



Member of the FM Global Group

FM Approvals
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CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

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

NI/I/2/ABCD/T4 Ta = 60°C; NI/I/2/IIC/T4 Ta = 60°C;

AIS/I,II,III/1/ABCDEFG – 90 016 11 31 1; Entity; [I/O] AEx [ia] IIC – 90 016 11 31 1; Entity

a = 0 or 5

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

c = Safe maximum voltage Voc (Uo) in 1/10 V.

d = Safe short circuit current in Isc (Io) in mA.

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

Special Conditions of Use:

- 1. The 9001 Intrinsic Safety Barriers shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application and in ambient temperature not exceeding 60°C.

Entity Parameters:

Table with 6 columns: Type, Voc (Uo) [V], Isc (Io) [mA], Po [mW], Ca (Co) [uF], La (Lo) [mH]. Rows include various model numbers like 9001/0b-050-050-101, 9001/0b-050-100-101, etc.

Type	Voc (Uo) [V]	Isc (Io) [mA]	Po [mW]	Ca (Co) [μF]	La (Lo) [mH]
9001/0b-126-150-101	12.6	150	472.5	1.15	1.3
9001/0b-137-065-101	13.7	65	222.6	0.79	8.8
9001/0b-158-005-101	15.8	5	19.75	0.478	1000
9001/0b-158-150-101	15.8	150	592.5	0.478	1.3
9001/0b-168-007-101	16.8	7	29.4	0.39	1000
9001/0b-168-020-101	16.8	20	84	0.39	90
9001/0b-168-050-101	16.8	50	210	0.39	15
9001/0b-168-075-101	16.8	75	315	0.39	6.7
9001/0b-168-100-101	16.8	100	420	0.39	4
9001/0b-199-010-101	19.9	10	49.75	0.223	330
9001/0b-199-020-101	19.9	20	99.5	0.223	90
9001/0b-199-038-101	19.9	38	189.1	0.223	26
9001/0b-199-050-101	19.9	50	248.8	0.223	15
9001/0b-199-070-101	19.9	70	348.3	0.223	7.5
9001/0b-199-100-101	19.9	100	497.5	0.223	4
9001/0b-199-150-101	19.9	150	746.3	0.223	1.3
9001/0b-252-070-101	25.2	70	441	0.107	4.5
9001/0b-280-020-101	28	20	140	0.083	50
9001/0b-280-050-101	28	50	350	0.083	8.5
9001/0b-280-075-101	28	75	525	0.083	3.3
9001/0b-280-085-101	28	85	595	0.083	2.4
9001/0b-280-100-101	28	100	700	0.083	1.6
9001/0b-280-110-101	28	110	770	0.083	1.2
9001/0b-315-020-101	31.5	20	157.5	0.056	50
9001/0b-315-050-101	31.5	50	393.8	0.056	7.5
9001/0b-315-070-101	31.5	70	551.3	0.056	3.2
9001/0b-398-020-101	39.8	20	199	0.03	50
9001/0b-398-050-101	39.8	50	497.5	0.03	5.2
9001/01-252-057-141	25.2	57	359.1	0.107	6.3
9001/01-252-060-141	25.2	60	378	0.107	6.2
9001/01-252-100-141	25.2	100	630	0.107	2
9001/02-016-015-101	1.6	15	6	100	160
9001/02-016-050-101	1.6	50	20	100	15
9001/02-016-050-111	1.6	50	20	100	15
9001/02-016-150-101	1.6	150	60	100	1.3
9001/02-016-150-111	1.6	150	60	100	1.3
9001/02-016-320-101	1.6	320	128	100	0.19
9001/02-061-020-101	6.1	20	30.5	37	90
9001/02-061-050-101	6.1	50	76.25	37	15
9001/02-061-150-101	6.1	150	228.8	37	1.3
9001/02-093-003-101	9.3	3	6.975	4.1	1000
9001/02-093-020-101	9.3	20	46.5	4.1	90
9001/02-093-030-101	9.3	30	69.75	4.1	40
9001/02-093-050-101	9.3	50	116.3	4.1	15
9001/02-093-075-101	9.3	75	174.4	4.1	6.7
9001/02-093-100-101	9.3	100	232.5	4.1	4
9001/02-093-120-101	9.3	120	279	4.1	2.5
9001/02-093-150-101	9.3	150	348.8	4.1	1.3
9001/02-093-250-101	9.3	250	581.3	4.1	0.27
9001/02-093-270-101	9.3	270	627.8	4.1	0.23
9001/02-093-390-101	9.3	390	906.8	4.1	0.16

