1 # EC-TYPE EXAMINATION CERTIFICATE

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

3 EC-Type Examination Certificate Number : **BAS01ATEX7005**

4 Equipment or Protective System: **A RANGE OF Z-SERIES SHUNT ZENER DIODE SAFETY BARRIERS**

5 Manufacturer: **PEPPERL + FUCHS GB LIMITED**

6 Address: **Oldham, Lancashire, OL1 4EL**

7 This equipment or protective system 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 equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems 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°

00(C)0982 dated 26 June 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**

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 equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

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

12 The marking of the equipment or protective system shall include the following:-

⟨Ex⟩ II (1) GD [EEx ia] IIC (-20°C ≤ T_a ≤ +60°C)

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

File No: EECS 0807/02/192

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.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
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I M CLEARE
DIRECTOR
26 June 2001

Re-issued 7 May 2002 for amendment - to correct cable parameters

13 **Schedule**

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15 **Description of Equipment or Protective System**

The Range of Z-Series Shunt Zener Diode Safety Barriers are designed to restrict the transfer of energy, from unspecified safe area equipment to intrinsically safe circuits, by the limitation of voltage and current. The range consists of single, double and triple channel barriers covering polarised - positive and negative, non-polarised, non-polarised-star connected barriers and diode return barriers.

The barriers consist of electronic components on a single printed circuit board encapsulated within a moulded plastic enclosure which incorporates two or four terminals with a separate earth terminal at both the Hazardous and Non-Hazardous area ends and an integral spring mounting foot, designed for a DIN rail.

The barriers are asymmetrical and have light blue Hazardous Area terminals.

For all versions of the Z7.., Z8.. and Z9.. Shunt Zener Barriers

Single Channel - Terminals 7 & 8
Dual Channel - Terminals 5, 6, 7 & 8
Triple Channel - Terminals 5, 6, 7 & 8

U_m = 250V

Single Channel - Terminals 1 & 2
Dual Channel - Terminals 1, 2, & 3

U_o = See CH1 below
I_o = See CH1 below
P_o = See CH1 below

Dual Channel - Terminals 4, 2, & 3

U_o = See CH2 below
I_o = See CH2 below
P_o = See CH2 below

Triple Channel - Terminals:-	1 & 2	3 & 2	4 & 2
U_o = See	CH1	CH2	CH3
I_o = See	CH1	CH2	CH3
P_o = See	CH1	CH2	CH3

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Z700 Series Positive Polarity Shunt Zener Diode Barriers						
		Fuse (mA)	U_o (V)	R_{min} (Ω)	I_o (mA)	P_o (W)
Z705	CH1	250	4.94	9.8	504	0.62
Z710	CH1	100	9.56	49	195	0.47
Z710.CL	CH1	100	9.56	49	195	0.47
Z713	CH1	160	15.75	21.8	723	2.84
Z715	CH1	100	14.7	98	150	0.55
Z715.CL	CH1	100	14.7	98	150	0.55
Z715.1k	CH1	100	14.7	980	15	0.06
Z722	CH1	50	22	147	150	0.82
Z722.CL	CH1	50	22	147	150	0.82
Z728	CH1	50	28	301	93	0.65
Z728.CL	CH1	50	28	301	93	0.65
Z728.H	CH1	80	28	235	119	0.83
Z731	CH1	50	28	300	93	0.65
	CH2	400	7.2	4.9	1470	2.64
	Combined		28	4.8	1570 @ 7.34V	2.95
Z755	CH1	250	4.94	9.8	504	0.62
	CH2	250	4.94	9.8	504	0.62
	Combined		4.94	4.9	1008 @ 4.94V	1.25
Z757	CH1	200	7.14	9.8	729	1.30
	CH2	200	7.14	9.8	729	1.30
	Combined		7.14	4.9	1457 @ 7.14V	2.60
Z763	CH1	100	11.6	31.35	370	1.07
	CH2	100	1.6	31.35	51	0.02
	Combined		13.2	15.63	422 @ 6.6V	0.70
Z764	CH1	50	11.6	980	12	0.03
	CH2	50	11.6	980	12	0.03
	Combined		11.6	490	24 @ 11.6V	0.06
Z765	CH1	100	14.7	98	150	0.55
	CH2	100	14.7	98	150	0.55
	Combined		14.7	49	300 @ 14.7V	1.10
Z772	CH1	50	22	147	150	0.82
	CH2	50	22	147	150	0.82
	Combined	Not permitted for Group IIC	22	73.5	300 @ 22V	1.64
Z778	CH1	50	28	607	46	0.32
	CH2	50	28	607	46	0.32
	Combined		28	303.5	93 @ 28V	0.65
Z779	CH1	50	28	301	93	0.65
	CH2	50	28	301	93	0.65
	Combined	Not permitted for Group IIC	28	150.5	186 @ 28V	1.30
Z779.H	CH1	80	28	235	119	0.83
	CH2	80	28	235	119	0.83
	Combined	Not permitted for Group IIC	28	117.5	238 @ 28V	1.67
Z786	CH1	50	28	Diode	0	0.00
	CH2	50	28	Diode	0	0.00
	Combined		28	Diode	0	0.00
Z787	CH1	50	28	301	93	0.65
	CH2	50	28	Diode	0	0.00
	Combined		28	301	93 @ 28V	0.65

