



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 10ATEX1218** Issue: **7**

4 Equipment: **Models:** **P-500-1500 Flash Point Analyzer**
P-700-1500 RVP Analyzer
P-600-1500, Salt-in-Crude Analyzer
P-800LT-1500 Low Temp Freeze Point Analyzer
P-820LT-1500 Low Temp Cloud Point Analyzer
P-840LT-1500 Pour Point Analyzer
P-860LT-1500 Cold Properties Analyzer

5 Applicant: **Bartec Orb, Inc.**

6 Address: **4724 South Christina Avenue, Chicago, Illinois 60632, USA**

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2012/A11:2013 EN 60079-1:2014 EN 13463-1:2009 (was used for reference)

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment is listed in Section 13:

**Model P-500-1500, Model P-700-1500,
Model P-600-1500**



II 2G

Ex db IIB+H2 T6 Gb
-#°C ≤ Ta ≤ +40°C

Model P-500-1500 = 18°C
Model P-700-1500 & Model P-600-1500 = 20°C

**Model P-800LT-1500, Model P-820LT-1500
Model P-840LT-1500, Model P-860LT-1500**



II 2G

Ex db IIB T6 Gb
0°C ≤ Ta ≤ +30°C

Project Number 70091793

N Jones
Certification Manager

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13 DESCRIPTION OF EQUIPMENT

The Model P-500-1500 Flash Point Analyzer and the P-700-1500 RVP Analyzer are on-line instruments, the Model P-500-1500 is designed to continuously measure the flash point of mid-distillate products and the Model P-700-1500 is designed to measure Reid Vapour Pressure. These products consist of three, previously certified, ATEX, Ex d enclosures, a connection enclosure, a control enclosure and a measurement enclosure, which are attached to a back plate. They require a single phase, 100-240 VAC, 50/60 Hz, 15 A power supply and the AC power connections are made in the connections enclosure. The Analyzer incorporates sample leak detection and vent/drain mounted on the bottom of the measurement enclosure. If an internal sample leak occurs, accumulation of fluid in the bottom of the enclosure activates the leak detection and this causes the power from the measurement and electronics enclosures to be removed. Once the leak has been corrected and fluid removed from the measurement enclosure, the power can be restored via the reset button on the side of the customer connections enclosure. The Model P-500-1500 Flash Point Analyzer and the P-700-1500 RVP Analyzer are programmed and controlled via a magnetic keypad on the front of the electronics enclosure, a magnetic pencil is supplied with the instrument for this purpose. The Model P-700-1500 RVP Analyzer utilizes a digitally controlled, syringe sampling system, micro-volume solenoid valves and an angled, temperature-controlled measurement cell with magnetic stirrer and high-resolution pressure sensor, these precisely meter, sample and measure vapour pressure at a 4:1 gas to fluid ratio with a 100°F (37.8°C) test temperature.

The product is marked $T_p = 100^{\circ}\text{C}$ to indicate the maximum fluid temperature allowed.

Ratings

The rating for Model P-500-1500 Flash Point and Model P-700-1500 RVP Analyzers is: 100-240 Vac, 50/60 Hz, 15 Amps

The rating for Model P-600-1500 Salt-in-Crude Analyzer is: input 120Vac, 50/60Hz, 5 Amps or 240 Vac, 50/60Hz, 2.5 Amps

The rating for Model P-840LT-1500 Pour Point Analyzer is: input 120Vac, 50/60Hz, 5 Amps or 240 Vac, 50/60Hz, 2.5 Amps

The rating for Model P-860LT-1500 Cold Properties Analyzer is: input 120Vac, 50/60Hz, 5 Amps or 240 Vac, 50/60Hz, 2.5 Amps

Variation 1 - This variation introduced the following change:

- i. The introduction of the Model P-800LT-1500 Low Temp Freeze Point and P-820LT-1500 Low Temp Cloud Point are on-line freeze and cloud point analyzers which provide continuous measurement of freeze/cloud point temperatures in hydrocarbons. The construction of the P-800LT-1500 and P-820LT-1500 differs only in the bottom enclosure. The customer terminal box and the electronic housing (upper enclosure) are identical to the previous P-500-1500 and P-700-1500. A larger bottom enclosure was required for freeze and cloud point application due to the larger measurement equipment required to perform that analysis.



