ANZEx

Australian/New Zealand Certification Scheme
for Explosion Protected Equipment

Certificate of Conformity

Ex EQUIPMENT

Certificate No.:	**ANZEx 13.2004X**	*Current Issue:* 1	*Date of Issue:*	2022-09-15

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

Equipment: KFD2-STC(V)4-Ex1(.2O)… Smart Transmitter Isolator

Type of Explosion Protection: Intrinsic Safety “i”

Explosion Protection Marking: [Ex ia Ma] I
-20 °C ≤ Ta ≤ +60 °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

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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 60079-0:2011 Ed 6.0	Explosive atmospheres Part 0: Equipment—General requirements
IEC 60079-11:2011 Ed 6.0	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 KFD2-STC(V)4-Ex1(.2O)... Smart Transmitter Isolator is designed to provide galvanic isolation between intrinsically safe circuits in a hazardous area and circuits in a safe area and limit voltage and current into the hazardous area to intrinsically safe levels.

The apparatus comprises a number of electrical components, including transformers, fuses, resistors and zener diodes, all mounted on a single printed circuit board and housed within a plastic enclosure fitted with terminals for external connections.

The use of 'C' or 'V' in the type description specifies Current source / sink or Voltage respectively.

Options following 'Ex1' in the type description are:

.2O (Dual non-hazardous area output)

-Y… (Current sink - used with 'C')

-1 (5 Volt - used with 'V')

-2 (10 Volt - used with 'V')

The apparatus is designed to operate from a DC supply of up to 35V on terminals 7 to 12, 14 and 15, and power rail connector terminals 1 and 2. The segregation of the hazardous area circuits meets the requirements for 250V.

Electrical Ratings/Parameters

Nil

Specific Conditions of Use:

1. The safety device must be installed in a controlled environment with suitably reduced pollution.

Conditions of Certification:

None

Additional Information:

The following entity parameters shall be observed:

Type KFD2-STC(V)4-Ex1. and Type KFD2-STC(V)4-Ex1.2O

For terminals 7 to 12, 14 and 15, and power rail terminals 1 & 2:
Um = 250V

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For Terminals 1 and 3:
Uo = 25.4 V Io = 86.8 mA Po = 551 mW Ci = 12 nF Li = 0

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

Group	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
I	4.3	29	833

For Terminals 3 and 2 (& 5):
Uo = 3.5 V Io = 74 mA Po = 64 mW Ui = 30 V Ii = 115 mA Ci = 0 Li = 0

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

Group	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
I	1000	421	7207

For Terminals 1, 2 (& 5) and 3:

Uo = 25.4 V Io = 115 mA Po = 0.584 W Ci = 12 nF Li = 0

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

Group	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
I	4.3	17	639

For Terminals 6 and 5 (&2):

Uo = 8.7 V Io = 0 Co = 5.9 µF Ui = 30 V Ii = 115 mA Ci = 0 Li = 0

Type KFD2-STC4-Ex1.H and Type KFD2-STC4-Ex1.2O.H

For terminals 7 to 12, 14 and 15, and power rail terminals 1 & 2:

Um = 250 V

For Terminals 1 and 3:

Uo = 27.2 V Io = 93 mA Po = 0.632 W Ci = 12 nF Li = 0

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

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Group	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
I	4.0	51.9	687

For Terminals 3 and 2 (& 5):

Uo = 3.5 V Io = 73 mA Po = 64 mW Ui = 30 V Ii = 117 mA Ci = 0 Li = 0

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

Group	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
I	1000	42	7207

For Terminals 1, 2 (& 5) and 3:

Uo = 27.2 V Io = 117 mA Po = 0.639 W Ci = 12 nF Li = 0

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

Group	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
I	4.0	30	409

For Terminals 6 and 5 (&2):

Uo = 8.7V Io = 0 Co = 5.9µF Ui = 30V Ii = 117mA Ci = 0 Li = 0

Notes:
The above load 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) is ≥ 1% of the Lo value and
- the total Ci of the external circuit (excluding the cable) is ≥ 1% of the Co value.

Routine testing of the transformer shall be carried out in accordance with clause 11.2 of IEC 60079-11: 2006.

