DNV·GL

Certificate No:
MEDB00002ZE

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of the Kingdom of Norway.

This is to certify:

That the Speed and distance measuring equipment (SDME)

with type designation(s)
DL1, DL1-Multi, DL2, DL21

Issued to
Skipper Electronics AS
Oslo, Norway

is found to comply with the requirements in the following Regulations/Standards:
Regulation **(EU) 2017/306,**
item No. MED/4.7. SOLAS 74 as amended, Regulations V/18, V/19 & X/3, IMO Res. A.694(17), IMO Res. A.824(19), IMO Res. MSC.36(63), IMO Res. MSC.97(73), IMO Res. MSC.191(79), IMO Res. MSC.302(87)

Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2020-05-05**.

Issued at **Høvik** on **2017-06-23**

DNV GL local station:
Oslo Maritime and CAP

Approval Engineer:
Steinar Kristensen

Notified Body
No.: **0575**

for **DNV GL AS**

Vidar Dolonen
Head of Notified Body

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of Certificates of Conformity for Marine Equipment" signed 17 October 2005.

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.
This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.
Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

NORWEGIAN ACCREDITATION PROD 019

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Product description

- DL1 and DL1-Multi are Single Axis Speed Logs for measurement of Speed Through Water (STW).
- DL2 is a Dual Axis Speed log with Graphic Touch Display for measurement of Speed Through Water and Speed Over Ground (SOG).
- DL21 ia a Combined DL2 Dual Axis Speed Log and DL1-Multi Single Axis Speed Log.

DL1, DL1-Multi, DL2 and DL21 are available in the following configurations:

DL1 Single Axis Speed Log:

Unit	Description	Type/part no.	SW ver.	Comment	Location
Display Units (alternatives)	Compact display	CD401D1-XX	1.*yy*		Exposed
	Graphical display unit for speed logs	EML224N-XX	1.*yy.yy*		Protected
Electronic Unit	Electronic Unit w/interface connections	JB60XX-XX	1.*yy*	Includes interfaces: 1xNMEA In 2x NMEA Out 2x AUX Out (pulse) 1x Relay Out (alarm) 1x Dimming +/- 1x Alarm Reset In 2x AUX Out	Protected

DL1-Multi Single Axis Speed Log:

Unit	Description	Type/part no.	SW ver.	Comment	Location
Display Units (alternatives)	Cabled control unit for speed logs	CD401CU-XX	1.*yy*		Exposed
	Control unit for speed logs	CD402CU-XX	1.*yy.yy*	Includes interface: 1xLAN	Protected
Electronic Unit	Electronic Unit w/interface connections	JB70D1-XX	1.*yy*	Includes interfaces: 1x NMEA In 4x NMEA Out 1x LAN 2x AUX In 2x AUX Out 1x Relay Out 2x Analgoue Out (Voltage/ current)	Protected

DL1 and DL1-Multi sensors and repeaters:

Unit	Description	Type/part no.	SW ver.	Comment	Location
Log Sensors for 60mm fittings	715 kHz sensor	DL1SZZ-XX	1.*yy*		Submerged
	555 kHz sensor	DL1S5ZZ-XX	1.*yy*		Submerged
Repeater Units	Repeater	IR300 Speed	1.*yy*	Option	Exposed
	Cabled speed repeater	CD401LR-XX	1.*yy*	Option	Exposed
	Cabled multirepeater	CD401MR-XX	1.*yy*	Option	Exposed

DL2 Dual Axis Speed Log:

Unit	Description	Type/part no.	SW ver.	Comment	Location
Graphic Touch Display Unit	Panel PC with 9" resistive touch display	CU-M001-XX	1.0.*yy* *or* 1.1.*yy*		Protected
Electronic Unit	Electronic Unit for DL2 and combined DL2 and DL1 doppler speed logs	JB70D2-XX	1.0.*yy* or 1.1.*yy*	Includes interfaces: 2xNMEA In 4x NMEA Out 2x LAN 1x AUX In 2x AUX Out 1x Relay out (alarm)	Protected

DL2 sensors and repeaters:

Unit	Description	Type/part no.	SW ver.	Comment	Location
Log Sensor for DL2 for 100mm fittings	DL2 dual axis STW and SOG sensor	DL2SZZ-XX	2.*yy* or 3.*yy*		Submerged
Repeater Units	Speed distance repeater IR300 with docking	ENIR300PD-XX	1.*yy*	Option	Exposed
	Cabled speed repeater	CD401LR-XX	1.*yy*	Option	Exposed
	Cabled multirepeater	CD401MR-XX	1.*yy*	Option	Exposed

