

CERTIFICATE OF CONFORMITY

1. HAZARDOUS LOCATION ELECTRICAL EQUIPMENT PER CANADIAN REQUIREMENTS

2. **Certificate No:** FM24CA0033X
3. **Equipment:** 9001 Series Intrinsic Safety Barriers
(Type Reference and Name)
4. **Name of Listing Company:** R. STAHL Schaltgeräte GmbH
5. **Address of Listing Company:** Am Bahnhof 30, D-74638 Waldenburg (Württ.), Germany
6. The examination and test results are recorded in confidential report number:
PR469323 dated 6 June 2024

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

CSA C22.2 No. 213:2021, CSA C22.2 No. 60079-0:2019, CSA C22.2 No. 60079-7:2018,
CSA C22.2 No. 60079-11:2014 (R2018), CSA C22.2 No. 61010-1:2019

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

10. Equipment Ratings:

Nonincendive for Class I, Division 2, Groups ABCD, T4
Intrinsically Safe Connections to Class I,II,III, Division 1, Groups ABCDEFG; in accordance with drawing 90 016 11 31 1
Increased Safety Protection for Class I, Zone 2, Ex ec IIC T4 Gc with intrinsically safe connections to Zone 0 [ia Ga] in accordance with drawing 90 016 11 31 1
Intrinsically Safe Connections to Zone 20, [Ex ia Da] Group IIIC; in accordance with drawing 90 016 11 31 1
Ta = -20°C to Tmax*

Or (depending on model)

Certificate issued by:



J.E. Marquedant
VP, Manager - Electrical Systems

6 June 2024

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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Nonincendive for Class I, Division 2, Groups ABCD, T4
Intrinsically Safe Connections to Class I,II,III, Division 1, Groups CDFG; in accordance with drawing 90 016 11 31 1
Increased Safety Protection for Class I, Zone 2, Ex ec IIB T4 Gc with intrinsically safe connections to Zone 0 [ia Ga] in accordance with drawing 90 016 11 31 1
Intrinsically Safe Connections to Zone 20, [Ex ia Da] Group IIIC; in accordance with drawing 90 016 11 31 1
Ta = -20°C to Tmax*

11. The marking of the equipment shall include:

Class I Division 2 Groups ABCD T4
Intrinsically Safe Connections to Class I, II, III, Division 1, Groups ABCDEFG
Ex ec [ia Ga] IIC T4 Gc
[Ex ia Da] IIIC
Ta = -20°C to Tmax*

Or (depending on model)

Class I Division 2 Groups ABCD T4
Intrinsically Safe Connections to Class I, II, III, Division 1, Groups CDFG
Ex ec [ia Ga] IIB T4 Gc
[Ex ia Da] IIIC
Ta = -20°C to Tmax*

Tmax* - Maximum barrier operating temperature is 60°C except as follows:	
T _a = 50°C	9001/0b-280-165-101 9001/03-280-000-101 9001/04-280-000-101 9001/0b-280-280-101 9001/51-280-091-141
T _a = 40°C	9001/51-280-110-141

12. Description of Equipment:

The 9001 Series Intrinsic Safety barriers are passive networks used for the separation of intrinsically safe circuits from non-intrinsically safe circuits.

The equipment has the following electrical characteristics:
U_m = 253V, U_o = 24V, I_o = 24mA and P_o = 80mW

9001/ab-c-d-e. Intrinsic Safety Barrier

a = 0 or 5.

b = Polarity: 0 (negative), 1 (positive), 2 (ac), 3 (diode return +) or 4 (diode return -).

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c = Safe maximum voltage $V_{oc} (U_o)$ in 1/10 V.

d = Safe short circuit current in $I_{sc} (I_o)$ in mA.

e = Suffix 101, 111 or 141 not related to safety.

