IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx CML 19.0150X** Page 1 of 3 Certificate history:

Status: **Current** Issue No: 0

Date of Issue: 2020-08-04

Applicant: **Controlled Systems Limited**
Unit 1 Ryder Close
Swadlincote
Derbyshire
DE11 9EU
United Kingdom

Equipment: **947x Series IS Ethernet Modules**

Optional accessory:

Type of Protection: **Intrinsic safety 'ia', inherently safe optical radiation 'op is'**

Marking:

Models 9471-xxx, 9476-xxx, 9479-xxx

Ex ia IIB T4 Ga (-ETG versions) Ex ia IIC T4 Ga (-ET versions)	Ex ia [ia Da] IIIC T135°C Db	Ex ia I Ma

Model 9475-xxx

Ex ia op is IIB T4 Ga (-ETG models) Ex ia op is IIC T4 Ga (-ET models)	Ex ia [ia op is Da] IIIC T135°C Db	Ex ia op is I Ma

Ta = -40°C to +70°C (all models and versions)

Approved for issue on behalf of the IECEx Certification Body: **A Snowdon MIET**

Position: **Assistant Certification Manager**

Signature: (for printed version)

Date: 2020-08-04

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Eurofins E&E CML Limited
Unit 1, Newport Business Park
New Port Road
Ellesmere Port, CH65 4LZ
United Kingdom

IECEx Certificate of Conformity

Certificate No.: **IECEx CML 19.0150X** Page 2 of 3

Date of issue: 2020-08-04 Issue No: 0

Manufacturer: **Controlled Systems Limited**
Unit 1 Ryder Close, Swadlincote, Derbyshire DE11 9EU
United Kingdom

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-28:2015 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

GB/CML/ExTR19.0169/00

Quality Assessment Report:

GB/SIR/QAR07.0023/13

IECEx Certificate of Conformity

EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The 947x Series Intrinsically Safe (IS) Ethernet Modules provide communication between networked devices in the Hazardous Area using Gigabit Ethernet technology. There are several types of modules described below, all of which are suitable to be located in the hazardous area.

These are designated as:

Type	**10/100/1000Mbps (Gigabit)**	**10/100Mbps**
9471	9471-ETG Serial Gateway	9471-ET Serial Gateway
9475	9475-ETG Media Converter	9475-ET Media Converter
9476	9476-ETG Ethernet Switch	9476-ET Ethernet Switch
9479	9479-ETG WLAN AP/Bridge	9479-ET WLAN AP/Bridge

See Annex for full description and Conditions of Manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:
See Annex for Specific Conditions of Use.

Annex:

IECEx CML 19.0150X Annex Issue 0.pdf

Annexe to:	IECEx CML 19.0150X Issue 0
Applicant:	Controlled Systems Limited
Apparatus:	947x Series IS Ethernet Modules

Description

The 947x Series Intrinsically Safe (IS) Ethernet Modules provide communication between networked devices in the Hazardous Area using Gigabit Ethernet technology. There are several types of modules described below, all of which are suitable to be located in the hazardous area.

These are designated as:

Type	10/100/1000Mbps (Gigabit)	10/100Mbps
9471	9471-ETG Serial Gateway	9471-ET Serial Gateway
9475	9475-ETG Media Converter	9475-ET Media Converter
9476	9476-ETG Ethernet Switch	9476-ET Ethernet Switch
9479	9479-ETG WLAN AP/Bridge	9479-ET WLAN AP/Bridge

9471-ETG Serial Gateway and 9471-ET Serial Gateway

The 9471-ET(G) 4-Port Serial Gateway allows existing Intrinsically Safe equipment with an RS485/RS422 or RS232/TTL port to become Ethernet Enabled via a Cat5/6 cable connection into an IS Ethernet Network (LAN). The unit has 4 off serial ports, each one supporting either RS485/RS422 or RS232/TTL depending upon the configuration required. There are 2 off RJ45 (LAN) ports that support 10/100 or Gigabit 10/100/1000 (G option) IS Ethernet connections - these allow 'daisy-chaining' of Ethernet units together.

