1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **Baseefa02ATEX0184 – Issue 5**

3.1 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. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **LN1000 IS Alarm Annunciator**

5 Manufacturer: **Eaton Electric Limited**
(formerly Measurement Technology Limited)

6 Address: **Great Marlings, Butterfield, Luton, Bedfordshire, LU2 8DL**

7 This re-issued certificate extends EC Type Examination Certificate No. Baseefa02ATEX0184 to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Baseefa, Notified Body number 1180, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report No. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0: 2012 + A11: 2013 **EN 60079-11: 2012**

except in respect of those requirements listed at item 18 of the Schedule.

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

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following :

⟨Ex⟩ II 1 G Ex ia IIC T4 Ga (-20°C ≤ Ta ≤ +60°C)	(8 Way LN1000 IS Alarm Annunciator)
⟨Ex⟩ II 1 G Ex ia IIB T4 Ga (-20°C ≤ Ta ≤ +60°C)	(12 & 32 Way LN1000 IS Alarm Annunciators)

SGS Baseefa Customer Reference No. **0703** Project File No. **16/0371**

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R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa02ATEX0184 – Issue 5**

15 **Description of Product**

The LN1000 I.S. Alarm Annunciator is designed to be mounted within a hazardous area and to provide a local visual display of the status of a number of remote alarm contacts, give a visual alarm and can operate an external audible alarm

The apparatus is a self-contained rack mounting assembly comprising up to two Backplane printed circuit cards (pcb's) into which slot a Common Sequence Card pcb and up to 16 Dual Channel Alarm Card pcb's all housed within a robust metallic enclosure with a plastic lid. Each Alarm Card has an LCD display which can be viewed through a window in the enclosure lid. Four push buttons are located on a push button card mounted on the lid and are connected to the Common Sequence Card pcb.

Three versions of the Annunciator are covered namely the 8 Way LN1000 IS Alarm Annunciator, the 12 Way LN1000 I.S. Alarm Annunciator and the 32 Way LN1000 I.S. Alarm Annunciator. Each version has fitted one Common Sequence Card pcb and up to four, six or sixteen Dual Channel Alarm Cards respectively.

The 32 Way LN1000 I.S. Alarm Annunciator uses two Backplane printed circuit cards and is housed in a larger enclosure than the 8 Way and 12 Way LN1000 I.S. Alarm Annunciators which both use only a single backplane PCB.

Electrical connections to the external apparatus are made via the field terminals located on the Backplane printed circuit cards.

The 8 way LN1000 IS Alarm Annunciator has coding:
⟨Ex⟩ II 1G Ex ia IIC T4 Ga ($-20^{\circ}C \leq Ta \leq +60^{\circ}C$)

The 12 and 32 wayLN1000 IS Alarm Annunciators have coding:
⟨Ex⟩ II 1G Ex ia IIB T4 Ga ($-20^{\circ}C \leq Ta \leq +60^{\circ}C$)

The outputs for external switches and the sounder on all variants can be mounted in Gas Group IIC

1. Common Sequence Card - Input parameters - Connector J1 pins 1 & 2:-

U_i = 30V
I_i = 165mA
P_i = 1.2W
C_i = 47nF
L_i = 0.44mH

2. Common Sequence Card - Output parameters - Connector J1 pins 3 & 4:-

U_o = 7.2V
I_o = 135mA
P_o = 244mW

Cable Parameters.

The Capacitance and either the Inductance or the Inductance to Resistance (L/R) ratio of the cables connected to the terminals of the Alarm Annunciator should not exceed the following values:-

Common Sequence Card - Output parameters - Connector J1 pins 3 & 4

GROUP	C µF	L mH	OR	L/R Ratio µH/ohm
IIC	13.5	2.05		150
IIB	240	8.87		590
IIA	1000	17.64		1230

Notes:

1) The above load parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

2) The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) is ≥ 1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB & IIA and 600nF for Group IIC.

The values of L_o and C_o determined by this method shall not be exceeded by the sum of all the L_i plus cable inductances in the circuit and the sum of all of the C_i plus cable capacitances respectively.

3. Common Sequence Card - Output parameters - Connector J1 pins 9 to 12:-

U_o = 7.2V

I_o = 13.2mA

P_o = 24mW

Cable Parameters.

The Capacitance and either the Inductance or the Inductance to Resistance (L/R) ratio of the cables connected to the terminals of the Alarm Annunciator should not exceed the following values:-

Common Sequence Card - Output parameters - Connector J1 pins 9 to 12

GROUP	C µF	L mH	OR	L/R Ratio µH/ohm
IIC	13.5	188		1352
IIB	240	733		1833
IIA	1000	1000		1833

Notes:

1) The above load parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

2) The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) is ≥ 1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB & IIA and 600nF for Group IIC.

The values of L_o and C_o determined by this method shall not be exceeded by the sum of all the L_i plus cable inductances in the circuit and the sum of all of the C_i plus cable capacitances respectively.

4. Common Sequence Card - Output parameters - Connector J1 pins 5, 6, 7, 8 and 12:-

U_o = 7.2V

I_o = 9.5mA

P_o = 17.1mW

Cable Parameters.

