

IEC EXPLOSION-PROOF SOLENOID VALVES



Kaneko IIC explosion-proof solenoid valves

Our explosion-proof solenoid valves with a pressure-resistant structure have been certified for gas and/or dust explosion(s), meeting the requirements for use in zone 1 (gas) and/or zone 2 (dust) explosion hazard zone(s). For example, our explosion-proof solenoid valves can be used in any gaseous atmosphere, if applicable, including hydrogen and acetylene. Our valves have been accredited for ATEX, TIIS, NEPSI, KCs and COST standards. New additions to our product series feature lower-power-consumption coils (power consumption down approximately 50% compared with our previous coils) and/or stainless steel pressure-resistant casing for higher salt-resistant performance.





M20
series

M00U
series

M15G
series

MK15G
series

MT16G
series

MB15G
series

M55
series

M65G
series

C81
series

M15WG
series

M65WG
series

2-way

3-way

4-way

Namur mount

Low power consumption

Double solenoid

All stainless steel

Low temperature-resistant

SIL

All-stainless-steel versions available!

We can offer valves made of stainless steel that still meet the ATEX/IEC Ex standards*.

Stainless steel versions provide much higher salinity tolerance than the conventional combination of aluminum and salinity-resistant coating.

* Stainless steel is used for exposed areas while non-exposed areas are made of aluminum.



[Series available in stainless steel]

3-way: M00U

4-way: M15G, MK15G

Double solenoid: M15WG

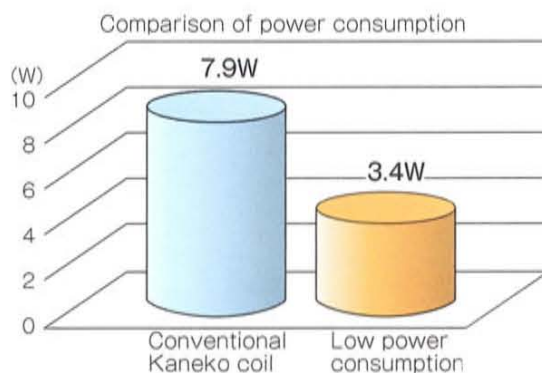
* As of July 2012. For more information, please contact us.

Low power consumption!

The new coils consume only about half the power consumed by our conventional coils.

Overcoming dusty environments!

Our valves meet the relevant dust-explosion-proof standards, including for the electrically conductive environment of Type 1 explosion hazard zone (zone 21), and still meet the ATEX/IEC Ex standards. Our all-stainless-steel versions also are dust-explosion-proof.



* DC24V coils were tested for comparison.

Low temperature resistance up to -40°C!

Thanks to the new sealing (packing), our valves offer low ambient temperature resistance of up to -40°C (up to -30°C depending on types of relevant certification).

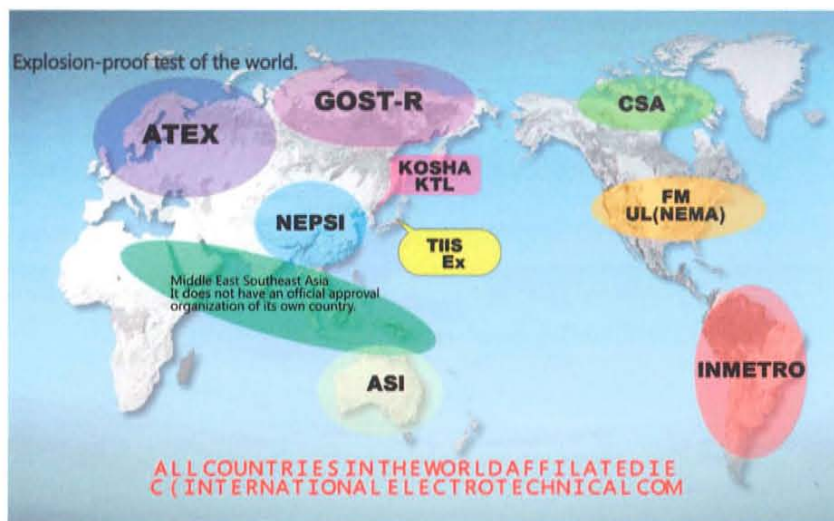
Safe instrumentation! (accredited for IEC61508 and JISCO508) (M00U, M15G)

Our individual solenoid valves are rated at up to SIL3 (applicable to aluminum versions). For stainless steel type IIC explosion-proof electromagnetic valves, we are planning to obtain certification for the safe instrumentation system shortly.



