



1 **EC-TYPE EXAMINATION CERTIFICATE**

2 **Component Intended for use on/in an Equipment or Protective System**
Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC

3 EC-Type Examination Certificate Number : **BAS01ATEX1285U**

4 Component: **HIGH SPEED OPTO ISOLATOR TYPE OPI 2000M**

5 Manufacturer: **BEDFORD OPTO TECHNOLOGY LIMITED**

6 Address: **Biggar, Lanarkshire, ML12 6NR**

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

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of components intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(CI)0751 dated 13 August 2001

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 EN 50020: 1994 EN 50284: 1999

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

10 The sign "U" placed after the certificate number indicates that this certificate must not be mistaken for a certificate intended for an equipment or protective system. This partial certification may be used as a basis for certification of an equipment or protective system.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified component. If applicable, further requirements of this Directive apply to the manufacture and supply of this component.

12 The marking of the component shall include the following:-

 **II 1 GD EEx ia IIC**

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

File No: EECS 1632/02/004

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.



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pp **I M CLEARE**
DIRECTOR
17 August 2001



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Schedule

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EC-TYPE EXAMINATION CERTIFICATE No. BAS01ATEX1285U

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Description of Component

The High Speed Opto-isolator Type OPI 2000M is designed to provide electrical isolation between two circuits and permit the transfer of data between them by optical means.

A light emitting diode and a photo transistor are enclosed within a moulded plastic shell and terminated as a surface mounted device, where the leads are designed to be soldered to pads on the same side of the printed circuit board as the component.

The opto-isolator is designed for applications either within a hazardous area or within a safe area and may be used in ambient temperatures of up to 80°C. When used within hazardous area apparatus the maximum surface temperature of this device will depend upon the total fault power dissipated in both the light emitting diode and the photo transistor within the opto-isolator. e.g. for a total fault power limited to not greater than 0.5W then the maximum surface temperature rise of the device will not be greater than 20°C.

The internal and external segregation distances between the conducting parts of the light emitting diode and the photo transistor complies with the creepage and clearance requirements for voltages up to 375 volts peak. The Opto-isolator is capable of withstanding an a.c. test voltage of at least 1500V for 1 min. without breakdown between the two circuits.

Parameters for Non IS : IS applications:-

Either the light emitting diode circuit or the photo transistor circuit:-

$$U_m = 250 \text{ Volts r.m.s.}$$

$$P_i \leq 3W^*$$

Either the photo transistor circuit or the light emitting diode circuit, respectively:-

$$U_i \leq 75 \text{ Volts peak or d.c.} \quad U_o = 0$$

$$P_i \leq 3W^* \quad P_o = 0$$

$$C_i = 0$$

$$L_i = 0$$

* Subject to an overriding Total Package power limit of 3W

Parameters for IS : IS applications:-

The light emitting diode and/or the photo transistor circuit:-

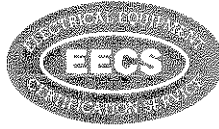
The sum of the two IS circuit voltages must be less than $U_i = 375 \text{ Volts}$ $U_o = 0$

$$P_i \leq 3W^* \quad P_o = 0$$

$$C_i = 0$$

$$L_i = 0$$

* Subject to an overriding Total Package power limit of 3W and consideration of surface temperature



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EC-TYPE EXAMINATION CERTIFICATE No. BAS01ATEX1285U

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Report No.

01(CI)0751

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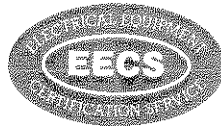
Schedule of Limitations

1. The Opto-isolator must be mounted on a p.c.b. having a CTI of at least 175 so that creepage and clearance distances are not impaired. The surface mounted device is designed for the pins to be soldered to pads on the same side of the printed circuit board as the component and must only be used either:-
 - a) on printed circuit boards which are potted, provided that the pad segregation maintains at least 2mm under potting,
 - or
 - b) on printed circuit boards which are coated provided that the pad segregation maintains at least 3.3mm under coating. Where the coating shall seal the connections after soldering and shall be two coats if applied by spraying or a single coat if dipped, brushed or vacuum impregnated. A CTI of at least 175 shall apply to both the pcb substrate and the coating material.
2. The Opto-isolator may be used to provide isolation between either:-
 - i) A non-intrinsically safe circuit and an intrinsically safe circuit, (Non IS : IS), where the IS circuit voltage is not greater than 75 Volts peak or d.c.
 - ii) Two intrinsically safe circuits, (IS : IS), where the sum of the two circuit voltages is not greater than 375 Volts peak or d.c.
3. The Opto-isolator must be installed such that the connection pins are provided with a degree of protection of at least IP20 where gasses and vapours may be present. If the Opto-isolator is to be installed within apparatus where flammable dusts represent a hazard then the overall apparatus must be appropriately certified, (e.g. EN 50281-1-1).

