Zelio Logic *(Smart Relay)*

..... Logically advanced!

Selection Guide

	Supply voltage	Number of discrete inputs[1]	Number of outputs	Clock	Reference
Smart relays	⎓ 12 V	8[2]	4 O relay	Yes	SR1 B121JD
	⎓ 24 V	6	4 O relay	No	SR1 A101BD
		8[2]	4 O relay	Yes	SR1 B121BD
		8[2]	4 O transistor	Yes	SR1 B122BD
		12	8 O relay	No	SR1 A201BD
		12[2]	8 O relay	Yes	SR1 B201BD
	∿ 24 V	6	4 O relay	Yes	SR1 B101B
		12	8 O relay	Yes	SR1 B201B
	∿ 100/240 V	6	4 O relay	No	SR1 A101FU
		6	4 O relay	Yes	SR1 B101FU
		12	8 O relay	No	SR1 A201FU
		12	8 O relay	Yes	SR1 B201FU
Smart relays without display & without buttons	⎓ 24 V	6	4 O relay	No	SR1 D101BD
		8	4 O relay	Yes	SR1 E121BD
	∿ 100/240 V	6	4 O relay	No	SR1 D101FU
		6	4 O relay	Yes	SR1 E101FU
Smart relays with integrated AS-i interface	⎓ 24 V	8[2]	6 O relay	Yes	ASI SR1470R
		8[2]	6 O transistor	Yes	ASI SR1470T
					

Power supply	Input voltage	Nominal output voltage	Nominal output current	Reference
	100 to 240 V 47/63 Hz	⎓ 12 V	1.9A	ABL 7RM1202
		⎓ 24 V	1.4A	ABL 7RM2401

Accessories		
	EERPOM back-up memory	SR1 MEM01

Zelio Soft Com software for Pocket PC

Description	Reference
Connecting cable Pocket PC Sub-D-9 connector to smart relay	SR1 CBL02
Programming software for Pocket PC (also including the Zelio Soft multilingual software for PC)	SR1 SFT02
Recommended Pocket PCs (order from appropriate distributor): Hewlett Packard "Jornada 525, 545 and 548", Compaq "Ipaq" 3630, Casio Casiopeia EM 505.	

Communication interface

Description	Supply voltage	Reference
Communication interface	⎓ 12-24 V	SR1 COM01
Programming software[3] (including "Zelio Soft Com" programming software and GSM "SIM Config" modem configuration software)		SR1 SFT03
Standard modem GSM modem GSM accessories Kit		SR1 MOD01 SR1 MOD02 SR1 KIT02
Connecting cables Smart relay to communication interface Communication interface to standard modem or standard modem to PC Communication interface to PC		 SR1 CBL01 SR1 CBL03 SR1 CBL04

(1) The supply voltage of the inputs is the same as that of the smart relay
(2) Including 2 configurable analogue inputs
(3) Also enables programming of any smart relay of the SR1 range, even if they are used without a communication interface.
Remark: For PC Connecting cable & kit, EEPROM, Starter pack, please contact Schneider Electric (HK) Ltd.

Programming Software for PC & Pocket PC

- Install the programming software in your Pocket PC and carry out simple "Drag and Drop" operation for:
  - Full input of control schemes
  - Transfer of programmes created with Zelio Soft on a PC to the Pocket PC and vice versa
  - Transfer of programmes created on PC or on Pocket PC to any smart relay of the range and vice versa as well as debugging programmes in module connected or non connected mode
- Save in time and reduce maintenance costs by performing programming or parametering of the module on site
- The Pocket PC thus avoids moving either a PC or smart relays in order to transfer and set-up applications

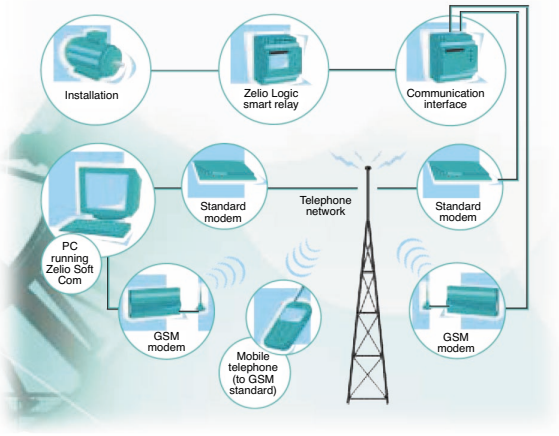
Functions

- Up to 10 timers, each configurable from a choice of 8 different types (0.1 second to 100 hours)
- Up to 10, 4-digit, up/down counters(0 to 9999)
- 8 analogue comparators, each configurable from a choice of 7 types of comparison
- 4 clocks, each with 4 channels
- 15 auxiliary relays
- Diversity of coil functions; with memory(set/reset), remote switch, normal

Modes

- Parametering mode
  Enables the parameter values of the function blocks to be adjusted.
- Display mode
  Enables display of the current values of the various function blocks.
- Diagnostic mode
  In RUN mode, view the I/O status.

Communication Interface



- The communication interface makes it possible to store messages, telephone numbers and calling conditions
- With the Zelio Soft Com software you have access to all the Zelio Soft software functions, plus the following possibilities:
  - Configuring the warning conditions (programme element to monitor, number to call, message to send)
  - Receiving warning messages
  - Remote supervision of the application
  - Remote forcing of the programme elements status (inputs, outputs, auxiliary relays, time delay or counting values, etc.)
  - Transferring programmes in a remote smart relay via the SR1 COM01 interface
  - Downloading a programme of a remote smart relay via the SR1 COM01 interface

Twido *(mini - PLC)*

..... More flexibility to simplify machine control

Specification Summary

Maximum I/O	I/O Type	Memory	Communications	Features
264 I/O (up to type of expansion modules)	- 10/16/24 I/O compact bases - 20/40 I/O modular bases - 8/16/24/32 discrete I/O expansion modules -1/2/3 I/O analogue expansion modules	Total memory: Up to 3000 instructions (6000 instructions with memory expansion)	RS485 multi-protocol terminal port - MODBUS® master/slave - ASCII - Remote I/O / peer PLC link	- High-speed counters (up to 4 counters, 5kHz and 20 kHz) - Pulse outputs - Analogue timers (potentiometer and 8 bit analogue input) - Program storage with embedded EEPROM - Optional additional serial port (RS485 or RS232) - Optional small operator display and plug-in memory enables sharing/updating of programs

Description: A hard-working ultra-compact controller specially designed for simple stand-alone applications and compact machines. Flexible, affordable and adaptable, TWIDO makes it easy to build just the right control solution for your application.

Selection Guide

Bases

Compact bases

Modular bases

Number & type of inputs	Number & type of outputs	Power supply	Rapid metering	No. of possible expansions	Connection type	Reference
6 I ⎓ 24V sink/source	4 O ∿ relay (2 A)	∿ 100...240 V	3 x 5 Khz 1 x 20 Khz	-	Screw terminal	TWDLCAA10DRF
9 I ⎓ 24V sink/source	7 O ∿ relay (2 A)	∿ 100...240 V		-	Screw terminal	TWDLCAA16DRF
14 I ⎓ 24V sink/source	10 O ∿ relay (2 A)	∿ 200...240 V		4	Screw terminal	TWDLCAA24DRF
12 I ⎓ 24V sink/source	8 O transistor (0.3A) sink or source according to ref.	⎓ 24 V	2 x 5 Khz 2 x 20 Khz	4	HE10 connectors	TWDLMDA20D•K*
12 I ⎓ 24V sink/source	6 O relay (240V ∿,30 ⎓ 2 A) 2 O source transistor (0.3A)	⎓ 24 V		7	Removable screw terminal	TWDLMDA20DRT
24 I ⎓ 24V sink/source	16 O transistor (0.3A) sink or source according to ref.	⎓ 24 V		7	HE10 connectors	TWDLMDA40D•K*

