
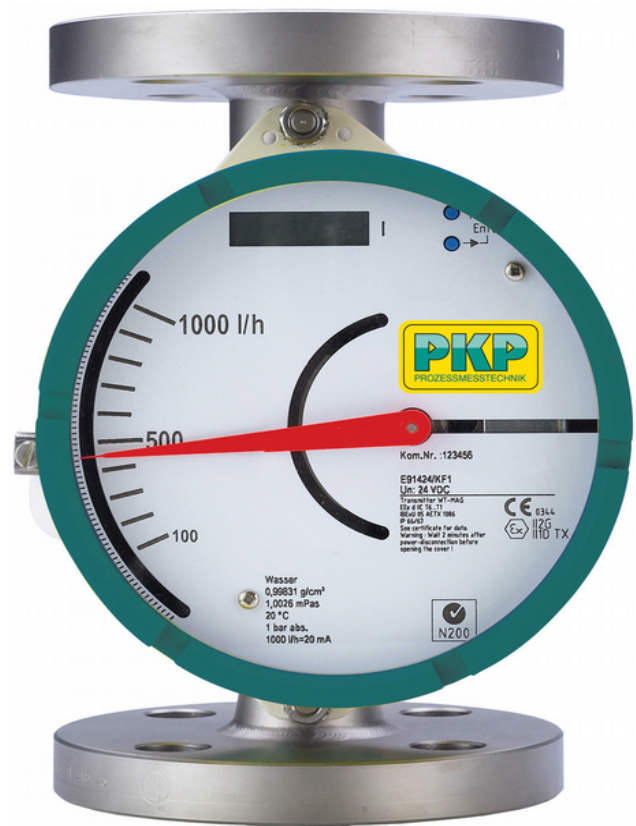


DS25

All-Metal Variable Area Flowmeter, Insensitive to Viscosity Changes

- for liquids, gases and steam
- operating pressure PN 40 and PN 100 (standard), higher pressures up to 320 bar on request
- operating temperature up to 370 °C
- float- blockade detection
- scales for all operating conditions individual calibrated
- local display, Min.-/Max.-contacts or analogue output
- Measuring tube completely of stainless steel 1.4404
- PTFE-coating for wetted parts optionally
-  Ex-Version acc. to ATEX



Description:

The Flowmeter DS25 work according to the proven variable area principle. The float is guided in a conical measuring tube. The flowing medium moves the float in the flow direction. An externally mounted pointer indicator is magnetically coupled to the float and thus, following the float position, indicates the flow rate on a scale. This indicator assembly is equipped with a scale calibrated to the operating conditions in the system and additionally may contain alarm contacts or an analogue output.

Typical application:

The variable area flowmeter model DS25 is used for measuring and monitoring the flow of all kinds of liquids or gases. By using only stainless steel 1.4404 for the wetted parts the meter is especially suited for aggressive media.



Flowmeter selection procedure:

1. Define materials of wetted parts
2. Select process connection (table "process connections")
3. Select measuring range (table "measuring ranges")
4. Select indicator and output signals
5. Select options

