

EU-Type Examination Certificate

[2] EQUIPMENT OR PROTECTIVE SYSTEM INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES DIRECTIVE 2014/34/EU

[3] EU-Type Examination Certificate Number: Presafe 17 ATEX 10725 Issue 0

[4] Product: Radio remote control terminal unit

[5] Manufacturer: Cavotec Micro-control AS

[6] Address: Gevinglia 112
7517 Hell
NORWAY

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.


[8] DNV GL Nemko Presafe AS, notified body number 2460, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in confidential reports listed in section 16.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with: EN 60079-0:2012/A11:2013, EN 60079-11:2012 and EN 50303: 2000

[10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

[11] This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

Terminals:  I M1 Ex ia I Ma

Terminals:  II 2 G Ex ia IIB T4/T3 Gb See « Ambient temperature » below for details.

Radio module:  I (M1) [Ex ia Ma] I

Radio module:  II (1)G [Ex ia Ga] IIB


Asle Kaastad

For DNV GL Nemko Presafe AS

The Certificate has been digitally signed.

See www.presafe.com/digital_signatures for more info



Date of issue: 2017-11-06

This certificate may only be reproduced in its entirety and without any change, schedule included.

[13]

Schedule

[14] EU-TYPE EXAMINATION CERTIFICATE No.: Presafe 17 ATEX Issue 0

[15] **Description of Product**

The Radio Remote Control comprises a portable terminal unit for use in the hazardous location. The system is designed to communicate by radio or cable. When the system communicates by radio, a battery is placed in the terminal unit and supplies it with power. When the system communicates by cable, a zener barrier is used (Presafe 15ATEX7369X or Nemko 10ATEX3217X). Charging of battery must take place in non-classified location. The Base unit is connected to a machine/PLS (for use in non-classified locations). The radio module MC-EX-RX-CD-TRX in the base unit has an intrinsically safe output for connection of an antenna cable and antenna. An antenna placed directly at the base unit or connected via an antenna cable is not part of the certified apparatus but may be used under the concept of IEC 60079-11 clause 5.4 "Simple Apparatus". The Radio module, MC-EX-RX-CD-TRX, shall be installed in an enclosure of minimum IP20.

The terminals don't satisfy the Ga requirements for avoiding electrostatic charging of some parts of the non-metallic surface of the enclosure. Therefore EPL Gb. The electronics satisfies "ia" requirements.

Type designation

Terminals : MC-3-5 EX and MC-3-6 EX
Radio module : MC-EX-RX-CD-TRX

Electrical Safety Parameters

Base unit with MC-EX-BARRIER2: Um: 125V
Base unit with MC-EX-BARRIER3: Um: 250V

| MC-EX-RX-CD-TRX (LMD-400) | | | |
|---------------------------|----------|---------|-----------|
| Um: 60V | | | |
| | | Group I | Group IIB |
| Uo: | 5,88V | | |
| Io: | 2,13A | | |
| Po: | 3,13W | | |
| Co: | | 565,1μF | 565,1μF |
| Lo: | | 99μH | 27μH |
| Lo/Ro | 45,6μH/Ω | | |

| | | | |
|----------------------------|----------|---------|-----------|
| MC-EX-RX-CD-TRX (STD-302S) | | | |
| Um: 60V | | | |
| | | Group I | Group IIB |
| Uo: | 5,88V | | |
| Io: | 2,13A | | |
| Po: | 3,13W | | |
| Co: | | 833,5μF | 833,5μF |
| Lo: | | 100μH | 28,8μH |
| Lo/Ro: | 45,6μH/Ω | | |

| MC-3-5 EX and MC-3-6 EX | | | |
|--------------------------------|------------|--|------------|
| Power input (Terminal J8-3) | | Signal RS485 input (Terminal J8-1 and J8-2) | |
| Ui: | 9,3V | Ui: | 9,1V |
| Ii: | 2,95A | Ii: | 111mA |
| Pi: | 4,77W | Pi: | 214mW |
| Ci: | 7,037μF | Ci: | 7,037μF |
| Li: | Negligible | Li: | Negligible |

The terminals shall either be powered from the base unit (barriers MC-EX-BARRIER2 or MC-EX-BARRIER3), MC-EX-BATTERY3 or MC-EX-BATTERY3 UL. The electrical safety parameters above are only for IS calculations including cable.

Degrees of protection (IP Code)

IP55 (Terminal unit)

IP4X (Battery pins)

Ambient temperature:

Terminal:

-20°C ≤ Ta ≤ +60°C → T4 (powered by MC-EX-BATTERY3)

-20°C ≤ Ta ≤ +60°C → T3 (powered by MC-EX-BATTERY3 UL)

-20°C ≤ Ta ≤ +45°C → T4 (powered by MC-EX-BATTERY3 UL)

-30°C ≤ Ta ≤ +60°C → T4 (powered by cable)

Base unit and MC-EX-RX-CD-TRX (antenna output): -30°C ≤ Ta ≤ +60°C

Routine tests

None

[16] Report No.: D0003207

[17] Specific Conditions of Use

None

[18] Essential Health and Safety Requirements

Essential Health and Safety Requirements (EHSRs) are covered by the standards listed at item 9

