User Manual
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PACSystems™ VersaMax

PLC USER MANUAL

EMERSON

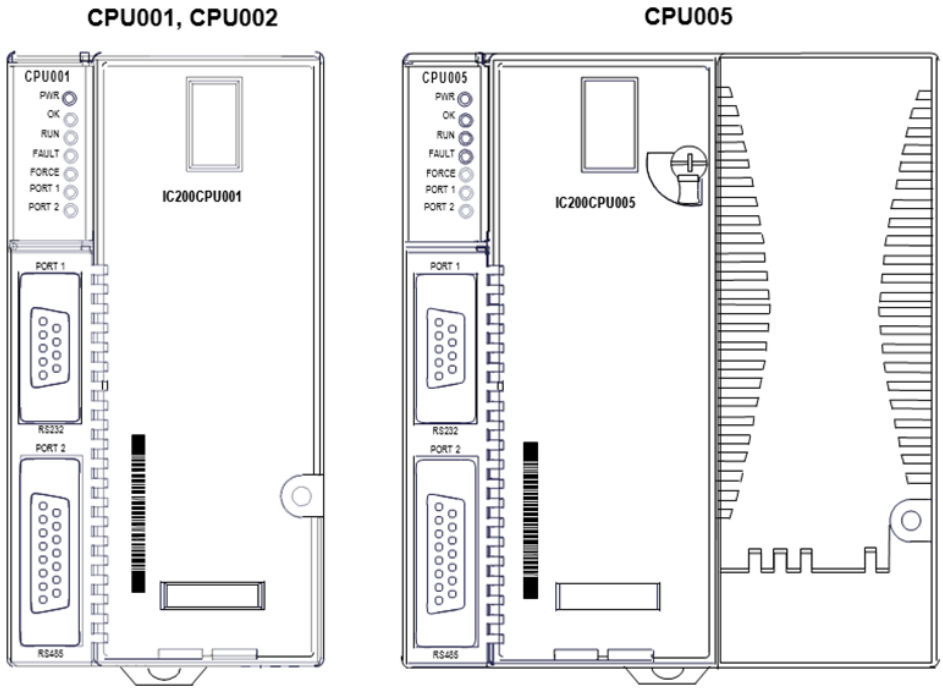
Chapter 2: CPU Module Datasheets: CPU001, CPU002, CPU005

This chapter describes the appearance, features, and functionality of the following VersaMax PLC CPU modules:

- IC200CPU001 CPU with 34kB Configurable Memory
- IC200CPU002 CPU with 42kB Configurable Memory
- IC200CPU005 CPU with 128kB Configurable Memory

VersaMax™ PLC CPUs IC200CPU001, CPU002, and CPU005 provide powerful PLC functionality in a small, versatile system. They are designed to serve as the system controller for up to 64 modules with up to 2048 I/O points. Two serial ports provide RS-232 and RS-485 interfaces for SNP slave and RTU slave communications.

Figure 10



2.1 Features

- Non-volatile flash memory for program storage.
- Programming in Ladder Diagram, Sequential Function Chart, and Instruction List.
- Battery backup for program, data, and time of day clock.
- Run/Stop switch.
- Floating point (real) data functions.
- Embedded RS-232 and RS-485 communications.
- 70mm height when mounted on DIN rail with power supply.
- Compatible with EZ Program Store device.

2.2 Module Specifications

Size	CPU001/002: 2.63" (66.8mm) x 5.04" (128mm) CPU005: 4.20" (106.7mm) x 5.04" (128mm)		
Program storage	System flash, battery-backed RAM		
Battery Backup for program, data, and time-of-day clock	Super capacitor provides power to memory for 1 hour. Over 1 hour, backup battery protects memory contents up to 6 months. Backup battery has shelf life of 5 years when not in use.		
Backplane current consumption: IC200CPU001, IC200CPU002	no serial port converter or EZ Program Store device	5V output: 40mA	3.3V output: 100mA
	with serial port converter or EZ Program Store device	5V output: 140mA	
Backplane current consumption: IC200CPU005	no serial port converter or EZ Program Store device	5V output: 35mA	3.3V output: 300mA*
	with serial port converter or EZ Program Store device	5V output: 135mA	
Floating point	yes		
Embedded communications	RS-232, RS-485		
Boolean execution speed	CPU001, CPU002: 1.8ms/K (typical) CPU005: 0.5ms/K (typical)		
Realtime clock accuracy (for timer functions)	100ppm (0.01%) or +/- 9sec/day		
Time of day clock accuracy	23ppm (0.0023%) or +/- 2sec/day @ 30C. 100 ppm (0.01%) or +/- 9sec/day @ full temperature range		

* CPU005 requires a power supply with expanded 3.3V.