All of these compact or modular base units have one RS485 communication port with an optional 2nd serial port RS232 or RS485 (except base unit TWDLCAA10DRF)

*replace the • with a 'U' for sink transistor outputs (ex: TWDLMA20DUK) and with a 'T' for source transistor outputs (ex: TWDLMA20DTK)

Discrete expansion modules

Removable screw terminals

HE10 connectors

Spring terminals

No. of inputs	Type	No. of output	Type	Current per I/O	Reference
8 I ⎓ 24 V	sink or source transistor	-	-	7 mA	TWDDDI8DT
16 I ⎓ 24 V	sink or source transistor	-	-	7 mA	TWDDDI16DT
-	-	8 O ⎓ 24V	sink or source acc. to ref.	0.3 A	TWDDD08•T*
-	-	8 O	relay	2 A	TWDDRA8RT
4 I ⎓ 24 V	sink/source	4 O	relay	2 A	TWDDMM8DRT
		16 O	relay	2 A	TWDDRA16RT
16 I ⎓ 24 V	sink/source transistor	-	-	5 mA	TWDDDI16DK
32 I ⎓ 24 V	sink/source transistor	-	-	5 mA	TWDDDI32DK
-	-	16 O ⎓ 24V	sink or source acc. to ref.	0.1 A	TWDDD016•K*
-	-	32 O ⎓ 24V	sink or source acc. to ref.	0.1 A	TWDDD032•K*
16 I ⎓ 24 V	sink/source	8 O	relay	2 A	TWDMM24DRF

*replace the • with a 'U' for sink transistor outputs (ex: TWDDD08UT) and with 'T' for source transistor outputs (ex: TWDDD08TT)

Analogue expansion modules

Removable screw terminals

No. of inputs	Type	No. of outputs	Type	Current per I/O	Reference
2 I 12 bits	K.J.T thermocouple PY100 temp.resistance	1 O 12 bits Current: 4...20 mA	Voltage: 0...10 V	0.12 A	TWDALM3LT
2 I 12 bits	Voltage: 0...10 V Current: 4...20 mA	1 O 12 bits	Voltage: 0...10 V Current: 4...20 mA	0.12 A	TWDAMM3HT
2 I 12 bits	Voltage: 0...10 V Current: 4...20 mA	-	-	-	TWDAMI2HT
- -	- -	1 O 12 bits	Voltage: 0...10 V Current: 4...20 mA	0.12 A	TWDAMO1HT

Twido Soft

	CD comprising	Reference
With cable	1 programming software (compatible with Windows 98SE & 2000) and 1 documentation 1 TSXPCX1031 programming cable	TWDSPU1001V10M
Without cable	1 programming software (compatible with Windows 98SE & 2000) and 1 documentation	TWDSPU1002V10M

Remarks: For connection cables, phaseo power supplies, options & accessories, please contact Schneider Electric (HK) Ltd.

Modicon Micro *(PLC)*

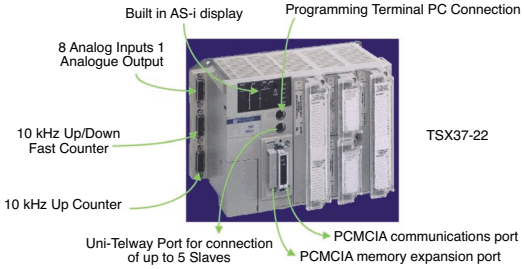
..... A compact modular & clever PLC

Introduction - Modicon TSX Micro

Micro is an inexpensive platform with room to grow! Compact size fits in tight space, yet has the versatility to serve a wide range of applications, such as a complete collection of communication options, discrete and analogue I/O, counter and machine safety modules. Operates in stand-alone applications or as part of a multi-processor network, PL7 programming software.

Features

- Up to 484 I/O
- Memory up to 64 Kwords
- Less than 0.15 .s/inst.
- Multi-task application program with even-triggered functions
- Numerous networks from the sensor/actuator bus to Ethernet
- Total protection of
  - user's know-how
  - data
  - PLC peripherals



Specification Summary

Maximum I/O	I/O Type	Memory	Communication	Features
484 digital I/O with - 8/12/32 input modules - 4/8/32 output modules - 8/26/64 mixed I/O modules	- Fixed and modular I/O - High density I/O - Remote I/O - IP67 I/O	Total memory: - 72KB plus 128KB via PCMCIA - Configurable program - Configurable data/variables	- RS485 - MODBUS® - AS-i - CAN	- Safety module - Integrated I/O: 8 analogue I/P 1 analogue O/P 1 10kHz counter

Description: Small, cost-effective PLC optimized for standalone machines and some distributed architecture.

Benefits

To provide incredibly fast response time, the Micro uses a fast execution time of 0.15.s for Boolean, and a programmable filtering for I/O of 0.1ms to 7.5ms for event processing coming from application modules as well as rapid outputs.
And now the lastest complementary offer includes:

- Enhance communication on the Micro range via TCP/IP and Ethernet or modem
- New functions in integrated Modbus communication
  A new V4.2 version of PL7 software, which includes, from PL7 Micro upwards, the Structured Text (ST) programming tool and various upgrades associated with the new function.
- Micro communication capacity

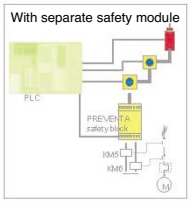
- Communication "towards devices":
  - Uni-Telway (terminal port and PCMCIA)
    >RS485, RS232, CL, on PCMCIA
  - AS-i Master (1/2 size module)
  - Modbus/Jbus (terminal port)
    >Modbus slave, RS485, RTU frame
    >Modbus master on TSX 37-10/21/22
  - ASCII (terminal port and PCMCIA)
    >RS485, RS232, CL, on PCMCIA
- Communication "between PLCs":
  - Fipio Agent (PCMCIA)
  - Fipway (PCMCIA)
  - Modbus/Jbus (PCMCIA)
    >Modbus master/slave, RS485, RS232, CL, RTU frame or ASCII links
  - Modbus + (PCMCIA)
  - Ethernet and interface for Modem on TSX 37-10/21/22

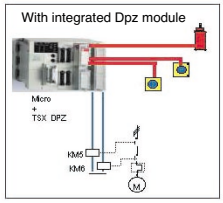
- Software services built into TSX ETZ 410 and TSX ETZ 510 (as standard)

Transparent Ready®

- TCP/IP gateway
  - Communication between PLCs and to supervisor
  - Modbus or UniTE protocols TCP/IP
  - All the usual communication services available
  - Network management (SNMP Agent)
  - Dynamic allocation of IP addresses (BOOTP, DHCP)
  - Totally compatible with TCP/IP standards
  - Compatible with the TSX Micro installed base
  - Local or remote access via PL7
- Web server
  - Data server for the total PLC configuration
  - The data can be accessed via standard Web pages (HTML format)
  - Can be accessed using standard browsers

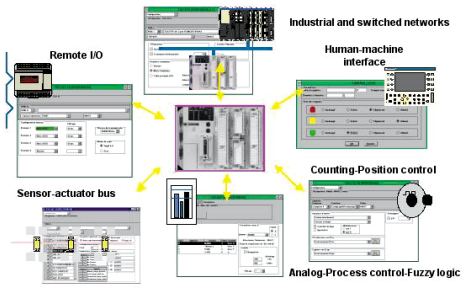
- New TSX CTZ1B absolute encoder position control module, 1 channel
- A new TSX AMZ 600 high-level mixed analogue module
- From the standard machine safety offer to the integrated Micro offer





The TSX DPZ module is suitable for all emergency stop and limited switch monitoring applications which require up to category 3 (standard En954-1) safety level.

