CSA INTERNATIONAL

Certificate of Compliance

Certificate: 1497596 (LR 43394) **Master Contract:** 159930

Project: 1534094 **Date Issued:** 2004/03/10

Issued to: **R. Stahl, Incorporated**

45 Northwestern Dr
Salem, New Hampshire 03079-4809
USA
Attention: Mr. Winni Faulring

The products listed below are eligible to bear the CSA Mark shown

Issued by: Ron Wildish

Authorized by: Nick Alfano, Operations Manager

PRODUCTS

CLASS 2258 04 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe, Entity - For Hazardous Locations

Ex nA [ib] IIC:

Intrinsic Safety Barriers, Type 9004; provides intrinsically safe circuits (non-linear) with entity parameters as listed below, when connected per installation drawing 9004611312. These devices must be mounted in a suitable enclosure in non-hazardous locations, Class I, Div. 2 or Class I, Zone 2 hazardous locations (temperature code T4 at Tamb = 60C). Maximum safe area voltage (Um) must not exceed 250Vrms.

Model 9004/0a-086-030-001; with output Entity Parameters Uo = 8.6V, Io = 30 mA; Po = 258 mW.

Model 9004/0a-086-050-001; with output Entity Parameters Uo = 8.6V, Io = 50 mA; Po = 430 mW.

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Model 9004/0a-086-100-001; with output Entity Parameters Uo = 8.6V, Io = 100 mA; Po = 860 mW.

Model 9004/0a-086-150-001; with output Entity Parameters Uo = 8.6V, Io = 150 mA; Po = 1290 mW.

Model 9004/0a-168-030-001; with output Entity Parameters Uo = 16.8V, Io = 30 mA; Po = 504 mW.

Model 9004/0a-168-050-001; with output Entity Parameters Uo = 16.8V, Io = 50 mA; Po = 840 mW.

Model 9004/0a-200-030-001; with output Entity Parameters Uo = 20V, Io = 30 mA; Po = 600 mW.

Model 9004/0a-263-025-001; with output Entity Parameters Uo = 26.3V, Io = 25 mA; Po = 657.5 mW.

Model 9004/5a-206-030-001; with output Entity Parameters Uo = 20.6V, Io = 30 mA; Po = 618 mW.

Model 9004/5a-220-030-001; with output Entity Parameters Uo = 22V, Io = 30 mA; Po = 660 mW.

Note: 1. a = 0 for negative; 1 for positive polarity type

2. For further details on Certification parameters, see Descriptive and Test Report.

Ex nA [ib] IIB:

Intrinsic Safety Barriers, Type 9004; provides intrinsically safe circuits (non-linear) with entity parameters as listed below, when connected per installation drawing 9004611312. These devices must be mounted in a suitable enclosure in non-hazardous locations, Class I, Div. 2 or Class I, Zone 2 hazardous locations (temperature code T4 at Tamb = 60C). Maximum safe area voltage (Um) must not exceed 250Vrms.

Model 9004/0a-168-100-001; with output Entity Parameters Uo = 16.8V, Io = 100 mA; Po = 1680 mW.

Model 9004/0a-172-140-001; with output Entity Parameters Uo = 17.2V, Io = 140 mA; Po = 2408 mW.

Model 9004/0a-200-050-001; with output Entity Parameters Uo = 20V, Io = 50 mA; Po = 1000 mW.

Model 9004/0a-200-095-001; with output Entity Parameters Uo = 20V, Io = 95 mA; Po = 1900 mW.

Model 9004/0a-263-030-001; with output Entity Parameters Uo = 26.3V, Io = 30 mA; Po = 789 mW.

Model 9004/0a-263-050-001; with output Entity Parameters Uo = 26.3V, Io = 50 mA; Po = 1315 mW.

Model 9004/0a-280-025-001; with output Entity Parameters Uo = 28V, Io = 25 mA; Po = 700 mW.

Model 9004/0a-280-045-001; with output Entity Parameters Uo = 28V, Io = 45 mA; Po = 1260 mW.

Model 9004/0a-315-022-001; with output Entity Parameters Uo = 31.5V, Io = 22 mA; Po = 693 mW.

Model 9004/0a-315-025-001; with output Entity Parameters Uo = 31.5V, Io = 25 mA; Po = 787.5 mW.

CSA INTERNATIONAL

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Model 9004/5a-206-050-001; with output Entity Parameters Uo = 20.6V, Io = 50 mA; Po = 1030 mW.

Model 9004/5a-206-085-001; with output Entity Parameters Uo = 20.6V, Io = 85 mA; Po = 1751 mW.