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		Fuse (mA)	U_o (V)	R_{min} (Ω)	I_o (mA)	P_o (W)
Z787.H	CH1	80	28	235	119	0.83
	CH2	80	28	Diode	0	0.00
	Combined		28	235	119 @ 28V	0.83
Z788	CH1	50	28	301	93	0.65
	CH2	50	9.56	49	195	0.47
	Combined		28	42	288 @ 12.2V	0.87
Z788.R	CH1	50	28	301	93	0.65
	CH2	50	9.56	49	195	0.47
	Combined		28	42	288 @ 12.2V	0.87
Z788.H	CH1	80	28	235	119	0.83
	CH2	80	9.56	49	195	0.47
	Combined		28	40	314 @ 12.8V	1.00
Z788.R.H	CH1	80	28	235	119	0.83
	CH2	80	9.56	49	195	0.47
	Combined		28	40	314 @ 12.8V	1.00
Z796	CH1	50	26.6	314	85	0.56
	CH2	50	20.5	407	50	0.26
	Combined		26.6	177	135 @ 24V	0.82
Z800 Series Negative Polarity Shunt Zener Diode Barriers						
Z805	CH1	250	4.94	9.8	504	0.62
Z810	CH1	100	9.56	49	195	0.47
Z810.CL	CH1	100	9.56	49	195	0.47
Z813	CH1	160	15.75	21.8	723	2.84
Z815	CH1	100	14.7	98	150	0.55
Z815.CL	CH1	100	14.7	98	150	0.55
Z815.1k	CH1	100	14.7	980	15	0.06
Z822	CH1	50	22	147	150	0.82
Z822.CL	CH1	50	22	147	150	0.82
Z828	CH1	50	28	301	93	0.65
Z828.CL	CH1	50	28	301	93	0.65
Z828.H	CH1	80	28	235	119	0.83
Z855	CH1	250	4.94	9.8	504	0.62
	CH2	250	4.94	9.8	504	0.62
	Combined		4.94	4.9	1008 @ 4.94V	1.25
Z857	CH1	200	7.14	9.8	729	1.30
	CH2	200	7.14	9.8	729	1.30
	Combined		7.14	4.9	1457 @ 7.14	2.60
Z864	CH1	50	11.6	980	12	0.03
	CH2	50	11.6	980	12	0.03
	Combined		11.6	490	24 @ 11.6V	0.06
Z865	CH1	100	14.7	98	150	0.55
	CH2	100	14.7	98	150	0.55
	Combined		14.7	49	300 @ 14.7V	1.10
Z872	CH1	50	22	147	150	0.82
	CH2	50	22	147	150	0.82
	Combined	Not permitted for Group IIC	22	73.5	300 @ 22V	1.64
Z878	CH1	50	28	607	46	0.32
	CH2	50	28	607	46	0.32
	Combined		28	303.5	93 @ 28V	0.65

