DNV·GL

Certificate No:
TAA00000W2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Programmable Electronic System

with type designation(s)
Programmable Logic Controllers "TSX Quantum" series

Issued to
SCHNEIDER ELECTRIC FRANCE
Carros, France

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Location classes:

Temperature	**A**
Humidity	**B**
Vibration	**A**
EMC	**A**
Enclosure	**Required protection according to the Rules shall be provided upon installation on board**

This Certificate is valid until **2021-12-31**.

Issued at **Høvik** on **2016-11-15**

for **DNV GL**

DNV GL local station: **Marseille**

Approval Engineer: **Nils Jarem**

Odd Magne Nesvåg
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

"TSX Quantum" series programmable logic controllers as follows:

Product	Description
Processors:	
140 CPU 113 02	Control Processor Unit
140 CPU 434 12U	Unity Control Processor Unit
140 CPU 534 14U	Unity Control Processor Unit
140 CPU 534 14B	Control Processor Unit
140 CPU651 50	Processor for complex application
140 CPU651 60	Processor for complex application
140 CPU652 60	Processor for complex application
140 CPU671 60	Processor for application with redundancy (Hot Stand By)
140 CPU672 61	Processor for application with redundancy (Hot Stand By)
140 CPU670 60	Hot Stand ByProcessor
140 CPU672 60	Hot Stand ByProcessor
140 CPU658 60	Stand Alone Processor
140 CPU678 61	Hot Stand ByProcessor
Safety Processors:	
140 CPU 651 60S	Stand-alone Safety CPU
140 CPU 671 60S	Hot Standby Safety CPU
Power Supplies	
140 CPS 111 00	In: 100-276V AC Out: 5.1V, 3A
140 CPS 114 20	In: 93-132V AC / 170-264V AC Out: 5.1V, 11A (Standalone), or 5.1V, 20A (Summable)
140 CPS 124 00	In: 93-138V AC / 170-276V AC Out: 5.1V, 8A – Redundant power supply
140 CPS 124 20	In: 93-138V AC / 170-276V AC Out: 5.1V, 11A – Redundant power supply with alarm relay
140 CPS 211 00	24V DC power supply Out: 5V DC 3A
140 CPS 214 00	24V DC power supply Out: 5V DC 8A, summable
140 CPS 224 00	24V DC power supply Out: 5V DC 8A, redundant
140 CPS 414 00	48…60 VDC - 8A, summable
140 CPS 424 00	48…60 VDC - 8A, redundant
Safety I/O:	
140 SAI 940 00S	Safety Analogue Inputs
140 SDI 953 00S	Safety Digital Inputs
140 SDO 953 00S	Safety Digital Outputs
Backplanes:	
140 XBP 002 00	4 slots backplane
140 XBP 003 00	6 slots backplane
140 XBP 004 00	Backplane 4 slot
140 XBP 006 00	Backplane 6 slot
140 XBP 010 00	Backplane 10 slot
140 XBP 016 00	Backplane 16 slot
140 XBE 100 00	Backplane Extender
Discrete I/O modules	
140 DAI 340 00	16 * 24 Vac input
140 DAI 440 00	16 * 48 Vac input
140 DAI 540 00	16 * 115 Vac input

