Modicon Quantum automation platform
Concept/ProWORX standard CPUs

Presentation

Quantum CPUs, which are compatible with Concept and ProWORX software, are single-slot CPUs. They have a built-in system memory, application memory and communication ports. With all memory components on-board, you do not need extra chips or cartridges for configuration.

Flash-based executive memory

Quantum CPUs use flash memory technology to support the CPU's system memory and instruction set. Flash is a state-of-the-art, non-volatile memory technology that enables field upgrades by downloading files via the integrated Modbus or Modbus Plus ports as new features and maintenance updates become available.

Memory backup and protection

The CPU stores the application program in a battery-backed RAM. This battery is located on the front of the module and can be replaced while the CPU is running.
To protect the application program from inadvertent changes during operation, the CPUs feature a memory-protect slide switch. An LED lights up when this switch is activated.

Math coprocessor

For math-intensive applications, a math coprocessor is available on certain CPU models. This coprocessor significantly improves execution times for the 984 Process Control Function Library (PCFL) and Equation Editor, as well as math operations in the IEC languages. Improved floating point execution times mean more power for processing process algorithms and math calculations.

Write protection

PLC write protection minimizes the possibility of a programmer inadvertently writing from a source PLC to a memory area in a destination PLC. Any data that is not authorized to be written is prevented from being written, both locally and over the network. This data protection option provides security against data transfer errors.

Communication ports

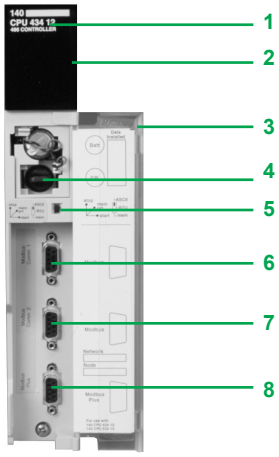
All CPUs support Modbus and Modbus Plus networking strategies. Rotary switches on the back of the modules are used to define the network address of the Modbus Plus port(s). Each device on a Modbus Plus network must have a unique address in the range 1...64. Modbus port settings include: Baud rate, parity, number of data bits, number of stop bits, protocol and Slave address. By default, these settings are 9600 bps, even parity, 8 data bits, 1 stop bit, RTU mode and address 1.
A switch on the front of the CPUs can be used to configure the Modbus port as a modem communication interface (2400 bps, even parity, 7 data bits, 1 stop bit, ASCII mode and address 1).

140 CPU 434 12A and **140 CPU 534 14B** CPUs have two serial Modbus ports:
- Modbus port 1, with full modem interfacing ability
- Modbus port 2, with RTS/CTS flow control (does not support modem connection)

Language choices

All the CPUs can use the following programming languages:
- Advanced IEC 66631-3 languages:
  - Sequential Function Chart (SFC) or Grafcet
  - Function Block Diagram (FBD) language
  - Ladder (LD) language
  - Structured Text (ST)
  - Instruction List (IL) language
- 984 Ladder Logic: A high performance, low level language whose application source code resides in the PLC

Modicon Quantum automation platform
Concept/ProWORX standard CPUs



140 CPU 434 12 A
140 CPU 534 14 B

Description

The **140 CPU ●●●** CPU front panel comprises:
1 Model number and colour code
2 A display block
3 A removable hinged door with a customizable identification label
4 A battery slot *(1)*
5 Two slide-switches for write-protecting the memory and for selecting the communication parameters of the Modbus port(s) *(2)*
6 One Modbus port (A)
7 One Modbus port (B) (for **140 CPU 434 12 A** and **140 CPU 534 14 B** CPUs)
8 One Modbus Plus port

Note:
140 CPU 113 0● CPUs have one Modbus and one Modbus Plus communication port.

Migrating Quantum CPUs

As both the **140 CPU 434 12A** and **140 CPU 534 14B** Quantum CPUs are compatible with Concept or ProWORX software, they can be migrated to be compatible with the Unity Pro software without any hardware modification. This Concept to Unity Pro migration is carried out by updating the CPU operating system.
This update is carried out using the OS-Loader loader tool which is included in the Unity Pro software (see page 48386/11).

The migrated **140 CPU 434 12A** CPU is then equivalent to the corresponding Unity CPU **140 CPU 434 12U.**

Note: *Migration of the* **140 CPU 534 14B** *CPU requires version ≥ 3.0 of Unity Pro software.*

CPUs

Memory (IEC program)	**Coprocessors**	**Safety**	**Reference**	**Weight kg**
109 KB	No	–	**140 CPU 113 02**	0.300
368 KB	No	–	**140 CPU 113 03**	0.300
896 KB	Built-in	–	**140 CPU 434 12A**	0.850
2.5 MB	Built-in	–	**140 CPU 534 14B**	0.850

Accessories

Description	**Length**	**Safety**	**Reference**	**Weight kg**
Programming cable for Modbus interface	3.7 m	–	**990 NAA 263 20**	0.300
	15 m	–	**990 NAA 263 50**	1.820
Backup battery	–	–	**990 XCP 980 00**	–

(1) Internal RAM memory backup battery:
- Product reference: 990 XCP 980 00
- Type: 3 V ⎓ lithium
- Capacity: 1200 mAh
- Storage life: 10 years

(2) Slide switch for selecting the communication parameters: "RTU" position (default setting), "ASCII" position for communication via modem (2400 bps, even parity, 7 data bits, 1 stop bit, ASCII mode and address 1).