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6. S U P P L E M E N T

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2053 X

(Translation)

Equipment: Safety barrier, type 9002/..-...-...-..1

Marking:  **II 3 (1) G Ex nA [ia Ga] IIC T4 Gc AND II (1) D [Ex ia Da] IIIC**

Manufacturer: R. STAHL Schaltgeräte GmbH

Address: Am Bahnhof 30, 74638 Waldenburg, Germany

Description of supplements and modifications

The safety-related specification applies without changes. It is, however, again represented as a summary of the current state.

The equipment can be installed outside of the hazardous area or inside up to category II 3 G (additional protection by an enclosure required). As an associated apparatus it provides two intrinsically safe circuits of category II 1 G or II 1 D respectively.

Overall conformity is confirmed in accordance with the currently applicable standards mentioned below.

The terminals for the equipotential bonding conductor are infallibly connected to the local equipotential bonding system.

The maximum permissible range of the ambient temperature reads -20 °C $\leq T_a \leq$ +60 °C (+50 °C) according to the following tables.

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Elektrische Daten

Non-intrinsically safe circuits (terminals 1 and 2)

type of protection Non-Sparking Ex nA Gc, safety-related maximum voltage for application as associated apparatus:

U_m = 253 V

Nominal data according to the following table:

Type	T_a [°C]	Channel I		Channel II	
		U_N [V]	I_N [mA]	U_N [V]	I_N [mA]
9002/00-120-024-001	60	-9.5	7.7	-9.5	7.7
9002/00-260-138-001	60	-22.5	62	-17.5	37
9002/00-280-186-001	60	-25	69	-25	69
9002/10-187-020-001	60	+6	11	-6	11
9002/10-187-270-001	60	+6	122	-6	122
9002/10-210-030-001	60	+8	21	-8	21
9002/11-120-024-001	60	+9.5	7.7	+9.5	7.7
9002/11-130-360-001	60	+10	100	+1	19
9002/11-137-029-001	60	+10	10	+10	10
9002/11-199-030-001	60	+16	10	+16	10
9002/11-260-138-001	60	+22.5	62	+17.5	37
9002/11-280-112-001	60	+24	8	+24	23
9002/11-280-186-001	60	+25	69	+25	69
9002/11-280-244-001	60	+24	70	+24	48
9002/11-280-293-001	60	+25	69	+6	88
9002/11-280-293-021	60	+25	69	+6	88
9002/13-199-225-001	60	+16	125	+16	80
9002/13-252-121-041	60	+20..35	80	+22	80
9002/13-280-093-001	60	+24	67	+24	67
9002/13-280-100-041	60	+20..35	35	+26	35
9002/13-280-110-001	60	+24	80	+24	80
9002/13-280-188-001	60	+24	70	+24	70
9002/22-016-383-111	60	0.35	40	0.35	40
9002/22-032-300-111	60	±0.7	33	±0.7	33
9002/22-048-442-111	60	±1.4	78	±1.4	78
9002/22-158-200-001	60	±5.5	57	±5.5	57
9002/22-240-024-001	60	±9	7.7	±9	7.7
9002/22-240-160-001	60	±9	50	±9	50
9002/33-280-000-001	60	+25.5	50	+25.5	50
9002/34-280-000-001	60	+16	100	-5	100
9002/77-093-040-001	60	±6	11	±6	11
9002/77-093-300-001	60	±6	73	±6	73
9002/77-100-400-001	60	±6	87	±6	87
9002/77-150-300-001	60	±12	95	±12	95
9002/77-220-146-001	50	±18	50	±18	50
9002/77-220-296-001	50	±18	80	±18	80
9002/77-280-094-001	60	±24	33	±24	33

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Intrinsically safe circuits (terminals 3 and 4) — type of protection Intrinsic Safety Ex ia IIB/IIC Ga or Ex ia IIIC Da, linear characteristic, maximum values according to the following table

