# Automation Products

**Automation Products**

**COMPACT**

**MICRO**

**MOMENTUM**

**PREMIUM**

**NANO**

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AUTOMATION PRODUCTS

25

# Quantum Automation Platform
Controllers
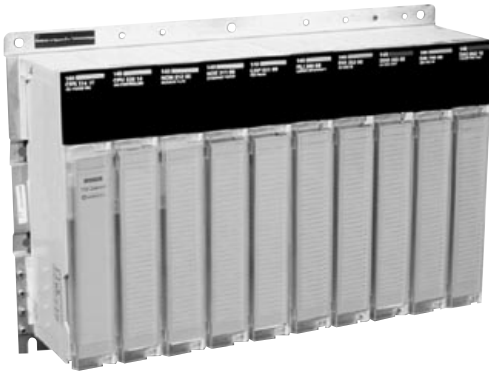
**Typical Quantum Installation**

The Quantum Automation Platform provides the right solution for your control needs with a full range of high performance, compatible control products. Its architecture is modular and scaleable, so it can be configured to meet the highest performance requirements for mid-size to large control systems.

Quantum systems combine a very small form factor with industrially rugged designs that ensure cost-effective and reliable installation in even the most difficult plant environments. The systems are simple to install and configure, and they cover a wide range of applications.

With a module depth of only 104 mm (4 inches), including the field wiring, the Quantum Automation Platform represents a major improvement in panel size requirements. It fits in a standard 156 mm (6 inch) electrical cabinet, saving you up to 50% over the cost of traditional control panels. It can be mounted easily on a backplane in an industry-standard panel or rack-mounted in a 500 mm (19 inch) installation.

Within this small form factor, Quantum maintains Schneider's very high standards of product performance and integrity. The Quantum Platform features:

- Increased system output based on very high scan rates with up to 486- and 586-based processors
- Tightly integrated automation technologies including motion, ASCII, communication and process control
- Redundant power supply and I/O cabling options and true Hot Standby capabilities to provide the highest system availability for critical applications
- Configurable output fail states for more predictable performance in critical applications
- High levels of isolation for noise immunity in electrically severe environments
- High-accuracy analog I/O for tighter process monitoring and control
- High-speed on/off circuits and interrupt processing for higher system performance
- Hot swapping (the ability to remove and insert I/O modules under power without disturbing other operating elements) for easier maintenance and increased system availability

### References

| Memory | Co-processor | Catalog No. | Weight | |
|---|---|---|---|---|
| | | | kg | lb |
| 256 K bytes | No | 140 CPU 113 02 | 0.30 | 0.66 |
| 512 K bytes | No | 140 CPU 113 03 | 0.30 | 0.66 |
| 2 M bytes | integrated | 140 CPU 434 12 | 0.85 | 1.87 |
| 4 M bytes | integrated | 140 CPU 534 14 | 0.85 | 1.80 |

### Accessories

| Description | Length | | Catalog No. | Weight | |
|---|---|---|---|---|---|
| | m | ft | | kg | lb |
| Programming cable for Modbus interface | 3.7 | 12 | 990 NAA 263 20 | 0.30 | 0.66 |
| | 15 | 50 | 990 NAA 263 50 | 1.82 | 4.00 |
| Battery for CPU | . . . | . . . | 990 XCP 980 00 | . . . | . . . |
| Quantum automation platform hardware reference guide | . . . | . . . | 840 USE 100 0X | . . . | . . . |

For Selection and Pricing refer to Programmable Controller document no. 8000PL9602R11/99.

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**Quantum Automation Platform**

Hot Standby Module

AUTOMATION PRODUCTS

25

The hot standby option provides Quantum series CPUs with the high availability that security-critical applications demand. Central to the system is a standby controller–a second Quantum system configured identically with the primary control system with special hot standby modules mounted in both backplanes. The standby controller uses a high-speed fiber optic link to constantly maintain the current system status of the primary controller. In the event of an unexpected failure in the primary controller, system control automatically switches over to the standby controller. Critical processes running on a remote I/O network remain intact, unaffected by controller hardware failures. The result is higher productivity with reduced down-time.

At the beginning of every primary controller scan, the current register and I/O state table is transferred to the standby controller across a secure, high-speed fiber optic link. If switchover is triggered, the standby controller takes control of the system with up-to-date I/O and register status for a bumpless, controlled transfer with minimal process impact. At switchover, the standby controller becomes the primary controller and, when the downed controller is restored to good health, it becomes the standby.

