DNV·GL

Certificate No:
TAA00000ZN

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Automatic Telephone, Public Address, General Alarm Systems

with type designation(s)
VINGTOR ACM System

Issued to
Zenitel Norway AS
HORTEN, Norway

is found to comply with
DNV GL rules for classification – Ships
IMO A.1021(26) Code on alerts and indicators (2009)
IMO MSC Circ 808
LSA Code VII 7.2

Application :

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

This Certificate is valid until **2018-06-30**.

Issued at **Høvik** on **2017-02-14**
DNV GL local station: **Sandefjord** for **DNV GL**

Approval Engineer: **Frederik Tore Elter**

Jan Tore Grimsrud
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

Vingtor ACM Automatic Telephone, Handsfree Two-Way Voice Communication, Public Address and General alarm system, consisting of the below equipment [1]:

The VINGTOR ACM family includes the following main system racks, to be installed in a protected environment:

Intercom exchange	Order number	Software version	Comment
AlphaCom XE7	ACM-M-D-V2	Version 11.5.3.x	
AlphaCom XE7	ACM-M-A-V2	Version 11.5.3.x	Same as ACM-M-D, but only equipped with line cards for analogue telephones and PA call stations
AlphaCom XE20	ACM-48-V10	Version 11.5.3.x	
AlphaCom XE26	ACM-144-V10	Version 11.5.3.x	
AlphaCom XE26	AACM-144-V10	Version 11.5.3.x	Same as ACM-144-V10 and with extra power supply and terminal board

ACM Field Equipment

Equipment type	Model	Environment
Flush (console) mount intercom, PA Call Station/Talk Back Station	CRM-V	Protected *2)
Handset units for flush mount intercom	CRM-V-HS	Protected *2)
Gooseneck unit for flush mount intercom	CRM-V-GN	Protected *2)
Direct access key panel for flush mount intercom	CRM-V-DAK48	Protected
Headset solution for flush intercom	CRM-VH	Protected *2)
Handheld microphone	EMMAR-1H	Protected *2)
Handheld microphone with noise suppression	ETC-577B	Protected *2)
Wall mount intercom, Talk Back Stations	VMP-503 VMP-530	Exposed Exposed
Handset units for wall mount intercom	VMP-211 VMP-250	Exposed Exposed
Headset units for wall mount intercom	VMP-36-PEL VMP-36-PELP	Exposed Exposed
Throat microphone for headset	MT9	Exposed
Portable intercom units	VMP-503PA VMP-503PA/15	Exposed Exposed
Handheld microphones	P-66-VMP P-66-VMP/10 P-66-VMP/25	Exposed Exposed Exposed
EX intercom	1007095000	Exposed
Desktop intercom	1008001000 1008001100 VMP-D619 VMP-619	Protected *2) Protected *2) Protected Protected
Desktop analogue telephone	DT-800M	Protected
VAF-1 Flush (console) mount analogue telephone, PA Call Station	VAF-1	Protected
Wall mount analogue telephone	HSB-03	Exposed

[1] Actual configuration may vary based on requirements for individual installations. Only modules listed in certificate are allowed for installation.

Equipment type	**Model**	**Environment**
Handset for wall mount analogue telephone	HAS-3 HAS-3WT	Exposed Exposed
Headset for wall mount analogue telephone	P-MT7	Exposed
Heavy duty analogue telephone	KNSP-09 KNSP-01	Exposed Exposed
EX analogue telephone	DA24 DA24ID DA24H	Exposed Exposed Exposed
Speakers (20 Ohm)	DSP-15EExmN VML-1520	Exposed *2) Exposed *2)
Turbine series intercom stations - TCAS =Analogue interface - TCIS = IP interface - TFIE = Industrial, IP interface - TFIX = Ex version, analogue interface Note : The use of "*x*" in Model identifies variants of the products, where x is in the range 1-6	TCAS-*x* TCIS-*x* TFIE-*x* TFIX-*x*	Exposed Exposed *2) Exposed *2) Exposed *2)
Turbine IP station/ amplifier/ interface kit Note: Where x relates to encapsulation type	TKIS-x TKIE-x	Protected *2) Protected *2)
Connection board with relays for Turbine/Exigo Industrial	TA-10	Protected*) *2)
10m cable and pluggbox with PTT for industrial headset	TA-22b	Exposed *2)
Flowire - Ethernet converters	FCDC1 FCDC2	Protected *2) Protected *2)
Power supplies for Flowire	Flowire 120 Flowire 250 Flowire Ex 120 Flowire Ex 250	Protected *1) *2) Protected *1) *2) Protected *1) *2) Protected *1) *2)
Industrial handset for Turbine with PTT	TA-23	Exposed *2)
Exigo Handheld Industrial Microphone, Compact	EMMAI-2H	Exposed *2)
Exigo Handheld Industrial Ex Microphone, 1 Button	EMMAX-1H	Exposed *2)
Ex Approved Headset, Pluggable	AK5850xx	Exposed
Ex Approved Cable for Headset with PTT	TAX-2b	Exposed *2)
Ex Approved Handset with PTT, Unterminated	TAX-3	Exposed
Speakers with transformer	CL-200T VLS-15T/F VLS-30T/F DSP-15EExmNT	Protected Exposed Exposed Exposed
Network loudspeakers	ELSII-10H ELSIR-10C	Protected *2) Exposed *2)
Signal unit/lamp Note: The use of "*x*" in Model identifies color variants of the products.	EHS-24x EHS-220x EHS-110x BLK5-24x BLK5-230x BLK5-115x PD2100AC	Exposed Exposed Exposed Exposed Exposed Exposed Exposed

