

## 4 Port ModbusTCP Data Concentrator : Model SC10E4NI M DC



Modbus is an industry adopted communication protocol based on RTU, ASCII, and TCP protocols for various applications; these three protocols are commonly used by various equipments in the industry, such as DCS, PLC, HMI, Power meters, various sensor and measuring instruments

The SC10E4 M Series support 16 simultaneous TCP master and 32 simultaneous requests for each TCP master. Each RS232/485/422 serial port can be individually configured for Modbus RTU or Modbus ASCII, Master or Slave or even different baudrate.

There are 2 Ethernet ports and they operates as :

Dual Subnet Mode : Two Ethernet ports have separate IP addresses and subnets

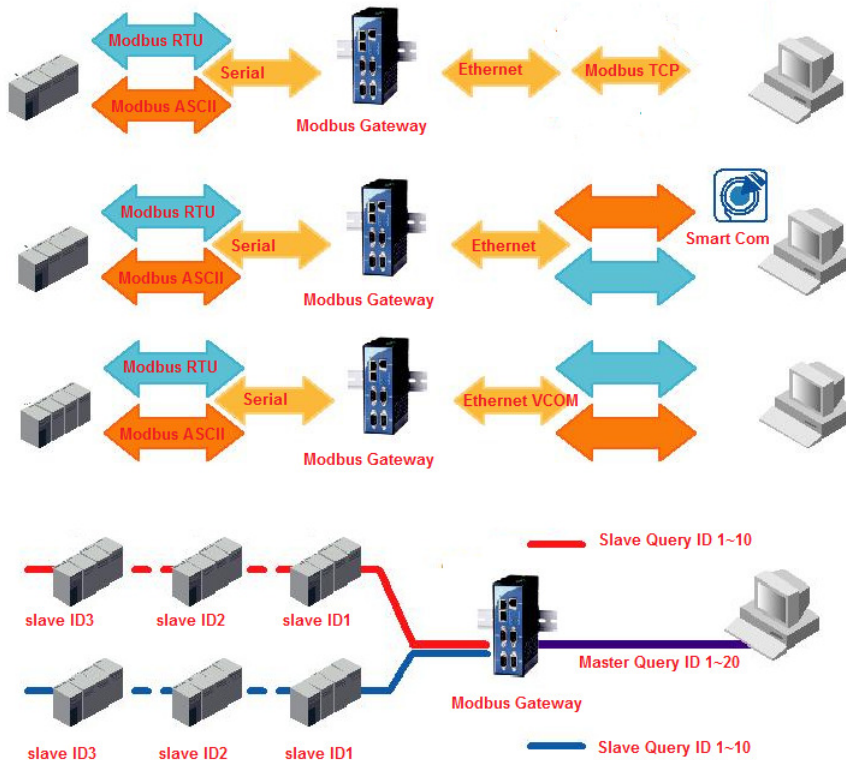
Redundancy Mode : The system will use only one port for data transfer. If the port is disconnected, the whole system will change to another port automatically

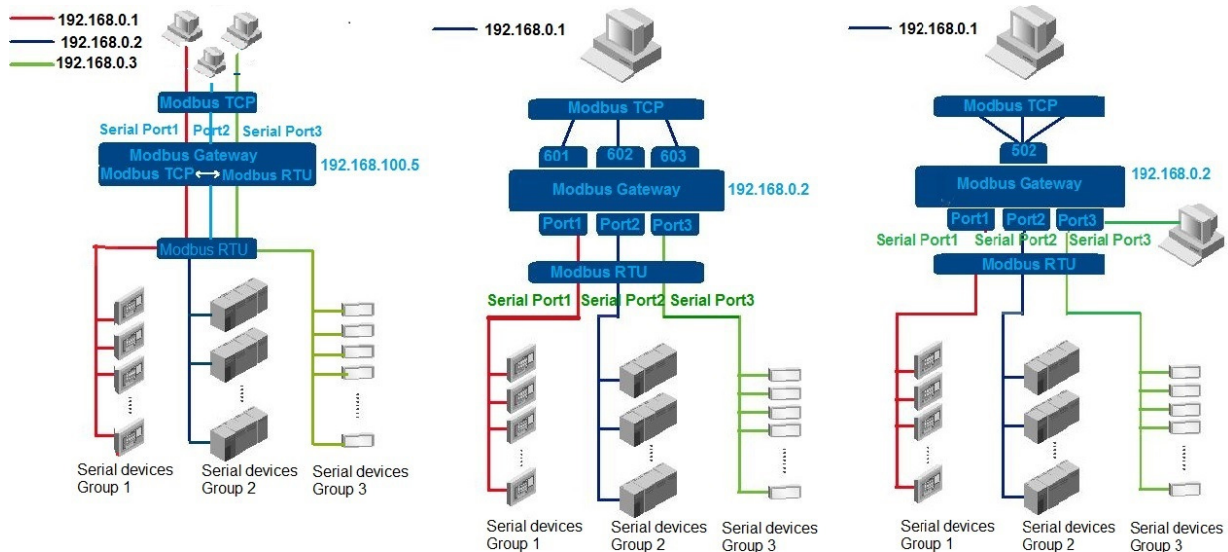
SC10E4NI M Series Gateway supports

1. RS232/485/422 and Ethernet
2. Conversion of any Modbus protocols between Modbus TCP, Modbus RTU, and Modbus ASCII
3. ID routing when a Modbus ID conflict occurs

