

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Control and Monitoring System**with type designation(s)
SIAS-03

Issued to

Zhenjiang Saiernico Automation Ltd.
Zhenjiang, Chinais found to comply with
DNV GL rules for classification – Ships**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Location classes:****Temperature B****Humidity B****Vibration A****EMC A****Enclosure Required protection according to DNV GL Rules shall be provided upon installation onboard**Issued at **Hamburg** on **2018-04-19**This Certificate is valid until **2023-04-18**.for **DNV GL**DNV GL local station: **Nanjing**Approval Engineer: **Dariusz Lesniewski**

Joannis Papanuskas
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

SaierNico Integrated Alarm, Monitoring and Control System SIAS-03

System main design features:

- System hardware scalable
- Network redundancy (dual network topology)
Network protocols: Ethernet TCP/IP, Profibus-DP, CANBUS
- Redundant power supply topology

System main functionalities:

- Alarm and Monitoring (AMS)
- Valve Control
- Pump Control
- Fan Control
- Tank Level Measurement
- Engineer Alarm System (EAS)

System components (configurable):

Equipment Name	Type	Manufacturer
Power Unit / UPS	SP3K	APC
Power Unit / UPS	5PX	EATON
UPS Battery	M2AL	Schneider
DC Filter	DNF211A10/20	CHANGZHOU DUOJI
AC Filter	NF211B10/20)	CHANGZHOU DUOJI
Switching Power Supply	MW SDR-480-24	Mean Well Enterprises
Bridge Cells Module	CP DM 10/20	Weidmüller
Insulation Tester	YT-ZBKΩ DV24V	YUTIAN
Display	YT-190CS	YUTIAN
Display	YT-151CS	YUTIAN
Display	YT-270CQ	YUTIAN
Operation Station	HP Z240 SFF	Hewlett Packard
Ethernet Switch	MOXA 408A	MOXA
Extended Alarm Panel	F007 / F010	FLEXEM
Extended Alarm Panel	FE4150X	FLEXEM
DZT-2 CAN to Profibus/CanOpen/Modbus TCP	S8039-07	SaierNico
MTTR-2 CAN/Modbus RTU to Modbus TCP	S8029-10	SaierNico
AI Module (16-ch)	S8010-16	SaierNico
AI Module (16-ch) – High Speed	S8011-16	SaierNico
RTD Input Module (8-ch)	S8015-8	SaierNico
AO Module (8-ch)	S8013-08	SaierNico
DIO Module (16-ch/16-ch)	S8002-32	SaierNico
DI Module (32-ch)	S8000-32	SaierNico
DO Module (24-ch)	S8003-24	SaierNico
Counter Module	S8004-08	SaierNico
PLC CPU	PM 573	ABB
PLC Base	TB511-ETH	ABB
CANOpen Module	CM578-CN	ABB
PLC Battery	TA521	ABB
PLC CPU	CPU1214C	Siemens
Profibus-DP Master Station	CM1243-5	Siemens
PLC CPU/TCP Communication Coupler	MPAX-5620 ¹	Advantech
TCP Communication Module	MPAX-5070 ¹	Advantech
RTD Input Module (8-ch)	MPAX-5013 ¹	Advantech
AI Module (12-ch)	MPAX-5017 ¹	Advantech
AI Module (12-ch) - High Speed	MPAX-5017H ¹	Advantech

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TC Input Module (12-ch)	MPAX-5018 ¹	Advantech
AO Module (8-ch)	MPAX-5028 ¹	Advantech
Counter/Frequency DIO Module (4/8-ch)	MPAX-5080 ¹	Advantech
DIO Module (24-ch)	MPAX-5045 ¹	Advantech
DI Module (24-ch)	MPAX-5040 ¹	Advantech
DO Module	MPAX-5046 ¹	Advantech
Backplane Module	MPAX-5002/2L ¹	Advantech
Backplane Module	MPAX-5001 ¹	Advantech
Input Connect Terminal	SNA-MPAX-8RTD	SaierNico
Input Connect Terminal	SNA-MPAX-12AI	SaierNico
Input Connect Terminal	SNA-MPAX-8AO	SaierNico
Input Connect Terminal	SNA-MPAX-12DI	SaierNico
Input Connect Terminal	SNA-MPAX-12DO	SaierNico
Metal Keyboard Ball	SPC412AG-B10-A01	SUNSON

System software

Work Station	OS Windows Embedded Win7	SP1
	Application Software	V3.0.0
	HMI	V3.0.X
PLC	Firmware SIMATIC S7-1200	V13
	Firmware ABB AC500	V2.3.0
	Firmware Advantech MPAX-5620	V4.081
	Application Software	V3.0.0
Acquisition Transmission System	Firmware	V1.0
External Alarm Panel	Application Software	V3.0.0

Approval conditions

The following documentation of the actual application is to be submitted for approval in each case:

- Reference to this Type Approval Certificate
- Functional description
- System block diagram
- Power supply arrangement
- List of control and monitored points
- Test program for certification

The current software numbers and versions are listed in document "Software Change Handling Procedure, Chapter Software Config List, Doc. ID: SNC-TA-DNVGL-008, Rev. B".

When the type approved software is revised (affecting all future deliveries) DNV GL is to be informed by forwarding updated software version documentation. If the changes are judged to affect functionality for which rule requirements apply a new functional type test may be required and the certificate may have to be renewed to identify the new software version.

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 before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Application software control

All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV GL for evaluation and approval before implemented on board.

Application/Limitation

(¹) Advantech PLC-Series moduels only with a valid Type Approval Certificate.

Type Approval documentation

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Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

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