- Micro: PL7 software assisting at all times

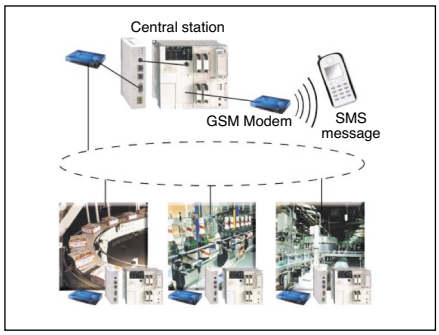


- The services offered by FactoryCast in TSX ETZ 510
  (All the standard functions of FactoryCast V2.2.1)

- 8Mb of user pages
  - Integration of HTML Web pages(Frontpage, Word, Powerpoint, etc)
  - Links with PLC data
  - Graphics access to data providing
    >Views for control and maintenance
    >Maintenance guides
    >Production reports
    >Quality reports, etc

Transparent Ready®

- Animated graphics pages
  - Fcast 2.2 built-in editor
  - Library of functions
  - Easy Copy/Paste
  - Re-usable objects in HTML pages
  - Graphics pages backed up in the module



Web server modules for the Micro PLC
TSX ETZ 410 TSX ETZ 510

- Micro architecture via your Internet browser
- Unbeatable connectivity
  For an existing machine, or a new device, the TSX ETZ module is ready as soon as it is connected remotely, via a standard modem.
- Remote maintenance services integrated in the Web server
  Perform diagnostics, make adjustments, download...courtesy of the TSX ETZ module Web services.
- Remote access to the PLC program
- Applications based on standard technologies

Selection Guide

Applications	For low or medium-complexity automation system				
					
Location					
base	2 (including 1 with a discrete I/O module)	3 (including 2 with a discrete I/O module)	2 (including 1 with a discrete I/O module)		
extension	-	-	2		
No. of discete I/O					
via connector	92	120	-		184 I/O: I ⎓ 24 V, O ⎓ 24V
via terminal blk	60	88	124		
Preventa safety module	Emergency stop and limited switch monitoring				
Remote I/O					
Number			96 remote I/O (4 Nano PLCs) or 248 I/O on AS-i bus (total with "in-rack" discrete I/O)		
Type			Input ⎓24 V, Input ∿115V, Input ⎓ 24 V, relay outputs		
Telefast 2					
Connection sub-base	8, 12 or 16 channels, with or without DEL, with common or 2 terminals per channel				
Adaptor sub-base	8 or 16 channels ⎓5 V TTL,⎓24V, ⎓48 V, ∿115 or 230V, 2 terminals per channel				
Real-time clock			Integrated (sec, min, hour, day, month, year)		
Analogue I/O					
No. of modules	2 half-format modules				
Module type	8 I, 12 bits(.10 V, 0-10 V), 8 I, 12 bits(0-20 mA, 4-20 mA), 4 I, differential multirange, 16 bits (high level, thermocouple, temperature probe), 4 O, 11 bits + sign (.10 V), 2 O, 11 bits + sign (.10 V, 0-20 mA, 4-20 mA), 4 I/2 O, 12 bits				
Remote	-		4 Nano analogue extension, each offering 3 I and 1 O (1:0...10 V, .10 V, 0...20 mA, 4-20mA; O:0...10 V, .10 V, 0...20 mA, 4...20 mA)		
Process control	Control loops, 3 integrated functions: PID, PWM (pulse width modulation) and SERVO (discrete valve control) with human-machine interface on CCX 17 operator panel (control and adjustment of 9 loops maximum)				
Counting					
Integrated	Two 500 Hz channels on discrete inputs				
No. of modules	2 half-format modules				
Module type	Counter modules with one or two 40 kHz channels, two 500 kHz channels: downcounting, upcounting, Up/down counting				
Communication					
Integrated	1 RS 485 terminal port, Uni-Telway Master/Slave, Modbus/Jbus Slave or character string protocol				
Ethernet TCP/IP			Ethernet TCP/IP external module or modem (PPP) RS 232 serial link		
Software structure	Single-task (cyclic or periodic), Multitask (Master task cyclic or periodic, fast task periodic)				
	Event task (1 to 8 events)				
Memory structure	11 Kwords protected internal RAM memory		14 Kwords protected internal RAM memory		
Supply voltage	∿ 100/240V (integrated ⎓ 24V sensor power supply)		∿100/240V (integrated ⎓ 24 V sensor power supply) or ⎓24 V depending of model		
I/O supplied as std	16 I ⎓ 24V	2 x 16 I ⎓ 24 V,	16 I ∿115V or ⎓ 24 V depends on model		16 or 32 I ⎓24 V depends on model
Type	12 O relay	12 O relay	12 O relay or ⎓ 24 V depends on model		12 or 32 O relay ⎓24V depends on model
Connection	Via screw terminal block				Via HE 10 type connector
Reference	TSX 37 05 028DR1	TSX 37 08 056DR1	TSX 37 10 •28 ••1*		TSX 37 101 •• DTK1*

Remarks: For Automation Systems with high end processor I/O modules, functional modules, please contact Schneider Electric (HK) Ltd.
*Refer detail catalogue for complete reference

Modicon Premium *(PLC)*

..... Integrating your middle application

Introduction - Modicon TSX Premium

Premium offers unique features that make it ideal for OEMs, such as 12 different communications options for flexibility in machine design, motion control and weigh scale modules for systems integration without the need for extensive programming. Transparent Factory® technology and integrated web server modules store and serve machine drawings, diagnostic information, etc. directly on the PLC for access via a web browser to reduce costs and manpower.

Features

- Power and performances in minimal dimensions
- A multi-technologies platform TSX or PCX
- A largely distributed architecture (Bus X or fieldbuses)
- A highly specialized & integrated catalogue of modules
- Communication architectures performance & open easy exploitation & maintenance

Specification Summary

Maximum I/O	I/O Type	Memory	Communication	Features
- 1024 digital, mix with any 8/16/32/64 point hot swappable modules - 80 analogue mix with any 4/8/16 point hot swappable modules	- Premium I/O - Momentum I/O - Bus I/O - Local I/O - High density I/O - Remote I/O - IP67 I/O	Total memory: 176kB plus 640kB via PCMCIA	- Ethernet TCP/IP - MODBUS® - MODBUS Plus - Profibus - Interbus - FIP - UniTelway - Jnet - SERCOS - AS-i - CAN	- Multi-axis motion - Fully-functional in-rack web server - Special purpose I/O: web server, stepper, high speed counter, weighing, safety, electronic cam. - ISA slot mounted CPU - Warm Standby/Redundant CPU

Description: Mid-range PLC that fits a broad range of applications. Optimized for discrete manufacturing

Benefits

Lower cost to connect remote racks

Premium
Bus X®

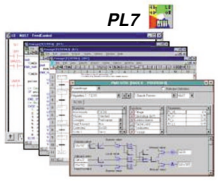
- Cable only
- Just plug them in!

Integrated motion control

- One CPU can handle up to 64 axes of motion without performance problems.

Programming - more flexibility

PL7



- 4 IEC Languages: LD, SFC, ST, IL
- Can add "C" code
- Loop control wizard

Premium Web Architecture

Standard Web Browser

Software needed:
1. **Any Web Page Development Tool** (i.e. MS Word, MS Excel, Frontpage...)
2. **FTP Utility (Factory Cast** included ***FREE*** with ETY Module)

Live data through the use of Java!