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Variation 2 - This variation introduced the following change:

- i. The introduction of a new model, type P-600-1500, Salt-in-Crude Analyzer was approved: this is an on-line analyzer that provides continuous measurement of the amount of salt in hydrocarbons (e.g. crude oil). The product consists of four 'Ex d' boxes that are interconnected with flexible cable. The assembly of these parts is noted in drawing P-600-1500. The construction of the P-600-1500 is similar to the P-500-1500, P-800LT-1500 and P-820LT-1500 analyzers in that they all have the same Electronics Assembly, ORB part number 701232. P-700-1500 also shares the same Electronics Assembly, ORB part number 701232

Variation 3 - This variation introduced the following changes:

- i. An alternative electrical construction for Analyzer models.
- ii. For models P-800LT-1500 and P-820LT-1500, the addition of a 240 Vac rating (2.5 Amps) and the correction of the 120 V rating (5 Amps).
- iii. An alternative solvent tank configuration for model P-600-1500.
- iv. The use of an alternative solenoid valve for model P-500-1500 was recognised; this required the minimum ambient temperature limitation to become -18°C.

Variation 4 - This variation introduced the following changes:

- i. The introduction of two new models, type P-840LT-1500, Pour Point Analyzer and P-860LT-1500 Cold Properties Analyzer.
Model P-840LT-1500, Pour Point Analyzer, is an on-line analyzer that provides continuous measurement of the pour point in hydrocarbons (e.g. crude oil). The pour point is the lowest temperature of a liquid at which it loses its flow characteristics. Model P-860LT-1500, Cold Properties Analyzer, is an on-line analyzer that provides continuous measurement of the cloud point (and other properties) in hydrocarbons (e.g. crude oil). The cloud point is the temperature of a liquid at which it is no longer completely soluble. The two products are very similar to each other and each consists of three 'Ex d' boxes that are interconnected with flexible cable. The construction of the P-840LT-1500 and P-860LT-1500 is also similar to the P-500-1500, P-600-1500, P-800LT-1500 and P-820LT-1500 analyzers in that they all have the same Electronics Assembly, ORB part number 701232 and the same Customer Connection Box assembly. P-700-1500 also shares the same Electronics Assembly, ORB part number 701232. The Measurement Assembly for models P-840LT- and P-860LT-1500 are different from all other listed models, but the assemblies are almost identical for the two new models.
- ii. For functionality reasons, the ambient temperature rating of the Model P-800LT-1500 and the Model P-820LT-1500 was changed from $20^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$ to $0^{\circ}\text{C} \leq T_a \leq +30^{\circ}\text{C}$.

Variation 5 - This variation introduced the following changes:

- i. The company name was changed from ORB Instruments Inc. to Bartec Orb Inc.
- ii. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, EN 60079-0:2009 and EN 60079-1:2007 were replaced by EN 60079-0:A11:2013 and EN 60079-1:2014, the markings in section 12 were updated accordingly.

Variation 6 - This variation introduced the following changes:

- i. Correction of EN 60079-0/A11:2013 to EN 60079-0:2012/A11:2103.



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14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	29 September 2010	R22173A/00	The release of the prime certificate.
1	12 April 2011	R24524A/00	The introduction of Variation 1.
2	26 September 2012	R28338A/00	The introduction of Variation 2.
3	21 February 2013	R29378A/00	The introduction of Variation 3.
4	05 June 2013	R30391A/00	The introduction of Variation 4.
5	29 November 2013	R22173A/01	Report R22173A/01 replaced R22173A/00.
6	07 March 2016	R70043939A	The introduction of Variation 5.
7	19 December 2016	R70091793A	This Issue covers the following changes: <ul style="list-style-type: none">• EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. <i>(In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)</i>• The introduction of Variation 6.

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

None

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

17 CONDITIONS OF MANUFACTURE

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.