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		Fuse (mA)	U_o (V)	R_{min} (Ω)	I_o (mA)	P_o (W)
Z879	CH1	50	28	301	93	0.65
	CH2	50	28	301	93	0.65
	Combined	Not permitted for Group IIC	28	150.5	186 @ 28V	1.30
Z879.H	CH1	80	28	235	119	0.83
	CH2	80	28	235	119	0.83
	Combined	Not permitted for Group IIC	28	117.5	238 @ 28V	1.67
Z886	CH1	50	28	Diode	0	0.00
	CH2	50	28	Diode	0	0.00
	Combined		28	Diode	0	0.00
Z887	CH1	50	28	301	93	0.65
	CH2	50	28	Diode	0	0.00
	Combined		28	301	93 @ 28V	0.65
Z887.H	CH1	80	28	235	119	0.83
	CH2	80	28	Diode	0	0.00
	Combined		28	235	119 @ 28V	0.83
Z888	CH1	50	28	301	93	0.65
	CH2	50	9.56	49	195	0.47
	Combined		28	42	288 @ 12.2V	0.87
Z888.R	CH1	50	28	301	93	0.65
	CH2	50	9.56	49	195	0.47
	Combined		28	42	288 @ 12.2V	0.87
Z888.H	CH1	80	28	235	119	0.83
	CH2	80	9.56	49	195	0.47
	Combined		28	40	314 @ 12.8V	1.00
Z888.R.H	CH1	80	28	235	119	0.83
	CH2	80	9.56	49	195	0.47
	Combined		28	40	314 @ 12.8V	1.00
Z896	CH1	50	26.6	314	85	0.56
	CH2	50	20.5	407	50	0.26
	Combined		26.6	177	135 @ 24V	0.82
Z900 Series Fieldbus Barrier						
Z922 (+/-)	CH1	100	+11	50	218	0.60
	CH2	100	-11	50	218	0.60
	Combined		22	101	218 @ 22V	1.20
Z900 Series a.c. Shunt Zener Diode Barriers						
Z905 (a.c.)	CH1	250	4.89	9.8	499	0.61
Z910 (a.c.)	CH1	100	9.94	49	203	0.50
Z915 (a.c.)	CH1	100	15	98	153	0.57
Z915.1k (a.c.)	CH1	100	15	980	15	0.06
Z928 (a.c.)	CH1	50	28	301	93	0.65
Z954 (a.c.)	CH1	50	4.5	11.76	383	0.43
	CH2	50	4.5	11.76	383	0.43
	CH3	50	4.5	11.76	383	0.43
	2 Combined		9	5.88	765 @ 4.5V	0.86
	3 Combined		9	3.92	1150 @ 4.5V	1.29
	3 Combined No Earth		9	17.64	510	1.15
Z955 (a.c.)	CH1	250	4.89	9.8	499	0.61
	CH2	250	4.89	9.8	499	0.61
	Combined		9.78	4.9	998 @ 4.89V	1.22

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		Fuse (mA)	U_o (V)	R_{min} (Ω)	I_o (mA)	P_o (W)
Z960 (Star)	CH1	50	9.94	49	203	0.50
	CH2	50	9.94	49	203	0.50
	Combined		9.94	24.5	406 @ 9.94V	1.00
Z961 (a.c.)	CH1	100	8.7	98	89	0.19
	CH2	100	8.7	98	89	0.19
	Combined		17.4	49	178 @ 8.7V	0.39
Z961.H (a.c.)	CH1	50	8.7	352.8	25	0.05
	CH2	50	8.7	352.8	25	0.05
	Combined		17.4	176	49 @ 8.7V	0.11
Z964 (a.c.)	CH1	50	12	980	12	0.04
	CH2	50	12	980	12	0.04
	Combined		24	490	24 @ 12V	0.08
Z965 (Star)	CH1	50	15	98	153	0.57
	CH2	50	15	98	153	0.57
	Combined		15	49	306 @ 15V	1.14
Z966 (a.c.)	CH1	50	12	147	82	0.24
	CH2	50	12	147	82	0.24
	Combined		24	73.5	164 @ 12V	0.48
Z966.H (a.c.)	CH1	100	12	73.5	164	0.49
	CH2	100	12	73.5	164	0.49
	Combined		24	36.75	328 @ 12V	0.98
Z967 (Star)	CH1	50	16.8	117	143	0.60
	CH2	50	16.8	117	143	0.60
	Combined		16.8	58	286 @ 16.8V	1.20
Z969 (Special star)	CH1	80	14.24	35.6	400	1.42
	CH2	80	17.6	50.5	349	1.53
	Combined		17.6	20.8	749 @ 15.63V	2.95
Z972 (Star)	CH1	50	22	301	73	0.40
	CH2	50	22	301	73	0.40
	Combined		22	151	146 @ 22V	0.80
Z978 (Star)	CH1	50	28	607	46	0.32
	CH2	50	28	607	46	0.32
	Combined		28	304	93 @ 28V	0.65

With the exception of the Z763, the above Range of Z-Series Shunt Zener Diode Barriers are considered to have identical output parameters to the equivalent barriers as specified on BASEEFA Certificate No Ex 93C2412. It is considered that the above barriers may be used as a direct replacement, provided that the following values for capacitance, inductance or the inductance to resistance ratio (L/R) are not exceeded.

