



TYPE EXAMINATION CERTIFICATE

[1]

[2] Equipment or Protective Systems Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU.

[3] Type Examination Certificate Number: **FIDI 23 ATEX 0082X** Issue: **1**

[4] Product: **Restricted Breathing Solutions / Units**

Type: **SR.***.*.Y*** or **GR.***.*.Y***

[5] Manufacturer: **Pepperl+Fuchs SE**

[6] Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

[8] FIDITAS Ltd., Certification Body, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II of the Directive.

The examination and test results are recorded in confidential Report No: **FIDI 23 CR 107**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018	EN 60079-1:2014	EN 60079-11:2012
EN IEC 60079-15:2019	EN IEC 60079-28:2015	

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 product is subject to Specific Conditions of Use specified in the schedule to this certificate.

[11] This Type Examination Certificate relates only to the design, examination and test of the specified product in accordance with Annex III. Further requirements of the Directive apply to the manufacturing process and supply of this products. These are not covered by this certificate.

[12] The marking of the product shall include the following:



II 3G Ex nR IIC T6...T4 Gc
II 3G Ex db nR [ia] IIC T6...T4 Gc
II 3G Ex nR [op is] IIC T6...T4 Gc

Optional, the marking can be modified with types of protection of the separately certified components, for example "db", "ia/ib/ic" and/or "op is" in combination.

Our ref.: 23.CRT.151

Date: 08.02.2024



FIDITAS Ltd.
Certification department
Approved

Marino Kelava, M.E.Eng.



[13]

SCHEDULE

[14] TYPE EXAMINATION CERTIFICATE No.:

FIDI 23 ATEX 0082X

[15] Description of product

Restricted breathing control Solutions / Units use the restricted breathing Ex protection concept to allow a wide variety of different electrical equipment to be used as equipment EPL Gc. The main requirements for restricted breathing are achieved by using specified ranges of Ex enclosures (P+F GR & SR) which have undergone the relevant testing. Only certified entry devices may be used and aside from a separately tested sealing nut used for the affixation of a flanged secondary enclosure, no other devices are allowed to be fitted through the wall of the enclosures. Restricted breathing control solutions / units can be realised with or without test port.

Electrical data:

Maximum voltage: 690 V

Maximum current: 630 A

Ambient temperature range: Ta = - 60 °C to +70°C.

Rated values of the equipment and terminal data shall be observed. The individual rated values will be specified on the marking labels.

Restricted Breathing Solutions/Units type code definition:

Enclosure Type	Solution Type		Customisation Code	Item Number	Comments
GR					GR Style Enclosure
SR					SR Style Enclosure
	TBR				Terminal Box 'nR'
	CSR				Control Station 'nR'
	CPR				Control Panel 'nR'
	DBR				Distribution Board 'nR'
	MSR				Motor Starter 'nR'
	PSR				Power Switching 'nR'
	IFR				Interface Solution 'nR'
	NER				Network Equipment 'nR'
	RER				Radio Equipment 'nR'
		*			Additional information as required
			S		Standard Product
			C		Configured Product
			CA		Configured Adapted
			Y		Engineered Product
GR	CPR	*	Y	***** 12345678	Item / Configuration Number Example

JK



The only enclosures allowed to be used to build Restricted Breathing Solutions are:

Type	Certificate	Service temperature range	Size range
P+F GR Ex e enclosure	CML 17 ATEX 3084U	-60°C to +85°C	GR.10.10.07.* to GR.36.72.24.*
P+F SR Ex e enclosure	CML 20 ATEX 3118U	-60°C to +85°C	SRS*15.15.09* to SRX*120.120.30*

The Restricted Breathing Solutions / Units may also contain additional Ex equipment with its own separate type of protection. Potential possible applications include:

- 'db' enclosure used for example to contain a sparking device, so that the overall 'nR' assembly does not need to consider the sparking device and may follow the requirements for non-sparking devices,
- 'ia/ib' barrier used to provide intrinsically safe inputs or outputs to external devices in the field,
- 'op is' device providing an optical output at a power level that is intrinsically safe.

