

FLOW METER WITH FLOAT – type K

I. APPLICATION

All-metal flow meters with float – type K are used for signalling and measuring of momentary flow, if need be flowed volume of liquid and fluent materials. In respect of their massive, all-metal (stainless) construction or lining of measuring part with PP, PVDF or PVC, they are highly resistant to physical and chemical agents. They are suitable for using in extreme service conditions of especially chemical, energetic, machinery, mining, food-processing industries, of material distribution in sewage works and water treatment plant, etc.



II. MEASURING PRINCIPLE

The flow meter is located right into the piping vertically $\pm 1\%$, where the measured material flows in the bottom-up direction. (Before the flow meter installation it is necessary to clean the pipe and rinse it out.) The float with magnet freely moves in the measuring part of the flow meter and it is stable in specific position accordance to the flow of measured material. Momentary position of the float is transferred by means of a magnetic connector to the indicator scale. The distance between the device and ferromagnetic materials or the distance among devices has to be 20 cm at least.

The devices must not be located in a strong magnetic field.

In case of dirty liquids measuring, it is possible to equip the flow meter inlet with the mechanical or magnetic filter.

This type of flow meter (up to size DN 25) is equipped with the vibration damper located by means of joint system and with the overload protection for measuring of fluent material. This construction is great at low hysteresis.

This flow meter does not require straight smooth lengths of pipes either at an inlet or at an outlet.

Precise local indication of momentary flow values directly on the flow meter scale is possible, by request of the Customer, to complete with limit contacts SP5, that read minimal or maximal momentary flow; or to complete with the contact SP6 with electrical output 4 – 20 mA, or with the evaluation device for the indication of momentary flow or/and flowed volume – i.e. totalizer.

In the ambient with explosion hazard, there is possible to use flow meters with all-metal measuring parts. The device may be connected only in a circuit followed with the sparking safeguarding device, which is certified for the design II(2) G [Ex ia] II C T6 with the supply secured from sparking at least. Practically the device produces no warming.

III. BENEFITS

Measuring part K:

- Measuring part is stainless, standard, resistant to high pressure and temperature
- Conical measuring cone, or float according to specific measuring conditions
- Magnetic transfer of float motion to the pointer motion is realised by means of high power magnetic materials with min. ageing influence
- Dumping of float motion – special ball joints construction with min. hysteresis
- Measuring part can be equipped with electrical or steam heating

Measuring part K lined with plastic:

- Measuring part is resistant to extreme mechanical and chemical straining
- Suitable for measuring of most of acids and alkali

Local indicator

- Direct indication of momentary flow by the pointer on the scale in fixed units
- Type for material high temperatures with the indicator offset and shielding

Limit contacts and converters

- One or two limit contacts SP 5
- Converter ECLM with linear outlet 4 – 20 mA,
11 – 26 Vss for Ex
11 – 36 Vss ambient without explosion hazard
- Evaluation device DMK with momentary flow indication
- Evaluation device ERT 50000 with indication of momentary flow and flowed volume
- Universal sectional unit PAX-D with indication of momentary flow and flowed volume

Physical engineering laboratory institute granted the Certificate FTZÚ 01 Ex0130X for flow meters type K with indicators P and V, design II2GEExia IICT6 for using in the ambient with explosion hazard.

IV. TECHNICAL DATA:

Type	K
Measuring range (100% of flow) choose from the table Water 20°C Air 101,3 kPa abs. , 20°C	1 up to 250.000 l / hr 0,18 up to 1300 m ³ / hr
Rate of max. and min. measured values	10 : 1
Measuring fault (in % from the rate) KP and KV KP-PP, KV-PP	± 1,6 ± 2,5
Measuring fault (in % from the rate) Additional fault of electrical outlet	± 2,5% ± 1%
Measuring part KP, KP-PP, KV and KV-PP	Metal tube with measuring cone or shield Metal tube with measuring cone or shield lined with PP, PVDF, PVC – acc. to measured material
Float type	Conical Conical with damping Cylindrical Material – stainless steel DIN 1.4541, DIN 1.4571, titanium PP, PVDF, PVC - acc. to measured material
Scale	In flow units (by the Customer's request)
Rated diameters	DN 15 up to DN 200
Shielding	IP 65, with angular connector IP 54
Flange connection acc. to CSN	DN 15 up to DN 200 DN 15 and DN 25/PN16 or Ermeto 12 – heating Food-processing connection acc. to DIN 11851
Max. working temperature of measured material in accordance with thermal category Thermal category T6 Thermal category T5 Thermal category T4 Thermal category T3	85° C 100° C 125° C 150° C
Max. working temperature of measured material without sensors using, max. ambient temperature ≤120°C KP and KV KP- PP, KV – PP KP – PVC, KV –PVC	300°C higher by request 150°C 60°C
Max. ambient temperature with using of SP6 sensors – analogue output Max. ambient temperature with using of sensors in ambient with explosion hazard Max. ambient temperature with using of sensors SP5, SP6 – analogue output, converter outside flow meter	85°C (acc. to temperature of measured material) 60°C 130°C