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

Z700 Series Positive Polarity Shunt Zener Diode Barriers					
Gas Group IIC		FOS	Capacitance (μF)	Inductance (mH)	L/R (μH/Ohm)
Z705	CH1	9.84	100	0.14	57
Z710	CH1	24	3.0	0.86	73
Z710.CL	CH1	24	3.0	0.86	73

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Gas Group IIC		FOS	Capacitance (µF)	Inductance (mH)	L/R (µH/Ohm)
Z713	CH1	1.51	0.48	0.076	12.5
Z715	CH1	8.8	0.58	1.30	64
Z715.CL	CH1	8.8	0.58	1.30	64
Z715.1k	CH1	88	0.58	144	570
Z722	CH1	2.25	0.17	1.45	45
Z722.CL	CH1	2.25	0.17	1.45	45
Z728	CH1	1.94	0.083	3.05*	56
Z728.H	CH1	1.51	0.083	1.82**	44
Z728.CL	CH1	1.94	0.083	3.05*	56
Z731	CH1	1.94	0.083	3.05*	56
	CH2	3.4	13.5	0.02	14
	Combined	3.18	0.083	0.02	10
Z755	CH1	9.8	100	0.14	57
	CH2	9.8	100	0.14	57
	Combined	4.92	100	0.03	22
Z757	CH1	6.8	13.5	0.07	28
	CH2	6.8	13.5	0.07	28
	Combined	3.4	13.5	0.02	11
Z763	CH1	13.5	1.41	0.24	36
	CH2	98	100	14.0	1,848
	Combined	11	0.94	0.20	38
Z764	CH1	417	1.41	240	1,000
	CH2	417	1.41	240	1,000
	Combined	208	1.41	61	360
Z765	CH1	8.8	0.58	1.3	64
	CH2	8.8	0.58	1.3	64
	Combined	4.5	0.58	0.32	22
Z772	CH1	2.25	0.17	1.45	45
	CH2	2.25	0.17	1.45	45
	Combined	X	Not permitted for Group IIC		
Z778	CH1	3.91	0.083	17.2	109
	CH2	3.91	0.083	17.2	109
	Combined	1.94	0.083	3.05*	42
Z779	CH1	1.94	0.083	3.05*	56
	CH2	1.94	0.083	3.05*	56
	Combined	X	Not permitted for Group IIC		
Z779.H	CH1	1.51	0.083	1.82**	44
	CH2	1.51	0.083	1.82**	44
	Combined	X	Not permitted for Group IIC		
Z786	CH1	---	0.083	---	---
	CH2	---	0.083	---	---
	Combined	---	0.083	---	---
Z787	CH1	1.94	0.083	3.05*	56
	CH2	---	0.083	---	---
	Combined	1.94	0.083	3.05*	56
Z787.H	CH1	1.51	0.083	1.82**	44
	CH	---	0.083	---	---
	Combined	1.51	0.083	1.82**	44
Z788	CH1	1.94	0.083	3.05*	56
	CH2	25	3.0	0.86	73
	Combined	12.6	0.083	0.32	26

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Gas Group IIC		FOS	Capacitance (µF)	Inductance (mH)	L/R (µH/Ohm)
Z788.R	CH1	1.94	0.083	3.05*	56
	CH2	25	3.0	0.86	73
	Combined	12.6	0.083	0.32	26
Z788.H	CH1	1.51	0.083	1.82**	44
	CH2	25	3.0	0.86	73
	Combined	8.8	0.083	0.26	25
Z788.R.H	CH1	1.51	0.083	1.82**	44
	CH2	25	3.0	0.86	73
	Combined	8.8	0.083	0.26	25
Z796	CH1	2.39	0.094	5.14	64
	CH2	8.5	0.203	14.6	138
	Combined	1.96	0.094	2.05	34
Z800 Series Negative Polarity Shunt Zener Diode Barriers					
Z805	CH1	9.8	100	0.14	57
Z810	CH1	24	3.0	0.86	73
Z810.CL	CH1	24	3.0	0.86	73
Z813	CH1	1.51	0.48	0.076	12.5
Z815	CH1	8.8	0.58	1.3	64
Z815.CL	CH1	8.8	0.58	1.3	64
Z815.1k	CH1	88	0.58	144	570
Z822	CH1	2.25	0.17	1.45	45
Z822.CL	CH1	2.25	0.17	1.45	45
Z828	CH1	1.94	0.083	3.05*	56
Z828.H	CH1	1.51	0.083	1.82**	44
Z828.CL	CH1	1.94	0.083	3.05*	56
Z855	CH1	9.8	100	0.14	57
	CH2	9.8	100	0.14	57
	Combined	4.92	100	0.03	22
Z857	CH1	6.8	13.5	0.07	28
	CH2	6.8	13.5	0.07	28
	Combined	3.4	13.5	0.02	11
Z864	CH1	417	1.41	240	1,000
	CH2	417	1.41	240	1,000
	Combined	208	1.41	61	360
Z865	CH1	8.8	0.58	1.3	64
	CH2	8.8	0.58	1.3	64
	Combined	4.5	0.58	0.32	22
Z872	CH1	2.25	0.17	1.45	45
	CH2	2.25	0.17	1.45	45
	Combined	X	Not permitted for Group IIC		
Z878	CH1	3.91	0.083	17.2	109
	CH2	3.91	0.083	17.2	109
	Combined	1.94	0.083	3.05*	42
Z879	CH1	1.94	0.083	3.05*	56
	CH2	1.94	0.083	3.05*	56
	Combined	X	Not permitted for Group IIC		
Z879.H	CH1	1.51	0.083	1.82**	44
	CH2	1.51	0.083	1.82**	44
	Combined	X	Not permitted for Group IIC		