Limiting values L_o and C_o alternatively in the circuit

Type / Channel	T_a [°C]	U_o [V]	I_o [mA]	P_o [W]		IIC	IIB
9002/00-260-138-001 + 9002/11-260-138-001							
I	60	26	87	0.54	Lo / mH	2.7	15.5
					Co / µF	0.099	0.77
II	60	20	51	0.245	Lo / mH	14	54
					Co / µF	0.22	1.41
I + II	60	26	138	0.785	Lo / mH	0.81	5.1
					Co / µF	0.087	0.67
9002/00-120-024-001 + 9002/11-120-024-001							
I	60	12	12	0.04	Lo / mH	240	850
					Co / µF	1.41	9
II	60	12	12	0.04	Lo / mH	240	850
					Co / µF	1.41	9
I + II	60	12	24	0.07	Lo / mH	63	230
					Co / µF	1.1	7.1
9002/10-187-020-001							
I	60	9.33	20	0.05	Lo / mH	90	330
					Co / µF	3.9	29
II	60	9.33	20	0.05	Lo / mH	90	330
					Co / µF	3.9	29
I + II	60	18.7	20	0.09	Lo / mH	90	330
					Co / µF	0.27	1.64
9002/10-187-270-001							
I	60	9.33	270	0.63	Lo / mH	0.23	2.2
					Co / µF	3.9	29
II	60	9.33	270	0.63	Lo / mH	0.23	2.2
					Co / µF	3.9	29
I + II	60	18.7	270	1.26	Lo / mH	0.23	2.2
					Co / µF	0.27	1.64
9002/10-210-030-001							
I	60	10.5	30	0.08	Lo / mH	40	150
					Co / µF	2.41	16.8
II	60	10.5	30	0.08	Lo / mH	40	150
					Co / µF	2.41	16.8
I + II	60	21	30	0.16	Lo / mH	40	150
					Co / µF	0.188	1.27
9002/00-280-186-001 + 9002/11-280-186-001							
I	60	28	93	0.65	Lo / mH	2	13
					Co / µF	0.083	0.65
II	60	28	93	0.65	Lo / mH	2	13
					Co / µF	0.083	0.65
I + II	60	28	186	1.3	Lo / mH	-	2.8
					Co / µF	-	0.551

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Type / Channel	T_a [°C]	U_o [V]	I_o [mA]	P_o [W]		IIC	IIB
9002/11-130-360-001							
I	60	13	321	1.04	Lo / mH	0.19	1.6
					Co / µF	1	6.2
II	60	1.6	39	0.016	Lo / mH	24	91
					Co / µF	100	1000
I + II	60	13	360	1.17	Lo / mH	0.17	1.3
					Co / µF	0.79	5
9002/11-137-029-001							
I	60	13.7	14.5	0.05	Lo / mH	160	560
					Co / µF	0.79	5
II	60	13.7	14.5	0.05	Lo / mH	160	560
					Co / µF	0.79	5
I + II	60	13.7	29	0.1	Lo / mH	43	160
					Co / µF	0.67	4.18
9002/11-280-112-001							
I	60	28	109	0.76	Lo / mH	1.3	9
					Co / µF	0.083	0.65
II	60	28	3	0.02	Lo / mH	50	150
					Co / µF	0.083	0.65
I + II	60	28	112	0.78	Lo / mH	0.76	8.4
					Co / µF	0.065	0.551
9002/11-280-244-001							
I	60	28	184	1.29	Lo / mH	-	2.9
					Co / µF	-	0.65
II	60	28	60	0.42	Lo / mH	-	25
					Co / µF	-	0.65
I + II	60	28	244	1.71	Lo / mH	-	1.1
					Co / µF	-	0.62
9002/11-280-293-001 + 9002/11-280-293							
I	60	28	89	0.63	Lo / mH	2.2	14
					Co / µF	0.083	0.65
II	60	9.56	180	0.43	Lo / mH	0.6	5
					Co / µF	3.6	26
I + II	60	28	269	1.05	Lo / mH	-	0.56
					Co / µF	-	0.62
9002/11-199-030-001							
I	60	19.9	15	0.075	Lo / mH	160	560
					Co / µF	0.223	1.42
II	60	19.9	15	0.075	Lo / mH	160	560
					Co / µF	0.223	1.42
I + II	60	19.9	30	0.15	Lo / mH	40	150
					Co / µF	0.223	1.42