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Register of Issues and Variations
includes the current issue

Issue 0 dated 2013-02-25

Standards relevant for this issue:

IEC 60079-0:2007 Ed 5.0 Explosive atmospheres Part 0: Equipment—General requirements

IEC 60079-11:2006 Ed 5.0 Explosive atmospheres Part 11: Equipment protection by intrinsic safety "i"

Test & Assessment Reports relevant for this issue:

TR No. & Issuing CBs: UK/BAS/03/1051, UK/BAS/04/0566, GB/BAS/ExTR06.0084/00, GB/BAS/ExTR08.0046/00, GB/BAS/ExTR10.0301/00; Baseefa
NI13/0002; Simtars

QAR No. & Issuing CB: DE/PTB/QAR06.0007/03, DE/PTB/QAR06.0008/05; PTB

File Reference: 12/0126

Manufacturer's Documents/Drawings associated with this issue:

Document Number	Pages / Sheets	Document Title	Revision	Date
266-014BS-01S	4	Schematic KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)…	S	2010-Oct-14
266-014BS-02A	9	Components KFD2-CR4-Ex1(.2O)… & KFD2-STC(V)4-Ex1(.2O)(.H)…	A	2006-May-15
266-014BS-03S (Sheet 1 of 2)	1	Assembly –top KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)…	S	2010-Oct-14
266-014BS-03S (Sheet 2 of 2)	1	Assembly –bottom KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)…	S	2010-Oct-14
266-014BS-04S (Sheets 1 and 2 of 14)	2	Moulded Transformer Housing KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14
266-014BS-04S (Sheets 3 and 4 of 14)	2	Toroidal Housing KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14

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Document Number	Pages / Sheets	Document Title	Revision	Date
266-014BS-04S (Sheets 5 to 14 of 14)	10	KF – Housing 15 Term. KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14
266-014BS-05S (Sheets 1 to 5 of 8)	5	Main Printed Circuit Board KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14
266-014BS-05S (Sheet 6 of 8)	1	Transformer mounting plinth PCB KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14
266-014BS-05S (Sheet 7 of 8)	1	Zener diode 6-way array PCB KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14
266-014BS-05S (Sheet 8 of 8)	1	Zener diode 4-way array PCB KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14
266-014BS-06S (Sheets 1 and 2 of 6)	2	Transformer details for T101 & T201 KFD2-CR4-Ex1(.2O)… KFD2-STC(V)4-Ex1(.2O)…	S	2010-Oct-14
266-014BS-06S (Sheets 3 and 4 of 6)	2	Transformer details for T102 & 202 KFD2-CR4-Ex1.2O… KFD2-STC(V)4-Ex1.2O…	S	2010-Oct-14
266-014BS-06S (Sheets 5 and 6 of 6)	2	Transformer details for T102 KFD2-CR4-Ex1 KFD2-STC(V)4-Ex1	S	2010-Oct-14
266-014BS-07S	2	Printed Circuit Board Lacquering details KFD2-CR4-Ex1(.2O)… & KFD2-STC(V)4-Ex1(.2O)(.H)…	S	2010-Oct-14
266-0014SI-10	2	Type Label KFD2-STC(V)4-Ex1(.2)(.H)...	-	2013-Feb-20

Issue 1 dated 2022-09-15

Variations Permitted by this Issue

- Update editions of the standards
- Changes to the transformer
- Use of an alternative fuse

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Certificate No.: **ANZEx 13.2004X**	*Current Issue:* 1	*Date of Issue:* 2022-09-15

- Addition of an 'X' suffix to the certificate number for the condition "The safety device must be installed in a controlled environment with suitably reduced pollution" due to the removal of the conformal coating
- Modification of Applicant and Manufacturer names to show current legal form

Standards relevant for this issue:

IEC 60079-0:2011 Ed 6.0 Explosive atmospheres Part 0: Equipment—General requirements

IEC 60079-11:2011 Ed 6.0 Explosive atmospheres Part 11: Equipment protection by intrinsic safety "i"

Test & Assessment Reports relevant for this issue:

TR No. & Issuing CBs: GB/BAS/ExTR14.0292/00, GB/BAS/ExTR15.0306/00, GB/BAS/ExTR16.0291/00; BASEEFA
QAR No. & Issuing CB: DE/PTB/QAR06.0008/16 - PTB
File Reference: 060041Audit