Ethernet TCP/IP Plant Intranet

- All Maintenance information available from a **Web browser.**
  -Alarms (with direct links)
  -Hardware diagnostic viewer
  -Device-specific diagnostics from device Java applets
  -Change / force bits
  -Current real-time data
- Reduces costs and time of sending a service technician on-site.
- Local ISP call is less expensive than long distance modem call
- Better information with Web pages and Web tools

Content Provider

Lower Software Costs

PL7

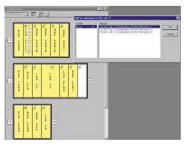
- Programming
- Network bridging
- Ethernet networking
- Serial Links
- Serial Links over TCP/IP

Programming with libraries

- **DFBs**
  -libraries of user defined functions
  -Can define in 4 IEC languages or in"C"
- **EF**(Enhanced Function) library extension with "C"
- **Section Import / Export** functioning sections of code

Premium is easier to configure

Premium
- No special software needed
- Point and click to add racks and modules - all drivers, links are integrated



Reduces enclosure wiring costs

Schneider TELE FAST

- Prewired cables to terminal block save wiring costs.
- Terminal blocks can power field devices
- Ability to connect to multiple PLC

Reduce design cost and risk
Integrated intelligent functions


- Motion (SERCOS, Servo, Steeper)


- Electronic CAM

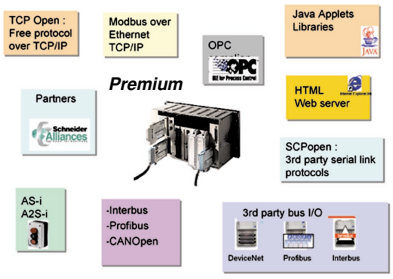

- Weighing


- Safety relays

- High speed reflex I/O


- Loop control

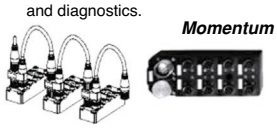
More design flexibility



Reduces wiring costs - Safety relays

AS-i
- Simple low cost two-wire cable
- Integrated in PL7. Configuration, device libraries, and diagnostics.

Momentum

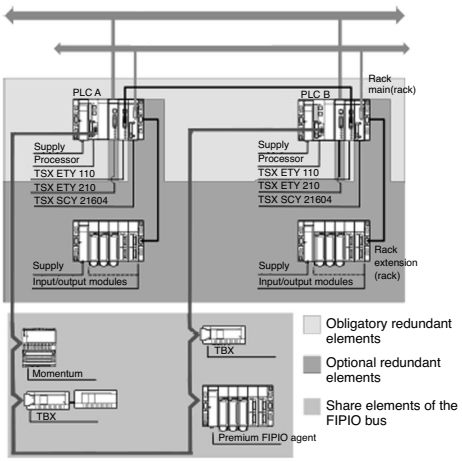


- **Power and data over the same cable** for IP67 I/O
- Daisy-chain with one cable

Configuration

Premium Warm stand-by

The following illustration presents a Warm Standby Premium architecture.
Optional TCP/IP Ethernet network
Optional Modbus network



Features of Premium Warm Stand-by

The Premium Warm Standby redundancy offer ensures continuity of operation for a control system based on a Premium platform in the event of failure of:

- Central processing and communication functions
- All or part of the I/O system

It is based on the "Normal/Backup" redundancy principle with complete redundancy of the main processing and communication functions, the use of simple I/O shared on a Fipio bus and/or redundancy of in-rack I/O.
It covers all availability requirements when the purpose of the PLC is to monitor an installation in continuous operation signal incidents to a control station, and transmit command instructions from the supervision manager to various locations on an extensive site. It is aimed at processes which can tolerate a lack of control on the part of the PLC lasting 1 to 2 s (average time for changeover from the "Normal" to the "Backup" unit).

Areas of application:

- In the commercial sector:
  - Centralised technical management of a public facility (tunnel, airport, etc)
  - Control/monitoring of a water treatment or distribution station
  - Electrical technical management
- In the industrial sector:
  - Food and beverage processing
  - Slow chemical processes
  - Level/temperature monitoring, etc.

Selection Guide

Applications	Single network modular PLCs with P7 Junior/Pro developement software				Multinetwork modular PLCs with PL7 Junior/Pro development software		
							
Number of racks							
4/6/8 slots	4		16				
12 slots	2		8				
Discrete I/O							
In-rack	512 (1), remote Bus X		1024 (1), remote Bus X		1024 (1), remote Bus X		2048 (1), remote Bus X
AS-ibus(2)	496 max.		992 max.		1984 max.		1984 max.
Fieldbus(3)	2048 max.	4032 max.	6080 max.	8672 max.	10,112 max.	12,704 max.	14,114 max.
Preventa modules	Emergency stop monitoring and limited switches						
Analogue I/O							
Max. no. of channels	24 in-rack (1)	24 in-rack (1) 640 on Fipio	80 in-rack (1)	80 in-rack (1) 640 on Fipio	120 in-rack (1)	128 in-rack (1) 640 on Fipio	256 in-rack (1) 1472 on Fipio
Max. no. of channels	Inputs: high level 1 (with common point or isolated), 12...16bits; inputs: isolated, 16 bits; inputs: thermocouple, 16 bits outputs: isolated, 11 bits + sign; output: with common point, 13 bits + sign						
App-spec. channels							
Maximum no.	8 (1)		24 (1)		32 (1)		64 (1)
Type							
Counter	40kHz, 500 kHz and 1 MHz counter (with SSI absolute encoder)						
Motion	Motion control for servomotors (500 kHz with incremental encoder, 200 kHz with SSI absolute encoder), motion control for stepper motor						
Weighing	Motion with measurement input for 8 sensors maximum, 2 discrete outputs and 1 RS 485 outputs for display (one module is counted as 2 application-specific channels)						
Communication	Communication module, 2 channels with 1 isolated RS 485 integrated channel (with Uni-Telway, Modbus/Jbus or character mode protocol) and 1 PCMCIA card slot (multiprotocol serial link, Jnet network)						
Network connections							
Maximum no.	1				3		4
Type	Fipway, Modbus Plus, Ethernet TCP/IP, Ethernet TCP/IP with integrated Web server						
Bus connection							
Uni-Telway	Integrated		Integrated		Integrated		Integrated
AS-i	2 max.		4 max.		8 max.		8 max.
Fipio manager	-	1	-	1	-	1	1
Fipio Agent	-		1		1		1
Third-party: InterBus-S, Profibus-DP CANopen	-		1 third-party bus		2 third-party bus (with 1 CANopen maxi)		2 third-party bus (with 1 CANopen maxi)
Process Control							
Number channels			10		15		20
Loop profile			Per channel: 3 single, process, cascade, secondary,		setpoint programmer		
Memory capacity							
Integrated RAM	32 Kwords		48 Kwords	64 Kwords	64/80 Kwords (4)	80/96 K words (4)	96/176 Kwords (4)
Extension	64 Kwords		160 Kwords		384 Kwords		512 Kwords
File Storage	128 Kwords with memory extension		128 or 640 Kwords with memory extension		128 or 640 Kwords with memory extension		128 or 640 Kwords with memory extension
Symbol storage	-		128 Kwords with memory extension		128 Kwords with memory extension		128 or 256 Kwords with memory extension
Power supply	Modules ∿10...240V (26/50/85), ⎓ 24 V non isolated (30/50W), ⎓ 24...48 V isolated (50W). Each rack requires a power supply						
Reference	TSX P57 103M	TSX P57 153M	TSX P57 203M	TSX P57 253M	TSX P57 303M	TSX P57 353M	TSX P57 453M

(1) Cumulative maximum values, (2) Sensor/actuator bus, (3) fipio/Modbus Plus/Inter Bus-S/Profibus DP fieldbus (4) The second value corresponds to the capacity of the integrated RAM when the application program is supported by the extension memory.

Remarks: For PLC corprocessors to be integrated in PC compatible, I/O modules, functional modules, please contact Schneider Electric (HK) Ltd.

