

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Amikon cover with selected official Schneider Electric pages

SCHNEIDER ELECTRIC MODICON QUANTUM

140CPU11302

80186 CONCEPT PROCESSOR

Selected official pages cover CPU specifications, module identification, indicators, communications and operating details for the exact model.

Part Number	Source Voltage	Type	Bus Current Provided
140CPS41400	48 Vdc	Standalone/ Redundant	8 A
140CPS42400	48 Vdc	Standalone/ Redundant	8 A
140CPS51100	100 ... 150 Vdc	Standalone	3 A
140CPS52400	125 Vdc	Standalone/ Redundant	8 A

CPU Specifications

The following table shows specifications for the CPUs.

Part Numbers	Max IEC Program	SRAM Size	Ladder Logic	Available Registers	Bus Current Required
140CPU11302	109 k	256 k	8 k	10 k	780 mA
140CPU11303	368 k	512 k	16 k	10 k	790 mA
140CPU21304	606 k	768 k	32 k or 48 k	64 k or 32 k	900 mA
140CPU42402	570 k	2 M	64 k	64 k	1.8 A
140CPU43412	896 k	2 M	64 k	57 k	1.8 A
140CPU43412A	896 k	2 M	64 k	57 k	1.25 A
140CPU53414	2.5 M	4 M	64 k	57 k	1.8 A
140CPU53414A	2.5 M	4 M	64 k	57 k	1.25A
140CPU53414B	2.5 M	4 M	64 k	57 k	1.25A

Networking Modules – RIO

The following table shows specifications for RIO Networking modules.

Part Numbers (RIO)	Drop Location	Communication Channel(s)	Bus Current Required
140CRA93100	Remote (Drop)	1	600 mA
140CRA93200	Remote (Drop)	2	750 mA
140CRP93100	Local (Head)	1	600 mA
140CRP93200	Local (Head)	2	750 mA
140NRP95400	Local (Head) or Remote (Drop)	2, multimode fiber optic (ST-style); 1 coaxial (F type)	700 mA
140NRP95401C	Local (Head) or Remote (Drop)	2, single-mode fiber optic (LC-style); 1 coaxial (F type)	750 mA

CPU Modules

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Introduction

This chapter provides information on the specifications, LED indicators and description and error codes for the Quantum CPU modules.

The following table shows an overview of the Quantum CPU modules.

CPU	SRAM (bytes)	Ladder	Registers	Extended	984 Ladder Performance	Max IEC Program
140CPU11302	256 k	8 k	10 k	none	0.3 - 1.4 ms/k	109 k
140CPU11303	512 k	16 k	10 k	none	0.3 - 1.4 ms/k	368 k
140CPU21304	768 k	32 k or 48 k	57 k or 28 k *	80 k or 0 k *	0.3 - 1.4 ms/k	606 k
140CPU42402	2 M	64 k	57 k	96 k *	0.1 - 0.5 ms/k	570 k
140CPU43412	2 M	64 K	57 K*	96 k	0.1 - 0.5 ms/k	896 k
140CPU43412A	2 M	64K	57 K*	96 k	0.1 - 0.5 ms/k	896 k
140CPU53414	4 M	64 K	57 K*	96 k	0.9 - 0.45 ms/k	2.5 M
140CPU53414A	4 M	64 K	57 K*	96K	0.1 - 0.5 ms/k	2.5 M
140CPU53414B	4 M	64 K	57 K*	96K	0.1 - 0.5 ms/k	2.5 M

*Refer to the individual specification pages for detailed information.

What Is in This Chapter?

This chapter contains the following topics:

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Specifications		
Local I/O (Main Backplane)		
Maximum I/O Words	64 In and 64 Out*	
Maximum Number of I/O Racks	2 (Requires expander)	
Remote I/O		
Maximum I/O Words per Drop	64 In / 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 two 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)	
General		
Diagnostics	Power Up	Runtime
	RAM	RAM
	RAM Address	RAM Address
	Executive Checksum	Executive Checksum
	User Logic Check	User Logic Check
	Processor	
Bus Current Required	780 mA	
Power Dissipation	3.9 W	

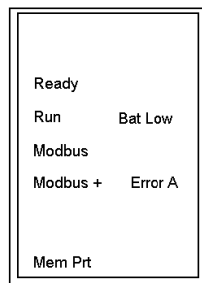
Specifications	
TOD Clock	+/- 8.0 seconds/day 0 ... 60° C
Maximum Number of NOM, NOE, and MMS modules (any combination)	2

* 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 140NOM2x00 Option Processor.–

LED Indicators and Descriptions

The following figure shows the CPU LED indicators.



The following table shows the LED descriptions.

LED Descriptions		
LEDs	Color	Indication when On
Ready	Green	The CPU has passed powerup diagnostics.
Run	Green	The CPU has been started and is solving logic. (See the following table for Run LED error codes).
Modbus	Green	Communications are active on the Modbus port.
Modbus +	Green	Communications are active on the Modbus Plus port.
Mem Prt	Amber	Memory is write protected (the memory protect switch is on).
Bat Low	Red	The battery needs replacing.
Error A	Red	Indicates a communications error on the Modbus Plus network.

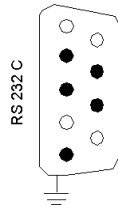
LED Error Codes

The following table show the number of times the Run LED blinks for each type of error, and the crash codes possible for that group (all codes are in hex) for the 140CPU11302 module.

LED Error Codes		
Number of Blinks	Code	Error
Continuous	0000	requested kernel mode
2	80B	ram error during sizing
	80C	run output active failed
	82E	MB command handler stack error
3	769	bus grant received
	72A	not master asic on cpu
	72B	master config write bad
	72C	quantum bus DPM write failure
	72F	plc asic loopback test
	730	plc asic BAD_DATA

RS-232C Port

Use a Modbus data cable, Part Number 990NAA26320 (2.7 m) or Part Number 990NAA26350 (15.5 m). The following figure shows the RS-232C port connection.



The following table shows the key to the RS-232C port.

Pin	Signal	Function
2	D2 (RXD)	Received Data
3	D1 (TXD)	Transmitted Data
5	E2 (GND)	Signal Ground
7	S2 (RTS)	Request to Send
8	M2 (CTS)	Clear to Send
Black circle = Pin occupied. White circle = N/C		

Reset Push Button

The reset push button performs a hardware reset of the module which must be done each time new firmware has been downloaded. This button allows you to reset the module without removing it from the backplane.

Required Loadables

Loadables are accessible from Groupe Schneider's World Wide Web site at <http://www.schneiderautomation.com>. Click on the appropriate software under the "Control Software" section on the home page.

NOTE: 140CPU11302 does not support the 140NOA61110 or the 140NOA62200 module.