Part numbers and Entity Parameters

BARRIER PART NO	V_{oc} (V)	I_{sc} (mA)	P_{max} (W)	La (Lo)	Grps. A, B, E	Grps. C, D, F, G
	U_o (V)	I_o (mA)	P_o (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/0b-050-050-101	5	50	62.5	Lo / mH	15	56
				Co / μ F	100	1000
9001/0b-050-100-101	5	100	125	Lo / mH	4	15
				Co / μ F	100	1000
9001/0b-050-150-101	5	150	187.5	Lo / mH	1.3	7
				Co / μ F	100	1000
9001/0b-083-442-101	8.3	442	917.2	Lo / mH	0.12	0.5
				Co / μ F	7.2	73
9001/0b-086-010-101	8.6	10	21.5	Lo / mH	300	1000
				Co / μ F	6.2	55
9001/0b-086-020-101	8.6	20	43	Lo / mH	90	330
				Co / μ F	6.2	55
9001/0b-086-050-101	8.6	50	107.5	Lo / mH	15	56
				Co / μ F	6.2	55
9001/0b-086-075-101	8.6	75	161.3	Lo / mH	6.7	25
				Co / μ F	6.2	55
9001/0b-086-100-101	8.6	100	215	Lo / mH	4	15
				Co / μ F	6.2	55
9001/0b-086-150-101	8.6	150	322.5	Lo / mH	1.3	7
				Co / μ F	6.2	55
9001/0b-086-270-101	8.6	270	580.5	Lo / mH	0.23	2.2
				Co / μ F	6.2	55

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BARRIER PART NO	V _{OC} (V)	I _{SC} (mA)	P _{max} (W)	La (Lo)	Grps. A, B, E	Grps. C, D, F, G
	U _O (V)	I _O (mA)	P _O (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/0b-086-390-101	8.6	390	838.5	Lo / mH	0.16	0.89
				Co / μF	6.2	55
9001/0b-126-020-101	12.6	20	63	Lo / mH	90	330
				Co / μF	1.15	7.4
9001/0b-126-050-101	12.6	50	157.5	Lo / mH	15	56
				Co / μF	1.15	7.4
9001/0b-126-075-101	12.6	75	236.3	Lo / mH	6.7	25
				Co / μF	1.15	7.4
9001/0b-126-100-101	12.6	100	315	Lo / mH	4	15
				Co / μF	1.15	7.4
9001/0b-126-140-101	12.6	140	441	Lo / mH	1.6	8
				Co / μF	1.15	7.4
9001/0b-126-150-101	12.6	150	472.5	Lo / mH	1.3	7
				Co / μF	1.15	7.4
9001/0b-137-065-101	13.7	65	222.6	Lo / mH	8.8	34
				Co / μF	0.79	5
9001/0b-158-005-101	15.8	5	19.75	Lo / mH	1000	1000
				Co / μF	0.478	2.88
9001/0b-158-150-101	15.8	150	592.5	Lo / mH	1.3	7
				Co / μF	0.478	2.88
9001/0b-168-007-101	16.8	7	29.4	Lo / mH	1000	720
				Co / μF	0.39	2.29
9001/0b-168-020-101	16.8	20	84	Lo / mH	90	330
				Co / μF	0.39	2.29
9001/0b-168-050-101	16.8	50	210	Lo / mH	15	56

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	U _o (V)	I _o (mA)	P _o (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/0b-168-050-101	16.8	50	210	Co / μF	0.39	2.29
9001/0b-168-075-101	16.8	75	315	Lo / mH	6.7	25
				Co / μF	0.39	2.29
9001/0b-168-100-101	16.8	100	420	Lo / mH	4	15
				Co / μF	0.39	2.29
9001/0b-199-010-101	19.9	10	49.75	Lo / mH	330	1000
				Co / μF	0.223	1.42
9001/0b-199-020-101	19.9	20	99.5	Lo / mH	90	330
				Co / μF	0.223	1.42
9001/0b-199-038-101	19.9	38	189.1	Lo / mH	26	95
				Co / μF	0.223	1.42
9001/0b-199-050-101	19.9	50	248.8	Lo / mH	15	56
				Co / μF	0.223	1.42
9001/0b-199-070-101	19.9	70	348.3	Lo / mH	7.5	28
				Co / μF	0.223	1.42
9001/0b-199-100-101	19.9	100	497.5	Lo / mH	4	15
				Co / μF	0.223	1.42
9001/0b-199-150-101	19.9	150	746.3	Lo / mH	1.3	7
				Co / μF	0.223	1.42
9001/0b-252-070-101	25.2	70	441	Lo / mH	4.5	25
				Co / μF	0.107	0.82
9001/0b-280-020-101	28	20	140	Lo / mH	50	50
				Co / μF	0.083	0.65
9001/0b-280-050-101	28	50	350	Lo / mH	8.5	25
				Co / μF	0.083	0.65

