[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: **UL 23 ATEX 3085X Rev. 2**

[4] Product: **XR Series of Encoders and XRB Series of Isolators**

[5] Manufacturer: **Nidec Conversion**

[6] Address: **243 Tuxedo Ave., Brooklyn Heights, OH 44131 USA**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the 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 the confidential report no. **US/UL/ExTR23.0083/02.**

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

EN IEC 60079-0:2018 **EN IEC 60079-0:2018/A11:2024** **EN 60079-11:2012**

Where additional criteria beyond those given here have been used, they are listed at item 18 in 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" listed under item 17 of this certificate.

[11] This EU-Type Examination Certificate relates only to the technical design of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by the certificate.

[12] The marking of the product shall include the following (marking is provided in the Schedule as a part of item 15, if applicable):

Isolators marking strings:

II (2) GD **[Ex ia Gb] IIC**
[Ex ia Db] IIIC

Encoder marking strings:

II 2 GD **Ex ia IIC T4 Gb**
Ex ia IIIC T200°C Db

Certification Manager
Thomas Wilson

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2024-05-23
Re-issued: 2025-10-16

Notified Body UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
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[13] [14]

Schedule
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[15] Description of Product

The Encoder System comprises an intrinsically safe Isolator in safe area and an encoder head mounted in on the shaft of a motor in hazardous area. The two items can only be used as a 'system', but the encoder heads can also be used in a zone 2 (EPL Gc) area without the isolator.

Isolator Overview:

Isolator XRB2 & XRB3:	[Ex ia Gb] IIC [Ex ia Db] IIIC	 II (2) GD

The isolator uses an intrinsically safe barrier consisting of a fuse, crowbar circuit, a resistor, and a Zener clamp. The return is via protected opto-coupler. The unit is potted into a standard terminal enclosure with an added 'is' earth point between the terminal connections (50mm between input/output with i.s. earth terminal in center).

Encoder Overview:

Encoder Overview Encoders XR series:	Ex ia IIC T4 Gb Ex ia IIIC T200°C Db	 II 2 GD

The encoders are made from a selection of five simple board combinations depending on the application. The boards in combination are effectively simple apparatus as the capacitance and inductance under mass fault are less than the permitted isolator value. In addition, the boards are potted into a solid block and mounted in metal cases (offering ingress protection IP54).

Encoder models covered are:

XR4F	XR56A	XR485
XR5	XR67A	XR685
XR12	XR85A	XR850
XR45	XR115	XR56S
XR47	XR125	XR97

Temperature range:
The relation between ambient temperature and the assigned temperature class is as follows:

Models	**Ambient temperature range**	**Temperature class**
All Encoders and isolators except XR485N and XR685N:	-40°C to +80°C	T4 T200°C
Encoders XR485N or XR685N:	-20°C to +80°C	T4 T200°C

Electrical data
Intrinsically safe specifications:
U_m : 30 V

Transmitter:
U_o : 7.14 V
I_o : 420mA
P_o : 1.40 W
L_o : 0.15 mH
C_o : 13.50 uF

Receiver:
U_o : 7.14 V
I_o : 420 mA
P_o : 1.40 W
L_o : 0.0 uH
C_o : 11.90 uF

Routine tests
None

[16] Descriptive Documents

The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this EU-Type Examination Certificate.

[17] Specific conditions of use:

Encoders:
When the encoder is marked as "ia Gb", it must only be used with the corresponding isolators listed in this certificate. The isolators, encoders and cable must be selected and installed in accordance with EN 60079-14 and EN 60079-25.
The equipment should be mounted to avoid electrostatic charging.

[13] **Schedule**

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Isolators:
The isolator must be installed inside of an enclosure with an appropriate mechanical strength and minimum degree of protection, IP20 for indoor locations and IP54 for outdoor locations or indoor wet locations.

For installations in which both the Ci and Li of the connected apparatus exceeds 1% of the Co and Lo parameters (excluding the cable), then 50% of Co and Lo parameters are applicable and shall not be exceeded.

Also provided with previously certified [operators/cable glands/terminal box] as specified in the test reports.

[18] Essential Health and Safety Requirements
The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.

Additional information
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The trademark AVTRON ENCODERS will be used as the company identifier on the marking label.

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.

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