Modicon Momentum *(PLC)*

..... The open solution for business

Introduction - Modicon TSX Momentum

Momentum is a complete family of I/O modules, processors, communication adapter, and option adapters that snap together to form versatile control system or sub-systems, giving you the flexibility to create a system that meets your needs perfectly today, and whose adaptability protects against obsolescence in the future. With the M1E processor adapter, Momentum has become one of the smallest but most powerful Ethernet-enabled automation solutions available in the market. Integrated diagnostic and data web pages can be accessed via simple web browsers to reduce downtime and increase production. Based on IEC 61131 Concept or ProWORX 984LL programming software.

Features

- High performance I/O Scanning & Control over Ethernet
- Increase connectivity with embedded Ethernet
- Embedded Web Server
- Offers 5 Pre-defined Web Pages
  - Home page
  - I/O status
  - CPU status screens
  - Ethernet statistics
  - Support page

Momentum =
Open Automation Solutions

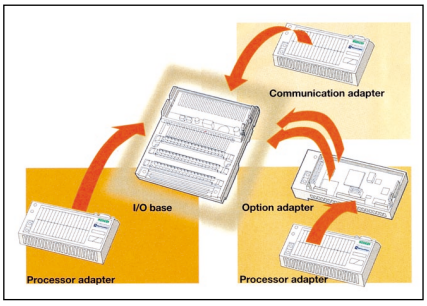
Specification Summary

Maximum I/O	I/O Type	Memory	Communication	Features
- 16 or 32 digital I/O base units - 4/8/16 channel multifunction analogue I/O base units - Max. 8192 I/O	- Fixed I/O module bases - Local I/O - Distributed I/O	Total memory: 1MB - 18K User logic - 24K data	- Ethernet TCP/IP - MODBUS® - MODBUS Plus - Profibus - Interbus - Devicenet - FIPIO - SERIPLEX™	- Save-to-Flash Memory capability with Concept V2.5, 2.06d - Diagnostic web pages - High speed counters - I/O base with MODBUS master - Option adapters

Description: Small footprint, modular PLC and/or I/O system for small to mid-range applications. Optimized for distributed architectures. Supports multiple communication networks.

Benefits

Momentum PLC Platform

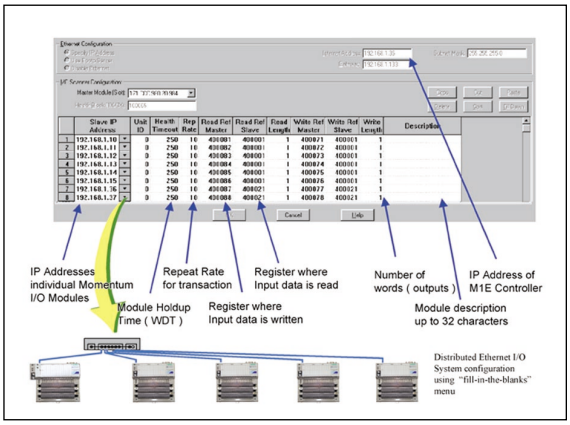


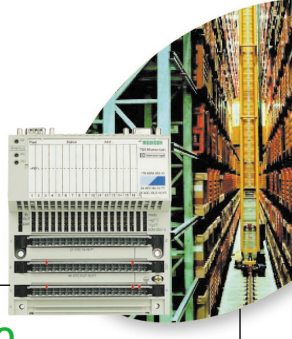
Real Time Control and Information Access with Embedded Ethernet Communication

The small footprint and open architecture concept of Schneider's Momentum platform allow it to fulfill many roles in a variety of automation strategies, including PC-based control, Distributed control, and traditional, stand-alone PLC control. The Momentum suite of components includes I/O bases, processor adapters, option adapters and communication adapters that are interchangeable and snap together to deliver optimal flexibility throughout the control system life-cycle.

- Ethernet delivers Interoperability
  Using Ethernet as its communications backbone, Schneider's Momentum M1E Processor delivers all the performance benefits of real-time control. The open architecture of the M1E processor made it the first truly universal controller for distributed I/O, compatible with all major fieldbus and control network environments.
- Ethernet power
  An integral Ethernet port in the M1E allows users to perform a wide range of functions over Ethernet, including data acquisition, peer-to-peer communications and I/O scanning. Five embedded web pages enable the use of a standard web browser to read status and diagnostic information from the processor.
- The distributed control solution
  The award winning M1E not only seamless connects I/O but also other control devices via open standard; it delivers the performance of a full function, real-time controller for stand-alone and distributed system configurations in one money-saving unit.

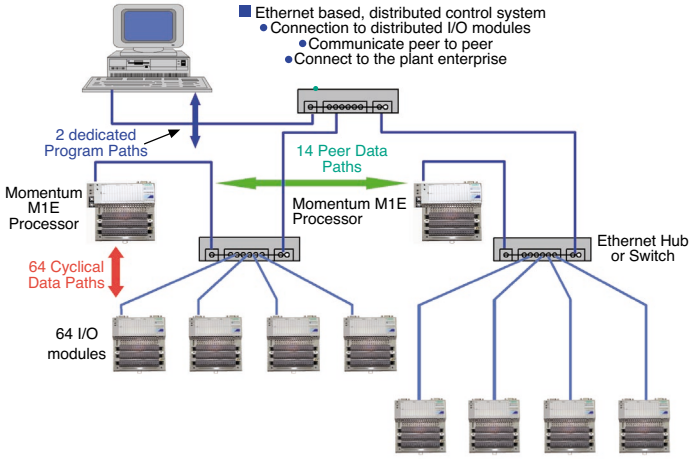
Easy I/O System Configuration





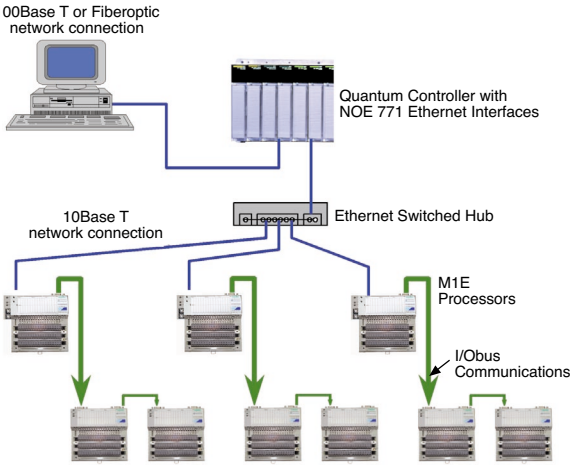
Configuration

Multiple Processors



Momentum I/O Modules with 170 ENT 110 00 Ethernet Communication Adapter

Multiple Processors with Interbus I/O



Momentum I/O Modules with 170 1NT 110 00 Interbus Communication Adapter

With the Momentum Web Loader Utility, users can now load customized web pages into all models of the M1E processors' flash memory over the Modbus TCP/IP communication network from a PC. The Web Loader replaces the existing web pages that are loaded at the factory with custom pages developed by the customer, as long as they stay within the memory limit of the M1E processors (128k). This utility does not include any capability for the creation of Web Pages - these pages can be developed by the customer using a standard web page development tool such as Microsoft Frontpage.