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Gas Group IIC		FOS	Capacitance (µF)	Inductance (mH)	L/R (µH/Ohm)
Z886	CH1	---	0.083	---	---
	CH2	---	0.083	---	---
	Combined	---	0.083	---	---
Z887	CH1	1.94	0.083	3.05*	56
	CH2	---	0.083	---	---
	Combined	1.94	0.083	3.05*	56
Z887.H	CH1	1.51	0.083	1.82**	44
	CH2	---	0.083	---	---
	Combined	1.51	0.083	1.82**	44
Z888	CH1	1.94	0.083	3.05*	56
	CH2	25	3.0	0.86	73
	Combined	12.6	0.083	0.32	26
Z888.R	CH1	1.94	0.083	3.05*	56
	CH2	25	3.0	0.86	73
	Combined	12.6	0.083	0.32	26
Z888.H	CH1	1.51	0.083	1.82**	44
	CH2	25	3.0	0.86	73
	Combined	8.8	0.083	0.26	25
Z888.R.H	CH1	1.51	0.083	1.82**	44
	CH2	25	3.0	0.86	73
	Combined	8.8	0.083	0.26	25
Z896	CH1	2.39	0.094	5.14	64
	CH2	8.5	0.203	14.6	138
	Combined	1.9	0.094	2.05	34
Z900 Series Fieldbus Barrier					
Z922 (+/-)	CH1	23	1.97	0.74	63
	CH2	23	1.97	0.74	63
	Combined	1.56	0.17	0.26	31
Z900 Series a.c. Shunt Zener Diode Barriers					
Z905 (a.c.)	CH1	9.8	100	0.14	57
Z910 (a.c.)	CH1	24.6	3.0	0.86	73
Z915 (a.c.)	CH1	8.8	0.58	1.3	64
Z915.1k (a.c.)	CH1	88	0.58	144	570
Z928 (a.c.)	CH1	1.94	0.083	3.05*	56
Z954 (a.c.)	CH1	13.0	100	0.24	81
	CH2	13.0	100	0.24	81
	CH3	13.0	100	0.24	81
	2 Combined	6.5	4.9	0.068	41
	3 Combined	4.35	4.9	0.030	27
	3 Combined No Earth	9.8	4.9	0.12	30
Z955 (a.c.)	CH1	9.8	100	0.14	57
	CH2	9.8	100	0.14	57
	Combined	4.92	3.3	0.03	22
Z960 (a.c. star)	CH1	24	3.0	0.86	73
	CH2	24	3.0	0.86	73
	Combined	12	3.0	0.19	26
Z961 (a.c.)	CH1	56	4.9	4.69	182
	CH2	56	4.9	4.69	182
	Combined	28	0.346	1.14	72

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005**

Gas Group IIC		FOS	Capacitance (µF)	Inductance (mH)	L/R (µH/Ohm)
Z961.H (a.c.)	CH1	200	4.9	57	613
	CH2	200	4.9	57	613
	Combined	102	0.346	15.2	249
Z964 (a.c.)	CH1	417	1.41	240	1,000
	CH2	417	1.41	240	1,000
	Combined	208	0.125	61	360
Z965 (a.c. star)	CH1	8.8	0.58	1.3	64
	CH2	8.8	0.58	1.3	64
	Combined	4.41	0.58	0.29	20
Z966 (a.c.)	CH1	61	1.41	5.52	147
	CH2	61	1.41	5.52	147
	Combined	30	0.125	1.38	57
Z966.H (a.c.)	CH1	31	1.41	1.38	75
	CH2	31	1.41	1.38	75
	Combined	15	0.125	0.33	36
Z967 (a.c. star)	CH1	5.5	0.38	1.63	60
	CH2	5.5	0.38	1.63	60
	Combined	2.8	0.38	0.24	21
Z969 (special a.c. star)	CH1	4.13	0.68	0.16	24
	CH2	2.03	0.33	0.14	22
	Combined	1.5	0.33	0.071	12
Z972 (a.c. star)	CH1	4.62	0.17	6.95	90
	CH2	4.62	0.17	6.95	90
	Combined	2.31	0.17	1.45	35
Z978 (a.c. star)	CH1	3.91	0.083	17.2	109
	CH2	3.91	0.083	17.2	109
	Combined	1.94	0.083	3.05*	42

* When the external circuit contains no lumped inductance i.e. the L_i of any attached apparatus is zero, the cable inductance may be increased to 4.2mH

**When the external circuit contains no lumped inductance i.e. the L_i of any attached apparatus is zero, the cable inductance may be increased to 2.51 mH

The maximum values of capacitance, inductance or L/R for Gas groups IIB and IIA, may be determined by multiplying the value for Gas Group IIC above, by a factor of 3 and 8 respectively.

