CSA INTERNATIONAL

sira CERTIFICATION

Assessment Report

Title:
DL8000 Preset (Model W40208)
Applicant:
Emerson Process Management Remote Automation Solutions
Manufacturer:
Bristol, Inc. dba Remote Automation Solutions, a division of Emerson Process Management
Report No. (Free Ref. No.):
R23028A/00
Place and date of issue:
February 2011
Sira Certification, Rake Lane Eccleston, Chester CH4 9JN, UK

1 Report Summary

1.1 Certification Overview

This report is intended to be used as the basis for certification of the DL8000 Preset (Model W40208) against the standards listed in section 1.8. The assessment is based on CSA Reports as detailed in Clause 1.12 below.

1.2 Applicant's Name & Address

Emerson Process Management Remote Automation Solutions
301 South, 1st Avenue, Marshalltown, Iowa 50158, USA

1.3 Manufacturer's Name & Address

Bristol, Inc. dba* Remote Automation Solutions, a division of Emerson Process Management,
1100 Buckingham Street, Watertown, Connecticut 06795, USA

*dba is 'doing business as'

1.4 Trademark

None

1.5 Product Name / Model Number

DL8000 Preset (Model W40208)

1.6 Equipment Description

Preset Controller

1.7 Rating

Um = 115V to 240V, 50/60Hz, 230 VA, ambient temperature Range -20°C to + 70°C

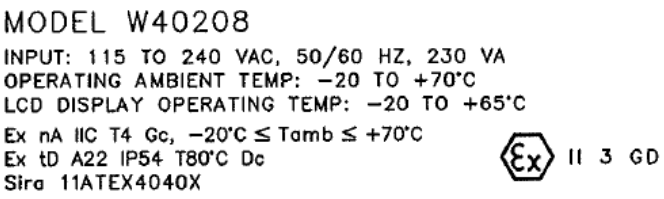
1.8 Assessment Standards

EN 60079-0:2006 EN 60079-15:2005 EN 61241-0:2006 EN 61241-1:2004
EN 60079-0:2009 (for marking purposes)

1.9 Marking

Model/Type	DL8000 Preset (Model W40208)
Manufacturer	Bristol, Inc. trading as Remote Automation Solutions
Address	Watertown, Connecticut 06795, USA
Certificate number:	Sira 11ATEX4040X
Certification code:	Ex nA IIC T4 Gc Ex tD A22 IP54 T80°C Dc
Ambient range:	-20°C≤Ta≤+70°C
Serial number:	xxxx
Year of manufacture:	yyyy
Other marking:	CE Ex II 3GD

A copy of the nameplate is shown below:



1.10 Product Description

DL8000 Preset (Model W40208) is designed to determine various physical measurements associated with petroleum, industrial chemicals or other products and control the blending and mixing of appropriate additives through preset recipes.

The Preset comprises a stainless steel prefabricated enclosure with an aluminium front cover, which is hinged on one side and clipped together with two lockable draw latches. The cover and enclosure are sealed with a gasket. Electrical access for communications is made via a military style locking connector on the bottom of the enclosure. There are three holes on the bottom wall for provision of suitably-certified conduit hubs or cable glands etc.

The front cover has a suitable cut-out, protected by a plastic bezel, which is covered with a Lexan window through which the display can be seen. The plastic bezel also contains a number of magnetic/hall-effect switches that allows the operator to communicate with the equipment. The bezel and window are suitably sealed to prevent ingress.

The enclosure contains a suitably modified power supply Type TSP 070-112EX manufactured by Traco Electronic AG and covered by Certificate No LCIE 07ATEX0004U, a Model W40135 Flow Computer (also known as the ROC809), manufactured by Fisher Controls or Micro Motion Inc to certificate number Sira 05ATEX4046X, together with additionally approved modules and boards. The Model W40135 (ROC809) includes all the currently-certified modules with the exception of the Foundation Fieldbus Interface CPU and H1 Cards.

1.11 Manufacturer's Documents

The drawings listed below accurately describe the sample. It was verified that these documents give a full and accurate description of those aspects of the equipment relating to compliance with the listed relevant certification standards.