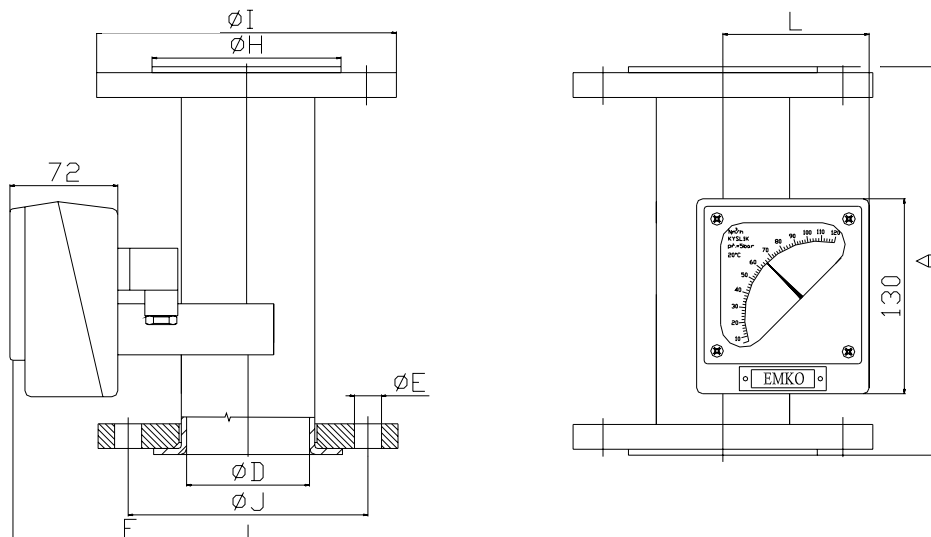
Requirements to other technical data have to be discussed with the producer.

MEASURING RANGES

DN	Type	Measuring range l/h	Measuring range m ³ /h
		Water 20°C	Air 20°C, 101,3 kPa
15	K1	1-40	0,18-1,2
15	K12	6-60	0,22-1,8
15	K13	10-100	0,30-3,0
15	K14	16-160	0,45-4,5
15	K15	25-250	0,70-7,5
15	K16	40-400	1,10-11
15	K17	54-540	1,30-13
15	K18	65-650	1,60-16
15	K19	100-1000	1,90-19
25	K21	68-680	1,70-17
25	K22	100-1000	2,00 -20
25	K23	160-1600	3,00 -30
25	K24	190-1900	3,40-34
25	K25	280-2800	4,00-40
25	K26	280-2800	6,00-60
25	K27	350-3500	10,00-100
25	K28	450-4500	14,00-140
50	K51	400-4000	5,00-50
50	K52	490-4900	7,00-70
50	K53	580-5800	9,00-90
50	K54	800-8000	11,00-110
50	K55	1100-11000	13,00-130
50	K56	1400-14000	15,00-150
50	K57	1900-19000	22,00-220
50	K58	2500-25000	26,00-260
80	K81	2600-26000	28,00-280
80	K82	3000-30000	30,00-300
80	K83	3500-35000	35,00-350
80	K84	3900-39000	50,00-500
100	K100	4000-30000	80,00-800
100	K101	6300-63000	120,00-1200
125	K121	5000-50000	130,00-1300
125	K122	5500-75000	
125	K123	6000-83000	
125	K124	15000-150000	
150	K151	5000-50000	
150	K152	5500-55000	
150	K153	7500-75000	
150	K154	10000-100000	
150	K155	12500-125000	
200	K201	14000-140000	
200	K202	19000-190000	
200	K203	25000-250000	

Above mentioned data are valid for materials mentioned in the table. For other liquid and fluent materials or their mixtures, the measuring ranges will be calculated and set up in accordance with temperature, pressure, density and viscosity of measured material.

