

# 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: **DEMKO 14 ATEX 1314X Rev. 5**
- [4] Product: **Electronically Operated Solenoid Coils, Types BZ Series**
- [5] Manufacturer: **Danfoss A/S**
- [6] Address: **Nordborgvej 81, 6430 Nordborg, Denmark**
- [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. **4789297399.1.1**
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN IEC 60079-0:2018                      EN 60079-18:2015 + A1:2017**
- [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 2 G      Ex mb IIC T4 Gb**

**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 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:** 2014-09-10

**Re-issued:** 2020-01-22



**Notified Body**

UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark  
Tel. +45 44 85 65 65, [info.dk@ul.com](mailto:info.dk@ul.com), [www.ul.com](http://www.ul.com)

[13]

[14]

**Schedule**  
**EU-TYPE EXAMINATION CERTIFICATE No.**  
**DEMKO 14 ATEX 1314X Rev. 5**

[15]

Description of Product

These are solenoid coils for use with Danfoss 'B-series' valves. They are intended for permanent installation and are supplied with a permanently attached cable. They are intended for use with 13.5 mm armature direct/servo driven valve types (for example EV . . . B).

The coils consist of a copper wire winding mounted on a plastic coil former over a thermal cut-out, which is intended to remove power to the winding in the event of the limit temperature being reached internally. The winding ends are connected to internally mounted contacts. The external cable is soldered to the internal contacts and the entire sub-assembly is then encapsulated using an injection moulding process. A metallic housing is then fitted around the encapsulated part of the coil, covering substantially all of the encapsulating compound, and earthed using a connection to the external cable. The coils are marked by printing the necessary information directly onto the metallic outer housing. The coils are intended to have an external protective fuse which provides additional limitation of the current available from the supply to ensure the rating of the thermal cut-out is not exceeded.

Types included and including electrical ratings:

**Solenoid Coil**

Type 018F4703

Type 018F4704

Type 018F4705

**Rating**

110 Vac (-10 - + 6 %) 50 Hz 0.14 A / 120 Vac (-10 - + 6 %) 60 Hz 0.13 A

230 Vac (-10 - + 6 %) 50 Hz 0.09 A / 240 Vac (-10 - + 6 %) 60 Hz 0.08 A

24 Vdc (-10 - + 5 %), 0.43 A

Temperature range

The ambient temperature range is:

-40 °C to +45 °C

The permitted process medium temperature range is:

-40 °C to +70 °C

Routine tests

Each product shall be subjected to a visual inspection according to EN 60079-18 clause 9.1. No damage shall be evident, such as cracks in the compound, exposure of encapsulated parts, flaking, shrinkage, swelling, decomposition, failure of adhesion or softening.

Each product shall be subjected to a dielectric strength test according EN 60079-18 clause 9.2 between external supply connections and earth/case at 1500 Vrms for 1 s minimum, with no breakdown

[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:

- An external protective fuse is required to protect the coils as follows:  
018F4703: 250 mA, 1500 A breaking capacity, 250 V, Medium Time Lag  
018F4704: 150 mA, 1500 A breaking capacity, 250 V, Medium Time Lag  
018F4705: 500 mA, 1500 A breaking capacity, 24 V, Medium Time Lag
- The power supplying the solenoid must be limited to a prospective short circuit current of a maximum of 1500 A.
- The solenoid coil shall be protected against impact during use.
- The product is provided with a Y/G coloured earth wire as well as an external earth terminal. These shall not be used simultaneously. If the external earth connection is connected to earth or bonding system, the Y/G earth wire must be cut off, isolated and not connected. If the Y/G wire is connected to earth, the external earth terminal must be left without any connection.
- The solenoid shall be protected against direct sunlight and other ultraviolet sources.
- The cable supplied with the solenoids must not be handled or flexed and protected against impact if the ambient temperature is below 0 °C.

[18]

Essential Health and Safety Requirements

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

Additional information



The trademark 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.



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEx ULD 14.0001X**

Page 1 of 4

Certificate history:

Status: **Current**

Issue No: 5

Issue 4 (2019-11-13)

Issue 3 (2018-02-20)

Issue 2 (2016-07-25)

Issue 1 (2015-07-30)

Issue 0 (2014-09-10)

Date of Issue: 2020-01-22

Applicant: **Danfoss A/S**  
Nordborgvej 81  
6430 Nordborg  
Denmark

Equipment: **Electrically Operated Solenoid Coils, BZ Series**

Optional accessory:

Type of Protection: **Encapsulation "mb"**

Marking: Ex mb IIC T4 Gb  
-40°C ≤ Tamb ≤ +45°C  
(process medium -40°C to +70°C )

Approved for issue on behalf of the IECEx  
Certification Body:

**Lucy Frieders**

Position:

**Staff Engineer**

Signature:  
(for printed version)

Date:

2020-01-22

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting [www.iecex.com](http://www.iecex.com) or use of this QR Code.



