

CERTIFICATE OF CONFORMITY



Member of the FM Global Group

1. HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS

2. **Certificate No:** FM24US0032X
3. **Equipment:** 9002 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:

3010778 dated 29th May 2001

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

FM 3600:2022, FM 3610:2021, FM 3611:2021, FM 3810:2021, ANSI/UL 60079-0:2020, ANSI/UL 60079-7:2021, ANSI/UL 60079-11:2018, ANSI/UL 61010-1:2019, ANSI/UL 121201:2021

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 90 026 11 31 1
Increased Safety Protection for Class I, Zone 2, AEx ec IIC T4 Gc with intrinsically safe connections to Zone 0 [ia Ga] in accordance with drawing 90 026 11 31 1
Intrinsically Safe Connections to Zone 20, [AEx ia Da] Group IIIC; in accordance with drawing 90 026 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 90 026 11 31 1
Increased Safety Protection for Class I, Zone 2, AEx ec IIB T4 Gc with intrinsically safe connections to Zone 0 [ia Ga] in accordance with drawing 90 026 11 31 1
Intrinsically Safe Connections to Zone 20, [AEx ia Da] Group IIIC; in accordance with drawing 90 026 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
Class I, Zone 2, AEx ec [ia Ga] IIC T4 Gc
[AEx 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
Class I, Zone 2, AEx ec [ia Ga] IIB T4 Gc
[AEx ia Da] IIIC
Ta = -20°C to Tmax*

Tmax* - Maximum barrier operating temperature is 60°C except as follows:	
Ta = 50°C	9002/77-220-146-001 9002/77-220-296-001

12. Description of Equipment:

The 9002 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 $P_o = 80mW$

9002/ab-c-d-e. Intrinsic Safety Barrier

a = Channel A (Terminals 3 to Gnd): 0 (negative), 1 (positive), 2 (ac), 3 (diode return +), 4 (diode return -), 7 (star connected).

b = Channel B (Terminals 4 to Gnd): 0 (negative), 1 (positive), 2 (ac), 3 (diode return +), 4 (diode return -), 7 (star connected).

c = Safe maximum voltage for interconnection of channels A & B in 1/10V.

d = Safe short circuit current for interconnection of channels A & B in mA.

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e = Suffix 001, 021, 041 or 111



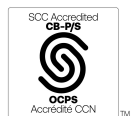
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Part numbers and Entity Parameters

Channel (Terminals)	V _{oc} (V) U _o (V)	I _{sc} (mA) I _o (mA)	P _o (W)	L _a , L _o	GP A, B, E GP IIC	GP C, D, F, G GP IIB/IIA
				C _a , C _o		
9002/00-260-138-001, 9002/11-260-138-001				#1		
3 to Gnd	26	83	0.54	L _a , L _o (mH)	2.7	15.5
				C _a , C _o (μF)	0.099	0.77
4 to Gnd	20	49	0.245	L _a , L _o (mH)	14	54
				C _a , C _o (μF)	0.22	1.41
3 & 4	V _t = 27.4	I _t = 132	0.785	L _a , L _o (mH)	0.81	5.1
				C _a , C _o (μF)	0.087	0.67
9002/00-120-024-001, 9002/11-120-024-001				#2		
3 to Gnd	12	12	0.04	L _a , L _o (mH)	240	850
				C _a , C _o (μF)	1.41	9
4 to Gnd	12	12	0.04	L _a , L _o (mH)	2.40	850
				C _a , C _o (μF)	1.41	9
3 & 4	V _t = 12.7	I _t = 24	0.07	L _a , L _o (mH)	63	230
				C _a , C _o (μF)	1.1	7.1
9002/10-187-020-001				#3		
3 to Gnd	9.33	20	0.05	L _a , L _o (mH)	90	330
				C _a , C _o (μF)	3.9	29
4 to Gnd	9.33	20	0.05	L _a , L _o (mH)	90	330
				C _a , C _o (μF)	3.9	29
3 & 4	V _t = 18.7	I _t = 20	0.09	L _a , L _o (mH)	90	330
				C _a , C _o (μF)	0.27	1.64
9002/10-187-270-001				#4		

