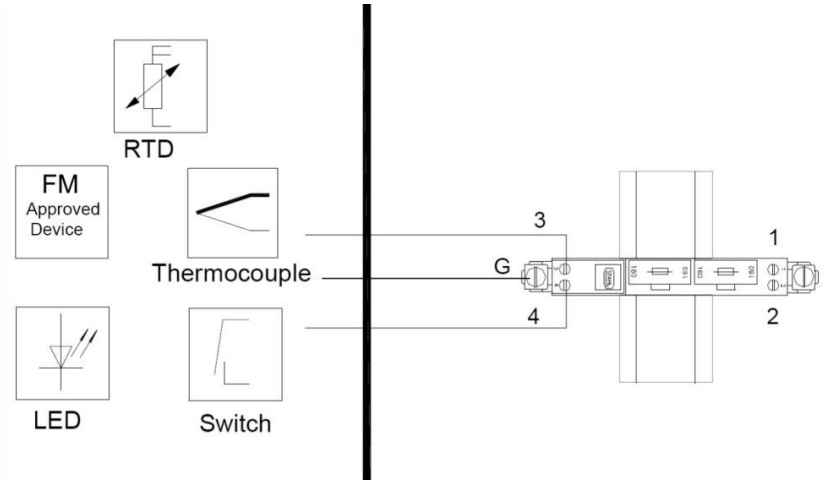
Class I, II, III, Div. 1, Group A - G
or Class I, Zone 0/20, Group IIC/IIB/IIIC
Hazardous Locations

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 a non-hazardous or Class I, Div. 2, Group A, B, C, D or Class I, Zone 2, Group IIC 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 0/20, Group IIC/IIB/IIIC Hazardous (Classified) Locations.

Note: This is an exemplary schematic. Depending on the model types, markings are shown on page 4.

Notes / Specific Conditions:

1. Intrinsically safe apparatus may be switches, thermocouples, LEDs, RTDs, or a FM Approved System or entity device connected in accordance with the manufacturer's installation instructions.
2. For entity concept use the appropriate parameters from below to ensure the following:
   V_t or $V_{OC} \leq V_{max}$ $\quad C_a \geq C_i + C_{cable}$
   I_t or $I_{SC} \leq I_{max}$ $\quad L_a \geq L_i + L_{cable}$
3. Electrical apparatus connected to non-IS side of barrier should not use or generate voltages > 250 V (U_{max}).
4. 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 Electrical Code (ANSI/NFPA 70) or in the Canadian Electrical Code (C22.1).
5. Use a general purpose enclosure meeting the requirements of ANSI/ISA 61010-1 for use in nonhazardous locations.
6. The equipment shall only be used in an area of at least pollution degree 2, as defined in IEC 60664-1.
7. 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.
8. The circuits shall be limited to overvoltage Category II as defined in IEC 60664-1.
9. Maximum barrier operating temperature is 60°C except as follows:

   T_a = 50°C: 9002/77-220-146-001
   9002/77-220-296-001

WARNING: Do not disconnect equipment when a flammable or combustable atmosphere is present.
AVERTISSEMENT: Ne pas débrancher l'équipement en présence d'atmosphère inflammable ou combustible.

			2001	Date	Name	Certification drawing	Scale: none
			Drawn by	5/01	Tobey		
			Checked	5/01	Feindel	Intrinsic Safety Barrier (ATEX) Type 9002/...-…-…-..1	Sheet: 1 of 4
					STAHL		
03	16.05.24	Garet				90 026 11 31 1	Agency: FM
02	14.03.11	Reistle					
01	06.03.09	Einsiedler					
Index	Date	Name				Rep. f. / Rep. t.	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 Grps. 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	-	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	-	2.8 / 0.551	#
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	-	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	-	0.56 / 0.62	#

			2001	Date	Name
			Drawn by	5/01	Tobey
			Checked	5/01	Feindel
03	16.05.24	Garet			
02	14.03.11	Reistle			
01	06.03.09	Einsiedler			
Index	Date	Name			

STAHL

Certification drawing

Intrinsic Safety Barrier (ATEX)
Type 9002/...-…-…-..1

90 026 11 31 1

Rep. f. | Rep. t.

Scale: none

Sheet: 2 of 4

Agency: FM

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	-	2.85 / 0.65	#
	4 to GND	28	3	0.021	-	150 / 0.65	#
	3 & 4	Vt = 28.3	It = 188	1.316	-	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	

			2001	Date	Name	Certification drawing	Scale: none
			Drawn by	5/01	Tobey		
			Checked	5/01	Feindel	Intrinsic Safety Barrier (ATEX) Type 9002/...-…-…-..1	Sheet: 3 of 4
03	16.05.24	Garet					
02	14.03.11	Reistle				90 026 11 31 1	Agency: FM
01	06.03.09	Einsiedler					
Index	Date	Name				Rep. f. / Rep. t.	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)
9002/77-093-040-001	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

BARRIER PART NO	TERMINAL	V_{max} (V) U_i (V)	I_{max} (mA) I_i (mA)	P_{max} (W) P_i (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)
9002/22-032-300-111	3 & 4	± 4.2	± 150	0.16	0.37 / 1.8	0.5 / 11

Remark: Eventually present internal inductance Li and capacitance Ci have to be subtracted.

Product marking:

CL. I, DIV. 2, GROUPS A,B,C,D, T4; CL. I, II, III, DIV. 1, GROUPS A,B,C,D,E,F,G; CL. I, ZONE 2, AEx/Ex ec [ia Ga] IIC T4 Gc; [AEx/Ex ia Da] IIIC

Products marked with # have the following marking:

CL. I, DIV. 2, GROUPS A,B,C,D, T4; CL. I, II, III, DIV. 1, GROUPS C,D,F,G; CL. I, ZONE 2, AEx/Ex ec [ia Ga] IIB T4 Gc; [AEx/Ex ia Da] IIIC

Index	Date	Name
03	16.05.24	Garet
02	14.03.11	Reistle
01	06.03.09	Einsiedler

2001	Date	Name
Drawn by	5/01	Tobey
Checked	5/01	Feindel

STAHL

Certification drawing
Intrinsic Safety Barrier (ATEX)
Type 9002/...-…-…-..1

90 026 11 31 1

Rep. f. | Rep. t.

Scale: none
Sheet: 4 of 4
Agency: FM
A4

F 4830 503