16 **Report No.**

00(C)0982

17 **Special Conditions For Safe Use**

None.

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005**

18 **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 00(C)0982 Clause 5.1.1.3
1.2.2	Components for incorporation or replacement	Report No 00(C)0982 Clause 5.1.2.2
1.2.5	Additional means of protection	Report No 00(C)0982 Clause 5.1.2.5
1.2.7	Protection against other hazards	Report No 00(C)0982 Clause 5.1.2.7
1.4.2	Withstanding attack by aggressive substances	Report No 00(C)0982 Clause 5.1.4.2

19 **DRAWINGS**

Number	Sheet	Issue	Date	Description
254-0312A	1 & 2	A	29.01.01	General Arrangement for Z7.., Z8.. and Z9.. series zener barriers
252-0928D	1	D	30.01.01	Parts list for Z705 and Z805
252-0930E	1	E	30.01.01	Parts list for Z710 and Z810
252-0931E	1 & 2	E	30.01.01	Parts list for Z710.CL and Z810.CL
252-0933E	1	E	30.01.01	Parts list for Z715 and Z815
252-0934E	1 & 2	E	30.01.01	Parts list for Z715.CL and Z815.CL
252-0935E	1	E	30.01.01	Parts list for Z715.1k and Z815.1k
252-0936E	1 & 2	E	30.01.01	Parts list for Z722 and Z822
252-0937E	1 & 2	E	30.01.01	Parts list for Z722.CL and Z822.CL
252-0938E	1 & 2	E	30.01.01	Parts list for Z728 and Z828
252-0939E	1 & 2	E	30.01.01	Parts list for Z728.CL and Z828.CL
252-0940D	1 & 2	D	30.01.01	Parts list for Z905
252-0941E	1 & 2	E	30.01.01	Parts list for Z910
252-0942C	1 & 2	C	05.02.01	Parts list for Z928
252-0943D	1 & 2	D	30.01.01	Parts list for Z755 and Z855
252-0944E	1 & 2	E	30.01.01	Parts list for Z772 And Z872
252-0945E	1 & 2	E	30.01.01	Parts list for Z778 and Z878
252-0946E	1 & 2	E	30.01.01	Parts list for Z779 and Z879
252-0947E	1 & 2	E	30.01.01	Parts list for Z786 and Z886
252-0948E	1 & 2	E	30.01.01	Parts list for Z787 and Z887
252-0949E	1 & 2	E	30.01.01	Parts list for Z788 and Z888
252-0950E	1 & 2	E	30.01.01	Parts list for Z788.R and Z888.R

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005**

Number	Sheet	Issue	Date	Description
252-0951D	1 & 2	D	30.01.01	Parts list for Z955
252-0952C	1 & 2	C	05.02.01	Parts list for Z960
252-0953E	1 & 2	E	30.01.01	Parts list for Z961
252-0954F	1 & 2	F	30.01.01	Parts list for Z964
252-0955C	1 & 2	C	05.02.01	Parts list for Z965
252-0956F	1 & 2	F	30.01.01	Parts list for Z966
252-0957C	1 & 2	C	05.02.01	Parts list for Z967
252-0958C	1 & 2	C	05.02.01	Parts list for Z978
252-0959E	1 & 2	E	30.01.01	Parts list for Z796 and Z896
252-0960C	1 & 2	C	05.02.01	Parts list for Z954
252-0966G	1 & 2	G	30.01.01	Parts list for Z915
252-0967G	1 & 2	G	30.01.01	Parts list for Z915.1k
252-0969C	1 & 2	C	05.02.01	Parts list for Z972
252-0970E	1 & 2	E	30.01.01	Parts list for Z765 and Z865
252-0971D	1 & 2	D	05.02.01	Parts list for Z764 and Z864
252-1015C	1 & 2	C	05.02.01	Parts list for Z922
252-1074C	1 & 2	C	30.01.01	Parts list for Z757 and Z857
252-1109C	1 to 4	C	05.02.01	Parts list for Z731
252-1111C	1 & 2	C	30.01.01	Parts list for Z713 and Z813
252-1128C	1 & 2	C	30.01.01	Parts list for Z728.H and Z828.H
252-1129C	1 & 2	C	30.01.01	Parts list for Z787.H and Z887.H
252-1143B	1 & 2	B	30.01.01	Parts list for Z779.H and Z879.H
252-1144B	1 & 2	B	30.01.01	Parts list for Z788.H and Z888.H
252-1145B	1 & 2	B	30.01.01	Parts list for Z788.R.H and Z888.R.H
252-1149B	1 & 2	B	05.02.01	Parts list for Z969
252-1156B	1 & 2	B	30.01.01	Parts list for Z961.H
252-1157B	1 & 2	B	30.01.01	Parts list for Z966.H
252-1297A	1 & 2	A	30.10.00	Parts list for Z763
251-0219C	1	C	07.02.01	Circuit Diagram for Z705 and Z805
251-0220D	1	D	07.02.01	Circuit Diagram for 3 diode Z7...and Z8..
251-0222B	1	B	08.03.01	Circuit Diagram for dual channel ±ve versions
251-0224B	1	B	07.02.01	Circuit Diagram for single channel ±ve versions
251-0225B	1	B	07.02.01	Circuit Diagram for 6 diode ±ve CL versions