Most applications demand that identical logic programs reside in the two controllers. User logic comparisons between the two controllers are performed at startup and during runtime. By default, the standby controller is taken offline if a logic mismatch is detected. You have the option to allow logic mismatches to coexist for high availability during maintenance periods. If minor process changes are required, you can make them without disturbing standby operations.

In the event that the standby controller does not have the application program, it can be copied from the primary controller. Copying the program is a simple two-step procedure that uses the keyswitch and update button on the front of the standby controller. This task can be accomplished by a maintenance person without the use of a programming panel.

| Description | Components | Catalog Number | Weight | |
|---|---|---|---|---|
| | | | kg | lb |
| Hot Standby module | . . . | 140 CHS 110 00 | 1.06 | 2.33 |
| Hot Standby kit | 2 CHS hot standby processors<br>1 fiber optic (3m) hot standby cable<br>1 CHS loadable software package<br>1 S908 terminator kit<br>CHS installation manual | 140 CHS 210 00 | . . . | . . . |
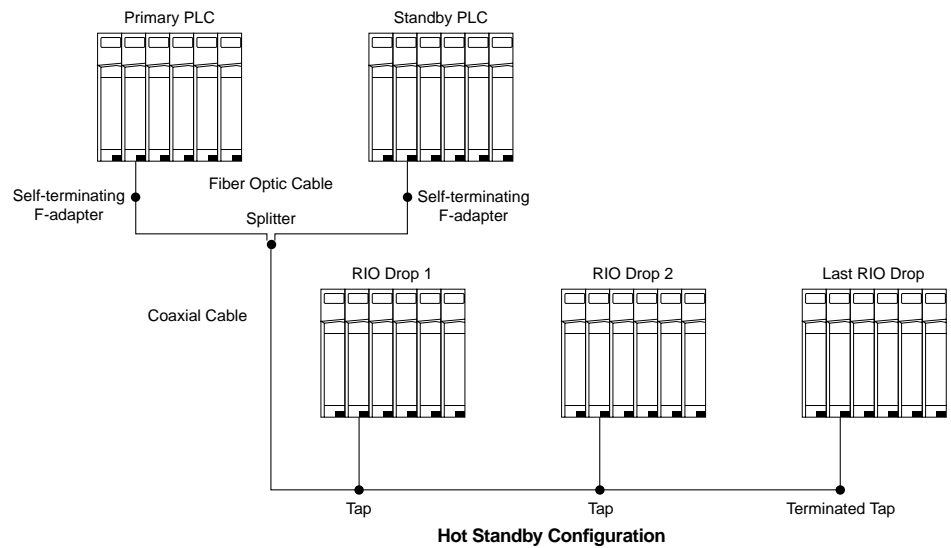


**Hot Standby Configuration**

For Selection and Pricing refer to Programmable Controller document no. 8000PL9602R11/99.

25-3

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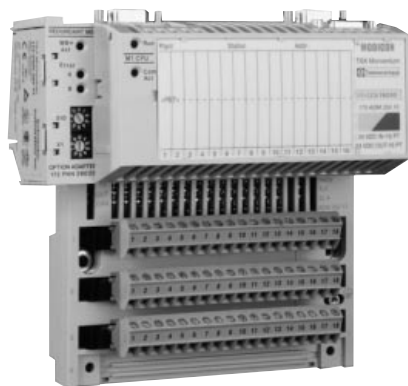
**Momentum Base**

The Momentum M1 Processor Adapters are mounted on Momentum I/O Bases to provide intelligence to the I/O. The Processor Adapter can quickly and independently solve logic, control its own local I/O (discrete or analog), and communicate to other control entities through one of a number of Momentum communication options. The Processor Adapter can turn an ordinary I/O Base into a PID controller or high-speed logic solver.

You can create your own controller from a number of different bases, and with other Momentum options, network your local logic solvers together into an intelligent subsystem as part of a larger Modicon application, or into a standalone, integrally networked system with local controllers with extended I/O.