Type	Voc (Uo) [V]	Isc (Io) [mA]	Po [mW]	Ca (Co) [μF]	La (Lo) [mH]
9001/02-133-003-101	13.3	3	9.975	0.91	1000
9001/02-133-020-101	13.3	20	66.5	0.91	90
9001/02-133-050-101	13.3	50	166.3	0.91	15
9001/02-133-075-101	13.3	75	249.4	0.91	6.7
9001/02-133-100-101	13.3	100	332.5	0.91	4
9001/02-133-120-101	13.3	120	399	0.91	2.5
9001/02-133-150-101	13.3	150	498.8	0.91	1.3
9001/02-175-020-101	17.5	20	87.5	0.339	90
9001/02-175-050-101	17.5	50	218.8	0.339	15
9001/02-175-075-101	17.5	75	328.1	0.339	6.7
9001/02-175-100-101	17.5	100	437.5	0.339	4
9001/02-175-120-101	17.5	120	525	0.339	2.5
9001/02-175-150-101	17.5	150	656.3	0.339	1.3
9001/02-175-200-101	17.5	200	875	0.339	0.5
9001/02-196-010-101	19.6	10	49	0.235	330
9001/02-196-020-101	19.6	20	98	0.235	90
9001/02-196-030-101	19.6	30	147	0.235	40
9001/02-196-050-101	19.6	50	245	0.235	15
9001/02-196-075-101	19.6	75	367.5	0.235	6.7
9001/02-196-100-101	19.6	100	490	0.235	4
9001/02-196-120-101	19.6	120	588	0.235	2.5
9001/02-196-125-101	19.6	125	612.5	0.235	2.2
9001/02-196-150-101	19.6	150	735	0.235	1.3
9001/02-224-020-101	22.4	20	112	0.156	90
9001/02-224-050-101	22.4	50	280	0.156	15
9001/02-224-075-101	22.4	75	420	0.156	6.7
9001/02-224-100-101	22.4	100	560	0.156	4
9001/02-224-120-101	22.4	120	672	0.156	2.5
9001/02-224-150-101	22.4	150	840	0.156	1.3
9001/02-280-015-101	28	15	105	0.083	50
9001/02-280-020-101	28	20	140	0.083	50
9001/02-280-050-101	28	50	350	0.083	8.5
9001/02-280-075-101	28	75	525	0.083	3.4
9001/02-280-090-101	28	90	630	0.083	2.2
9001/02-307-075-101	30.7	75	575.6	0.062	2.9
9001/02-412-040-101	41.2	40	412	0.03	8
9001/03-086-000-101	8.6	0	0	6.2	1000
9001/03-168-000-101	16.8	0	0	0.39	1000
9001/03-199-000-101	19.9	0	0	0.223	1000
9001/04-086-000-101	8.6	0	0	6.2	1000
9001/04-168-000-101	16.8	0	0	0.39	1000
9001/04-199-000-101	19.9	0	0	0.223	1000
9001/0b-158-270-101	15.8	270	1067	0.478	0.23
9001/0b-158-390-101	15.8	390	1541	0.478	0.16
9001/0b-199-270-101	19.9	270	1343	0.223	0.23
9001/02-172-270-101	17.2	270	1161	0.36	0.23
9001/02-172-390-101	17.2	390	1677	0.36	0.16

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

NI/II/2/ABCD/T4 Ta = 50°C; NI/II/2/IIC/T4 Ta = 50°C;

AIS/I,II,III/1/ABCDEFG – 90 016 11 31 1; Entity; [I/O] AEx [ia] IIC – 90 016 11 31 1; Entity

a = 0 or 5

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

c = Safe maximum voltage Voc (Uo) in 1/10 V.

d = Safe short circuit current in Isc (Io) in mA.

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

Special Conditions of Use:

1. The 9001 Intrinsic Safety Barriers shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application and in ambient temperature not exceeding 50°C.

