# EXPLOSION PROTECTION
## CERTIFICATE OF CONFORMITY

Cert NO.GYJ12.1129X

This is to certify that the product

Vortex frequency flowmeter

manufactured by Krohne Messtechnik GmbH

(Address:Ludwig-Krohne Strasse 5, Duisburg, Germany)

which model is OPTISWIRL 4070C

Ex marking Ex dia [ia Ga] ⅡC T1~T6 Ga/Gb

product standard /

drawing number APPR GD 821019－02~03

has been inspected and certified by NEPSI, and that it conforms to GB 3836.1-2010,GB 3836.2-2010,GB 3836.4-2010,GB 3836.20-2010

This Approval shall remain in force until 2017.05.21

Remarks 1.Conditions for safe use are specified in the attachment to this certificate.

Director

National Supervision and Inspection Centre for Explosion Protection and Safety of Instrumentation

Issued Date 2012.05.22

This Certificate is valid for products compatible with the documents and samples approved by NEPSI.

103 Cao Bao Road
Shanghai 200233, China

http://www.nepsi.org.cn
Email: info@nepsi.org.cn

Tel: +86 21 64368180
Fax: +86 21 64844580

**Attachment Ⅰ to GYJ12.1129X**

Vortex frequency flowmeter typed OPTISWIRL 4070C, manufactured by Krohne Messtechnik GmbH has been certified National Supervision and Inspection Center for Explosion Protection and Safety of Instrumentation (NEPSI).

Vortex frequency flowmeter accords with following standards:

GB 3836.1-2010 Explosive atmospheres Part 1: Equipment-General requirements

GB 3836.2-2010 Explosive atmospheres Part 2: Equipment protection by flameproof enclosures"d"

GB 3836.4-2010 Explosive atmospheres Part 4: Equipment protection by intrinsic safety"i"

GB 3836.20-2010 Explosive atmospheres Part 20: Equipment with equipment protection level (EPL) Ga

Vortex frequency flowmeter has the Ex-marking Ex d ia [ia Ga] ⅡC T1～T6 Ga/Gb.

## 1. Special condition for safe use

Symbol "X" denotes special condition for safe use: The earth connection shall be connected to the equipotential bonding system.

## 2. Condition for safe use

2.1The ambient temperature of vortex frequency flowmeter is (-40～+60) ℃。

2.2The relation among temperature class, ambient temperature and maximum temperature of process medium is listed in following table 1 to table 3.

**Table 1 Converter is mounted above the sensor**

| | Temp. class | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Max. Temp. of process medium ℃ | T6 | T5 | T4 | | T3 | | | T2/T1 | | |
| Max. ambient temp. | 60 | 60 | 50 | 60 | 40 | 50 | 60 | 40 | 50 | 60 |
| Nominal diameter | | | | | | | | | | |
| DN15~25 | 60 | 75 | 110 | 110 | 175☆ | 175 | 125☆ | 235☆ | 180☆ | 125☆ |
| DN 40~50 | 60 | 75 | 110 | 110 | 175 | 175 | 115 | 215 | 165 | 115 |
| DN65~100 | 60 | 75 | 110 | 110 | 175 | 175 | 110 | 200 | 155 | 110 |
| DN150~DN300 | 60 | 75 | 110 | 110 | 175 | 175 | 130☆ | 240☆ | 190☆ | 130☆ |

☆ The temperature of connection cable is much than 80℃.

**Table 2 Converter is mounted on the side of sensor**

| Max. Temp. of process medium ℃ | Temp. class | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | T6 | T5 | T4 | | T3 | | | T2/T1 | | |
| Max. ambient temp | 60 | 60 | 50 | 60 | 40 | 50 | 60 | 40 | 50 | 60 |
| Nominal diameter | | | | | | | | | | |
| DN15~25 | 60 | 75 | 110 | 110 | 175☆ | 175☆ | 145☆ | 240☆ | 205☆ | 145☆ |
| DN 40~50 | 60 | 75 | 110 | 110 | 175 | 175☆ | 135☆ | 240☆ | 205☆ | 135☆ |
| DN65~100 | 60 | 75 | 110 | 110 | 175 | 175☆ | 130☆ | 240☆ | 195☆ | 130☆ |
| DN150~DN300 | 60 | 75 | 110 | 110 | 175 | 175 | 150☆ | 240☆ | 235☆ | 150☆ |

☆ The temperature of connection cable is much than 80℃.

**Table 3 Sensor is lacquered**

| Max. Temp. of process medium ℃ | Temp. class | | |
|---|---|---|---|
| | T6 | T5 | T4~T1 |
| Max. ambient temp | 60 | 60 | 60 |
| Nominal diameter | | | |
| DN15~DN300 | 60 | 75 | 90 |

2.3 Safe parameters

| Terminals | Safe parameters | | | | |
|---|---|---|---|---|---|
| A+, A | $U_i$=30V | $I_i$=100mA | $P_i$=1W | $L_i$=600 μH | $C_i$=15nF |
| B+,B | $U_i$=30V | $I_i$=100mA | $P_i$=1W | $L_i$=600 μH | $C_i$=15nF |

2.4End users is not permitted to change any components insides。

2.5During installation and maintenance, observe the warning " After de-energizing, Delay X min before opening". The relation between X and temperature class is listed as following.

| Temp. Class | X |
|---|---|
| T5，T6 | 1 |
| T1~T4 | 0 |

2.6The Cable gland and blanking plug, certified to GB 3836.1-2010 and GB 3836.2-2010 with Ex marking Ex d ⅡC Gb shall be used. The engaged threads shall be no less than 5.

2.7When installation, use and maintenance of vortex frequency flowmeter, observe following standards.

GB3836.13-1997 Electrical apparatus for explosive gas atmospheres Part 13:Repair and overhaul for apparatus used in explosive gas atmospheres

GB3836.15-2000 Electrical apparatus for explosive gas atmospheres Part 15:Electrical installations in hazardous area (other than mines)

GB 3836.16-2006 Electrical apparatus for explosive gas atmospheres – Part 16: Inspection and maintenance of electrical installation in hazardous areas (other than mines)

GB 50257:1996 Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering

GB 3836.20-2010 Explosive atmospheres Part 20: Equipment with equipment protection level (EPL) Ga

## 3. Manufacturer's Responsibility

3.1 Special condition for safe use specified above should be included in the instruction manual.

3.2 Manufacturing should be done according to the documentation approved by NEPSI.

3.3 Any modification with influence on the type of protection should be submitted to NEPSI before application.

3.4 Following items should be added to the nameplate

a) NEPSI log

b) Ex marking

c) Number of certificate

d) Ambient temperature range

e) Safe parameters

**National Supervision and Inspection Center**
**for Explosion Protection and Safety of Instrumentation**
**May 22th,2012**