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Type / Channel	T_a [°C]	U_o [V]	I_o [mA]	P_o [W]		IIC	IIB
9002/13-199-225-001							
I	60	19.9	222	1.1	Lo / mH	0.39	3.18
					Co / µF	0.223	1.42
II	60	19.9	3	0.015	Lo / mH	1000	1000
					Co / µF	0.223	1.42
I + II	60	19.9	225	1.12	Lo / mH	0.37	3.15
					Co / µF	0.213	1.38
9002/13-252-121-041							
I	60	25.2	118	0.74	Lo / mH	1.3	7.4
					Co / µF	0.107	0.82
II	60	25.2	0	0.02	Lo / mH	50	150
					Co / µF	0.107	0.82
I + II	60	25.2	121	0.76	Lo / mH	1.25	7.35
					Co / µF	0.104	0.8
9002/13-280-093-001							
I	60	28	90	0.63	Lo / mH	2.2	14
					Co / µF	0.083	0.65
II	60	28	3	0.021	Lo / mH	50	150
					Co / µF	0.083	0.65
I + II	60	28	93	0.651	Lo / mH	2	13
					Co / µF	0.08	0.636
9002/13-280-100-041							
I	60	28	97	0.679	Lo / mH	1.8	12
					Co / µF	0.083	0.65
II	60	28	0	0.021	Lo / mH	50	150
					Co / µF	0.083	0.65
I + II	60	28	100	0.7	Lo / mH	1.55	11
					Co / µF	0.08	0.635
9002/13-280-110-001							
I	60	28	107	0.749	Lo / mH	1.35	9.6
					Co / µF	0.083	0.65
II	60	28	3	0.021	Lo / mH	50	150
					Co / µF	0.083	0.65
I + II	60	28	110	0.77	Lo / mH	1.25	9
					Co / µF	0.08	0.635
9002/13-280-188-001							
I	60	28	185	1.295	Lo / mH	-	2.85
					Co / µF	-	0.65
II	60	28	3	0.021	Lo / mH	-	150
					Co / µF	-	0.65
I + II	60	28	188	1.316	Lo / mH	-	2.7
					Co / µF	-	0.635

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Type / Channel	T_a [°C]	U_o [V]	I_o [mA]	P_o [W]		IIC	IIB
9002/22-016-383-111							
I	60	0.8	191.5	0.038	Lo / mH	0.54	4.4
					Co / µF	100	1000
II	60	0.8	191.5	0.038	Lo / mH	0.54	4.4
					Co / µF	100	1000
I + II	60	1.6	383	0.077	Lo / mH	0.16	0.96
					Co / µF	100	1000
9002/22-032-300-111							
I	60	1.6	150	0.06	Lo / mH	1.3	7
					Co / µF	100	1000
II	60	1.6	150	0.06	Lo / mH	1.3	7
					Co / µF	100	1000
I + II	60	3.2	300	0.12	Lo / mH	0.2	1.8
					Co / µF	100	1000
9002/22-048-442-111							
I	60	2.4	221	0.133	Lo / mH	0.4	3.19
					Co / µF	100	1000
II	60	2.4	221	0.133	Lo / mH	0.4	3.19
					Co / µF	100	1000
I + II	60	4.8	442	0.266	Lo / mH	0.12	0.54
					Co / µF	100	1000
9002/22-158-200-001							
I	60	7.9	100	0.198	Lo / mH	4	15
					Co / µF	8.8	115
II	60	7.9	100	0.198	Lo / mH	4	15
					Co / µF	8.8	115
I + II	60	15.8	200	0.395	Lo / mH	0.5	4
					Co / µF	0.478	2.88
9002/22-240-024-001							
I	60	12	12	0.04	Lo / mH	240	850
					Co / µF	1.41	9
II	60	12	12	0.04	Lo / mH	240	850
					Co / µF	1.41	9
I + II	60	24	24	0.08	Lo / mH	41	145
					Co / µF	0.125	0.93
9002/22-240-160-001							
I	60	12	80	0.24	Lo / mH	6	22
					Co / µF	1.41	9
II	60	12	80	0.24	Lo / mH	6	22
					Co / µF	1.41	9
I + II	60	24	160	0.48	Lo / mH	0.7	4
					Co / µF	0.125	0.93

