제12-698호

안 전 인 증 서

KROHNE Messtechnik GmbH

Ludwig-Krohne-Str.5, 47058 Duisburg, Germany

위 사업장에서 제조하는 아래의 품목이 「산업안전보건법」 제34조 및 같은 법 시행규칙 제58조의4제4항에 따른 안전인증 심사 결과 안전·보건기준에 적합하므로 안전인증표시의 사용을 인증합니다.

품 목

Variable area flow meter and indicator

형식 · 모델 / 용량 · 등급 / 인증번호

형식·모델	용량 · 등급	인증번호
H250./.././M40./../.../..-Ex-.. and M40./../.../..-Ex-..	첨부 인증조건(12-0698) 참조	12-GA4BO-0698
	Ex d IIC T6...T1, Ex d IIB T6...T1 Ex tD IIIC T70℃	

인 증 기 준

방호장치 의무안전인증 고시(고용노동부고시 제2010-36호)

인 증 조 건

첨부 인증조건 (12-0698) 참조

2012 년 11 월 21 일

한국가스안전공사 사장

인 증 조 건

1. 제조공장:

Ludwig-Krohne-Str.5, 47058 Duisburg, Germany에 위치한 KROHNE Messtechnik GmbH 공장에서 생산한 제품 중 아래 인증범위의 제품에 한함.

2. 제품개요

The variable area flow meters H250./../../M40./../.../..-Ex-.. and indicator M40./../.../..-Ex-.. manufactures by KROHNE Messtechnik GmbH are suitable for measuring gases, vapours and liquids. Different functionalities, depending on built-in modules for signal processing, are available. Possible are :

- Current output 4-20 mA
- Limit switches (max. 2) with O/C- or NAMUR-output (2-wire)
- Limit switches (max. 2) with pnp-output (3-wire)
- Reed switches (max. 2) with contact-output
- Signal output for bus communication (PROFI-BUS or FieldBus-FF)

Connection of the up to 4 separated external circuits is effected in type of protection "flameproof" or "protection by enclosure" . Electrical connections for the circuits designed as internal plug connectors.
For the technical data please refer to the attachment.

3. 인증범위: 본 인증서는 아래의 형식번호에 한하여 유효함

품목 명 Variable area indicator, 모델 명 Type H250./../../M40./../.../..-Ex-.. and M40./../.../..-Ex-..에 한하여 인증함.
첨부 인증조건(12-0698) 참조.

4. 안전한 사용을 위한 조건

첨부 인증조건(12-0698) 참조.

5. 인증(변경)사항

6. 그 밖의 사항

안전인증품의 품질관리. 확인심사 수검, 변경사항 신고 등 인증 받은 자의 의무 준수

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Technical data

Operating pressure at metering unit H250, depending on construction:	16 ... 40 (200) bar
Medium temperature (depending on model):	-40 ℃ up to +300 ℃
Temperature at reference point (ext. PA-connection at M40 indicator):	-40 (-25) ℃ up to +88 ℃
Ambient temperature (depending on model):	-40 (-25) ℃ bis zu +65 ℃
Ingress protection	IP 66 / 67 acc to IEC 60529

Electrical data EGL Gb

Power supply, (protective-extra-low-voltage PELV)

Indicator M40 / ESK with converter ESK4 terminals 11, 12	nominal values: U_N = 14 - 32 V nominal 4…20mA current output in 2-wire connection with optional HART- communication
Indicator M40 / ESK with converter ESK4 terminals 11, 12	nominal values: U_N = 14 - 32 V I_N = 4 - 20 mA nominal 4…20mA current output in 2-wire connection with optional HART- communication
and module I/O binary output 1, terminals 1, 3 (OC) resp. binary output 2, terminals 4, 6 (OC) or	nominal values per circuit: U_N = 8 - 32 V (open collector, pnp-output) I_N ≤ 100 mA
binary output 1, terminals 1, 2 (NAMUR) resp. binary output 2, terminals 4, 5 (NAMUR) and	U_N = 8 V (acc. to the switch position) I_N = ≤1 / ≥ 3 mA
state input, terminals 7, 8	U_N = 8 - 32 V I_N = < 2 mA
Indicator M40 / ESK with converter ESK4-FF or converter ESK4-PA terminals D, D⊥	suitable for connection to an fieldbus-system U_N = 9 - 32 V I_N = 16 mA 2-wire Manchester coded current output for connection to Foundation-Fieldbus or Profibus-PA
Indicator M40 / K. limit switch (2-wire) Terminals 1, 2 resp. 4, 5 resp. limit switch (3-wire) Terminals 1, 2, 3 resp. 4, 5, 6	nominal values per circuit U_N = 5 - 25 V I_N = ≤1 / ≥ 3 mA (acc. to the switch position) U_N = 10 - 30 V I_N = 0 ... 100 mA (acc. to the switch position)
Indicator M40 R. limit switch (2- or 3-wire) Terminals 1, 2, 3 resp. 4, 5, 6	nominal values: U_N = 0 - 32 V I_N = ≤ 100 mA (acc. to the switch position)

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Model/type code

H	2	5	0		/			/		/	M	4	0		/		/			/		-	Ex	-		
1						2			3		4				5		6				7		8		9	

1 Type series measuring unitH250

H250	standard version – vertical flow direction from bottom to top
H250H	horizontal version
H250U	vertical flow direction from top to bottom