The Momentum M1 Processor Adapters are meant to stand alone, to be mounted on a single Momentum I/O Base, or be mounted together with one of a variety of Momentum Option Adapters, providing different network capabilities, a time-of-day clock, and a battery back-up system. The built-in flash memory is used to store the Modicon 984 Executive, allowing for convenient field upgrades of the operating system. The flash memory can also be used to back up your applications, creating a local copy of your program to be loaded back into RAM, thus providing original program file integrity.
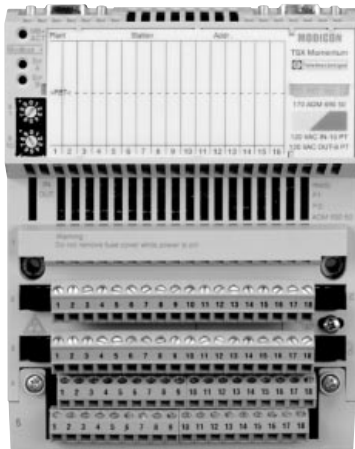
### References

#### M1 Processor Adapters

| RAM Memory | Comm Port(s) | Clock Speed | Catalog No. | Weight | |
|---|---|---|---|---|---|
| | | | | g | oz |
| 64 K | 1 Modbus Plus | 20 MHz | 171CCS70000 | 42.5 | 1.5 |
| 64 K | 1 Modbus Plus | 32 MHz | 171CCS70010 | 42.5 | 1.5 |
| 64 K | 2 Modbus Plus | 20 MHz | 171CCS78000 | 42.5 | 1.5 |
| 256 K | 1 Modbus Plus, 1 I/O Bus | 20 MHz | 171CCS76000 | 42.5 | 1.5 |
| 512 K | 2 Modbus Plus | 32 MHz | 171CCC78010 | 42.5 | 1.5 |
| 512 K | 1 Modbus Plus, 1 Ethernet | 50 MHz | 171CCC98020 | 42.5 | 1.5 |
| 512 K, IEC Exec | 1 Modbus Plus, 1 Ethernet | 50 MHz | 171CCC98030 | 42.5 | 1.5 |
| 512 K | 1 Modbus Plus, 1 I/O Bus | 32 MHz | 171CCC76010 | 42.5 | 1.5 |
| 512 K | 1 Ethernet, I/O Bus | 50 MHz | 171CCC96020 | 42.5 | 1.5 |
| 512 K, IEC Exec | 1 Ethernet, I/O Bus | 50 MHz | 171CCC96030 | 42.5 | 1.5 |

### Accessories

| Description | Quantity/Length | Catalog No. | Weight |
|---|---|---|---|
| Terminal block, screw type terminals | Set of 3 | 170XTS01200 | . . . |
| Terminal block, spring type terminals | Set of 3 | 170XTS01100 | . . . |
| Bus Bar, screw type terminals | 1 Row | 170XTS00601 | . . . |
| | 2 Row | 170XTS00501 | . . . |
| | 3 Row | 170XTS00401 | . . . |
| Bus Bar, spring type terminals | 1 Row | 170XTS00701 | . . . |
| | 2 Row | 170XTS00801 | . . . |
| | 3 Row | 170XTS00301 | . . . |
| RS232 Communication Cable RJ45 to RJ45 | 3 ft (.91 m) | 110XCA002821 | . . . |
| | 10 ft (3.04 m) | 170XCA002822 | . . . |
| | 20 ft (6.09 m) | 170XCA002823 | . . . |
| RJ45 shielded connectors | 20/package | 170XTS02200 | . . . |
| RS485 terminating RJ45 resistor plugs | 2/package | 170XTS04100 | . . . |
| RJ45 9-pin D shell adapter (for AT serial port) | | 110XCA002030 | . . . |
| RJ45 12-pin D shell adapter (for XT serial port) | | 110XCA002040 | . . . |
| RS485 cable connector T for RJ45 | | 170XTS04000 | . . . |

For Selection and Pricing refer to Programmable Controller document no. 8000PL9602R11/99.

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# Momentum Automation Platform
## Discrete I/O Bases and Analog I/O Bases