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Type / Channel	T_a [°C]	U_o [V]	I_o [mA]	P_o [W]		IIC	IIB
9002/33-280-000-001							
I	60	28	„0“		Lo / mH	1000	1000
					Co / µF	0.083	0.65
II	60	28	„0“		Lo / mH	1000	1000
					Co / µF	0.083	0.65
I + II	60	28	„0“		Lo / mH	1000	1000
					Co / µF	0.083	0.65
9002/34-280-000-001							
I	60	20	„0“		Lo / mH	1000	1000
					Co / µF	0.22	1.41
II	60	8	„0“		Lo / mH	1000	1000
					Co / µF	8.4	100
I + II	60	28	„0“		Lo / mH	1000	1000
					Co / µF	0.083	0.65
9002/77-093-040-001 (auch als 9002/22...)							
I	60	9.3	20	0.05	Lo / mH	90	330
					Co / µF	4.1	31
II	60	9.3	20	0.05	Lo / mH	90	330
					Co / µF	4.1	31
I + II	60	9.3	40	0.09	Lo / mH	23	87
					Co / µF	4.1	31
9002/77-093-300-001 (auch als 9002/22...)							
I	60	9.3	150	0.35	Lo / mH	1.3	7
					Co / µF	4.1	31
II	60	9.3	150	0.35	Lo / mH	1.3	7
					Co / µF	4.1	31
I + II	60	9.3	300	0.7	Lo / mH	0.2	1.8
					Co / µF	4.1	31
9002/77-100-400-001							
I	60	10	200	0.5	Lo / mH	0.5	4
					Co / µF	3	20.2
II	60	10	200	0.5	Lo / mH	0.5	4
					Co / µF	3	20.2
I + II	60	10	400	1	Lo / mH	0.15	0.8
					Co / µF	3	20.2
9002/77-150-300-001							
I	60	15	150	0.56	Lo / mH	1.3	7
					Co / µF	0.58	3.55
II	60	15	150	0.56	Lo / mH	1.3	7
					Co / µF	0.58	3.55
I + II	60	15	300	1.13	Lo / mH	0.2	1.8
					Co / µF	0.58	3.55

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Type / Channel	T_a [°C]	U_o [V]	I_o [mA]	P_o [W]		IIC	IIB
9002/77-220-146-001							
I	50	22	73	0.4	Lo / mH	7	26
					Co / µF	0.165	1.14
II	50	22	73	0.4	Lo / mH	7	26
					Co / µF	0.165	1.14
I + II	50	22	146	0.8	Lo / mH	1.4	7.4
					Co / µF	0.165	1.14
9002/77-220-296-001							
I	50	22	148	0.81	Lo / mH	1.35	7.2
					Co / µF	0.165	1.14
II	50	22	148	0.81	Lo / mH	1.35	7.2
					Co / µF	0.165	1.14
I + II	50	22	296	1.63	Lo / mH	0.24	1.84
					Co / µF	0.165	1.14
9002/77-280-094-001							
I	60	28	47	0.33	Lo / mH	10.1	30
					Co / µF	0.083	0.65
II	60	28	47	0.33	Lo / mH	10.1	30
					Co / µF	0.083	0.65
I + II	60	28	94	0.66	Lo / mH	1.96	12.5
					Co / µF	0.083	0.65

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Limiting values L_o and C_o existing in combination in the circuit

