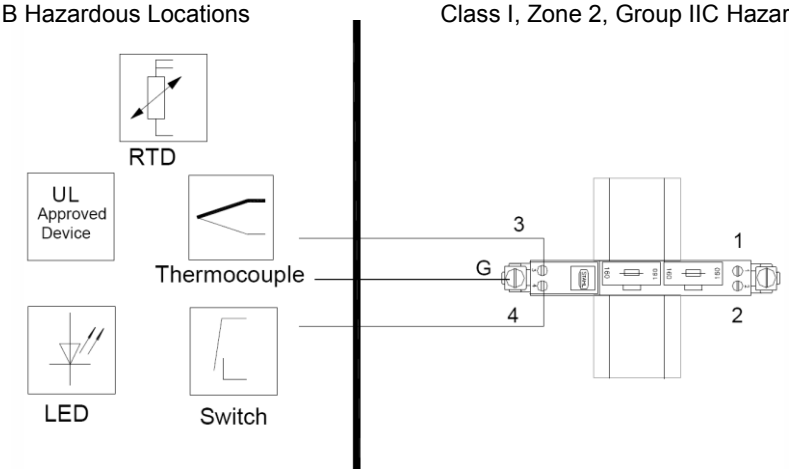
Class I, II, III, Div. 1, Group A - G or
Class I, Zone 0, Group IIC/IIB Hazardous Locations

Nonhazardous or Class I, Div. 2, Group A, B, C, D or
Class I, Zone 2, Group IIC Hazardous Locations

Intrinsically Safe Apparatus
or Simple Apparatus



The Intrinsic Safety Barriers are associated apparatus located in Nonhazardous or Class I, Div. 2, Group A, B, C, D, T4 or Class I, Zone 2, Group IIC, T4 locations and provide intrinsically safe connections for device(s) located in Class I, Div. 1, Group A, B, C, D; Class II, Div. 1, Group E, F & G; Class III, Div. 1; or Class I, Zone 0, Group IIC/IIB Hazardous (Classified) Locations.

Notes:

1. Intrinsically safe apparatus may be switches, thermocouples, LEDs, RTDs, or a UL Approved System or Entity device connected in accordance with the manufacturer's installation instructions as defined in Article 504.2 and installed and temperature classified in accordance with Article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.
2. The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is a straight line drawn between open-circuit voltage and short-circuit current.
3. For Entity concept use the appropriate parameters from above to ensure the following:
   V_t or $V_{OC} \leq V_{max}$ $\quad C_a \geq C_i + C_{cable}$
   I_t or $I_{SC} \leq I_{max}$ $\quad L_a \geq L_i + L_{cable}$ $\quad P_o \leq P_{max}, P_i$
   Capacitance C_{cable} and inductance L_{cable} of the field wiring, plus intrinsically safe equipment capacitance, C_i and inductance L_i shall be considered in the calculation above. Where the cable capacitance and inductance per foot are not known, the following values shall be used: C_{cable} = 60 pF/ft., L_{cable} = 0.2 µH/ft.
4. Electrical apparatus connected to non-IS side of barrier should not use or generate voltages > 250 V (U_{max}).
5. This associated apparatus is open-type and must be installed in an enclosure suitable for the application in accordance with the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.
6. The associated apparatus must be connected to a suitable ground electrode per the National Electrical Code (ANSI/NFPA 70), or other local installation codes, as applicable. The resistance of the ground path must be less than 1 ohm.
7. Where multiple circuits extend from the same piece of associated apparatus, they must be installed in separate cables or in one cable having suitable insulation. Refer to Article 504.30 (B) of the National Electrical Code (ANSI/NFPA 70) and Instrument Society of America Recommended Practice ISA RP12.6 for installing intrinsically safe equipment.
8. Intrinsically safe circuits must be wired and separated in accordance with Article 504.20 of the National Electrical Code (ANSI/NFPA 70) or other local codes, as applicable.
9. This associated apparatus has not been evaluated for use in combination with another associated apparatus.
10. Maximum barrier operating temperature for Temperature Class T4 is T_a = 60°C except as follows:
    T_a = 50°C: 9002/77-220-146-001 9002/77-220-296-001

WARNING: - Substitution of components may impair suitability for Division 2.

WARNING: - EXPLOSION HAZARD – Do not remove or replace back-up fuse(s) or disconnect non intrinsically safe wiring unless power has been switched off or the area is known to be non-hazardous.