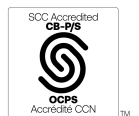
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Channel (Terminals)	V _{oc} (V) U _o (V)	I _{sc} (mA) I _o (mA)	P _o (W)	L _a , L _o	GP A, B, E GP IIC	GP C, D, F, G GP IIB/IIA
				C _a , C _o		
3 to Gnd	9.33	270	0.63	L _a , L _o (mH)	0.23	2.2
				C _a , C _o (μF)	3.9	29
4 to Gnd	9.33	270	0.63	L _a , L _o (mH)	0.23	2.2
				C _a , C _o (μF)	3.9	29
3 & 4	V _t = 18.7	I _t = 270	1.26	L _a , L _o (mH)	0.23	2.2
				C _a , C _o (μF)	0.27	1.64
9002/10-210-030-001				#5		
3 to Gnd	10.5	30	0.08	L _a , L _o (mH)	40	150
				C _a , C _o (μF)	2.41	16.8
4 to Gnd	10.5	30	0.08	L _a , L _o (mH)	40	150
				C _a , C _o (μF)	2.41	16.8
3 & 4	V _t = 21	I _t = 30	0.16	L _a , L _o (mH)	40	150
				C _a , C _o (μF)	0.188	1.27
9002/00-280-186-001, 9002/11-280-186-001				#6		
3 to Gnd	28	93	0.65	L _a , L _o (mH)	2	13
				C _a , C _o (μF)	0.083	0.65
4 to Gnd	28	93	0.65	L _a , L _o (mH)	2	13
				C _a , C _o (μF)	0.083	0.65
3 & 4	V _t = 30.1	I _t = 186	1.3	L _a , L _o (mH)	-	2.8
				C _a , C _o (μF)	-	0.551
9002/11-130-360-001				#7		
3 to Gnd	13	321	1.04	L _a , L _o (mH)	0.19	1.6
				C _a , C _o (μF)	1	6.2

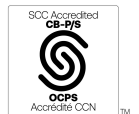
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				C _a , C _O		
4 to Gnd	1.6	39	0.016	L _a , L _O (mH)	24	91
				C _a , C _O (μF)	100	1000
3 & 4	V _t = 13.3	I _t = 360	1.17	L _a , L _O (mH)	0.17	1.3
				C _a , C _O (μF)	0.79	5
9002/11-137-029-001					#8	
3 to Gnd	13.7	14.5	0.05	L _a , L _O (mH)	160	560
				C _a , C _O (μF)	0.79	5
4 to Gnd	13.7	14.5	0.05	L _a , L _O (mH)	160	560
				C _a , C _O (μF)	0.79	5
3 & 4	V _t = 14.4	I _t = 29	0.1	L _a , L _O (mH)	43	160
				C _a , C _O (μF)	0.67	4.18
9002/11-280-112-001					#9	
3 to Gnd	28	109	0.76	L _a , L _O (mH)	1.3	9
				C _a , C _O (μF)	0.083	0.65
4 to Gnd	28	3	0.02	L _a , L _O (mH)	50	150
				C _a , C _O (μF)	0.083	0.65
3 & 4	V _t = 28.7	I _t = 112	0.78	L _a , L _O (mH)	0.76	8.4
				C _a , C _O (μF)	0.065	0.551
9002/11-280-293-001, 9002/11-280-293-021					#10	
3 to Gnd	28	89	0.63	L _a , L _O (mH)	2.2	14
				C _a , C _O (μF)	0.083	0.65
4 to Gnd	9.56	180	0.43	L _a , L _O (mH)	0.6	5
				C _a , C _O (μF)	3.6	26