The module consists of a single printed circuit board (9471-COM) mounted inside an anti-static plastic DIN rail enclosure. Excluding the user connectors and LED's the unit is totally encapsulated. The module is suitable for mounting in the Hazardous Area within an enclosure having a minimum protection level equivalent to or exceeding IP54.

Electrical connections are via cage-clamp and/or screw type plug/socket terminals along with RJ45 type connectors for the Ethernet LAN ports.

Power (12V IS) is supplied to the module either locally or using Power over Ethernet (PoEx) from the LAN port - This requires the PoEx output to be wired to the Supply Input terminals by the user. Note that PoEx is not available on Gigabit LAN ports.

The equipment has the following safety description:

12Vdc POWER IN (CON1, Pin 1 wrt Pin 2 (0V))

Group	Ui	Ci	Li
IIC/IIIC	15.4Vdc	0	0
IIB/IIIB			
IIA/IIIA			
I			

Unit 1, Newport Business Park
New Port Road
Ellesmere Port
CH65 4LZ

T +44 (0) 151 559 1160
E info@cmlex.com

www.cmlex.com

Company Reg No. 8554022 VAT No. GB163023642

PoEx OUT (CON1, Pin 3 wrt Pin 4 (0V) OR Pin 5 wrt Pin 6 (0V))

Group	Uo	Co	Lo
IIC/IIIC	Same as power supply connected to LAN1 or LAN2 PoEx connections	Same as power supply connected to LAN1 or LAN2 PoEx connections minus 0.48µF internal capacitance	Same as power supply connected to LAN1 or LAN2 PoEx connections
IIB/IIIB			
IIA/IIIA			
I			

Note: PoEx OUT (CON1 pins 3+4 OR pins 5+6) may be linked to 12Vdc POWER IN (CON1 pins 1+2) when power is via the LAN1 or LAN2 port.

RS485/RS422 COMMS (CON3, Pin1 to 4 and 9 to 12 wrt Pin 6,8,14,16 (0V) – Ports 1 and 2), RS485/RS422 COMMS (CON4, Pin1 to 4 and 9 to 12 wrt Pin 6,8,14,16 (0V) – Ports 3 and 4) (Values shown are for each pin)

Group	Ui	Uo	Io	Po	Ci	Li
IIC/IIIC	7.2V	5.88V	77mA	114mW	0	0
IIB/IIIB						
IIA/IIIA						
I						

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:

Group	Capacitance (µF)	Inductance (mH)	or	L/R Ratio (µH/Ohm)
IIC	43	6.0		314
IIB/III	1000	24.0		1256
IIA	1000	48.0		2513
I	1000	78.7		4123

The above figures are based on the output parameters only and may need to be recalculated based on the input parameters.

RS232/TTLCOMMS (CON3, Pin 5, 13 (TX) wrt Pin 6,8,14,16 (0V) – Ports 1 and 2)
RS232/TTL COMMS (CON4, Pin 5,13 (TX) wrt Pin 6,8,14,16 (0V) Ports 3 and 4)

Group	Ui	Uo	Io	Po	Ci	Li
IIC/IIIC	12.8V	5.88V	6mA	8mW	0	0
IIB/IIIB						
IIA/IIIA						
I						

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:

Group	Capacitance (µF)	Inductance (mH)	or	L/R Ratio (µH/Ohm)
IIC	43	987		4031
IIB/III	1000	3951		16125
IIA	1000	7901		32250
I	1000	12963		52910

RS232/TTLCOMMS (CON3, Pin 7, 15 (RX) wrt Pin 6,8,14,16 (0V)–Ports 1 and 2)
RS232/TTL COMMS (CON4, Pin 7, 15 (RX) wrt Pin 6,8,14,16 (0V) – Ports 3 and 4)

Group	Ui	Uo	Io	Po	Ci	Li
IIC/IIIC	12.8V	3.15V	6mA	8mW	0	0
IIB/IIIB						
IIA/IIIA						
I						

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:

Group	Capacitance (µF)	Inductance (mH)	or	L/R Ratio (µH/Ohm)
IIC	100	987		4031
IIB/III	1000	3951		16125
IIA	1000	7901		32250
I	1000	12963		52910

The above figures are based on the output parameters only and may need to be recalculated based on the input parameters.

