

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Control and Monitoring System**with type designation(s)
Vista Automation SystemIssued to
maresystems GmbH
Hamburg, Germanyis 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.****Environmental Classes: see page 2.**Issued at **Hamburg** on **2018-08-24**for **DNV GL**This Certificate is valid until **2020-04-17**.DNV GL local station: **Hamburg**Approval Engineer: **Jens Dietrich**

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

System components:

Prod. Name	Prod. description	Prod.no.	Temp.	Humidity	Vibration	EMC	Encl.
F802	SMU-Substation Management Unit	F802	B	B	A	B	*
F803	SMU-Substation Management Unitv	F803	B	B	A	A	*
A218	Interface Converter	A218	B	B	A	B	*
DAD	Data Acquisition Display, 128 LED	A205	B	B	A	B	*
DAD	Liquid Crystal Diode Display +64 LEDs	A206	B	B	A	B	*
RCP/RCD	Remote Panels / Displays	F504, F505, F506	B	B	A	B	*
PCP	10.4" TFT Process Control Panel	F507001, rev.A	B	B	A	B	*
PCP	10.4" TFT Process Control Panel	F507001, rev.B	B	B	A	B	*
VBI-1	1-Channel Fieldbus Converter	F403	B	B	A	B	*
VBI-5	5-Channel Fieldbus Converter	F401	B	B	A	B	*
VBI-6	6-Channel Fieldbus Converter	F404	B	B	A	B	*
XAS	Extension Alarm Panel	F503	B	B	A	B	*
XAS-X	Extension Alarm System XAS Distribution Board	F902 A002A	B	B	A	B	*
PPI	Parallel Printer Interface Node	F601	B	B	A	B	*
	OKI ML280	D701	B	B	A	B	*
	Ethernet Switch AT-FS700	D903	B	B	A	B	*
	Keyboard and Trackball	D502	B	B	A	B	*
UPS	Uninterruptible Power Supply	UPS700	B	B	A	B	*
ACI-6	Bus node, 6 input channels: 0-25mA	F101	B	B	B	B	*
API-6	Bus node, 6 input channels: PT100	F102	B	B	B	B	*
ATI-6	Bus node, 6 input channels: Thermocouple	F103	B	B	B	B	*
DVI-24	Bus node, 24 Binary Voltage Inputs	F104	B	B	A	B	*
DCI-24	Bus node, 24 Binary Contact Inputs NC/NO	F105	B	B	B	B	*
DCO8	Bus node, 8 Relay contact outputs	F201	B	B	A	B	*
DCO16	Bus node, 16 Relay contact outputs	F203	B	B	A	B	*
ACO8	Bus node, 8 analogue outputs, 0-25mA	F202	B	B	A	B	*
RSI	RS232 Signalling Interface		B	B	A	B	*
SCN	Slave Clock Node	F402	B	B	A	B	*

ACI-6, API-6, ATI-6, DCI-24, ACO8 and DCO16 also in version Plus (with DC/DC-converter) and Red (with additional field bus interface).

Compass safe distance: Minimum 5m.

Application/Limitation

This Type Approval covers hardware and basic design principles with following features:

Operator Workstation:

- Managing of up to 8192 I/O channels from up to 16 substations
 - Intuitively operation and monitoring of the process via keyboard and trackball
- Graphical representation of:
- Alarms, alarm history lists, list of non-reset alarms
 - Blocking list, list from faded out alarms (e.g. sensor failure)
 - Pre-configured trend pages
 - Control permission handling to assign different user rights
 - Parameter changing e.g. alarm limits, fade in/out, alarm group (e.g. for XAS panel), alarm delay (rise/fall time)
 - Exhaust gas temperature, exhaust gas average deviation with slowdown function
 - System diagnosis list for communication error and hardware failure;

SMU/Bus Nodes:

- Managing of up to 512 I/O-channels per substation
- Collecting, preparing, indicating and providing of sensor data
- Alarm groups, blocking groups and channel groups
- Detecting, indicating and reporting of exceeded limits or sensor failures
- Analogue mean value deviation calculation and indication
- Measuring point parameter changing
- Alarm and journal printer interface with buffer for 100 alarms

XAS

- Extended alarm indication on bridge and cabins, alarmlist of the last 10 alarms
- Selection of duty engineer, engineer call, independent fire alarm signaling

With reference to DNV GL Rules for Classification of Ships Pt.4 Ch.9, the documentation listed below is required to be submitted for approval to DNV GL for each application:

- Reference to this type approval certificate
- Reference to valid type approval certificates for other hardware/third party equipment, alternatively datasheets of similar information documenting compliance with environmental requirements in DNV GL Pt.4 Ch.9 Sec.5 [2]
- Equipment list
- System block diagram/topology drawing
- Power supply arrangement (may be part of the system block diagram)
- Functional description
- List of controlled and monitored points (I/O list, including data transferred on communication links)
- Test program for product certification
- For integrated systems a functional failure analysis covering network including a procedure for the test and verification.

Product certificate

Each delivery of the application system is to be certified according to DNV GL 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 following clause for application software control will be in force:

Clause for application software control

All changes in software are to be recorded. 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 and possibly tested before being installed in the computer onboard.

Job Id: **262.1-028739-1**
Certificate No: **TAA00001TT**

Type Approval documentation

Test reports: CE-Cert 404.022.xx, 2004; IABG P340 2222-13 TA 22-1, dated 2004-05-06; Schwille no. 1980, dated 2004-04-07; System documentation PCB circuit diagrams; SW-Questionnaire RC3 dated 2005-03-17; Add. reports Raytheon ET04-04-06, GEDIS EMV005306e.
Additional test reports: EMC Testreport 24/17, rev.1; Delphi VL2010001JCK.115.02-01; Raytheon ET55-11-09; ET54-11-09, ET53-11-09; N. Eichler, 09-005, 09-006, 09-007, 09-008, 09-009, 09-010, GEDIS AB2258. I/O update 2011: Eichler 11-004, 11-006, 11-008, 11-010; ET-11-05-11, ET-12-05-11, ET-13-05-11, ET-14-05-11; GEDIS AB2591-001, AB2571-001/002.
Assessment Report, DNV GL Hamburg, dated 2018-08-23.

Tests carried out

Applicable tests according to:

- GL Guidelines for the performance of Type Approvals VI-7-2, Edition 2012;
- GL Regulations for the Use of Computer and Computer Systems.

Marking of product

Components are marked with product name and product number as listed in the table above.

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 renewal of this certificate.

END OF CERTIFICATE