Typical devices are shown in table below:

Type / Manufacturer	Certificate No.	Ambient temperature range	Ratings	Ex marking
GUB*** or GUBX***	INERIS 14 ATEX 0035X	-60°C to +60°C	1500 V DC / 1000 V AC max.	II 2G Ex db IIC Gb
KFD0-SD2-Ex*	FIDI 21 ATEX 0091X	-40°C to +60°C	253V r.m.s.	II 3(1)G Ex ec [ia Ga] IIC T4 Gc
FO converter STAHL 9721A	TÜV 13 ATEX 7316 X	-30°C to +75°C	24VDC	II 3(1)G Ex ec [op is T6 Ga] IIC T4 Gc
Multi RF Barrier Solexy M Series	TÜV CY 18 ATEX 0206158X	-40°C to +85°C	Up to 250V AC/DC	II (1)G [Ex ia Ga] IIC
Antenna barrier Phoenix contact BAR-ANT-N-N-EX	IBExU 15 ATEX 1064 X	-40°C to +75°C	Up to 253V AC/DC	II 3(1)G Ex ec [ia Ga] IIC T6 Gc

In addition to the devices listed above, alternative ATEX certified Ex components and Ex equipment may be used, provided that the safety relevant parameters are met or exceeded and their standards editions are in line with those specified in the Restricted Breathing Solutions/Units certificate.

The Restricted Breathing Solutions / Units can be equipped only with cells or batteries that are certified for a minimum 'ec' type of protection or that are sealed type and satisfy requirements for 'ec' type of protection.

For the use of equipment in type of protection intrinsic safety "i" the distances between intrinsically safe and non-intrinsically safe circuits shall fulfil the requirements given in EN 60079-11.

A second separately certified (meaning with its own Ex equipment certificate) enclosure may be physically connected or 'flanged' to the Restricted Breathing Solutions /Units.

SA



Temperature class can be different for each different configuration. It depends on ambient temperature and temperature rise (ΔT) related to maximum dissipated power (MDP).

Maximum allowed dissipated power (MDP) in relation on size and temperature rise (ΔT) is shown in the following tables:

GR.*.Y* enclosures/units:**

Enclosure/unit type	Dimensions			5 k ΔT	10 k ΔT	15 k ΔT
	h (m)	w (m)	d (m)	MDP(W)	MDP(W)	MDP(W)
GR.10.10.07.*	0.1	0.1	0.065	1.1	2.3	3.4
GR.13.13.09.*	0.13	0.13	0.086	1.9	3.9	5.8
GR.13.18.09.*	0.13	0.18	0.0915	2.5	5	7.6
GR.18.18.10.*	0.18	0.18	0.104	3.4	6.8	10.1
GR.18.24.10.*	0.18	0.24	0.104	4.1	8.2	12.3
GR.18.36.10.*	0.18	0.36	0.104	5.6	11.2	16.7
GR.18.36.17.*	0.18	0.36	0.1665	7.7	15.4	23.1
GR.36.36.10.*	0.36	0.36	0.104	8.8	17.6	26.4
GR.36.36.17.*	0.36	0.36	0.1665	11.6	23.3	34.9
GR.36.36.24.*	0.36	0.36	0.2415	15	30.1	45.1
GR.48.60.24.*	0.48	0.6	0.2415	25.5	51	76.5
GR.36.72.17.*	0.36	0.72	0.1665	19.5	39	58.5
GR.36.72.24.*	0.36	0.72	0.2415	24.6	49.2	73.8

For different values of ΔT the allowed MDP may be calculated using the following formula:

$$MDP = 6.3 \times A \times \Delta T \text{ (GR enclosures)}$$

- MDP = Maximum Dissipated Power
- A = Exposed surface area of enclosure in m^2 (not counting back face against wall)
- ΔT = temperature rise of internal ambient / air

SR.*.Y* enclosures/units:**

Enclosure/unit type	Dimensions			5 k ΔT	10 k ΔT	15 k ΔT
	h (m)	w (m)	d (m)	MDP(W)	MDP(W)	MDP(W)
SRS*15.15.09*	0.15	0.15	0.09	1.2	2.4	3.6
SRS*15.19.09*	0.15	0.19	0.09	1.4	2.8	4.2
SRS*19.19.10*	0.19	0.19	0.1	1.8	3.5	5.3
SRM*26.26.09*	0.26	0.26	0.087	2.5	5	7.5
SRM*26.26.16*	0.26	0.26	0.16	3.7	7.4	11.1
SRM*26.26.22*	0.26	0.26	0.22	4.7	9.4	14
SRM*23.30.16*	0.23	0.3	0.16	3.8	7.5	11.3
SRM*19.38.16*	0.19	0.38	0.16	4	8	12.1
SRM*31.31.09*	0.31	0.31	0.087	3.2	6.4	9.7
SRM*31.31.16*	0.31	0.31	0.16	4.6	9.3	13.9
SRM*31.31.22*	0.31	0.31	0.22	5.8	11.6	17.5
SRM*38.38.16*	0.38	0.38	0.16	6.1	12.2	18.4