Manufacturer's Documents/Drawings associated with this issue:

Document Number	Pages / Sheets	Document Title	Revision	Date
		GB/BAS/ExTR14.0292/00		
266-015IE-F	1	Summary KFD2-CR4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)..	-	2014-May-12
266-010BS-04E (Sheet 1 of 15)	1	Mechanical parts Moulded Transformer Housing - base	-	2014-Mar-27
266-010BS-04E (Sheet 2 of 15)	1	Mechanical parts Moulded Transformer Housing – alternative base	-	2014-Mar-27
266-010BS-04E (Sheet 3 of 15)	1	Mechanical parts Moulded Transformer Housing – cover	-	2014-Mar-27
266-010BS-04E (Sheet 4 and 5 of 15)	2	Mechanical parts Transformer – Toroidal Housing	-	2014-Mar-27
266-010BS-04E (Sheet 6 to 15 of 15)	10	Mechanical parts KF – Housing 15 Term. Asymm	-	2014-Mar-27
266-014BS-10T	3	Type Label KFD2-STC(V)4-Ex1(.2O)..	-	2014-May-12
		GB/BAS/ExTR15.0306/00		
266-015IE-G	1	Summary KFD2-CR4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)..	-	2015-Oct-15

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Document Number	Pages / Sheets	Document Title	Revision	Date
266-014BS-02U	9	Components KFD2-STC(V)4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)(.H)..	-	2015-Oct-15
		GB/BAS/ExTR16.0291/00		
266-014BS-V	1	Summary KFD2-CR4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)(,H)..	-	2016-Sep-15
266-014BS-01V	4	Schematic KFD2-CR4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)..	-	2015-Dec-10
266-014BS-02V	2	Safety Relevant Components KFD2-CR4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)(.H)..	-	2016-Sep-15
266-014BS-03V (Sheet 1 of 2)	1	Assembly -top KFD2-CR4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)..	-	2016-Mar-23
266-014BS-03V (Sheet 2 of 2)	1	Assembly -bottom KFD2-CR4-Ex1(.2O).. & KFD2-STC(V)4-Ex1(.2O)..	-	2016-Mar-23
266-010BS-04F (Sheet 1 of 15)	1	Mechanical parts Moulded Transformer Housing - base	-	2016-Mar-23
266-010BS-04F (Sheet 2 of 15)	1	Mechanical parts Moulded Transformer Housing – alternative base	-	2016-Mar-23
266-010BS-04F (Sheet 3 of 15)	1	Mechanical parts Moulded Transformer Housing – cover	-	2016-Mar-23
266-010BS-04F (Sheets 4 and 5 of 15)	2	Mechanical parts Transformer – Toroidal Housing	-	2016-Mar-23
266-010BS-04F (Sheets 6 to 15 of 15)	10	Mechanical parts KF – Housing 15 Term. Asymm	-	2016-Mar-23
266-014BS-05V (Sheets 1 to 5 of 6)	5	Main Printed Circuit Board KFD2-CR4-Ex1(.2O)... & KFD2-STC(V)4-Ex1(.2O)(.H)…	-	2016-Mar-23
266-014BS-05V (Sheet 6 of 6)	1	Zener diode 4-way array PCB KFD2-CR4-Ex1(.2O)… & KFD2-STC(V)4-Ex1(.2O)(.H)…	-	2016-Mar-23
266-014BS-06V (Sheets 1 and 2 of 6)	2	Transformer details for T101 & T201 KFD2-CR4-Ex1(.2O)… & KFD2-STC(V)4-Ex1(.2O)…	-	2016-Sep-15
266-014BS-06V (Sheets 3 and 4 of 6)	2	Transformer details for T102 & T202 KFD2-CR4-Ex1(.2O)... & KFD2-STC(V)4-Ex1(.2O)…	-	2016-Sep-15
266-014BS-06V (Sheets 5 and 6 of 6)	2	Transformer details for T102 KFD2-CR4-Ex1 & KFD2-STC(V)4-Ex1	-	2016-Sep-15

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Document Number	Pages / Sheets	Document Title	Revision	Date
266-0014SI-10A	1	Type Label KFD2-STC(V)4-Ex1(.2)(.H)...	-	2022-Sep-02