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**25**

**Momentum I/O Base**

## Discrete I/O Bases

| Description | Voltage | Current per output | Catalog No. | Weight kg |
|---|---|---|---|---|
| **Discrete Input Bases** | | | | |
| 1 x 16 Inputs | 24 Vdc | | 170ADI34000 | 0.190 |
| 2 x 16 Inputs | 24 Vdc | | 170ADI35000 | 0.200 |
| 2 x 8 Inputs | 120 Vac | | 170ADI54050 | 0.284 |
| **Discrete Output Bases** | | | | |
| 2 x 8 Outputs | 24 Vdc | 0.5 A | 170ADO34000 | 0.210 |
| 2 x 16 Outputs | 24 Vdc | 0.5 A | 170ADO35000 | 0.210 |
| 2 x 4 Outputs | 120 Vac | 2 A | 170ADO53050 | 0.320 |
| 2 x 8 Outputs | 120 Vac | 0.5 A | 170ADO54050 | 0.284 |
| 2 x 4 Outputs | 230 Vac | 2 A | 170ADO73050 | 0.284 |
| 2 x 8 Outputs | 230 Vac | 0.5 A | 170ADO74050 | 0.284 |
| **Discrete I/O Bases** | | | | |
| 16 Inputs and 2 x 8 Outputs | 24 Vdc | 0.5 A | 170ADM35010 | 0.200 |
| 16 Inputs and 2 x 8 Outputs | 24 Vdc | 0.5 A | 170ADM35011 | 0.200 |
| 4 x 4 Inputs and 2 x 4 Outputs | 24 Vdc | 2 A | 170ADM37010 | 0.220 |
| 16 Inputs, 1 x 8  and 1 x 4 Outputs | 24 Vdc | 0.5 A | 170ADM39010 | 0.200 |
| 10 Inputs and 2 x 4  Relay Outputs | 24 Vdc | 2 A | 170ADM39030 | 0.260 |
| 10 Inputs and 1 x 8  Triac Outputs | 120 Vac | 0.5 A | 170ADM69050 | 0.220 |

## Analog I/O Bases

| Description | Catalog No. | Weight kg |
|---|---|---|
| **Analog Input Bases** | | |
| 16 Single ended Inputs, 12 bit | 170AAI14000 | 0.215 |
| 4 Differential Inputs, 16 bit, RTD, Thermocouple and mV Input | 170AAI52040 | 0.215 |
| **Analog Output Bases** | | |
| 4 Outputs, +/-10 V, 0…20 mA | 170AAO12000 | 0.215 |
| 4 Outputs, +/-10 V, 4…20 mA | 170AAO92100 | 0.215 |
| **Analog I/O Bases** | | |
| 4 Analog Inputs, and 2 Analog Outputs, 4 Discrete Inputs, and 2 Discrete Outputs | 170AMM09000 | 0.240 |

## Accessories

| Description | Quantity | Catalog No. | Weight kg |
|---|---|---|---|
| Terminal block, screw type terminals | Set of 3 | 170XTS00100 | |
| Terminal block, spring type terminals | Set of 3 | 170XTS00200 | |
| Bus Bar, screw type terminals | 1 Row | 170XTS00601 | - |
| | 2 Row | 170XTS00501 | - |
| | 3 Row | 170XTS00401 | - |
| Bus Bar, spring type terminals | 1 Row | 170XTS00701 | - |
| | 2 Row | 170XTS00801 | - |
| | 3 Row | 170XTS00301 | - |
| Simulator for 16 discrete inputs | | 170BSM01600 | - |
| Cable Grounding Rail | | CER001 | - |
| Set of Labels | Set of 10 | 170XCP10000 | - |

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**Nano**

The extremely compact size of the Nano means that it is equally easy to install both in shallow enclosures and directly within the framework of machines, or in mobile installations. It is easy to mount and can either be clipped onto a DIN rail or screwed vertically or horizontally onto a mounting plate.

The Nano PLC is easily adapted to a wide variety of applications:
- 24 Vdc or 100-240 Vac supply
- 24 Vdc or 115 Vac inputs
- 0.5 A transistor (positive or negative logic ) or 2 A relay outputs.

Since its I/O are compatible with such control systems components as two or three-wire proximity sensors, photo-electric cells, or contactors, no interface is needed and setup is simplified.

The integrated analog potentiometers on the front panel make it easy to debug and run applications.

The Nano PLC is the competitive alternative to control systems which are created using:
- Industrial relays, combined with control system functions (counters, timers, clock, etc.).
- Special purpose electronic or relay-based cards.

In many cases, the unit cost of the automated system and its development are significantly reduced, and flexibility is increased.

### Non-extendable Nano PLC bases

These bases will not accept any extension. They incorporate extended communication: Uni-Telway master/slave link or ASCII link for transmission/reception.

