# EU Type Examination Certificate CML 21ATEX21077X Issue 0

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **9478 Ethernet Isolators**

3 Manufacturer **Controlled Systems Limited**

4 Address **Ryder Close, Cadley Hill,**
**Swadincote,**
**Derbyshire DE45 9EU,**
**United Kingdom**

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 CML B.V., Chamber of Commerce No 6738671, Koopvaardijweg 32, 4906CV Oosterhout The Netherlands, Notified Body Number 2776, 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 equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.

8 This EU Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Article 13 apply to the manufacture of the equipment or component and are separately certified.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN IEC 60079-0:2018 EN 60079-11:2012

10 The equipment shall be marked with the following:

Ex I (M1)

[Ex ia Ma] I

Ta=-40°C to +70°C

Ex II (1) G D

[Ex ia Ga] IIB (-ETG and -ETXG versions)

[Ex ia Ga] IIC (-ET and -ETX versions)

[Ex ia Da] IIIC

Ta=-40°C to +70°C

R. C. Marshall
Operations Manager

## 11 Description

The 9478 Gigabit Ethernet Isolator provides connections from the safe area to Zones 1 or 0 intrinsically safe ethernet networks with IS Cat 5 cable or interconnects intrinsically safe ethernet networks in Zone 2.

The modules consist of a single printed circuit boards or the same configuration but split over two PCB's. There is a single output LAN port for connection to the intrinsically safe ethernet network that supports either Gigabit or 10/100 communications systems

The boards are conformally coated and when installed in Zone 2 it needs to be in an appropriately certified enclosure.

The Ethernet Isolator has the following safety parameters:

**9478-ET(G) Non-IS Connections: Supply (CON1), LAN RJ45 (SK1, SK2)**

**9478-ETX(G) Non-IS Connections: Supply (T1-T4), LAN RJ45 (SK1)**

Un = 30 V (SELV)
Um = 250 V

**9478-ET(G)**

**IS Connection: LAN RJ45 (SK3)**

| | | |
|---|---|---|
| Uo | = | 5.88 V |
| Io | = | 2.18A (10/100) or 4.36A (Gigabit) |
| Po | = | 0.83 W |
| Ci | = | 0.48 µF |
| Li | = | 0 |

**9478-ETX(G)**

**IS Connections: PoEx (T14 wrt T15)**

| | | |
|---|---|---|
| Ui | = | 15.5 V on LAN RJ45 (SK2) |
| Ci | = | 0.48 µF |
| Li | = | 0 |

**IS Connection LAN RJ45 (SK2)**

| | | |
|---|---|---|
| Uo | = | 5.88 V (or PoEx power supply Uo parameter when connected) |
| Io | = | 2.18A (10/100) or 4.36A (Gigabit) |
| Po | = | 0.83 W |
| Ci | = | 0.48 µF |
| Li | = | 0 |

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the load connected to the output terminals must not exceed the following values:

10/100 Ethernet Ports

| Group | Capacitance (µF) | Inductance (µH) | or | L/R Ratio (µH/Ohm) |
|---|---|---|---|---|
| IIC | 43 | 7.5 | | 11 |
| IIB/III | 1000 | 29.9 | | 44 |
| IIA | 1000 | 59.9 | | 89 |
| I | 1000 | 98.2 | | 146 |

Gigabit 10/100/1000 Ethernet Ports

| Group | Capacitance (µF) | Inductance (µH) | or | L/R Ratio (µH/Ohm) |
|---|---|---|---|---|
| IIB/III | 1000 | 7.5 | | 22 |
| IIA | 1000 | 15.0 | | 44 |
| I | 1000 | 24.5 | | 73 |

## 12 Certificate history and evaluation reports

| Issue | Date | Associated report | Notes |
|---|---|---|---|
| 0 | 10 Mar 2022 | R14575A/00 | Issue of Prime Certificate |

Note: Drawings that describe the equipment or component are listed in the Annex.

## 13 Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

i. Where the product incorporates certified parts or safety critical components the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.

## 14 Specific Conditions of Use

The following conditions relate to safe installation and/or use of the equipment.

i. When installed in a Zone 2 environment, the apparatus must be housed in an appropriately certified enclosure as defined in EN IEC 60079-0 & EN IEC 60079-7 with the minimum dimensions of 180 mm (H) x 45 mm (W) x 145 mm (D) in and IP 54.

ii. The external combinations of capacitance and inductance have not been assessed for spark Ignition. With reference to EN 60079-11 CL 10.1.5.2, the following Special Condition of Safe Use has been added:

The values of Co and Lo apply when one of the two conditions below is given:

- The total Li of the external circuit (excluding the cable) is < 1% of the Lo value or
- The total Ci of the external circuit (excluding the cable) is < 1% of the Co value.

The above parameters are reduced to 50% when both of the two conditions below are given:

- The total Li of the external circuit (excluding the cable) > 1% of the Lo and
- The total Ci of the external circuit (excluding the cable) > 1% of the Co.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for IIB and 600nF for IIC.

# Certificate Annex

| | |
|---|---|
| **Certificate Number** | **CML 21UKEX21077X** |
| **Equipment** | **9478 Ethernet Isolator** |
| **Manufacturer** | **Controlled Systems Limited** |

The following documents describe the equipment or component defined in this certificate:

**Issue 0**

| Drawing No | Sheets | Rev | Approved date | Title |
|---|---|---|---|---|
| 9478 ATEX-IECEx-UKEx Label | 1 of 1 | 1 | 10 Mar 2022 | 9478 ATEX-IECEx-UKEx Certification Label Drawing |
| 9478-ET(G) Assy | 1 to 2 | 1 | 10 Mar 2022 | 9478-ET(G) Assembly Drawing |
| 9478-ISO | 1 to 3 | 2 | 10 Mar 2022 | 9478-ISO Gigabit Ethernet Isolator Circuit Diagram |
| 9478-ISO PCB | 1 to 3 | 2 | 10 Mar 2022 | 9478-ISO Artworks |
| 9478-ETX(G) Assy | 1 to 2 | 1 | 10 Mar 2022 | 9478-ETX(G) Assembly Drawing |
| 9478-PSU | 1 of 1 | 1 | 10 Mar 2022 | 9478-PSU Gigabit Ethernet Isolator Power Supply Circuit Diagram |
| 9478-ETX | 1 to 2 | 2 | 10 Mar 2022 | 9478-ETX Gigabit Ethernet Isolator Circuit Diagram |
| 9478-PSU PCB | 1 of 1 | 1 | 10 Mar 2022 | 9478-PSU Artworks |
| 9478-ETX PCB | 1 to 2 | 2 | 10 Mar 2022 | 9478-ETX Artworks |