⚠ Back-up fuse may only be replaced with R. STAHL part Art. no. 158964

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			2001	Date	Name	Certification drawing	Scale
			Drawn by	5/01	Tobey		none
			Checked		Kaiser	Intrinsic Safety Barrier Type 9002/..-…-…-..1	Sheet 1 of 4
02	14.05.14	Bader				90 026 11 31 3	Agency UL
01	12.08.09	Einsiedler					
Index	Date	Name				Rep. f. / Rep. t.	A4

STAHL

F 4830 503

BARRIER PART NO	TERMINAL	V_{OC} (V) / U_O (V)	I_{SC} (mA) / I_O (mA)	P_{max} (W) / P_O (W)	Grps. A, B, E Grp. IIC L_a/C_a (mH/µF)	Grps. C, D, F, G Grp. IIB/IIA L_a/C_a (mH/µF)
9002/00-120-024-001	3 to GND	12	12	0.04	240 / 1.41	850 / 9
	4 to GND	12	12	0.04	240 / 1.41	850 / 9
	3 & 4	Vt = 12.7	It = 24	0.07	63 / 1.1	230 / 7.1
9002/00-260-138-001	3 to GND	26	83	0.54	2.7 / 0.099	15.5 / 0.77
	4 to GND	20	49	0.245	14 / 0.22	54 / 1.41
	3 & 4	Vt = 27.4	It = 132	0.785	0.81 / 0.087	5.1 / 0.67
9002/00-280-186-001	3 to GND	28	93	0.65	2 / 0.083	13 /0.65
	4 to GND	28	93	0.65	2 / 0.083	13 / 0.65
	3 & 4	Vt = 30.1	It = 186	1.3	N / A	2.8 / 0.551
9002/10-187-020-001	3 to GND	9.33	20	0.05	90 / 3.9	330 / 29
	4 to GND	9.33	20	0.05	90 / 3.9	330 / 29
	3 & 4	Vt = 18.7	It = 20	0.09	90 / 0.27	330 / 1.64
9002/10-187-270-001	3 to GND	9.33	270	0.63	0.23 / 3.9	2.2 / 29
	4 to GND	9.33	270	0.63	0.23 / 3.9	2.2 / 29
	3 & 4	Vt = 18.7	It = 270	1.26	0.23 / 0.27	2.2 / 1.64
9002/10-210-030-001	3 to GND	10.5	30	0.08	40 / 2.41	150 / 16.8
	4 to GND	10.5	30	0.08	40 / 2.41	150 / 16.8
	3 & 4	Vt = 21	It = 30	0.16	40 / 0.188	150 / 1.27
9002/11-120-024-001	3 to GND	12	12	0.04	240 / 1.41	850 / 9
	4 to GND	12	12	0.04	240 / 1.41	850 / 9
	3 & 4	Vt = 12.7	It = 24	0.07	63 / 1.1	230 / 7.1
9002/11-130-360-001	3 to GND	13	321	1.04	0.19 / 1	1.6 / 6.2
	4 to GND	1.6	39	0.016	24 / 100	91 / 1000
	3 & 4	Vt = 13.3	It = 360	1.17	0.17 / 0.79	1.3 / 5
9002/11-137-029-001	3 to GND	13.7	14.5	0.05	160 / 0.79	560 / 5
	4 to GND	13.7	14.5	0.05	160 / 0.79	560 / 5
	3 & 4	Vt = 14.4	It = 29	0.1	43 / 0.67	160 / 4.18
9002/11-199-030-001	3 to GND	19.9	15	0.075	160 / 0.223	560 / 1.42
	4 to GND	19.9	15	0.075	160 / 0.223	560 / 1.42
	3 & 4	Vt = 20.6	It = 30	0.15	40 / 0.223	150 / 1.42
9002/11-260-138-001	3 to GND	26	83	0.54	2.7 / 0.099	15.5 / 0.77
	4 to GND	20	49	0.245	14 / 0.22	54 / 1.41
	3 & 4	Vt = 27.4	It = 132	0.785	0.81 / 0.087	5.1 / 0.67
9002/11-280-112-001	3 to GND	28	109	0.76	1.3 / 0.083	9 / 0.65
	4 to GND	28	3	0.02	50 / 0.083	150 / 0.65
	3 & 4	Vt = 28.7	It = 112	0.78	0.76 / 0.065	8.4 / 0.551
9002/11-280-186-001	3 to GND	28	93	0.65	2 / 0.083	13 / 0.65
	4 to GND	28	93	0.65	2 / 0.083	13 / 0.65
	3 & 4	Vt = 30.1	It = 186	1.3	N / A	2.8 / 0.551
9002/11-280-244-001	3 to GND	28	184	1.29	N / A	2.9 / 0.65
	4 to GND	28	60	0.42	N / A	25 / 0.65
	3 & 4	Vt = 28.3	It = 244	1.71	N / A	1.1 / 0.62
9002/11-280-293-001	3 to GND	28	89	0.63	2.2 / 0.083	14 / 0.65
	4 to GND	9.56	180	0.43	0.6 / 3.6	5 / 26
	3 & 4	Vt = 28.7	It = 269	1.05	N / A	0.56 / 0.62
9002/11-280-293-021	3 to GND	28	89	0.63	2.2 / 0.083	14 / 0.65
	4 to GND	9.56	180	0.43	0.6 / 3.6	5 / 26
	3 & 4	Vt = 28.7	It = 269	1.05	N / A	0.56 / 0.62

