Modicon Quantum automation platform
Hot Standby safety architectures

140CPU67160S

References

Hot Standby safety CPU with Unity Pro XL Safety

Hot Standby CPU		Application memory (max.)		Optical fibre	Communication ports	Safety	Reference	Weight
Clock speed	Coprocessor	Available internal RAM (with located variables)	With PCMCIA card	Type and max. distance				
MHz		KB	KB					kg/lb
266 MHz	Yes, integrated Ethernet TCP/IP, use reserved for Hot Standby	1024	7168	multimode 2 km	1 Modbus *(1)* 1 Modbus Plus 1 USB 1 Ethernet 100 Mbps port (dedicated Hot Standby port)	Yes	**140CPU67160S**	–

140NOE77111

Associated modules

Description	Type of architecture	Topology	Transparent Ready	No. *(2)*	Safety	Reference	Weight kg/lb
RIO head adaptor	Remote I/O (RIO) and mixed I/O	Redundant cable	–	3	Non-interfering	**140CRP93200** **140CRP93200C**	–
RIO drop adaptor				15	Non-interfering	**140CRA93200** **140CRA93200C**	–
RIO drop optical fibre repeater *(3)*	Remote I/O (RIO)	Multimode optical fibre (single or redundant)	–	–	Non-interfering	**140NRP95400** **140NRP95400C**	–
		Single mode optical fibre (single or redundant)	–	–	Non-interfering	**140NRP95401C**	–
Ethernet Modbus/TCP network module	Mixed	Bus or ring (copper or optical fibre)	Class C30	–	Non-interfering	**140NOE77111** **140NOE77111C**	–

(1) RS 232/RS 485 Modbus port.
(2) For item numbers, see page 6/16.
(3) Module can be declared and configured in Unity Pro XLSafety version 7.0 and later. This module can however be used with earlier versions of Unity Pro XLS without being declared.

***Note**: For all accessories and connections, see page 2/35.*

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Modicon Quantum automation platform
Non-interfering modules

Type	RIO head adaptor	RIO drop adaptor
		
Input voltage	–	24 V ⎓
Output voltage	–	
Main characteristics	■ RIO Quantum head adaptor module, with redundant cable (2 channels) ■ Controls up to 31 RIO drops ■ Data transfer rate: 1.54 Mbps	■ RIO Quantum drop adaptor module, with redundant cable (2 channels) ■ Data transfer rate: 1.54 Mbps
I/O addresses	64 input words/64 output words per drop	64 input words/64 output words per drop
Bus current required	750 mA	750 mA
Maximum load Current per channel	–	
Current per group	–	
Current per module	–	
Functional safety certification	Non-interfering	
Approvals	UL 508, CSA 22.2-142, FM Class 1 Div 2, CE ATEX Zone 2/22 *(1)*	UL 508, CSA 22.2-142, FM Class 1 Div 2, CE ATEX Zone 2/22 *(1)*
Type of module	**140CRP93200**	**140CRA93200**
Pages	2/31	3/2 and 3/14

(1) Only "Conformal Coating" versions, depending on the model, are certified ATEX Zone 2/22. For further information, see pages 8/2 to 8/9.

Ethernet Modbus TCP network module	Multifunction input module	RIO drop fiber optic repeater	RIO drop fiber optic repeater
			
24 V ⎓	24…125 V ⎓	5V ⎓	5V ⎓
–			
■ Physical interface: 10 BASE-T/100 BASE-TX (copper cable) and 100 BASE-FX (optical fibre) ■ Access: CSMA-CD ■ Medium: shielded twisted pair cables or optical fibre cables ■ In safety application: Ethernet Peer-to-Peer and Global Data	■ Multifunction input module ■ Discrete inputs processed cyclically ■ Event inputs (4096 time-stamped events/module) ■ Counter inputs (32-bit, 500 Hz) ■ Periodic time stamping ■ Time-delayed switching	■ Multimode optical fibre repeater	■ Single mode optical fibre repeater ■ Coated
64 input words/64 output words per drop	–		
750 mA	330 mA	760 mA	
–			
–			
–			
Non-interfering			
UL 508, CSA 22.2-142, FM Class 1 Div 2, CE ATEX Zone 2/22 *(1)*	UL 508, CSA 22.2-142, Class 1 Div. 2, CE, ATEX Zone 2/22 (1)		
140NOE77111	**140ERT85420**	**140NRP95400**	**140NRP95401C**
5/3 and 5/41	3/6 and 3/14	3/16 and 3/22	3/18 and 3/22