2. Process connections:

Nom. pipe size [DN]	Process connection	Meas. tube	Conn. code	Length
		No.	No.	L [mm]
15 (1/2")	flange DN 15 PN 40	1	101	250
	flange ANSI 1/2" 150 lbs.	1	102	250
	flange ANSI 1/2" 300 lbs.	1	103	250
	G 1/2 female	1	104	295
	1/2" NPT female	1	105	295
	flange DN 15 PN 40	2	206	250
	flange ANSI 1/2" 150 lbs.	2	207	250
	flange ANSI 1/2" 300 lbs.	2	208	250
20 (3/4")	flange DN 20 PN 40	1	111	250
	flange ANSI 3/4" 150 lbs.	1	112	250
	flange ANSI 3/4" 300 lbs.	1	113	250
	flange DN 20 PN 40	2	216	250
	flange ANSI 3/4", 150 lbs.	2	217	250
	flange ANSI 3/4", 300 lbs.	2	218	250
	G 3/4 female	2	219	250
	3/4" NPT female	2	220	250
25 (1")	flange DN 25 PN 40	1	121	250
	flange ANSI 1" 150 lbs.	1	122	250
	flange ANSI 1" 300 lbs.	1	123	250
	threaded spigot DN 25 PN 40 (female)			
	acc. to DIN 11851	1	126	275
	Tri-clamp DN 25 / 1	1	127	250
	flange DN 25 PN 40	2	228	250
	flange ANSI 1" 150 lbs.	2	229	250
	flange ANSI 1" 300 lbs.	2	230	250
	threaded spigot DN 25 PN 40 (female)			
	acc. to DIN 11851	2	233	275
	Tri-clamp DN 25 / 1	2	234	250
	flange DN 25 PN 40	3	335	250
	flange ANSI 1", 150 lbs.	3	336	250
	flange ANSI 1", 300 lbs.	3	337	250
	G 1 female	2	338	250
1" NPT female	2	339	250	

Flange for nominal pipe size DN 125 / 5" and DN 150 / 6" on request.

1. Material version (wetted parts):

The flow meters model DS25 may be supplied either completely in stainless steel 1.4404 (DS25.1) or with PTFE- coating (DS25.2).

Nom. pipe size [DN]	Process connection	Meas. tube	Conn. code	Length
		No.	No.	L [mm]
32 (1 1/4")	flange DN 32 PN 40	1	140	250
	Tri-clamp DN 32	1	141	250
	flange DN 32 PN 40	2	242	250
	flange ANSI 1 1/4" 150 lbs.	2	243	250
	flange ANSI 1 1/4" 300 lbs.	2	244	250
	Tri-clamp DN 32	2	245	250
	flange DN 32 PN 40	3	346	250
	flange ANSI 1 1/4", 150 lbs.	3	347	250
	flange ANSI 1 1/4", 300 lbs.	3	348	250
	G 1 1/4 female	3	349	250
	1 1/4" NPT female	3	350	250
	40 (1 1/2")	Tri-clamp DN 40 / 1 1/2"	1	151
Tri-clamp DN 40 / 1 1/2"		2	252	250
flange DN 40 PN 40		3	353	250
flange ANSI 1 1/2", 150 lbs.		3	354	250
flange ANSI 1 1/2" 300 lbs.		3	355	250
G 1 1/2 female		3	364	250
1 1/2" NPT female		3	365	250
50 (2")		flange DN 50 PN 40	3	356
	flange ANSI 2" 150 lbs.	3	357	250
	flange ANSI 2" 300 lbs.	3	358	250
	threaded spigot DN 50 PN 25 (female)			
	acc. to DIN 11851	3	359	275
	Tri-clamp DN 50 / 2"	3	360	250
	flange DN 50 PN 40	4	461	250
	flange ANSI 2" 150 lbs.	4	462	250
	flange ANSI 2" 300 lbs.	4	463	250
	flange DN 65 PN 40	4	469	250
	flange ANSI 2 1/2" 150 lbs.	4	470	250
	flange ANSI 2 1/2" 300 lbs.	4	471	250
65 (2 1/2")	threaded spigot DN 65 PN 25 (female)			
	acc. to DIN 11851	4	466	275
	G 2 1/2 female	4	467	250
	2 1/2" NPT female	4	468	250
80 (3")	threaded spigot DN 80 PN 25 (female)			
	acc. to DIN 11851	4	469	275
	Tri-clamp DN 80 / 3"	4	470	300
	flange DN 80 PN 40	5	571	250
	flange ANSI 3", 150 lbs.	5	572	250
	flange ANSI 3", 300 lbs.	5	573	250
100 (4")	threaded spigot DN 100 PN 25 (female)			
	acc. to DIN 11851	5	574	300
	Tri-clamp DN 100 / 4"	5	575	250
	flange DN 100 PN 16	6	676	250
	flange DN 100 PN 40	6	677	250
	flange ANSI 4", 150 lbs.	6	678	250

Higher pressures on request



3. Measuring ranges:

Reference conditions: Water: 20 °C
Air: 0 °C, 1,013 bar abs.

