



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **A-12858**

This is to certify that the
Programmable Electronic System

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

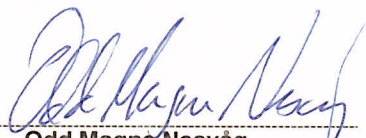
Manufactured by
SCHNEIDER AUTOMATION
SOPHIA ANTIPOLIS CEDEX, France

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
Location classes:

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

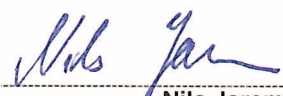
Hovik, 2012-07-23
for Det Norske Veritas AS


Odd Magne Nesvåg
Head of Section



DNV local office:
Marseille

This Certificate is valid until
2016-12-31


Nils Jarem
Surveyor



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.
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Certificate No.: A-12858
File No.: 862.50
Job Id.: 262.1-003799-3

Product description

"TSX Quantum" series programmable logic controllers as follows:

Model Numbers

Equipment

Basic Processors:

140 CPU 113 02	CPU 256K, 1XMB+
140 CPU 113 03	CPU 512K, 1XMB+
140 CPU 311 10	CPU 548K
140 CPU 434 12U	CPU 2M, 1xMB+, 2xMB OS for Unity
140 CPU 434 12A	CPU 2M, 1xMB+, 2xMB OS for Concept Prowork 32
140 CPU 534 14U	CPU 4M, 1xMB+, 2xMB OS for Unity
140 CPU 534 14A	CPU 4M, 1xMB+, 2xMB OS for Concept Prowork 32
140 CPU 534 14B	CPU 4M, 1xMB+, 2xMB OS for Concept Prowork 32

High-performance Processors:

140 CPU 651 50	Processor for complex application
140 CPU 651 60	Processor for complex application
140 CPU 652 60	Processor for complex application
140 CPU 671 60	Processor for complex application (Hot Standby)
140 CPU 672 61	Processor Unity Hot Standby extended

Safety Processors:

140 CPU 651 60S	Stand-alone Safety CPU
140 CPU 671 60S	Hot Standby Safety CPU

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

I/O modules:

140 DDI 353 00	DC input 24V 4x8 Sink
140 DDO 353 00	DC input 24V 4x8 Source
140 DRC 830 00	Relay out 8x1
140 ACI 030 00	Analogue current 8 inputs
140 ACI 040 00	Analogue current 16 inputs
140 AVI 030 00	Analogue voltage 8 inputs
140 ATI 030 00	Thermocouple 8 inputs
140 ARI 030 10	RTD 8 inputs
140 ACO 130 00	Analogue current 8 outputs
140 AVO 020 00	Analogue voltage 4 outputs
140 DAI 540 00	115Vac 16 inputs
140 DAO 840 00	24-230V AC 16 outputs
140 DAO 840 10	24-115V AC 16 outputs
140 DDM 390 00	24V DC 16 inputs / 8 outputs
140 AMM 090 00	Analogue I/O – 4 inputs / 12 outputs
140 DAI 753 00	AC 230V 4x8 inputs

Safety I/O:

140 SAI 940 00S	Safety Analogue Inputs
140 SDI 953 00S	Safety Digital Inputs
140 SDO 953 00S	Safety Digital Outputs

Backplane:

140 XBP00400	Backplane 4 slot
140 XBP00600	Backplane 6 slot



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140 XBP01000	Backplane 10 slot
140 XBP01600	Backplane 16 slot
140 XBE00100	Backplane Extender

Remote I/O interface:

140 CRA 211 10	DIO ac Drop MB+ 1 channel
140 CRA 211 20	DIO dc Drop MB+ 2 channels
140 CRA 212 10	DIO ac Drop MB+ 1 channel
140 CRA 212 20	DIO dc Drop MB+ 2 channels
140 CRP 931 00	RIO Head 1 channel
140 CRP 932 00	RIO Head 2 channels
140 CRA 931 00	RIO Drop 1 channel
140 CRA 932 00	RIO Drop 2 channels
140 CHS 110 00	S911 Hot Standby module

Communication:

140 NOM 211 00	MB+ Head 1 channel
140 NOM 212 00	MB+ Head 2 channels
140 NOM 252 00	MB+ Head 2 channel fiber optic
140 NOE 771 00	Ethernet TCP/IP network
140 NOE 771 01	Ethernet TCP/IP network
140 NOE 771 11	Ethernet TCP/IP network
140 NOC 771 00	Ethernet TCP/IP network copper
140 NWM 100 00	Ethernet TCP/IP network web services
140 ESI 062 10	No-isolated RS232 2 channels

Power Supply Modules:

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 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

Modbus Plus Accessories:

NW-BP85-002	MB+Bridge Plus
NW-BP85-00	MB+Bridge Mux
490 NRP25400	MB+ Fiber Optic repeater, Line/Drop
AM-SA85-002	MB+ AT adapter (ISA Bus)
990 NAA26320	Programming cable RS-232
990 XCA65609	Fibre optic cable 3 meters
990 NAD21110	MB+ Drop cable 2.4 meters
990 NAD21130	MB+ Drop cable 6 meters
990 NAD23000	MB+ Tap
490 NAA2710*	MB+ Cable (* = length)
110 XCA 203 00	Adapter RS232 for CPU6x
110 XCA 282 0X	Cable for PC (x= length)
416 NHM 212 34	PCMCIA Modbus+
990 NAD 218 X	MB+ drop cable for CPU6 (x = length)

Connectors:

140 XTS00100	40 pos. terminal block, IP20 compliant
140 XTS00200	40 pos. terminal block
140 XTS00500	7 pos. terminal block, IP20 compliant

Notes: Product designation can be followed by "C" for coated PCB versions.
Product designations followed by "S" are certified by TÜV for Functional Safety up to SIL3.



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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 and basic software listed under Product description. When the hardware is used in applications to be classed by DNV, 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 Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

Product certificate

Each delivery of the application system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system according to an approved test program before the system is shipped to the yard. 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 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:

Report no.:	Date:	Report no.:	Date:
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



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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
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		

A-11791 retention survey report, DNV Le Havre 2012-07-02.

Tests carried out

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

Certificate retention survey

The scope of the retention/renewal survey 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 survey 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

Retention survey is to be performed at least every second year and at renewal of this certificate.

END OF CERTIFICATE