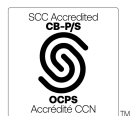
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				C _a , C _o		
3 & 4	V _t = 28.7	I _t = 269	1.05	L _a , L _o (mH)	-	0.56
				C _a , C _o (μF)	-	0.62
9002/11-199-030-001				#11		
3 to Gnd	19.9	15	0.075	L _a , L _o (mH)	160	560
				C _a , C _o (μF)	0.223	1.42
4 to Gnd	19.9	15	0.075	L _a , L _o (mH)	160	560
				C _a , C _o (μF)	0.223	1.42
3 & 4	V _t = 20.6	I _t = 30	0.15	L _a , L _o (mH)	40	150
				C _a , C _o (μF)	0.223	1.42
9002/13-199-225-001				#12		
3 to Gnd	19.9	222	1.1	L _a , L _o (mH)	0.39	3.18
				C _a , C _o (μF)	0.223	1.42
4 to Gnd	19.9	3	0.015	L _a , L _o (mH)	1000	1000
				C _a , C _o (μF)	0.223	1.42
3 & 4	V _t = 20.2	I _t = 225	1.12	L _a , L _o (mH)	0.37	3.15
				C _a , C _o (μF)	0.213	1.38
9002/13-252-121-041				#13		
3 to Gnd	25.2	118	0.74	L _a , L _o (mH)	1.3	7.4
				C _a , C _o (μF)	0.107	0.82
4 to Gnd	25.2	0	0.02	L _a , L _o (mH)	50	150
				C _a , C _o (μF)	0.107	0.82

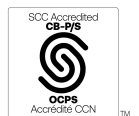
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				C _a , C _o		
3 & 4	V _t = 25.5	I _t = 121	0.76	L _a , L _o (mH)	1.25	7.35
				C _a , C _o (μF)		
9002/13-280-093-001					#14	
3 to Gnd	28	90	0.63	L _a , L _o (mH)	2.2	14
				C _a , C _o (μF)		
4 to Gnd	28	3	0.021	L _a , L _o (mH)	50	150
				C _a , C _o (μF)		
3 & 4	V _t = 28.3	I _t = 93	0.651	L _a , L _o (mH)	2	13
				C _a , C _o (μF)		
9002/13-280-100-041					#15	
3 to Gnd	28	97	0.679	L _a , L _o (mH)	1.8	12
				C _a , C _o (μF)		
4 to Gnd	28	0	0.021	L _a , L _o (mH)	50	150
				C _a , C _o (μF)		
3 & 4	V _t = 28.3	I _t = 100	0.7	L _a , L _o (mH)	1.55	11
				C _a , C _o (μF)		
9002/13-280-110-001					#16	
3 to Gnd	28	107	0.749	L _a , L _o (mH)	1.35	9.6
				C _a , C _o (μF)		
4 to Gnd	28	3	0.021	L _a , L _o (mH)	50	150
				C _a , C _o (μF)		

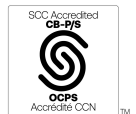
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				C _a , C _o		
3 & 4	V _t = 28.3	I _t = 110	0.77	L _a , L _o (mH)	1.25	9
				C _a , C _o (μF)		
9002/13-280-188-001					#17	
3 to Gnd	28	185	1.295	L _a , L _o (mH)	-	2.85
				C _a , C _o (μF)		-
4 to Gnd	28	3	0.021	L _a , L _o (mH)	-	150
				C _a , C _o (μF)		-
3 & 4	V _t = 28.3	I _t = 188	1.316	L _a , L _o (mH)	-	2.7
				C _a , C _o (μF)		-
9002/22-016-383-111					#18	
3 to Gnd	0.8	191.5	0.038	L _a , L _o (mH)	0.54	4.4
				C _a , C _o (μF)		100
4 to Gnd	0.8	191.5	0.038	L _a , L _o (mH)	0.54	4.4
				C _a , C _o (μF)		100
3 & 4	V _t = 1.6	I _t = 383	0.077	L _a , L _o (mH)	0.16	0.96
				C _a , C _o (μF)		100
9002/22-032-300-111					#19	
3 to Gnd	1.6	150	0.06	L _a , L _o (mH)	1.3	7
				C _a , C _o (μF)		100
4 to Gnd	1.6	150	0.06	L _a , L _o (mH)	1.3	7
				C _a , C _o (μF)		100