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005**

Number	Sheet	Issue	Date	Description
251-0226D	1	D	07.02.01	Circuit Diagram for single channel Z9.. (a.c.) versions
251-0227C	1	C	07.02.01	Circuit Diagram for Z755 and Z855 versions
251-0229C	1	C	07.02.01	Circuit Diagram for Z788, Z888, Z788.H and Z888.H versions
251-0230C	1	C	07.02.01	Circuit Diagram for Z788.R, Z888.R, Z788.R.H and Z888.R.H versions
251-0231B	1	B	07.02.01	Circuit Diagram for dual channel a.c. versions
251-0232B	1	B	08.02.01	Circuit Diagram for dual channel 9 diode a.c. versions
251-0233B	1	B	07.02.01	Circuit Diagram for dual channel ±ve polarity versions
251-0234B	1	B	07.02.01	Circuit Diagram for Z786 and Z886
251-0235C	1	C	07.02.01	Circuit Diagram for Z787, Z887, Z787.H and Z887.H versions
251-0236B	1	B	08.02.01	Circuit Diagram for Z954
251-0237B	1	B	08.02.01	Circuit Diagram for Z928
251-0238C	1	C	07.02.01	Circuit Diagram for Z905
251-0239C	1	C	07.02.01	Circuit Diagram for Z955
251-0240B	1	B	08.02.01	Circuit Diagram for dual channel 18 diode a.c. version
251-0274C	1	C	07.02.01	Circuit Diagram for 3 diode Z7.. and Z8.. CL versions
251-0276C	1	C	07.02.01	Circuit Diagram for 3 diode dual channel Z7.. and Z8.. versions
251-0283B	1	B	07.02.01	Circuit Diagram for single channel Z7.. and Z8.. versions
251-0284B	1	B	07.02.01	Circuit Diagram for Z969
251-0290B	1	B	07.02.01	Circuit Diagram for Z966.H
251-0251C	1	C	08.02.01	Circuit Diagram for Z922
251-0434B	1	B	12.06.01	Circuit Diagram for Z763
251-0450A	1	A	08.02.01	Circuit Diagram for Z731
255-1519A	1 & 2	A	31.10.00	PCB master for Z763
255-1519B	1 to 3	B	09.04.01	PCB master for Z763
255-1521A	1 to 3	A	08.03.01	PCB master for single/dual channel barriers
255-1529A	1 to 3	A	27.02.01	PCB master for Z731

13 Schedule

14 EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005

Number	Sheet	Issue	Date	Description
255-1535A	1 to 3	A	27.02.01	PCB master for Z922
255-1538A	1 to 3	A	27.02.01	PCB master for a.c. star connected barriers Z7.., Z8.. and Z9..
255-1541A	1 to 3	A	27.02.01	PCB master for Z954
253-0260A	1	A	08.03.01	Component Overlay for 3 diode Z7.. and Z8.. versions
253-0261A	1	A	31.10.00	Component Overlay for Z763
253-0274A	1	A	12.02.01	Component Overlay for 3 diode Z7.. and Z8.. versions
253-0275A	1	A	12.02.01	Component Overlay for single channel a.c. versions
253-0276A	1	A	12.02.01	Component Overlay for single channel Z7.. and Z8.. versions
253-0277A	1	A	12.02.01	Component Overlay for Z788, Z788.H, Z888 and Z888.H versions
253-0278A	1	A	26.02.01	Component Overlay for Z788.R, Z788.R.H, Z888.R and Z888.R.H versions
253-0279A	1	A	26.02.01	Component Overlay for dual channel a.c. versions
253-0280A	1	A	26.02.01	Component Overlay for dual channel Z7.. and Z8.. versions
253-0281A	1	A	26.02.01	Component Overlay for Z787, Z787.H, Z887 and Z887.H versions
253-0282A	1	A	26.02.01	Component Overlay for Z786 and Z886 versions
253-0283A	1	A	26.02.01	Component Overlay for 3 diode Z7.. and Z8.. versions
253-0284A	1	A	26.02.01	Component Overlay for Z713 and Z813 versions
253-0285A	1	A	26.02.01	Component Overlay for Z966.H
253-0286A	1	A	27.02.01	Component Overlay for Z705 and Z805 versions
253-0287A	1	A	27.02.01	Component Overlay for 6 diode Z7.. and Z8.. CL versions
253-0288A	1	A	27.02.01	Component Overlay for Z755 and Z855 versions
253-0289A	1	A	27.02.01	Component Overlay for Z905 a.c.
253-0290A	1	A	27.02.01	Component Overlay for Z955 a.c.
253-0291A	1	A	27.02.01	Component Overlay for 3 diode Z7.. and Z8.. CL versions
253-0292A	1	A	27.02.01	Component Overlay for Z954
253-0293A	1	A	27.02.01	Component Overlay for Z969
260-1486A	1 & 2	A	25.01.01	Certification label for dual channel Z7.., Z8.. and Z9.. versions

