DNV·GL

Certificate No:
TAA000003G

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Loading and unloading arrangement

with type designation(s)
Radio remote control base unit: MC-MB2-MBL

Issued to
Cavotec Micro-control AS
Hell, Norway

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

Radio remote control base unit for remote operation of winches/cranes.
Radio frequency band: 434.050-434.775 MHz or 2402.5-2478.5 MHz.

Location classes:

Temperature	**D**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**C / IP66**

This Certificate is valid until **2020-10-18**.

Issued at **Høvik** on **2015-10-19**

for **DNV GL**

DNV GL local station: **Trondheim**

Approval Engineer: **Ståle Sneen**

Odd Magne Nesvåg
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

Modular base unit for radio remote operation of winches/cranes. The base units connects wired or wirelessly to a terminal unit. The base units are designed for integration with an existing winch/crane control system.

Product code: MC-MB2-MBL-01 (10-30VDC supply, approved for nominal voltage 24VDC)

MC-MB2-MBL comprises the following modules:

MC-MB2-PWR	Power Module
MC-MB2-PM	Processor Module
MC-MB2-TCM	Terminal Communication Module
MC-MB2-CC	Field Bus Module
MC-MB2-SFR	Stop Function Module
MC-MB2-LCD	LCD Display Module
MC-MUS-LED	4 digit LED Module
MC-EX-BARRIER3	EX safety barrier

Radio frequency band:	434.050-434.775 MHz	2402.5-2478.5 MHz
Channel separation:	25 kHz	1 MHz
Channels:	30	77
Max. radiated power:	10 mW e.i.r.p.	10 mW e.i.r.p.

Approval conditions

For approvals related to class notations CRANE BARGE, CRANE VESSELS and CRANE, or when certification is required by the DNV GL Offshore Standard E101, the following documentation of the actual application is to be submitted for approval in each case:

- Reference to relevant Type Approval Certificates
- Functional description
- System block diagram
- User interface description
- Power supply arrangement (may be part of the System block diagram)
- List of control and monitored points
- Description of functions covered by software
- Test program for application software at manufacturer

The Type Approval covers hardware listed under Product description.

Product certificate

The control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate as specified in DNV Standard for Certification No. 2.22 "Lifting Appliances". For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After the certification the clause for application software control will be put into force.

Clause for application software control

All changes in 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 DNV GL for evaluation and approval.
Major changes in the software are to be approved before being installed in the computer.
A Certification of Application Functions may be required for the particular vessel.

Application/Limitation

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Use of radio frequency bands
The type approval does not cover the different administrations requirements for use of the radio frequency bands.

The applied frequency band 433.050-434.775 MHz is defined by ITU-R Radio Regulations (2008) as an ISM-band for that may be subject to special authorization by the administration concerned. Any use of the radio frequency band has to be in line with the requirements of the administration concerned.

The applied frequency band 2402.5-2478.5 MHz is defined by ITU-R Radio Regulations (2008) as an ISM-band. Any use of the radio frequency band has to be in line with the requirements of the administration concerned.

Type Approval documentation

Tests carried out

Applicable tests according to Standard for Certification No. 2.4, April 2006.
Applicable tests according to ETSI EN 300 220-1 (V2.3.1) for MC-LINK-CAN-MINI.
Applicable tests according to ETSI EN 300 220-2 (V2.3.1) for MC-LINK-CAN-MINI.
Applicable tests according to ETSI EN 300 440-1 (V1.6.1) for MC-LINK-CAN-MINI.
Applicable tests according to ETSI EN 300 440-2 (V1.4.1) for MC-LINK-CAN-MINI.

Marking of product

Product code:	As listed under product description
Product name:	As listed under product description
Frequency:	433.050-434.775 MHz or 2402.5-2478.5 MHz
Voltage/Current:	24 VDC
Unique Serial No.	

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