Explosion proof certification systems around the world

Different countries and regions have different certification standards. Our solenoid valves have been certified by accreditation organizations and can be used in Europe, including Russia, and in Asia.



Standards	Member countries	Certification ID	Solenoid ID (Examples)
ATEX	Europe & Asia	KEMA 10ATEX0033X	E22P1 (0.A.L) , E22P3 (0.A.L)
IEC Ex	World	IEC Ex KEM 10.0035X	E22P1 (0.A.L) , E22P3 (0.A.L)
NEPSI	China	GYJ101127	E22P1 (0.A.L) , E22P3 (0.A.L)
KCS (KTL)	Korea	12-KB4BO-0175	E22P10,E22P30
		12-KB4BO-0193	E22P1LE22P3L
		12-KB4BO-0194	E22P1A,E22P3A
TIIS	Japan	TC20159	E22P0A-SA
GOST-R	Russia	POCC JP.A Я 45.B05970	E22P00,E22P0L



ATEX※



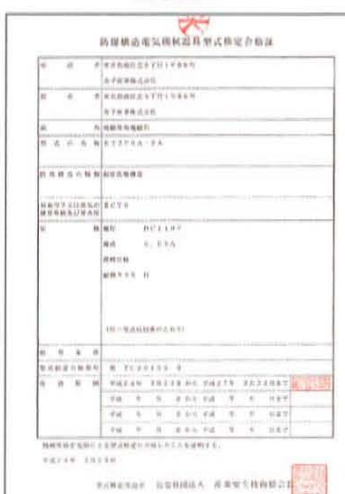
IECEX※



NEPSI



KCs



TIIS



GOST-R

※Please see the details at the end of the catalog

Solenoid coding system

The coding system for the IIC explosion-proof solenoid E22P is as follows.

E 2 2 P 0 A - S A

① ② ③

① Material for pressure-resistant casing

- 0 : Base unit A356.0 / gas-explosion-proof
- 1 : Base unit A356.0 / gas-explosion-proof & low temperature-resistant
- 3 : Base unit 316SS / gas-explosion-proof & low temperature-resistant
- 4 : Base unit A356.0 / gas- and dust-explosion-proof
- 5 : Base unit 316SS / gas- and dust-explosion-proof

② Coil type

- L : Low power consumption coil
- A : Rectifier coil
- 0 : Conventional coil

③ Pressure-resistant packing

- No code : Not available
- SA : SUS304 + aluminum
(Only Japan (TIIS))

【Standard specifications】

Permissible voltage regulation: +10% , -15%

* +/-10% for low power consumption versions

Type of insulation : H

* Limitations applied depending on explosion proof certification types.

Terminal box conduit connection : G1/2, M20 x 1.5, NPT1/2

Ambient temperature : With conventional coils

T4 -20/-40 ≤ Ta ≤ +60℃

: With low power consumption / rectifier coils

T6 -20/-40 ≤ Ta ≤ +40℃

T5 -20/-40 ≤ Ta ≤ +60℃

Note : The temperature of -40℃ only applies to low temperature-resistant coils.

E22Psolenoid types

The E22P solenoid can be used with a range of valves.

【M00U series】

The M00U series solenoid valves are 3-way direct operated solenoid valves and are primarily used for actuating single-acting cylinders. The M00U series has a wide range of applications including open and closed on energization.

M 0 0 U - 8 - E 2 2 P 0 A - 0 1 - D L - B

① ※ ② ③ ④

※ Please refer to the descriptions above about the coding system for the E22P solenoid.

