



## EC-TYPE EXAMINATION CERTIFICATE

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

EC-Type Examination Certificate Number : **BAS00ATEX7216**

Equipment or Protective System: **TRANSFORMER ISOLATED DRIVER TYPES**  
**K\*D2-S\*-ExI(P).\*\*-\*\*\*\*\***

Manufacturer: **PEPPERL + FUCHS GB LTD**

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

This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

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)0919 dated 1 December 2000**

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.

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.

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.

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



**II (1) GD**

**[EEEx ia] IIC (-20°C ≤ T<sub>a</sub> ≤ +60°C)**

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

File No: **EECS 0807/02/191**

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.



Electrical Equipment Certification Service  
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**I M CLEARE**  
**DIRECTOR**

**13 December 2000**



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**Schedule**

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**Description of Equipment or Protective System**

The Transformer Isolated Solenoid Driver Types K\*D2-S\*-Ex1(P).\*\*-\*\*\*\* are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to intrinsically safe circuits located in a hazardous area, and provide galvanic isolation between the hazardous area and non-hazardous area circuits.

The Transformer Isolated Solenoid Driver Types K\*D2-S\*-Ex1(P).\*\*-\*\*\*\* comprises a number of electrical components, including isolating transformers, fuses, resistors, and zener diodes all mounted onto a single printed circuit board (PCB) and housed within a plastic enclosure.

The "\*" in the Type designation indicates the different options used in that particular type of unit.

The options are; the fitting of screw terminals or plugs and sockets or not and the provision of a power rail connector in the base of the enclosure or not (see the table below). The enclosures used vary to suit the options.

The screw terminals and the plugs and sockets are numbered and colour coded to make incorrect connections improbable.

The different types are as follows:-

K	*	D2	-S	*	-Ex1	(P)	**-****	
	H							Screw Terminals
	F							Plug-in Terminals
				D				Without Logic Input
				L				With Logic Input
						P		With Power Rail Option
							.17	17.22V 220mA
							.17-200R	17.22V 88mA
							.47	25.2V 93mA
							.48	25.2V 93mA (Operational Current limit set at 35mA)
							.48-90A	25.2V 93mA (Operational Current limit set at 45mA)

**Input/Output Parameters**

$U_m = 250V$  on terminals 11 and 12 (7, 8 and Power Rail Connector, if fitted).

The apparatus is designed to operate from a d.c. supply of up to 40V on the above terminals

**K\*D2-S\*-Ex 1(P).17**

Terminals 1 and 2

$U_o = 17.22V$

$I_o = 220mA$

$P_o = 0.95W$

$C_i = 0$

$L_i = 0$



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**K\*D2-S\*-Ex 1(P).17 -200R**

Terminals 1 and 2

$U_o = 17.22V$

$I_o = 88mA$

$P_o = 0.38W$

$C_i = 0$

$L_i = 0$

**K\*D2-S\*-Ex 1(P).47, K\*D2-S\*-Ex 1(P).48 and K\*D2-S\*-Ex 1(P).48-90A**

Terminals 1 and 2

$U_o = 25.2V$

$I_o = 93mA$

$P_o = 0.59W$

$C_i = 0$

$L_i = 0$

The capacitance and either the inductance or the inductance to resistance ratio ( $L_o/R_o$ ) of the load connected to the output terminals of each channel must not exceed the following values:

GROUP	CAPACITANCE in $\mu F$	INDUCTANCE in mH	OR	L/R RATIO in $\mu H/ohm$
<b>K*D2-S*-Ex 1(P)-17</b>				
II C	0.353	0.56		39
II B	2.060	1.67		166
II A	8.500	4.46		334
<b>K*D2-S*-Ex 1(P)-17-200R</b>				
II C	0.353	4.80		96
II B	2.060	19.61		358
II A	8.500	40.04		755
<b>K*D2-S*-Ex 1(P)-47, 48, 48-90A</b>				
II C	0.107	4.30		62
II B	0.820	17.72		234
II A	2.900	36.02		493

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Report Nos.