Type / Channel	U_o [V]	I_o [mA]	P_o [W]		IIC			IIB		
9002/00-260-138-001 + 9002/11-260-138-001										
I	26	87	0.54	Lo / mH	2	1	0.1	10	1	0.1
				Co / µF	0.047	0.061	0.099	0.34	0.41	0.77
II	20	51	0.245	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.11	0.15	0.188	0.72	0.93	1.2
I + II	26	138	0.785	Lo / mH	-	-	-	5	1	0.1
				Co / µF	-	-	-	0.32	0.37	0.77
9002/00-120-024-001 + 9002/11-120-024-001										
I	12	12	0.04	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.34	0.63	1.1	1.8	3.5	6.6
II	12	12	0.04	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.34	0.63	1.1	1.8	3.5	6.6
I + II	12	24	0.07	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.26	0.62	1.1	1.6	3.4	6.6
9002/10-187-020-001										
I	9.33	20	0.05	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.48	1	1.8	2.8	5.7	11
II	9.33	20	0.05	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.48	1	1.8	2.8	5.7	11
I + II	18.7	20	0.09	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.48	0.21	0.25	0.69	1.3	1.5
9002/10-187-270-001										
I	9.33	270	0.63	Lo / mH	-	0.5	0.1	2	1	0.1
				Co / µF	-	0.88	1.7	3.6	4.8	11
II	9.33	270	0.63	Lo / mH	-	0.5	0.1	2	1	0.1
				Co / µF	-	0.88	1.7	3.6	4.8	11
I + II	18.7	270	1.26	Lo / mH	-	0.2	0.1	-	1	0.1
				Co / µF	-	0.15	0.19	-	1	1.3
9002/10-210-030-001										
I	10.5	30	0.08	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.27	0.8	1.4	2	4.5	8.7
II	10.5	30	0.08	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.27	0.8	1.4	2	4.5	8.7
I + II	21	30	0.16	Lo / mH	20	1	0.1	50	1	0.1
				Co / µF	0.13	0.13	0.188	0.51	0.79	1.1
9002/00-280-186-001 + 9002/11-280-186-001										
I	28	93	0.65	Lo / mH	-	1	0.1	10	1	0.1
				Co / µF	-	0.052	0.083	0.25	0.35	0.65
II	28	93	0.65	Lo / mH	-	1	0.1	10	1	0.1
				Co / µF	-	0.052	0.083	0.25	0.35	0.65
I + II	28	186	1.3	Lo / mH	-	-	-	-	1	0.1
				Co / µF	-	-	-	-	0.34	0.551

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Type / Channel	U_o [V]	I_o [mA]	P_o [W]		IIC			IIB		
9002/11-130-360-001										
I	13	321	1.04	Lo / mH	-	0.2	0.1	-	1	0.1
				Co / µF	-	0.64	0.83	-	2.3	5.4
II	1.6	39	0.016	Lo / mH	20	1	0.1	50	1	0.1
				Co / µF	15	36	75	78	210	640
I + II	13	360	1.17	Lo / mH	-	0.2	0.1	-	1	0.1
				Co / µF	-	0.62	0.82	-	2.2	5.3
9002/11-137-029-001										
I	13.7	14.5	0.05	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.25	0.48	0.79	1.3	2.6	5
II	13.7	14.5	0.05	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.25	0.48	0.79	1.3	2.6	5
I + II	13.7	29	0.1	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.17	0.47	0.79	1.2	2.6	5
9002/11-280-112-001										
I	28	109	0.76	Lo / mH	-	-	0.05	5	1	0.1
				Co / µF	-	-	0.083	0.23	0.34	0.65
II	28	3	0.02	Lo / mH	50	1	0.1	50	1	-
				Co / µF	0.062	0.075	0.083	0.34	0.41	-
I + II	28	112	0.78	Lo / mH	-	-	-	5	1	0.1
				Co / µF	-	-	-	0.28	0.36	0.551
9002/11-280-244-001										
I	28	184	1.29	Lo / mH	-	-	-	-	1	0.1
				Co / µF	-	-	-	-	0.3	0.65
II	28	60	0.42	Lo / mH	-	1	0.1	10	1	0.1
				Co / µF	-	0.059	0.083	0.28	0.37	0.65
I + II	28	244	1.71	Lo / mH	-	-	-	-	1	0.05
				Co / µF	-	-	-	-	0.28	0.551
9002/11-280-293-001 + 9002/11-280-293										
I	28	89	0.63	Lo / mH	-	1	1	10	1	0.1
				Co / µF	-	0.053	0.083	0.25	0.35	0.65
II	9.56	180	0.43	Lo / mH	-	1	0.1	5	1	0.1
				Co / µF	-	0.72	1.6	2.7	4.9	10
I + II	28	269	1.05	Lo / mH	-	-	-	10	1	-
				Co / µF	-	-	-	0.24	0.36	-
9002/11-199-030-001										
I	19.9	15	0.075	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.15	0.17	0.22	0.8	0.98	1.3
II	19.9	15	0.075	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.15	0.17	0.22	0.8	0.98	1.3
I + II	19.9	30	0.15	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.14	0.16	0.22	0.77	0.97	1.3