17.3 The Amal flame arrestors, which are of a welded construction, shall be subjected to a 1.5 times hydrostatic pressure test equal to 8.8 bar (129.3 PSIG). The tests may be completed at ambient conditions and may be carried out on the flame arrestors separated from the main enclosure. The Amal flame arrestors shall withstand the pressure without permanent deformation in accordance with EN 60079-1:2007.clause 15.1.3.

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- 17.4 The products covered by this certificate incorporate previously certified devices, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform Sira of any modifications of the devices that may impinge upon the explosion safety design of their products

Certificate Annexe



Certificate Number: Sira 10ATEX1218
 Equipment: Analyzers
 Applicant: Bartec Orb, Inc.

Issue 0

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
P-500	1 to 2	B	25 Aug 10	Flash Point Analyzer Assembly
Overall Wiring	1 of 1	-	25 Aug 10	Main Wiring P-500 Flash Point Analyzer
700637	1 of 1	B	25 Aug 10	Customer Connection Box Assembly
680008	1 of 2	F	25 Aug 10	Customer Connection Box RVP Analyzer
680008	2 of 2	E	25 Aug 10	Customer Connection Box RVP Analyzer
700877	1 of 1	-	25 Aug 10	Terminal Block Assembly
701515	1 to 2	-	25 Aug 10	Electronics Assembly
701510	1 of 1	C	16 Sep 10	Upper enclosure Modified
701451	1 of 1	A	29 Sep 10	Upper Electronics Plate
680017	1 of 2	C	25 Aug 10	RVP/VL20 Enclosure Top
680017	2 of 2	B	25 Aug 10	RVP/VL20 Enclosure Top
700876	1 of 1	-	25 Aug 10	Lower Electronics Plate
701505	1 of 2	A	16 Sep 10	Lower Enclosure Assembly
701505	2 of 2	C	16 Sep 10	Lower Enclosure Assembly
701450	1 of 1	B	16 Sep 10	Measurement Enclosure General Layout
680018	1 of 1	C	25 Aug 10	RVP/VL20 Enclosure Bottom
701300	1 of 1	E	25 Aug 10	Flame Arrestor Assy
670004	1 of 1	B	25 Aug 10	Bulkhead EX Proof Analyzers
701443	1 of 1	A	25 Aug 10	Arrestor Housing, Top
670007	1 of 1	A	25 Aug 10	Arrestor Housing, Weldment
670006	1 of 1	B	25 Aug 10	Bulkhead EX Proof Analyzers
701070	1 of 1	B	29 Sep 10	Marking Label
88/12251	1 of 1	1	25 Aug 10	Amal Crimping Details (process line connected)
GROUND	1 of 1	-	16 Sep 10	Ground Continuity Diagram
700701	1 of 1	A	16 Sep 10	Magnetic Pencil Body and Assy
188/46/15/15/SS316	1 of 1	-	25 Aug 10	Amal Crimping Details (drain)
Overall Wiring	1 of 1	A	29 Sep 10	RVP Wiring
P-700-1500	1 of 2	B	25 Aug 10	Reid Vapor Analyzer Assembly
P-700-1500	2 of 2	C	16 Sep 10	Reid Vapor Analyzer Assembly
700637	1 of 1	B	25 Aug 10	Customer Connection Box Assembly
680008	1 of 2	F	25 Aug 10	Customer Connection Box RVP Analyzer
680008	2 of 2	E	25 Aug 10	Customer Connection Box RVP Analyzer
700877	1 of 1	-	25 Aug 10	Terminal Block Assembly
701511	1 to 2	-	25 Aug 10	Electronics Assembly
701510	1 of 1	C	16 Sep 10	Upper enclosure Modified
700875	1 of 1	A	29 Sep 10	Upper Electronics Plate
680017	1 of 2	C	25 Aug 10	RVP/VL20 Enclosure Top
680017	2 of 2	B	25 Aug 10	RVP/VL20 Enclosure Top
701512	1 of 1	B	25 Aug 10	RVP Analytical Assembly
700406	1 of 1	-	25 Aug 10	RVP/VL20 Analysis Module
680018	1 of 1	C	25 Aug 10	RVP/VL20 Enclosure Bottom
701300	1 of 1	E	25 Aug 10	Flame Arrestor Assy
670004	1 of 1	B	25 Aug 10	Bulkhead EX Proof Analyzers
701071	1 of 1	B	29 Sep 10	Marking Label
88/12251	1 of 1	1	25 Aug 10	Amal Crimping Details (process line connected)
GROUND	1 of 1	-	16 Sep 10	Ground Continuity Diagram

