

## 140CPU53414A CPU Module

### Overview

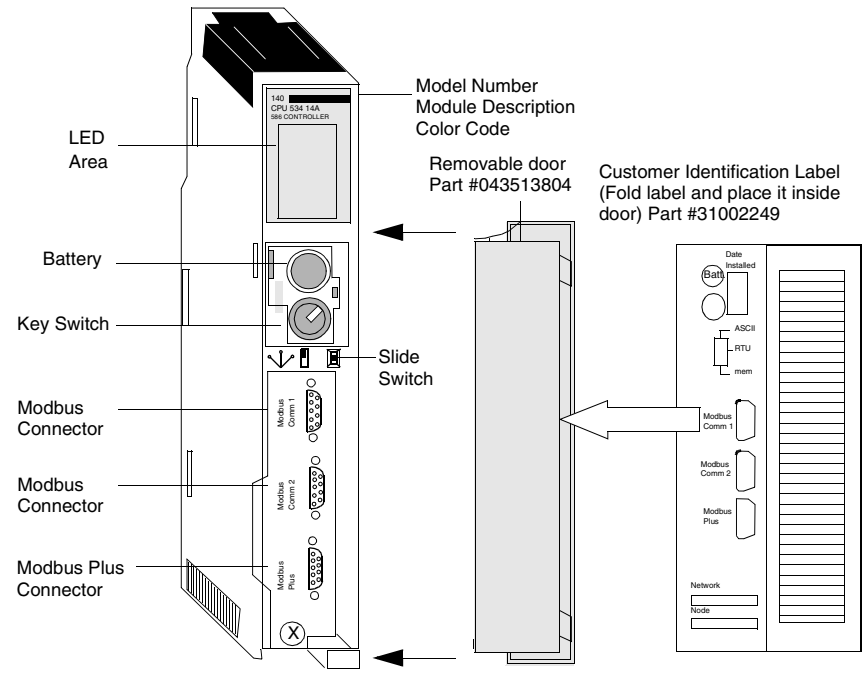
This unit provides information on the specifications, LED indicators and description and error codes for the 140CPU53414A Controller Module.

This module is functionally identical to the non-"A" version, however, the following should be considered:

- If you are using the module in a Hot Standby topology, then you **must** use either two non-"A" models or two "A" models.
- The "A" version requires a new flash executive.
- The "A" version and non-"A" flash executives are **not** interchangeable.
- Schneider Automation software (Concept, ProWORX, and Modsoft) supports the "A" version. Any existing or new 140CPU53414 program configuration will load into a 140CPU53414A without any modifications.

### CPU Module

The following figure shows the CPU Module and its components.



**Specifications**

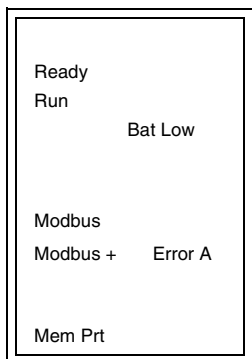
The following table shows the specifications for the CPU53414A Controller module.

<b>Specifications</b>					
<b>User Logic/Reference Capacity</b>	<b>984 Ladder Logic</b>	<b>Discrete</b>	<b>Register</b>	<b>Extended Register</b>	<b>IEC Application Memory</b>
	64 k words	64 k	57 k	96 k	2.7M
57,766 4XX registers max Only if: 0XXX = 16 and 1XXX = 16 and 3XXX = 16					
<b>Reference Capacity</b>					
Discrete	64 k - any mix				
<b>Local I/O</b>					
Maximum I/O Words	64 In and 64 Out*				
Maximum Number of I/O Racks	2 (Requires Expander)				
<b>Remote I/O</b>					
Maximum I/O Words per Drop	64 In and 64 Out*				
Maximum Number of Remote Drops	31				
<b>Distributed I/O</b>					
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				
*This information can be a mix if 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 Register I/O must be subtracted from the total available. **Requires the use of two 140NOM21X00 Option Modules.					
<b>Maximum Number of Network Option Module Interfaces</b>	Supports up to six network modules (i.e., Modbus Plus, Ethernet and Multi-Axis Motion option modules) using the option module interface technique (see p. 33). <b>Note:</b> Only two Modbus Plus modules can have full functionality, including Quantum DIO support.				

<b>Specifications</b>		
<b>Watchdog timer</b>	250 ms (software adjustable)	
<b>Logic Solve Time</b>	0.1 ms/k to 0.5 ms/k	
<b>Battery</b>		
Type	3 V Lithium	
Service Life	1200 mAh	
Shelf Life	10 years with 0.5% loss of capacity per year	
<b>Battery Load Current at Power-off</b>		
Typical	14 $\mu$ A	
Maximum	420 $\mu$ A	
<b>Communication</b>		
Modbus (RS-232)	2 serial port (9-pin D-shell)	
Modbus Plus (RS-485)	1 network port (9-pin D-shell)	
<b>Programming Software Capability</b>	Modsoft, version 2.6 Concept, version 2.1 with B2.1 patch exec Concept 2.2 with SR2 ProWorx NxT, version 2.0 ProWorx Plus, version 1.05	
<b>General</b>		
Diagnostics	<b>Power Up</b>	<b>Runtime</b>
	RAM RAM Address Executive Checksum User Logic Check Processor	RAM RAM Address Executive Checksum User Logic Check
Bus Current Required	1.25 A	
Power dissipation	6.25 W	
TOD Clock	+/- 8.0 seconds/day 0 ... 60° C	
Operating Temperature	0 ... 50° C	

## LED Indicators and Descriptions

The following figure shows the LED indicators.