3a) DS25.1. Stainless steel version

Meas. tube Nr.	Meas.-range-code	Water/ Liquids				Air/ Gases			
		Meas. range* [m³/h]	Meas.-cone No.	Float No.	Pressure drop [mbar]	Meas. range* [Nm³/h]	Meas. cone No.	Float No.	Pressure drop [mbar]
1	101	0,0025- 0,026	43	S0	40	0,075- 0,75	43	S0	45
	102	0,004- 0,04	44	S0	40	0,12- 1,2	44	S0	45
	103	0,0063- 0,063	47	S0	40	0,18- 1,8	47	S0	45
	104	0,01- 0,1	51	S0	40	0,3- 3	51	S0	45
	105	0,01- 0,1	53	L1	6	-	-	-	-
2	206	0,01- 0,1	53	L1	6	0,55- 5,5	53	M1	20
	207	0,016- 0,16	53	M1	15	0,4- 4	53	L1	11
	208	0,016- 0,16	54	L1	6	0,65- 6,5	54	L1	11
	209	0,025- 0,25	53	S1	40	0,75- 7,5	53	S1	45
	210	0,025- 0,25	57	L1	6	1- 10	57	L1	11
	211	0,04- 0,4	54	S1	40	1,3- 13	54	S1	45
	212	0,04- 0,4	61	L1	6	1,6- 16	61	L1	11
	213	0,063- 0,63	57	S1	40	2- 20	57	S1	45
	214	0,063- 0,63	61	M1	15	2,5- 25	62	L1	11
	215	0,1- 1	61	S1	40	3- 30	61	S1	45
	216	0,1- 1	62	M1	15	3,5- 35	62	M1	20
	217	0,16- 1,6	62	S1	40	-	-	-	-
	218	0,23- 2,3	62	V1	45	-	-	-	-
3	319	0,1- 1	63	L2	7	4- 40	63	L2	12
	320	0,16- 1,6	64	L2	7	5- 50	63	M2	22
	321	0,25- 2,5	63	S2	41	7- 70	64	L2	12
	322	0,25- 2,5	64	M2	16	9- 90	64	M2	22
	323	0,4- 4	64	S2	41	13- 130	64	S2	47
	324	0,6- 6	64	V2	43	-	-	-	-
4	425	0,25- 2,5	67	L5	8	10- 100	67	L5	14
	426	0,4- 4	71	L5	8	13- 130	67	M5	25
	427	0,63- 6,3	67	S5	47	16- 160	71	L5	14
	428	0,63- 6,3	72	L5	8	20- 200	71	M5	25
	429	1- 10	71	S5	47	20- 200	67	S5	54
	430	1- 10	72	M5	19	28- 280	72	L5	14
	431	1,6- 16	72	S5	47	36- 360	72	M5	25
	432	2,3- 23	72	V5	63	50- 500	72	S5	54
5	533	2,5- 25	73	V8	60	50- 500	73	L8	30
	534	4- 40	74	V8	60	75- 750	73	V8	65
	535	6,3- 63	77	V8	60	85- 850	74	L8	30
	536	-	-	-	-	120- 1200	74	V8	65
	537	-	-	-	-	180- 1800	77	V8	65
6	638	10- 100	81	11	70	-	-	-	-
	639	15- 130	81	12	-	-	-	-	-

Measuring range for steam on request

* The specified measuring ranges - in particular for air - serve for orientation. Please specify the following process conditions for inquiries:

Medium, pressure, temperature

We create an individual scale for you at no extra charge.



