



Certificate No. 03-001821/031494

TYPE APPROVAL CERTIFICATE

This is to certify that this product complies with the Rules for the classification of ships, Part 1 - General requirements, Chapter 3 - Type approval of products.

TYPE AND DESCRIPTION OF PRODUCT:

ELECTRONIC VESSEL CONTROL SYSTEM – EVC 2.0

PCU	Powertrain Control Unit	IGW	Information Gateway
HCU	Helm Control Unit	PFM	Power Feed Module
SUS	Steering Unit Servo	SDM	Shutdown Module
HLU	Helm Lever Unit	IRS	Independent Rudder System
AKI	Analog Key Interface	VMM	Vessel Main Module
EKS	Electronic Key System	SU	Steering Unit
AD	Alarm Display 7"		Joystick
SG	Steering Gear Display 7" Info Display 2,5"		EVC Color Display 7"

MANUFACTURER:

AB Volvo Penta
SE 405 08 Göteborg
SWEDEN

THE PRODUCT MEETS FOLLOWING RULES/REGULATIONS:

**Croatian Register of Shipping: Rules for the classification of ships,
Part 9. – Machinery, Part 13. – Automation**

IACS UR E10

FURTHER DETAILS OF THE PRODUCT AND CONDITIONS FOR CERTIFICATION ARE GIVEN OVERLEAF.

APPROVAL IS VALID UNTIL: **2025-07-06**

Place and date: **Split, 2021-07-06**

Seal

Marinko Popović, dipl.ing

NOTE: This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Croatian Register of Shipping of any modification or changes to the product in order to obtain a valid certificate.

DETAILED PRODUCT DESCRIPTION:

Electronic Vessel Control System EVC 2.0 (EVC2) without electronic steering is a complete vessel control and monitoring system for engine and transmission.

EVC2 system is comprised of following components:

Item	Part Number
PCU	
Powertrain Control Unit (PCU)	23030397
HCU	
Helm Control Unit (HCU) Stand alone, Twin	23002230
Control lever with integrated HCU units, Twin, Top Mounted	23070862
Control lever with integrated HCU units, Single, Top Mounted	23002239
HLU – Control Levers	
Control lever (HLU) Heavy duty control - twin, IB/IPS/IS	23794477
Control lever (HLU) Heavy duty control - twin, IB/IPS	23062615
Control lever (HLU) Heavy duty control - Single Inb	23816246
Control lever (HLU) Heavy duty control - Single AQ/IS	23794338
Control lever (HLU) Heavy duty control - Single AQ	23062589
Joystick	
Joystick deluxe IPS	23293100
Joystick HD	
Joystick deluxe IPS (Heavy Duty Controls)	23293102
EKS	
Electronic Key System, Twin (EKS)(IP67)	22499608
Analog Key Interface (AKI)	21656937
SUS	
Servo Unit Steering (SUS20)	23574557
Servo Unit Steering (SUS10)	23433933
Steering Wheel	
Steering Unit (SU) , twin	23362099
VMM	
VMM vessel main module	23308671
Display	
EVC Color Display 7" (IP67)	23874046
Alarm Display 7" (AD) (IP67)	23874048
Steering Gear Display 7" (SG)(IP67)	23874099
Info display 2,5"	22480957
Misc	
Generic Button Panel	22480958
Information Gateway (IGW)	23592027
Independent rudder angle sensor (IRS)	22394967
Power Feed Module (PFM)	21379671
Autopilot Gateway	3889760
IRS Display 3,5" XDi96	23834725
A-CAN interface	23834745

APPLICATION / LIMITATIONS:

System is applicable to the following engine range – **D8/D11/D13/D16**

Approved installation type is IPS or inboard in twin, triple or quad engine configuration.