[19] Drawings and documents

| Number | Title | Rev. | Date |
|--------------|---|------|------------|
| BOM-97-006 | Bill of materials for MC-EX-PM | 11 | 2016-01-15 |
| LAY-97-006 | Layout for MC-EX-PM | 5 | 2009-05-20 |
| SCH-97-006 | Schematic for MC-EX-PM | 7 | 2015-08-17 |
| TN-09-030 | New moulding jig MC-EX-PM | 2 | 2013-12-09 |
| SP-15-023 | PCB specification for MC-EX-PM | 1 | 2015-06-26 |
| TP-09-001 | Test procedure for MC-EX-PM | 6 | 2016-03-30 |
| | | | |
| LAY-96-004 | Layout for MC-TX-KB-2 | 6 | 2009-05-28 |
| SCH-96-004 | Schematic MC-TX-KB-2 | 6 | 2009-05-28 |
| SP-15-024 | PCB specification for MC-TX-KB-2 | 1 | 2015-07-06 |
| | | | |
| LAY-07-003 | Layout MC-TX-KB4 | 4 | 2009-06-24 |
| SCH-07-007 | Schematic MC-TX-KB4 | 3 | 2009-06-24 |
| TP-97-006 | Test procedure for MC-TX-KB2, 3 and 4 | 12 | 2012-10-05 |
| SP-15-025 | PCB specification for MC-TX-KB4 | 1 | 2015-07-06 |
| | | | |
| BOM-97-009 | Bill of materials for MC-LCD | 6 | 2015-08-11 |
| LAY-97-009 | Layout for MC-LCD | 3 | 2009-05-29 |
| SCH-97-009 | Schematic for MC-LCD | 3 | 2009-05-29 |
| TP-09-002 | Test procedure for MC-LCD | 4 | 2015-06-22 |
| SP-15-026 | PCB specification for MC-LCD | 1 | 2015-06-25 |
| TN-15-024 | MC-LCD display modules, circuit plan | 1 | 2015-08-11 |
| | | | |
| LAY-02-003 | Layout for MC-LCD2 | 2 | 2009-05-29 |
| SCH-02-009 | Schematic and bill of materials for MC-LCD2 | 3 | 2015-08-12 |
| TP-09-003 | Test procedure for MC-LCD2 | 4 | 2015-06-22 |
| SP-15-027 | PCB specification for MC-LCD2 | 1 | 2015-07-07 |
| | | | |
| LAY-06-001 | Layout MC-EX-BATTERY3 | 2 | 2009-05-29 |
| SCH-05-008 | Schematic MC-EX-BATTERY3 | 6 | 2015-05-11 |
| MP-06-001 | Assembly Instructions for MC-EX-BATTERY3 | 11 | 2015-06-24 |
| SP-15-028 | PCB specification for MC-EX-BATTERY3 | 1 | 2015-06-29 |
| | | | |
| SP-15-015 | MC-EX-BATTERY3 UL Specification | 1 | 2015-05-22 |
| | | | |
| LAY-14-012 | Layout MC-EX-RX-CD-TRX | 2 | 2015-03-19 |
| SCH-14-010 | Schematics MC-EX-RX-CD-TRX | 3 | 2015-08-17 |
| MP-15-004 | Assembly Procedure for MC-EX-RX-CD-TRX module | 2 | 2016-01-20 |
| M9-2004-1005 | Approval label 48x28mm, MC-EX-RX-CD-TRX-STD-302 | B | 2017-07-03 |

| | | | |
|--------------|---|----|------------|
| M9-2004-1006 | Approval label 48x28mm, MC-EX-RX-CD-TRX-LMD-400 | B | 2017-07-03 |
| M9-2004-1007 | Approval label 48x28mm, MC-EX-RX-CD-TRX-STD-302S | B | 2017-07-03 |
| SP-15-031 | PCB specification for MC-EX-RX-CD-TRX | 1 | 2015-06-26 |
| TN-15-018 | Marking of antenna output on MC-EX-RX-CD-TRX | 1 | 2015-07-02 |
| | | | |
| LAY-07-004 | Layout MC-CD-PLL | 7 | 2014-01-21 |
| SCH-07-003 | Schematics MC-CD-PLL | 14 | 2015-08-17 |
| MP-08-008 | Mounting procedure MC-CD-PLL | 6 | 2015-06-24 |
| SP-15-030 | PCB specification for MC-CD-PLL | 1 | 2015-07-06 |
| | | | |
| TN-11-021 | Safety control drawing | 2 | 2015-05-08 |
| SP-03-021 | Procedure for encapsulation of EX components | 7 | 2012-09-26 |
| SP-12-025 | Specification of EX marking labels for MC-3 series EX | 5 | 2017-07-04 |
| SP-15-005 | Legend plate specification for MC-3 series EX | 1 | 2015-04-09 |
| SP-15-014 | EX Conformal coating for CMC products | 1 | 2015-05-21 |
| MAN-11-004 | MC-3 Series EX Instruction Manual | 5 | 2017-07-04 |
| 90280711A | Project drawing for base unit | A | 2013-03-07 |
| M9-2003-3501 | Chassis top MC-3-5 EX | B | 2012-07-20 |
| M9-2003-3536 | Chassis bottom MC-3-5 EX | B | 2012-07-20 |
| M9-2003-3691 | Chassis top MC-3-6 EX | E | 2012-07-19 |
| M9-2003-3692 | Chassis bottom MC-3-6 EX | F | 2012-07-19 |
| 902807T1B | Project drawing for MC-3-5 EX and MC-3-6 EX | B | 2015-09-03 |
| | | | |
| SP-04-007 | System specification for MC-3-5 EX and MC-3-6 EX, IECEx 04.0001 | 7 | 2017-07-06 |
| M5-2000-0461 | MC-BAT3 Bottom housing | A | 2015-03-23 |
| M5-2000-0462 | MC-BAT3 Lid | A | 2015-01-27 |

[20] Certificate History

| Issue | Description | Issue date | Report no. |
|-------|----------------|------------|------------|
| 0 | Original issue | 2017-11-06 | D0003207 |

END OF CERTIFICATE