⎓ 24 V/150 mA sensor power supply is not protected.

| No. of I/O | Inputs | Relay Outputs | Transistor Outputs 24 V/0.5 A | Catalog Number ▲ | Weight kg |
|---|---|---|---|---|---|
| ∿ **100...240 V power supply** | | | | | |
| 14 | 8 ⎓ 4 V | 6 | – | TSX073L1428 | 0.320 |
| 20 | 12 ⎓ 24 V | 8 | – | TSX073L2028 | 0.340 |

### Extendable Nano PLC bases

These Nano PLC bases are used as base PLCs (1 per configuration), as I/O extensions (maximum 1 per configuration) or as peer PLCs (maximum 3 per configuration). They integrate an extended communication function: Uni-Telway master/slave link or ASCII link in transmission/reception and Modbus slave link

| No. of I/O | Inputs | Relay Outputs | Transistor Outputs 24 V/0.5 A | Catalog Number ▲ | Weight kg |
|---|---|---|---|---|---|
| ⎓ **24 V power supply** | | | | | |
| 10 | 6 ⎓ 24 V | 4 | – | TSX07301022 | 0.290 |
| | | – | 4 protected, positive logic | TSX07301012 | 0.270 |
| | | – | 4 unprotected, negative logic | TSX07301002 | 0.270 |
| 16 | 9 ⎓ 24 V | 7 | – | TSX07311622 | 0.350 |
| | | – | 7 protected, positive logic | TSX07311612 | 0.325 |
| | | – | 7 unprotected, negative logic | TSX07311602 | 0.325 |
| 24 | 14 ⎓ 24 V | 10 | – | TSX07312422 | 0.400 |
| | | – | 10 protected, positive logic | TSX07312412 | 0.370 |
| | | – | 10 unprotected, negative logic | TSX07312402 | 0.370 |
| ∿ **100...240 V power supply** | | | | | |
| 10 | 6 ⎓ 24 V | 4 | – | TSX07301028 | 0.300 |
| | | – | 4 unprotected, negative logic | TSX07301008 | 0.280 |
| 16 | 9 ∿ 115 V | 7 | – | TSX07311648 | 0.390 |
| | 9 ⎓ 24 V | 7 | – | TSX07311628 | 0.360 |
| | | – | 7 unprotected, negative logic | TSX07311608 | 0.335 |
| 24 | 14 ⎓ 24 V | 10 | – | TSX07312428 | 0.410 |
| | | – | 10 unprotected, negative logic | TSX07312408 | 0.380 |

▲ Multilingual quick reference guide included as standard (English, French, German, Italian and Spanish).

### Nano PLC bases (with an integrated analogue input) ■

| No. of I/O | Inputs | Relay Outputs | Integrated Analogue Input | Catalog Number ▲ | Weight kg |
|---|---|---|---|---|---|
| ∿ **100...240 V power supply** | | | | | |
| 10 | 6 ⎓ 24 V | 4 | 1 x 0...10 V | TSX07321028 | 0.290 |
| 16 | 9 ⎓ 24 V | 7 | 1 x 0...10 V | TSX07331628 | 0.290 |
| 24 | 14 ⎓ 24 V | 10 | 1 x 0...10 V | TSX07332428 | 0.290 |

### Nano PLC extensions

These extensions can be used to augment extendable Nano PLC bases at minimum cost (maximum 1 extension per base).

| No. of I/O | Inputs | Relay Outputs | Transistor Outputs 24 V/0.5 A | Catalog Number ▲ | Weight kg |
|---|---|---|---|---|---|
| ⎓ **24 V power supply** | | | | | |
| 16 | 9 ⎓ 24 V | – | 7 protected, positive logic | TSX07EX1612 | 0.325 |
| 24 | 14 ⎓ 24 V | – | 10 protected, positive logic | TSX07EX2412 | 0.370 |
| ∿ **100...240 V power supply** | | | | | |
| 16 | 9 ⎓ 24 V | 7 | – | TSX07EX1628 | 0.360 |
| 24 | 14 ⎓ 24 V | 10 | – | TSX07EX2428 | 0.410 |

■ TSX 07 32/33 ●●28 PLCs do not have I/O extension and/or PLC extension links or the Modbus slave link.

For Selection and Pricing refer to Programmable Controller document no. 8000PL9602R11/99.

**Premium Configuration**

Modicon TSX Premium TSX P57 ●●2M control system platform processors manage the entire PLC station with discrete I/O modules, analogue I/O modules and application-specific modules which can be distributed over one or more racks connected on the X bus.

