UK Type Examination Certificate CML 21UKEX21078X Issue 0

United Kingdom Conformity Assessment

1 Product or Protective System Intended for use in Potentially Explosive Atmospheres UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

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 Eurofins E&E CML Limited, Newport Business Park, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom, Approved Body Number 2503, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), 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 Schedule 1 of the Regulations.

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 specific conditions of use (affecting correct installation or safe use). These are specified in Section 14.

8 This UK Type Examination certificate relates only to the design and construction of the specified equipment. Further requirements of the Regulations apply to the manufacturing process and supply of the product. These are not covered by this certificate.

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 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 21UKEX21078X**
Equipment	**9478 Ethernet Isolator**
Manufacturer	**Controlled Systems Limited**

The following documents describe the equipment 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