Product	**Description**
140 DAI 740 00	16 * 230 Vac input
140 DAO 840 00	16 * 24…230 Vac output
140 DDO 353 00	32 * 24 Vdc output
140 DDO 353 01	32 * 24 Vdc output
140 DDO 353 10	32 * 24 Vdc output
140 DDI 353 00	32 * 24 Vdc input
140 DDI 153 10	32 * 5 Vdc input
140 DDI 353 10	32 * 24 Vdc input
140 DDI 841 00	16 * 10…60 Vdc input
140 DDM 390 00	16 * 24 Vdc input + 8 * 24 Vdc output
140 DRA 840 00	16 * relay output
140 DRC 830 00	8 * output 5A
140 DAO 840 10	24V – 115V AC 16 outputs
Analog I/O modules	
140 ATI 030 00	8 * 5 A input
140 ARI 030 10	8 * RTD input
140 AVI 030 00	8 * voltage/current analog input
140 AVO 020 00	4 * voltage analog output
140 ACO 130 00	8 * current analog output
140 ACO 020 00	4 * current analog output
140 ACI 040 00	8 * current analog input
140 AMM 090 00	4 * voltage/current analog input + 4 * current analog output
140 ACI 030 00	Analogue current 8 inputs
Memory Units:	(x= memory capacity)
TSX MFPP x	Flash EPROM Memory from 128kb to 4Mb
TSX MRPP x	SRAM memory for application from 128kb to 384 kb
TSX MRPC x	Configurable SRAM memory for application/file from 768k to 7Mb
TSX MCPC x	Flash EPROM and SRAM Memory from 224 kb to 2Mb
TSX MRPF x	SRAM memory for file from 4Mb to 8 Mb
TSX MFPB x	Flash EPROM backup Memory 96 kb
Remote I/O Interface	
140 CRA 931 00	RIO Drop S908 1 channel
140 CRA 932 00	RIO Drop S908 2 channels
140 CRP 931 00	RIO Head S908 1 channel
140 CRP 932 00	RIO Head S908 2 channels
140 CRA 312 00	RIO internet communication
140 CRA 319 08	S908 Adapter
140 CRP 312 00	RIO internet communication
140 NRP 954 00	RIO optical repeater
140 NRP 954 01C	Remote I/Os optical repeater
140 NRP 312 00	Ethernet Converter multimode fiber
140 NRP 312 01	Ethernet Converter monomode fiber
140 CHS 110 00	S911 Hot Standby module
140 CHS 210 00	S911 Hot Standby module
140 CRA 211 10	DIO ac Drop MB+ 1 channel
140 CRA 211 20	DIO ac Drop MB+ 2 channe
140 CRA 212 10	DIO ac Drop MB+ 1 channe
140 CRA 212 20	DIO ac Drop MB+ 2 channel
Terminal Blocks and accessories	
140 XTS 001 00	IP20 ; 40 positions terminal block
140 XTS 002 00	40 positions terminal block

Product	**Description**
140 XTS 005 00	IP20 ; 7 positions terminal block
Communication	
140 NOM 251 00	Ethernet TCP/IP
140 NOE 771 00	Ethernet TCP/IP
140 NOE 771 01	Ethernet TCP/IP
140 NOE 771 10	Ethernet TCP/IP
140 NOE 771 11	Ethernet TCP/IP
140 NOC 771 01	Ethernet TCP/IP
140 NOC 780 00	Communication module with Ethernet
140 NOC 781 00	Communication module with Ethernet
140 NOP 850 00	Communication module with Ethernet IEC61850
140 NOM 211 00	Modbus SL bus 1 ch
140 NOM 212 00	Modbus SL bus 2 ch
140 NOM 252 00	Modbus SL bus
140 CRP 811 00	Profibus DP
NWBP 850 02	ModBus Plus Bridge Plus
NWBP 850 00	ModBus Plus Bridge Mux
490 NRP 254 00	ModBus Plus Fiber Optic Repeater; Line/Drop
AMSA 850 02	ModBus Plus AT Adapter (ISA Bus)
140 ESI 062 10	Non-isolated RS232 2 channels
Special modules	
140 ERT 854 20	Time stamping input
140 ERT 854 30	Time stamping input
140 EHC 105 00	Fast counting 2 channels
140 EHC 202 00	Fast counting 5 channels

Products may be followed by "C" (Coated boards)

Place of Manufacture

Schneider Electric Carros (France)
ZI Carros 8ème Rue
F- 06516 Carros, FRANCE

WUXI Pro-face Electronics Co, LTD
No 20 Hangjiang Road National Hi-Tech Industrial Development Disctrict
Wuxi, CHINA
214028

Application/Limitation

All units listed under Product description shall be properly mounted in direct contact with other units and end stops, or other effective means to reduce the effects of sideways vibration.
All units listed under Product description shall be installed in a metallic cabinet to comply with EMC class A. The same units comply with EMC class B when installed in metallic cabinet with power supply filtering arranged.

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Product certificate

If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the

certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After the certification the clause for application software control will be put into force.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Type Approval documentation

Tests carried out
Applicable tests according to Standard for Certification No. 2.4, April 2006 and EU directive on EMC.

Marking of product
The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE