

1 **UK-TYPE EXAMINATION CERTIFICATE**

2 **Safety Device, Controlling Device or Regulating Device intended for use outside a potentially explosive atmosphere but required for or contributing to the safe functioning of Product and Protective Systems with respect to the risks of explosion**
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 UK-Type Examination Certificate Number: **BAS23UKEX0028**

4 Product: **MTL4500 & MTL5500 Series Galvanic Isolators – Miscellaneous modules**

5 Manufacturer: **Eaton Electric Limited**

6 Address: **Great Marlings, Butterfield, Luton, Bedfordshire, LU2 8DL United Kingdom**

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

8 SGS Baseefa, Approved Body number 1180, in accordance with Regulation 43 of the Apparatus and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), 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 Schedule 1 of the Regulations.

The examination and test results are recorded in confidential Report No. **GB/BAS/ExTR23.0021/00**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN IEC 60079-0:2018 EN 60079-11: 2012

except in respect of those requirements listed at item 18 of the Schedule.

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 UK-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations 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 :

⊗ II (1) GD [Ex ia Ga] IIC (-20°C ≤ Ta ≤ +60°C)
[Ex ia Da] IIIC (-20°C ≤ Ta ≤ +60°C)
⊗ I (M1) [Ex ia Ma] I (-20°C ≤ Ta ≤ +60°C)

SGS Baseefa Customer Reference No. **0703**

Project File No. **22/0560**

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0191



R S SINCLAIR
TECHNICAL MANAGER

On behalf of SGS Baseefa Limited

13 **Schedule 1 – MTL4573 & MTL4573Y Temperature Converter**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL4573 & MTL4573Y Temperature Converters are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4573 & MTL4573Y Temperature Converters are designed for connection to thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. An optional cold junction compensation (CJC) plug can be fitted to the hazardous area connections which alters the internal connections and affects the output parameters.

The apparatus comprises an isolating transformer, an opto-isolator, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

The MTL4573Y Temperature Converter differs from the MTL4573 with regard to the configuration of the non-hazardous area circuitry. In terms of intrinsic safety, both are identical.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1 to 6 (forming part of the same intrinsically safe circuit)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 76mA & L_i &= 0 \\ P_o &= 0.13W \end{aligned}$$

Hazardous Area Terminals 3 w.r.t. 1 (WITHOUT the Cold Junction Compensation (CJC) plug fitted)

$$\begin{aligned} U_o &= 1.1V & C_i &= 0 \\ I_o &= 7mA & L_i &= 0 \\ P_o &= 2mW \end{aligned}$$

Hazardous Area Terminals 3, 2 & 1 (with or without CJC plug fitted)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 10mA & L_i &= 0 \\ P_o &= 17mW \end{aligned}$$

Programming / Configuration Port (Jack Socket)

$$\begin{aligned} U_o &= 8V & U_i &= 9.1V \\ I_o &= 14.6mA \\ P_o &= 26mW \\ C_i &= 0 \\ L_i &= 0 \end{aligned}$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load connected to hazardous area terminals 1 to 6 and the programming / configuration port must not exceed the following values:

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous Area Terminals 1 to 6				
IIC	22	6.42		288
IIB*	500	25.6		1,057
IIA	1,000	53.0		2,228
I	1,000	77.2		3,402
Programming / Configuration Port (Jack Socket)				
IIC	0.367	153		349
IIB*	2.15	591		1,355
IIA	8.8	1,000		1,453
I	12.32	1,000		1,453

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4573-5	1 of 1	4	2.23	MTL4573 Certification Label Details – Baseefa – Ex i

For all other drawings see SGS23ATEX0021.

13 **Schedule 2 - MTL4575 Temperature Converter**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL4575 Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4575 Temperature converter is designed for connection to thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. An optional cold junction compensation plug can be fitted to the hazardous area connections, which alters the internal connections and affects the output parameters.

The apparatus comprises an isolating transformer, an opto-isolator, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1 to 6 (forming part of the same intrinsically safe circuit)

$$\begin{array}{ll} U_o = 6.6V & C_i = 0 \\ I_o = 76mA & L_i = 0 \\ P_o = 0.13W & \end{array}$$

Hazardous Area Terminals 3 w.r.t 1 (WITHOUT the Cold Junction Compensation (CJC) plug fitted)

$$\begin{array}{ll} U_o = 1.1V & C_i = 0 \\ I_o = 7mA & L_i = 0 \\ P_o = 2mW & \end{array}$$

Hazardous Area Terminals 3, 2 & 1 (with or without CJC plug fitted)

$$\begin{array}{ll} U_o = 6.6V & C_i = 0 \\ I_o = 10mA & L_i = 0 \\ P_o = 17mW & \end{array}$$

Programming / Configuration Port (Jack Socket)

$$\begin{array}{ll} U_o = 8V & U_i = 9.1V \\ I_o = 14.6mA & \\ P_o = 26mW & \\ C_i = 0 & \\ L_i = 0 & \end{array}$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load connected to hazardous area terminals 1 to 6 and the programming / configuration port must not exceed the following values:

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous Area Terminals 1 to 6				
IIC	22	6.42		288
IIB*	500	25.6		1,057
IIA	1,000	53.0		2,228
I	1,000	77.2		3,402
Programming / Configuration Port (Jack Socket)				
IIC	0.367	153		349
IIB*	2.15	591		1,355
IIA	8.8	1,000		1,453
I	12.32	1,000		1,453

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4575-1	6 of 6	6	2.23	MTL4575 Certification Label Details - Baseefa

For all other drawings see SGS23ATEX0021.

Schedule 3 - MTL4576 Two Channel & MTL4575B Single Channel Temperature Converter

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Certificate Number BAS23UKEX0028

15 Description of Product

The MTL4576 Two Channel Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either up to two thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4576 Two Channel Temperature Converter is designed for connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

The MTL4575B Single Channel Temperature Converter comprises the same circuitry and enclosure as the MTL4576, the only difference being is it only has one channel for the connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. In terms of intrinsic safety, both the MTL4576 & MTL4575B are identical.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14)

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1, 2, 3 & 4 (forming part of the same intrinsically safe circuit)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 42mA & L_i &= 0 \\ P_o &= 69.3mW \end{aligned}$$

Hazardous Area Terminals 1, 2 & 3 (Channel 1)

or

Hazardous Area Terminals 4, 5 & 6 (Channel 2 – MTL4576 model only)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 28mA & L_i &= 0 \\ P_o &= 46.2mW \end{aligned}$$

Hazardous Area Terminals 3 w.r.t. 1 (Channel 1)

or

Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL4576 model only)

$$\begin{aligned} U_o &= 1.2V & U_i &= 5V \\ I_o &= 4mA & C_i &= 0 \\ P_o &= 1.2mW & L_i &= 0 \end{aligned}$$

Programming / Configuration Port (Jack Socket)

$$\begin{aligned} U_o &= 6.68V & U_i &= 9.1V \\ I_o &= 12mA & C_i &= 0 \\ P_o &= 17.7mW & L_i &= 0 \end{aligned}$$

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous area terminals 1, 2, 3 & 4 (forming part of the same intrinsically safe circuit)				
IIC	22.0	20.1		513
IIB*	500	80.6		2,052
IIA	1,000	161.2		4,104
I	1,000	264.5		6,363
Hazardous area terminals 1, 2 & 3 (Channel 1) or terminals 4, 5 & 6 (Channel 2 – MTL4576 only)				
IIC	11.0	22.6		384
IIB*	250	90.7		1,539
IIA	500	181.4		2,121
I	500	297.6		2,121
Hazardous area terminals 3 w.r.t. 1 (channel 1) or terminals 6 w.r.t. 4 (Channel 2 – MTL4576 only)				
IIC	50	500		1,666
IIB*	500	500		1,666
IIA	500	500		1,666
I	500	500		1,666
Programming / Configuration Port (Jack Socket)				
IIC	0.478	79.4		448
IIB*	2.88	317.9		1,412
IIA	11.6	635.8		1,412
I	15.8	1,000		1,412

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)

Clause	Subject
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4576-1	7 of 7	5	2.23	MTL4576 Certification Label Details - Baseefa

For all other drawings see SGS23ATEX0021.

13 **Schedule 4 – MTL4581 Millivolt / Thermocouple Isolator**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL4581 Millivolt / Thermocouple Isolator are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a low-level d.c. signal from a voltage source or thermocouple located in the hazardous area by limitation of voltage and current. Two transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4581 Millivolt / Thermocouple Isolator are designed for connection to a low level d.c. signal from a voltage source of thermocouple situated in the hazardous area. The apparatus isolates and passes the signal to the receiving apparatus located in the non-hazardous area.

The apparatus comprises two isolating transformers, duplicated zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 13 & 14 are designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1 & 2

$$\begin{array}{lll} U_o = 1.1V & U_i = 28V & C_i = 0 \\ I_o = 53mA & I_i = 120mA & L_i = 0.5mH \\ P_o = 15mW & & \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 1 & 2 are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

When an external intrinsically safe source is connected to these terminals it should have a source resistance of U_i / I_i and the capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area connections must not exceed the values detailed in the certificate of the intrinsically safe source.

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu H/ohm$)
IIC	100	12.3		2,438
IIB*	1,000	47.3		8,932
IIA	1,000	104.2		18,140
I	1,000	155.7		28,229

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- 1) The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

- 2) The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4581-1	8 of 8	4	2.23	MTL4581 Certification Label Details - Baseefa

For all other drawings see SGS23ATEX0021.

13 **Schedule 5 – MTL4582B Resistance Isolator**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL4582B Resistance Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a Resistance Temperature Device (RTD) or other resistance located in the hazardous area by limitation of voltage and current. A transformer and opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4582B Resistance Isolator is designed for the connection to a 2-wire, 3-wire or 4-wire RTD or other resistance situated in the hazardous area. The apparatus repeats the resistance on the non-hazardous area output terminals for connection to a monitoring system.

The apparatus comprises an isolating transformer, opto-isolator, duplicated zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for connection of a suitably certified data terminal for programming the apparatus. An LED is fitted to provide power on indication.

Input / Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1, 3, 4 & 5

$$\begin{aligned} U_o &= 6.51V & C_i &= 0 \\ I_o &= 10mA & L_i &= 0 \\ P_o &= 16.1mW \end{aligned}$$

Hazardous Area Terminals 1, 3 & 4

$$\begin{aligned} U_o &= 6.51V & C_i &= 0 \\ I_o &= 6mA & L_i &= 0 \\ P_o &= 9.2mW \end{aligned}$$

Hazardous Area Terminals 3 w.r.t. 1

$$\begin{aligned} U_o &= 1.2V & U_i &= 5V \\ I_o &= 4mA & C_i &= 0 \\ P_o &= 1.2mW & L_i &= 0 \end{aligned}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 3 w.r.t. 1 are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

Programming / Configuration Port (Jack Socket)

$$\begin{aligned} U_o &= 6.68V & U_i &= 9.1V \\ I_o &= 12mA & C_i &= 0 \\ P_o &= 17.7mW & L_i &= 0 \end{aligned}$$

Load Parameters

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous area terminals 1, 3, 4 & 5				
IIC	22.0	355.5		1,536
IIB*	500	1,000		1,536
IIA	1,000	1,000		1,536
I	1,000	1,000		1,536
Hazardous area terminals 1, 3 & 4				
IIC	22.0	987.6		921
IIB*	500	1,000		921
IIA	1,000	1,000		921
I	1,000	1,000		921
Hazardous area terminals 3 w.r.t. 1				
IIC	100	1,000		3,333
IIB*	1,000	1,000		3,333
IIA	1,000	1,000		3,333
I	1,000	1,000		3,333
Programming / Configuration Port (Jack Socket)				
IIC	0.478	79.4		448
IIB*	2.88	317.9		1,412
IIA	11.6	635.8		1,412
I	15.8	1,000		1,412

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects

Clause	Subject
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4582B-5	1 of 1	3	2.23	MTL4582B Certification Label Details – Baseefa – Ex i

For all other drawings see SGS23ATEX0021.

Schedule 6 – MTL4531 Single Channel & MTL4533 Two Channel Vibration Transducer Interfaces

13

14

Certificate Number BAS23UKEX0028

15 Description of Product

The MTL4533 Two Channel Vibration Transducer Interface is designed to restrict the transfer of energy from unspecified apparatus in the non-hazardous area to up to two intrinsically safe vibration transducers by limitation of voltage and current. Two transformers and two opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises two isolating transformer, two opto-isolators and detection circuits with zener diode and resistor combinations to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The MTL4531 Single Channel Vibration Transducer Interface is a depopulated version of the MTL4533 with only one channel populated.

Input/Output Parameters

Non-Hazardous Area Terminals 7, 8, 11, 12, 13 & 14)

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 7, 8, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 3 w.r.t. 1 (Channel 1)

Or

Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL4533 model only)

$$\begin{array}{ll} U_o = 26.6V & C_i = 0 \\ I_o = 86mA & L_i = 0 \\ P_o = 0.66W & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 2 (Channel 1)

Or

Hazardous Area Terminals 6 w.r.t. 5 (Channel 2 – MTL4533 model only)

$$\begin{array}{ll} U_o = 1.1V & U_i = 28V \\ I_o = 0.11mA & C_i = 0 \\ P_o = 0.03mW & L_i = 0 \end{array}$$

Although the apparatus does not itself comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when each hazardous area channel is connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

Each channel must be considered as a separate intrinsically safe circuit.

Load Parameters

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

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
Hazardous Area Terminals 3 w.r.t. 1 or Terminals 6 w.r.t. 4 (MTL4533 only)				
IIC	0.094	4.02		56
IIB*	0.73	16.09		227
IIA	2.42	32.19		455
I	4.27	52.81		746
Hazardous Area Terminals 3 w.r.t. 2 or Terminals 6 w.r.t. 5 (MTL4533 only)				
IIC	100	1,000		1,000
IIB*	1,000	1,000		1,000
IIA	1,000	1,000		1,000
I	1,000	1,000		1,000

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is \geq 1% of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is \geq 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1 μ F for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4533-1	8 of 8	5	2.23	MTL4533 & MTL4531 Certification Label Details - Baseefa

For all other drawings see SGS23ATEX0021.

13

Schedule 7 – MTL4532 Pulse Isolator

14

Certificate Number BAS23UKEX0028

15 Description of Product

The MTL4532 Pulse Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in the hazardous area by limitation of voltage and current. Transformers, an opto-isolator and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4532 Pulse Isolator is designed for connection of a switch, proximity detector, current pulse transmitter or voltage pulse transmitter situated in the hazardous area. The apparatus repeats the pulse signals from the apparatus in the hazardous area onto outputs in the non-hazardous area. An alarm circuit provides a relay contact output in the non-hazardous area to indicate a failure.

The apparatus comprises isolating transformers, an opto-isolator, a relay, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 7, 8, 9, 10, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Non-hazardous area terminals 11 & 12 are connected to relay contacts which can switch up to 250V r.m.s. or 5A r.m.s. or 100VA.

Hazardous Area Terminals 2 w.r.t. 1, Hazardous Area Terminals 6 w.r.t. 1 or Hazardous Area Terminals 6 w.r.t. 3

$$\begin{array}{ll} U_o = 10.5V & C_i = 0 \\ I_o = 14mA & L_i = 0 \\ P_o = 37mW & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 1

$$\begin{array}{lll} U_o = 1.1V & U_i = 30V & C_i = 0 \\ I_o = 53mA & I_i = 100mA & L_i = 0 \\ P_o = 15mW & \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 3 w.r.t. 1 are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

When an external intrinsically safe source is connected to these terminals it should have a source resistance of U_i / I_i and the capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area connections must not exceed the values detailed in the certificate of the intrinsically safe source. Hazardous area terminals 2, 4, 5 and 6 must not be used when the source is connected.

Hazardous Area Terminals 5 w.r.t. 1

$U_o = 10.5V$ $C_i = 0$
 $I_o = 1.1mA$ $L_i = 0$
 $P_o = 2.9mW$

Hazardous Area Terminals 4 w.r.t. 3

$U_o = 28V$ $C_i = 0$
 $I_o = 93mA$ $L_i = 0$
 $P_o = 0.65W$

Hazardous Area Terminals 4 & 3 w.r.t. 1

$U_o = 28V$ $C_i = 0$
 $I_o = 93mA$ at 28V $L_i = 0$
 $I_o = 146mA$ at 2.9V
 $P_o = 0.65W$

Hazardous Area Terminals 5 & 4 w.r.t. 1

$U_o = 28V$ $C_i = 0$
 $I_o = 93mA$ at 28V $L_i = 0$
 $I_o = 94mA$ at 27.5V
 $P_o = 0.65W$

Programming / Configuration Port (Jack Socket)

$U_o = 8V$ $P_o = 27mW$ $C_i = 0$
 $I_o = 15mA$ $U_i = 9.1V$ $L_i = 0$

Load Parameters

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR L/R RATIO ($\mu H/ohm$)
Hazardous Area Terminals 2 w.r.t. 1, Hazardous Area Terminals 6 w.r.t. 1 or Hazardous Area Terminals 6 w.r.t. 3			
IIC	2.41	181.4	967
IIB*	16.8	725.6	1,333
IIA	75.0	1,000	1,333
I	95.0	1,000	1,333
Hazardous Area Terminals 3 w.r.t. 1			
IIC	100	12.6	2,439
IIB*	1,000	50.6	9,757
IIA	1,000	101.2	19,515
I	1,000	166.1	32,018
Hazardous Area Terminals 5 w.r.t. 1			
IIC	2.41	1,000	12,313
IIB*	16.8	1,000	49,254
IIA	75.0	1,000	98,508
I	95.0	1,000	161,616
Hazardous Area Terminals 4 w.r.t. 3			
IIC	0.083	4.2	55
IIB*	0.65	12.6	210
IIA	2.15	33.6	444
I	3.76	53.7	668

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous Area Terminals 4 & 3 w.r.t. 1				
IIC	0.083	1.66		55
IIB*	0.65	6.67		210
IIA	2.15	13.3		444
I	3.76	21.8		668
Hazardous Area Terminals 5 & 4 w.r.t. 1				
IIC	0.083	4.02		55
IIB*	0.65	16.0		210
IIA	2.15	32.1		444
I	3.76	52.8		668
Programming / Configuration Port (Jack Socket)				
IIC	0.367	60.7		360
IIB*	2.15	243.0		1,441
IIA	8.8	486.1		1,484
I	12.32	797.5		1,484

*Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4532-1	8 of 8	5	2.23	MTL4532 Certification Label Details - Baseefa

For all other drawings see SGS23ATEX0021.

Schedule 8 – MTL4561 Two Channel Fire / Smoke Detector Interface

13

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Certificate Number BAS23UKEX0028

15 Description of Product

The MTL4561 Two Channel Fire / Smoke Detector Interface is designed to provide two separate loop-powered interface channels for the connection of fire and smoke detectors located in the hazardous area to unspecified apparatus in the nonhazardous area whilst restricting the transfer of energy from unspecified non-hazardous area apparatus to the intrinsically safe circuits by limitation of voltage and current.

The MTL4561 Two Channel Fire / Smoke Detector Interface comprises two isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, fuses, zener diodes and resistors providing voltage and current limitation on each channel. The above, together with other electronic components are mounted on a single printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and nonhazardous area connections.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11 & 12

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11 & 12 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 & 3 w.r.t. 1 (Channel 1)

Or

Hazardous Area Terminals 5 & 6 w.r.t. 4 (Channel 2)

$$\begin{aligned} U_o &= 28V & C_i &= 0 \\ I_o &= 93mA & L_i &= 0 \\ P_o &= 0.65W \end{aligned}$$

Each channel must be considered as a separate intrinsically safe circuit.

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
IIC	0.083	4.2		56
IIB*	0.65	12.6		210
IIA	2.15	33.6		444
I	3.76	53.7		668

*Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- 1) The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- 2) The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause Subject

- | | |
|--------|--|
| 13 | Protection against other hazards (LVD type requirements, etc.) |
| 14 | Overloading of apparatus (protection relays, etc.) |
| 21 (1) | External effects |
| 21 (2) | Aggressive substances, etc. |

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4561-1	6 of 6	6	2.23	MTL4561 Certification Label Details - Baseefa

For all other drawings see SGS23ATEX0021.

13 **Schedule 9 – MTL5573 Temperature Converter**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL5573 Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5573 Temperature Converter is designed for connection to thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. An optional cold junction compensation (CJC) plug can be fitted to the hazardous area connections which alters the internal connections and affects the output parameters.

The apparatus comprises an isolating transformer, an opto-isolator, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

Input/Output Parameters

Non-Hazardous Area Terminals 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1 to 6 (forming part of the same intrinsically safe circuit)

$$\begin{array}{ll} U_o = 6.6V & C_i = 0 \\ I_o = 76mA & L_i = 0 \\ P_o = 0.13W & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 1 (WITHOUT the Cold Junction Compensation (CJC) plug fitted)

$$\begin{array}{ll} U_o = 1.1V & C_i = 0 \\ I_o = 7mA & L_i = 0 \\ P_o = 2mW & \end{array}$$

Hazardous Area Terminals 3, 2 & 1 (with or without CJC plug fitted)

$$\begin{array}{ll} U_o = 6.6V & C_i = 0 \\ I_o = 10mA & L_i = 0 \\ P_o = 17mW & \end{array}$$

Programming / Configuration Port (Jack Socket)

$$\begin{array}{ll} U_o = 8V & U_i = 9.1V \\ I_o = 14.6mA & \\ P_o = 26mW & \\ C_i = 0 & \\ L_i = 0 & \end{array}$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load connected to hazardous area terminals 1 to 6 and the programming / configuration port must not exceed the following values:

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous Area Terminals 1 to 6				
IIC	22	6.42		288
IIB*	500	25.6		1,057
IIA	1,000	53.0		2,228
I	1,000	77.2		3,402
Programming / Configuration Port (Jack Socket)				
IIC	0.367	153		349
IIB*	2.15	591		1,355
IIA	8.8	1,000		1,453
I	12.32	1,000		1,453

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5573-1	1 of 1	4	2.23	MTL5573 Certification Label Details & DIN Rail Fittings – Baseefa – Ex i

For all other drawings see SGS23ATEX0021.

13 **Schedule 10 – MTL5575 Temperature Converter**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL5575 Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5575 Temperature converter is designed for connection to thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. An optional cold junction compensation plug can be fitted to the hazardous area connections, which alters the internal connections and affects the output parameters.

The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1 to 6 (forming part of the same intrinsically safe circuit)

$$\begin{array}{ll} U_o = 7.2V & C_i = 0 \\ I_o = 76mA & L_i = 0 \\ P_o = 0.14W & \end{array}$$

Hazardous Area Terminals 3 w.r.t 1 (WITHOUT the Cold Junction Compensation (CJC) plug fitted)

$$\begin{array}{ll} U_o = 1.1V & C_i = 0 \\ I_o = 7mA & L_i = 0 \\ P_o = 2mW & \end{array}$$

Hazardous Area Terminals 3, 2 & 1 (with or without CJC plug fitted)

$$\begin{array}{ll} U_o = 7.2V & C_i = 0 \\ I_o = 10mA & L_i = 0 \\ P_o = 18mW & \end{array}$$

Programming / Configuration Port (Jack Socket)

$$\begin{array}{ll} U_o = 8V & U_i = 9.1V \\ I_o = 14.6mA & \\ P_o = 26mW & \\ C_i = 0 & \\ L_i = 0 & \end{array}$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load connected to hazardous area terminals 1 to 6 and the programming / configuration port must not exceed the following values: -

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
Hazardous Area Terminals 1 to 6				
IIC	13.5	6.42		263
IIB*	240	25.6		969
IIA	1,000	53.0		2,042
I	1,000	77.2		3,119
Programming / Configuration Port (Jack Socket)				
IIC	0.367	153		349
IIB*	2.15	591		1,355
IIA	8.8	1,000		1,453
I	12.32	1,000		1,453

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1μ F for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5575-1	1 of 1	5	2.23	MTL5575 Certification Label Details & DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.

Schedule 11 – MTL5576 Two Channel & MTL5575B Single Channel Temperature Converter

13

Channel Temperature Converter

14

Certificate Number BAS23UKEX0028

15 Description of Product

The MTL5576 Two Channel Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either up to two thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5576 Two Channel Temperature Converter is designed for connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area.

The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

The MTL5575B Single Channel Temperature Converter comprises the same circuitry and enclosure as the MTL5576, the only difference being is it only has one channel for the connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. In terms of intrinsic safety, both the MTL5576 & MTL5575B are identical.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14)

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1, 2, 3 & 4 (forming part of the same intrinsically safe circuit)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 42mA & L_i &= 0 \\ P_o &= 69.3mW \end{aligned}$$

Hazardous Area Terminals 1, 2 & 3 (Channel 1)

or

Hazardous Area Terminals 4, 5 & 6 (Channel 2 – MTL5576 model only)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 28mA & L_i &= 0 \\ P_o &= 46.2mW \end{aligned}$$

Hazardous Area Terminals 3 w.r.t. 1 (Channel 1)

or

Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL5576 model only)

$$\begin{aligned} U_o &= 1.2V & U_i &= 5V \\ I_o &= 4mA & C_i &= 0 \\ P_o &= 1.2mW & L_i &= 0 \end{aligned}$$

Programming / Configuration Port (Jack Socket)

$$\begin{aligned} U_o &= 6.68V & U_i &= 9.1V \\ I_o &= 12mA & C_i &= 0 \\ P_o &= 17.7mW & L_i &= 0 \end{aligned}$$

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

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
Hazardous area terminals 1, 2, 3 & 4 (forming part of the same intrinsically safe circuit)				
IIC	22.0	20.1		513
IIB*	500	80.6		2,052
IIA	1,000	161.2		4,104
I	1,000	264.5		6,363
Hazardous area terminals 1, 2 & 3 (Channel 1) or terminals 4, 5 & 6 (Channel 2 – MTL5576 only)				
IIC	11.0	22.6		384
IIB*	250	90.7		1,539
IIA	500	181.4		2,121
I	500	297.6		2,121
Hazardous area terminals 3 w.r.t. 1 (channel 1) or terminals 6 w.r.t. 4 (Channel 2 – MTL5576 only)				
IIC	50	500		1,666
IIB*	500	500		1,666
IIA	500	500		1,666
I	500	500		1,666
<u>Programming / Configuration Port (Jack Socket)</u>				
IIC	0.478	79.4		448
IIB*	2.88	317.9		1,412
IIA	11.6	635.8		1,412
I	15.8	1,000		1,412

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is \geq 1% of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is \geq 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1 μ F for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5576-1	1 of 1	5	2.23	MTL5576 Certification Label Details & DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.

13 **Schedule 12 – MTL5581 Millivolt / Thermocouple Isolator**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL5581 Millivolt / Thermocouple Isolator are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a low-level d.c. signal from a voltage source or thermocouple located in the hazardous area by limitation of voltage and current. Two transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5581 Millivolt / Thermocouple Isolator are designed for connection to a low level d.c. signal from a voltage source of thermocouple situated in the hazardous area.

The apparatus isolates and passes the signal to the receiving apparatus located in the non-hazardous area. The apparatus comprises two isolating transformers, duplicated zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

Input/Output Parameters

Non-Hazardous Area Terminals 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 11, 12, 13 & 14 are designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1 & 2

$$\begin{array}{lll} U_o = 1.1V & U_i = 28V & C_i = 0 \\ I_o = 53mA & I_i = 120mA & L_i = 0.5mH \\ P_o = 15mW & & \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 1 & 2 are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

When an external intrinsically safe source is connected to these terminals it should have a source resistance of U_i / I_i and the capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area connections must not exceed the values detailed in the certificate of the intrinsically safe source.

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu H/ohm$)
IIC	100	12.3		2,438
IIB*	1,000	47.3		8,932
IIA	1,000	104.2		18,140
I	1,000	155.7		28,229

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

- 2) The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5581-1	1 of 1	4	2.23	MTL5581 Certification Label Details & DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.

13 **Schedule 13 – MTL5582 Resistance Isolator**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL5582 Resistance Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a Resistance Temperature Device (RTD) or other resistance located in the hazardous area by limitation of voltage and current. A transformer and opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5582 Resistance Isolator is designed for connection to a 2-wire, 3-wire or 4-wire RTD or other resistance situated in the hazardous area. The apparatus repeats the resistance on the non-hazardous area output terminals for connection to a monitoring system.

The apparatus comprises an isolating transformer, opto-isolator, duplicated zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for connection of a suitably certified data terminal for programming the apparatus.

Input/Output Parameters

Non-Hazardous Area Terminals 9, 10, 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 9, 10, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1, 3, 4 & 5

$$\begin{array}{ll} U_o = 6.6V & C_i = 0 \\ I_o = 42mA & L_i = 0 \\ P_o = 69.3mW & \end{array}$$

Hazardous Area Terminals 1, 3 & 4

$$\begin{array}{ll} U_o = 6.6V & C_i = 0 \\ I_o = 28mA & L_i = 0 \\ P_o = 46.2mW & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 1

$$\begin{array}{ll} U_o = 1.2V & U_i = 5V \\ I_o = 4mA & C_i = 0 \\ P_o = 1.2mW & L_i = 0 \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 3 w.r.t. 1 are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

Programming / Configuration Port (Jack Socket)

$$\begin{array}{ll} U_o = 6.68V & U_i = 9.1V \\ I_o = 12mA & C_i = 0 \\ P_o = 17.7mW & L_i = 0 \end{array}$$

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous area terminals 1, 3, 4 & 5				
IIC	22.0	20.1		513
IIB*	500	80.6		2,052
IIA	1,000	161.2		4,104
I	1,000	264.5		6,363
Hazardous area terminals 1, 3 & 4				
IIC	22.0	45.3		769
IIB*	500	181.4		3,078
IIA	1,000	362.8		4,242
I	1,000	595.2		4,242
Hazardous area terminals 3 w.r.t. 1				
IIC	100	1,000		3,333
IIB*	1,000	1,000		3,333
IIA	1,000	1,000		3,333
I	1,000	1,000		3,333
Programming / Configuration Port (Jack Socket)				
IIC	0.478	79.4		448
IIB*	2.88	317.9		1,412
IIA	11.6	635.8		1,412
I	15.8	1,000		1,412

*Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4582-1	7 of 7	4	2.23	MTL5582 Certification Label Detail & DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.

13 **Schedule 14 – MTL5582B Resistance Isolator**

14 **Certificate Number BAS23UKEX0028**

15 **Description of Product**

The MTL5582B Resistance Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a Resistance Temperature Device (RTD) or other resistance located in the hazardous area by limitation of voltage and current. A transformer and opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5582B Resistance Isolator is designed for the connection to a 2-wire, 3-wire or 4-wire RTD or other resistance situated in the hazardous area. The apparatus repeats the resistance on the non-hazardous area output terminals for connection to a monitoring system.

The apparatus comprises an isolating transformer, opto-isolator, duplicated zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for connection of a suitably certified data terminal for programming the apparatus. An LED is fitted to provide power on indication.

Input / Output Parameters

Non-Hazardous Area Terminals 9, 10, 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 9, 10, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 1, 3, 4 & 5

$$\begin{aligned} U_o &= 6.51V & C_i &= 0 \\ I_o &= 10mA & L_i &= 0 \\ P_o &= 16.1mW \end{aligned}$$

Hazardous Area Terminals 1, 3 & 4

$$\begin{aligned} U_o &= 6.51V & C_i &= 0 \\ I_o &= 6mA & L_i &= 0 \\ P_o &= 9.2mW \end{aligned}$$

Hazardous Area Terminals 3 w.r.t. 1

$$\begin{aligned} U_o &= 1.2V & U_i &= 5V \\ I_o &= 4mA & C_i &= 0 \\ P_o &= 1.2mW & L_i &= 0 \end{aligned}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 3 w.r.t. 1 are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

Programming / Configuration Port (Jack Socket)

$$\begin{aligned} U_o &= 6.68V & U_i &= 9.1V \\ I_o &= 12mA & C_i &= 0 \\ P_o &= 17.7mW & L_i &= 0 \end{aligned}$$

Load Parameters

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous area terminals 1, 3, 4 & 5				
IIC	22.0	355.5		1,536
IIB*	500	1,000		1,536
IIA	1,000	1,000		1,536
I	1,000	1,000		1,536
Hazardous area terminals 1, 3 & 4				
IIC	22.0	987.6		921
IIB*	500	1,000		921
IIA	1,000	1,000		921
I	1,000	1,000		921
Hazardous area terminals 3 w.r.t. 1				
IIC	100	1,000		3,333
IIB*	1,000	1,000		3,333
IIA	1,000	1,000		3,333
I	1,000	1,000		3,333
Programming / Configuration Port (Jack Socket)				
IIC	0.478	79.4		448
IIB*	2.88	317.9		1,412
IIA	11.6	635.8		1,412
I	15.8	1,000		1,412

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects

Clause	Subject
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5582B-1	1 of 1	4	2.23	MTL5582B Certification Label Details & DIN Rail Fittings – Baseefa – Ex i

For all other drawings see SGS23ATEX0021.