① Aperture

- 6 : Rc 1/8
- 8 : Rc 1/4
- 10 : Rc 3/8
- 6N : NPT 1/8
- 8N : NPT 1/4
- 10N : NPT 3/8

② Orifice size (mm)

- No code : φ 1.6
- 01 : φ 3.0

③ Extra feature 1

- No : Not available
 - DL : Low temperature-resistant
- NOTE : The Japan (TIIS) certification does not offer low temperature resistance.

④ Extra feature 2

- No code : Aluminum body
- B : Body 304SS
- C : Body 316SS

<Standard specifications>

Fluid: Clean air (without moisture or other impurities)

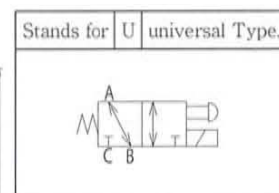
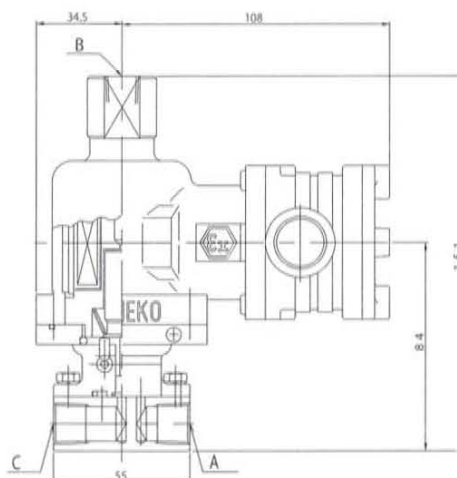
Connector aperture: 6A (1.8"), 8A (1/4"), 10A (3/8")

Air pressure: 0 - 0.7 MPa: Orifice size φ 1.6 mm

0 - 0.4MPa: Orifice size φ 3.0 mm

Response time: 0.1 sec

Cv value: 0.084 (φ 1.6)~0.22 (φ 3.0)



【M15G series】

The M15G series solenoid valves are 4-way pilot solenoid valves and are primarily used for actuating double-acting cylinders.

M15G-8-E22P 0 A-DL-B

①

※

②

③

※ Please refer to the descriptions above about the coding system for the E22P solenoid.

① Aperture

8 : Rc 1/4

10 : Rc 3/8

8N : NPT 1/4

10N : NPT 3/8

② Extra feature 1

No : Not available

DL : Low temperature-resistant

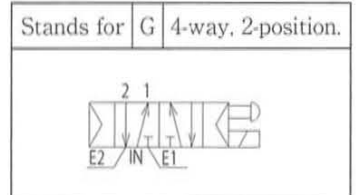
NOTE : The Japan (TIIS) certification does not offer low temperature resistance.

③ Extra feature 2

No code : Aluminum body

B : Body 304SS

C : Body 316SS



<Standard specifications>

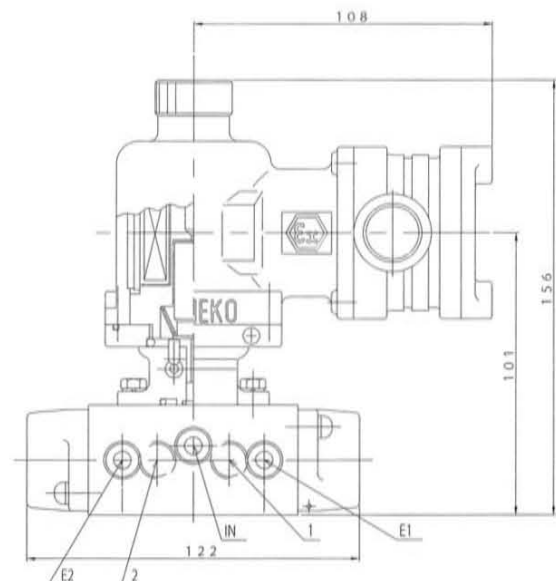
Fluid: Clean air (without moisture or other impurities)

Connector aperture: 8A (1/4"), 10A (3/8")