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3b) DS25.2 – Wetted parts PTFE coated

Meas. tube No.	Meas.-range-code	Water/ Liquids				Air/ Gases			
		Meas. range* [m³/h]	Meas.-cone No.	Float No.	Pressure drop [mbar]	Meas. range* [Nm³/h]	Meas.-cone No.	Float No.	Pressure drop [mbar]
2	250	0,01 – 0,1	51	A1	16	0,35- 3,5	51	A1	20
	251	0,016- 0,16	52	A1	16	0,5- 5	52	A1	20
	252	0,025- 0,25	53	A1	16	0,85- 8,5	53	A1	20
	253	0,04- 0,4	54	A1	16	1,3- 13	54	A1	20
	254	0,063- 0,63	57	A1	16	2- 20	57	A1	20
	255	0,1- 1	61	V1	18	3,4- 34	61	V1	22
3	356	0,16- 1,6	62	A2	20	5- 50	62	A2	25
	357	0,25- 2,5	63	A2	20	8,5- 85	63	A2	25
	358	0,4- 4	63	V2	22	-	-	-	-
4	459	0,4- 4	64	A5	20	13- 130	64	A5	25
	460	0,63- 6,3	67	A5	20	20- 200	67	A5	25
	461	1- 10	71	A5	20	35- 350	71	A5	25
	462	1,6- 16	71	V5	22	-	-	-	-
5	563	1,6- 16	72	V8	25	50- 500	72	27	12
	564	2,5- 25	73	V8	25	85- 850	73	27	22
	565	4- 40	74	V8	25	-	-	-	-
6	666	6,3- 63	77	10	30	-	-	-	-

* The specified measuring ranges - in particular for air - serve for orientation.
Please specify the following process conditions for inquiries:

Medium, pressure, temperature

We create an individual scale for you at no extra charge.


Technical Data (Measuring tube):

Measured media:	liquids, gases or steam
Measuring ranges:	see tables 3a) and 3b)
Turndown ratio:	10:1
Accuracy:	
DS25.1:	class 1.6
DS25.2:	class 2.5
Process connection:	see table „Process connection“
Max. pressure:	see table „Process connection“
Operating temperature:	
DS25.1:	-180 °C...370 °C
DS25.2:	- 80 °C...130 °C

Materials:	
DS25.1:	all wetted parts stainless steel 1.4404, (AISI 316 L)
DS25.2:	all wetted parts stainless steel 1.4404, (AISI 316 L) with PTFE coating
Mounting:	vertical
Flow direction:	from bottom to top
Mounting length:	see table „process connection“
Straight pipe runs:	
DN 15-65	none
DN 80-100	min. 5D
protection class:	IP66

Note max. operating temperatures of the display part and any options.



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4. Indicator:

The indicator part of the DS25 consists of an aluminium or stainless steel housing with a pointer assembly magnetically coupled to the float.

The scale may be calibrated in flow units or in percent. Additionally, transducers and alarm contacts may be mounted in the indicator housing.

4a. Housing versions

Material:	Code No.
Aluminium, round, d = 160 mm	2
Stainless steel, round, d = 160 mm	3

4b. Alarm contacts

Contact version:	Code No.
without	0
1 min.-contact	1
1 max.-contact	2
1 min.-contact + 1 max.-contact	3
2 Min.-contacts	4
2 Max.-contacts	5

4c. Analogue output signals

Type:	Code No.
without	0
electrical transmitter	1
electrical transmitter (Ex)	2

4d. Power supply and output signals

Type:	Code No.
without	00
115 VAC, 0...20 mA, 4-wire	01
115 VAC, 4...20 mA, 4-wire	02
230 VAC, 0...20 mA, 4-wire	03
230 VAC, 4...20 mA, 4-wire	04
24 VDC, 0...20 mA, 3-wire	07
24 VDC, 4...20 mA, 2-wire (standard)	08
24 VDC, 4...20 mA, 3-wire	09
24 VDC, 4...20 mA, 2-wire HART®	10
9-32 VDC, PROFIBUS, 2-wire	11

