DNV·GL

Certificate No:
TAA00001TZ

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Loading and unloading arrangement

with type designation(s)
Radio remote control base units: MC-BIX and MC-BLK

Issued to
Cavotec Micro-control AS
Hell, Norway

is 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.

Radio remote control base unit for remote operation of winches/cranes.
Radio frequency band: 433.05-434.79 MHz.

Location classes:

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

Issued at **Høvik** on **2018-06-19**
This Certificate is valid until **2022-12-31**.
DNV GL local station: **Trondheim**

for **DNV GL**

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

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

Product names:

MC-BIX – I/O system
I/O systems with built in PLC (MC-IRX-LITE) for direct control of digital and analogue functions.

MC-BLK – Link system
Fieldbus systems which communicates with a PLC. The Fieldbus systems are designed to be used with a variety of bus formats as Profibus, Modbus RTU/TCP/Plus, CANopen, J1939, DeviceNet, ControlNet, Ethernet IP and Hostlink.

Radio frequency band: 433.05-434.79 MHz
Channel separation: 25 kHz
Max. radiated power: 10 mW e.r.p.

Base unit product code:
Baaa.b-cc-dd-ee.ff.ggg-hhhh

where
B = Base unit (fixed)
aaa = Enclosure
b = EX/non-EX
cc = Approval
dd = Application
ee = Safety
ff = Main electronics
ggg = Radio
hhhh = Additional info

The following key combinations are covered by this approval:
aaa = 000 * Open frame (24V MC-BLK without MC-EX-BARRIER2)
001 MC-BUE 1 (MC-IRX-LITE and MC-CD-TRX / 24V MC-BLK without MC-EX-BARRIER2)
002 MC-BUE 2 (MC-IRX-LITE and MC-CD-TRX / 24V MC-BLK without MC-EX-BARRIER2)
004 Steel enclosure
cc = 01 Maritime approval, DNV-OS-D202/IACS-E10
50 ATEX and/or IECEx + DNV-OS-D202/IACS-E10
51 cFMus + DNV-OS-D202/IACS-E10
52 GOST-R + DNV-OS-D202/IACS-E10
53 Inmetro and Anatel + DNV-OS-D202/IACS-E10

* For combination aaa = 000 (open frame), required protection according to DNV GL Rules or Offshore Standard shall be provided upon installation onboard.

Place of manufacture

Cavotec Germany GmbH
Division Cavotec Micro-control
Gewerbering 3
DE-93345 Hausen
Germany

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 DNVGL-ST-0378 "Standard for offshore and platform 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 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.

The type approval does not cover the different administrations requirements for use of the radio frequency band. The applied frequency band 433.05-434.79 MHz is defined by ITU-R Radio Regulations (2016) as an ISM-band for ITU Region 1 that may be subject to special authoriztion by the administration concerned. Any use if 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 301 489-1 (V1.8.1) and ETSI EN 301 489-3 (V1.4.1).
Applicable tests according to ETSI EN 300 220-3 (V2.3.1) for MC-LINK-CAN-MINI.

Marking of product

Product code:	As listed under product description
Product name:	As listed under product description
Frequency:	433.05-434.79 MHz
Voltage/Current:	24 VDC or 230 VAC
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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE