Health & Safety Executive

BASEEFA

British Approvals Service for Electrical Equipment in Flammable Atmospheres

1. # CERTIFICATE OF CONFORMITY

2. BAS No Ex 84B2236

3. This certificate is issued for the electrical apparatus:

EUROBLOC-90 SHUNT ZENER DIODE SAFETY BARRIERS
TYPE E948, E949, E958 AND E959

4. manufactured and submitted for certification by:

SAFETY TECHNOLOGY LIMITED
of Feltham, Middlesex

5. This electrical apparatus and any acceptable variation thereto is specified in the Schedule to this Certificate and the documents therein referred to.

6. BASEEFA being an Approved Certification Body in accordance with Article 14 of the Council Directive of the European Communities of 18 December 1975 (76/117/EEC) confirms that the apparatus has been found to comply with harmonised European Standards

EN50 014 (1977) + A1 to 4
EN50 020 (1977) + A1

and has successfully met the examination and test requirements which are recorded in confidential Test Report

No 84(i)164 dated 6 September 1984
(held on File SFA 12/621/07)

7. The apparatus marking shall include the code

[EEx ia] IIB T_{amb} = 55°C

File No : SFA/16/130/013

B HILL
DIRECTOR
6 September 1984

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

CERTIFICATE OF CONFORMITY SCHEDULE

NUMBER Ex 84B2236

DATED 6 September 1984

APPARATUS

THE EUROBLOC-90 SHUNT ZENER DIODE SAFETY BARRIERS TYPE E948, E949, E958 AND E959 are designed to limit to a safe level the transfer of energy between uncertified electrical apparatus and certified intrinsically safe apparatus by limitation of voltage and current.

Each barrier consists of a network of fuses, resistors, zener diodes and diodes mounted on a printed circuit board and fully encapsulated within a plastic enclosure which is fitted with terminals for connection of the input and output wiring. A flying earth lead is brought out of the enclosure for connection to an earthed busbar. A 'saddle' type label is fitted over the enclosure.

The barriers will accept either positive or negative polarised inputs, the barrier type is denoted by the colour of the saddle type label as follows:-

Red - positive polarised

Black - negative polarised

One end of the label is coloured blue to identify the output terminals, which are further identified by a strip of blue epoxy paint on the end of the enclosure adjacent to the output terminals.

The parameters for the barriers are as follows:-

BARRIER TYPE	DESCRIPTION	FUSE RATING (mA)	OUTPUT PARAMETERS Uz (VOLTS)	OUTPUT PARAMETERS R_{MIN} (OHMS)	IMAX OUT (mA)	OPTIMUM POWER (W)	FACTOR OF SAFETY	REMARKS
E948	22V 75 ohm	50	22	75	293	1.61	2.2	
E949	Dual 22V 75 ohm	50	22	75	293	1.61	2.2	Each channel
E958	28V 150 ohm	50	28	173	162	1.13	2.28	
E959	Dual 28V 150 ohm	50	28	173	162	1.13	2.28	Each channel

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DATED 6 September 1984

The outputs of the dual channel barriers must be run as separate intrinsically safe circuits and must not be interconnected.

The flying earth lead must be connected to the earthed busbar by means of an Increased Safety (EEx e) termination.

The Capacitance and Inductance or Inductance to Resistance (L/R) ratio of the load connected to the output terminals of the barriers must not exceed the values listed:-

BARRIER TYPE	CAPACITANCE in μF	INDUCTANCE OR L/R RATIO in mH	in μH/ohm	REMARKS
E948	0.75	1.85	69	
E949	0.75	1.85	69	Each channel
E958	0.39	5.6	113	
E959	0.39	5.6	113	Each channel

The values for Group IIA are approximately 2.67 times these figures.

DRAWINGS

Number	Issue	Date	Description
*STL1338 Sht 2	1	13.8.84	General assembly 22V and 28V barriers excluding 28V diode return
STL1365	2	21.8.84	E948 22V 75 ohm barrier
STL1366	2	21.8.84	E949 dual 22V 75 ohm barrier
STL1369	2	3.8.84	E958 28V 150 ohm barrier
STL1370	2	3.8.84	E959 dual 28V 150 ohm barrier

*This drawing is also associated with Certificate No Ex 84B2235 and is held with that Certificate.

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British Approvals Service for Electrical Equipment in Flammable Atmospheres

CERTIFICATE OF CONFORMITY VARIATION

THIS IS TO CERTIFY THAT CERTIFICATE OF CONFORMITY BAS NO Ex 84B2236

Issued to SAFETY TECHNOLOGY LIMITED
of Feltham, Middlesex

for the EUROBLOC-90 SHUNT ZENER DIODE SAFETY BARRIERS
TYPES E948, E949, E958 AND E959

is hereby extended to apply to apparatus designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having the variations specified in the following Schedule.

Schedule

VARIATION ONE To permit a different method of encapsulation.

DRAWINGS

Number	Issue	Date	Description
STL 1338 Sht 2	3	26.9.85	General assembly 22V & 28V barriers excluding 28V diode return
STL 1338 Sht 4	3	26.9.85	Encapsulation detail

These drawings are also associated with Certificate No Ex 84B2235/1 and are held with that Certificate.

Code: [EEx ia] IIB
T_{amb} = 55°C

File: SFA 16/130/013

HEALTH AND SAFETY EXECUTIVE

CERTIFICATE OF CONFORMITY BAS NO Ex 84B2236/1

p.p. B HILL
DIRECTOR
Dated 22 October 1985

83/19

Health & Safety Executive

BASEEFA

British Approvals Service for Electrical Equipment in Flammable Atmospheres

CERTIFICATE OF CONFORMITY VARIATION

THIS IS TO CERTIFY THAT CERTIFICATE OF CONFORMITY BAS NO Ex 84B2236

Issued to SAFETY TECHNOLOGY LIMITED
of Feltham, Middlesex

for the EUROBLOC-90 SHUNT ZENER DIODE SAFETY BARRIERS
TYPES E948, E949, E958, AND E959

is hereby extended to apply to apparatus designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having the variations specified in the following Schedule.

Code: [EEx ia] IIB
(T_{amb} = 55°C)

File: SFA 16/130/013

HEALTH AND SAFETY EXECUTIVE

B HILL
DIRECTOR
Dated 13 August 1986

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

CERTIFICATE OF CONFORMITY SCHEDULE

NUMBER Ex 84B2236/2

DATED 13 August 1986

VARIATION TWO To permit the use of a redesigned printed circuit board which is cast as an encapsulated sub-assembly for wiring into the enclosure.

The output parameters for each barrier are listed in Table 1.

TABLE 1

BARRIER TYPE	DESCRIPTION	CONFIGURATION	FUSE RATING (mA)	OUTPUT PARAMETERS U_Z (VOLTS)	OUTPUT PARAMETERS R_{MIN} (OHMS)	I MAX OUT (mA)	OPTIMUM POWER (W)	FACTOR OF SAFETY FOR GROUP IIB
E948	Single 22V 75 ohm Polarised	A	50	24	74.1	323	1.94	1.64
E949	Dual 22V 75 ohm Polarised	B	50	24	74.1	323	1.94	1.64
		C	50	24	74.1	323	1.94	1.64
E958	Single 28V 150 ohm Polarised	A	50	28	173	162	1.13	2.28
E959	Dual 28V 150 ohm Polarised	B	50	28	173	162	1.13	2.28
		C	50	28	173	162	1.13	2.28

CONFIGURATION A = Single Barrier
B = 1st Channel of a Dual Barrier
C = 2nd Channel of a Dual Barrier

The outputs of the dual channel barriers must be run on separate intrinsically safe circuits and must not be interconnected.

The Capacitance and Inductance or Inductance to Resistance (L/R) ratio of the load connected to the output terminals must not exceed the values listed in Table 2. Any configuration not listed in Table 2 is not permitted.

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TABLE 2

BARRIER TYPE	CONFIGURATION	CAPACITANCE in μF	INDUCTANCE in mH	OR L/R RATIO in μH ohm
E948	A	0.6	1.5	78
E949	B	0.6	1.5	78
	C	0.6	1.5	78
E958	A	0.39	5.6	113
E959	B	0.39	5.6	113
	C	0.39	5.6	113

CONFIGURATION: A = Single Channel
B = 1st Channel of a Dual Barrier
C = 2nd Channel of a Dual Barrier

The parameters listed are for Group IIB. The values for Group IIA are 2.67 times these values.

DRAWINGS

Number	Issue	Date	Description
*STL 1534 sheets 1-3	3	11.6.86	P.c.b. detail, d.c. barrier
*STL 1532	2	20.1.86	Encapsulation detail
STL 1365 sheets 1-3	4	11.6.86	E948 barrier detail
STL 1366 sheets 1-3	4	11.6.86	E949 barrier detail
STL 1369 sheets 1-3	3	11.6.86	E958 barrier detail
STL 1370 sheets 1-3	3	11.6.86	E959 barrier detail

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Number	Issue	Date	Description
STL 1556	2	11.6.86	Parts list 22V, 75 ohm polarised barrier
STL 1559	2	11.6.86	Parts list 28V, 150 ohm polarised barrier
*STL 1561	1	3.2.86	Flexible lead assembly, red
*STL 1562	1	3.2.86	Flexible lead assembly, orange or black
*STL 1563	1	3.2.86	Flexible lead assembly, green
*STL 1564	1	3.2.86	Earth lead
*STL 1565	1	3.2.86	Earth link
*STL 1585	1	22.4.86	Bipolar foldback diode 22 and 28V
*STL 1586	1	22.4.86	Clamp diode and preform
*STL 1632	1	11.6.86	Fuse assembly
*STL 1633	1	11.6.86	Wirewound resistor

* The drawings are also associated with Certificate Nos Ex 84B2235 and are held with that certificate.

VARIATION THREE To permit the use of an alternative enclosure.