ANZEx

Australian/New Zealand Certification Scheme
for Explosion Protected Equipment

Certificate of Conformity

Ex EQUIPMENT

Certificate No.: **ANZEx 08.2008X**	*Current Issue:* 2	*Date of Issue:* 2021-11-22

Applicant: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
GERMANY

Equipment: Type KCD2-SR-Ex*.* Switch Amplifier

Type of Explosion Protection: Intrinsic Safety “i”

Explosion Protection Marking: [Ex ia Ma] I
-40 °C ≤ Ta ≤ +70 °C

This certificate is granted subject to the requirements as set out in
Joint Accreditation System of Australia and New Zealand Publications
ANZEx System Rules 2020 & ANZEx Certified Equipment Scheme Rules 2021

Signed for and on behalf of issuing body .....

Name & Position *Geoff Barnier*
Principal Engineer - Certification
.....

This certificate is not transferable and remains the property of the issuing body.
The status of this certificate can be confirmed through the database located at www.anzex.com.au

Certificate issued by:

Safety in Mines, Testing and Research Station
2 Robert Smith Street, REDBANK QLD 4301

JAS-ANZ
WWW.JAS-ANZ.ORG/REGISTER

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Simtars

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Manufacturer : **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
GERMANY

Additional Manufacturing Location(s): **Pepperl+Fuchs Asia Pte. Ltd.**
18 Ayer Rajah Crescent
Singapore 139942
SINGAPORE

STANDARDS:

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0: 2017	Explosive atmospheres – Part 0: Equipment – General requirements
IEC 60079-11: 2011	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”

This Certificate does not indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

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Schedule

Equipment Description:

The Type KCD2-SR-Ex*.* Switch Amplifier is designed as associated apparatus. The Switch Amplifiers transfer digital signals from the hazardous area to unspecified apparatus. The voltage and current passed further to the hazardous area are limited to intrinsically safe levels and have linear characteristics. Up to two hazardous area channels fitted are galvanically isolated from the non-hazardous area circuit using transformers.

The Type KCD2-SR-Ex*.* Switch Amplifier comprise a number of electronic components, including isolating transformers, fuses, zener diodes and resistors all mounted on a single printed circuit board and housed in a plastic enclosure with polarised plug-in screw or spring (denoted with an ".SP" suffix) terminals for hazardous and non-hazardous area connections. The non-hazardous area connections are via relay contacts with configuration switches allowing the setting of the direction of operation and lead monitoring. LED indication is provided for power-on and channel status.

There are three models of the Type KCD2-SR-Ex*.* Switch Amplifier:

- Type KCD2-SR-Ex2(.SP) Two Channel Switch Amplifier,
- Type KCD2-SR-Ex1(.SP) Single Channel Amplifier and
- Type KCD2-SR-Ex1.LB(.SP) Single Channel Switch Amplifier.

The Types KCD2-SR-Ex1(.SP) & KCD2-SR-Ex1.LB(.SP) are depopulated versions of the Type KCD2-SR-Ex2(.SP) with only one hazardous area channel. The type code of KCD2-SR-Ex*.* Switch Amplifier may be followed by additional alphanumeric signs (e.g. –Y1) to indicate special version. This does not affect the type of protection.

Electrical Ratings/Parameters

Non-Hazardous Area Terminals 9 & 10 and Power Rail Connections PR1 & PR2

Um = 253V r.m.s.

The circuit connected to non-hazardous area terminals 9 & 10 or Power Rail Connections PR1 & PR2 is designed to operate from a d.c. supply voltage of 19-30V.

Non-Hazardous Area (Zone 2) Terminals 5 & 6 and 7 & 8

Um = 253V r.m.s.

Non-hazardous area terminals 5 & 6 (Channel 1) and 7 & 8 (Channel 2) are connected to relay contacts which can switch up to 253V r.m.s & 2A r.m.s, 126.5V r.m.s. & 4A r.m.s. or 30Vdc & 2A dc.

Power Rail Connections PR4 (Fault Bus)

Um = 40V d.c.

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The circuit connected to Power Rail Connection PR4 is designed to operate from a d.c. supply voltage up to 30V.