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**Special Conditions For Safe Use**

None

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**Essential Health and Safety Requirements**

ESSENTIAL HEALTH & SAFETY REQUIREMENTS not covered by Standards listed at (9)		
Clause	Subject	Compliance
1.1.3	Changes in characteristics of materials and combinations thereof	Report No 00(C)0919 Clause 6.1.1.3
1.2.2	Components for incorporation or replacement	Report No 00(C)0919 Clause 6.1.2.2
1.2.5	Additional means of protection	Report No 00(C)0919 Clause 6.1.2.5
1.2.7	Protection against other hazards	Report No 00(C)0919 Clause 6.1.2.7
1.4.2	Withstanding attack by aggressive substances	Report No 00(C)0919 Clause 6.1.4.2

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**DRAWINGS**

Number	Sheets	Issue	Date	Description
251-0426A	1	A	06.09.00	Circuit diagram
252-1187G	1 to 28	G	06.09.00	Parts list
255-1277E	1 to 3	E	06.09.00	PCB master
253-0253A	1	A	07.09.00	PCB Component overlay
252-1199C	1	C	07.09.00	Parts list for transformer T1 (17, (-200R))
252-1200	1	C	07.09.00	Parts list for transformer T1 (47, 48, (-90A))
256-0145A	1	A	11.08.00	Transformer winding details T1 (17, (-200R))
256-0146A	1	A	07.09.00	Transformer connection details T1 (47, 48, (-90A))
256-0062C	1	C	11.08.00	Transformer connection details T1 (17, (-200R))
256-0088C	1	C	07.09.00	Transformer connection details T1 (47, 48, (-90A))
255-0751C	1 & 2	C	14.01.99	Transformer PCB master
254-0263A	1	A	16.06.98	Transformer plastic moulding
254-0284D	1 & 2	D	15.11.00	GA for 20mm non-power rail FIM housing
254-0295G	1 & 2	G	15.11.00	GA for 20mm FIM housing
254-0299F	1 & 2	F	15.11.00	GA for transformer isolated barriers (large housing)
254-0300G	1 & 2	G	15.11.00	GA for 20mm KH.. housing (Power rail version)
260-1445A	1	A	07.09.00	Certification label KHD2-SD-Ex 1.17
260-1446A	1	A	07.09.00	Certification label KFD2-SD-Ex 1.17
260-1447A	1	A	07.09.00	Certification label KHD2-SD-Ex 1.17 -200R



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<b>Number</b>	<b>Sheets</b>	<b>Issue</b>	<b>Date</b>	<b>Description</b>
260-1448A	1	A	07.09.00	Certification label KFD2-SD-Ex 1.17 -200R
260-1449A	1	A	07.09.00	Certification label KHD2-SL-Ex 1.17
260-1450A	1	A	07.09.00	Certification label KHD2-SL-Ex 1.P.17
260-1451A	1	A	07.09.00	Certification label KFD2-SL-Ex 1.17
260-1452A	1	A	07.09.00	Certification label KHD2-SL-Ex 1.17 -200R
260-1453A	1	A	07.09.00	Certification label KHD2-SL-Ex 1.P.17 -200R
260-1454A	1	A	07.09.00	Certification label KFD2-SL-Ex 1.17 -200R
260-1455A	1	A	14.09.00	Certification label KHD2-SD-Ex 1.47, 48 & 48-90A
260-1456A	1	A	14.09.00	Certification label KFD2-SD-Ex 1. 47, 48 & 48-90A
260-1457A	1	A	14.09.00	Certification label KHD2-SL-Ex 1. 47, 48 & 48-90A
260-1458A	1	A	14.09.00	Certification label KHD2-SD-Ex 1.P. 47, 48 & 48-90A
260-1459A	1	A	14.09.00	Certification label KFD2-SD-Ex 1. 47, 48 & 48-90A

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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: **BAS00ATEX7216/1**
- 4 Equipment or Protective System: **TRANSFORMER ISOLATED DRIVER TYPES  
K\*D2-S\*-Ex1(.P).\*\*-\*\*\*\***
- 5 Manufacturer: **PEPPERL + FUCHS GB LTD**
- 6 Address: **Oldham, Lancashire, OL1 4EL**
- 7 This supplementary certificate extends EC – Type Examination Certificate No. BAS00ATEX7216 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.

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.

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

Baseefa (2001) Ltd. Customer Reference No. 0807

Project File No. 03/1024

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.

**Baseefa (2001) Ltd.**

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



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## Schedule

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Certificate Number BAS00ATEX7216/1

15 Description of the variation to the Equipment or Protective System

### Variation 1.1

Minor drawing changes that do not affect the intrinsic safety assessment.

16 Report Number

None

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

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

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
252-1187H	1 to 28	H	2.12.03	Parts list
255-1277F	1 to 3	F	2.12.03	PCB Master
253-0253B	1 of 1	B	2.12.03	PCB Component Overlay