Technical Data (Indicator Assembly):

Mechanical indicator assembly:

Ambient temperature: -25 °C...130 °C, for higher or lower operating temperature use option "temperature isolation"

Alarm contacts:

Type: inductive proximity switch SJ 3,5-N acc. to DIN 19234 (NAMUR)

Ambient temperature: -25 °C ... 100 °C (for higher or lower operating temperatures use option "temperature insulation")

Rated voltage: 8 VDC (Ri = 1 kOhm)

Output signal: ≤ 1 mA = 0
≥ 3 mA = 1

Explosion protection: EEx ia IIC T6, group II category 2G (on request)

Dust-explosion protection: EEx iaD 20 T 108 °C, group II category 1D

Recommended accessories: contact protection relay type KFA/KFD (see chapter supplies)

Electrical transmitter:

Output signal: 0...20 mA, 4 - 20 mA

Display: LCD, 8-digits, (programmable for indication of flow rate or as non resettable totalizer)

Power supply: see table 4d

Max. Load: 4-wire: ≥ 500 Ohm
2/3-wire: (U-13,5 V) 20 mA

Operating temperature: 0 °C...100 °C (for higher or lower operating temperatures use option "temperature insulation")

Electrical connection: M16 x 1,5 or 1/2" NPT

Intrinsically safe electronic transducer:

Technical Data as standard unit, but:

Output signal: 4...20 mA

Operating temperature: -25 °C...70 °C (for higher or lower operating temperatures use option "temperature insulation")

Ex-protection: EEx nL IIC T6; protection „nL“; group II; category 3G
EEx ia IIC T6 Gb; protection ia; group II; category 2G

Dust explosion protection: EEx II 3D; group II; category 3D, max: surface temperature: 80 °C



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5. Options:

Temperature insulation IA:

For media temperatures outside the limits given in the technical specifications for the indicator assembly the measuring tube and the indicator assembly may be temperature isolated by mounting the indicator at a distance of 95 mm apart from the measuring tube. This ensures that the unit may be operated at media temperatures as high as stated in the specifications for the measuring tube.

Damping SD:

A float damping is recommended for gas applications to prevent an up and down movement (only for DS25.1).

Heating H...:

Heating assemblies (steam jackets) are used to keep the medium in the measuring tube at a required temperature. Steam jackets are available with three different process connections:

H.1: DIN flanges DN 15 PN 40
H.2: DIN flanges DN 25 PN 40
H.3: Threaded connection R 1/4"

Oil and grease free OF:

For use with oxygen the meters may be supplied oil- and grease- free.

Certifications:

on request

Tags, customer specified scales:

Stainless steel tags with customer specified text are optionally available

Order Code:

Order number: DS25. 1. 121. 1. 321. 1. 0. 104

Variable Area Flowmeter

Material version:

1 = stainless steel
2 = wetted parts PTFE-coated

Process connection:

101...678 = process connection acc. to table 2
999 = special connection
(please specify in plain text)

Medium:

1 = water / liquids
2 = air / gases
3 = steam

Measuring range:

101...666 = measuring range acc. to table 3a or 3b
999 = special range (please specify in plain text)

Housing version: (acc. to table 4a)

2 = aluminium, round, d = 160 mm
3 = stainless steel, round, d = 160 mm

Alarm contacts:

0...5 = contacts acc. to table 4b

Analogue output and power supply:

1st. digit:

0...3 = analogue output acc. to table 4c

2nd...3rd. digit:

00...13 = power supply and output signal acc. to table 4d

Options: please specify in plain text

Ordering information:

for complete identification of the meter the following information must be specified:

1. order no. acc. to table above
2. a. name of medium
b. temperature
c. pressure
d. viscosity (for liquids only)
e. density
3. for gases only: reference conditions
4. options:
 - a. model number acc. to section "Options"
 - b. additional customer specific information



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Dimensions:

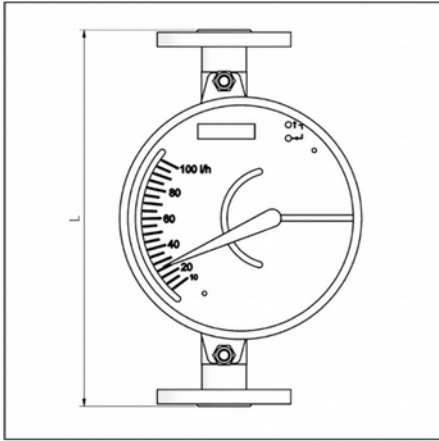


Fig. 1: front view

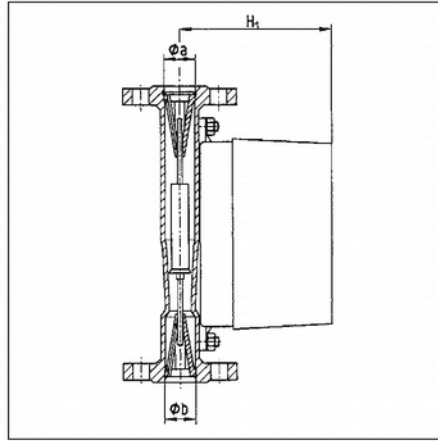


Fig. 2: stainless steel measuring tube

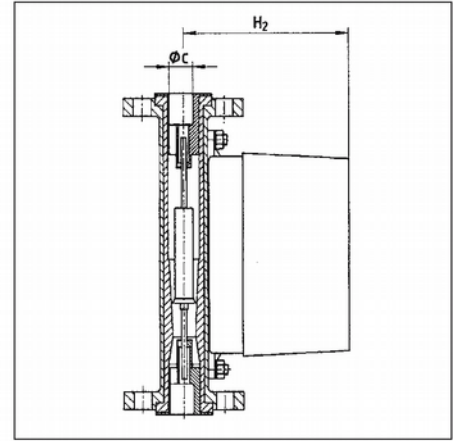


Fig. 3: measuring tube PTFE coated

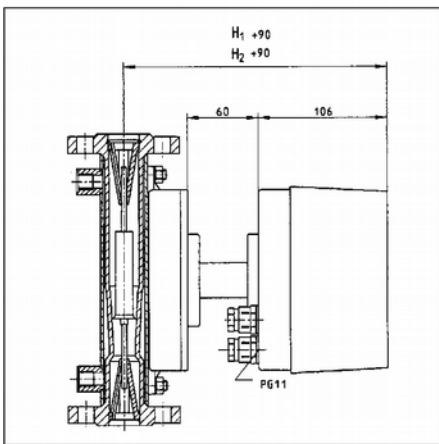


Fig. 4: Option DS25.H... (steam jacket and DS25.A (temperature isolation)

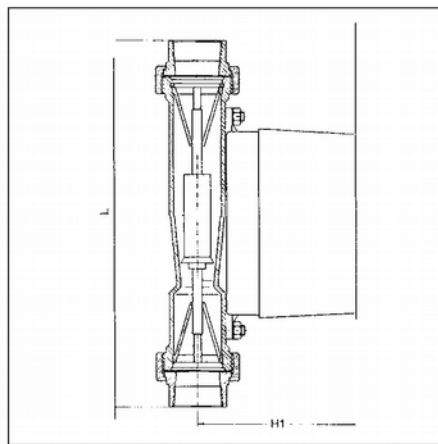


Fig. 5: measuring tube with threaded connection (R or NPT)