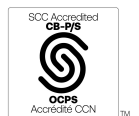
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				C _a , C _o		
3 & 4	V _t = 3.2	I _t = 300	0.12	L _a , L _o (mH)	0.2	1.8
				C _a , C _o (μF)		
9002/22-048-442-111					#20	
3 to Gnd	2.4	221	0.133	L _a , L _o (mH)	0.4	3.19
				C _a , C _o (μF)		
4 to Gnd	2.4	221	0.133	L _a , L _o (mH)	0.4	3.19
				C _a , C _o (μF)		
3 & 4	V _t = 4.8	I _t = 442	0.266	L _a , L _o (mH)	0.12	0.54
				C _a , C _o (μF)		
9002/22-158-200-001					#21	
3 to Gnd	7.9	100	0.198	L _a , L _o (mH)	4.0	15
				C _a , C _o (μF)		
4 to Gnd	7.9	100	0.198	L _a , L _o (mH)	4.0	15
				C _a , C _o (μF)		
3 & 4	V _t = 15.8	I _t = 200	0.395	L _a , L _o (mH)	0.5	4
				C _a , C _o (μF)		
9002/22-240-024-001					#22	
3 to Gnd	12	12	0.04	L _a , L _o (mH)	240	850
				C _a , C _o (μF)		
4 to Gnd	12	12	0.04	L _a , L _o (mH)	240	850
				C _a , C _o (μF)		

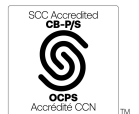
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				C _a , C _o		
3 & 4	V _t = 24	I _t = 24	0.08	L _a , L _o (mH)	41	145
				C _a , C _o (μF)		
9002/22-240-160-001					#23	
3 to Gnd	12	80	0.24	L _a , L _o (mH)	6	22
				C _a , C _o (μF)		
4 to Gnd	12	80	0.24	L _a , L _o (mH)	6	22
				C _a , C _o (μF)		
3 & 4	V _t = 24	I _t = 160	0.48	L _a , L _o (mH)	0.7	4
				C _a , C _o (μF)		
9002/33-280-000-001					#24	
3 to Gnd	28	0	0	L _a , L _o (mH)	1000	1000
				C _a , C _o (μF)		
4 to Gnd	28	0	0	L _a , L _o (mH)	1000	1000
				C _a , C _o (μF)		
3 & 4	V _t = 28	I _t = 0	0	L _a , L _o (mH)	1000	1000
				C _a , C _o (μF)		
9002/34-280-000-001					#25	
3 to Gnd	20	0	0	L _a , L _o (mH)	1000	1000
				C _a , C _o (μF)		
4 to Gnd	8	0	0	L _a , L _o (mH)	1000	1000
				C _a , C _o (μF)		

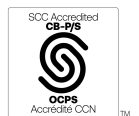
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Channel (Terminals)	V _{oc} (V) U _o (V)	I _{sc} (mA) I _o (mA)	P _o (W)	L _a , L _o	GP A, B, E GP IIC	GP C, D, F, G GP IIB/IIA
				C _a , C _o		
3 & 4	V _t = 28	I _t = 0	0	L _a , L _o (mH)	1000	1000
				C _a , C _o (μF)		
9002/77-093-040-001					#26	
3 to Gnd	9.3	20	0.05	L _a , L _o (mH)	90	330
				C _a , C _o (μF)		
4 to Gnd	9.3	20	0.05	L _a , L _o (mH)	90	330
				C _a , C _o (μF)		
3 & 4	V _t = 9.3	I _t = 40	0.09	L _a , L _o (mH)	23	87
				C _a , C _o (μF)		
9002/77-093-300-001					#27	
3 to Gnd	9.3	150	0.35	L _a , L _o (mH)	1.3	7
				C _a , C _o (μF)		
4 to Gnd	9.3	150	0.35	L _a , L _o (mH)	1.3	7
				C _a , C _o (μF)		
3 & 4	V _t = 9.3	I _t = 300	0.7	L _a , L _o (mH)	0.2	1.8
				C _a , C _o (μF)		
9002/77-100-400-001					#28	
3 to Gnd	10	200	0.5	L _a , L _o (mH)	0.5	4
				C _a , C _o (μF)		
4 to Gnd	10	200	0.5	L _a , L _o (mH)	0.5	4
				C _a , C _o (μF)		
3 & 4	V _t = 10	I _t = 400	1	L _a , L _o (mH)	0.15	0.8
				C _a , C _o (μF)		
9002/77-150-300-001					#29	

