



(1) **EC-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment and Protective Systems Intended for Use in
Potentially Explosive Atmospheres - Directive 94/9/EC



(3) EC-type-examination Certificate Number:

PTB 01 ATEX 2202

(4) Equipment: Rotameter, type series DK37./../...-EEx and
type series H250/...../M37/./../...-EEx

(5) Manufacturer: Krohne Messtechnik GmbH & Co. KG

(6) Address: 47058 Duisburg, Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 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 the confidential report PTB Ex 01-21325 .

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014:1997 + A1 + A2 **EN 50020:1994**

(10) 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.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance 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.

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

 **II 2 G EEx ia IIC T6 ... T1**

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, January 21, 2002

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

(13)

SCHEDULE

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2202

(15) Description of equipment

The rotameters of type series DK37/./././...-EEx and H250/./.../M37/./././...-EEx are used to measure the volume flow rate of flammable and non-flammable gases and liquids in pipings. A 4...20 mA current signal which is proportional to the flow rate is available as measuring signal.

Flammable media may be used as measuring media provided that these do not form an explosive atmosphere and that the rotameters are included in the recurring pressure test of the system.

The minimum permissible ambient temperature is -40 °C.

For relationship between maximum permissible ambient temperature, maximum permissible medium temperature and the temperature class, reference is made to the following tables:

Type series DK37/././ P/...-EEx

temperature class	max. permissible ambient temperature [°C]	max. permissible medium temperature [°C] for version	
		DK37E/P-EEx	DK37M/K./P-EEx
T6	40	60	85
	50	-	85
	60	-	70
T5	40	100	100
	50	85	
	60	65	
T4	40	135	135
	50	130	
	60	115 (90)	
T3 ... T1	40	145	200
	50	130	200
	60	115 (90)	200 (150)

Values in round brackets represent medium temperatures above which a heat-resistant line is required.

Type series H250/...../M37/./././...-EEx

temperature class	max. permissible ambient temperature [°C]	max. permissible medium temperature [°C] for version	
		H250/...../M37/EG/...-EEx	H250/...../M37/MG/K./...-EEx
T6	40	75	85
	50	-	
	60	-	
T5	40	100	100
	50	100	
	60	70	
T4	40	135	135
	50	135	
	60	135 (90)	
T3 ... T1	40	200 (190)	200
	50	185 (145)	
	60	145 (90)	

Values in round brackets represent medium temperatures above which a heat-resistant line is required.

Electrical data

Types DK 37 E././...-EEx and H250/...../M37/EG/...-EEx

Supply and signal circuit
(terminals + and -)

type of protection Intrinsic Safety EEx ia IIC or EEx ib IIC
only for connection to a certified intrinsically safe circuit
Maximum values:
 $U_i = 30 \text{ V}$
 $I_i = 100 \text{ mA}$
 $P_i = 1 \text{ W}$
 $C_i \leq 20 \text{ nF}$
 L_i negligibly low

Types DK 37 M/K././...-EEx and H250/...../M37/MG/K./...-EEx

Comparator circuit
(terminals + and -)

type of protection Intrinsic Safety EEx ia IIC or EEx ib IIC
only for connection to certified intrinsically safe circuits
Maximum values per circuit:
 $U_i = 16 \text{ V}$
 $I_i = 25 \text{ mA}$
 $P_i = 64 \text{ mW}$
 $C_i = 150 \text{ nF}$
 $L_i = 150 \text{ }\mu\text{H}$

(16) Test report PTB Ex 01-21325

(17) Special conditions for safe use
none

(18) Essential health and safety requirements
met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, January 21, 2002

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

4 pages, correct and complete as regards content.
By order:

Dr.-Ing. Johannsmeyer Braunschweig, December 1, 2004
Regierungsdirektor


1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2202

(Translation)

Equipment: Rotameter, type series DK37./.../...-EEx and type series H250/.../M37./.../...-EEx

