GROUPE SCHNEIDER

■ Modicon ■ Square D ■ Telemecanique

Modicon
140 CPU 213 04
768k CPU Module

Publication # 043506145
Version 4.0

Specifications

User Logic/Reference Capacity	**User Logic** / **Discrete** / **Register** / **Extended Register** 32 k words / 64 k * / 57 k * / 80 k 48 k words / 64 k * / 28 k * / 0 k * Given are absolute maximum values: Discrete = number of 0x + 1x references Register = number of 3x = 4x references
Reference Capacity	
Discrete	64 k -- any mix
Local I/O (Main Backplane)	
Maximum I/O Words	64 In and 64 Out *
Maximum Number of I/O Racks	1
Remote I/O	
Maximum I/O Words per Drop	64 In and 64 Out *
Maximum Number of Remote Drops	31
Distributed I/O	
Maximum Number of Networks per System	3 **
Maximum Words per Network (For every DIO drop, there is a minimum of words input of overhead.)	500 In and 500 Out
Maximum Words per Node	30 In and 32 Out
Watchdog Timer	250 ms (S/W adjustable)
Logic Solve Time	0.3 ms / k to 1.4 ms / k
Battery	3 V Lithium
Service Life	1200 mAh
Shelf Life	10 years with 0.5% loss of capacity per year
Battery Load Current @ Power–off	
Typical	5 µA
Maximum	110 µA
Communication	
Modbus (RS–232)	1 serial port (9–pin D–shell)
Modbus Plus (RS–485)	1 network port (9–pin D–shell)

* This information can be a mix of Discrete or Register I/O. For each word of register I/O configured, one word of I/O words must be subtracted from the total available. The same holds true for each block of 8 bits or 16 bits of Discrete I/O configured–one word of Register I/O must be subtracted from the total available.

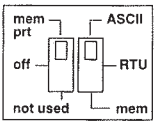
** Requires the use of the 140 NOM 21x 00 Option Processor.

Specifications (cont'd)

General		
Diagnostics	**Power Up** RAM RAM Address Executive Checksum User Logic Check Processor	**Runtime** RAM RAM Address Executive Checksum User Logic Check
Bus Current Required	900 mA	
TOD Clock	+/– 8.0 seconds/day 0 ... 60°C	

Front Panel Switches

Two three-position slide switches are located on the front of the CPU. The left switch is used for memory protection when in the top position and no memory protection in the middle and bottom positions. The three-position slide switch on the right is used to select the comm parameter settings for the Modbus (RS-232) ports. Three options are available:



- Setting the slide switch to the top position assigns ASCII functionality to the port; the following comm parameters are set and cannot be changed:

ASCII Comm Port Parameters	
Baud	2,400
Parity	Even
Data Bits	7
Stop Bits	1
Device Address	Modbus Plus Address

- Setting the slide switch to the middle position assigns remote terminal unit (RTU) functionality to the port; the following comm parameters are set and cannot be changed:

RTU Comm Port Parameters	
Baud	9,600
Parity	Even
Data Bits	8
Stop Bits	1
Device Address	Modbus Plus Address

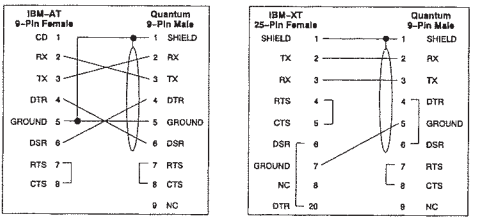
- Setting the slide switch to the bottom position gives you the ability to assign comm parameters to the port in software; the following parameters are valid:

Valid Comm Port Parameters

Baud	19,200	1,200
	9,600	600
	7,200	300
	4,800	150
	3,600	134.5
	2,400	110
	2,000	75
	1,800	50
Data Bits	7 / 8	
Stop Bits	1 / 2	
Parity	Enable/Disable Odd/Even	
Device Address	1 ... 247	

Modbus Connector Pinouts

All Quantum CPUs are equipped with a nine–pin RS–232C connector that supports Modicon's proprietary Modbus communication protocol. The following is the Modbus port pinout connections for nine–pin and 25–pin connections.

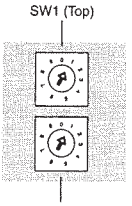


TX: Transmitted Data **DTR:** Data Terminal Ready
RX: Received Data **CTS:** Clear to Send
RTS: Request to Send **N/C:** No Connection
DSR: Data Set Ready **CD:** Carrier Detect

Rear Panel Switches

Two rotary switches (refer to the illustration and table below) are located on the rear panel of the CPU. They are used for setting Modbus Plus node and Modbus port addresses.

SW1 (the top switch) sets the upper digit (tens) of the address; SW2 (the bottom switch) sets the lower digit (ones) of the address. The illustration below shows the correct setting for an example address of 11.



SW1 and SW2 Address Settings

Node Address	SW1	SW2
1 ... 9	0	1 ... 9
10 ... 19	1	0 ... 9
20 ... 29	2	0 ... 9
30 ... 39	3	0 ... 9
40 ... 49	4	0 ... 9
50 ... 59	5	0 ... 9
60 ... 64	6	0 ... 4

☞ **Note:** If "0" or an address greater than 64 is selected, the Modbus + LED will be "on" steady, to indicate the selection of an invalid address.

For complete information concerning this and other modules, please obtain a copy of the *Quantum Automation Series Hardware Reference Guide* from your distributor or local Square D office.