

**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:**

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

This Certificate is valid until **2021-12-31**.Issued at **Høvik** on **2016-11-15**DNV GL local station: **Marseille**Approval Engineer: **Nils Jarem**for **DNV GL**

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**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.

## Product description

"TSX Quantum" series programmable logic controllers as follows:

<b><u>Product</u></b>	<b><u>Description</u></b>
<b>Processors:</b>	
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
<b>Safety Processors:</b>	
140 CPU 651 60S	Stand-alone Safety CPU
140 CPU 671 60S	Hot Standby Safety CPU
<b>Power Supplies</b>	
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
<b>Safety I/O:</b>	
140 SAI 940 00S	Safety Analogue Inputs
140 SDI 953 00S	Safety Digital Inputs
140 SDO 953 00S	Safety Digital Outputs
<b>Backplanes:</b>	
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
<b>Discrete I/O modules</b>	
140 DAI 340 00	16 * 24 Vac input
140 DAI 440 00	16 * 48 Vac input
140 DAI 540 00	16 * 115 Vac input

<b>Product</b>	<b>Description</b>
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:**

TSX MFPP x	(x= memory capacity) 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

<b><u>Product</u></b>	<b><u>Description</u></b>
140 XTS 005 00	IP20 ; 7 positions terminal block
<b>Communication</b>	
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
<b>Special modules</b>	
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 District  
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

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Certificate No: **TAA00000W2**

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**

Modicon Catalog & Specifier's Guide

Modicon Quantum Catalogs; May 2003 DIA6ED2030405 EN, April 2003 AUTC201384126 EN, July 2004 MKTED204071 EN, Quantum-2008-EN-MKTED208011EN-960237

Drawings:

043501201, -1204, -1263, -2156, -2299, -2301, -4149, -4151, -4714, -6564, -6690, -6824, -6925, -6934, -7135, -7403, -7546, -8105, -8938, -9954,

Eng. Design Standards IPA 2000

EM Compatibility 400-043/500025 dated 93-05-17

Technical Construction file in accordance with the EU directive

on EMC 89/336/EEC, 043509621 dated 97-02-18

including Certificate 89/336/EEC dated 97-04-04

and Retlif EMC test reports for above

Test results environmental testing 31002704 P0700 ver.01 dated 00-05-08 Including:

Test report vibration testing FR-35921-00C rev. 0 dated 00-05-16

Retlif EMI test report R-2690N dated 96-05-30

Retlif EMI test report R-2882N

Retlif EMI test report R-2987N dated 97-01-21

Schneider Electric; EMI/environmental/overload/temp.rise/drop/IP/vibration/shock test reports:

0005M01/02/03/04/05/06/07/08/09/10/11Q dated 01-01-18 to 01-03-05

Schneider Electric; temp./vibration/humidity/shock/drop/enclosure/electric/

EMC test reports: 0212S01/02/03/06/07/08/09/10/11Q dated 03-02-28 to 03-05-22

Schneider Electric; electric/temp.rise/EMC test reports:

0302M01/02/03/04/05Q dated 03-02-13 to 03-03-25

AEMC Lab; EMC test report: R0211296C-E-C dated 03-03-18

Schneider Test Reports and appendices:

<b>Report no.:</b>	<b>Date:</b>	<b>Report no.:</b>	<b>Date:</b>
0106S01Q	08-04-03	0214S02Q	12-07-04
0106S02Q	23-10-02	0214S03E	24-05-04
0106S04Q	25-10-02	0214S04Q	25-05-04
0106S05Q	07-01-03	0214S05Q	06-06-04
0106S06Q	29-10-02	0214S06Q	01-06-04
0106S07Q	21-10-02	0214S07Q	07-07-04
0106S08Q	13-11-02	0214S08Q	07-07-04
0106S09Q	19-05-03	0214S12Q	08-07-04
0106S10Q	20-05-03	0307S01Q	02-03-04
0107S01Q	25-02-03	0307S02Q	16-06-04
0107S02Q	15-04-03	0307S05Q	29-04-04
0107S03Q	18-03-03	0307S06Q	30-04-04
0107S05Q	17-04-03	0307S07Q	18-06-04
0107S06Q	16-04-03	0307S09Q	18-06-04
0107S07Q	21-05-03	0307S10Q	26-07-03
0107S08Q	18-04-03	0307S11Q	18-06-04
0107S09Q	14-03-03	0307S12Q	28-06-04

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<b>Report no.:</b>	<b>Date:</b>	<b>Report no.:</b>	<b>Date:</b>
0107S10Q	30-04-03	0307S14Q	06-09-04
0209M01Q	29-11-02	59765883-TUS	02-10-02
0209M02Q	19-09-02	59765909-TUS	17-02-03
0209M08Q	02-01-03	61472237-TUS	28-06-04
0209M09Q	14-10-02	61472239-279 revA	28-06-04
0209M10Q	03-12-02	R0211296C-E-C	18-03-03
0209M13Q	28-04-02	R0405155C2-E-C-A1	25-08-04
		Schneider hot stand by	
0212S09Q	28-02-03	R0405155C4-E Schneider	24-08-04
		_hot stand by	
0214S01Q	12-07-04	0602S01C	07-08-07
0602S07V	04-10-07	0602S09V	10-12-07
0602S23V	20-11-07	0602S26V	16-11-07
0602S28E	16-11-07	0602S30V	13-11-07
0602S31V	14-11-07	0602S32V	13-12-07
0602S34V	25-10-07	2007-0804-00-A	26-10-07
2007-0812-00-A	07-11-07	R0708284C4-E-C	19-10-07
R0708284C6-E-C	19-11-07	R0710386C2-E	17-12-07
0806S01C	30-01-09	0806S04C	18-02-09
0806S05C	09-11-09	0806S05V	23-04-09
0806S52V	09-11-09	0806S53V	09-11-09
A09-007-WT-01	10-12-09		

#### **Extension and renewal 2016:**

##### **PRODUCT TEST SYNTHESIS reports:**

HRB4887800 01	2014-12-01
S1B3465600 02	2014-02-17
S1B3465400 02	2014-12-01
S1A9509100 01	2014-12-01
IOCC-LAB-TF-002	2.0 / 2014-04-21

##### **Catalogue:**

MKTED2120701EN	2016-09
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Type approval periodical assessment report for A-12858, Carros 2016-10-18.

Type approval initial assessment report for A-12858, Wuxi 2016-11-02.

#### **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

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### **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