Modicon Quantum automation platform
Non-interfering modules


140CPS12420


140CRP93200


140NOE77111

Non-interfering modules and racks *(1)*

The following Quantum non-interfering modules are fully compatible with the Quantum safety modules.

Power supply module

Input voltage	Output current	Type	Safety	Reference	Weight kg/ lb
115/230 V ∼	11 A	Redundant	SIL3 certified	**140CPS12420**	0.650/ *1.433*
24 V ⎓	8A	Redundant	Non-interfering	**140CPS22400**	0.650/ *1.433*

Discrete input module

Description	Voltage	Modularity	Logic	Safety	Reference	Weight kg/ lb
4 groups of 8 inputs	**24 V ⎓**	32 inputs	Positive	Non-interfering	**140DDI35300**	0.300/ *0.661*

Discrete output module

Description	Voltage	Modularity	Logic	Safety	Reference	Weight kg/ lb
4 groups of 8 outputs	**24 V ⎓**	32 outputs	Positive	Non-interfering	**140DDO35300**	0.450/ *0.992*

Analog input module

Description	Range	Safety	Reference	Weight kg/ lb
16 high level channels 0…25,000 points, single-pole	0...20 mA 0...25 mA 4...20 mA	Non-interfering	**140ACI04000**	0.300/ *0.661*

Analog output module

Description	Range	Safety	Reference	Weight kg/ lb
4 current channels 12-bit	4...20 mA	Non-interfering	**140ACO02000**	0.300/ *0.661*

Multifunction input module

Description	Function	Safety	Reference	Weight kg/ lb
Multifunction input module	32 discrete inputs, supplied between 24 V and 125 V ⎓ Status logging - 500 Hz counting 1 clock signal input	Non-interfering	**140ERT85420**	0.450/ *0.992*

Modules

Description	Type of architecture	Topology	Transparent Ready	Safety	Reference	Weight kg/ lb
Quantum RIO head adaptor (1 max.)	Remote I/O (RIO) and mixed I/O	Redundant cable	–	Non-interfering	**140CRP93200**	–
Quantum RIO drop adaptor (31 max.)					**140CRA93200**	
RIO drop optical fibre repeater	Remote I/O (RIO)	Multimode optical fibre (single or redundant)	–	Non-interfering	**140NRP95400**	–
		Single mode optical fibre (single or redundant)	–	Non-interfering	**140NRP95401C**	–
Ethernet TCP/IP network module	Mixed	Bus or ring (copper Class C30 or optical fibre)		Non-interfering	**140NOE77111**	0.345/ *0.761*

Racks

Description	Number of positions	Safety	Reference	Weight kg/ lb
Racks for: **- Local I/O modules** **- Remote I/O modules** **- Distributed I/O modules**	6	Non-interfering	**140XBP00600**	0.640/ *1.411*
	10	Non-interfering	**140XBP01000**	1.000/ *2.205*
	16	Non-interfering	**140XBP01600**	1.600/ *3.527*

(1) For non-interfering modules certified by TÜV Rheinland, please consult our website www.schneider-electric.com.

CPUs: page 1/2 | I/O architectures: page 2/6 | I/O: page 3/2 | Communication: page 5/2

Modicon Quantum automation platform

Treatment for severe environments
“Conformal Coating” modules

Presentation

Protective treatment of Modicon Quantum PLCs

Modicon Quantum PLCs comply with “**TC**” (Treatment for all Climates) treatment requirements.