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Type / Channel	U_o [V]	I_o [mA]	P_o [W]		IIC			IIB		
9002/13-199-225-001										
I	19.9	222	1.1	Lo / mH	-	0.2	0.1	-	1	0.1
				Co / µF	-	0.14	0.18	-	0.79	1.2
II	19.9	3	0.015	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.17	0.17	0.22	0.83	0.99	1.3
I + II	19.9	225	1.12	Lo / mH	-	0.2	0.1	2	1	0.1
				Co / µF	-	0.14	0.18	0.79	0.79	1.2
9002/13-252-121-041										
I	25.2	118	0.74	Lo / mH	-	0.5	0.1	5	1	0.1
				Co / µF	-	0.074	0.107	0.35	0.41	0.81
II	25.2	0	0.02	Lo / mH	10	1	0.1	50	1	0.1
				Co / µF	0.083	0.09	0.107	0.43	0.5	0.82
I + II	25.2	121	0.76	Lo / mH	-	0.5	0.1	5	1	0.1
				Co / µF	-	0.088	0.088	0.36	0.43	0.683
9002/13-280-093-001										
I	28	90	0.63	Lo / mH	-	1	0.1	10	1	0.1
				Co / µF	-	0.052	0.083	0.25	0.35	0.65
II	28	3	0.021	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.062	0.075	0.083	0.34	0.41	0.65
I + II	28	93	0.651	Lo / mH	-	-	-	5	1	0.1
				Co / µF	-	-	-	0.25	0.36	0.551
9002/13-280-100-041										
I	28	97	0.679	Lo / mH	-	0.5	0.1	10	1	0.1
				Co / µF	-	0.067	0.083	0.24	0.35	0.65
II	28	0	0.021	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.062	0.075	0.083	0.34	0.41	0.65
I + II	28	100	0.7	Lo / mH	-	-	-	5	1	0.1
				Co / µF	-	-	-	0.28	0.36	0.551
9002/13-280-110-001										
I	28	107	0.749	Lo / mH	-	-	0.1	5	1	0.1
				Co / µF	-	-	0.083	0.23	0.34	0.65
II	28	3	0.021	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.062	0.075	0.083	0.34	0.41	0.65
I + II	28	110	0.77	Lo / mH				5	1	0.1
				Co / µF				0.28	0.36	0.551
9002/13-280-188-001										
I	28	185	1.295	Lo / mH	-	-	-	-	1	0.1
				Co / µF	-	-	-	-	0.3	0.65
II	28	3	0.021	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.062	0.075	0.083	0.34	0.41	0.65
I + II	28	188	1.316	Lo / mH	-	-	-	5	1	0.1
				Co / µF	-	-	-	0.28	0.36	0.551