Entity Parameters:

Type	Voc (Uo) [V]	Isc (Io) [mA]	Po [mW]	Ca (Co) [µF]	La (Lo) [mH]
9001/03-280-000-101	28	0	0	0.083	50
9001/04-280-000-101	28	0	0	0.083	50
9001/51-280-091-141	28	91	637	0.083	2.2

Equipment Ratings:

Nonincendive apparatus for use in Class I, Division 2, Group A, B, C, D and Class I, Zone 2, Group IIC with Intrinsically safe connections for Class I, II, III, Division 1, Groups A, B, C, D, E, F, G and Class I, Zone 0, Group IIC hazardous (classified) locations when installed in accordance with Certification Drawing 90 016 11 31 1, issue date 3/2002

And

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

NI/II/2/ABCD/T4 Ta = 50°C; NI/II/2/IIC/T4 Ta = 50°C;

AIS/I,II,III/1/CDEFG – 90 016 11 31 1; Entity; [I/O] AEx [ia] IIB – 90 016 11 31 1; Entity

a = 0 or 5

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

c = Safe maximum voltage Voc (Uo) in 1/10 V.

d = Safe short circuit current in Isc (Io) in mA.

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

Special Conditions of Use:

1. The 9001 Intrinsic Safety Barriers shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application and in ambient temperature not exceeding 50°C.

Entity Parameters:

Type	Voc (Uo) [V]	Isc (Io) [mA]	Po [mW]	Ca (Co) [µF]	La (Lo) [mH]
9001/0b-280-165-101	28	165	1155	0.65	3.5
9001/0b-280-280-101	28	280	1960	0.65	0.6

Equipment Ratings:

Nonincendive apparatus for use in Class I, Division 2, Group A, B, C, D and Class I, Zone 2, Group IIC with Intrinsically safe connections for Class I, II, III, Division 1, Groups C, D, E, F, G and Class I, Zone 0, Group IIB hazardous (classified) locations when installed in accordance with Certification Drawing 90 016 11 31 1, issue date 3/2002

And

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

NI/II/2/ABCD/T4 Ta = 60°C; NI/II/2/IIC/T4 Ta = 60°C;

AIS/I,II,III/1/CDEFG – 90 016 11 31 1; Entity; [I/O] AEx [ia] IIB – 90 016 11 31 1; Entity

a = 0 or 5

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

c = Safe maximum voltage Voc (Uo) in 1/10 V.

d = Safe short circuit current in Isc (Io) in mA.

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

Special Conditions of Use:

1. The 9001 Intrinsic Safety Barriers shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application and in ambient temperature not exceeding 60°C.

Entity Parameters:

Type	Voc (Uo) [V]	Isc (Io) [mA]	Po [mW]	Ca (Co) [µF]	La (Lo) [mH]
9001/0b-199-390-101	19.9	390	1940	1.42	0.89
9001/02-217-270-101	21.7	270	1465	1.17	2.2
9001/02-217-390-101	21.7	390	2116	1.17	0.89
9001/02-280-120-101	28	120	840	0.65	7
9001/02-307-130-101	30.7	130	997.8	0.53	5.4
9001/02-308-230-101	30.8	230	1771	0.524	0.7
9001/02-412-065-101	41.2	65	669.5	0.287	23
9001/02-412-095-101	41.2	95	978.5	0.287	9

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

NI/II/2/ABCD/T4 Ta = 40°C; NI/II/2/IIC/T4 Ta = 40°C;

AIS/I,II,III/1/ABCDEF – 90 016 11 31 1; Entity; [I/O] AEx [ia] IIC – 90 016 11 31 1; Entity

a = 0 or 5

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

c = Safe maximum voltage Voc (Uo) in 1/10 V.

d = Safe short circuit current in Isc (Io) in mA.

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

Special Conditions of Use:

1. The 9001 Intrinsic Safety Barriers shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application and in ambient temperature not exceeding 40°C.

Entity Parameters:

Type	Voc (Uo) [V]	Isc (Io) [mA]	Po [mW]	Ca (Co) [µF]	La (Lo) [mH]
9001/51-280-110-141	28	110	770	0.083	1.2

Equipment Ratings:

Nonincendive apparatus for use in Class I, Division 2, Group A, B, C, D and Class I, Zone 2, Group IIC with Intrinsically safe connections for Class I, II, III, Division 1, Groups C, D, E, F, G and Class I, Zone 0, Group IIB hazardous (classified) locations when installed in accordance with Certification Drawing 90 016 11 31 1, issue date 3/2002

FM Approved for:

R. Stahl Schaltgeraete
Am Bahnhof 30
D-74638 Waldenburg (Wurt)
Germany

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	1998
Class 3610	2010
Class 3611	1999
Class 3810	1998
Including Supplement #1	2005


Original Project ID: 3011002

Approval Granted: December 17, 2002

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
041124	February 10, 2005		
111403	March 22, 2011		

FM Approvals LLC



Patrick Byrne
Technical Team Manager

March 22, 2011
Date