	Drawing	Sheets	Rev.	Date (Sira stamp)	Title
01	W40208	1 to 4	A	07 Mar 11	Model W40208 DL8000 Enclosure Assembly
02	W48086	1 of 1	A	07 Mar 11	ACIO Module Assembly
03	W38286*	1 to 4	C1	07 Mar 11	ACIO Schematic, Main Board
04	W38294*	1 & 2	C1	07 Mar 11	ACIO Schematic, Daughter Board
05	W48081	1 of 1	A	07 Mar 11	Display Board Assembly
06	W38305	1 to 3 + Index	C1	07 Mar 11	Display Board Schematic
07	7FSC1054	1 to 4	D2	07 Mar 11	APM Module Schematic, Main Board
08	7FSC1055*	1 to 3	C1	07 Mar 11	APM Module Schematic, Daughter Board
09	BE-12586	1 of 1	B	07 Mar 11	Keyboard Assembly Schematic
10	CE-12584	1 of 1	F	07 Mar 11	Keyboard Assembly PCA

*See also Certificate No. Sira 08ATEX1063

1.12 Attachments

Number	Details	Pages
CSA Certificate 1859870 dated 06 May 2010	DL8000 Series Controller Model W40201	1 to 3
CSA Report 179806-2229922 dated 06 May 2010	Assessment of the DL8000 Series Controller, Model W40201 for Class I, Div 2, Groups A, B, C, D, Type 4	1 to 15
CSA Report 179806-2309338	Assessment of the DL8000 Controller Model W40201 tested to IEC60079-15:2004 Clause 33.3 and IEC 60529:1989 (+ Amd 1) Clauses 14.2.4 and 13.5	1 to 4
CSA Certificate 1859870 dated 06 04 Jan 2011	DL8000 Series Controller Model W40201	1 to 3
CSA Report 179806-2384679 dated 04 Jan 2011	Assessment of the DL8000 Series Controller, Model W40201 for Class I, Div 2, Groups A, B, C, D, Type 4	1 to 17

It should be noted that the CSA Reports CSA Report 179806-2229922 and CSA Report 179806-2384679 also mention versions that are certified Ex d IIB. This is not included within the scope of this report.

1.13 Special Conditions For Safe Use

The 'X' suffix to the certificate number relates to the following special conditions for safe use:

1. Items of the equipment are made of plastic. By virtue of its shape, design and position of use, it is assessed that the equipment is not considered to be an electrostatic risk; however, the equipment must not be installed in a position where it may be subjected to an excessive air/fluid flow or be subjected to rubbing that may cause an electrostatic build-up.

2. The DL8000 Preset (Model W40208) shall withstand a 500Vrms test voltage to earth or frame for 1 minute.

3. Electrical entries into the enclosure shall be made via either suitably-certified conduit entries or glands that will maintain the IP54 rating of the enclosure.

4. The arrangement of the Model W40135 Flow Computer modules shall be designed such that the maximum power that may be drawn from the TSP 070-112EX power supply is 38W.

5. Customer connections to the earth terminals must be made via spade or eyelet connectors, crimped or soldered to the field wiring.

6. The enclosure should not be subjected to intense sunlight without protecting the plastic display cover.

1.14 Conditions Of Manufacture

There are no conditions of certification.

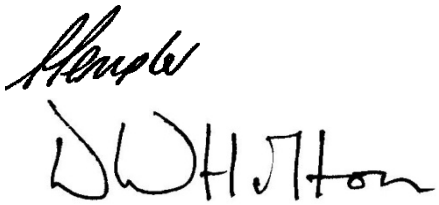
1.15 Conclusion

The DL8000 Preset (Model W40208) as described in the Report Summary satisfies the requirements of the listed standards, the relevant certification code being as indicated.

1.16 Signatories

Compiled by + signature (ExTL): Andrew Templer CEng MIET
Senior Certification Engineer

Reviewed by + signature (ExTL): David Holton BSc(Hons)
Senior Certification Engineer



2 Certification Overview

The purpose of this report is the testing and assessments to the standards listed in the Report Summary, of the DL8000 Preset (Model W40208) for certification with the following coding:

 II 3GD

Ex nA IIC T4 Gc (-20°C≤Ta≤+70°C)

The DL8000 Preset (Model W40208) is identical in construction to the DL8000 Preset (Model W40201) approved for North American Division 2 by CSA. Additional tests were conducted by CSA to ensure that the enclosure met the requirements of EN/IEC 60079-15, details of which are included in this report.