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	U _O (V)	I _O (mA)	P _O (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/0b-280-075-101	28	75	525	Lo / mH	3.3	21
				Co / μF	0.083	0.65
9001/0b-280-085-101	28	85	595	Lo / mH	2.4	16
				Co / μF	0.083	0.65
9001/0b-280-100-101	28	100	700	Lo / mH	1.6	11
				Co / μF	0.083	0.65
9001/0b-280-110-101	28	110	770	Lo / mH	1.2	9
				Co / μF	0.083	0.65
9001/0b-280-165-101	28	165	1155	Lo / mH	-	3.5
				Co / μF	-	0.65
9001/0b-315-020-101	31.5	20	157.5	Lo / mH	50	50
				Co / μF	0.056	0.41
9001/0b-315-050-101	31.5	50	393.8	Lo / mH	7.5	25
				Co / μF	0.056	0.41
9001/0b-315-070-101	31.5	70	551.3	Lo / mH	3.2	24
				Co / μF	0.056	0.41
9001/0b-398-020-101	39.8	20	199	Lo / mH	50	50
				Co / μF	0.03	0.26
9001/0b-398-050-101	39.8	50	497.5	Lo / mH	5.2	25
				Co / μF	0.03	0.26
9001/01-252-057-141	25.2	57	359.1	Lo / mH	6.3	25
				Co / μF	0.107	0.82
9001/01-252-060-141	25.2	60	378	Lo / mH	6.2	25
				Co / μF	0.107	0.82
9001/01-252-100-141	25.2	100	630	Lo / mH	2	11

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	U _O (V)	I _O (mA)	P _O (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/01-252-100-141	25.2	100	630	Co / μF	0.107	0.82
9001/02-016-015-101	1.6	15	6	Lo / mH	160	560
				Co / μF	100	1000
9001/02-016-050-101	1.6	50	20	Lo / mH	15	56
				Co / μF	100	1000
9001/02-016-050-111	1.6	50	20	Lo / mH	15	56
				Co / μF	100	1000
9001/02-016-150-101	1.6	150	60	Lo / mH	1.3	7
				Co / μF	100	1000
9001/02-016-150-111	1.6	150	60	Lo / mH	1.3	7
				Co / μF	100	1000
9001/02-016-320-101	1.6	320	128	Lo / mH	0.19	1.6
				Co / μF	100	1000
9001/02-061-020-101	6.1	20	30.5	Lo / mH	90	330
				Co / μF	37	880
9001/02-061-050-101	6.1	50	76.25	Lo / mH	15	56
				Co / μF	37	880
9001/02-061-150-101	6.1	150	228.8	Lo / mH	1.3	7
				Co / μF	37	880
9001/02-093-003-101	9.3	3	6.975	Lo / mH	1000	1000
				Co / μF	4.1	31
9001/02-093-020-101	9.3	20	46.5	Lo / mH	90	330
				Co / μF	4.1	31
9001/02-093-030-101	9.3	30	69.75	Lo / mH	40	150
				Co / μF	4.1	31

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	U _O (V)	I _O (mA)	P _O (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/02-093-050-101	9.3	50	116.3	Lo / mH	15	56
				Co / μF	4.1	31
9001/02-093-075-101	9.3	75	174.4	Lo / mH	6.7	25
				Co / μF	4.1	31
9001/02-093-100-101	9.3	100	232.5	Lo / mH	4	15
				Co / μF	4.1	31
9001/02-093-120-101	9.3	120	279	Lo / mH	2.5	10
				Co / μF	4.1	31
9001/02-093-150-101	9.3	150	348.8	Lo / mH	1.3	7
				Co / μF	4.1	31
9001/02-093-250-101	9.3	250	581.3	Lo / mH	0.27	2.7
				Co / μF	4.1	31
9001/02-093-270-101	9.3	270	627.8	Lo / mH	0.23	2.2
				Co / μF	4.1	31
9001/02-093-390-101	9.3	390	906.8	Lo / mH	0.16	0.89
				Co / μF	4.1	31
9001/02-133-003-101	13.3	3	9.975	Lo / mH	1000	1000
				Co / μF	0.91	5.6
9001/02-133-020-101	13.3	20	66.5	Lo / mH	90	330
				Co / μF	0.91	5.6
9001/02-133-050-101	13.3	50	166.3	Lo / mH	15	56
				Co / μF	0.91	5.6
9001/02-133-075-101	13.3	75	249.4	Lo / mH	6.7	25
				Co / μF	0.91	5.6
9001/02-133-100-101	13.3	100	332.5	Lo / mH	4	15