Certificate issued by:

**UL International DEMKO A/S**  
Borupvang 5A  
DK-2750 Ballerup  
Denmark





# IECEx Certificate of Conformity

Certificate No.: **IECEx ULD 14.0001X**

Page 2 of 4

Date of issue: 2020-01-22

Issue No: 5

Manufacturer: **Danfoss A/S**  
Nordborgvej 81  
6430 Nordborg  
**Denmark**

Additional manufacturing locations: **Danfoss Ltd**  
No.9 Quanhui Road  
Wuqing Development Area  
301700 Tianjin  
**China**

**Danfoss A/S**  
Albuen 29  
6000 Kolding  
**Denmark**

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

## STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

**IEC 60079-0:2017** Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

**IEC 60079-18:2017** Explosive atmospheres - Part 18: Protection by encapsulation "m"  
Edition:4.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

## TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

### Test Reports:

[DK/ULD/ExTR14.0001/00](#)  
[DK/ULD/ExTR14.0001/03](#)

[DK/ULD/ExTR14.0001/01](#)  
[DK/ULD/ExTR14.0001/04](#)

[DK/ULD/ExTR14.0001/02](#)  
[DK/ULD/ExTR14.0001/05](#)

### Quality Assessment Report:

[DK/ULD/QAR12.0002/06](#)



# IECEx Certificate of Conformity

Certificate No.: **IECEx ULD 14.0001X**

Page 3 of 4

Date of issue: 2020-01-22

Issue No: 5

## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

These are solenoid coils for use with Danfoss 'B-series' valves. They are intended for permanent installation and are supplied with a permanently attached cable. They are intended for use with 13.5 mm armature direct/servo driven valve types (for example EV . . . B).

The coils consist of a copper wire winding mounted on a plastic coil former over a thermal cut-out, which is intended to remove power to the winding in the event of the limit temperature being reached internally. The winding ends are connected to internally mounted contacts. The external cable is soldered to the internal contacts and the entire sub-assembly is then encapsulated using an injection moulding process. A metallic housing is then fitted around the encapsulated part of the coil, covering substantially all of the encapsulating compound, and earthed using a connection to the external cable. The coils are marked by printing the necessary information directly onto the metallic outer housing. The coils are intended to have an external protective fuse which provides additional limitation of the current available from the supply to ensure the rating of the thermal cut-out is not exceeded.

**Please see Annex for additional information.**

## **SPECIFIC CONDITIONS OF USE: YES as shown below:**

- An external protective fuse is required to protect the coils as follows:
  - 018F4703: 250 mA, 1500 A breaking capacity, 250 V, Medium Time Lag
  - 018F4704: 150 mA, 1500 A breaking capacity, 250 V, Medium Time Lag
  - 018F4705: 500 mA, 1500 A breaking capacity, 24 V, Medium Time Lag
- The power supplying the solenoid must be limited to a prospective short circuit current of a maximum of 1500 A.
- The solenoid coil shall be protected against impact during use.
- The product is provided with a Y/G coloured earth wire as well as an external earth terminal. These shall not be used simultaneously. If the external earth connection is connected to earth or bonding system, the Y/G earth wire must be cut off, isolated and not connected. If the Y/G wire is connected to earth, the external earth terminal must be left without any connection.
- The solenoid shall be protected against direct sunlight and other ultraviolet sources.
- The cable supplied with the solenoids must not be handled or flexed and protected against impact if the ambient temperature is below 0 °C.





# IECEx Certificate of Conformity

Certificate No.: **IECEx ULD 14.0001X**

Page 4 of 4

Date of issue: 2020-01-22

Issue No: 5

## **DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

Issue 1: Minor changes to 2 drawings - not affecting the previous evaluation.

Issue 2: Editorial changes to instructions - no impact to the previous assessment.

Issue 3: Update to IEC 60079-18 Edition 4.

Issue 4: Update to IEC 60079-0, 7<sup>th</sup> Edition. Addition of alternative thermal cutout.

Issue 5: Update to IEC 60079-18 Edition 4.1.

## **Annex:**

[Annex to IECEx ULD 14.0001X Issue 5.pdf](#)



# IECEx Certificate of Conformity

Certificate No.: IECEx ULD 14.0001X

Issue No.: 5

Page 1 of 2

## PARAMETERS RELATING TO THE SAFETY

018F4703: 110 / 120 Vac, 50/60 Hz, 0.14 / 0.13 A

018F4704: 230 / 240 Vac, 50/60 Hz, 0.09/ 0.08 A

018F4705: 24 Vdc, 0.43 A

## MARKING

Marking has to be readable and indelible; it has to include the following indications:

### MARKING left side

CE 0539 Ex II 2G  
Ex mb IIC T4 Gb  
DEMKO 14 ATEX 1314X  
IECEx ULD 14.0001X

*Danfoss*

DK-6430 Denmark  
MADE IN DENMARK

*Danfoss*

DK-6430 Denmark  
MADE IN CHINA

### MARKING right side

Warnings  
Do not separate coil from  
the valve when energized  
See instruction

Coil type 018F4703  
-40°C ≤ Tamb ≤ +45°C IP65  
110V 50Hz 0,14A  
120V 60Hz 0,13A

Coil type 018F4704  
-40°C ≤ Tamb ≤ +45°C IP65  
230V 50Hz 0,09A  
240V 60Hz 0,08A

Coil type 018F4705  
-40°C ≤ Tamb ≤ +45°C IP65  
24Vdc 0,43A



# IECEx Certificate of Conformity

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Certificate No.: IECEx ULD 14.0001X

Issue No.: 5

Page 2 of 2

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## ROUTINE EXAMINATIONS AND TESTS

Each piece of equipment defined above has to have successfully passed; before delivery:

Each product shall be subjected to a visual inspection according to IEC 60079-18 clause 9.1. No damage shall be evident, such as cracks in the compound, exposure of encapsulated parts, flaking, shrinkage, swelling, decomposition, failure of adhesion or softening.

Each product shall be subjected to a dielectric strength test according IEC 60079-18 clause 9.2 between external supply connections and earth/case, at 1500 Vrms for 1 s minimum, with no breakdown.