3 Assessment against EN 60079-15

3.1 Description of apparatus

DL8000 Preset (Model W40208) is designed to measure various physical measurements associated with petroleum, industrial chemicals or other products and control the blending and mixing of appropriate additives through preset recipes.

The DL8000 Preset comprises of a stainless steel prefabricated enclosure with an aluminium front cover, which is piano-hinged on one side and clipped together with two lockable draw latches. The cover and enclosure are sealed with a gasket. Electrical access for communications is made via a military style connector on the bottom of the enclosure. There are three holes on the bottom wall for provision of conduit hubs etc.

The front cover has a suitable cut-out, protected by a plastic bezel, which is covered with a Lexan window through which the display can be seen. A plastic bezel also contains a number of magnetic/hall-effect switches that allows the operator to communicate with the equipment. The bezel and window are suitably sealed to prevent ingress.

The enclosure contains a suitably modified power supply Type TSP 070-112EX manufactured by Traco Electronic AG and covered by Certificate No LCIE 07ATEX0004U, a Model W40135 Flow Computer (also known as the ROC809), manufactured by Fisher Controls or Micro Motion Inc to Certificate No Sira 05ATEX4046X together with additionally approved modules and boards. The Model W40135 (ROC809) includes all the currently certified modules with the exception of the Foundation Fieldbus Interface CPU and H1 Cards.

The cover gasket is fixed into position

3.2 Enclosure

The main enclosure is formed and welded from 304 stainless steel sheet. The door is formed from 2.28mm (0.090 inch) thick aluminium. Both parts are coated with epoxy polyester or polyurethane.

The door is hinged to body with a piano hinge, secured with two lockable draw latches, and sealed with gasket made from Cohrlastic R10480M material. Door has a cut-out for a 4.5mm (0.178 inch) thick Lexan window, adhered to the outside with Dow Corning 832 RTV sealant. A plastic bezel with magnetic keypad buttons is then attached using 6 screws. The ROC809 and power module assembly are mounted to a base plate secured to the back of the housing body. A military style LOI connector with tethered screw-on cap is attached through a hole in the bottom wall with a hex nut and sealing provided by a synthetic rubber gasket. All screws that go through the walls of the housing body for securing the hinge use a neoprene sealing washer. Rivets that go through housing wall are also sealed with the sealing washer or a sealed rivet. Three holes are located in the bottom wall for provision for suitably certified conduit hubs or cable glands.

Following thermal conditioning to both hot (4 weeks at +85°C and 90% RH) and cold (24hrs at -40°C), impact testing as detailed below, the enclosure was IP tested to a degree of protection of at least IP54 as confirmed by CSA Report 179806-2309338.

The steel enclosure was subjected to an impact of 7.0 Joules at an ambient temperature of (+20 ± 5)°C without damage.

The Lexan window was subjected to an impact of 3.5 Joules with an ambient temperature of both + 75°C and -40°C without damage. By virtue of its shape and size it is assessed that an impact of 4J on the window is very unlikely to cause any damage.

No damage was observed. (See CSA Report 179806-2309338).

To prevent un-authorized access, the front cover is lockable.

3.3 Non-Metallic Enclosures

The enclosure is coated with a plastic coating and the front bezel is also made of plastic. By virtue of its shape, design and position of use, it is assessed that the apparatus is not considered to be an electrostatic risk; however, the apparatus must not be installed in a position where it may be subjected to an excessive air/fluid flow or be subjected to rubbing that may cause an electrostatic build-up. A 'Special Condition of Safe Use' as specified in the Report Summary, section 1.13, draws this to the attention of the user.

The enclosure should not be subjected to intense sunlight without protecting the plastic display cover.

3.4 Apparatus Supply

The apparatus is to be supplied from an external source of not greater than 240V. It is considered that the TSP 070-112EX Power Supply to LCIE 07ATEX0004U provides any necessary supply protection.