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	U _o (V)	I _o (mA)	P _o (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/02-133-100-101	13.3	100	332.5	Co / μF	0.91	5.6
9001/02-133-120-101	13.3	120	399	Lo / mH	2.5	10
				Co / μF	0.91	5.6
9001/02-133-150-101	13.3	150	498.8	Lo / mH	1.3	7
				Co / μF	0.91	5.6
9001/02-175-020-101	17.5	20	87.5	Lo / mH	90	330
				Co / μF	0.339	1.97
9001/02-175-050-101	17.5	50	218.8	Lo / mH	15	56
				Co / μF	0.339	1.97
9001/02-175-075-101	17.5	75	328.1	Lo / mH	6.7	25
				Co / μF	0.339	1.97
9001/02-175-100-101	17.5	100	437.5	Lo / mH	4	15
				Co / μF	0.339	1.97
9001/02-175-120-101	17.5	120	525	Lo / mH	2.5	10
				Co / μF	0.339	1.97
9001/02-175-150-101	17.5	150	656.3	Lo / mH	1.3	7
				Co / μF	0.339	1.97
9001/02-175-200-101	17.5	200	875	Lo / mH	0.5	4
				Co / μF	0.339	1.97
9001/02-196-010-101	19.6	10	49	Lo / mH	330	1000
				Co / μF	0.235	1.47
9001/02-196-020-101	19.6	20	98	Lo / mH	90	330
				Co / μF	0.235	1.47
9001/02-196-030-101	19.6	30	147	Lo / mH	40	150
				Co / μF	0.235	1.47

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	U _o (V)	I _o (mA)	P _o (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/02-196-050-101	19.6	50	245	Lo / mH	15	56
				Co / μF	0.235	1.47
9001/02-196-075-101	19.6	75	367.5	Lo / mH	6.7	25
				Co / μF	0.235	1.47
9001/02-196-100-101	19.6	100	490	Lo / mH	4	15
				Co / μF	0.235	1.47
9001/02-196-120-101	19.6	120	588	Lo / mH	2.5	10
				Co / μF	0.235	1.47
9001/02-196-125-101	19.6	125	612.5	Lo / mH	2.2	9
				Co / μF	0.235	1.47
9001/02-196-150-101	19.6	150	735	Lo / mH	1.3	7
				Co / μF	0.235	1.47
9001/02-224-020-101	22.4	20	112	Lo / mH	90	330
				Co / μF	0.156	1.09
9001/02-224-050-101	22.4	50	280	Lo / mH	15	56
				Co / μF	0.156	1.09
9001/02-224-075-101	22.4	75	420	Lo / mH	6.7	25
				Co / μF	0.156	1.09
9001/02-224-100-101	22.4	100	560	Lo / mH	4	15
				Co / μF	0.156	1.09
9001/02-224-120-101	22.4	120	672	Lo / mH	2.5	10
				Co / μF	0.156	1.09
9001/02-224-150-101	22.4	150	840	Lo / mH	1.3	7
				Co / μF	0.156	1.09
9001/02-280-015-101	28	15	105	Lo / mH	50	50