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Type / Channel	U_o [V]	I_o [mA]	P_o [W]		IIC			IIB		
9002/22-016-383-111										
I	0.8	191.5	0.038	Lo / mH	-	1	0.1	5	1	0.1
				Co / µF	-	100	100	400	900	1000
II	0.8	191.5	0.038	Lo / mH	-	1	0.1	5	1	0.1
				Co / µF	-	100	100	400	900	1000
I + II	1.6	383	0.077	Lo / mH	-	0.5	0.1	2	1	0.1
				Co / µF	-	26	67	100	170	620
9002/22-032-300-111										
I	1.6	150	0.06	Lo / mH	2	1	0.1	10	1	0.1
				Co / µF	20	29	73	72	200	640
II	1.6	150	0.06	Lo / mH	2	1	0.1	10	1	0.1
				Co / µF	20	29	73	72	200	640
I + II	3.2	300	0.12	Lo / mH		0.5	0.1	2	1	0.1
				Co / µF		7.3	15	30	41	110
9002/22-048-442-111										
I	2.4	221	0.133	Lo / mH		1	0.1	5	1	0.1
				Co / µF		10	29	36	80	220
II	2.4	221	0.133	Lo / mH		1	0.1	5	1	0.1
				Co / µF		10	29	36	80	220
I + II	4.8	442	0.266	Lo / mH		0.2	0.1		1	0.1
				Co / µF		4.4	6.1		16	43
9002/22-158-200-001										
I	7.9	100	0.198	Lo / mH	2	1	0.1	10	1	0.1
				Co / µF	1	1.3	2.5	3.9	7.6	16
II	7.9	100	0.198	Lo / mH	2	1	0.1	10	1	0.1
				Co / µF	1	1.3	2.5	3.9	7.6	16
I + II	15.8	200	0.395	Lo / mH		0.5	0.1	2	1	0.1
				Co / µF		0.34	0.38	1.4	1.7	2.6
9002/22-240-024-001										
I	12	12	0.04	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.34	0.63	1.1	1.8	3.5	6.6
II	12	12	0.04	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.34	0.63	1.1	1.8	3.5	6.6
I + II	24	24	0.08	Lo / mH	50	1	0.1	50	1	0.1
				Co / µF	0.26	0.62	1.1	1.6	3.4	6.6
9002/22-240-160-001										
I	12	80	0.24	Lo / mH	5	1	0.1	10	1	0.1
				Co / µF	0.33	0.57	1.1	1.8	3.3	6.6
II	12	80	0.24	Lo / mH	5	1	0.1	10	1	0.1
				Co / µF	0.33	0.57	1.1	1.8	3.3	6.6
I + II	24	160	0.48	Lo / mH			0.02	2	1	0.1
				Co / µF			0.125	0.37	0.85	0.93

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Type / Channel	U_o [V]	I_o [mA]	P_o [W]		IIC			IIB		
9002/33-280-000-001										
I	28	„0“		Lo / mH	50-5	1	0.1	50-5	1	0.1
				Co / µF	0.062	0.075	0.083	0.33	0.41	0.65
II	28	„0“		Lo / mH	50-5	1	1	50-5	1	0.1
				Co / µF	0.062	0.075	0.083	0.33	0.41	0.65
I + II	28	„0“		Lo / mH	50-5	1	1	50-5	1	0.1
				Co / µF	0.062	0.075	0.083	0.33	0.41	0.65
9002/34-280-000-001										
I	20	„0“		Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.82	0.98	1.3	0.82	0.98	1.3
II	8	„0“		Lo / mH	50	1	0.1	10	1	0.1
				Co / µF	43	7.9	16	5.1	7.9	16
I + II	28	„0“		Lo / mH	50-5	1	0.1	50-5	1	0.1
				Co / µF	0.062	0.075	0.083	0.33	0.41	0.65
9002/77-093-040-001 (auch als 9002/22...)										
I	9.3	20	0.05	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.68	1	1.8	3.6	5.7	11
II	9.3	20	0.05	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.68	1	1.8	3.6	5.7	11
I + II	9.3	40	0.09	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.59	1	1.8	3.4	5.7	11
9002/77-093-300-001 (auch als 9002/22...)										
I	9.3	150	0.35	Lo / mH	2	1	0.1	5	1	0.1
				Co / µF	0.58	0.82	1.8	3.1	5.3	11
II	9.3	150	0.35	Lo / mH	2	1	0.1	5	1	0.1
				Co / µF	0.58	0.82	1.8	3.1	5.3	11
I + II	9.3	300	0.7	Lo / mH		0.5	0.1	2	1	0.1
				Co / µF		0.83	1.7	3.4	4.7	11
9002/77-100-400-001										
I	10	200	0.5	Lo / mH		1	0.1	5	1	0.1
				Co / µF		0.62	1.5	2.3	4.4	9.4
II	10	200	0.5	Lo / mH		1	0.1	5	1	0.1
				Co / µF		0.62	1.5	2.3	4.4	9.4
I + II	10	400	1	Lo / mH		0.2	0.1		1	0.1
				Co / µF		1	1.4		3.7	9.2
9002/77-150-300-001										
I	15	150	0.56	Lo / mH		1	0.1	5	1	0.1
				Co / µF		0.31	0.54	1.2	2	3.55
II	15	150	0.56	Lo / mH		1	0.1	5	1	0.1
				Co / µF		0.31	0.54	1.2	2	3.55
I + II	15	300	1.13	Lo / mH		0.2	0.1		1	0.1
				Co / µF		0.48	0.48		1.8	3.5