### Connection Architecture

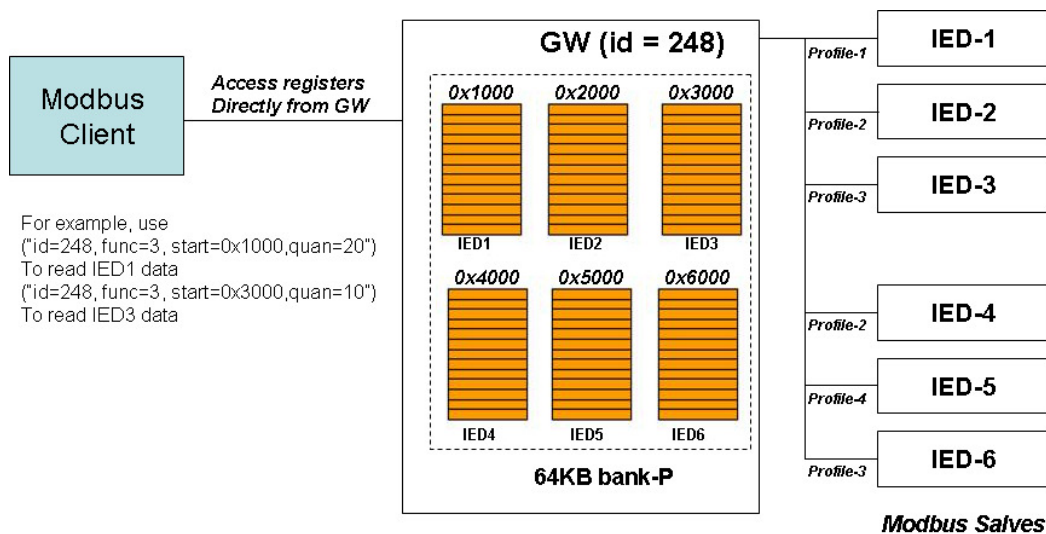
1. Interfacing between Modbus/TCP over Ethernet network to Modbus RTU/ASCII serial devices
2. Interfacing between Modbus RTU/ASCII serial host to Modbus RTU/ASCII serial devices, and
3. Interfacing between Modbus RTU/ASCII host connected through Virtual com port (VCOM) over Ethernet to Modbus RTU/ASCII serial devices





### Concentrator Function

Modbus Concentrator concept is to act as a gateway to collect data from Modbus slaves independently to main memory and to response the requests from Modbus Master directly from the memory to increase the performance. This memory mapping can save the time querying the Modbus registers via serial line interface. For example, 9600 bps will cost 1 byte per milli-second. To extract 100 IEDs with each 10 registers (20 bytes), it will require  $100 \times 10 \times 2 / 1000 = 2$  seconds. Ethernet executes in 100Mbps. It means that Modbus Master will always be in waiting state. Fig. shows the concept of a Modbus Concentrator. There are 6 IEDs via a serial line connecting to the Concentrator abbreviated as GW. The GW maps all 6 IEDs into a memory map in different address e.g the registers of IED1 is mapped in 0x1000 address of GW; the registers of IED3 is mapped in 0x3000. Then a Modbus Master can use the same Modbus commands but different slave ID and different address to get the data for all IEDs. A Modbus command ("id=248, func=3, start=0x1000,quan=20 ") is equal to the query of the registers in IED1. A Modbus command ("id=248, func=3, start=0x3000,quan=10 ") is equal to the query of the registers in IED3.



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Connecting. Converting. Leading !

### Specifications

**Ethernet** : 2 no's. 2 MAC id's, 10/100M Fast-Ethernet, Auto-detection  
Network Protocol : ICMP, TCP, IP, UDP Modbus TCP/ASCII/RTU, HTTP, ARP, SNMP, SMTP, NTP, DHCP Client, DNS, Telnet

Supports 16 simultaneous TCP Masters & 32 simultaneous request per TCP Master

**Serial Interface** : RS-232/422/485 software selectable  
Date Rate : 1200 bps ~ 921 Kbps, Support user define baud rate  
Data Bits : 5, 6, 7, 8  
Parity Check : None, Even, Odd, Space, Mark  
Stop Bits : 1, 2  
Flow Control : None, XON/XOFF, RTS/CTS  
Protection : 15KV ESD

Each 422/485 serial port can be individually configured for Modbus RTU or Modbus ASCII operation or even different baudrate,

Alerts : Emails, Traps, Relay, Syslog  
Watch Dog Timer : 60-second software auto-reset. 1 second real-time clock built-in  
Configuration : Web Browser, Windows-based Utility  
MTBF : 188251 hours / 21.5 years

### Connector

Serial Port : 4-Port ; DB9 Male connector

### Power

Power Input : DC 9 ~ 48V, 7-pin TB, Wattage : 5.85W max  
Redundant : Yes

### Mechanical

Dimension (W x H x D) mm : 53.4 x 145.7 x 119.9  
Mounting : DIN-Rail  
Weight : 900g

### Environmental

Operation Temperature : -40°C ~ 80°C  
Storage Temperature : -40°C ~ 85°C  
Humidity : 5%~95% non-condensing

### Ordering Information

SC10E4NI M DC : 4-Port Serial-to-Ethernet Modbus Gateway, DB9 (M)