Notes: 1. a = 0 for negative; 1 for positive polarity type

2. For further details on Certification parameters, see Descriptive and Test Report.

Ex nA [ib] IIC:

Class I, Groups A, B, C and D; Class II, Groups E, F and G; Class III:

Intrinsic Safety Barriers, Type 9004; provides intrinsically safe circuits with entity parameters as listed below, when connected per installation drawing 9004611312. These devices must be mounted in a suitable enclosure in non-hazardous locations, Class I, Div. 2 or Class I, Zone 2 hazardous locations (temperature code T4 at Tamb = 60C). Maximum safe area voltage (Um) must not exceed 250Vrms.

Model 9004/61-220-035-001; with output Entity Parameters Uo = 22V, Io = 35 mA; Po = 770 mW.

Model 9004/61-232-028-041; with output Entity Parameters Uo = 23.2V, Io = 28 mA; Po = 649.6 mW.

Note: For further details on Certification parameters, see Descriptive and Test Report.

APPLICABLE REQUIREMENTS

CAN/CSA-E60079-0:02 - Electrical Apparatus for Explosive Gas Atmospheres??Part 0: General Requirements

CAN/CSA- E60079-11:02 - Electrical apparatus for explosive gas atmospheres, Part 11: Intrinsic safety "i"

CAN/CSA-E60079-15:02 - Electrical apparatus for explosive gas atmospheres, Part 15: Electrical apparatus with type of protection "n"

CSA Std C22.2 No. 213-M1987 - Non-incendive Electrical Equipment for use in Class I, Division 2 Hazardous Locations

CAN/CSA- No. 157-92 - Intrinsically Safe and Non-incendive Electrical Equipment for Use in Hazardous Locations

CSA INTERNATIONAL

Supplement to Certificate of Compliance

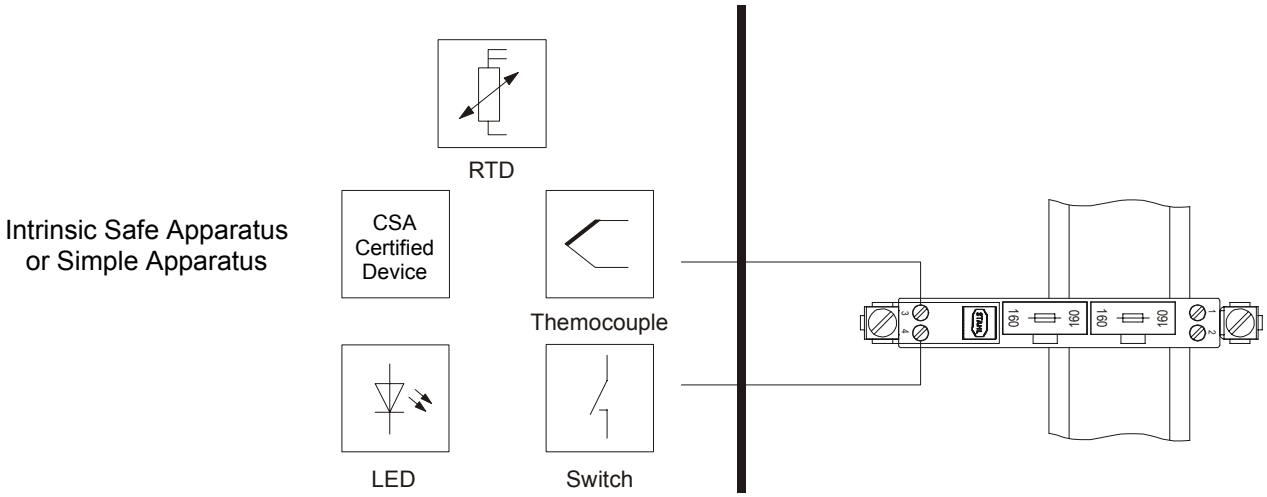
Certificate: 1497596 **Master Contract:** 159930

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1534094	2004/03/10	Update of Report 1497596 to Cover Report Corrections
1497596	2004/01/09	Original Certification. New Generation of Safety Barriers for Hazardous Locations

For Safety barriers 9004/0.-…-…-..1 and 9004/5.-…-…-..1 (see Table 1)	Class I, Zone 1; Group IIC/IIB Hazardous Locations	Non-hazardous or Zone 2 Hazardous Locations
For Safety barriers 9004/61-...-...-..1 (see Table 2)	Class I, II, III; Div. 1; Group A-G or Class I; Zone 1; Group IIC/IIB Hazardous Locations	Non-hazardous, Division 2 or Zone 2 Hazardous Locations



Notes:

1. Intrinsically safe apparatus may be switches, thermocouples, LEDs, RTDs or a CSA Certified System or Entity device connected in accordance with the manufacturer´s installation instructions.