Marking:  II 2 G EEx ia IIC T6 ... T1

Manufacturer: Krohne Messtechnik GmbH & Co. KG

Address: 47058 Duisburg, Germany

Description of supplements and modifications

The rotameters of type series DK37./.../...-EEx and H250/.../M37./.../...-EEx may in future also be manufactured and operated in accordance with the test documents listed in the test report. Variants with comparator are equipped with EMC-filters and further certified comparators. Variants with electronic signal output are equipped with a new electronic assembly. Type series DK37 may also be equipped with flange connection adaptors for installation into vertical pipings. With type series H250 the connection elements for electrostatic earthing are modified. Further modifications concern the "Electrical data", the layout of the type plates and the type code for the modified variants which changes as follows:

previous type designation	new type designation
DK37E/P/...-EEx	DK37/M8E/..
DK37M/K./P/...-EEx	DK37/M8M/.. /K.
H250/... /M37/EG/...-EEx	H250/.. /M8EG
H250/... /M37/MG/K./...-EEx	H250/.. /M8MG/K.

The minimum permissible ambient temperature is -40 °C (-25 °C for variant M8M with comparator SJ 2-S1N). For relationship between maximum permissible ambient temperature, maximum permissible medium temperature and the temperature class, reference is made to the following tables:

Type series DK37/M8. /.. /..

temperature class	max. permissible ambient temperature [°C]	max. permissible medium temperature [°C] for version	
		DK37/M8E/..	DK37/M8M/.. /K.
T6	40	60	85
	50	-	85
	60	-	70
T5	40	100	100
	50	85	
	60	65	
T4	40	135	135
	50	130	
	60	(115) 90	
T3 ... T1	40	145	200
	50	130	200
	60	(115) 90	(200) 140

Medium temperature without round brackets:

thermal stability of the line: 70 °C

Medium temperature in round brackets:

thermal stability of the line: 80 °C

Type series H250/.. /M8.. /..

temperature class	max. permissible ambient temperature [°C]	max. permissible medium temperature [°C] for version	
		H250/.. /M8EG	H250/.. /M8MG/K.
T6	40	75	85
	50	-	
	60	-	
T5	40	100	100
	50	100	
	60	70	
T4	40	135	135
	50	135	
	60	(135) 90	
T3 ... T1	40	(200) 190	200
	50	(185) 145	
	60	(145) 90	

Medium temperature without round brackets:

thermal stability of the line: 70 °C

Medium temperature in round brackets:

thermal stability of the line: 80 °C

1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2202

Electrical data

Types DK37/M8E/.. and H250/.. /M8EG

Supply and signal circuit
(terminals + and -)

type of protection Intrinsic Safety EEx ia IIC or EEx ib IIC
only for connection to a certified intrinsically safe circuit

Maximum values:

$U_i = 30 \text{ V}$
 $I_i = 100 \text{ mA}$
 $P_i = 1 \text{ W}$
 C_i negligibly low
 L_i negligibly low

Types DK37/M8M/.. /K. and H250/.. /M8MG/K.

Comparator circuits
(terminals + and -)

type of protection Intrinsic Safety EEx ia IIC or EEx ib IIC
only for connection to certified intrinsically safe circuits

Maximum values per circuit:

$U_i = 16 \text{ V}$
 $I_i = 25 \text{ mA}$
 $P_i = 64 \text{ mW}$

comparator	SC 2-NO...	SJ 2-SN...	SJ 2-S1N...
C_i	165 nF	45 nF	45 nF
L_i	150 μ H	100 μ H	100 μ H

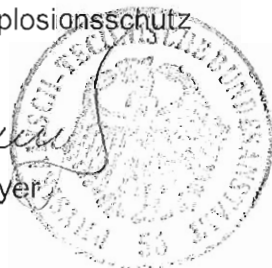
All further specifications of the EC-type examination certificate apply also for this 1st supplement.

Test report: PTB Ex 04-24342

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, December 1, 2004


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor




2. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2202

(Translation)

Equipment: Rotameter, type series DK37/M8. /.. /.. und H250/.. /M8.G/..

Marking:  II 2 G EEx ia IIC T6 ... T1

Manufacturer: Krohne Messtechnik GmbH & Co. KG

Address: Ludwig-Krohne-Strasse 5, 47058 Duisburg, Germany

Description of supplements and modifications

In the future the rotameters of type series DK37/M8. /.. /.. und H250/.. /M8.G/.. may also be manufactured and operated according to the test documents listed in the test report. The modifications concern the installation of an alternative ring initiator which is separately certified. Furthermore, this supplement comprises the adaption to the current state of the standard series EN 60079-et sqq. and, therefore, the marking of the equipment.

