

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Loading and unloading arrangement**

with type designation(s)

**Tiger Generation II Radio Remote Control Receivers TG-R4, TG-R9, TG-R10,
Tiger Generation II Radio Remote Control Transmitters TG-T9, TG-T11, TG-T12**

Issued to

**Tele-Radio International Holding AB
Askim, Sweden**

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.****Location classes:**

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Receivers	-20°C to +55°C	B	A	B	IP66
Transmitters	-20°C to +55°C	B	A	B	IP65/IP66

Issued at **Høvik** on **2019-12-16**This Certificate is valid until **2024-12-15**.DNV GL local station: **Sweden CMC**Approval Engineer: **Ståle Sneen**for **DNV GL**Digitally Signed By: **Trond Sjøvåg**Location: **DNV GL Høvik, Norway****Trond Sjøvåg
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.



Product description

Tiger Generation II Radio Remote Control units, comprising transmitter and receiver.

The transmitter is a portable radio remote control terminal unit, equipped with an emergency stop function and configurable with joysticks, paddles and switches. The transmitter connects wirelessly to the receiver.

The receiver is a base unit for radio remote operation of winches/cranes. The receiver connects wirelessly to the transmitter and is designed for integration with an existing winch/crane control system.

Transmitter units

TG-T9-1: Tx 8 btn, internal battery, 433 MHz
TG-T9-2: Tx 6 btn, display, internal battery, 433 MHz
TG-T11-4: Tx 10 btn, display, external battery, 433 MHz
TG-T11-5: Tx 12 btn, external battery, 433 MHz
TG-T9-11: Tx 8 btn, internal battery, 915 MHz
TG-T9-12: Tx 6 btn, display, internal battery, 915 MHz
TG-T11-14: Tx 10 btn, display, external battery, 915 MHz
TG-T11-15: Tx 12 btn, external battery, 915 MHz
TG-T9-22: Tx 6 btn, display, internal battery, 2400 MHz
TG-T11-24: Tx 10 btn, display, external battery, 2400 MHz
TG-T12-20: Tx JD, display, 2x2+0x2, Metallux, 433 MHz
TG-T12-21: Tx JD, display, 2x2+2x2, Metallux, 433 MHz
TG-T12-22: Tx JD, display, 4x4+0x4, Metallux, 433 MHz
TG-T12-23: Tx JD, display, 4x4+4x4, Metallux, 433 MHz
TG-T12-24: Tx JD, display, Analog XY+Y, Metallux, 433 MHz
TG-T12-25: Tx JD, display, Analog XY+XY, Metallux, 433 MHz
TG-T12-30: Tx JD, display, 2x2+0x2, Metallux, 915 MHz
TG-T12-31: Tx JD, display, 2x2+2x2, Metallux, 915 MHz
TG-T12-32: Tx JD, display, 4x4+0x4, Metallux, 915 MHz
TG-T12-33: Tx JD, display, 4x4+4x4, Metallux, 915 MHz
TG-T12-34: Tx JD, display, Analog XY+Y, Metallux, 915 MHz
TG-T12-35: Tx JD, display, Analog XY+XY, Metallux, 915 MHz

Receiver units

TG-R4-1: Rx MN 2+7 relay, 12-24 VDC, 48-230 VAC, 433 MHz
TG-R4-6: Rx MD 2+17 relay, 12-24 VDC, 48-230 VAC, 433 MHz
TG-R4-46: Rx MD 2+12 relay, 12-24 VDC, 48-230 VAC, 433 MHz
TG-R4-26: Rx MN CANopen, low cabinet, 12-24 VDC, 48-230 VAC, 433 MHz
TG-R4-36: Rx MN Analog output, high cabinet, 12-24 VDC, 48-230 VAC, 433 MHz
TG-R4-3: Rx MN 2+7 relay, 12-24 VDC, 48-230 VAC, 915 MHz
TG-R4-8: Rx MD 2+17 relay, 12-24 VDC, 48-230 VAC, 915 MHz
TG-R4-48: Rx MD 2+12 relay, 12-24 VDC, 48-230 VAC, 915 MHz
TG-R4-28: Rx MN CANopen, low cabinet, 12-24 VDC, 48-230 VAC, 915 MHz
TG-R4-38: Rx MN Analog output, high cabinet, 12-24 VDC, 48-230 VAC, 915 MHz
TG-R4-5: Rx MN 2+7 relay, 12-24 VDC, 48-230 VAC, 2400 MHz
TG-R4-10: Rx MD 2+17 relay, 12-24 VDC, 48-230 VAC, 2400 MHz
TG-R4-50: Rx MD 2+12 relay, 12-24 VDC, 48-230 VAC, 2400 MHz
TG-R4-30: Rx MN CANopen, low cabinet, 12-24 VDC, 48-230 VAC, 2400 MHz
TG-R4-40: Rx MN Analog output, high cabinet, 12-24 VDC, 48-230 VAC, 2400 MHz
TG-R9-1: Rx MX 2+2+12 relay, 12-250 VDC, 24-230 VAC, 433 MHz
TG-R9-6: Rx MX 2+2+12 relay, ANYBUS, 12-250 VDC, 24-230 VAC, 433 MHz
TG-R9-11: Rx MX 2+2+28 relay, 12-250 VDC, 24-230 VAC, 433 MHz
TG-R10-1: Rx MQ 2+7 relay, 10pin connector, 48-230 VAC, 433 MHz
TG-R10-2: Rx MQ 2+7 relay, 10pin connector, 12/24 VDC, 24V AC, 433 MHz