Selection Guide

Type	M1 processor adapters							
								
RAM memory	64 K			256 K	512 K			
Flash memory	256 K				512 K	512 K for 171 CCC 980 20 1 MB for 171 CCC 980 30	512 K	512 K for 171 CCC 960 20 1 MB for 171 CCC 960 30
984 LL program memory	2.4K			12 K	18 K			
IEC program memory				160 K	240 K	-/200K	240K	-/200 K
Data memory	2 K			4 K	24 K			
Scan time	1 ms/K	0.63 ms/K	1 ms/K	0.63 ms/K	1 ms/K	0.3 ms/K	1 ms/K	0.3 ms/K
Clock speed	20 MHz	32 MHz	20 MHz	32 MHz	32 MHz	50 MHz	32 MHz	50 MHz
I/O points	2048			4096	8192			
I/O drops	Up to 2048 I/O points with Modbus Plus option adapter			80 with ProWORX 128 with Concept	Up to 2048 I/O points with Modbus Plus option adapter		80 with ProWORX 128 with Concept	
Power source	Power supply on-board the I/O bases							
Communication ports	1 RS 232 Modbus		1 RS 232 Modbus 1 RS 485 Modbus	1 RS 232 Modbus 1 I/O bus	1 RS 232 Modbus 1 RS 485 Modbus	1 Ethernet 1 RS 485 Modbus	1 RS 232 Modbus 1 I/O bus	1 Ethernet 1 I/O bus
IEC executive				Compatible		Supplied with 171 CCC 980 30	Compatible	Supplied with 171 CCC 960 30
Reference	171 CCS 700 00	171 CCS 700 10	171 CCS 780 00	171 CCS 760 00	171 CCC 780 10	171 CCC 980 20/30	171 CCC 760 10	171 CCC 960 20/30

Remarks: For I/O modules, functional modules, please contact Schneider Electric (HK) Ltd.

Modicon Compact *(PLC/RTU)*

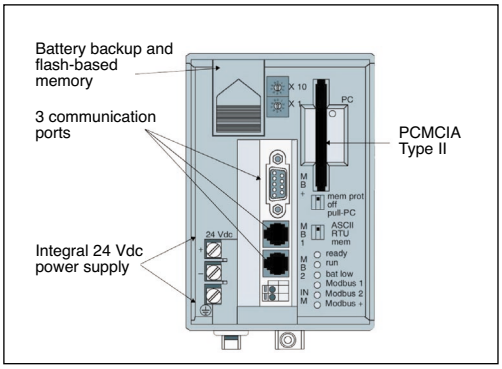
..... A world class control solution for RTU application

Introduction - Modicon TSX Compact

Compact has many advantages, especially in RTU applications. Resistance to extreme temperatures and airborne chemicals, flow calculations, special function blocks and networking options make Compact a powerful and versatile solution. Based on IEC 61131 Concept or ProWORX 984LL programming software.

Features

- Faster processing for more demanding applications
- Simple Windows programming with concept or ProWorks
- Remote I/O with extension I/O capacity
- Enhance RTU functionality(upon release of Concept 2.2)
  - Report on exception
  - Password protected in the PLC
  - Special function data protection
  - Long term data logging to PC card
  - Extended temperature and conformal coatings
  - GPS time synchronization
  - Enhanced radio communications



Specification Summary

Maximum I/O	I/O Type	Memory	Communication	Features
- Digital, 16K maximum mix with any 4/8/16 point - Analogue modules with 4/8/16 channel with multifunction capability	- A120 Series I/O - Momentum I/O - Local I/O (18 modules max.) - Remote I/O - Distributed I/O	Total memory: 1MB - 620K program - 96K data/variables	- MODBUS® - MODBUS Plus - Profibus - Interbus	- Extended temp.(-40°C to +70°C) - Conformal coating - Starling gas flow loadables - Motion control - IEC 61131-3 programming languages - True RTU with functionality - XMIT loadables

Description: PLC for small to mid-range applications. Special features make Compact ideal for RTU applications.

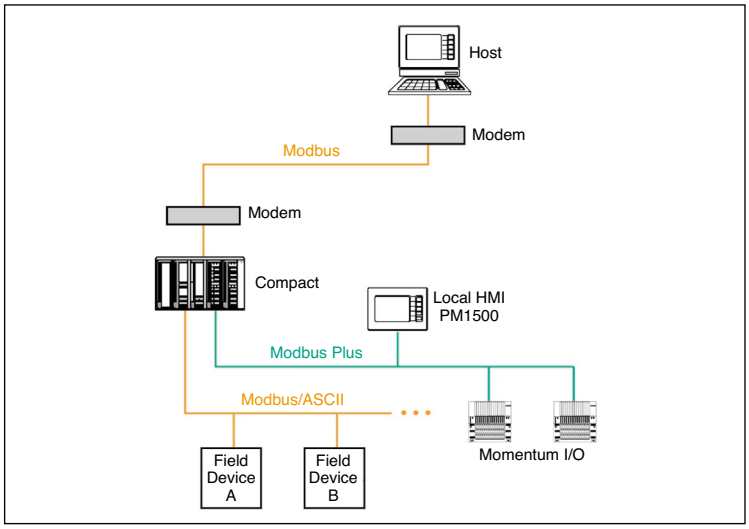
Configuration

Local I/O Options

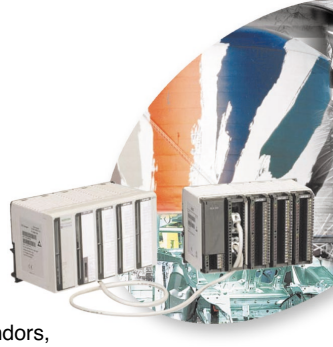
Compact I/O modules support traditional Compact applications and provide solutions for expanded new applications. They also support the demanding harsh environment requirements (-10 to +70°C operating) of local process and RTU applications. Even the primary and subracks (AS-HTDA-200 and AS-HDTA-201) are available with conformal coating and in most applications need no special heating and cooling equipment or expensive enclosures. Taken together, these enhancements provide real solutions to real world problems.

I/O Range			
Discrete Input Modules	4 & 8 Inputs	16 Inputs	
DC Inputs	66...154	5 TTL, 12 to 60, 24, 48, 60	
AC Inputs	115...230		
Discrete Input Modules	4 Outputs	8 Outputs	16 Outputs
Relay (voltage/current)	24 to 110 Vdc/2A 24 to 230 Vac/2A	24 to 110 Vdc/2A 24 to 230 Vac/2A	
Solid State (voltage/current)		24 to 230 Vac/1A	5 to 24 Vdc/0.3A 24 Vdc/0.5A 24 to 230 Vac/0.5A
Analogue I/O	4 Point Input- +/-500mv, Pt100 non-isolated 4 Point Input high level, current and voltage, isolated and non-isolated 2,4 and 8 Point Output, current and voltage, isolated and non-isolated		
Motion	Single Axis Incremental Encoder Single Axis Resolver and Incremental Encoder		
Frequency/ Counter	4 point, 1 kHz, 24 Vdc or 500 kHz 5 Vdc, 2 relay out		
Communications	Interbus Master and Slave interface for Compact I/O modules Profibus DP Slave for Compact I/O		

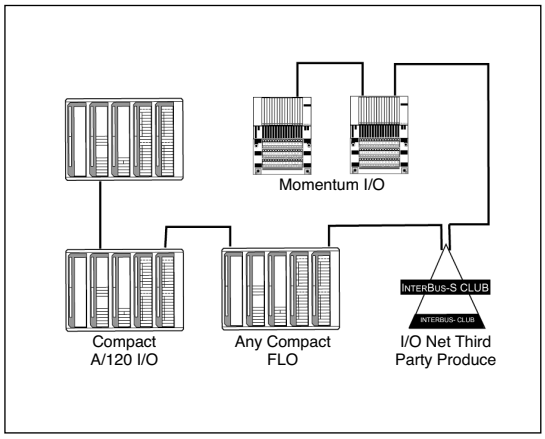
Networking Options



- Backward and forward compatibility
  The key to success for any new or upgraded platform is backward and forward compatibility. The Compact delivers unparalleled networking connectivity for RTU, local and remote I/O.
- Simple networking integration
  Integration of field proven Modbus and Modbus Plus provides simple integration with both Quantum and Sy/Max controllers.
- Modbus Plus networking
  Simple and easy to program, install, and maintain, and available across the Modbus Telemecanique family, Modbus Plus is the high performance choice for flexible network architectures.
- Two Modbus interface for RTU and point to point applications
  Two Modbus ports on every Compact controller deliver dedicated modem communications and local operator interface concurrently at a remote site. Bridging between Modbus and Modbus Plus is done automatically on controllers and Modbus Plus network option modules by configuration to the bridge mode.