EXTERNAL LEDS (CON1, Pin13 to 18 wrt Pin 11,12 (0V))
(Values shown are for each output)

Group	Ui	Uo	Io	Po	Ci	Li
IIC/IIIC	5.88V	5.88V	52mA	76mW	0	0
IIB/IIIB						
IIA/IIIA						
I						

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:

Group	Capacitance (µF)	Inductance (mH)	or	L/R Ratio (µH/Ohm)
I	1000	172		6105
IIA	1000	105		3721
IIB/III	1000	52		1861
IIC	43	13		465

LAN Port 1 or LAN Port 2 (10/100 and Gigabit 10/100/1000 Ethernet) (SK1/SK2 – RJ45)
(Values for all pins combined)

Group	Ui	Uo	Io	Ci	Li
IIC/IIIC	15.4V	5.88V	2.18A (10/100) or 4.36A (Gigabit)	0.48µF	0
IIB/IIIB					
IIA/IIIA					
I					

Note 1. Io = 2.18A is the total for the four Ethernet lines (each line 545mA), 4.36A is the total for the eight Ethernet lines (Gigabit 10/100/1000 Ethernet versions).

Note 2. Ci = 0.48uF is given as worse case (8 line) Gigabit 10/100/1000 Ethernet

Note 3. Gigabit 10/100/1000 Ethernet versions are not suitable for Gas Group IIC

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

If PoEx is used, then the parameters of the PoEx power supply must also be considered
(The above capacitance figures are based on 5.88V)

The 10/100 or 10/100/1000 (gigabit) Ethernet ports may be connected to any other equipment having appropriate Entity parameters.

9475-ETG Media Converter and 9475-ET Media Converter

The 9475-ET(G) Dual Media Converter provides fibre-optic connections to extend an IS Ethernet Network (LAN) over a greater distance. The use of 1300nm optics allows a longer fibre-optic link length, typically 5Km at 10Mbps, 2Km at 100Mbps and by using different optics 10Km at (Gigabit) 1000Mbps. There are 2 off RJ45 (LAN) ports that support 10/100 or 10/100/1000 Gigabit (G option) IS Ethernet connections – these can allow 'daisy-chaining' of Ethernet units together. The Media Converter incorporates an Ethernet switch that helps eliminate any compatibility issues and aids fault finding. The switch also allows the unit configuration as either two separate independent media converters or a fibre-optic repeater with two local LAN ports.

The module consists of a single printed circuit board (9475-FO) mounted inside an anti-static plastic DIN rail enclosure. Excluding the user connectors and LED's the unit is totally encapsulated. The module is suitable for mounting in the Hazardous Area within an enclosure having a minimum protection level equivalent to or exceeding IP54.

Electrical connections are via cage-clamp and/or screw type plug/socket terminals along with RJ45 type connectors for the Ethernet LAN ports.

Power (12V IS) is supplied to the module either locally or using Power over Ethernet (PoEx) from the LAN port - This requires the PoEx output to be wired to the Supply Input terminals by the user. Note that PoEx is not available on Gigabit LAN ports.