The following table provides a description of the LED indicators for the 140CPU53414A module.

LED Descriptions		
LEDS	Color	Indication when On
Ready	Green	The CPU has passed power-up diagnostics.
Run	Green	The CPU has been started and is solving logic.
Bat Low	Red	The battery needs replacing or is not present.
Modbus	Green	Communications are active on Modbus port 1 or 2.
Modbus +	Green	Communications are active on the Modbus Plus port.
Error A	Red	Indicates communications error on the Modbus Plus port.
Mem Prt	Amber	Memory is write-protected (the memory protect switch is on).

**LED Error Codes** The following table shows the run LED error codes for the 140CPU53414A.

<b>LED Error Codes</b>		
<b>Number of Blinks</b>	<b>Code</b>	<b>Error</b>
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
4	604	UPI timeout error
	605	bad UPI response opcode
	606	UPI bus diagnostic error
	607	modbus cmd-buffer overflow
	608	modbus cmd-length is zero
	609	modbus abort command error
	614	mbp bus interface error
	615	bad mbp response opcode
	616	timeout waiting for mbp
	617	mbp out of synchronization
	618	mbp invalid path
	619	page 0 not paragraph aligned
	61E	bad external uart hardware
	61F	bad external uart interrupt
	620	bad receive comm state
	621	bad transmit comm state
	622	bad comm state trn_asc
	623	bad comm state trn_rtu
	624	bad comm state rcv_rtu
	625	bad comm state rcv_asc
626	bad modbus state tmr0_evt	
627	bad modbus state trn-int	

LED Error Codes		
Number of Blinks	Code	Error
	628	bad modbus state rcv-int
	631	bad interrupt
5	503	ram address test error
	52D	P.O.S.T BAD MPU ERROR
6	402	ram data test error
7	300	EXEC not loaded
	301	EXEC Checksum
8	8001	Kernal prom checksum error
	8002	flash prog / erase error
	8003	unexpected executive return

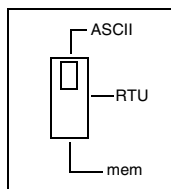
**Note:** Information in the Code column is visible only with the Flash download utility.

### Front Panel Slide Switch

The slide switch, located on the front of the CPU, is used to select the comm parameter settings for the Modbus (RS232) ports. Three options are available.

1. Setting the switch to the top position assigns ASCII functionality to the port.
2. Setting the switch to the middle position assigns remote terminal unit (RTU) functionality to the port.
3. Setting the switch to the bottom position lets you assign comm parameters to the port in software.

Slide switch::



**Note:** The CPU hardware defaults to bridge mode when the front panel switch is set to RTU or ASCII mode. When networking controllers, a panel device connected to the CPU Modbus port can communicate with the controller to which it is connected, as well as log into any nodes on the Modbus Plus network.

The following table shows the ASCII comm port parameters.

<b>ASCII Comm Port Parameters</b>	
Baud	2,400
Parity	Even
Data Bits	7
Stop Bits	1
Device Address	Rear panel rotary switch setting

The following table shows the RTU comm port parameters. The comm parameters are set and cannot be changed.

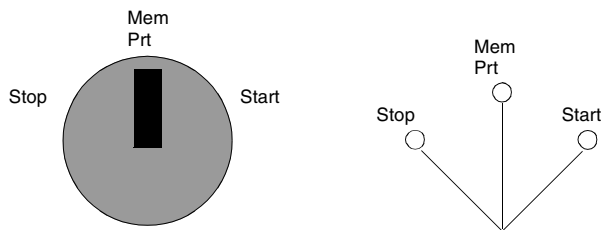
<b>RTU Comm Port Parameters</b>	
Baud	9,600
Parity	Even
Data Bits	8
Stop Bits	1
Device Address	Rear panel rotary switch setting

The following table shows the valid comm port parameters.

<b>Valid Comm Port Parameters</b>		
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
Parity	Enable/Disable Odd/Even	
Data Bits	7 / 8	
Stop Bits	1 / 2	
Device Address	1 ... 247	

## Key Switch

The following figure shows the key switch.



**Note:** The key switch positions shown next to the switch (above, left) are for reference only and are marked on the module as indicated on the right.

The CPU53414A has 1435KByte of Flash EPROM memory, which can be used to save the program and the initial values of variables. On power up, if you have a program in flash memory, you can choose the desired operating mode using the PLC MEM switch on the processor front panel. The 140CPU53414A has a key switch with Run, Mem Prt, and Stop positions.

Stop position	The application in Flash is not transferred to internal RAM: warm restart of the application.
Mem Prt position	The application in Flash is not transferred to internal RAM: warm restart of the application.
Start position	The application in Flash is automatically transferred to internal RAM when the PLC processor is powered up: cold restart of the application.