DL21 Combined DL2 Dual Axis and DL1-Multi Single Axis Speed Log:

Unit	Description	Type/part no.	SW ver.	Comment	Location
Display Units	Display Units as specified for DL1-Multi				See DL1-Multi
	Graphic Touch Display Unit as specified for DL2				Protected
Electronic Unit	Electronic Unit with Interface connection	JB70D21-XX, consisting of electronics for DL1-Multi and DL2	See DL1-Multi and DL2	See DL1-Multi and DL2	Protected

DL21 sensors and repeaters:

Sensors	Description	Type/part no.	SW ver.	Comment	Location
Log Sensor for DL21 for 100mm Sea Valve	Combined DL1 and DL2 sensor	DL21SZZ-XXA	See DL1-Multi and DL2		Submerged
Repeater Units	Repeater units as specified for DL1-Multi and DL2				See DL1-Multi and DL2

where
yy is SW version build nbr
XX is OEM customer reference and version
ZZ is fitting/mounting bracket type

Location specifies the allowed location for the equipment according to IEC 60945 (2002)

Application/Limitation

An installation of DL21 fulfills the requirement in IMO Res. MSC.334(90) for ships required to carry speed logs for measuring of speed through the water and speed over the ground, where these speed logs shall be provided by two separate devices.

Tests carried out

- Environmental Tests: IEC 60945 (2002)
- Performance Tests: IEC 61023 (2007)
- Serial Interface Tests: IEC 61162-1 (2010), IEC 61162-2 (1998)*, IEC 61162-450 (2011)*
- Presentation of information: IEC 62288 (2014)

* for DL1-Multi, DL2 and DL21

Type Examination documentation

DNV GL No	Doc. ID	Rev.	Description
30		2017-06-09	Report: Skipper, Change of frequency for DL2/DL21 SDME
27	344.1-003886		Type Examination documentation for DL1 and DL1-Multi
25		2015-02-13	Report: Skipper, Performance test report for DL2 Dual Axis Speed log and DL21 Combined Dual Axis and Single Axis Speed log
24		2015-02-24	Report: Skipper, Sea test report for DL2/ DL1/ DL21
22	E14223.01	01	Report: Nemko, EMC and environmental test report for DL2 and DL21 speed sensors
21	DM-M003-SA	1723	Manual: Skipper, CU-M001 Panel PC 9inch touch display, User manual
3	DM-M006-SA	1424	Manual: Skipper, DL21 Installation Manual
2	DM-M002-SA	1723A	Manual: Skipper, DL2 Installation Manual
41*	DM-R004-SB	1.12	Manual: Skipper, CD401 LR Operation and Installation Manual
40*	Performance DL1, DL1 Multi and EML224	2013-10-03	Performance Test Report for DL1, DL1 Multi and EML224
34*		2013-10-03	Description: Skipper, Additional information for approval of DL1-Multi
33*	DM-M005-SA	1.50	Manual: Skipper, DL1-Multi User Manual
32*	DM-M004-SA	1.50	Manual: Skipper, DL1-Multi Installation manual
28*	DM-R001-SA	1.7	Manual: Skipper, IR300 Operation and Installation Manual
27*	E13222.00	00	Report: Nemko, EMC and environmental test report for CD402 and JB70D1
24*	DM-M001-SA	1.15	Manual: Skipper, EML224/DL1 Operation and installation manual
19*	EML224 - CD401(DNV)3	2008-04-24	Report: Skipper, Performance test report for EML224 with CD401 display
17*	CD 401 MR	2010-03-26	Report: Skipper, Performance test report for CD401MR multi repeater
16*	62288-EML224-DNV	2009-02-23	Report: Skipper, Operational tests for CD401 compact display
28	S-8070	2014-05-07	Certificate: DNV, Bottom penetration for Echo Sounder, Sonar or Log
11*	E07412.02	2011-10-06	Report: Nemko, EMC and environmental tests for CD401 compact display
9*	E13096.00	2013-05-15	Report: Nemko, Environmental test report for DL1SXX-XX doppler sensor
8*	E13094.00	2013-05-13	Report: Nemko, EMC Test report for DL1SXX-XX doppler sensor
5*	Sea test DL1	2013-04-25	Report: Skipper, Sea Tests- Performance test report for DL1

*) Documentation available on NPS folder 344.1-003886

Marking of product

The type designation and name and contact address of the manufacturer shall be affixed visibly, legibly and indelibly to the product. In addition the product shall be marked with serial number, safe distance to magnetic compass, power consumption and/or supply voltage