The equipment has the following safety description:

12Vdc POWER IN (CON1, Pin 1 wrt Pin 2 (0V))

Group	Ui	Ci	Li
IIC/IIIC	15.4Vdc	0	0
IIB/IIIB			
IIA/IIIA			
I			

PoEx OUT (CON1, Pin 3 wrt Pin 4 (0V) OR Pin 5 wrt Pin 6 (0V))

Group	Uo	Co	Lo
IIC/IIIC	Same as power supply connected to LAN1 or LAN2 PoEx connections	Same as power supply connected to LAN1 or LAN2 PoEx connections minus 0.48µF internal capacitance	Same as power supply connected to LAN1 or LAN2 PoEx connections
IIB/IIIB			
IIA/IIIA			
I			

Note: PoEx OUT (CON1 pins 3+4 OR pins 5+6) may be linked to 12Vdc POWER IN (CON1 pins 1+2) when power is via the LAN1 or LAN2 port.

EXTERNAL LEDS (CON1, Pin13 to 18 wrt Pin 11,12 (0V))
(Values shown are for each output)

Group	**Ui**	**Uo**	**Io**	**Po**	**Ci**	**Li**
IIC/IIIC	5.88V	5.88V	52mA	76mW	0	0
IIB/IIIB						
IIA/IIIA						
I						

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:

Group	**Capacitance (µF)**	**Inductance (mH)**	**or**	**L/R Ratio (µH/Ohm)**
IIC	43	13		465
IIB/III	1000	52		1861
IIA	1000	105		3721
I	1000	172		6105

FIBRE OPTIC PORTS (FO1 & FO2)

Group	**Po (optical)**
IIC/IIIC	15mW each
IIB/IIIB	
IIA/IIIA	
I	

LAN Port 1 or LAN Port 2 (10/100 and Gigabit 10/100/1000 Ethernet) (SK1/SK2 – RJ45)
(values for all pins combined)

Group	Ui	Uo	Io	Ci	Li
IIC/IIIC	15.4V	5.88V	2.18A (10/100) or 4.36A (Gigabit)	0.48µF	0
IIB/IIIB					
IIA/IIIA					
I					

Note 1. Io = 2.18A is the total for the 4 Ethernet lines (each line 545mA), 4.36A is the total for the 8 Ethernet lines (Gigabit 10/100/1000 versions).

Note 2. Ci = 0.48uF is given as worse case (8 line) Gigabit Ethernet

Note 3. Gigabit 10/100/1000 versions are not suitable for Gas Group IIC

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

If PoEx is used, then the parameters of the PoEx power supply must also be considered
(The above capacitance figures are based on 5.88V)

The 10/100 or Gigabit 10/100/1000 Ethernet ports may be connected to any other equipment having appropriate Entity parameters.

9476-ETG Ethernet Switch and 9476-ET Ethernet Switch

The 9476-ET(G) 6 Port Ethernet Switch provides six LAN ports for connection to other IS Ethernet devices. There are 6 off RJ45 (LAN) ports that support 10/100 or 10/100/1000 Gigabit (G option) IS Ethernet connections depending on the model type. The switch provides management to allow configuration of the ports and provide diagnostic information, however it may be also be utilised in an un-managed mode where all ports by default Auto-Negotiate with no user configuration required.

The module consists of a single printed circuit board (9476-SW) mounted inside an anti-static plastic DIN rail enclosure. Excluding the user connectors and LED's the unit is totally encapsulated. The module is suitable for mounting in the Hazardous Area within an enclosure having a minimum protection level equivalent to or exceeding IP54.

Electrical connections are via cage-clamp and/or screw type plug/socket terminals along with RJ45 type connectors for the Ethernet LAN ports.

Power (12V IS) is supplied to the module locally and Power over Ethernet (PoEx) can be used for the 10/100 LAN ports if required to power compatible connected devices. Note that PoEx is not available on Gigabit LAN ports.