Schedule 15 – MTL5531 Single Channel & MTL5533 Two Channel Vibration Transducer Interfaces

13

14

Certificate Number BAS23UKEX0028

15 Description of Product

The MTL5533 Two Channel Vibration Transducer Interface is designed to restrict the transfer of energy from unspecified apparatus in the non-hazardous area to up to two intrinsically safe vibration transducers by limitation of voltage and current. Two transformers and two opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises two isolating transformer, two opto-isolators and detection circuits with zener diode and resistor combinations to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The MTL5531 Single Channel Vibration Transducer Interface is a depopulated version of the MTL5533 with only one channel populated.

Input/Output Parameters

Non-Hazardous Area Terminals 7, 8, 11, 12, 13 & 14)

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 7, 8, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 3 w.r.t. 1 (Channel 1)

Or

Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL5533 model only)

$$\begin{array}{ll} U_o = 26.6V & C_i = 0 \\ I_o = 86mA & L_i = 0 \\ P_o = 0.66W & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 2 (Channel 1)

Or

Hazardous Area Terminals 6 w.r.t. 5 (Channel 2 – MTL5533 model only)

$$\begin{array}{ll} U_o = 1.1V & U_i = 28V \\ I_o = 0.11mA & C_i = 0 \\ P_o = 0.03mW & L_i = 0 \end{array}$$

Although the apparatus does not itself comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when each hazardous area channel is connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

Each channel must be considered as a separate intrinsically safe circuit.

Load Parameters

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous Area Terminals 3 w.r.t. 1 or Terminals 6 w.r.t. 4 (MTL5533 only)				
IIC	0.094	4.02		56
IIB*	0.73	16.09		227
IIA	2.42	32.19		455
I	4.27	52.81		746
Hazardous Area Terminals 3 w.r.t. 2 or Terminals 6 w.r.t. 5 (MTL5533 only)				
IIC	100	1,000		1,000
IIB*	1,000	1,000		1,000
IIA	1,000	1,000		1,000
I	1,000	1,000		1,000

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5533-1	1 of 1	5	2.23	MTL5533 & MTL5531 Certification Label Details & DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.

13

Schedule 16 – MTL5532 Pulse Isolator

14

Certificate Number BAS23UKEX0028

15 Description of Product

The MTL5532 Pulse Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in the hazardous area by limitation of voltage and current. Transformers, an opto-isolator and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5532 Pulse Isolator is designed for connection of a switch, proximity detector, current pulse transmitter or voltage pulse transmitter situated in the hazardous area. The apparatus repeats the pulse signals from the apparatus in the hazardous area onto outputs in the non-hazardous area. An alarm circuit provides a relay contact output in the non-hazardous area to indicate a failure.

The apparatus comprises isolating transformers, an opto-isolator, a relay, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 7, 8, 9, 10, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Non-hazardous area terminals 11 & 12 are connected to relay contacts which can switch up to 250V r.m.s. or 5A r.m.s. or 100VA.

Hazardous Area Terminals 2 w.r.t. 1, Hazardous Area Terminals 6 w.r.t. 1 or Hazardous Area Terminals 6 w.r.t. 3

$$\begin{array}{ll} U_o = 10.5V & C_i = 0 \\ I_o = 14mA & L_i = 0 \\ P_o = 37mW & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 1

$$\begin{array}{lll} U_o = 1.1V & U_i = 30V & C_i = 0 \\ I_o = 53mA & I_i = 100mA & L_i = 0 \\ P_o = 15mW & \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 3 w.r.t. 1 are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of EN 60079-11: 2012 to the parameters of the circuit into which it is connected.

When an external intrinsically safe source is connected to these terminals it should have a source resistance of U_i / I_i and the capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area connections must not exceed the values detailed in the certificate of the intrinsically safe source. Hazardous area terminals 2, 4, 5 and 6 must not be used when the source is connected.

Hazardous Area Terminals 5 w.r.t. 1

$$\begin{array}{ll} U_o = 10.5V & C_i = 0 \\ I_o = 1.1mA & L_i = 0 \\ P_o = 2.9mW & \end{array}$$

Hazardous Area Terminals 4 w.r.t. 3

$$\begin{array}{ll} U_o = 28V & C_i = 0 \\ I_o = 93mA & L_i = 0 \\ P_o = 0.65W & \end{array}$$

Hazardous Area Terminals 4 & 3 w.r.t. 1

$$\begin{array}{ll} U_o = 28V & C_i = 0 \\ I_o = 93mA \text{ at } 28V & L_i = 0 \\ I_o = 146mA \text{ at } 2.9V & \\ P_o = 0.65W & \end{array}$$

Hazardous Area Terminals 5 & 4 w.r.t. 1

$$\begin{array}{ll} U_o = 28V & C_i = 0 \\ I_o = 93mA \text{ at } 28V & L_i = 0 \\ I_o = 94mA \text{ at } 27.5V & \\ P_o = 0.65W & \end{array}$$

Programming / Configuration Port (Jack Socket)

$$\begin{array}{lll} U_o = 8V & P_o = 27mW & C_i = 0 \\ I_o = 15mA & U_i = 9.1V & L_i = 0 \end{array}$$