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Index	Date	Name
02	14.05.14	Bader
01	12.08.09	Einsiedler

	Date	Name
2001		
Drawn by	5/01	Tobey
Checked		Kaiser

STAHL

Certification drawing

Intrinsic Safety Barrier
Type 9002/..-…-…-..1

90 026 11 31 3

Rep. f. | Rep. t.

Scale: none

Sheet: 2 of 4

Agency: UL

A4

F 4830 503

BARRIER PART NO	TERMINAL	V_{OC} (V) / U_O (V)	I_{SC} (mA) / I_O (mA)	P_{max} (W) / P_O (W)	Grps. A, B, E Grp. IIC L_a/C_a (mH/µF)	Grps. C, D, F, G Grp. IIB/IIA L_a/C_a (mH/µF)
9002/13-199-225-001	3 to GND	19.9	222	1.1	0.39 / 0.223	3.18 / 1.42
	4 to GND	19.9	3	0.015	1000 / 0.223	1000 / 1.42
	3 & 4	Vt = 20.2	It = 225	1.12	0.37 / 0.213	3.15 / 1.38
9002/13-252-121-041	3 to GND	25.2	118	0.74	1.3 / 0.107	7.4 / 0.82
	4 to GND	25.2	0	0.02	50 / 0.107	150 / 0.82
	3 & 4	Vt = 25.5	It = 121	0.76	1.25 / 0.104	7.35 / 0.8
9002/13-280-093-001	3 to GND	28	90	0.63	2.2 / 0.083	14 / 0.65
	4 to GND	28	3	0.021	50 / 0.083	150 / 0.65
	3 & 4	Vt = 28.3	It = 93	0.651	2 / 0.08	13 / 0.636
9002/13-280-100-041	3 to GND	28	97	0.679	1.8 / 0.083	12 / 0.65
	4 to GND	28	0	0.021	50 / 0.083	150 / 0.65
	3 & 4	Vt = 28.3	It = 100	0.7	1.55 / 0.08	11 / 0.635
9002/13-280-110-001	3 to GND	28	107	0.749	1.35 / 0.083	9.6 / 0.65
	4 to GND	28	3	0.021	50 / 0.083	150 / 0.65
	3 & 4	Vt = 28.3	It = 110	0.77	1.25 / 0.08	9 / 0.635
9002/13-280-188-001	3 to GND	28	185	1.295	N / A	2.85 / 0.65
	4 to GND	28	3	0.021	N / A	150 / 0.65
	3 & 4	Vt = 28.3	It = 188	1.316	N / A	2.7 / 0.635
9002/22-016-383-111	3 to GND	0.8	191.5	0.038	0.54 / 100	4.4 / 1000
	4 to GND	0.8	191.5	0.038	0.54 / 100	4.4 / 1000
	3 & 4	Vt = 1.6	It = 383	0.077	0.16 / 100	0.96 / 1000
9002/22-032-300-111	3 to GND	1.6	150	0.06	1.3 / 100	7 / 1000
	4 to GND	1.6	150	0.06	1.3 / 100	7 / 1000
	3 & 4	Vt = 3.2	It = 300	0.12	0.2 / 100	1.8 / 1000
9002/22-048-442-111	3 to GND	2.4	221	0.133	0.4 / 100	3.19 / 1000
	4 to GND	2.4	221	0.133	0.4 / 100	3.19 / 1000
	3 & 4	Vt = 4.8	It = 442	0.266	0.12 / 100	0.54 / 1000
9002/22-158-200-001	3 to GND	7.9	100	0.198	4.0 / 8.8	15 / 115
	4 to GND	7.9	100	0.198	4.0 / 8.8	15 / 115
	3 & 4	Vt = 15.8	It = 200	0.395	0.5 / 0.478	4 / 2.88
9002/22-240-024-001	3 to GND	12	12	0.04	240 / 1.41	850 / 9
	4 to GND	12	12	0.04	240 / 1.41	850 / 9
	3 & 4	Vt = 24	It = 24	0.08	41 / 0.125	145 / 0.93
9002/22-240-160-001	3 to GND	12	80	0.24	6 / 1.41	22 / 9
	4 to GND	12	80	0.24	6 / 1.41	22 / 9
	3 & 4	Vt = 24	It = 160	0.48	0.7 / 0.125	4 / 0.93
9002/33-280-000-001	3 to GND	28	0	0	1000 / 0.083	1000 / 0.65
	4 to GND	28	0	0	1000 / 0.083	1000 / 0.65
	3 & 4	Vt = 28	It = 0	0	1000 / 0.083	1000 / 0.65
9002/34-280-000-001	3 to GND	20	0	0	1000 / 0.22	1000 / 1.41
	4 to GND	8	0	0	1000 / 8.4	1000 / 100
	3 & 4	Vt = 28	It = 0	0	1000 / 0.083	1000 / 0.65