3.5 Input/Output Parameters

Um = 240Vac

Any output are considered to be Non-Sparking as specified by Certificate No Sira 05ATEX4046X.

3.6 Creepage And Clearance

With the exception of the supply to the TSP 070-112EX Power Supply to Certificate No LCIE 07ATEX0004U all voltages are less than 75V. It is considered that the power supply prevents this being exceeded, thus creepage and clearance requirements do not apply.

A review of the power supply shows that the mains supply has sufficient creepage and clearance for voltages up to 250V.

3.7 Sparking Contacts

The TSP 070-112EX Power Supply to Certificate No. LCIE 07ATEX004X is coded Ex nAC IIC T4 (-20°C≤Ta≤+70°C) and is deemed to be non-sparking by reference to its own certificate.

The Model W40135 Flow Computer to Certificate No. Sira 05ATEX4046X is coded EEx nA IIC T4 (-40°C≤Ta≤+75°C) and is deemed to be non-sparking by reference to its own certificate.

An assessment of the Display Board and Keyboard shows that these boards do not have any potential sparking contacts. The Keyboard uses magnet and hall-effect switches and are deemed to be non-sparking.

3.8 Connection Facilities

3.8.1 External Connections

Communications with the DL8000 are made via a military style LOI connector, located on the floor of the enclosure, which provides a locking mechanism to prevent inadvertent disconnection.

There are three holes on the bottom wall for provision of suitably-certified conduit hubs or cable glands etc. A 'Special Condition of Safe Use' as detailed in the Report Summary, section 1.13, details the requirements of the conduit hub or cable glands.

Customer connections are made directly to the Model W40135 Flow Computer and the assessment of these connections are deemed to be non-sparking by reference to its own certificate.

The mains input connection is made via a Molex Part No. 387217302 (or equivalent) screw connectors that provides protection against damaging the supply cable and provides locking to prevent loosening by vibration. A protective cover prevents inadvertent connection to these connectors. The terminal size is appropriate to the rated current of the apparatus.

3.8.2 Internal Connections

The power supply terminal connector WAGO 869-112 (W11267) (or equivalent) use terminals that grip the wire and secure against loosening or twisting.

The RJ45 connector used in the communications line is deemed to be locking.

3.9 Surface Temperature

The TSP 070-112EX Power Supply to Certificate No. LCIE 07ATEX004X is coded Ex nAC IIC T4 ($-20°C \leq Ta \leq +70°C$) and is deemed to be T4 by reference to its own certificate.

The Model W40135 Flow Computer to Certificate No. Sira 05ATEX4046X is coded EEx nA IIC T4 ($-40°C \leq Ta \leq +75°C$) and is deemed to be T4 by reference to its own certificate.

Further tests were conducted by CSA as detailed in Report 1859870 which found a temperature rise of 18K on the Line Voltage Terminal Block. This will give a maximum temperature of 88°C in a 70°C ambient. This is much less than the permitted 135°C for T4. Any variance in test procedures is unlikely to exceed the requirements of T4.

There are no known external sources of heating.

3.10 Electrical Isolation From Earth

Tests were conducted by CSA at 1500Vac as detailed in Report 1859870 and it is considered that these far exceeded the requirements of EN 60079-15. It is therefore considered that the electrical circuit is capable of withstanding 500Vrms to earth or frame for 1 minute.

3.11 Connection Facilities For Earthing Or Bonding Conductors

Customer connections to these terminals must be made via spade or eyelet connectors, crimped or soldered to the field wiring.

3.12 Fuses

The fuses that are used to protect the power supply are:

- 2A Littelfuse 0313002 (W10061) or equivalent

- 10A Bussman MDA (W10062) or equivalent

Each fuse is held in position by a Littelfuse Fuseholder Type 03420848 (W11269) (or equivalent) which is spring loaded and is deemed to be non-sparking. The fuse rating is marked next to the fuse holder.

4 Assessment against EN 61241-0

The enclosure has been tested for an Ingress Protection of IP54 (see clause 3.2 & 3.3 above). This is considered suitable for use in Zone 22 with non-conductive test.