2. For Entity concept use the appropriate parameters to ensure the following:
   - for Divisions: $V_{OC} \leq V_{max}$ $C_a \geq C_i + C_{leads}$; $I_{SC} \leq I_{max}$ $L_a \geq L_i + L_{leads}$
   - for Zones: $U_O \leq U_i$ $C_O \geq C_i + C_{leads}$; $I_O \leq I_i$ $L_O \geq L_i + L_{leads}$

3. Electrical apparatus connected to an intrinsically safe system should not use or generate voltages > 250 V (U_{max}).

4. Installation should be in accordance with the Canadian Electrical Code, Part I.

5. The system shall be installed in a suitable enclosure per the Authority Having Jurisdiction..

6. Maximum barrier operating temperature is 60 °C.

WARNING – DO NOT DISCONNECT NON-INTRINSICALLY SAFE WIRING OR REPLACE FUSES UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

			Certification drawing			
			2003	Date	Name	Title: INTRINSPAK Series 9004/..-…-…-..1 Intrinsic Safety Barriers	Scale: none
			Drawn	21.07.	T. Walter		Sheet: 1 of 2
			Appr.		Kaiser		
			STAHL			Drawing No.: 90 046 11 31 2	Agency: CSA
01	03.11.03	T. Stahl				Replaces:	Replaced by:	A4
Index	Date	Drawn						

F 4830 510

Safety Barriers Types 9004/0.-…-…-..1 and 9004/5.-…-…-..1

The Intrinsic Safety Barriers Types 9004/0. and 9004/5. are associated apparatus located in a non-hazardous or Zone 2 locations and provide intrinsically safe connections for device(s) located in Class I, Zone 1, Group IIC/IIB Hazardous (Classified) Locations.

Table 1 - Barrier Types and Parameters suitable for Zone 1 Installations:

Type	U_O [V]	I_O [mA]	P_O [mW]	Group IIC		Group IIB	
				L_O [mH]	C_O [µF]	L_O [mH]	C_O [µF]
9004/0a-086-030-001	8.6	30	258	2.0	0.86	2.5	5.0
9004/0a-086-050-001	8.6	50	430	2.0	0.69	2.5	4.5
9004/0a-086-100-001	8.6	100	860	1.0	0.63	2.5	3.4
9004/0a-086-150-001	8.6	150	1290	0.97	0.38	2.5	2.3
9004/0a-168-030-001	16.8	30	504	2.0	0.22	2.5	1.3
9004/0a-168-050-001	16.8	50	840	0.86	0.16	2.5	1.2
9004/0a-168-100-001	16.8	100	1680	-	-	1.6	1.1
9004/0a-172-140-001	17.2	140	2408	-	-	0.17	1.2
9004/0a-200-030-001	20	30	600	2.0	0.082	2.5	0.80
9004/0a-200-050-001	20	50	1000	-	-	2.5	0.68
9004/0a-200-095-001	20	95	1900	-	-	0.2	0.88
9004/0a-263-025-001	26.3	25	657.5	0.17	0.097	2.5	0.33
9004/0a-263-030-001	26.3	30	789	-	-	2.5	0.31
9004/0a-263-050-001	26.3	50	1315	-	-	1.3	0.33
9004/0a-280-025-001	28	25	700	-	-	2.5	0.28
9004/0a-280-045-001	28	45	1260	-	-	1.5	0.28
9004/0a-315-022-001	31.5	22	693	-	-	2.5	0.24
9004/0a-315-025-001	31.5	25	787.5	-	-	2.5	0.23
9004/5a-206-030-001	20.6	30	618	2.0	0.072	2.5	0.72
9004/5a-206-050-001	20.6	50	1030	-	-	2.5	0.58
9004/5a-206-085-001	20.6	85	1751	-	-	0.37	0.68
9004/5a-220-030-001	22	30	660	1.3	0.073	2.5	0.55

a = Polarity: 0 (negative) or 1 (positive)

Safety Barriers Types 9004/61-…-…-..1

The Intrinsic Safety Barriers Types 9004/61 are associated apparatus located in a non-hazardous or Div. 2 or Zone 2 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 1, Group IIC/IIB Hazardous (Classified) Locations.

Table 2 - Barrier Types and Parameters suitable for Division 1 and Zone 1 Installations

Type	V_{OC} (U_O) [V]	I_{SC} (I_O) [mA]	P_O [mW]	Group A, B, E Group IIC		Group C, D, F, G Group IIB	
				L_O / L_a [mH]	C_O / C_a [µF]	L_O / L_a [mH]	C_O / C_a [µF]
9004/61-220-035-001	22	35	770	0.05	0.165	2.5	0.52
9004/61-232-028-041	23.2	28	649.6	1.0	0.075	2.5	0.46