Load Parameters

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

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
Hazardous Area Terminals 2 w.r.t. 1, Hazardous Area Terminals 6 w.r.t. 1 or Hazardous Area Terminals 6 w.r.t. 3				
IIC	2.41	181.4		967
IIB*	16.8	725.6		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333
Hazardous Area Terminals 3 w.r.t. 1				
IIC	100	12.6		2,439
IIB*	1,000	50.6		9,757
IIA	1,000	101.2		19,515
I	1,000	166.1		32,018
Hazardous Area Terminals 5 w.r.t. 1				
IIC	2.41	1,000		12,313
IIB*	16.8	1,000		49,254
IIA	75.0	1,000		98,508
I	95.0	1,000		161,616
Hazardous Area Terminals 4 w.r.t. 3				
IIC	0.083	4.2		55
IIB*	0.65	12.6		210
IIA	2.15	33.6		444

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
I	3.76	53.7		668
Hazardous Area Terminals 4 & 3 w.r.t. 1				
IIC	0.083	1.66		55
IIB*	0.65	6.67		210
IIA	2.15	13.3		444
I	3.76	21.8		668
Hazardous Area Terminals 5 & 4 w.r.t. 1				
IIC	0.083	4.02		55
IIB*	0.65	16.0		210
IIA	2.15	32.1		444
I	3.76	52.8		668
Programming / Configuration Port (Jack Socket)				
IIC	0.367	60.7		360
IIB*	2.15	243.0		1,441
IIA	8.8	486.1		1,484
I	12.32	797.5		1,484

*Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

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17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5532-1	1 of 1	5	2.23	MTL5532 Certification Label Details & DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.

Schedule 17 – MTL5561 Two Channel Fire / Smoke Detector Interface

13

14

Certificate Number BAS23UKEX0028

15 Description of Product

The MTL5561 Two Channel Fire / Smoke Detector Interface is designed to provide two separate loop-powered interface channels for the connection of fire and smoke detectors located in the hazardous area to unspecified apparatus in the non-hazardous area whilst restricting the transfer of energy from unspecified non-hazardous area apparatus to the intrinsically safe circuits by limitation of voltage and current.

The MTL5561 Two Channel Fire / Smoke Detector Interface comprises two isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, fuses, zener diodes and resistors providing voltage and current limitation on each channel. The above, together with other electronic components are mounted on a single printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11 & 12

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11 & 12 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 & 3 w.r.t. 1 (Channel 1)

Or

Hazardous Area Terminals 5 & 6 w.r.t. 4 (Channel 2)

$$\begin{aligned} U_o &= 28V & C_i &= 0 \\ I_o &= 93mA & L_i &= 0 \\ P_o &= 0.65W \end{aligned}$$

Each channel must be considered as a separate intrinsically safe circuit.

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
IIC	0.083	4.2		56
IIB*	0.65	12.6		210
IIA	2.15	33.6		444
I	3.76	53.7		668

*Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- 1) The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is $< 1\%$ of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is $< 1\%$ of the C_o value.
- 2) The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is $\geq 1\%$ of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is $\geq 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause Subject

- 13 Protection against other hazards (LVD type requirements, etc.)
- 14 Overloading of apparatus (protection relays, etc.)
- 21 (1) External effects
- 21 (2) Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5561-1	1 of 1	6	2.23	MTL5561 Certification Label Details & DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.

Schedule 18 – MTL5553 Foundation Fieldbus Isolator / Power Supply

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Certificate Number BAS23UKEX0028

15 Description of Product

The MTL5553 Foundation Fieldbus Isolator / Power Supply is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to Fieldbus apparatus located in the hazardous area by limitation of voltage and current. Two transformers and an opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5553 Foundation Fieldbus Isolator / Power Supply is designed for the connection to Fieldbus devices situated in the hazardous area. The apparatus provides power and communication to the Fieldbus devices through the signal conductors for connection to a Fieldbus Network located in the non-hazardous area. Terminals are also provided on the hazardous area side of the apparatus to permit the connection of a suitably certified Fieldbus Communicator to permit diagnostics of the Fieldbus network.

The apparatus comprises two isolating transformers, an opto-isolator, duplicated zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. An LED is fitted to provide power on indication.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2/5 w.r.t. 1/4

$$\begin{array}{ll} U_o = 22V & C_i = 0 \\ I_o = 216mA & L_i = 0 \\ P_o = 1.2W & \end{array}$$

Load Parameters

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to the hazardous area terminals 2/5 w.r.t. 1/4 must not exceed the following values: -

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu H/ohm$)
IIC	0.165	0.26		29
IIB*	1.14	0.79		119
IIA	4.2	2.12		239
I	6.0	9.54		392

*Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

- 1) The above load parameters apply when one of the two conditions below is given:
 - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
 - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

- 2) The above parameters are reduced to 50% when both of the two conditions below are given:
 - the total L_i of the external circuit (excluding the cable) is \geq 1% of the L_o value and
 - the total C_i of the external circuit (excluding the cable) is \geq 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1 μ F for Groups IIB, IIA & I and 600nF for Group IIC.

The values of Lo and Co determined by this method shall not be exceeded by the sum of all of the Li plus cable inductances in the circuit and the sum of all of the Ci plus cable capacitances respectively.

16 Report Number

GB/BAS/ExTR23.0021/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject
13	Protection against other hazards (LVD type requirements, etc.)
14	Overloading of apparatus (protection relays, etc.)
21 (1)	External effects
21 (2)	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI5553-5	1 of 1	3	2.23	MTL5553 Certification Label Details and DIN Rail Fittings - Baseefa

For all other drawings see SGS23ATEX0021.