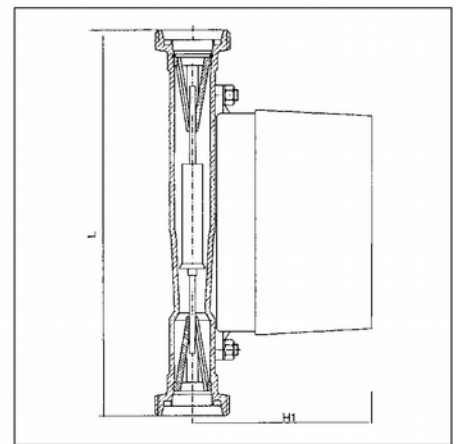


Fig. 6: measuring tube with hygienic connection acc. to DIN 11851

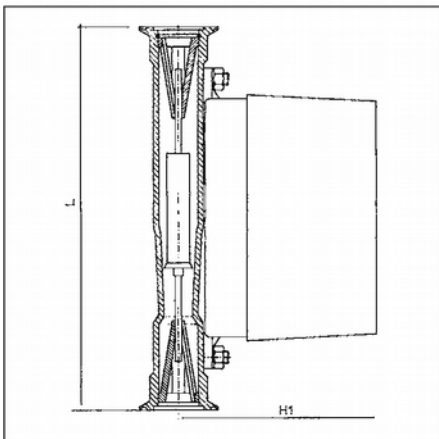
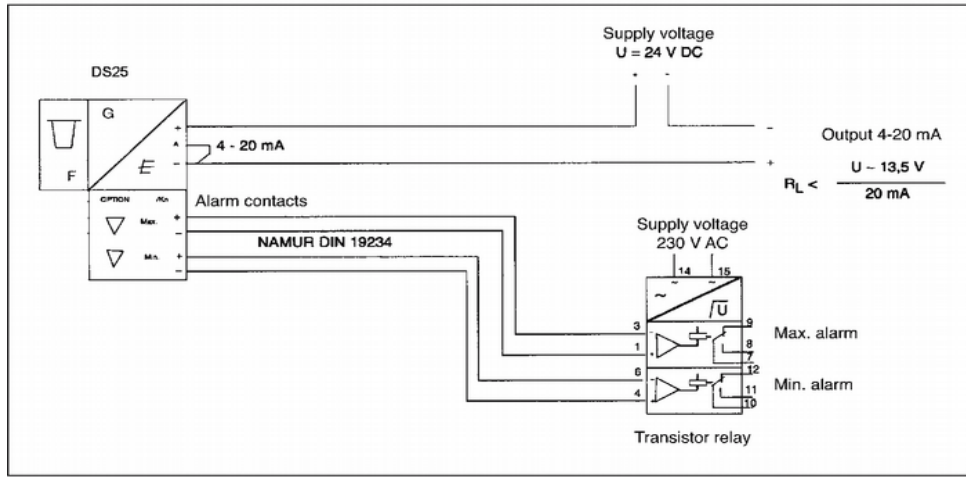


Fig. 7: measuring tube with Tri-Clamp connection

Measuring tube No.	H1 (mm)	H2 (mm)	Weight (kg)
1	122	122	5
2	123	127	5
3	131	136	6,5
4	147	152	11
5	161	168	16
6	170	176	20

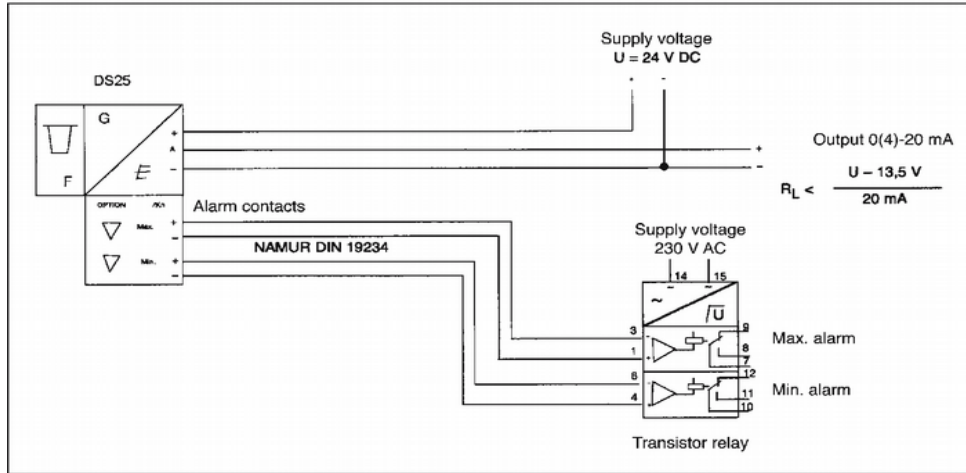
Dimension "L": see table 2 (process connections)