For installations in industrial production workshops or environments corresponding to “**TH**” (Treatment for hot and humid environments), PLCs must be housed in enclosures providing at least IP 54 protection as specified by standard IEC/EN 60529 or an equivalent level of protection according to NEMA 250.

These PLCs themselves have an IP 20 protection index *(1)*.
They can therefore be installed without an enclosure in reserved access areas that do not exceed **pollution level 2** (control room with no dust-producing machinery or activity). **Pollution level 2** does not take account of more severe environments such as those where the air is polluted with dust, fumes, corrosive or radioactive particles, vapours or salts, moulds, insects, etc.

Treatment for more severe environments

If the Modicon Quantum automation platform has to be used in a severe environment, the “*Conformal Coating*” offer provides CPU and power supply modules, I/O modules and racks with “***Humiseal 1A33***” coating on their electronic cards.

This treatment improves the cards' insulation qualities and their resistance to:
- Condensation
- Dusty atmospheres (conducting foreign particles)
- Chemical corrosion, in particular during use in sulphurous atmospheres (oil refinery, purification plant, etc.) or atmospheres containing halogens (chlorine, etc.)

This protection, combined with appropriate installation and maintenance, enables Modicon Quantum products to be used in harsh chemical environments such as types **3C2** and **3C3** described in standard IEC/EN 60721-3-3 or types **G3** and **GX** described in standard ISA-S71.04.

The functional and electrical characteristics of the coated modules are identical to those of the non-coated versions. Consult the selection guides or the references pages in this catalogue (chapter 1…chapter 5).

To order modules and racks with Conformal Coating protection, please refer to references pages 8/3 to 8/9 (for coated products, add the letter “**C**” at the end of the standard reference).

ATEX IECEx certification consists of a detailed procedure for the testing and inspection of equipment made to be used in potentially hazardous areas. The results obtained after this procedure enable an ATEX certificate to be issued, together with a report confirming and demonstrating that the product can be used safely in potentially explosive environments (in line with the given parameters).

For Modicon Quantum, some “Coated” modules which can be used in a Unity system are now certified ATEX IEC-EX with the following standards:
- IEC/EN 60079-0
- IEC/EN 60079-15
- IEC/EN 60079-31

ATEX level “II 3 GD” certified products will have the following information on their identification plates:

II: for surface industries only

3: Category 3 equipment, for use in areas in which explosive environments caused by gases, vapours, mists or air/dust mixtures are unlikely to occur, or if they do occur, are likely to do so only infrequently and for a short period only (less than 10 hours a year). This equipment can be used in zones 2/22.

G-D: for gas and dust.

The PLC configuration must be placed in a location providing at least IP54 protection (insulated enclosure) for 3G and Gc materials and IP6X for category 3D and Dc equipment when used in zones 2/22.

Items located in a hazardous zone 2/22 or outside ATEX zones can be connected to the PLC configuration intrinsically with no safety barrier. Certified modules can also be connected in hazardous zones 1/21 or 0/20 using intrinsic, external safety barriers.

1) Any slot in **TSXRKY●●** *racks that is not occupied by a module must be fitted with a* **TSXRKA02** *screw-on protective cover (sold in lots of 5).*

Modicon Quantum automation platform

Treatment for severe environments
"Conformal Coating"
I/O architectures

"Conformal Coating" remote I/O (RIO) modules (1)

Description	Cable	Safety	Certified ATEX Zone 2/22	Reference	Weight kg/lb
Quantum RIO head adaptor (1 max.)	Single cable	–	Yes	**140CRP93100C**	–
	Redundant cable	Non-interfering	Yes	**140CRP93200C**	–
	Redundant cable	Non-interfering	Yes	**140CRP31200C**	–
Quantum RIO drop adaptor (31 max.)	Single cable	–	Yes	**140CRA93100C**	–
	Redundant cable	Non-interfering	Yes	**140CRA93200C**	–
	Redundant cable	–	Yes	**140CRA31200C**	–

Quantum Ethernet drop optical fibre repeater (2)