Air pressure: 0.1- 0.99MPa

Response time: 0.05 - 0.2 sec

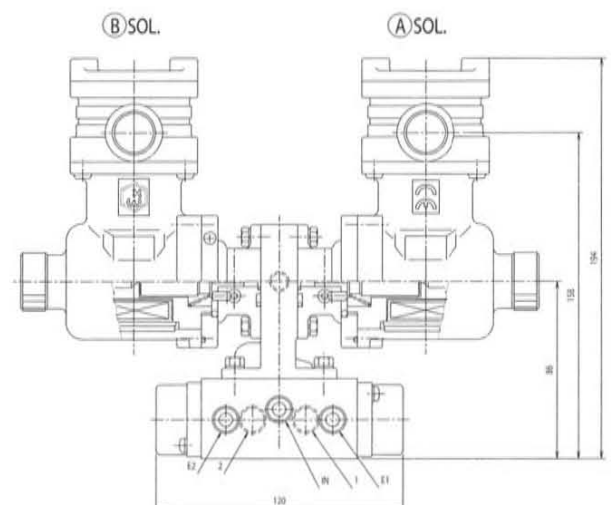
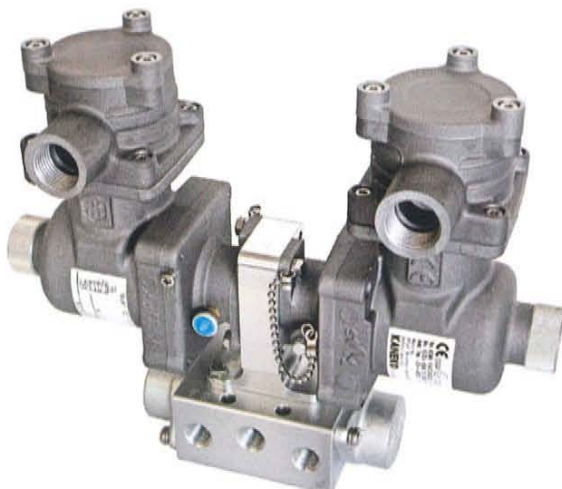
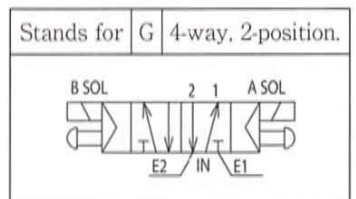
Cv value: 0.87 (φ 6)



【M15WG series】

M15WG series electromagnetic valves incorporate two solenoids to maintain their positions even after demagnetization.

*The other M15WG specifications are the same as those for the M15G series. For more information, see the M15 series specifications.



【MK15G series】

MK15G series electromagnetic valves are four-way pilot valves and are primarily used for driving double-acting cylinders.

MK15G-8-E22P 0 A-DMI

①

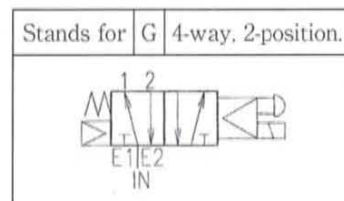
※

① Aperture

8 : Rc1/4

8N : NPT1/4

※ Please refer to the descriptions above about the coding system for the E22P solenoid.



<Standard specifications>

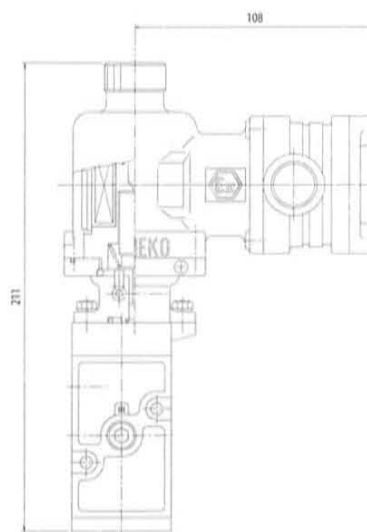
Fluid: Clean air (without moisture or other impurities)

Connector aperture: 8A (1/4")

Air pressure: 0.12 ~ 0.99 MPa

Response time: 0.2 sec

Cv value: 0.9



【その他】

【M20 series】

M20 series electromagnetic valves are two-way pilot valves.