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Index	Date	Name
02	14.05.14	Bader
01	12.08.09	Einsiedler

	Date	Name
2001		
Drawn by	5/01	Tobey
Checked		Kaiser

STAHL

Certification drawing

Intrinsic Safety Barrier
Type 9002/..-…-…-..1

90 026 11 31 3

Rep. f. | Rep. t.

Scale: none

Sheet: 3 of 4

Agency: UL

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BARRIER PART NO	TERMINAL	V_{OC} (V) / U_O (V)	I_{SC} (mA) / I_O (mA)	P_{max} (W) / P_O (W)	Grps. A, B, E Grp. IIC L_a/C_a (mH/µF)	Grps. C, D, F, G Grp. IIB/IIA L_a/C_a (mH/µF)
9002/77-093-040-001	3 to GND	9.3	20	0.05	90 / 4.1	330 / 31
	4 to GND	9.3	20	0.05	90 / 4.1	330 / 31
	3 & 4	Vt = 9.3	It = 40	0.09	23 / 4.1	87 / 31
9002/77-093-300-001	3 to GND	9.3	150	0.35	1.3 / 4.1	7 / 31
	4 to GND	9.3	150	0.35	1.3 / 4.1	7 / 31
	3 & 4	Vt = 9.3	It = 300	0.7	0.2 / 4.1	1.8 / 31
9002/77-100-400-001	3 to GND	10	200	0.5	0.5 / 3	4 / 20.2
	4 to GND	10	200	0.5	0.5 / 3	4 / 20.2
	3 & 4	Vt = 10	It = 400	1	0.15 / 3	0.8 / 20.2
9002/77-150-300-001	3 to GND	15	150	0.56	1.3 / 0.58	7 / 3.55
	4 to GND	15	150	0.56	1.3 / 0.58	7 / 3.55
	3 & 4	Vt = 15	It = 300	1.13	0.2 / 0.58	1.8 / 3.55
9002/77-220-146-001	3 to GND	22	73	0.4	7 / 0.165	26 / 1.14
	4 to GND	22	73	0.4	7 / 0.165	26 / 1.14
	3 & 4	Vt = 22	It = 146	0.8	1.4 / 0.165	7.4 / 1.14
9002/77-220-296-001	3 to GND	22	148	0.81	1.35 / 0.165	7.2 / 1.14
	4 to GND	22	148	0.81	1.35 / 0.165	7.2 / 1.14
	3 & 4	Vt = 22	It = 296	1.63	0.24 / 0.165	1.84 / 1.14
9002/77-280-094-001	3 to GND	28	47	0.33	10.1 / 0.083	30 / 0.65
	4 to GND	28	47	0.33	10.1 / 0.083	30 / 0.65
	3 & 4	Vt = 28	It = 94	0.66	1.96 / 0.083	12.5 / 0.65

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2001		
Drawn by	5/01	Tobey
Checked		Kaiser

STAHL

Certification drawing

Intrinsic Safety Barrier
Type 9002/..-…-…-..1

90 026 11 31 3

Rep. f. | Rep. t.

Scale: none

Sheet: 4 of 4

Agency: UL

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