Enclosure/unit type	Dimensions			5 k ΔT	10 k ΔT	15 k ΔT
	h (m)	w (m)	d (m)	MDP(W)	MDP(W)	MDP(W)
SRM*38.38.22*	0.38	0.38	0.22	7.6	15.1	22.7
SRM*38.48.09*	0.38	0.48	0.087	5.2	10.5	15.7
SRM*38.48.16*	0.38	0.48	0.16	7.2	14.4	21.7
SRM*38.48.22*	0.38	0.48	0.22	8.9	17.7	26.6
SRL*48.48.16*	0.48	0.48	0.16	8.5	17	25.5
SRL*48.48.22*	0.48	0.48	0.22	10.3	20.6	30.9
SRL*40.60.22*	0.4	0.6	0.22	10.7	21.5	32.2
SRL*38.76.16*	0.38	0.76	0.16	10.3	20.6	31
SRL*48.76.16*	0.48	0.76	0.16	12	24	36.1
SRL*48.76.22*	0.48	0.76	0.22	14.4	28.7	43.1
SRL*60.60.26*	0.6	0.6	0.26	15.5	31.1	46.6
SRX*90.60.30*	0.9	0.6	0.3	22.7	45.5	68.2
SRX*80.80.30*	0.8	0.8	0.3	25.3	50.5	75.8
SRX*100.80.30*	1	0.8	0.3	29.7	59.4	89
SRX*130.80.30*	1.3	0.8	0.3	36.3	72.6	108.9
SRX*120.120.30*	1.2	1.2	0.3	45.5	90.9	136.4

For different values of ΔT the allowed MDP may be calculated using the following formula:

$$MDP = 3.157 \times A \times \Delta T \text{ (SR enclosures)}$$

- MDP = Maximum Dissipated Power
- A = Exposed surface area of enclosure in m² (not counting back face against wall)
- ΔT = temperature rise of internal ambient / air

According to EN IEC 60079-15 Clause 12.4 when the temperature rise is verified via calculation, the sum of the dissipated power from all of internally mounted devices must not exceed 80% of the assigned MDP figure for the temperature rise and no single device of the assembly may contribute more than 10% of the power. For devices that dissipate more than 10% of the MDP figure, a temperature rise test in accordance with EN IEC 60079-0 is necessary to confirm stated temperature classification as a routine test. In that case the manufacturer performs routine test of Restricted Breathing Solutions / Units according to clause 12.3 of the standard EN IEC 60079-15.

In the case where the Restricted Breathing Solutions / Units are intended to flange or flanged secondary enclosure, maximum dissipated power (MDP) shall be reduced. The manufacturer uses the calculation method described in document 16-1649CM-00.



[16] Confidential Report No. FIDI 23 CR 107

[16.1] Routine testing

The manufacturer shall carry out the following routine tests, as applicable:

- Test of Restricted Breathing Solutions / Units with test port according to clause 12.2.2.1.1 of the standard EN IEC 60079-15.
- Test of Restricted Breathing Solutions / Units without test port according to clause 12.2.2.1.2 of the standard EN IEC 60079-15.
- Test of Restricted Breathing Solutions / Units that contain individual internal components with more than 10 % of the possible total power dissipation according to clause 12.3 of the standard EN IEC 60079-15.
- Test of electric strength according to clause 6.2 of the standard EN IEC 60079-15.

[17] Specific Conditions of Use

- Opening of the 'nR' enclosure without test port is only permitted in exceptional cases, as example for maintenance.

[18] Essential Health and Safety Requirements

Covered by the conformity with harmonized standards listed under item 9.

[19] Drawings and Documents

Title:	Drawing No.:	Rev. level:	Date:
Description for Certification of Restricted Breathing Solutions	16-1623FI-00	-	08.11.2023.
Ex d/e flanged panel thermal calculation	16-1649CM-00	-	02.08.2023.
Flexible Ex nR general arrangement	16-1623FI-04	-	13.02.2023.
Restricted Breathing Solution flanged with Zago nut	16-1623FI-04_2	-	09.01.2024.
Installation & Maintenance Manual for Restricted Breathing Solutions	16-1623FI-09	-	-
Restricted Breathing Solutions - label drawing	16-1623FI-10	-	09.01.2024.
GR enclosure general assembly & sizes	16-1369CM-04	-	19.04.2017.
SRM/L/X enclosure general assembly & sizes	16-1513CM-04	-	02.03.2020.