Equipment type	**Model**	**Environment**
Signal unit/buzzer	A-100 A-100AC HB-105 HB-90	Exposed Exposed Exposed Exposed
Signal unit/lamp and buzzer Note: The use of *"X"* in Model identifies variants of the products, e.g. different colours and supply voltages. *X* can be more than one digit/character.	SON-16*X*-*X* AL-100*X* AL-105*X*	Exposed Exposed Exposed
Watertight relay box	CRB-7 IRR-3	Exposed Exposed
Watertight connection box	CD-4 CD-7-VMP SB01 M217	Exposed Exposed Exposed Exposed
Indoor connection boxes	PT-625A 1009800100	Protected Protected

*1) May be used in an exposed environment when mounted in TFIE intercom stations or EAPII access panels.
*2) Main station and station accessories supporting Pulse mode without Alphacom exchange

Equipment type		**Model**	**Environment**
Access Panels	Exigo Call Panel, PTT Button, Pluggable Microphone,Ethernet	ECPIR-P	Protected
	Exigo Call Panel, PTT + 3 Buttons, Pluggable Microphone, Ethernet	ECPIR-3P	Protected
	Exigo Alarm Panel, 8 Buttons, Ethernet	EAPIR-8	Protected
	Exigo Button Expansion Module, 8 Buttons	EBMDR-8	Protected
	Exigo Industrial Access Panel, 1 Button, Ethernet	EAPII-1	Exposed
	Exigo Industrial Access Panel, 6 Buttons, Ethernet	EAPII-6	Exposed
	Exigo Industrial Ex Access Panel, 1 Button, Flowire	EAPFX-1	Exposed
	Exigo Industrial Ex Access Panel, 6 Buttons, Flowire	EAPFX-6	Exposed
Mounting cabinet		PLM-32 PLM-43 PLM-54 76R1005 76R1007 WCAB-1005 WCAB-1010	Exposed Exposed Exposed Exposed Exposed Exposed Exposed
Network Equipment	Data switch kit with power line filter	2960+24PC-L/DNV ProCurve 2620-24/DNV	Protected Protected
	Data switch	DNV6250-P24-EU DNV6250-P48-EU	Protected Protected

Equipment type		Model	Environment
	Data switch for DIN rail mounting	eCON2050BA eCON3080BTA EDS-405A EDS-P510 IE-3000-4TC IE-3000-8TC IE-3000-4TC-E IE-3000-8TC-E	Protected Protected Protected Protected Protected Protected Protected Protected
	Dataswitch extension modules DIN rail	IEM-3000-8TM IEM-3000-4SM IEM-3000-8SM IEM-3000-4PC IEM-3000-4PC-4TC	Protected Protected Protected Protected Protected Protected
	Router with power line filter	C2911/DNV	Protected
	Fibre interface	GLC-SX-MMD J4858C	Protected Protected
	Injector sets	INJKIT-NOP INJKIT-PSU	Protected Protected
UHF	Portable two way radios MotoTrbo DP4XXXe for UHF on-board	DP4400e DP4401e DP4600e DP4601e DP4800e DP4801e	Portable
	Mobile two way radios MotoTrbo DM4XXXe for UHF on-board	DM4400e DM4401e DM4600e DM4601e	Protected
	MotoTrbo SLR5500 Repeater for UHF on-board	SLR5500	Protected
	Heavy Duty Headset for DP4xxxe	PMLN5275C	
	Heavy Duty Headset for DP4xxxe	PMLN6853A	
	Headset for DP4xxxe	MT53H79A-77	
	Heavy Duty Headset for DP4xxxe	A-COM TRBO	
	Body Switch for Handsfree Operation of DP4xxxe	C-C440	
	Headset with Bone Microphone for DP4xxxe	HC-1	
	Foot Switch	254-2348	
	Microphone for DM4xxxe	DM8320	

Application/Limitation

Application:

The system can be used as:

1. Automatic telephone system,
2. Public Address system (combined with SPA V2 or Exigo system with the same application and limitations as specified in the type approval of that system),
3. General Alarm system (combined with SPA V2 or Exigo system with the same application and limitations as specified in the type approval of that system),
4. Talk Back system as hands free two-way voice communication system as required by DNV Nautical safety rules.
5. ACM Pulse automatic telephone, IP intercom for independent installation without external call server.
6. Fixed and handheld UHF communication system; interfaced to UHF on-board Base Station SLR5500 and ACM System for interface of PA.