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Certificate Annexe



Certificate Number: Sira 10ATEX1218

Equipment: Analyzers

Applicant: Bartec Orb, Inc.

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
700701	1 of 1	A	16 Sep 10	Magnetic Pencil Body and Assy
188/46/15/15/SS316	1 of 1	-	25 Aug 10	Amal Crimping Details (drain)

Issue 1

Drawing	Sheets	Rev.	Date(Sira stamp)	Title
P800LT & P820LT-1500	1 of 1	A	11 Mar 11	P800LT/P820LT Freeze/Cloud PT Assy
701081	1 of 1	B	11 Mar 11	P800/820LT Measurement Enclosure Assy
680015	1 of 2	-	11 Mar 11	Low Temp Freeze Point Enclosure Bottom
680015	2 of 2	-	11 Mar 11	Low Temp Freeze Point Enclosure Bottom
Electrical	1 of 1	-	11 Mar 11	P800LT/P820LT Electrical Schematic
701072	1 of 1	-	11 Mar 11	ATEX Cloud Point Main Nameplate
701073	1 of 1	-	11 Mar 11	ATEX Freeze Point Main Nameplate

Issue 2

Drawing	Sheets	Rev.	Date (Sira Stamp)	Title
P-600-1500	1 to 2	A	25 Sep 12	Salt in Crude Analyzer
P-600-1500 BOM	1 to 4		25 Sep 12	Salt in Crude Analyzer Bill of Materials
670004	1 of 1	B	25 Sep 12	Bulkhead Ex Proof Analyzers
680008	1 of 2	F	25 Sep 12	Customer Connection Box RVP Analyzer (Explosion Proof)
680008	2 of 2	E	25 Sep 12	Customer Connection Box RVP Analyzer (Explosion Proof)
680017	1 of 2	D	25 Sep 12	RVP/VL20 Enclosure Top
680017	2 of 2	C	25 Sep 12	RVP/VL20 Enclosure Top
680018	1 of 1	C	25 Sep 12	ATEX Explosion Proof Enclosure
680025	1 of 1	A	25 Sep 12	ORB2011-001 Power Enclosure
700637	1 of 1	B	25 Sep 12	Customer Connection Box Assembly
700875	1 of 1	B	25 Sep 12	Ex Proof Analyzers Upper Electronics Plate
700876	1 of 1	-	25 Sep 12	Ex Proof Analyzers Lower Electronics Plate
700877	1 of 1	-	25 Sep 12	Ex Proof Analyzers Terminal Block Assembly
701232	1 to 2	-	25 Sep 12	Electronics Assembly
701300	1 of 1	E	25 Sep 12	Flame Arrestor Assy Sample
701348	1 of 1	A	25 Sep 12	Analysis Assy
701389	1 of 1	-	25 Sep 12	Measurement Assy
701390	1 of 1	B	25 Sep 12	Salt-in-Crude Cell Assy
701474	1 of 1	-	25 Sep 12	Syringe & Valve Assy
701510	1 of 1	C	25 Sep 12	Upper Enclosure Modified Ex-Proof Units
701515	1 to 2	-	25 Sep 12	Electronics Assembly
701573-1	1 of 1	-	25 Sep 12	Solvent Tank Assy
701688	1 of 1	B	25 Sep 12	IS Barrier Enclosure P-600-1400
701723	1 of 1	-	25 Sep 12	Salt in Crude Main Electrical
701739	1 of 1	-	25 Sep 12	Salt-in-Crude Measuring Assy
701743	1 of 1	-	25 Sep 12	ATEX SIC Main Nameplate
701937	1 of 1	-	25 Sep 12	Lower Electronics Plate
701941	1 of 1	-	25 Sep 12	Customer Connection Box Assembly
702119	1 of 1	-	25 Sep 12	Salt in Crude Main Electrical
702132	1 to 2	-	25 Sep 12	Electronics Assembly

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 Equipment: Analyzers
 Applicant: Bartec Orb, Inc.