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005**

Number	Sheet	Issue	Date	Description
260-1506A	1 & 2	A	26.01.01	Certification label for single channel Z7.., Z8.. and Z9.. versions
260-1507A	1	A	29.01.01	Certification label for Z731
260-1508A	1	A	29.01.01	Certification label for Z954

BASEEFA List Keywords
2ISOLBAR

1 # SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use**
in Potentially explosive atmospheres
Directive 94/9/EC

3 Supplementary EC-Type Examination Certificate Number: **BAS01ATEX7005/1**

4 Equipment or Protective System: **A RANGE OF Z-SERIES SHUNT ZENER DIODE SAFETY BARRIERS**

5 Manufacturer: **PEPPERL + FUCHS GB LIMITED**

6 Address: **Oldham, Lancashire, OL1 4EL**

7 This supplementary certificate extends EC-Type Examination Certificate No. BAS01ATEX7005 to apply to equipment or protective systems 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.

File No: EECS 0807/02/192

HSE
Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
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I M CLEARE
DIRECTOR
16 November 2001

13 Schedule

14 SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005/1

Description of the Variation to the Equipment or Protective System

VARIATION 1.1

To permit:

a. the inclusion of drawings that should have been part of the original schedule.

b. an alternative place of manufacture for all types of barrier.

c. a version of the barrier types Z796 and Z896 whose output parameters have been reduced. These versions will be designated as the Z796.L and Z896.L.

Z700 Series Positive Polarity Shunt Zener Diode Barriers						
		Fuse	U_o	R_{min}	I_o	P_o
		(mA)	(V)	(Ω)	(mA)	(W)
Z796.L	CH1	50	26.0	314	83	0.54
	CH2	50	20.0	407	49	0.25
	Combined		26.0	177	132 @ 23.4V	0.77
Z800 Series Negative Polarity Shunt Zener Diode Barriers						
Z896.L	CH1	50	26.0	314	83	0.54
	CH2	50	20.0	407	49	0.25
	Combined		26.0	177	132 @ 23.4V	0.77

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

Z700 Series Positive Polarity Shunt Zener Diode Barriers					
Gas Group IIC		FOS	Capacitance (µF)	Inductance (mH)	L/R (µH/Ohm)
Z796.L	CH1	2.39	0.094	5.14	64
	CH2	8.5	0.203	14.6	138
	Combined	1.96	0.094	2.05	34
Z800 Series Negative Polarity Shunt Zener Diode Barriers					
Z896.L	CH1	2.39	0.094	5.14	64
	CH2	8.5	0.203	14.6	138
	Combined	1.9	0.094	2.05	34

Report No.

None.

13 Schedule

14 SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7005/1

Special Conditions For Safe Use

None.

Essential Health and Safety Requirements

See original certificate.

DRAWINGS

Number	Sheet	Issue	Date	Description
*253-5017A	1	A	10.10.01	Component Overlay for Z928
*253-5019A	1	A	10.10.01	Component Overlay for AC Star 9 diode barrier
*253-5020A	1	A	10.10.01	Component Overlay for AC Star 18 diode barrier
252-5011A	1 & 2	A	26.10.01	Parts List for Z796.L and Z896.L
260-1486B	1 & 2	B	10.10.01	Certification label for dual channel Z7.., Z8.. and Z9.. versions
260-1506B	1 & 2	B	10.10.01	Certification label for single channel Z7.., Z8.. and Z9.. versions
260-1507B	1	B	10.10.01	Certification label for Z731
260-1508B	1	B	10.10.01	Certification label for Z954

The drawings marked * should be referenced to the original schedule