The Capacitance and either the Inductance or the Inductance to Resistance (L/R) ratio of the cables connected to the combined output terminals of the isolator should not exceed the following values:-

Common Sequence Card - Output parameters - Connector J1 pins 5, 6, 7, 8 and 12

GROUP	C µF	L mH	OR	L/R Ratio µH/ohm
IIC	13.5	390		1319
IIB	240	1000		1319
IIA	1000	1000		1319

Notes:

1) The above load parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

2) The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) is ≥ 1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB & IIA and 600nF for Group IIC.

The values of L_o and C_o determined by this method shall not be exceeded by the sum of all the L_i plus cable inductances in the circuit and the sum of all of the C_i plus cable capacitances respectively.

5. Each Alarm Card - Output parameters, per card - Connector J1 pins 1 to 12:-

U_o = 7.2V

I_o = 32.2mA

P_o = 58mW

Cable Parameters.

The Capacitance and either the Inductance or the Inductance to Resistance (L/R) ratio of the cables connected to the combined output terminals of the isolator should not exceed the following values:-

Each Alarm Card - Output parameters, per card - Connector J1 pins 1 to 12

GROUP	C µF	L mH	OR	L/R Ratio µH/ohm
IIC	13.5	33.94		570
IIB	240	124.7		2178
IIA	1000	258.2		4041

Notes:

1) The above load parameters apply when one of the two conditions below is given:
   - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
   - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

2) The above parameters are reduced to 50% when both of the two conditions below are given:
   - the total L_i of the external circuit (excluding the cable) is ≥ 1% of the L_o value and
   - the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

   The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB & IIA and 600nF for Group IIC.

The values of L_o and C_o determined by this method shall not be exceeded by the sum of all the L_i plus cable inductances in the circuit and the sum of all of the C_i plus cable capacitances respectively.

16 Report Number

None

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product:

Clause	Subject	Compliance
1.4.1	External effects	The Purchaser should make the manufacturer aware of such issues.
1.4.2	Aggressive substances, etc.	The Purchaser should make the manufacturer aware of such issues.

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
CE3826		4	12.17	General Assembly for 12 Way LN1000 I.S. Annunciator
CE3827		4	12.17	General Assembly for 32 Way LN1000 I.S. Annunciator
CE3828	1	4	09.16	LN1000 Certification Label
GA10999	1	1	12.17	General Assembly for 8 Way LN1000 I.S. Annunciator

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CE3814		-	16/6/1997	Alarm Card Parts List
CE3815		2	25 OCT 05	Sequence Card Parts List
CE3816		-	12/6/1997	12 Way Backplane Circuit Diagram
CE3817		-	12/6/1997	16Way Backplane Circuit Diagram
CE3818		-	12/6/1997	Alarm Card Circuit Diagram
CE3819		2	25 OCT 05	Sequence Card Circuit Diagram
CE3820		-	12/6/1997	12 Way Backplane PCB Track & Component Layout
CE3821		-	12/6/1997	16Way Backplane PCB Track & Component Layout

Number	Sheet	Issue	Date	Description
CE3822		-	12/6/1997	Alarm Card PCB Track Layout
CE3823		2	25 OCT 05	Sequence Card PCB Track Layout
CE3824		-	24/6/1997	Alarm Card PCB Component Layout
CE3825		2	25 OCT 05	Sequence Card Component Layout

20 Certificate History

Certificate No.	Date	Comments
Baseefa02ATEX0184	10 February 2003	The release of the prime certificate. The associated test and assessment against the requirements of EN50014: 1997 + A1 & A2, EN50020: 2002 and EN50284: 1999 is documented in Test Report No. 02(C)0149. The certificate was originally issued to RTK Instruments Limited.
Baseefa02ATEX0184/1	25 September 2003	To permit the use of alternative anti-static coatings. Report 02(C)0415.
Baseefa02ATEX0184/2	03 November 2005	To permit minor changes to the certified drawings which do not affect the original safety assessment. The certification code and the output parameters are not affected. Project reference: 05/0712
Baseefa02ATEX0184/3	15 March 2012	To confirm that the LN1000 IS Alarm Annunciator meets the requirements of EN60079-0:2009 and EN60079-11:2012 for the more restrictive Gas Group IIB and may be marked with the certification code:- ⟨Ex⟩ II 1G Ex ia IIB T4 Ga (-20°C ≤ Ta ≤ +60°C) The outputs for external switches and the sounder can retain the ability to be mounted in Gas Group IIC. Report 09(C)0951.
Baseefa02ATEX0184/4	02 November 2012	To confirm that the 12 and 32 way LN1000 IS Alarm Annunciators meets the requirements of EN60079-0:2012 and EN60079-11:2012 for Group IIB. To permit the introduction of an 8 Way, 4 Alarm Card, LN1000 IS Alarm Annunciator which may be marked with the certification code:- ⟨Ex⟩ II 1G Ex ia IIC T4 Ga (-20°C ≤ Ta ≤ +60°C) Report 12(C)0741 The certificate was transferred from RTK instruments to Measurement Technology Limited.
Baseefa02ATEX0184 Issue 5	17 January 2018	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current designs of the LN1000 IS Alarm Annunciator meet the requirements of EN 60079-0: 2012 + A11: 2013. This issue of the certificate also permits a change of company name from 'Measurement Technology Limited' to 'Eaton Electric Limited', and other minor drawing changes not affecting the original assessment. As a result of the drawing changes, Drawing No. LA10991 was made obsolete. Project number 16/0371.
For drawings applicable to each issue, see original of that issue.		