Fluid: Water, Air

Connector aperture: 15A ~ 25A

Air pressure: 0.049 ~ 0.883 MPa

Fluid pressure: 0.049 ~ 1.57 MPa

Cv value: 15A : 4.5

20A : 8.6

25A : 12.6



【M55 series】

M55 series electromagnetic valves are 3-way pilot valves.

Fluid: Instrumentation Air

Connector aperture: 10A ~ 32A

Air pressure: 0.12 ~ 0.99 MPa

Cv value: 8A : 1.22

10A : 3.2

15A : 4.3

20A : 5.18

25A : 14.5

32A : 17.3



【MT16G series】

MT16G series electromagnetic valves are four-way pilot valves and are primarily used for driving double-acting cylinders.

MT16G-8-E22P 0 A-DL-B
① ※ ② ③

※ Please refer to the descriptions above about the coding system for the E22P solenoid.

① Aperture

8 : Rc 1/4
8N : NPT 1/4

② Extra feature 1

No : Not available

DL : Low temperature-resistant

NOTE : The Japan (TIIS) certification does not offer low temperature resistance.

③ Extra feature 2

No code : Aluminum body

B : Body 304SS

C : Body 316SS

Stands for	G	4-way, 2-position.

<Standard specifications>

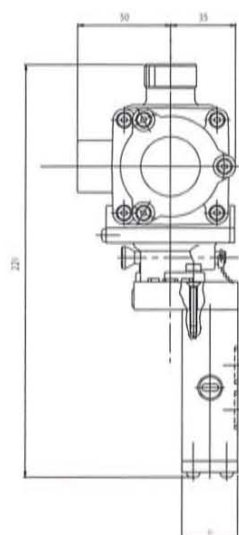
Fluid: Clean air (without moisture or other impurities)

Connector aperture: 8A (1/4")

Air pressure: 0.15 ~ 0.99 MPa (DL : 0.3 ~ 0.99MPa)

Response time: 0.2 sec

Cv value: 0.81



【MB15G series】

MB15 series electromagnetic valves are 4-way spool valves.

Fluid: Instrumentation Air

Connector aperture: 8A, 10A

Air pressure: 0.15 ~ 0.99MPa

Cv value: 0.5



【M65G series】

M65G series electromagnetic valves are 4-way pilot valves.

Fluid: Instrumentation Air

Connector aperture: 10A ~ 32A

Air pressure: 0.1 ~ 0.9 MPa

Cv value: 10A : 2.0

15A : 2.5

20A : 5.0

25A : 12

32A : 12

1000



[I E C E x]

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 KEM 10 0036X Issue No: 2
Status: Current
Date of issue: 2012-01-16 Page 1 of 4
Certificate history:
Issue No. 2 (2012-1-16)
Issue No. 1 (2010-6-17)
Issue No. 0 (2010-3-26)

Applicant: **Kaneko Sangyo Co., Ltd**
8-10-8 Shiba, Minato-ku
Tokyo 108-0014
Japan

Electrical Apparatus: **Solenoid Valve Operator, Type E22Pa0, Type E22PaL and Type E22PaA**
Optional accessory:

Type of Protection: **Ex d, Ex tb**

Marking: **Ex d IIC T6...T4 Db
Ex tb IIC T05 °C...T135 °C Db
Ta -20/-40 °C to +45/+95 °C**

Approved for issue on behalf of the IECEx Certification Body: **R.H.D. Penné**
Position: **Certification Manager**
Signature: *[Signature]*
Date: **2012-01-16**

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: **DEKRA Certification B.V.**
Utrechtseweg 310
6812 AP Arnhem
The Netherlands
All testing, inspection, training and certification activities of the former KEMA Quality are an integral part of the DEKRA Certification Group.

