

[1]

EC-TYPE EXAMINATION CERTIFICATE



[2]

**Equipment or Protective System intended for use
in Potentially Explosive Atmospheres
Directive 94/9/EC**

[3]

EC-Type Examination Certificate Number: **DEMKO 14 ATEX 1314X Rev. 1**

[4]

Equipment or Protective System: **Solenoid Coil, Types 018F470x**

[5]

Manufacturer: **Danfoss A/S**

[6]

Address: **Nordborgvej 81, 6430 Nordborg, Denmark**

[7]

This equipment or protective system 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 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to design and construction of equipment and protective systems 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. **4786985486**

[9]

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

EN 60079-0:2012 + A11:2013

EN 60079-18:2009

[10]

If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11]

This EC-Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system.

These are not covered by the certificate.

[12]

The marking of the equipment or protective system shall include the following:

Ex II 2 G Ex mb IIC T4 Gb

Certification Manager

Jan-Erik Storgaard

Notified Body

This is to certify that the sample(s) of the Equipment described herein ("Certified Equipment") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Equipment Certification Program Requirements. This certificate and test results obtained apply only to the equipment 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 equipment. 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: 2014-09-10

Re-issued: 2015-07-30



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[13]

[14]

Schedule
EC-TYPE EXAMINATION CERTIFICATE No.
DEMKO 14 ATEX 1314X Rev. 1
Report: 4786985486

[15]

Description of Equipment or protective system

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	110 Vac (-10 - + 6 %) 50 Hz 0.14 A / 120 Vac (-10 - + 6 %) 60 Hz 0.13 A
	Type 018F4704	230 Vac(-10 - + 6 %) 50 Hz 0.09 A / 240 Vac (-10 - + 6 %) 60 Hz 0.08 A
	Type 018F4705	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

Installation instructions

Refer to 018R9667.

Mounting instructions

Refer to "Instructions".

Routine tests

- Each product shall be subjected to a visual inspection according to EN60079-18 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 EN60079-18 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 EC-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

Concerning ESRs this Schedule verifies compliance with the Annex III of ATEX directive only. By placing the product on the market, the manufacturer declares compliance with other relevant Directives, and all other safety related requirements including those of Annex II of this Directive.



Additional information

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in ANNEX III to Directive 94/9/EC of the European Parliament and the Council of 23 March 1994.



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx ULD 14.0001X Issue No: 1 Certificate history:
Status: **Current** Page 1 of 5 [Issue No. 1 \(2015-07-30\)](#)
Date of Issue: **2015-07-30** [Issue No. 0 \(2014-09-10\)](#)
Applicant: **Danfoss A/S**
Nordborgvej 81
6430 Nordborg
Denmark
Electrical Apparatus: **018F470x Solenoid Valve Coils**
Optional accessory:
Type of Protection: **Encapsulation "mb"**
Marking:
Ex mb IIC T4 Gb
-40 °C to +45 °C

*Approved for issue on behalf of the IECEx
Certification Body:*

Jasmin Omerovic

Position:

Program Manager

*Signature:
(for printed version)*

Date:

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 the [Official IECEx Website](#).

Certificate issued by:

UL International Demko A/S
Borupvang 5A,
DK-2750 Ballerup
Denmark





IECEX Certificate of Conformity

Certificate No: IECEx ULD 14.0001X

Issue No: 1

Date of Issue: 2015-07-30

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

Additional Manufacturing
location(s):

Danfoss Ltd
No.9 Quanhui Road,
Wuqing Development Area
301700 Tianjin
China

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 electrical apparatus 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 : 2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0

IEC 60079-18 : 2009 Explosive atmospheres Part 18: Equipment protection by encapsulation "m"
Edition:3

*This Certificate **does not** indicate compliance with electrical 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 Report:

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

Quality Assessment Report:

[DK/ULD/QAR12.0002/02](#)



IECEx Certificate of Conformity

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Schedule

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.

Model numbers:

018F4703 (110 Vac 50 Hz /120 Vac 60 Hz)

018F4704 (230 Vac 50 Hz / 240 Vac 60 Hz)

018F4705 (24 Vdc)

Temperature range:

Coil: -40 to +45 °C

Process Medium: -40 to +70 °C

CONDITIONS OF CERTIFICATION: 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.



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The cable supplied with the solenoids must not be handled or flexed and protected against impact if the ambient temperature is below 0 °C.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

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