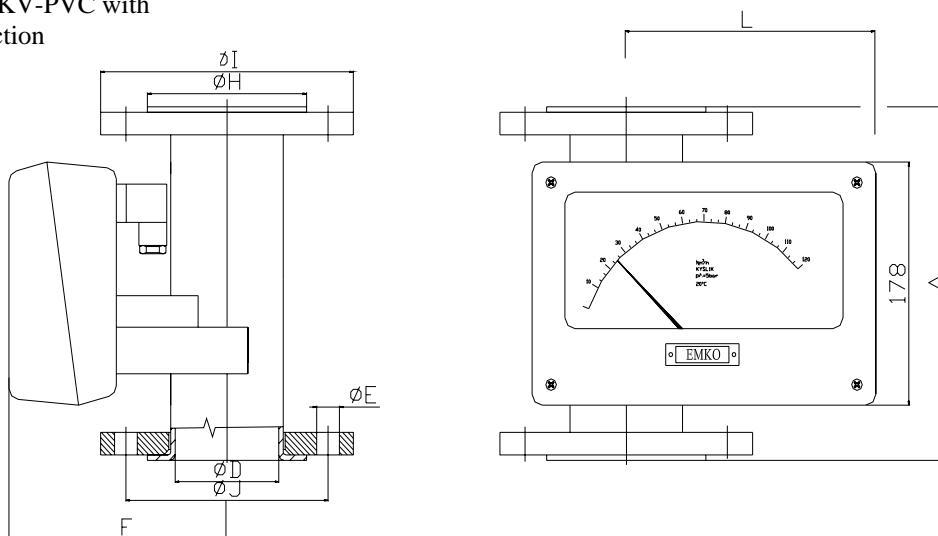
KP, KP-PP, KP-PVC with flange connection



Total connection dimensions, weights of flow meters KP, KP-PP, KP-PVC with flange connection

DN	A	D	H	J	I	E	F	L	Weight kg
15	250	23	45	65	90	4xØ14	112	65	2,4
25	250	33	60	85	110	4xØ14	112	65	3
50	250	60	90	125	155	4xØ18	112	77	6
80	400	80	110	160	190	8xØ18	130	90	8,5
100	400	110	148	180	210	8xØ18	150	105	15
125	500	142	188	210	245	8xØ18	180	130	27
150	550	160	212	240	280	8xØ22	210	170	35
200	600	210	268	295	335	12xØ22	250	220	45

KV, KV-PP, KV-PVC with flange connection



Total connection dimensions, weights of flow meters KV, KV-PP, KV-PVC with flange connection

DN	A	D	H	J	I	E	F	L	Hmotnost kg
15	250	23	45	65	90	4xØ14	112	147	2,8
25	250	33	60	85	110	4xØ14	112	147	3,4
50	250	60	90	125	155	4xØ18	112	160	6,4
80	400	80	110	160	190	8xØ18	130	172	8,9
100	400	110	148	180	210	8xØ18	150	187	15,4
125	500	142	188	210	245	8xØ18	180	212	27,4
150	550	160	212	240	280	8xØ22	210	252	35,4
200	600	210	268	295	335	12xØ22	250	300	45,4

V. ASSEMBLY, SERVICE AND MAINTENANCE

The flow meters are located in the piping vertically + 1° inlet from below. Before the flow meter installation it is necessary to **clean** the pipe and **rinse** it out. Service and maintenance present only the inspection of the tightness, filter cleaning at the inlet, if it is installed.

If it is necessary, clean the magnetic float, which is possible to take out from the flow meter:

1. The flow meter with the crossbar guide of a float and damping in the upper part of the flow meter. Take out the retaining ring in the upper part of the device and take out the damping cylinder. Loosen (best by the special spanner) the nut and the bottom cross of the float; take out the float, clean it and also the internal space of the device.
2. The flow meter with the bar guide of a float and damping in the bottom part of the flow meter. Take out the retaining ring in the upper part of the device and take out the upper guide of the float and then the float itself. Clean the float and also the internal space of the flow meter. Some types of flow meters have the possibility to take out also the bottom-damping cylinder.

The damping is used for measuring of compressible materials.