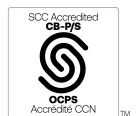
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				C _a , C _o		
3 to Gnd	15	150	0.56	L _a , L _o (mH)	1.3	7
				C _a , C _o (μF)		
4 to Gnd	15	150	0.56	L _a , L _o (mH)	1.3	7
				C _a , C _o (μF)		
3 & 4	V _t = 15	I _t = 300	1.13	L _a , L _o (mH)	0.2	1.8
				C _a , C _o (μF)		
9002/77-220-146-001				#30		
3 to Gnd	22	73	0.4	L _a , L _o (mH)	7	26
				C _a , C _o (μF)		
4 to Gnd	22	73	0.4	L _a , L _o (mH)	7	26
				C _a , C _o (μF)		
3 & 4	V _t = 22	I _t = 146	0.8	L _a , L _o (mH)	1.4	7.4
				C _a , C _o (μF)		
9002/77-220-296-001				#31		
3 to Gnd	22	148	0.81	L _a , L _o (mH)	1.35	7.2
				C _a , C _o (μF)		
4 to Gnd	22	148	0.81	L _a , L _o (mH)	1.35	7.2
				C _a , C _o (μF)		
3 & 4	V _t = 22	I _t = 296	1.63	L _a , L _o (mH)	0.24	1.84
				C _a , C _o (μF)		
9002/77-220-094-001				#32		
3 to Gnd	28	47	0.33	L _a , L _o (mH)	10.01	30
				C _a , C _o (μF)		

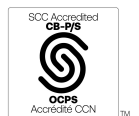
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Channel (Terminals)	V _{oc} (V) U _o (V)	I _{sc} (mA) I _o (mA)	P _o (W)	L _a , L _o	GP A, B, E GP IIC	GP C, D, F, G GP IIB/IIA
				C _a , C _o		
4 to Gnd	28	47	0.33	L _a , L _o (mH)	10.1	30
				C _a , C _o (μF)		
3 & 4	V _t = 28	I _t = 94	0.66	L _a , L _o (mH)	1.96	12.5
				C _a , C _o (μF)		

Barrier Part No.	Terminal	V _{max} (V) U _i (V)	I _{max} (mA) I _i (mA)	P _{max} (W) P _i (W)	GP A, B, E GP IIC L _a /C _a (mH/μF)	GP C, D, F, G GP IIB/IIA L _a /C _a (mH/μF)
9002/22-032-300-111	3 & 4	± 4.2	± 150	0.16	0.37 / 1.8	0.5 / 11

Note: Internal inductance (L_i) and capacitance (C_i) have to be subtracted.

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 National Electric Code (ANSI/NFPA 70)
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 US Certification Requirements.

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:

Date	Description
29 May 2001	Original Issue.

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SCHEDULE

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Date	Description
1 April 2024	<p><u>Supplement 3:</u> Report Reference: RR240839 dated 1 April 2024. Description of the Change(s):</p> <ol style="list-style-type: none">1. Reinstated product that was erroneously delisted.2. Updated dates for FM3600 and FM3611 which had no technical changes.3. Updated Conditions of Use statement.4. Updated certificate format.
6 June 2024	<p><u>Supplement 4:</u> Report Reference: PR469323 dated 6 June 2024. Description of the Change(s):</p> <ol style="list-style-type: none">1. FM3610, FM3611 and FM3810 updated to latest edition (2021)2. ANSI/UL 121201:2021 added to Standards List3. ANSI/UL 61010-1:2019 added to Standards List4. ANSI/UL 60079-0:2020 added to Standards List5. ANSI/UL 60079-7:2021 added to Standards List6. ANSI/UL 60079-11:2018 added to Standards List7. Updates to Equipment Ratings and Markings Section

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