CSA Report 179806-2229922 states that the maximum temperature rise of the external enclosure was 6 K. With a maximum ambient temperature of 70°C the equipment will be given a T80°C marking.

The equipment will be marked Ex tD A22 IP54 T80°C Dc.

5 Tests

5.1 Tests conducted

Refer to CSA Reports 179806-2229922 and 179806-2309338

5.2 The following tests were waived

None

5.3 Tests conducted under sub-contract

None

6 Assessment against ATEX Directive 94/9/EC

All relevant Essential Health and Safety Requirements (EHSRs) in Annex II of the Directive are addressed by the listed standards.

EN 60079-15:2005			
Clause	Requirement – Test	Result – Remark	Verdict
1	Scope	See Report Summary	
2	Normative references		
3	Definitions		
4	General		
4.1	Apparatus grouping and temperature classification	See Report Summary	
4.2	Potential ignition sources	See Clause 3	Pass
5	Temperatures	See Clause 3.9	Pass
5.1	Environmental influences	See Clause 3.9	Pass
5.1.1	Ambient temperature	See Clause 3.9	Pass
5.1.2	External source of heating or cooling	See Clause 3.9	Pass
5.2	Service temperature	See Clause 3.9	Pass
5.3	Maximum surface temperature	See Clause 3.9	Pass
5.3.1	Determination of maximum surface temperature	See Clause 3.9	Pass
5.3.2	Limitation of maximum surface temperature	See Clause 3.9	Pass
5.4	Surface temperature & ignition temperature	See Clause 3.9	Pass
5.5	Small components	Not applicable	
6	Requirements for electrical apparatus		
6.1	General		
6.2	Mechanical strength of apparatus	See Clause 3.2	Pass
6.3	Opening times	Not applicable	
6.4	Circulating currents	Not applicable	
6.5	Gasket retention	See Clause 3.2	Pass
6.6	Degree of protection of enclosure (IP)	See Clause 3.2	Pass
6.7	Clearances, creepage distances & separations	See Clause 3.6	Pass
6.8	Electric strength	See Clause 3.10	Pass
7	Non-metallic enclosures and non-metallic parts of enclosures	See Clause 3.3	Pass
7.1	General	See Clause 3.3	Pass
7.2	Thermal endurance	See Clause 3.2	Pass
7.3	Electrostatic charges on external non-metallic materials of enclosures	See Clause 3.3	Pass
7.4	Threaded holes	Not applicable	
7.5	Thermal shock	Not applicable	
7.6	Resistance to light	See Clause 3.3	Pass
8	Enclosures containing light metals	Not applicable for nA	
9	Fasteners	See Clause 3.2	Pass
10	Interlocking devices	Not applicable	
11	Bushings	Not applicable	
12	Materials used for cementing	Not applicable	
13	Ex components	Not applicable	
14	Connection facilities and terminal compartments	See Clause 3.8	Pass
14.1	General	See Clause 3.8	Pass
14.2	Connection for external conductors	See Clause 3.8.1	Pass
14.3	Internal connection facilities	See Clause 3.8.1	Pass
15	Connection facilities for earthing or bonding conductors	See Clause 3.8.1	Pass
16	Entries into enclosures	See Clause 3.8.1	Pass
17	Supplementary requirements for non-sparking electrical machines	Not applicable	
18	Supplementary requirements for switchgear	Not applicable	
19	Supplementary requirements for non-sparking fuses and fuse assemblies	See Clause 3.12	Pass
20	Supplementary requirements for non-sparking plugs and sockets	Not applicable	
21	Supplementary requirements for non-sparking luminaires	Not applicable	