Power Supply		
Input Dips, Variations	EN 61000-4-11	During Operation: Dips to 30% and 100%, Variation for AC +/-10%, Variation for DC +/-20%

2.4 Serial Ports

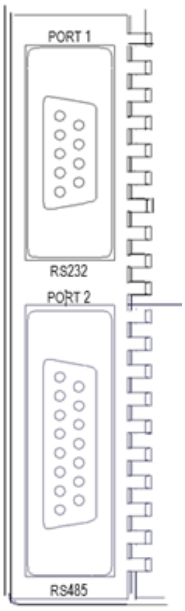
The two serial ports are software-configurable for SNP slave or RTU master or slave operation. 4-wire and 2-wire RTU are supported. If a port is being used for RTU, it automatically switches to SNP slave mode if necessary. Both ports default to SNP slave and both automatically revert to SNP slave when the CPU is in Stop mode, if configured for Serial I/O. Either port can be software-configured to set up communications between the CPU and various serial devices. An external device can obtain power from Port 2 if it requires 100mA or less at 5VDC.

Port 1: is an RS-232 port with a 9-pin female D-sub connector. The pinout of Port 1 allows a simple straight- through cable to connect with a standard AT-style RS-232 port. Maximum cable lengths from the CPU to the last device attached to the cable are:

Baud Rate	Maximum Cable Length
19.2 K and below	15 meters (50 ft.)
38.4K	7.5 meters (25 ft.)
57.6K	5 meters (16 ft.)
115.2K	2.5 meters (8 ft.)

Port 2: is an RS-485 port with a 15-pin female D-sub RS-232 adapter (IC690ACC901). Maximum cable lengths from the CPU to the last device attached to the cable is Port 2 1200 meters (4000 ft.).

Figure 11



The following table compares the functions of Port 1 and Port 2.

	Port 1	Port 2
CPU Protocols (SNP slave, RTU master/slave, Serial I/O)	Defaults to SNP slave	Defaults to SNP slave
Firmware Upgrade	PLC in Stop/No I/O mode.	no
Smart module firmware upgrade	PLC in Stop/No I/O mode	PLC in Stop/No IO mode.

2.4.1 Serial Port Baud Rates

	CPU001, CPU002	CPU005**
RTU protocol	1200, 2400, 4800, 9600, 19.2K	1200, 2400, 4800, 9600, 19.2K, 38.4K*, 57.6K*
Serial I/O protocol	1200, 2400, 4800, 9600, 19.2K	1200, 2400, 4800, 9600, 19.2K, 38.4K*, 57.6K*
SNP protocol	4800, 9600, 19.2K, 38.4K*	4800, 9600, 19.2K, 38.4K*
Firmware Upgrade via	1200, 2400, 4800, 9600, 19.2K, 38.4K	1200, 2400, 4800, 9600, 19.2K, 38.4K, 57.6K, 115.2K

* Only on one port at a time, not available on older CPU001 and CPU002 hardware revisions.

** Some versions of VersaPro software allow configuration of RTU and Serial I/O at 115.2K baud for CPU005. However, this baud rate is not supported by the CPU. If a configuration using this baud rate is stored to the PLC:

1. For RTU, an "Unsupported Feature in Configuration" fault is logged and the PLC transitions to Stop Faulted mode.
2. For Serial I/O, the same fault is logged when the transition to Run mode occurs. The PLC will immediately transition to Stop Faulted mode.

2.5 Mode Switch

The CPU module has a convenient switch that can be used to place the PLC in Stop or Run mode. The same switch can also be used to block accidental writing to CPU memory and forcing or overriding discrete data. Use of this feature is configurable.

The default configuration enables Run/Stop mode selection and disables memory protection.