This will read in future:  II 2 G Ex ia IIC T6...T1

Electrical data

Types DK37/M8E/.. and H250/.. /M8EG

Supply and signal circuit (terminals + and -)	type of protection Intrinsic Safety Ex ia IIC or Ex ib IIC only for connection to a certified intrinsically safe circuit Maximum values: U _i = 30 V I _i = 100 mA P _i = 1 W C _i negligibly low L _i negligibly low
--	--

Types DK37/M8M/.. /K. and H250/.. /M8MG/K.

Initiator circuits
(terminals + and -)

type of protection Intrinsic Safety Ex ia IIC or Ex ib IIC
only for connection to certified intrinsically safe circuits
Maximum values per circuit:

$$U_i = 16 \text{ V}$$

$$I_i = 25 \text{ mA}$$

$$P_i = 64 \text{ mW}$$

Type of initiator	I7S2002-N	SC 2-NO...	SJ 2-SN...	SJ 2-S1N...
C_i	165 nF	165 nF	45 nF	45 nF
L_i	120 μ H	150 μ H	100 μ H	100 μ H

All further specifications of the EC-type examination certificate as well as the 1st supplement apply without changes also to this 2nd supplement.

Applied standards

EN 60079-0:2006

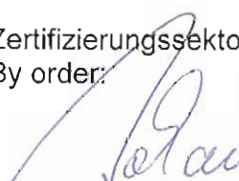
EN 60079-11:2007

Assessment and test report:

PTB Ex 09-29135

Zertifizierungssektor Explosionsschutz
By order:

Braunschweig, October 28, 2009


Dr.-Ing. U. Johannsmeyer
Direktor und Professor



3. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2202 (Translation)

Equipment: Rotameter, type series DK37/M8. /.. /.. and H250/.. /M8.G/..

Marking:  II 2 G Ex ia IIC T6...T1

Manufacturer: KROHNE Messtechnik GmbH
formerly
Krohne Messtechnik GmbH & Co. KG

Address: Ludwig-Krohne-Straße 5, 47058 Duisburg, Germany

Description of supplements and modifications

In the future the rotameters of type series DK37/M8. /.. /.. and H250/.. /M8.G/.. may also be manufactured and operated according to the test documents listed in the test report. The modifications comprise a revision of the electronic circuitry in the non-safety-relevant area, a correction of the sensor specifications (C_i) in the electrical data and the adaption to the current state of the standards. Furthermore the legal form of the company changes as stated above.

In the future the marking will be specified with EPL as follows:

 II 2 G Ex ia IIC T6...T1 Gb

Electrical data

Types DK37/M8E/.. and H250/.. /M8EG

Supply and signal circuit (terminals + and -) type of protection Intrinsic Safety Ex ia IIC or Ex ib IIC
only for connection to a certified intrinsically safe circuit

Maximum values:

$$U_i = 30 \text{ V}$$

$$I_i = 100 \text{ mA}$$

$$P_i = 1 \text{ W}$$

C_i negligibly low

L_i negligibly low

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2202

Types DK37/M8M/.. /K. and H250/.. /M8MG/K.

Initiator circuits
(terminals + and -)

type of protection Intrinsic Safety Ex ia IIC or Ex ib IIC
only for connection to certified intrinsically safe circuits

Maximum values per circuit:

$U_i = 16 \text{ V}$
 $I_i = 25 \text{ mA}$
 $P_i = 64 \text{ mW}$

Type of initiator	I7S2002-N	SC 2-NO...	SJ 2-SN...	SJ 2-S1N...
C_i	165 nF	165 nF	45 nF	75 nF
L_i	120 μH	150 μH	100 μH	100 μH

All further specifications given in the EC-type examination certificate as well as the 1st and 2nd supplement apply without changes also to this 3rd supplement.

Applied standards

EN 60079-0:2012 + A11:2013

EN 60079-11:2012

Test report: PTB Ex 16-25203

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, January 18, 2016


Dr.-Ing. U. Johannsmeyer
Direktor und Professor