TYPE APPROVAL DOCUMENTATION:

Documentation:

EVC-F FMEA, doc. D-001034 rev. A, dated 2019-06-12
FRS, Station Handling, EVC 2.0, doc. D-000974 rev. A, dated 2020-09-08
SRS, Electronic Vessel Control, doc. D000975 rev. B, dated 2020-09-08
Functional Requirement Specification HMI EVC, doc. D001040 rev. B, 2020-08-21
SAD/SRS IRS, doc. 210070 rev. 1.2, dated 2020-05-28
EVC system – Power supply distribution strategy for classified installations, doc. D001005 rev. E, dated 2020-08-24
EVC SW Quality Plan, doc. D001044 rev. C, dated 2019-09-02
System Architecture Description EVC System Generation EVC2, doc. D001033 rev. C, dated 2020-08-31
Alarm and Shutdown list, doc. 23432751 rev. 03
Design Verification Test Procedure for EVC 2, doc. SEM20_002 rev. A, dated 2020-08-31
Type Test Program EVC 2.0, doc. CL0875.3, dated 2020-11-18
Installation manual EVC 2.0, doc. 47712401, dated 2020-07
Workshop manual EVC2, doc 47711763, dated 2020-07
Operator's manual D8, D8/IPS, doc. 47712384, 47712384, dated 2020-08
Updates to TA EVC system, doc. D-000992 rev. A, dated 2020-09-07
Release note EVC E4 and EVC 2.0, doc. D-001091 rev. A, dated 2020-12-11

Test reports:

Compass safe distance test of Joystick DPS Deluxe, SP Test report 4P02620, dated 2014-04-28
Compass safe distance test of HLU TWIN IPS IS, SP Test report 6P05360-CSD, dated 2016-11-22
Compass safe distance test of EKS, SP Test report FX205883, dated 2012-03-27
Determination of compass safe distance for a magnetic and electric equip., SP Test report MTkPX00809-02, dated 2010-03-22
Compass safe distance test of ESIU, SKF Test report No. 27, dated 2007-10-30
EMC tests on EVC 7", SP Test report 6P01979, dated 2016-03-01
EMC testing of EVC 2.0 and EVC E, RISE Test report 2P03142-02, dated 2020-06-12
EMC test of EVC 2.0, TMHCU and PCU, RISE Test report 8P03169, dated 2019-03-13
EMC testing of SUS 10 – Steering unit for IPS10, RISE Test report 8P07420-P1, dated 2019-03-19
EMC test of Joystick DPS Deluxe, RISE Test report 4P02620E1, dated 2012-04-29
EMC testing of VMM Unit, RISE Test report 8P09521-E1, dated 2019-03-13
EMC testing of VMM Unit, RISE Test report 8P09521-P1, dated 2019-03-13
EMC testing of IGW – Information Gateway, RISE Test report 9P02189-E1, dated 2019-03-04
Testing of display according to parts of SS-EN 62288:2014, RISE Test report MTi9P08737, dated 2019-12-11
EMC test of IGW, PFM and XCU units to Volvo Penta EVC system, Delta Test report 618-20047-10-R0, dated 2018-04-26
EMC test of HLU, SP Test report 6P05360-E2, dated 2016-09-29
EMC test of a complete system, EVC-D1019, SP Test report FX001958, dated 2010-02-25
EMC test of EVC-D1019, SP Test report FX001958B, dated 2010-05-03
EMC test of EKS Twin rev R1D, SP Test report FX110628, dated 2012-02-10
Environmental Durability test of three Joysticks, SP Test report 5P08534, dated 2015-11-16
Environmental test of HLU, SP Test report 6P05572, dated 2016-09-01
Environmental Durability tests of PCU2, RISE Test report 7P07041-2, dated 2018-02-28
Environmental Durability tests of TMHCU, RISE Test report 7P07041-4, dated 2018-04-12
Environmental tests of SUS10, RISE Test report 7P08354, dated 2018-06-25
Environmental Durability tests of VMM, RISE Test report 8P07827-1, dated 2019-01-28
Mechanical test of CPACs units, RISE Test report 280829A, dated 2018-05-15
Climatic test of CPACs units, RISE Test report 282829B, dated 2018-05-15
Mechanical testing of SUS10, RISE Test report 280940, dated 2018-10-02
Environmental tests of EVC system, SP Test report PX00809_001, dated 2010-09-02
Salt mist test, SP Test report PX00809-04, dated 2010-05-26
E10 Type approval tests of two EKS, SP Test report PX17794:A, dated 2012-01-23
Environmental tests of two+four EKS, SP Test report PX17794:B, dated 2012-03-12
Environmental tests of EKS, SP Test report PX17794:C, dated 2012-03-30
Salt mist test, SP Test report PX17794-01, dated 2011-12-27
Environmental test report SUS20, CPAC Test report SUS20 rev. A, dated 2020-12-03
IEC 68-2-38 test of SUS10, RISE Test report 8P07765, dated 2018-10-16
Needle Flame Test according to IEC 60695-11-5, RISE Test report 2P00115-02, dated 2020-02-28
IEC 60695-11-5, Needle flame test of TM STHCU, RISE Test report 2P02600, dated 2020-06-23
IEC 60695-11-5, Needle flame test of NMEA2000/Easy Connect, RISE Test report 2P02600-1, dated 2020-06-23
IEC 60695-11-5, Needle flame test of VMM, RISE Test report 2P02600-2, dated 2020-06-23
IEC 60695-11-5, Needle flame test of PFM, RISE Test report 2P02600-3, dated 2020-06-23