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Essential Health and Safety Requirements

ESSENTIAL HEALTH & SAFETY REQUIREMENTS not covered by standards listed in Section 9		
Clause	Subject	Compliance
1.1.3	Changes in characteristics of materials and combinations thereof	Report No 01(CI)0751 Clause 6.1.1.3
1.2.2	Components for incorporation or replacement	Report No 01(CI)0751 Clause 6.1.2.2
1.2.5	Additional means of protection	Report No 01(CI)0751 Clause 6.1.2.5
1.2.7	Protection against other hazards	Report No 01(CI)0751 Clause 6.1.2.7
1.4.2	Withstanding attack by aggressive substances	Report No 01(CI)0751 Clause 6.1.4.2



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EC-TYPE EXAMINATION CERTIFICATE No. BAS01ATEX1285U

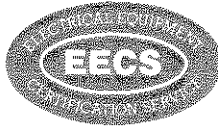
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DRAWINGS

Number	Issue	Date	Description
OPI2000MASS	B	07/08/2001	General Assembly
OPI2000MATEX	A	07/08/2001	Materials and Marking
OPI2000MLP	A	18/07/2001	Light Pipe

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

BASEEFA List Keywords
2OPTOCOU



1 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2 **Component Intended for use on/in an Equipment or Protective System**
3 **Intended for use in Potentially explosive atmospheres**
4 **Directive 94/9/EC**

5 Supplementary EC-Type Examination Certificate Number: **BAS01ATEX1285U/1**

6 Component: **HIGH SPEED OPTO ISOLATOR TYPE OPI2000M**

7 Manufacturer: **BEDFORD OPTO TECHNOLOGY LIMITED**

8 Address: **Biggar, Lanarkshire, ML12 6NR**

9 This supplementary certificate extends EC-Type Examination Certificate No. BAS01ATEX1285U to apply to components designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This Supplementary Certificate shall be held with the original Certificate.

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

File No: EECS 1632/02/004

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10 I M CLEARE
11 DIRECTOR
12 13 March 2002



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14 **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX1285U/1**

Description of the Variation to the Component

VARIATION 1.1

To permit the use of an alternative material for the internal light pipe. The operating parameters and the Schedule of Limitations on the original certificate continue to apply.

Report No.

None

Schedule of Limitations

See original certificate.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Issue	Date	Description
OPI 2000 MATEX	B	22/2/02	Materials and Marking
OPI 2000 MLP	B	19/2/02	Light Pipe

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1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Component Intended for use on/in an Equipment**
3 **Intended for use in Potentially Explosive Atmospheres - Directive 94/9/EC**

3 Supplementary EC - Type Examination Certificate Number: **BAS01ATEX1285U/2**

4 Component: **High Speed Opto Isolator Type OPI 2000M**

5 Manufacturer: **Bedford Opto Technology Limited**

6 Address: **1 Biggar Business Park, Market Road, Biggar, Lanarkshire, ML12 6FX**

7 This supplementary certificate extends EC - Type Examination Certificate No. BAS01ATEX1285U to apply to components designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

This supplementary certificate shall be held with the original certificate.

The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa (2001) Ltd., Notified Body Number 1180, is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate it has issued.

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Baseefa Customer Reference No. 1632

Project File No. 07/0405

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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PP DISBREARLEY

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.



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Certificate Number BAS01ATEX1285U/2

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Description of the variation to the Component

Variation 2.1

To permit:

- minor drawing changes
- an alternative light pipe
- a through-hole mounted version designated OPI2000MTH

The OPI2000MTH is not subject to schedule of limitation no. 1 specified for the OPI2000M for voltages up to 375Vpk providing the mounting arrangement does not reduce the creepage distance to less than 10mm.

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GB/BAS/ExTR07.0152/00

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Schedule of Limitations

None additional to those listed previously

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Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

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Drawings and Documents

Number	Sheet	Issue	Date	Description
OPI2000MATEX	1 of 1	D	04.10.07	High Speed IS Coupler Short Body
OPI2000MASS	1 of 1	E	04.10.07	High Speed IS Coupler Assembly Short Body
OPI2000MLP	1 of 1	D	30.03.07	High Speed IS Coupler, Combined Light Guide And Back Plate Short Body



1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

2 **Component Intended for use on/in an Equipment**
3 **Intended for use in Potentially Explosive Atmospheres - Directive 94/9/EC**

3 Supplementary EC - Type **BAS01ATEX1285U/3**
Examination Certificate Number:

4 Component: **High Speed Opto Isolator Type OPI 2000M**

5 Manufacturer: **Bedford Opto Technology Limited**

6 Address: **1 Biggar Business Park, Market Road, Biggar, Lanarkshire, ML12 6FX**

7 This supplementary certificate extends EC - Type Examination Certificate No. BAS01ATEX1285U to apply to components designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

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Baseefa Customer Reference No. 1632

Project File No. 07/0889

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DIRECTOR
On behalf of
Baseefa (2001) Ltd.

Re-issued 9th July 2008 to replace original



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Schedule

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Certificate Number BAS01ATEX1285U/3

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Description of the variation to the Component

Variation 3.1

To permit the re-examination of the High Speed Opto Isolator, Types OPI 2000M and OPI 2000MTH against the requirements of EN60079-0:2006, EN60079-11:2007, EN60079-26:2004, EN61241-0:2006 and EN61241-11:2006 and to confirm compliance in all respects, so that the components may be marked with the certification code:-

⊕ II 1GD Ex ia IIC

The through-hole mounted version OPI2000MTH is not subject to Schedule of Limitation No. 1, specified for the OPI2000M, for voltages up to 375Vpk providing the mounting arrangement does not reduce the creepage distance to less than 10mm.

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Report Number

None

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Schedule of Limitations

For all future applications of the High Speed Opto Isolator, Types OPI 2000M and OPI 2000MTH, the Schedule of Limitations No. 3 is modified to take account of the more restrictive requirements of the Standards where Dust forms the hazard.

The Opto Isolator Types OPI 2000M and OPI 2000MTH must be installed such that the connection pins are provided with a degree of protection of at least IP20 where gasses and vapours may be present. If the Opto Isolators are to be installed where dusts represent a hazard, then they must be provided with a degree of protection of at least IP54 and the overall apparatus must be appropriately certified to the dust Standards, EN61241-0:2006 and EN61241-11:2006.

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Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

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Drawings and Documents

None