Limitations:

1. When used as combined PA/GA system together with SPA V2 or Exigo system, two independent loops are needed in all public areas. The ACM intercom units can provide PA/GA coverage for one of the loops.
2. When used as Public Address system onboard passenger vessels, the SPA system shall be duplicated.
3. Network / network equipment/VLAN solution shall be in accordance with Zentiel's specifications in "Data Network Guideline for Ships – VINGTOR ACM Solution, Doc. No. A100K10649". When such subsystems/components are not included in Zenitel's delivery, Zenitel shall evaluate these subsystems/components towards above mentioned specification and include the relevant documents in the system document package delivered for each installation.
4. Network /network equipment/ VLAN solution shall be in compliance with DNVGL-CG-0339 or IEC60945.
5. Local muting of the loudspeakers near call stations shall be available.
6. Wireless and DECT are not covered by type approval. As optional functionalities any subunits used for Wireless and DECT communication near bridge shall comply with IEC60945.
7. Any Ex-equipment (equipment to be used in areas with explosive atmosphere) listed in this certificate are subject to separate Ex- approvals.
8. ACM Pulse components as indicated in above product description may be configured and installed to comply with DNV GL rules for Automatic Telephone systems. Installation to be in accordance to installation documentation.
9. UHF listed may be fitted with headsets and microphones for hands free communication. Installation to be in accordance to installation documentation. UHF repeater SLR5500 may provide dual LAN communication link between units, and be interfaced to ACM for PA announcement on dedicated channels.

Tests carried out

- Performance testing: DNVGL-RU-SHIP Part 6 Chapter 3 - for two-way voice communication, Public Address, General Alarm and hands free two-way voice communication.
- Environmental testing: IEC60945 (2002)

Marking of product

The Manufacturer and Type Designation to be applied to the equipment in a clearly visible location. In addition the equipment shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage.

Periodical assessment

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.
The scope of the periodical/renewal assessment is to verify that the production quality conditions stipulated for the type approval are complied with and that no alterations are made to the product design or its components and/or materials without appraisal by the Society.

Type Approval documentation

DNV GL No	Drawing No	Title	Rev.
163	A100K11711	Manual: ACM System - Marine UHF	Revision 1.0
162	A100K11720	Report: ACM Pulse Test Specification Performance Test DNV	Version 1.0 (signed)
161	A100K11700	Report: Performance Test procedure DNV GL Approval of Upgrading ACM System Including UHF On-board Radio Capabilities	Rev -01 (signed)

DNV GL No	Drawing No	Title	Rev.
149	T208091-1 - DANAK 1914910	Report: Delta IEC60945 Test of Data Networking Equipment according to Marine specifications - Zenitel Norway AS	2015-01-13
147	A100K11065	Manual: VINGTOR Pulse Getting Started	
145	30-12-2016	Prosedure: ACM Pulse Test Specification Performance Test DNV	rev1.0
144	A100K11700	Prosedure: MotoTurbo DNV-GL Performance Test Procedure	rev03
142	U161176E1	Report Phoenix TestLab: Test report IEC60945 Environmental testing DP4XXX (DP4801)	Ver. 2
141	U160035	Report Phoenix TestLab: Test report IEC60945 environmental tests for UHF SLR 5500	
140	U113486E1	Report Phoenix TestLab: Test report safety and environmental (IEC 60945) testing of DM4XXX (DM4601)	
136	F161176E1 Annex A	Report Phoenix TestLab: Photos from IEC 60945 and ETSI 300 720-1 testing of DP4XXX	
135	F161176E1	Report Phoenix TestLab: IEC 60945 Report from EMC testing acc - DP4801e	
134	F160035E2 Annex A	Report Phoenix TestLab: Annex A Photos from IEC60945 testing of SLR5500	2nd edition
133	F160035E2	Report Phoenix TestLab: Test report IEC60945 for SLR5500	2nd edition
129	E113486E1[1]	Report Phoenix TestLab: Test report IEC 60945 for DM4XXX (DM4601) Fixed mobile UHF radio	
126	2011-10-10	Report BSH: IEC60945 Compass Safe Distance - DM4601-UHF LP	
125	2016-02-10	Report BSH: IEC60945 Compass Safe Distance - Motorola SLR 5500 R	
124	FF113486E1	Report Phoenix TestLab: Annex A Photos from safety and environmental (IEC 60945) testing of DM4XXX (Fixe type)	
123	2016-09-12	Report BSH: IEC60945 Compass Safe Distance - UHF DP4801e	
89		SLR5500_BSIM_EN	
71	TAA000003W	TAA000003W Rev 1- Vingtor Exigo	Rev 1
57	U160035E1	Report: EN 60068 -, EN 60945 , Phoenix Testlab, Motorola SLR 5500 Filter FMT05B03	
55		Report: EN 60945 Phoenix Testlab, UHF on-board vessels repeater SLR5500 with line filter FMT05FB03 Annex A	
54	F160035E2	Report: EN 60945 Phoenix Testlab, UHF on-board vessels repeater SLR5500 with line filter FMT05FB03	2nd eddition
53		Report: IEC 60945 Phoenix Testlab, UHF on-board vessels repeater SLR5500 with line filter FMT05FB03 Annex B	
50	933	Certificate: BSH, Compass safe distance test IEC60945 11.2 - Motorola SLR 5500	2nd version
49	U161176E1	Report: EN 60068 -, EN 60945 , Phoenix Testlab, Motorola DP4801e	
48		Report: EN 60945, Phoenix Testlab, Motorola DP4801e, Annex	