The equipment has the following safety description:

12Vdc POWER IN (CON1, Pin 1 wrt Pin 2 (0V))

Group	Ui	Ci	Li
IIC/IIIC	15.4Vdc	0	0
IIB/IIIB			
IIA/IIIA			
I			

PoEx IN - PORT 3 (CON1, Pin 3 wrt Pin 4 (0V))
PoEx IN - PORT 4 (CON1, Pin 5 wrt Pin 6 (0V))
PoEx IN - PORT 5 (CON1, Pin 7 wrt Pin 8 (0V))
PoEx IN - PORT 6 (CON1, Pin 9 wrt Pin 10 (0V))

Group	Ui	Ci	Li
IIC/IIIC	15.4Vdc	0.48µF	0
IIB/IIIB			
IIA/IIIA			
I			

EXTERNAL LEDS (CON1, Pin13 to 18 wrt Pin 11,12 (0V))
(values shown are for each output)

Group	Ui	Uo	Io	Po	Ci	Li
IIC/IIIC	5.88V	5.88V	52mA	76mW	0	0
IIB/IIIB						
IIA/IIIA						
I						

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:

Group	Capacitance (µF)	Inductance (mH)	or	L/R Ratio (µH/Ohm)
IIC	43	13		465
IIB/III	1000	52		1861
IIA	1000	105		3721
I	1000	172		6105

LAN Port 1 to LAN Port 6 (10/100 and Gigabit 10/100/1000 Ethernet) (SK1-SK6 – RJ45)
(values for all pins combined)

Group	Ui	Uo	Io	Ci	Li
IIC/IIIC	15.4V	5.88V (or PoEx power supply Uo parameter when connected)	2.18A (10/100) or 4.36A (Gigabit)	0.48µF	0
IIB/IIIB					
IIA/IIIA					
I					

Note 1. Io = 2.18A is the total for the four 10/100 Ethernet lines (each line 545mA), 4.36A is the total for the 8 Ethernet lines (Gigabit 10/100/1000 versions).

Note 2. Ci = 0.48uF is given as worse case (8 line) Gigabit Ethernet

Note 3. Gigabit 10/100/1000 versions are not suitable for Gas Group IIC

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

If PoEx is used, then the parameters of the PoEx power supply must also be considered
(The above capacitance figures are based on 5.88V)

The 10/100 or Gigabit 10/100/1000 Ethernet ports may be connected to any other equipment having appropriate Entity parameters.

9479-ETG WLAN AP/Bridge and 9479-ET WLAN AP/Bridge

The 9479-ET(G) WLAN AP/Bridge provides a wireless (Wi-Fi) connection as well as the IS Ethernet Network (LAN) ports. The use of 2.4GHz and 5GHz allows connections to various wireless devices in the Hazardous Area. There are 2 off RJ45 (LAN) ports that support 10/100 or 10/100/1000 Gigabit (G option) IS Ethernet connections – these can allow 'daisy-chaining' of Ethernet units together.

The module consists of a single printed circuit board (9479-WL) mounted inside an anti-static plastic DIN rail enclosure. Excluding the user connectors and LED's the unit is totally encapsulated. The module is suitable for mounting in the Hazardous Area within an enclosure having a minimum protection level equivalent to or exceeding IP54.

Electrical connections are via cage-clamp and/or screw type plug/socket terminals along with RJ45 type connectors for the Ethernet LAN ports and two SMA type RF connectors for the antenna(s).

Power (12V IS) is supplied to the module either locally or using Power over Ethernet (PoEx) from the LAN port - This requires the PoEx output to be wired to the Supply Input terminals by the user. Note that PoEx is not available on Gigabit LAN ports.

The equipment has the following safety description:

12Vdc POWER IN (CON1, Pin 1 wrt Pin 2 (0V))

Group	Ui	Ci	Li
IIC/IIIC	15.4Vdc	0	0
IIB/IIIB			
IIA/IIIA			
I			

PoEx OUT (CON1, Pin 3 wrt Pin 4 (0V) OR Pin 5 wrt Pin 6 (0V))

Group	Uo	Co	Lo
IIC/IIIC	Same as power supply connected to LAN1 or LAN2 PoEx connections	Same as power supply connected to LAN1 or LAN2 PoEx connections minus 0.48µF internal capacitance	Same as power supply connected to LAN1 or LAN2 PoEx connections
IIB/IIIB			
IIA/IIIA			
I			

Note: PoEx OUT (CON1 pins 3+4 OR pins 5+6) may be linked to 12Vdc POWER IN (CON1 pins 1+2) when power is via the LAN1 or LAN2 port.