Description	Cable	Safety	Certified ATEX Zone 2/22	Reference	Weight kg/lb
Ouantum Ethernet drop optical fibre repeater (3)	Multimode optical fibre (single or redundant)	–	–	**140NRP31200C**	–
	Single mode optical fibre (single or redundant)	–	–	**140NRP31201C**	–

RIO drop optical fibre repeater (2)

Description	Cable	Safety	Certified ATEX Zone 2/22	Reference	Weight kg/lb
RIO drop optical fibre repeater (3)	Multimode optical fibre (single or redundant)	Non-interfering	Yes	**140NRP95400C**	–
	Single mode optical fibre (single or redundant)	Non-interfering	Yes	**140NRP95401C**	–

"Conformal Coating" distributed I/O (DIO) modules

Description	Medium	Type of medium	Certified ATEX Zone 2/22	Reference	Weight kg/lb
DIO head-end adaptors no. 2 and no. 3 (4)	Single	Twisted pair cable	–	**140NOM21100C**	–
	Redundant	Twisted pair cable	Yes	**140NOM21200C**	–
	Single	Optical fibre cable	Yes	**140NOM25200C**	–

Description	Medium	Built-in power supply	Certified ATEX Zone 2/22	Reference	Weight kg/lb
DIO drop adaptors	Single	115/230 V ∿	–	**140CRA21110C**	–
		24 V ⎓	Yes	**140CRA21120C**	–
	Redundant	115/230 V ∿	–	**140CRA21210C**	–
		24 V ⎓	Yes	**140CRA21220C**	–

(1) For connection cables and rack accessories, see page 2/31.
(2) For topologies, see pages 2/32 and 2/33.
(3) Module declarable and configurable in Unity Pro Small/Medium/Large/Extra Large version 6.0 and later.
(4) For Modbus Plus network cables and accessories, see pages 5/48 to 5/53. For presentation, see page 5/44.

Modicon Quantum automation platform

Treatment for severe environments

“Conformal Coating” high-speed counter, high-speed inputs, Hot Standby system

“Conformal Coating” high-speed counter modules

Description	Safety	Certified ATEX Zone 2/22	Reference	Weight kg/*lb*
Counter module, 5 channels of 100 kHz max.	–	–	**140EHC10500C**	0.350/ *0.772*
Counter module, 2 channels of 500 kHz max.	–	–	**140EHC20200C**	0.350/ *0.772*

“Conformal Coating” high-speed input interrupt module

Description	Number of channels	Functions	Safety	Certified ATEX Zone 2/22	Reference	Weight kg/*lb*
High-speed input interrupt module	16 x 24 V ⎓ inputs	Interrupts, latching, high-speed inputs	–	–	**140HLI34000C**	–

“Conformal Coating” multifunction input module

Description	Number of channels	Functions	Safety	Certified ATEX Zone 2/22	Reference	Weight kg/*lb*
Multifunction input module	32 discrete inputs, supplied between 24 V and 125 V ⎓	Status logging 500 Hz counting 1 clock signal input	Non-interfering	–	**140ERT85420C**	–

140NOE771●1C

“Conformal Coating” Unity Hot Standby system *(1)*

Associated modules

Description	Type of architecture	Topology	Transparent Ready	Safety	Certified ATEX Zone 2/22	Reference	Weight kg/*lb*
RIO head adaptor modules	Remote I/O (RIO) and and mixed I/O	Single cable	–	–	Yes	**140CRP93100C**	–
		Redundant cable	–	Non-interfering	Yes	**140CRP93200C**	–
RIO drop adaptor	–	Single cable	–	–	Yes	**140CRA93100C**	–
		Redundant cable	–	Non-interfering	Yes	**140CRA93200C**	–
Ethernet TCP/IP network modules	Mixed	Bus or ring (copper or optical fibre)	Class B30	–	Yes	**140NOE77101C**	0.345/ *0.761*
			Class C30	Non-interfering	Yes	**140NOE77111C**	0.345/ *0.761*

(1) For optical fibre cables for Hot Standby architecture, connection kits and accessories, see page 2/41.