,003,0000,020,001,002,0520  
038,003,0020,020,001,002,0540  
039,003,0000,020,001,002,0560  
040,003,0000,020,001,002,0580  
041,003,0000,020,001,002,0600  
040,003,0020,020,001,002,0620

### **5.1 Gateway Config**

IP Address = 090.000.000.099  
Remote IP = 090.000.000.098  
Remote2 IP = 090.000.000.097  
Remote3 IP = 090.000.000.096  
Netmask = 255.255.255.000  
Gateway = 000.000.000.000  
Baudrate = 019200  
Databit = 8  
Parity = N  
Client-Server = C  
Port = 0502  
Slave Node\_ID = 001

### **5.2 Net 1 Slave config**

IP Address = 090.000.000.098  
Remote IP = 000.000.000.000  
Remote2 IP = 000.000.000.000  
Netmask = 255.255.255.000  
Gateway = 000.000.000.000  
Baudrate = 009600  
Databit = 8  
Parity = N  
Client-Server = S

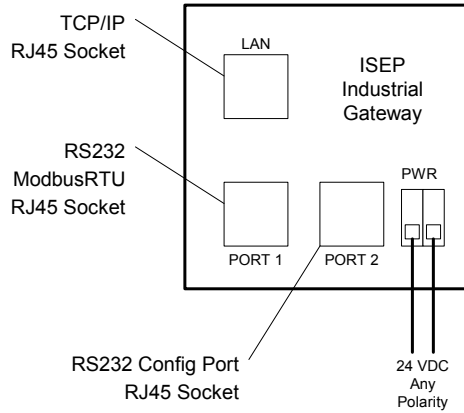
### **5.3 Net 2 Slave config**

IP Address = 090.000.000.097  
Remote IP = 000.000.000.000  
Remote2 IP = 000.000.000.000  
Netmask = 255.255.255.000  
Gateway = 000.000.000.000  
Baudrate = 009600  
Databit = 8  
Parity = N  
Client-Server = S

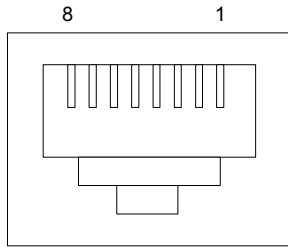
### **5.4 Net 3 Slave config**

IP Address = 090.000.000.096  
Remote IP = 000.000.000.000  
Remote2 IP = 000.000.000.000  
Netmask = 255.255.255.000  
Gateway = 000.000.000.000  
Baudrate = 009600  
Databit = 8  
Parity = N  
Client-Server = S

## 6.0 Connections Diagrams

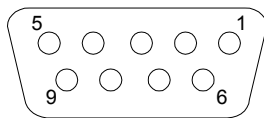


Pin assignment for Port 1 and Port 2 are as follows:



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	

End of Document