DNV GL No	Drawing No	Title	Rev.
47	F161176E1	Report: EN 60945, Phoenix Testlab, Motorola DP4801e	
46	954	Certificate: BSH, Compass safe distance test IEC60945 11.2 - Motorola DP4801e	
42		Datasheet: Procom PRO-COM450-HDAR-2/... 2-Channel 19	
41		Datasheet: Procom PRO-AR..G, 19" Rack-Mountable Receiver Multicoupler series for the VHF through low UHF bands 50 MHz - 960 MHz.	
38	69 280-90 HH	Certificate: GL, Rittal KL, AE, AK, AS, AP and EB cabinets	2009-07-24
35	ACM 11.2.3.10	Description: Zenitel, ACM 11.2 Release notes	2014-06-12
33	E14084.00	Report: Nemko, EMC and environmental test report for Turbine Ex intercom	2014-06-12
32	E14083.00	Report: Nemko, EMC and environmental test report for Turbine Industrial intercom	2014-06-11
31		Report: Zenitel, VINGTOR Exigo performance test incl ACM integration and Turbine intercom stations	2014-06-01
29	GR 14-001	Report: Zenitel, Turbine TCAS-x - EN60945 Compliance	2014-05-28
28	20047	Report: Applica, Environmental test report for Turbine Compact	0
27	2013-3236	Report: DNV, EMC test report for Turbine Compact	0
26	2010-3593	Report: DNV, Environmental Testing of Vingtor ACM Intercom System	1
23		Report: Zenitel, Performance Test DNV Type Approval of upgraded ACM System including IP capabilities	2010-20-12 V 1.1
22	A100K10792	Manual: Stentofon, ACM Emergency Functions	V2.0
21	139500	Report: Nemko, EMC test report for Power Supply unit	2010-06-07
18	97-1341	Report: DNV, EMC and environmental tests for Vingtor ACM-48 intercom system	1
17	A100K 10369	Manual: Steenhans, SPA-V2 Public Address and General Alarm System	1.11, 20. April 2008
16	A100K10649	Manual: Vingtor, Data Network Guidelines for Ships - VINGTOR ACM Solution	1.0, 03 Feb. 2010
14	A100K10647	Manual: Stentofon, ACM family, System overview and installation	V2.0
13	A100K10430	Manual: Vingtor, Technical manual ACM Telephone System ACM-M-A-V2	V .1.0
12	96-1197	Report: DNV, EMC testing of Vingtor VMP/ACM Intercom System for Marine Use	1997-01-29
11	GR-YYYYxx	Report: Zenitel, Technical Report ACM-system– IEC 60945 Compliance	4th, 15.11.2009
10	E06067.00	Report: Nemko, EMC test report for AlphaCom E series exchanges	1
9	2000-1366	Report: DNV, EMC and environmental test report for AlphaCom M	1
8	106916/04	Report: Nemko, EMC test report for IP Intercom Station	2008-06-23
7	E07219.00	Report: Nemko, Maritime exchange cabinet ACM 144,	1

DNV GL No	Drawing No	Title	Rev.
		Radiated disturbance 1-2GHz and Radiated RF field immunity 1-2GHz	
6	E07218.00	Report: Nemko, Maritime exchange cabinet ACM 48, Radiated disturbance 1-2GHz and Radiated RF field immunity 1-2GHz	1