

EU-TYPE EXAMINATION CERTIFICATE



- [1]
- [2] **Product intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU**
- [3] EU-Type Examination Certificate Number: **DEMKO 06 ATEX 0614247X Rev. 4**
- [4] Product: **Optical Encoders, H20, HS20, H25, HS25, HS35, and HS45**
- [5] Manufacturer: **BEI Sensors, Industrial Encoders Division**
- [6] Address: **1461 Lawrence Drive, Thousand Oaks, CA 91320 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 Council Directive 2014/34/EU of 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to 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. **4787497856-06ATEX0614247X**
- [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 EN 60079-26:2007
- [10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to special conditions for safe 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 the certificate.
- [12] The marking of the product shall include the following:

II 1 G Ex ia IIB/IIC T4 Ga

Certification Manager
Jan-Erik Storgaard

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 equipment. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all equipment 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: 2006-10-09

Re-issued: 2016-09-30

Notified Body

UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
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Schedule
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[15] Description of Product
 Models H20, HS20, H25, HS25, HS35, and HS45 optical encoders are powered by associated apparatus. Typical applications of an encoder includes measuring distance travelled for a cut to length operation, measuring the position of a work table through a screw ball, determining relative position, direction and speed of travel in a bi-directional conveyor belt and encoding the position and velocity of a rack and pinion. The encoder disc interrupts the light as the encoder shaft is rotated.

Model Nomenclature:
 This certificate covers the following models:

H20, HS20, H25, HS25, HS35 and HS45.

The nomenclatures for the models are as follows:

H20	X	X	X	X	X	X	EX	X
I	II	III	IV	V	VI	VII	VIII	IX

I - Basic model number: H20, HS20, H25, HS25, HS35 or HS45.

II - Housing type: D, E, F, CF, DB, DC, EB or EC.

- D - Square flange with mounting holes in each corner
- E - Round flange with a groove around the OD used with special clips (servo housing)
- F - Housing type for HS25, HS35 and HS45
- CF - Special H25 housing with a bolted adapter. Produces larger diameter mounting flange.
- DB and DC - Two square flange H20 housings with different pilot diameters.
- EB and EC - Two round or servo housings for H20 with different pilot diameters.

Bore size (Hollow shaft encoders): 25 to 200.

Shaft diameter (H20 and H25 encoders): 25, 37, 39.

Tether (Hollow shaft encoders): R1 to R99.

Face mount (H20, H25 encoder): F1 to F99.

Shaft Seal: SS, BS

III - Resolution – 1 to 80,000-T16

IV - Output channels : A, AB, ABZ, AZ, AC, ABC, AZC, ABZC

- A - Square wave output with the number of pulses equal to the encoder resolution
- B - Square wave output with phase shifted by 1/4 cycle
- Z - Marker pulse
- C - Complimentary outputs of each A, B and/or Z

V - Output type determines Group: 5V/V, 5V/OCR and 5V/OC are Group IIC. 9V/OC is Group IIB.

VI - Single or dual electronics*: SMXX or DMXX
 SMXX – Single termination where XX indicates connector size
 DMXX – Dual termination where XX indicates connector size

VII - Termination type

VIII - EX denotes intrinsically safe

IX - Special features

*NOTE: Dual Channel models cannot utilize the 9V/OC version circuit boards. All other combinations of circuit boards are allowed for the dual channel models.

The optical radiation output of the product with respect to explosion protection, according to Annex II clause 1.3.1 of the Directive 2014/34/EU is covered in this certificate based on Exception 1 to the scope of EN 60079-28:2015.

Temperature range
 The ambient temperature range of these devices is -40°C to +85°C.

Electrical data

Entity Parameters:
 See Control Drawing/Installation Instructions Document No. 08292-001.

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Routine tests

None.

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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.

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Specific conditions of use:

- The main enclosures of these encoders contain aluminum. The encoder shaft can be aluminum alloy for models HS20 and HS25. Care must be taken to avoid ignition hazards due to impact or friction.
- The encoders must be installed in accordance with Control Drawing No. 08292-001.
- To reduce the risk of ignition due to electrostatic discharge, the enclosures of the encoders must be connected to earth ground.
- To prevent excessive heating caused by friction of shaft seals and bearings of the product beyond the Temperature Code ratings, each model shall be operated within the constraints as shown below:

Model	Maximum RPM	Bearing Life (REVS)
H20	5,000	1.5 x 10 ⁹
HS20	4,000	7.5 x 10 ⁹
H25	5,000	10.0 x 10 ⁹ (AT 10% RATED LOAD)
HS25	4,000	7.5 x 10 ⁹
HS35	4,000	7.5 x 10 ⁹
HS45	4,000	5.0 x 10 ¹²

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Essential Health and Safety Requirements

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

Additional information

The encoders have in addition passed the tests for Ingress Protection to IP 65 in accordance with EN60529:1991+A1:2000+A2:2013.

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.