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BARRIER PART NO	V _{OC} (V)	I _{SC} (mA)	P _{max} (W)	La (Lo)	Grps. A, B, E	Grps. C, D, F, G
	U _O (V)	I _O (mA)	P _O (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/02-280-015-101	28	15	105	Co / μF	0.083	0.65
9001/02-280-020-101	28	20	140	Lo / mH	50	50
				Co / μF	0.083	0.65
9001/02-280-050-101	28	50	350	Lo / mH	8.5	25
				Co / μF	0.083	0.65
9001/02-280-075-101	28	75	525	Lo / mH	3.4	21
				Co / μF	0.083	0.65
9001/02-280-090-101	28	90	630	Lo / mH	2.2	14
				Co / μF	0.083	0.65
9001/02-280-120-101	28	120	840	Lo / mH	-	7
				Co / μF	-	0.65
9001/02-307-075-101	30.7	75	575.6	Lo / mH	2.9	20
				Co / μF	0.062	0.53
9001/02-307-130-101	30.7	130	997.8	Lo / mH	-	5.4
				Co / μF	-	0.53
9001/02-412-040-101	41.2	40	412	Lo / mH	8	25
				Co / μF	0.03	0.287
9001/02-412-065-101	41.2	65	669.5	Lo / mH	-	23
				Co / μF	-	0.287
9001/02-412-095-101	41.2	95	978.5	Lo / mH	-	9
				Co / μF	-	0.287
9001/03-086-000-101	8.6	0	0	Lo / mH	1000	1000
				Co / μF	6.2	55
9001/03-168-000-101	16.8	0	0	Lo / mH	1000	1000
				Co / μF	0.39	2.29

To verify the availability of the Approved product, please refer to www.approvalguide.com

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	U _O (V)	I _O (mA)	P _O (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/03-199-000-101	19.9	0	0	Lo / mH	1000	1000
				Co / μF	0.223	1.42
9001/03-280-000-101	28	0	0	Lo / mH	50	50
				Co / μF	0.083	0.65
9001/04-086-000-101	8.6	0	0	Lo / mH	1000	1000
				Co / μF	6.2	55
9001/04-168-000-101	16.8	0	0	Lo / mH	1000	1000
				Co / μF	0.39	2.29
9001/04-199-000-101	19.9	0	0	Lo / mH	1000	1000
				Co / μF	0.223	1.42
9001/04-280-000-101	28	0	0	Lo / mH	50	50
				Co / μF	0.083	0.65
9001/0b-158-270-101	15.8	270	1067	Lo / mH	0.23	2.2
				Co / μF	0.478	2.88
9001/0b-158-390-101	15.8	390	1541	Lo / mH	0.16	0.89
				Co / μF	0.478	2.88
9001/0b-199-270-101	19.9	270	1343	Lo / mH	0.23	2.2
				Co / μF	0.223	1.42
9001/0b-199-390-101	19.9	390	1940	Lo / mH	-	0.89
				Co / μF	-	1.42
9001/0b-280-280-101	28	280	1960	Lo / mH	-	0.6
				Co / μF	-	0.65
9001/02-172-270-101	17.2	270	1161	Lo / mH	0.23	2.2
				Co / μF	0.36	2.11
9001/02-172-390-101	17.2	390	1677	Lo / mH	0.16	0.89

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	U _O (V)	I _O (mA)	P _O (W)	Ca (Co)	Grp. IIC	Grp. IIB/IIA
9001/02-172-390-101	17.2	390	1677	Co / μF	0.36	2.11
9001/02-217-270-101	21.7	270	1465	Lo / mH	-	2.2
				Co / μF	-	1.17
9001/02-217-390-101	21.7	390	2116	Lo / mH	-	0.89
				Co / μF	-	1.17
9001/02-308-230-101	30.8	230	1771	Lo / mH	-	0.7
				Co / μF	-	0.524
9001/51-280-091-141	28	91	637	Lo / mH	2.2	14
				Co / μF	0.083	0.65
9001/51-280-110-141	28	110	770	Lo / mH	1.2	9
				Co / μF	0.083	0.65

13. Specific Conditions of Use:

1. The barriers shall be installed within a tool-secured enclosure, which is capable of accepting one or more of the wiring methods specified in the Canadian Electric Code (C22.1)
2. The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1
3. Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment
4. The circuits shall be limited to overvoltage Category II as defined in IEC 60664-1

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals Canadian Certification Scheme.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

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Date	Description
6 June 2024	Original Issue.

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