Hazardous Area Terminals 1 w.r.t. 2 (Channel 1) or Hazardous Area Terminals 3 w.r.t. 4 (Channel 2 – KCD2-SR-Ex2 model only)

U_0 (V)	I_0 (mA)	P_0 (mW)	C_0 (µF)	L_0 (mH)
10.5	13*	34*	0	0

* Note: Io and Po are changed to lower values with this issue.

KCD2-SR-Ex2*: The intrinsically safe input circuits are not galvanically isolated from each other. The non-intrinsically safe circuits are galvanically isolated from the intrinsically safe circuits.

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

Group	Capacitance (µF)	Inductance (mH)	L/R (µH/Ω)
I	95	1000	13600

The above parameters apply when one of the two conditions below is given:

- the total Li of the external circuit (excluding the cable) is < 1% of the Lo value or
- the total Ci of the external circuit (excluding the cable) is < 1% of the Co value.

The above parameters are reduced to 50% when both of the two conditions below are given:

- the total Li of the external circuit (excluding the cable) ≥1% of the Lo value and
- the total Ci of the external circuit (excluding the cable) ≥1% of the Co value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF.

Hazardous Area Terminals 1 & 3 w.r.t. 2 & 4 (Channel 1 and Channel 2)

U_0 (V)	I_0 (mA)	P_0 (mW)	C_0 (µF)	L_0 (mH)
10.5	26	68	0	0

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

Group	Capacitance (µF)	Inductance (mH)	L/R (µH/Ω)
I	95	500	6800

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The above parameters apply when one of the two conditions below is given:

- the total Li of the external circuit (excluding the cable) is < 1% of the Lo value or
- the total Ci of the external circuit (excluding the cable) is < 1% of the Co value.

The above parameters are reduced to 50% when both of the two conditions below are given:

- the total Li of the external circuit (excluding the cable) ≥1% of the Lo value and
- the total Ci of the external circuit (excluding the cable) ≥1% of the Co value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF.

Specific Conditions of Use:

The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC 60664-1.

The device must be installed and operated only in a controlled environment that ensures a pollution degree 2 (or better) according to IEC 60664-1.

Conditions of Certification:

None

Additional Information:

None

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Register of Issues and Variations
includes the current issue

Issue 0 dated 2008-11-12

Test & Assessment Reports relevant for this issue:

TR No. & Issuing CBs: GB/BAS/ExTR06.0025/00, GB/BAS/ExTR06.0166/00 - Baseefa

QAR No. & Issuing CB: DE/PTB/QAR06.0007/01, DE/PTB/QAR06.0008/01 - PTB

File Reference: 08/0157

Manufacturer's Documents/Drawings associated with this issue:

Document Number	Pages / Sheets	Document Title	Revision	Date
16-533BS	1	Summary KCD2-SR-Ex*.*	-	2006-May-15
16-533BS-00 (Sheets 1 to 8 of 8)	8	Description KCD2-SR-Ex*.*	-	2006-Apr-25
16-533BS-01 (Sheets 1 and 2 of 4)	2	Schematic KCD2-SR-Ex2 K-System SlimLine	-	2006-Apr-25
16-533BS-01 (Sheets 3 and 4 of 4)	2	Schematic KCD2-SR-Ex1.* K-System SlimLine	-	2006-Apr-25
16-533BS-02	1	Relevant Components KCD2-SR-Ex*.* / HiC282*	-	2005-Dec-05
16-533BS-03 (Sheet 1 of 5)	1	Assembly drawing wired top side binary input KCD2-SR-Ex1.* / KCD2-SR-Ex2	-	2005-Sep-30
16-533BS-03 (Sheet 2 of 5)	1	Assembly drawing SMD top side binary input KCD2-SR-Ex2	-	2005-Sep-30
16-533BS-03 (Sheet 3 of 5)	1	Assembly drawing SMD bottom side binary input KCD2-SR-Ex2	-	2005-Sep-30
16-533BS-03 (Sheet 4 of 5)	1	Assembly drawing SMD top side binary input KCD2-SR-Ex1.*	-	2005-Sep-30
16-533BS-03 (Sheet 5 of 5)	1	Assembly drawing SMD bottom side binary input KCD2-SR-Ex1.*	-	2005-Sep-30
16-533-04 (Sheets 1 and 2 of 2)	2	housing KCD2	-	2005-Dec-05
16-533BS-05 (Sheet 1 of 4)	1	pcb layout TOP binary input KCD2-SR-Ex1(-Ex2)(.LB)	-	2005-Sep-30
16-533BS-05 (Sheet 2 of 4)	1	pcb layout TOP1 binary input KCD2-SR-Ex1 (-Ex2)(.LB)	-	2005-Sep-30
16-533BS-05 (Sheet 3 of 4)	1	pcb layout BOT1 binary input KCD2-SR-Ex1(-Ex2)(.LB)	-	2005-Sep-30