Different types of processors are available to meet various application requirements, typically configured as follows:

- 4 to 16 TSX RKY ●●EX extendable racks
- 512 to 2048 discrete I/O
- 24 to 256 analog I/O
- 8 to 48 application-specific channels. Each application-specific module (counter, motion control, communication or weighing) uses "n" application-specific channels.

In addition, each processor integrates :

- A protected internal RAM memory which contains the entire application and can be extended by a PCMCIA memory card (RAM or Flash EPROM)
- A real-time clock
- Various communication modes :

  — communication via terminal port (Uni-Telway mode or character mode) : 2 terminal ports (TER and AUX) which enable several devices to be connected simultaneously (typically a programming terminal and an MMI terminal)

  — communication via Type III PCMCIA card : a slot which can accept various communication cards (Fipway, Fipio Agent, Uni-Telway, Modbus/Jbus, Modbus Plus, Modem, serial links).

  — communication via 9-way SUB-D connector (on TSX P57 ●●52M processors only) : this connector enables the PLC to be the Fipio bus manager.

The application is designed using PL7 Junior Pro software under Windows 95/NT 4.● which offers, among others :

- Four programming languages : Grafcet, Ladder language, Structured Text language and Instruction list language
- A multitask software structure : master task, fast task, event processing
- Program modification during execution

**Description**

| Type and maximum no. of racks (2) | I/O capacity | Memory capacity | | Maximum no. of bus/network modules | Catalog Number (1) | Weight kg |
|---|---|---|---|---|---|---|
| | | Integrated in processor | PCMCIA extension | | | |
| TSX 57-10 2/4 racks | 512 discrete I/O 24 analogue I/O 8 app-specific channels (3) | 32 Kwords | 64 Kwords maximum | 1 network 2 AS-i bus | TSX P57 102M | 0.380 |
| TSX 57-20 8/16 racks | 1024 discrete I/O 80 analogue I/O 24 app-specific channels (3) | 48 Kwords | 128 Kwords maximum | 1 network 4 AS-i bus 1 third-party bus | TSX P57 202M | 0.380 |
| | | 64 Kwords | 128 Kwords maximum | 1 integrated Fipio 1 network 4 bus AS-i 1 third-party bus | TSX P57 252M | 0.380 |
| TSX 57-30 8/16 racks | 1024 discrete I/O 128 analogue I/O 32 app-specific channels (3) | 64 Kwords | 256 Kwords maximum | 3 network 8 AS-i bus 2 third-party bus | TSX P57 302M | 0.380 |
| | | 80 Kwords | 256 Kwords maximum | 1 integrated Fipio 3 network 8 AS-i bus 2 third-party bus | TSX P57 352M | 0.380 |
| TSX 57-40 8/16 racks | 2048 discrete I/O 256 analogue I/O maximum 48 app-specific channels maximum (4) | 96 Kwords | 256 Kwords maximum | 4 network 8 AS-i bus 2 third-party bus | TSX P57 402M | 0.520 |
| | | 112 Kwords | 256 Kwords maximum | 1 integrated Fipio 4 network 8 AS-i bus 2 third-party bus | TSX P57 452M | 0.520 |

**Micro Controller**

The Micro Automation Platform is a general-purpose PLC with unique capabilities to meet the requirements of machine and equipment manufacturers. It is a high-performance, micro PLC with a competitive price. It offers important advantages over other micro PLCs in its class, including:

- Highly modular I/O
- High speed
- Large memory capacity
- Multitasking
- Distributed processing

### Basic TSX 37-05/08 PLC configurations (1 slot available)

| Power supply | Integrated memory | | Discrete I/O modules | | Catalog Number | Weight |
|---|---|---|---|---|---|---|
| | **RAM** | **Flash EPROM** | **Type** | **Connection** | | |
| ∿ 100…240 V | 9 Kwords + data memory | 10 Kwords | 16 I ⎓ 24 V 12 O relay | Via screw term. block (supplied) | TSX 37 05 028DR1 | 2.370 |
| | | | 16 I ⎓ 24 V 12 O relay | Via screw term. block (supplied) | TSX 37 08 056DR1 | 2.720 |