Drawing	Sheets	Rev.	Date (Sira Stamp)	Title
GROUND	1 of 1	-	25 Sep 12	Grounding Continuity Diagram
orbdisplay	1 of 5	C	25 Sep 12	Operator Display Schematics
orbdisplay	2 to 5	-	25 Sep 12	Operator Display Schematics

Issue 3

Drawing	Sheets	Rev.	Date (Sira Stamp)	Title
Overall wiring	1 of 1	A	7 Feb 13	(P 500 Flash Point) Analyzer Electrical
P-500-1500 (replaces P-500)	1 to 2	D*	7 Feb 13	(ATEX Flash Point Analyzer) Assembly
702119	1 of 1	-	7 Feb 13	P-600 Salt in Crude Analyzer Electrical
Overall wiring	1 of 1	-	7 Feb 13	(P-700 Reid Vapor Pressure) Analyzer Electrical
P-700-1500	1 to 2	C	7 Feb 13	Reid Vapor Pressure Analyzer Assembly
Electrical	1 of 1	-	7 Feb 13	P800LT/P820LT Electrical Schematic
P-800LT-1500 & P-820LT-1500	1 of 1	B	7 Feb 13	(Low Temp Freeze Point and Low Temp Cloud Point) Assembly
701070	1 of 1	C	7 Feb 13	ATEX Flash Point Main Nameplate
701072	1 of 1	A	7 Feb 13	ATEX Cloud Point Main Nameplate
701073	1 of 1	A	7 Feb 13	ATEX Freeze Point Main Nameplate
702118	1 to 2	-	7 Feb 13	(Common) Electronics Assembly

*It was noted that this drawing introduced two revision changes, the second (rev D) was just to change the legend format of the drawing and had no impact on the manufacturers design and construction.

Note - Drawings 680009 and 680010 were no longer required, accordingly, they have been removed from the list of drawings detailed at Issue 2.

Issue 4

Drawing	Sheets	Rev.	Date (Sira Stamp)	Title
680015	1 to 2	-	13 May 13	Low Temp Freeze Point Enclosure Bottom
701072	1 to 1	B	13 May 13	ATEX Cloud Point Main Nameplate
701073	1 to 1	B	13 May 13	ATEX Freeze Point Main Nameplate
702216	1 to 1	A	05 Jun 13	P-840LT/P-860LT-1500 Measurement Enclosure Assembly
702236	1 to 1	A	13 May 13	ATEX Pour Point Main Nameplate
702237	1 to 1	A	13 May 13	ATEX Cold Properties Main Nameplate
GROUND	1 to 1	-	13 May 13	Ground Continuity Diagram: Low Temp Models
P840LT & P860LT-1500	1 to 1	-	13 May 13	P840LT/P860LT-1500 Pour/Cloud Combo Pt Assy.

Issue 5 - no new drawings were introduced.

Issue 6

Drawing	Sheets	Rev.	Date (Sira stamp)	Description
701070	1 of 1	D	10 Nov 15	Nameplate
701071	1 of 1	C	10 Nov 15	Nameplate
701072	1 of 1	C	10 Nov 15	Nameplate
701073	1 of 1	C	10 Nov 15	Nameplate

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Certificate Annexe

Certificate Number: Sira 10ATEX1218
Equipment: Analyzers
Applicant: Bartec Orb, Inc.



Drawing	Sheets	Rev.	Date (Sira stamp)	Description
701743	1 of 1	A	16 Feb 16	Nameplate
702236	1 of 1	B	10 Nov 15	Nameplate
702237	1 of 1	B	10 Nov 15	Nameplate

Issue 7 - no new drawings were introduced.

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