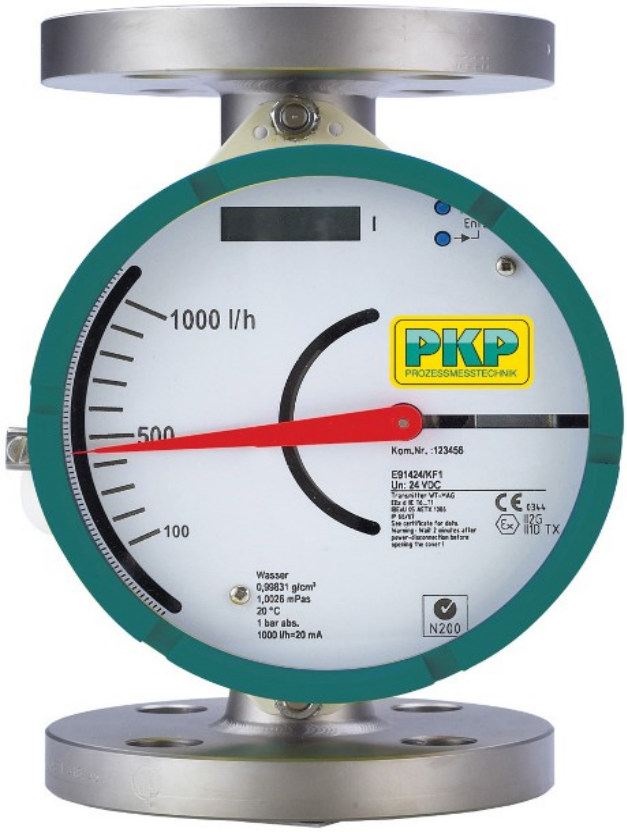
DS25

All-Metal Variable Area Flowmeter, Robust Industrial Design with Large Display

- 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.

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Subject to technical changes

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**

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).

2. Process connections:

Nom. pipe size [DN]	Process connection	Meas. tube No.	Conn. code No.	Length 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.

Nom. pipe size [DN]	Process connection	Meas. tube No.	Conn. code No.	Length 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 14 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	250
	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	250
	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

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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

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

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

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 insolation”)
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 insolation”)
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 insolation”)
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

5. Options:

Temperature insolation 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:

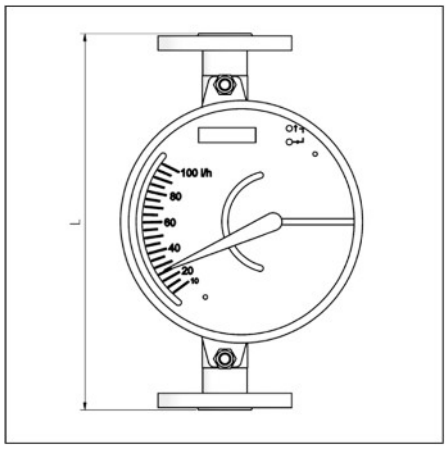

Fig. 1: front view

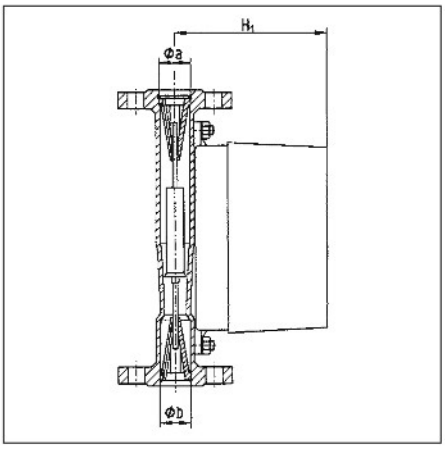

Fig. 2: stainless steel measuring tube

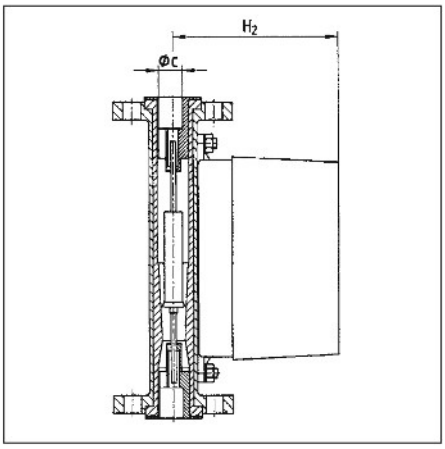

Fig. 3: measuring tube PTFE coated

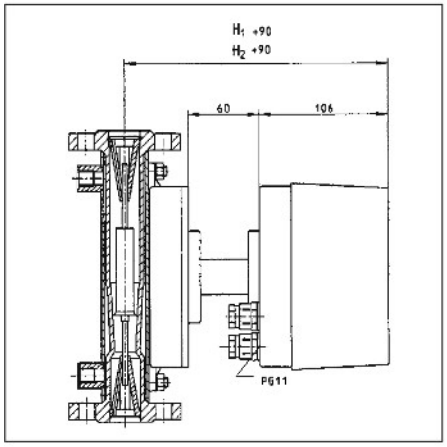

Fig. 4: Option DS25.H... (steam jacket and DS25.A (temperature isolation)