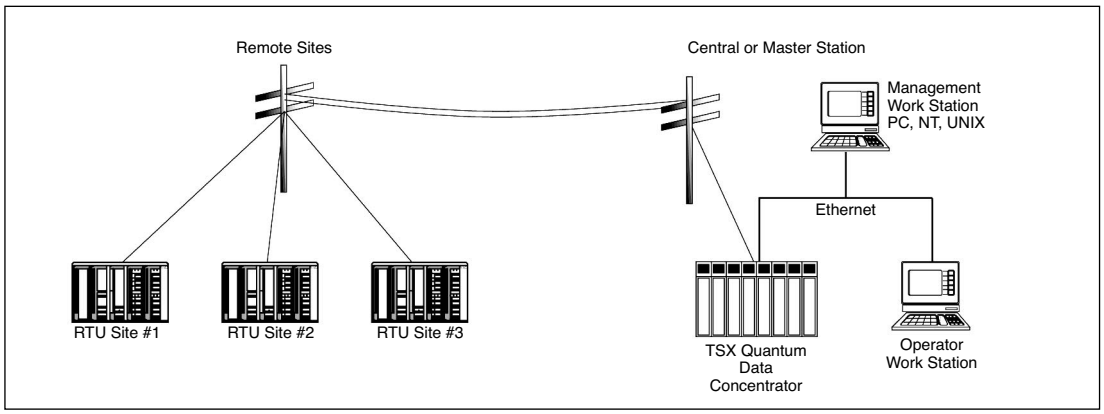


Remote I/O Options



- Interbus I/O network
  Interbus, which enjoys wide third party support with over 300 vendors, is now offered for remote I/O support as master and slave modules. As an I/O fieldbus, it is used heavily in manufacturing and offers a master/slave topology that permits deterministic I/O servicing over its 13km twisted pair network, and is best suited when talking to groups of I/O rather than bits of data. The number of master modules in the back plate is limited only by CPU I/O capacity, while the slave module supports up to 18 I/O modules.
  New modules support remote I/O via Interbus networks - such as BKF201 Master, DEA202 and BKF202 Slave.
- Profibus DP I/O
  Compact I/O is supported with a Profibus slave module for both normal and extended temperature application

A World Class Control Solution For RTU Applications



- Compact provides a common programming environment with Quantum resulting in the perfect automation remote-control solution. And with the benefits of Concept or ProWORX NxT at both Master and Remote locations a simple Master station data concentrator and remote site relationship can be employed with any media.

Selection Guide of Compact 32-bit Controller

Processor/ Clock Speed	386EX/ 25Hz	386EX/ 25Hz	386EX/ 25Hz	386EX/ 25Hz
Memory - Flash/SRAM	1M/512k bytes	1M/512k bytes	1M/512k bytes	1M/1M bytes
I/O Word Capacity (in 16 bit words)	256/256	128/128	256/256	512/512
Communications Ports Modbus/Modbus Plus	2/0	2/1	2/1	2/1
PCMCIA Flash	NO	NO	YES	YES
IEC Logic/Data	204k bytes	204k bytes	204k bytes	624k bytes
984 Logic/Data	16k/32k	8k/16k	16k/32k	32k/64k
Logic Solve Time Range	0.2 - 0.6 ms/k	0.2 - 0.6 ms/k	0.2 - 0.6 ms/k	0.2 - 0.6 ms/k
Extended Temperature Operation	-40 to +70°C	0 to -60°C	0 to -60°C	-40 to +70°C
Conformal Coating	Optional	Optional	Optional	Optional
Reference	PC-E984-258	PC-E984-265	PC-E984-275	PC-E984-285

Remark: For compact 16-bit Controller and other accessories, please contact Schneider Electric (HK) Ltd.

Specification of I/O Card

New I/O Range -40 to +70°C Operating Conformal coating option	
Combo Discrete	8 in 24 Vdc/2 out 2 Amp 8 in 24 Vdc/2 out 2A relay
Discrete Out	8 point, 2A
Discrete In	16 point, 24 Vdc 16 point, 24...48 Vdc 16 point, 66 to 154 Vdc
Frequency	4 points
Analogue Out	2 point, volt, mA
Temperature	4/8 TC, RTD, MV, .
Analogue in	4 Point, volt, mA

Modicon Quantum *(PLC)*

..... For high performance architecture

Introduction - Modicon TSX Quantum

Quantum provides a scaleable, modular architecture that can easily be configured to meet the highest performance application requirements, from single rack system to plant-wide architecture. Integrated in-rack web server capability provided by Transparent Factory® technology allows Quantum to store and serve database information, process graphics, process diagnostics, etc.via the use of standard web browsers. Software and network compatible with Compact and Momentum.

Specification Summary

Maximum I/O	I/O Type	Memory	Communication	Features
- Digital 64K maximium mix with any 8/12/32/64 point modules - Digital/analogue mixed modules - All Quantum modules are hot swappable	- Quantum I/O - Momentum I/O - 800 Series I/O - 200 Series I/O - SY/MAX 1/O - Local I/O - Remote I/O - Distributed I/O - Redundant I/O - Intrinsically safe I/O (FM Class 1, Div 1)	Total memory: 4MB - 2.5MB program - 1.5MB data/variables	- Ethernet TCP/IP - MODBUS® - MODBUS Plus - Profibus - Interbus - Lonworks - Devicenet - SERCOS - ASi - SERIPLEX™ - Hart - Fieldbus Foundation	- Multi-axis motion - Fully-functional in-rack web server - Hot standby/redundant CPU, power supplies, communication, I/O - Motion control - Conformal coating - FM Class 1, Div2 for Quantum family - IEC 61131-3 programming languages

Description: High-end PLC optimized for process control and large end user installations. True hot standby capabilities with the most communication network options.

Quantum CPU Selection Guide

Processor/Clock Speed	186/20 MHz	186/20 MHz	486 DX/80 MHz	586/133 MHz
Memory Flash / SRAM	256K/256K	256K/512K	1 M / 2M	1M / 4M
Registers	9,999	9,999	57K	57K
Discretes	8,192	8,192	65,535	65,535
Maximum IEC 1131-3 Program Memory	109K	368K	896K	2.5M
Maximum 984 Ladder Logic	8K	16K	64K	64K
984 Ladder Logic solve time	0.3-1.4mS/K	0.3-1.4mS/K	0.1-0.5mS/K	0.09-0.45mS/K
Modbus Plus Port	Yes	Yes	Yes	Yes
Modbus Port	1	1	2	2
Option Modules Supported	2	2	6	6
Reference	140CPU11302	140CPU11303	140CPU43412A	140CPU53414A

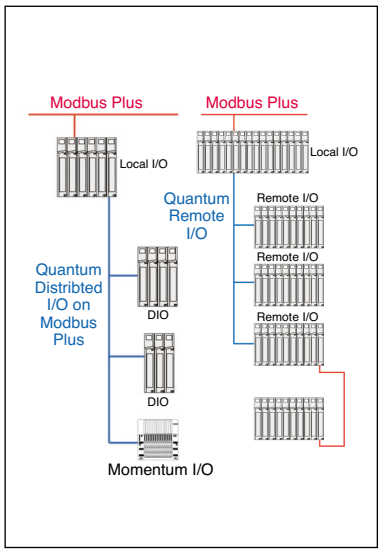
Typical applications include:

- Control networking and interlocking
- Data acquisition
- On-line remote programming
- Program upload/download
- Connections to operator interfaces

I/O Type

	Local I/O	Remote I/O	Distributed I/O
Maximum I/O words per drop	64 in / 64 out	64 in / 64 out	30 in / 32 out
Maximum discretes per drop	1024 in / 1024 out	1024 in / 1024 out	480 in / 512 out
Maximum analogues per drop	64 in / 64 out	64 in / 64 out	30 in / 32 out
Typical back plates	6, 10, 16 slots	10, 16 slots	2, 3, 4 slots