2 measuring unit material

RR	stainless steel
C	PTFE resp. PTFE / ceramic
HC	Hastelloy C
Ti	Titan
F	Food

3 Version heating jacket

B	with heating jacket
w/o	without heating jacket

4 Version indicator unit

M40	Aluminium housing varnished, (standard)
M40S	Aluminium housing increased protection
M40R	Stainless steel housing
M40T	Stainless steel housing increased protection

5 High temperature version

w/o	without HT- extension
HT	with HT – extension

6 Signal output

w/o	without Transmitter
ESK	signal output 4…20mA (ESK4) optional with counter, I/O- Module and Display (ESK4-T) or signal output Foundation Fieldbus (ESK4-FF) or signal output Profibus PA (ESK4-PA)

7 Limit switch

w/o	without limit switch
K1	1 limit switch
K2	2 limit switches
R1	1 reed switch
R2	2 reed switches

8 Version

Ex	explosionproof version

9 SIL version

SE	SIL conform signal output
SK	SIL conform limit switch

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Temperatures

				Permitted measuring temperature T_m [℃]						
Heating jacket		HT version	TK ▶	T6	T5	T4	T3		T2 … T1	
without	with		T_{amb} [℃] ▶	≤ 60	≤ 65	≤ 65	≤ 60	≤ 65	≤ 60	≤ 65
DN15, DN25, DN50	DN15, DN25			85	100	135	200	175	200	175
		X		85	100	135	200	200	300	300
DN80, DN100	DN50, DN80			85	100	135	185	165	185	165
		X		85	100	135	200	200	300	300

Table 1 Measuring and ambient temperatures H250..././M40./../……./..-Ex-..
Continuous operation temperature of connection cable and cable gland min. 90℃

				Permitted measuring temperature T_m [℃]								
Heating jacket		HT version	TK ▶	T6	T5		T4		T3		T2 … T1	
without	with		T_{amb} [℃] ▶	≤ 60	≤ 60	≤ 65	≤ 60	≤ 65	≤ 60	≤ 65	≤ 60	≤ 65
DN15, DN25, DN50	DN15, DN25			85	100	75	105	75	105	75	105	75
		X		85	100	95	135	95	175	95	175	95
DN80, DN100	DN50, DN80			85	90	75	90	75	90	75	90	75
		X		85	100	90	135	90	155	90	155	90

Table 2 Measuring and ambient temperatures H250..././M40./../……./..-Ex-..
Continuous operation temperature of connection cable and cable gland min. 70℃

			Permitted measuring temperature T_{Ref} [℃]		
Heating jacket		TK ▶	T6 … T1	T6	T5 … T1
without	with	$T_{connection\ cable}$ [℃] ▶	standard (70 ℃)	heat resistant (90 ℃)	
DN15, DN25, DN50, DN80, DN100	DN15, DN25, DN50, DN80		64	74	84

Table 3 Highest permitted temperature at the reference point H250..././M40./../……./..-Ex-.. and and indicator type M40./../……./..-Ex-..
Continuous operation temperature of connection cable and cable gland 70℃ resp. 90℃

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Additional hints for safe operation:

Any components attached or installed (e.g. terminal compartments, bushings, explosion-proof cable entries, connectors) shall be of a technical standard that complies with the specifications on the cover sheet as a minimum and for which a separate examination certificate has been issued. The operating conditions set forth in the relevant component certificates must by all means be complied with.

Connection conditions

1. The variable area flow meters H250./../../M40./../…/..-Ex-.. and indicator M40./../…/..-Ex-.. shall be connected by means of suitable cable entries or conduit systems, which meet the requirements of EN 60079-1, sections 13.1 and 13.2, and for which a separate examination certificate has been issued. Should the variable area flow meters H250./../../M40./../…/..-Ex-.. and indicator M40./../…/..-Ex-.. be connected by means of a conduit entry which has been approved for this purpose, the required sealing device shall be provided immediately at the device.
2. Cable entries (conduit threads) and sealing plugs of simple designs must not be used.
3. Any openings not used shall be sealed as specified in EN 60079-1, section 11.9.
4. The connecting cable of the variable area flow meters H250./../../M40./../…/..-Ex-.. and indicator M40./../…/..-Ex-.. has to be connected inside an enclosure, which complies with the requirements of an accepted type of protection acc. to EN 60079-0, clause 1, if connection is made in a hazardous location.
5. The connecting wire of the variable area flow meters H250./../../M40./../…/..-Ex-.. and indicator M40./../…/..-Ex-.. shall be installed to provide for permanent wiring and adequate protection against mechanical damage..
6. If the temperature at entry fittings should exceed 70 ℃, the connecting cables used have to be of the temperature-resistant type.
7. The variable area flow meters H250./../../M40./../…/..-Ex-.. and indicator M40./../…/..-Ex-.. is to be included into the local equibonding solution of the hazardous location.

These notes shall accompany each apparatus in an adequate form.

In order to avoid ignition hazards due to electrostatical charging, the flow meters must not be used in areas, where
- strong charge creating processes,
- automatic friction and separation processes,
- spraying of electrons (e.g.: in the field of electrostatic painting systems),

occur.

To avoid hazards due to electrostatical charging, in the case of the model variant H250/C... (PTFE, non-conductive), a minimum conductivity of the medium of 10^{-8} S/m has to be ensured.

The operation with flammable media is only permitted, if under operating conditions no potentially explosive combustible / air mixture inside the flow meter is created. In the case of flammable media, the metering units are to be included into the recurring pressure test of the site.