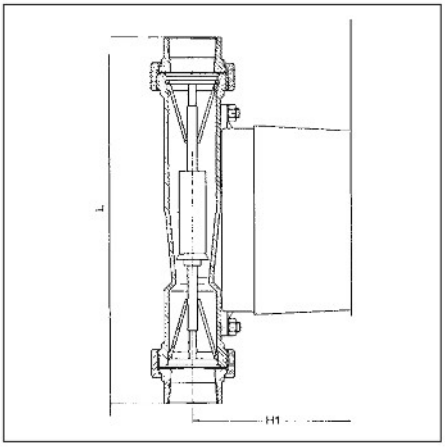

Fig. 5: measuring tube with threaded connection (R or NPT)

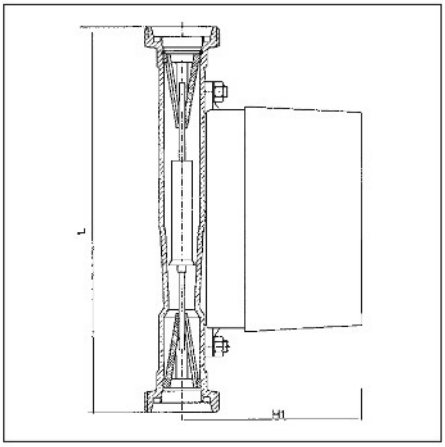

Fig. 6: measuring tube with hygienic connection acc. to DIN 11851

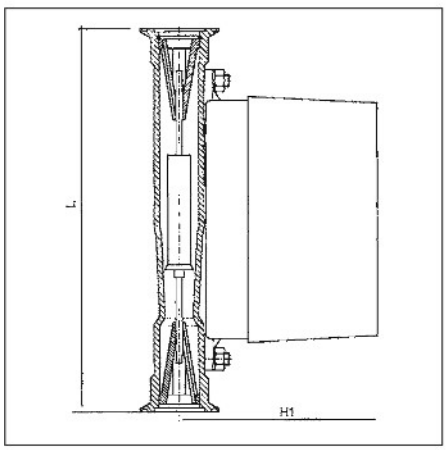

Fig. 7: measuring tube with Tri-Clamp connection

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)

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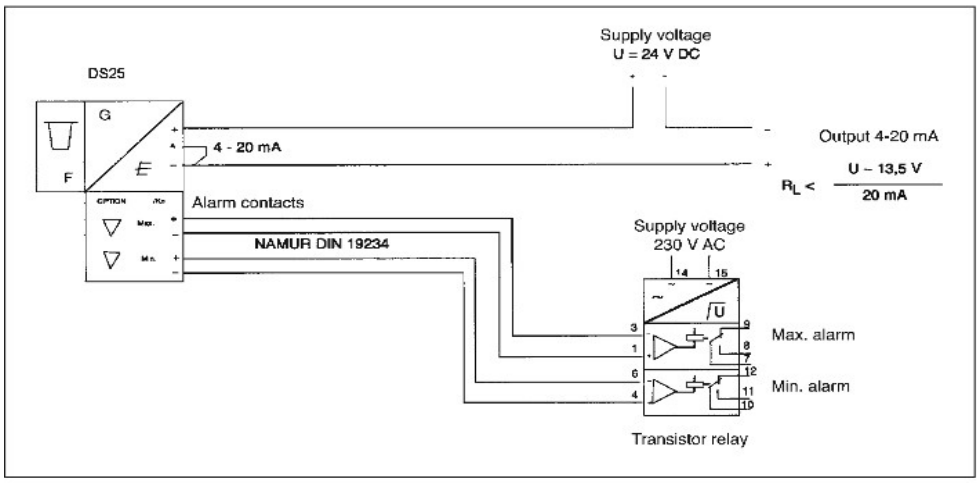
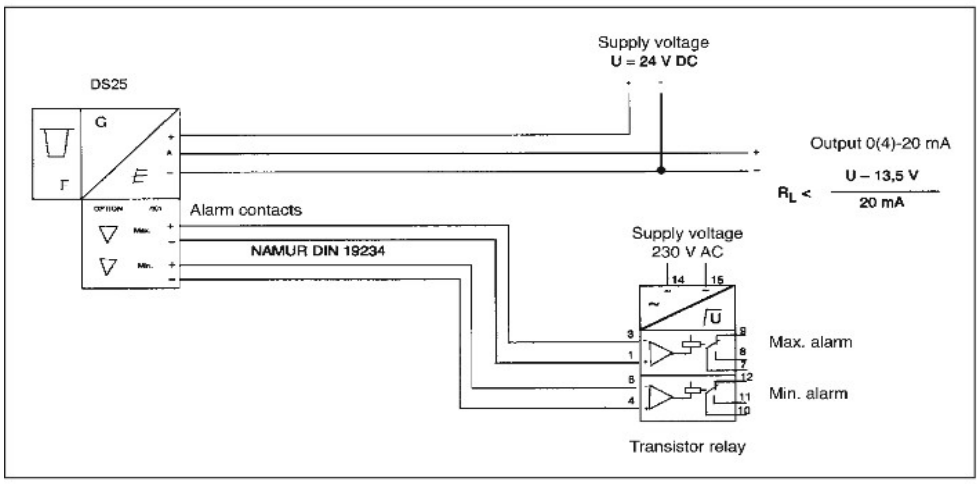
Electrical connections:



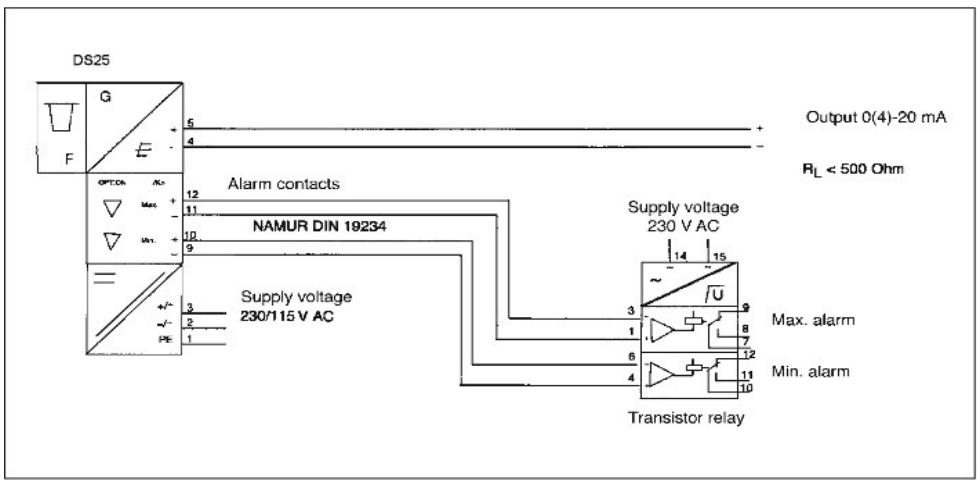
electronic transducer, 2-wire

2 alarm contacts with contact protection relay



electronic transducer, 3-wire

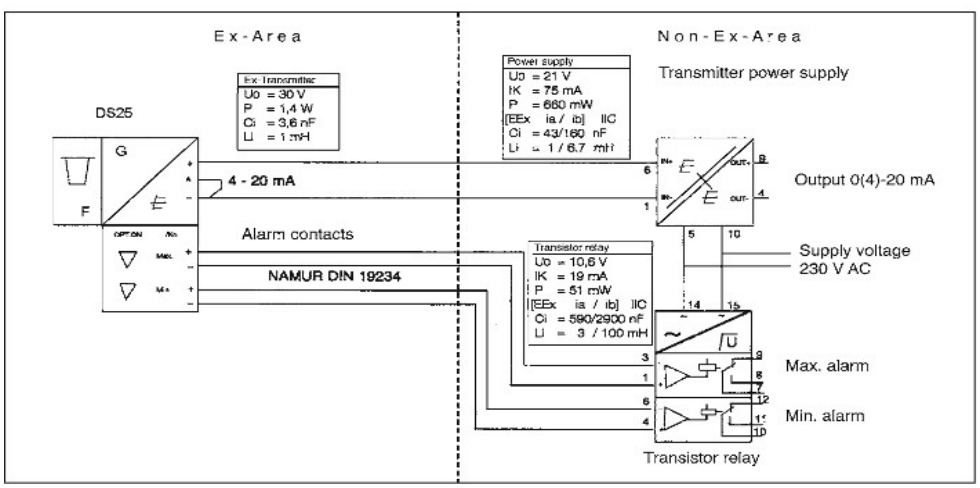
2 alarm contacts with contact protection relay



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

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