Test reports:

IEC 60695-11-5, Needle flame test of Info display, RISE Test report 2P02600-4, dated 2020-06-23
IEC 60695-11-5, Needle flame test of GBP display, RISE Test report 2P02600-5, dated 2020-06-23
Needle Flame Test according to IEC 60695-11-5 of Molex buttonpad, RISE Test report 7P02028, dated 2017-04-04
Needle Flame Test according to IEC 60695-11-5 of eight items, SP Test report F908520, dated 2009-06-29
E10 Type approval tests of two PCU2, SP Test report PX10622:A, dated 2011-12-19
Needle Flame Test according to IEC 60695-11-5 on one EKS, SP Test report PX17794-02, dated 2011-12-07
IRS Transmitter Flame Retardant Deviation, doc. 212728-1.1, dated 2020-11-18
Classif. of degree of protection provided by enclosure of 7" display, SP Test report 4F014605:C, dated 2014-11-07
Classif. of degree of protection provided by enclosure of EKS, SP Test report 4F022662, dated 2014-11-21
Classif. of degree of protection provided by enclosure of TMHCU, SP Test report 4F025926, dated 2015-01-09
Classif. of degree of protection provided by enclosure of Joysticks, SP Test report 5F019264, dated 2015-12-04
Classif. of degree of protection provided by enclosure of SUS10, RISE Test report 7P02440-01:B rev. 1, dated 2017-05-15
Environmental durability tests of SMHCU, RISE Test report 7P07041-3, dated 2018-04-12
Environmental testing of Flexidisplay, doc. 10306656_QDO_000_AC rev. AC, dated 2014-11-20
Classification of degree of protection provided by enclosure of EVC 7" display, SP Test report 5F001278, dated 2015-02-18
Protection against accidental access to dangerous voltages of EVC display, SP Test report PX00809-01:A, dated 2010-04-23
Salt mist test of eight items, SP Test report PX00809-04, dated 2010-05-26

Drawings:

Control and monitoring system D8/D11/D13/D16 INB-TWIN 24045841 rev. 02
Control and monitoring system D8/D11/D13/D16 INB-TWIN EATS 24045558 rev. 02
Control and monitoring system D13/D16 INB-TRIPLE 24045911 rev. 02
Control and monitoring system D13/D16 INB-TRIPLE EATS 24045618 rev.02
Control and monitoring system D8/D11/D13 IPS-TWIN 24011534 rev. 01
Control and monitoring system D13 IPS-TWIN EATS 23979389 rev. 03
Control and monitoring system D8/D11/D13 IPS-TRIPLE 24044033 rev. 02
Control and monitoring system D13 IPS-TRIPLE EATS 23988580 rev. 03
Control and monitoring system D13 IPS-QUAD 24044579 rev. 02
Control and monitoring system D13 IPS-QUAD EATS 24010010 rev. 03

Witness test:

EVC 2.0 Type test according to CL0875.3, Krossholmen, Sweden, CRS witness 2021-12-17

MARKING OF PRODUCT:

In accordance with IEC60945 – Marking and identification (The Manufacturer and Type Designation of the product, serial number, date of manufacture, safe distance to magnetic compass, supply voltage, software version...).

CONDITIONS FOR CERTIFICATION:

Correct configuration and set up for each delivery to be tested during commissioning, after installation, under the supervision of a Society Surveyor.

All changes in hardware or 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 CRS for evaluation and approval.