### Basic TSX 37-10/ PLC configurations (1 slots available)

| Power supply | Integrated memory | | Discrete I/O modules integrated in the 1st slot | | Catalog Number (1) | Weight kg |
|---|---|---|---|---|---|---|
| | **RAM** | **Flash EPROM** | **Type** | **Connection** | | |
| ⎓ 24 V | 14 Kwords | 15 Kwords + 1000 %MWi | 16 I ⎓ 24 V 12 O solid state 0.5 A | Via screw term. block (supplied) | TSX 37 10 128DT1 | 1.870 |
| | | | 16 I ⎓ 24 V 12 O relay | Via screw term. block (supplied) | TSX 37 10 128DR1 | 1.900 |
| | | | 16 I ⎓ 24 V 12 O solid state 0.5 A | Via HE 10 type connector | TSX 37 10 128DTK1 | 1.740 |
| | | | 32 I ⎓ 24 V 32 O solid state 0.1 A | Via HE 10 type connector | TSX 37 10 164DTK1 | 1.820 |
| ∿ 100…240 V | 14 Kwords | 15 Kwords + 1000 %MWi | 16 I ∿ 115 V 12 O relay | Via screw term. block (supplied) | TSX 37 10 028AR1 | 1.910 |
| | | | 16 I ⎓ 24 V 12 O relay | Via screw term. block (supplied) | TSX 37 10 028DR1 | 1.910 |

### Basic TSX 37-21/22 PLC configurations (3 slots available)

| Power supply | Integrated memory | | Integrated functions | Catalog Number (1) | Weight kg |
|---|---|---|---|---|---|
| | **RAM** | **Flash EPROM** | | | |
| ⎓ 24 V | 20 Kwords | 15 Kwords + 1000 %MWi | – | TSX 37 21 101 | 1.720 |
| | | | 8 analogue inputs 0-10 V 1 analogue output 0-10 V 1 up/down counter 10 kHz 1 counter 10 kHz | TSX 37 22 101 | 1.750 |
| ∿ 100…240 V | 20 Kwords | 15 Kwords + 1000 %MWi | – | TSX 37 21 001 | 1.720 |
| | | | 8 analogue inputs 0-10 V 1 analogue output 0-10 V 1 up/down counter 10 kHz | TSX 37 22 001 | 1.750 |

For Selection and Pricing refer to Programmable Controller document no. 8000PL9602R11/99.

# Compact Automation Platform
## CPUs
### Overview and Description

**Compact Controller and I/O**

The Compact controllers use Flash Memory for their operating system and command set storage. This nonvolatile memory allows cost and time saving upgrades on site: instead of replacing EEPROMs or memory assemblies, only one file needs to be loaded into the central processing unit (CPU).

For both decentralized data transfer and programming, every CPU is equipped with at least two Modbus communications interfaces. The larger CPUs also have one Modbus Plus interface. These interfaces are easily accessible at the module's front panel. Two rotary switches are located on the front for models with Modbus Plus. These switches are used to set the addresses of the Modbus interfaces.

The CPU stores the application program in battery-backed RAM. The battery is located on the front of the module and can be replaced without loss of data during operation. Storing the user program in flash ROM secures data even during operation without a battery.

Two slide switches provide simplified user control of key functions. The memory protection switch prevents programming devices or other input devices from overwriting the user program. The Modbus interface switch sets the Modbus data transfer parameters as either ASCII, RTU, or any other protocol that can be set manually.

LEDs provide information on the operating status of the CPU: startup diagnostics (READY); when the program is being executed (RUN); active status of the Modbus interfaces (MODBUS); and when the battery must be replaced (BAT LOW).

The PCMCIA cards - available in the 275 and 285 series CPUs - provide another programming interface or memory expansion possibility.

Every central processing unit has a real-time clock that provides both the date and the time.

The 258C/R central processing units conform to Railroad Standard EN 50 155. They have an expanded temperature range, flash ROM for the user program on the CPU (no battery required), and yellow LEDs.

All controllers are available with optional conformal protective coating on the electronic components.