Power supply options

Power Supply 12-24 VDC, 48-230 VAC:

- 433 MHz: Rx MN 2+7 relay, Rx MD 2+17 relay, Rx MD 2+12 relay,
Rx MN CANopen w low cabinet, Rx MN Analog output w high cabinet
- 915 MHz: Rx MN 2+7 relay, Rx MD 2+17 relay, Rx MD 2+12 relay,
Rx MN CANopen w low cabinet, Rx MN Analog output w high cabinet
- 2400 MHz: Rx MN 2+7 relay, Rx MD 2+17 relay, Rx MD 2+12 relay,
Rx MN CANopen w low cabinet, Rx MN Analog output w high cabinet

Power Supply 12-250 VDC, 24-230 VAC:

- 433 MHz: Rx MX 2+2+12 relay, Rx MX 2+2+12 relay ANYBUS, Rx MX 2+2+28 relay

Power Supply 48-230 VAC:

- 433 MHz: Rx MQ 2+7 relay w 10 pin connector

Power Supply 12/24 VDC, 24 VAC:

- 433 MHz: Rx MQ 2+7 relay w 10 pin connector

Radio transceiver specifications

433 MHz

- Frequency management: 2FSK
- Radio frequency band: 433.075-434.775 MHz (69 channels)
- Channel separation: 25 kHz
- Max. radiated power: 10 mW e.r.p.

915 MHz

- Frequency management: Frequency-hopping spread spectrum (FHSS)
- Radio frequency band: 903-927 MHz (15 channels)
- Channel separation: 25 kHz
- Max. radiated power: 10 mW e.r.p.

2400 MHz

- Frequency management: Direct Sequence Spread Spectrum (DSSS)
Field Strength Adaptation Feature
- Radio frequency band: 2405-2480 MHz (16 channels)
- Channel separation: 5 MHz
- Max. radiated power: 10 mW e.r.p.

Place of manufacture

Tele Radio (Xiamen) Electronic Co., Ltd.
2nd floor, No.3 Bldg., No.606 Xing Long RD, Huli District, Xiamen, PRC

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 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

The type approval does not cover the different administrations requirements for use of the radio frequency band. ITU-R Radio Regulations (2016) defines the applied frequency bands as follows:

- 433.075-434.775 MHz is defined as an ISM-band for ITU Region 1 that may be subject to special authorization by the administration concerned
- 903-927 MHz is defined as an ISM-band for ITU Region 2
- 2405-2480 MHz is defined 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

Test reports: PE-M115-002 dated 2013-09-18; PE-M115-001 dated 2012-09-18;
PE-M115-005 dated 2013-10-08; PE-M115-006 dated 2013-10-10;
PE-M115-007 dated 2013-10-10 and PE-M115-008 dated 2013-10-14;
PX26817 dated 2012-11-23; PX28481-02 dated 2012-11-23.

Additional Documentation:

GZEM11070025411RF, GZEM1107002541RF; GZEM110700254102V,
GZEM1107002572RF, GZEM1107002540RF, GZEM110700254002V, GZEM1107002571RF
dated 2011-09-06;
GZEM1112004946RF, GZEM111200494602V, GZEM1112004945RF, GZEM110600222304
dated 2012-07-18;
GZEM110600222305, GZEM110600222301 dated 2011-07-18;
GZEM1011002660RF, GZEM1011002660RF dated 2011-02-16;
GZEM101100266002, GZEM1011002660RF, GZEM1011002660RFV2 dated 2011-03-28;
GZEM101100339501 dated 2011-02-21;
LVD GZES1011003395AV dated 2011-02-24;
LVD GZES1011003396AV dated 2011-02-16;
GZES101100339601 dated 2011-01-24;
GLEMO080902757RF, GLEMO080902757RFV-1, GLEMO080902757RFV-2,
GLEMO080902757RFR dated 2008-09-17;
GZEM1106002223RF, GZEM1106002223RFV, GZEM110600222302 dated 2011-09-01;
ZE02D0002 dated 2011-09-02;
GZES110600405201 dated 2011-08-23;
LVD GZES1106004052RF dated 2011-09-07;
GZES110600405301 dated 2011-08-12;
LVD GZES1106004053RF dated 2011-08-15;
LVD GLESO08091737TX dated 2009-02-25;
S-GLESO08091737TX dated 2009-02-24;
GLEMO09050143201, GLEMO09050143202, GLEMO090501432032, GLEMO090501432RFV
dated 2009-07-13;
GLEMO090501432RFV-2 dated 2009-07-13;
GLESO09050156701, LVD GLSEO090501567TX, GLESO09050156601,
LVD GLSEO090501566TX dated 2009-08-20;
GLEMO090902847RFV-1 dated 2009-09-26.

TA renewal assessment report for Tele Radio (Askim), DNV GL Sweden CMC 2019-12-13

TA renewal assessment report for Tele Radio (Xiamen), DNV GL Xiamen NB & CMC 2019-12-06

Job Id: **262.1-032753-1**
Certificate No: **TAA00002JC**

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

Product code: As listed under product description
Product name: As listed under product description
Frequency: 433.075-434.775 MHz, 903-927 MHz, or 2405-2480 MHz
Voltage/Current: As listed under product description
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