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Document Number	Pages / Sheets	Document Title	Revision	Date
16-533BS-05 (Sheet 4 of 4)	1	pcb layout BOTTOM binary input KCD2-SR-Ex1(-Ex2)(.LB)	-	2005-Sep-30
16-533BS-06 (Sheets 1 to 4 of 4)	4	transformer KCD2-SR-Ex*.* / HiC282*	-	2005-Dec-05
16-533SI-09 (Sheets 1 and 2 of 2)	2	Instructions KCD2-SR-Ex*.*	-	2008-Nov-05
16-533SI-10 (Sheets 1 to 3 of 3)	3	Type Label KCD2-SR-Ex*.*	-	2008-Nov-05
16-533BS A	1	Summary KCD2-SR-Ex*.*	-	2006-Nov-15
16-533BS-00A (Sheets 1 to 8 of 8)	8	Description KCD2-SR-Ex*.*	-	2006-Nov-15
16-533BS-06A (Sheets 1 to 4 of 4)	4	transformer KCD2-SR-Ex*.* / HiC282*	-	2006-Nov-15

Issue 1 dated 2019-01-03

Variations Permitted by this Issue

- Amended referenced QARs

Test & Assessment Reports relevant for this issue:

TR No. & Issuing CBs: GB/BAS/ExTR06.0025/00, GB/BAS/ExTR06.0166/00 - Baseefa
QAR No. & Issuing CB: DE/PTB/QAR06.0008/09 - PTB
File Reference: 06/0041

Manufacturer's Documents/Drawings associated with this issue:

None

Issue 2 dated 2021-11-22

Variations Permitted by this Issue

- The use of spring terminal plugs as an alternative to the screw terminal plug
- Introduction of an alternative schematic (and associated PCB)
- A change in the ambient temperature range to -40 °C to +70 °C
- Re-assessment against the requirements of the latest applicable standards (IEC 60079-0:2017, IEC 60079-11: 2011)
- Review and update of all entity parameters

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Test & Assessment Reports relevant for this issue:

TR No. & Issuing CBs: GB/BAS/ExTR12.0043/00, GB/BAS/ExTR18.0047/00, GB/BAS/ExTR21.0032/00 - Baseefa
QAR No. & Issuing CB: DE/PTB/QAR06.0008/16 - PTB
File Reference: 21/0001

Manufacturer's Documents/Drawings associated with this issue:

Document Number	Pages / Sheets	Document Title	Revision	Date
16-0533BS C	1	Summary – KCD2-SR-Ex*	C	2021-Feb-03
16-0533BS-00C	38	Description – KCD2-SR-Ex*	C	2020-Dec-18
16-0533BS-01C	2	schematic drawing – KCD2-SR-(Ex)1(-(Ex)2)(.LB)	C	03.06.2020
16-0533BS-02C	2	Bill of Material – KCD2-SR-Ex*	C	2020-Dec-18
16-0533BS-03C	1	Assembly drawing - KCD2-SR-((Ex)(1)(- (Ex)2)(.LB)(-*)	C	2020-06-03
16-0533UL-04C	2	Housing – KCD2-SR-Ex*	C	2020-June-03
16-0533BS-05C	4	PCB Layout – KCD2-SR-((Ex)(1)(-(Ex)2)(.LB)(-*)	C	2020-06-03
16-0533BS-06C	3	Transformer – KCD2-SR-Ex*	C	2020-June-03
16-0533BS-09C	2	Instructions – KCD2-SR-Ex*	C	2020-Dec-18
16-0533SI-10C	1	Type Label – KCD2-SR-Ex*	C	2021-Apr-30

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