Electrical connections:



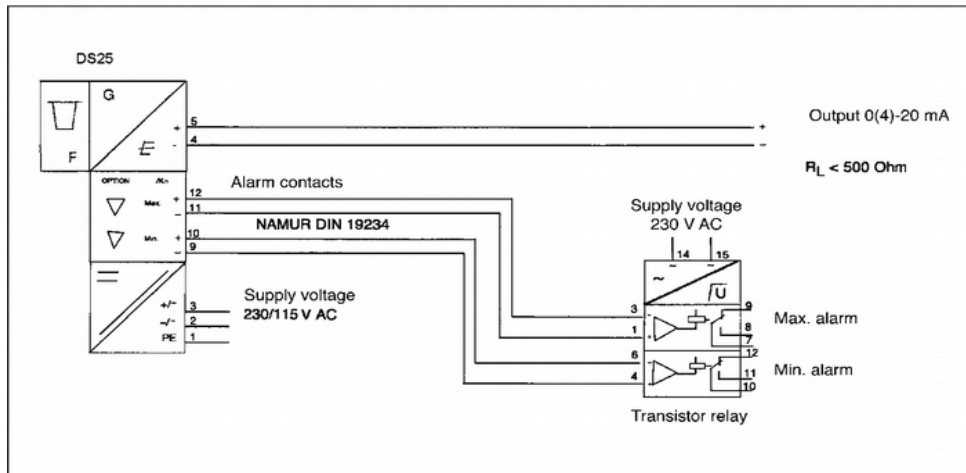
electronic transducer,
2-wire

2 alarm contacts with
contact protection relay



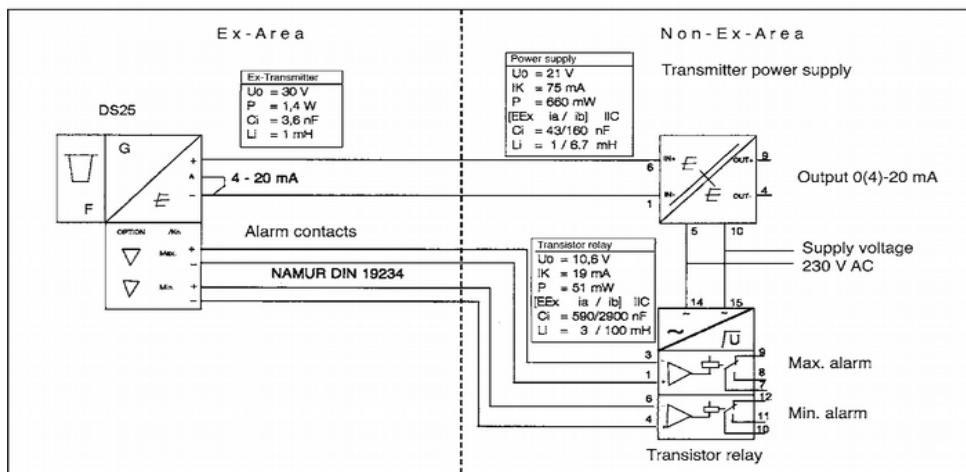
electronic transducer,
3-wire

2 alarm contacts with
contact protection relay



electronic transducer,
4-wire

2 alarm contacts with
contact protection relay



EEx application:

electronic transducer [EEx],
2-wire

2 alarm contacts with
contact protection relay