DEKRA

IECEx Certificate of Conformity

Certificate No.: IECEx KEM 10 0036X Issue No: 2
Date of issue: 2012-01-16 Page 2 of 4

Manufacturer: **Kaneko Sangyo Co., Ltd**
8-10-8 Shiba, Minato-ku
Tokyo 108-0014
Japan

Manufacturing location(s):
Kaneko Korea Co., Ltd.
202-207, Busan Techno-Park Sanggyong 3rd St-1, Ssanggyong-Dong, Oryong-Gu
Busan-Se, Gyonggi-Do
Korea, Republic of
Shanghai Kaneko Auto-Instrument Ltd.
No. 310 Xuyuan Road, Zongangyuan Area
Chongming Island
Shanghai 201421
China
Kaneko Sangyo Co., Ltd.
5-3-9 Higashiyama
Hiratsuka-City
Kanagawa 254-0216
Japan

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 set 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 CE and Operational Documents as amended.

STANDARDS:
The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the standard documents, was found to comply with the following standards:
IEC 60079-0 : 2007-10 Explosive atmospheres - Part 0 Equipment - General requirements
Edition 9
IEC 60079-1 : 2007-04 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition 6
IEC 60079-31 : 2008 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "T"
Edition 1

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:
NLKEM10TR10.0029001 NLKEM10TR10.0029001 NLKEM10TR10.0029002
Quality Assessment Report:
NLKEM10QAR11.0066003 NLKEM10QAR11.0066001 NLKEM10QAR10.0048001

IECEx Certificate of Conformity

Certificate No.: IECEx KEM 10 0036X
Date of issue: 2012-01-16 Issue No: 2
Page 3 of 4

Schedule

EQUIPMENT:
Equipment and systems covered by this certificate are as follows:
The Solenoid Valve Operator, Type E22Pa0, Type E22PaL and type E22PaA consists of an aluminium or stainless steel enclosure, a coil and a sleeve-plunger assembly.
For details, see Attachment 1.

CONDITIONS OF CERTIFICATION: YES as shown below:

- The Solenoid Valve Operator shall be installed in such a way that the risk from electrostatic discharges and propagating brush discharges caused by rapid flow of dust is avoided.
- The cover bolts are Class A2-50.
- The fumepaths are specified in drawing no. CM-3457Ex and are as follows:
L1: min. 16.5 mm (length) and max. 0.15 mm (gap)
L2: min. 10.8 mm (length) and max. 0.10 mm (gap)
L3: min. 20.8 mm (length) and max. 0.15 mm (gap)
L4: min. 12.7 mm (length) and max. 0.15 mm (gap)

IECEx Certificate of Conformity

Certificate No.: IECEx KEM 10 0036X
Date of issue: 2012-01-16 Issue No: 2
Page 4 of 4

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

Issue 1:
This project involves change of type reference in E22Pa0 and addition of low power version type E22PaL.

Issue 2:
- addition of dust ignition protection: Ex tb IIC T4 Db
- addition of diode coil version, type E22PaA
- addition of stainless steel enclosure
- extension of the minimum ambient temperature to -40 °C
- modify T classification with TuT4
- minor changes to the construction and electrical data, not affecting the type of protection.

Annex: 420013200-Attachment 1 to IECEx KEM 10 0036X.pdf

[A T E X]

CERTIFICATE
EC-Type Examination

(1) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC

(2) EC-Type Examination Certificate Number: KEMA 10ATEX0033 X Issue Number: 3

(3) Equipment: Solenoid Valve Operator, Type E22Px0, Type E22PxL and Type E22PxA

(4) Manufacturer: Kaneko Sangyo Co., Ltd

(5) Address: 5-10-6 Shiba, Minato-ku, Tokyo 108-0014, Japan

(6) This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to

(7) DEKRA Certification B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the 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 test report number NLKEM/EXTR10.0029**

(8) Compliance with the Essential Health and Safety Requirements has been assumed by compliance with:
EN 60079-0 : 2009 EN 60079-1 : 2007 EN 60079-31 : 2005

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

(10) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(11) The marking of the equipment shall include the following:

 II 2 G Ex d IIC T6...T4 Gb
II 2 D Ex tb IIC T85 °C...T135 °C Db

This certificate is issued on 16 January 2012 and, as far as applicable, shall be revised before the date of cessation or presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.
R. J. D. Pommé
Certification Manager

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T +31 26 3 56 20 00 F +31 26 3 52 58 00 www.dekra-certification.com Registered Arnhem 09085306

DEKRA

(13) **SCHEDULE**

(14) to EC-Type Examination Certificate KEMA 10ATEX0033 X Issue No. 3

(15) **Description**

The Solenoid Valve Operator, Type E22Px0, Type E22PxL and Type E22PxA consists of an aluminium or stainless steel enclosure, a coil and a sleeve-plunger assembly.

The model code is as follows: E22Pab

a = enclosure
0 = aluminium, Ta ≤ -20 °C, gas
1 = aluminium, Ta ≥ -40 °C, gas
2 = stainless steel, Ta ≥ -20 °C, gas
3 = stainless steel, Ta ≥ -40 °C, gas
4 = aluminium, Ta ≥ -40 °C, gas and dust
5 = stainless steel, Ta ≥ -40 °C, gas and dust

b = coil specification
0 = normal power coil
L = low power coil
A = diode coil

The relation between type, temperature class, temperature code and ambient temperature range is listed in the following table:

Type	Temperature class	Temperature code	Ambient temperature range
Normal power coil, E22P00, E22P10, E22P20 and E22P30	T4	-	-20/-40 °C to +60 °C
Normal power coil, E22P40 and E22P50	T4	T135 °C	-40 °C to +60 °C
Low power coil, E22P0L, E22P1L, E22P2L and E22P3L, and Diode coil, E22P0A, E22P1A, E22P2A and E22P3A	T6	-	-20/-40 °C to +40 °C
Low power coil, E22P4L and E22P5L, and Diode coil, E22P4A and E22P5A	T6	T85 °C	-40 °C to +40 °C
	T5	T100 °C	-40 °C to +60 °C

The Solenoid Valve Operator in type of protection Dust protection by enclosure "T" provides a degree of protection of IP67 in accordance with EN 60529.

Electrical data

Rated voltage: 100 - 240 Vac, 50/60 Hz (E22Px0 and E22PxL)
125 and 260 Vac, 60 Hz (E22Px0 and E22PxL)
12 - 250 Vac, 50/60 Hz (E22PxA)
12 - 220 Vdc (E22Px0, E22PxL and E22PxA)

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Form 101
Version 2 (2011-01)

The certificate is as of July in 2012

DEKRA

(13) **SCHEDULE**

(14) to EC-Type Examination Certificate KEMA 10ATEX0033 X Issue No. 3

	E22Px0	E22PxL	E22PxA
Rated current	0.07 - 0.10 A	0.04 - 0.09 A	0.03 - 0.06 A
AC versions	0.03 - 0.62 A	0.02 - 0.28 A	0.03 - 0.62 A
Rated power	8.4 - 13.9 W	3.5 - 6.2 W	4.8 - 8.0 W
DC versions	6.0 - 12.0 W	3.3 - 4.6 W	5.6 - 8.8 W

Installation instructions

The instructions provided with the equipment shall be followed in detail to assure safe operation.

(16) **Test Report**

DEKRA No. NLKEM/EXTR10.0029**.

(17) **Specific conditions of use**

- The Solenoid Valve Operator shall be installed in such a way that the risk from electrostatic discharges and propagating brush discharges caused by rapid flow of dust is avoided.
- The cover bolts are Class A2-50.
- The flamepaths are specified in drawing no. CM-3487Ex and are as follows:
L1: min. 10,5 mm (length) and max. 0,15 mm (gap)
L2: min. 10,5 mm (length) and max. 0,10 mm (gap)
L3: min. 20,6 mm (length) and max. 0,15 mm (gap)
L4: min. 12,7 mm (length) and max. 0,15 mm (gap)

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (8).

(19) **Test documentation**

As listed in Test Report DEKRA No. NLKEM/EXTR10.0029**.

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Form 103
Version 2 (2011-01)