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Type / Channel	U_o [V]	I_o [mA]	P_o [W]		IIC			IIB		
9002/77-220-146-001										
I	22	73	0.4	Lo / mH	5	1	0.1	10	1	0.1
				Co / µF	0.09	0.096	0.165	0.55	0.63	1
II	22	73	0.4	Lo / mH	5	1	0.1	10	1	0.1
				Co / µF	0.09	0.096	0.165	0.55	0.63	1
I + II	22	146	0.8	Lo / mH		0.5	0.1	5	1	0.1
				Co / µF		0.091	0.16	0.56	0.57	0.99
9002/77-220-296-001										
I	22	148	0.81	Lo / mH		0.5	0.1	5	1	0.1
				Co / µF		0.09	0.16	0.55	0.56	0.99
II	22	148	0.81	Lo / mH		0.5	0.1	5	1	0.1
				Co / µF		0.09	0.16	0.55	0.56	0.99
I + II	22	296	1.63	Lo / mH					1	0.1
				Co / µF					0.45	0.93
9002/77-280-094-001										
I	28	47	0.33	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.042	0.063	0.083	0.29	0.38	0.65
II	28	47	0.33	Lo / mH	10	1	0.1	10	1	0.1
				Co / µF	0.042	0.063	0.083	0.29	0.38	0.65
I + II	28	94	0.66	Lo / mH		0.5	0.1	10	1	0.1
				Co / µF		0.067	0.083	0.25	0.35	0.65

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The electrical data of type 9002/22-032-300-111 are supplemented – without modification of the design – by those applicable for connection of an active intrinsically safe source (e.g. an RS-485 interface) to the terminals 3 and 4.

Electrical data

Non-intrinsically safe circuits (terminals 1 and 2)

type of protection Non-Sparking Ex nA Gc
safety-related maximum voltage for application as an associated apparatus:

U_m = 253 V

Intrinsically safe circuit (terminals 3 and 4)

type of protection Intrinsic Safety Ex ia IIB/IIC Ga

Maximum values:

U_o = ±3.2 V
I_o = ±300 mA
P_o = 120 mW

U_i = ±4.2 V
I_i = ±150 mA
P_i = 160 mW

the effective internal inductance L_i and capacitance C_i are negligibly low

All circuits are interconnected by the reference conductor and they are electrically connected to ground.

Additional note:

The following values of the permissible inductance L_o and capacitance C_o in the (field) circuit apply to the interconnection of the safety barrier and an interface with the active input values given above:

	IIC		IIB		
L_o [mH]	0.37	0.1	1.5	0.5	0.1
C_o [µF]	1.8	3	7.2	11	19

Possibly existing internal inductances L_i and capacitances C_i of the interface shall be subtracted.

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Applied standards

EN 60079-0:2012 **EN 60079-11:2012** **EN 60079-15:2010**

Test report: PTB Ex 13-23074

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, August 19, 2013

Dr.-Ing. U. Johannsmeyer
Direktor und Professor