EN 60079-15:2005			
Clause	Requirement – Test	Result – Remark	Verdict
22	Supplementary requirements for apparatus incorporating non-sparking cells and batteries	Not applicable	
23	Supplementary requirements for non-sparking low power apparatus	Not applicable	
24	Supplementary requirements for non-sparking current transformers	Not applicable	
25	Other electrical apparatus	Not applicable	
26	General supplementary requirements for apparatus producing arcs, sparks or hot surfaces	Not applicable	
27	Supplementary requirements for enclosed-break devices	Not applicable	
28	Supplementary requirements for hermetically sealed devices producing arcs, sparks or hot surfaces	Not applicable	
29	Supplementary requirements for sealed devices or encapsulated devices producing arcs, sparks or hot surfaces	Not applicable	
30	Supplementary requirements for energy-limited apparatus and circuits producing arcs, sparks or hot surfaces	Not applicable	
31	Supplementary requirements for restricted-breathing enclosures protecting apparatus producing arcs, sparks or hot surfaces	Not applicable	
32	General information on verification and tests	Not applicable	
33	Type tests	Not applicable	
33.1	Representative samples	Not applicable	
33.2	Test configuration	Not applicable	
33.3	Tests for enclosures on which the type of protection depends	Not applicable	
33.4	Test for enclosed-break devices and non-incendive components	Not applicable	
33.5	Tests for sealed devices and encapsulated devices	Not applicable	
33.6	Assessment and test of energy-limited apparatus and circuits	Not applicable	
33.7	Tests for restricted-breathing enclosures	Not applicable	
33.8	Test for screw lampholders	Not applicable	
33.9	Test for starter holders for luminaires	Not applicable	
33.10	Tests for electronic starters for tubular fluorescent lamps and for ignitors for high pressure sodium or metal halide lamps	Not applicable	
33.11	Test for wiring of luminaires subject to high-voltage impulses from ignitors	Not applicable	
33.12	Mechanical shock test for batteries	Not applicable	
33.13	Insulation resistance test for batteries	Not applicable	
33.14	Additional ignition tests for large or high-voltage machines	Not applicable	
34	Routine verifications and tests	Not applicable	
34.1	General	Not applicable	
34.2	Specific routine tests	Not applicable	
35	Marking	See section 1.9	Pass
35.1	General	See section 1.9	Pass
35.2	Additional marking for batteries		
35.3	Examples of marking	Not applicable	
36	Documentation	See section 1.11	Pass
37	Instructions	Not applicable	
Annex ZA	Normative references to international publications with their corresponding European publications	Not applicable	
Annex ZZ	Coverage of essential requirements of the Directive	Not applicable	

EN 61241-1:2004			
Clause	Requirement – Test	Result – Remark	Verdict
1	Scope		
2	Normative references		
3	Definitions		
4	Construction	See Section 3.2	Pass
5	Practice A and practice B	Practice A – See Section 3.2	Pass
6	Supplementary requirements for electrical apparatus protected by enclosures for practice A in zones 20, 21 & 22	See Sections 3.2 & 3.3	Pass
7	Supplementary requirements for electrical apparatus protected by enclosures for practice B in zones 20, 21 & 22	Not applicable	
7.1	Joints	Not applicable	
7.1.1	Plain joints	Not applicable	
7.1.2	Spigotted joints	Not applicable	
7.1.3	Gasketed joints	Not applicable	
7.2	Operating rods, spindles or shafts	Not applicable	
7.2.1	General	Not applicable	
7.2.2	Running contact seals	Not applicable	
7.2.3	Power shafts	Not applicable	
7.2.4	Operating rods	Not applicable	
7.3	Clearance of bolts	Not applicable	
8	Verification & tests	Not applicable	
8.1	General	Not applicable	
8.2	Type tests		
8.2.1	Tests for dust exclusion by enclosures	See Section 3.2	Pass
8.2.1.1	General	See Section 3.2	Pass
8.2.1.2	Dust-tight apparatus for practice A	Not Applicable	
8.2.1.3	Dust-protected apparatus for practice A	See Section 3.2	Pass
8.2.1.4	Dust-tight apparatus for practice B	Not applicable	
8.2.1.4.1	Heat cycling test	Not applicable	
8.2.1.4.2	Acceptance criteria	Not applicable	
8.2.1.5	Dust-tight apparatus for practice B	Not applicable	
8.2.1.5.1	Heat cycling test	Not applicable	
8.2.1.5.2	Acceptance criteria	Not applicable	
8.2.2	Thermal tests	Not applicable	
8.2.2.1	Apparatus for practice A	See Section 4	Pass
8.2.2.2	Apparatus for practice B	Not applicable	
9	Marking	See Section 1.9	Pass