EXTERNAL LEDS (CON1, Pin13 to 18 wrt Pin 11,12 (0V))
(values shown are for each output)

Group	Ui	Uo	Io	Po	Ci	Li
IIC/IIIC	5.88V	5.88V	52mA	76mW	0	0
IIB/IIIB						
IIA/IIIA						
I						

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:

Group	Capacitance (µF)	Inductance (mH)	or	L/R Ratio (µH/Ohm)
IIC	43	13		465
IIB/III	1000	52		1861
IIA	1000	105		3721
I	1000	172		6105

Wi-Fi ANTENNA (X1/X2 - SMA)

Group	Po (RF)
IIC/IIIC	500mW each
IIB/IIIB	
IIA/IIIA	
I	

Note: The type and length of any antenna cable and the antenna itself are classified as simple apparatus and are not restricted by the output parameters.

LAN Port 1 or LAN Port 2 (10/100 and Gigabit 10/100/1000 Ethernet) (SK1/SK2 – RJ45)
(values for all pins combined)

Group	Ui	Uo	Io	Ci	Li
IIC/IIIC	15.4V	5.88V	2.18A (10/100) or 4.36A (Gigabit)	0.48µF	0
IIB/IIIB					
IIA/IIIA					
I					

Note 1. Io = 2.18A is the total for the 4 Ethernet lines (each line 545mA), 4.36A is the total for the 8 Ethernet lines (Gigabit 10/100/1000 versions).

Note 2. Ci = 0.48uF is given as worse case (8 line) Gigabit Ethernet

Note 3. Gigabit 10/100/1000 versions are not suitable for Gas Group IIC

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

10/100 and 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

If PoEx is used, then the parameters of the PoEx power supply must also be considered
(The above capacitance figures are based on 5.88V)

The 10/100 or Gigabit 10/100/1000 Ethernet ports may be connected to any other equipment having appropriate Entity parameters.

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.

Specific Conditions of Use

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

i. For Group I, the modules shall each be mounted within an enclosure providing a degree of protection of at least IP54.

This shall be in accordance with IEC 60529, and the modules installed in a manner that does not impair the existing creepage and clearance distances. The enclosure shall also comply with the appropriate requirements of Clauses 7.4.2 and 7.5, or 8.2 of IEC 60079-0.

ii. For Group II, the RJ45 connectors shall be fitted with either a plug or blanking plug. Alternatively, the module shall be mounted in an enclosure providing a degree of protection of at least IP20.

This shall be in accordance with IEC 60529, and the modules installed in a manner that does not impair the existing creepage and clearance distances. The enclosure shall also comply with the appropriate requirements of Clauses 7.4.2 and 7.5, or 8.3 of IEC 60079-0.

iii. For Group III, the module shall be mounted inside a suitably certified enclosure which provides a minimum degree of protection of at least IP54. The module shall be installed in a manner that does not impair the existing creepage and clearance distances.

iv. The supply to the modules must be derived from a suitably certified, intrinsically safe supply.

v. The values of Co and Lo shall 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 1 µF for Group I and IIB/III and 600 nF for IIC.

vi. The equipment shall be mounted on an earthed metal bracket or housing.

Components covered by Ex Certificates issued to older editions of Standards

Certificate number	Standards (incl. Ed)	Assessment result
IECEx SIR 05.0015U	IEC 60079-0:2000 Ed 3.1 IEC 60079-11:1999 Ed 4	Technical differences evaluated and found satisfactory. For detail see ExTR