| Description | Catalog Number | Weight grams |
|---|---|---|
| 8 K user logic, 2 Modbus ports | PCE984241 | 540 |
| 8 K user logic, 1 Modbus, 1 Modbus Plus ports | PCE984245 | 540 |
| 16 K user logic, 2 Modbus ports | PCE984251 | 540 |
| 16 K user logic, 1 Modbus, 1 Modbus Plus ports | PCE984255 | 540 |
| 512 K RAM, 2 Modbus ports<br>Conformal coating. Conforms to Railroad Standard EN 50 155. | PCE984258R | 550 |
| 512 K RAM, 2 Modbus ports | PCE984258 | 550 |
| 512 K RAM, 2 Modbus ports<br>Conformal coating. Conforms to Railroad Standard EN 50 155. | PCE984258C | 550 |
| 512 K RAM, 1 Modbus Plus, 2 Modbus ports | PCE984265 | 540 |
| 512 K RAM, 1 Modbus Plus, 2 Modbus ports<br>Conformal coating | PCE984265C | 540 |
| 512 K RAM, 1 Modbus Plus, 2 Modbus ports<br>PCMCIA II slot | PCE984275 | 580 |
| 512 K RAM, 1 Modbus Plus, 2 Modbus ports<br>PCMCIA II slot,<br>Conformal coating | PCE984275C | 580 |
| 1 MB RAM, 1 Modbus Plus, 2 Modbus ports<br>PCMCIA II slot | PCE984285 | 580 |
| 1 MB RAM, 1 Modbus Plus, 2 Modbus ports<br>PCMCIA II slot,<br>Conformal coating | PCE984285C | 580 |

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## Programming software

Two popular Schneider Automation programming software packages can be used with Quantum – Concept and ProWORX.

Concept is a Microsoft Windows-based software that complies with all five programming languages specified in the IEC 1131-3 international standard. Concept provides a feature-rich environment where you can rapidly develop structured, re-usable code. Overall design, startup and maintenance costs are significantly reduced. Concept also supports 984 Ladder Logic programming. You can easily import programs previously developed in a Modsoft environment.

| IEC Languages | Software | Features |
|---|---|---|
| Function Block Diagram | | Math, bistables, comparators, counters/timers, logic, edge detection, communications, diagnostics |
| Sequential Function Chart Instruction List Structured Text Ladder Diagram | Concept | State language approach using steps and transitions Boolean instruction set High-level text language with Pascal-level instructions Discrete contacts, coils and function blocks |
| **Non-IEC Language** | | |
| 984 Ladder Logic | Concept | 984 ladder logic instruction set including contacts, coils, function blocks, process control, Equation Editor, and communications |

### Concept Ordering Information

| Description | | Catalog Number | Weight kg |
|---|---|---|---|
| **Packages** | | | |
| Concept S, for Momentum | | 372 SPU 471 01 V22 | . . . |
| Concept M, for Compact and Momentum | | 372 SPU 472 01 V22 | . . . |
| Concept XL | single-user license | 372 SPU 474 01 V22 | . . . |
| | three-user license | 372 SPU 474 11 V22 | . . . |
| | 10-user license | 372 SPU 474 21 V22 | . . . |
| | network license | 372 SPU 474 31 V22 | . . . |
| Concept 984 XL | | 372 SPU 479 01 V22 | . . . |
| **Upgrades** | | | |
| Concept V x.x to Concept XL | single-user license | 372 SPU 445 51 V22 | . . . |
| | three-user license | 372 SPU 445 61 V22 | . . . |
| | 10-user license | 372 SPU 445 71 V22 | . . . |
| | network license | 372 SPU 445 81 V22 | . . . |
| Modsoft V x.xx to Concept XL | | 372 SPU 485 01 V22 | . . . |
| Concept EFB V x.x to V 2.1 | | 332 SPU 433 51 V22 | . . . |
| **Options** | | | |
| Concept S to XL expansion | | 372 SPU 480 01 V22 | . . . |
| Concept M to XL expansion | | 372 SPU 481 01 V22 | . . . |
| Concept EFB option | | 332 SPU 470 01 V22 | . . . |

## ProWorx Feature Summary

### Windows

- Full-featured Modicon PLC programming
- Runs in Windows 3.1/98/NT

### Easy to use

- Drag-and-Drop
- Multiple Network Editor views
- User-defined Register Edit screens
- Symbolic Addressing
- Cut-and-Paste, Search and Global Replace

### Increased Visibility

- I/O Drawing Generator
- Network Scan
- Graphical I/O Card display
- Traffic Cop
- Terminal block display

### Superior Documentation

- Document complete system hardware (controllers, I/O drops, racks, lots/channels, power supplies, I/O interfaces and software configuration addresses, networks, segments)
- Extensive listings
- Supports Windows® Printers

## Ordering Information

| Product Number | Description |
|---|---|
| 372 SPU 680 01 NDEV | NxT Online/Offline Development |
| 372 SPU 681 01 NONL | NxT Online |
| 372 SPU 610 01 NLDV | NxT Lite |

For Selection and Pricing refer to Programmable Controller document no. 8000PL9602R11/99.

3/00