Configuration



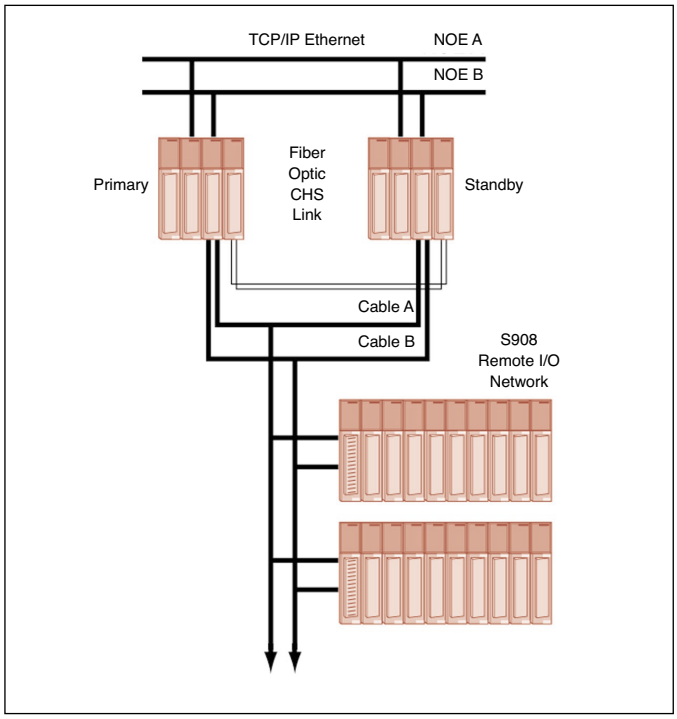
Communication

	Modbus	Modbus Plus
Technique	Slaves polled by a Master	Peer to peer, token rotation
Speed	19.2K typical	1M
Electrical	RS-232, various others	RS-485
Distance without repeater	RS-232 50ft. (15m)	1,500 ft. (475 m)
Media	Various	Twisted pair, Fiber optics
Max nodes/ network	247	64
Max network traffic	300 Reg/sec @ 9.6kb	20,000 Reg/sec
Programming	Yes	Yes
Read/write data	Yes	Yes
Global data	No	Yes
Peer Cop	No	Yes

	Remote I/O	Distributed I/O
Media	Coax	Twisted pair
Maximum distance without repeaters	15,000 ft. (4,572 m)	1,500 ft. (457 m)
Speed	1.5MHz	1MHz
Scan synched I/O servicing	Yes	No
Hot Standby Support	Yes	No
Momentum I/O support	No	Yes
Modbus Plus compatible	No	Yes
Max Drops per network	31	63
Max I/O words per network	1,984 in 1,984 out	500 in 500 out
Max discretes per network	31,744 in 31,744 out	7,840 in 7,840 out
Max analogues per network	1,984 in 1,984 out	500 in 500 out
Networks per controller	1	3

Configuration

Quantum Hot Standby



Specification of CHS Hot Standby Processor

Description	
CHS Hot Standby Processor	Option Process for Standby Quantum Controller Family
Controller Supported	
984 Ladder Software IEC 61131-3 Software	140 CPU 113 0X, 434 12A, 534 14A (plug into any slot in Quantum backplane) 140 CPU 434 12A, 534 14A (plug into any slot in Quantum backplane)
CHS Hot Standby Topology	
Two modules requried per Hot Standby system	
Performance	
Switch cover Time Scan Impact	13-48 ms for Hot Standby to assume control after primary fault detected 3 ms + 6ms/k of configured State RAM
Communications	
CHS Comm Rate Cable Between Quantum System	10 megabaud 3m Fiber Optic cable supplied (1km capability w/o repeaters)
Indicators and Switches	
LED Indicators Swtiches Push Buttons	READY, PRIMARY, STANDBY, COM ACT RUN/XFER/OFFLINE, Controller A, Controller B Program Update
Software Requirements	
Loadable Function Block	CHS block (Included with kit)
Power Supply Requirements	
Operating Voltage: Current Requirements:	Supplied by CPS Power Supply 700MA
Environmental	
Temperature Operating: Storage: Humidity: Shock: Free Fall: Vibration:	0-60ºC -40 . 85ºC 0-95% RH non-condensing 15Gs for 11 msec 1m unpacked 0-57 Hz @ 0.075mm d.A., 57-150 Hz@ 1G.
Physical	
Dimensions: (HxWxD) Approximate Weight:	9.84" x 4.09" x 1.59" (250mm x 103.85mm x 40.34mm) (requires one slot in Quantum back plate) 0.453kg (1 lb.)

Remark: For I/O, functional modules, please contact Schneider Electric (HK) Ltd.

Application of Hot Standby

- Batch and continuous process control
  - No Loss of process data in the event of hardware or software failure
  - Higher availability of Controller Hot Standby system ensures higher productivity of process
  - Secure, bumpless transfer provides uninterrupted control process for better product quality.
  - Client computer access is easily implemented by Modbus TCP/IP, Modbus Plus, or Modbus communication networks.
  - Available dual cable remote I/O, Modbus Plus, and Modbus TCP/IP systems provide additional system security for critical communications.
- Interlocking systems
  - User logic comparisons are performed every scan to verify the integrity of the interlock sequence
  - Bumpless control transfers eliminate false tripping
  - Modbus TCP/IP, Modbus Plus, and Modbus access provides necessary system status to client computers of distributed control systems.
  - Dual cable remote I/O and Modbus Plus systems provide an additional system security for critical I/O and communications
- Material handling
  - Higher availability of the Hot Standby system ensures continuity of service
  - Fast data transfers minimize scan impact to ensure high productivity
  - High security of the Quantum Hot Standby system ensures availability of critical parts tracking data

Features of Quantum Hot Standby

- A single-board Modicon Hot Standby option processor in each controller system improves reliability by eliminating the need for an intermediate supervisor controller
- System control transfer occur in either direction increasing system uptime by eliminating the master-slave relationship
- Integrity of the User programs are verified and compared in both controller to ensure high security
- High-speed fiber optic communication link between processors minimizes scan impact and improves productivity
- Configurable Primary State Table transfers to the standby controller provides up-to-date system integrity
- Online primary-to-standby program transfer minimizes the amount of time that the standby controller is out of service
- Software control of Modbus and Modbus Plus ports allows client computer communications to either controller with no custom communication drivers
- New configuration extension mode provides greater flexibility in state RAM transfer
- An optional ladder logic function block delivers an easy migration path for 984/800 Series Hot Standby users
- The Hot Standby system is compatible with all Quantum controllers and S908 remote I/O systems for cost-effective system design
- IEC 61131-3 Programming language Support for high availibility Hot Standby system

Components of Hot Standby Kit

Components	Hot Standby Kit for open configuration 140 CHS 210 00	CPU11302 Hot Standby Kit 140 CHS 410 10	CPU11303 Hot Standby Kit 140 CHS 410 20
Kit for CHS Hot Standby includes:	Two CHS Hot Standby processors One fiber optic (3m) Hot standby cable One CHS loadable software package One S908 terminator kit CHS Installation manual	Two CHS Hot Standby processors One fiber optic (3m) Hot standby cable One CHS loadable software package One S908 terminator kit CHS Installation manual Two back plates Two power supplies Two remote I/O processors Two processors	
CHS Model reference	140 CHS 110 00		
CHS Installation Manual	840 USE 106 00, Version 2.0		
Back Plate reference		140 XBP 006 00	
Power Supply reference		140 CPS 111 00	
Remote I/O Processor reference		140 CRP 931 01	
Processor reference		140 CPU 113 02	140 CPU 113 03