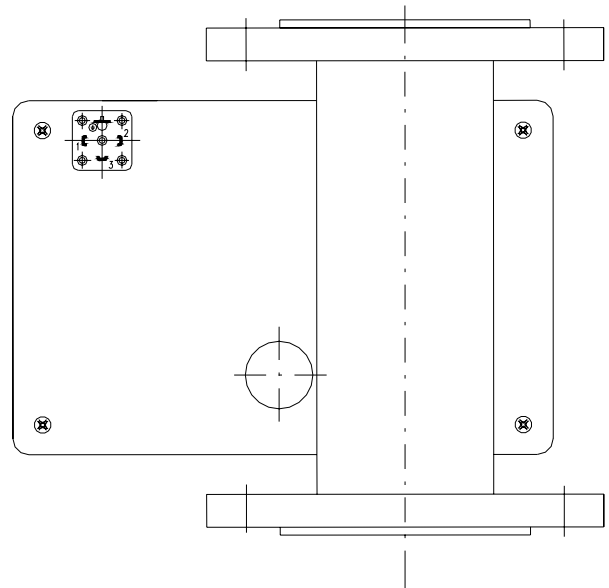
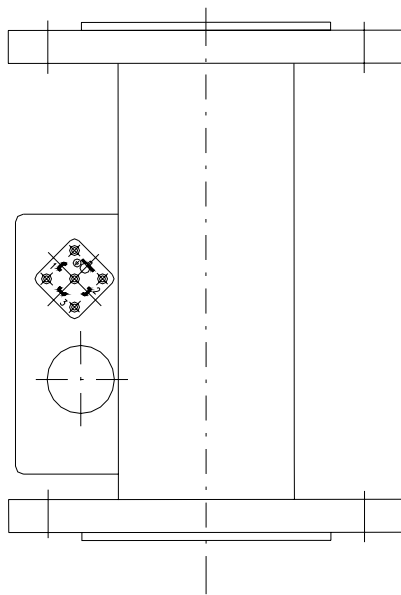
Adjusting or reduction valve has to be located into the piping in such a way to secure fixed pressure value in the flow meter and corresponding to the value mentioned at the device scale. In like manner secure the temperature values.

This flow meter does not require straight parts of pipes either at inlet or at outlet. The device is not suitable to use in the ambient with strong magnetic fields.

To connect conductors to angular connector located at the backside of the flow meter, in case of using limited contacts, current outlet or connection of external evaluation devices, follow this chart:

Flow meter type K - P

Flow meter type K - V

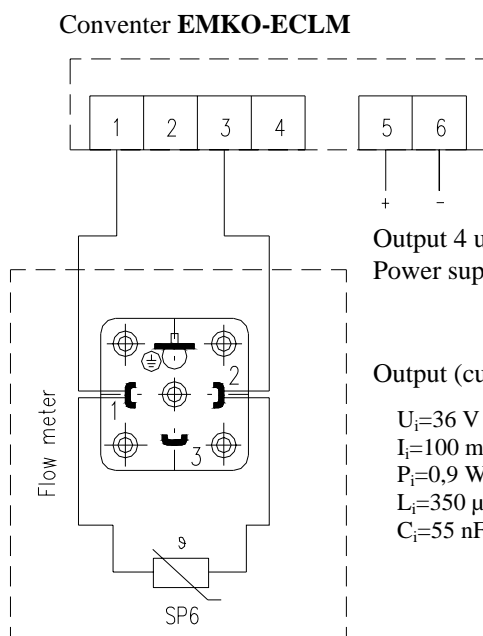


sensor

SP 5 min., contact closed at the flow fall

SP 5 max., contact closed at the flow increase

Wiring diagram of the flow meter to the converter with separated indication of momentary flow, type EMKO-ECLM with the display.

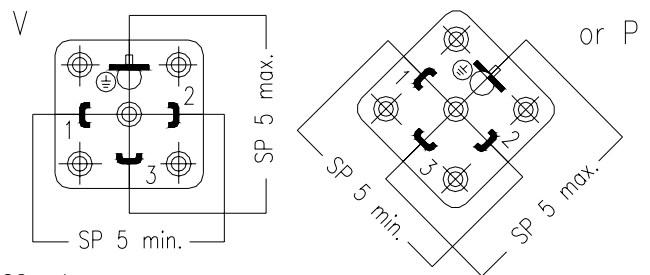


Output 4 up to 20 mA

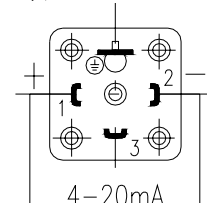
Power supply from the current loop 11 up to 36 Vss

Output (current loop):

- $U_i=36$ V DC
- $I_i=100$ mA
- $P_i=0,9$ W
- $L_i=350$ μ H
- $C_i=55$ nF



Wiring diagram of the flow meter output 4-20mA type EMKO-ECLM



Power supply from the current loop 11 up to 36 Vss
11-26 Vss Ex

Screw Possible corrections of a circuit resistance:

Specify in your order or during the adjusting the size of the total circuit resistance Rv.clamps are instrumental to the connection of conductors with profile from 0,5 to 1,5 mm².

Wiring diagram of the flow meter and the converter Ex to following equipment, which max. output parameters have to be smaller or equal to corresponding converter max. input parameters of.

$U_i=26\text{ V DC}$
 $I_i=100\text{ mA}$
 $P_i=0,9\text{ W}$
 $L_i=350\text{ }\mu\text{H}$
 $C_i=55\text{ nF}$

Converter Ex 5102

Screw clamps are instrumental to the connection of conductors with profile from 0,5 to 1,5 mm².

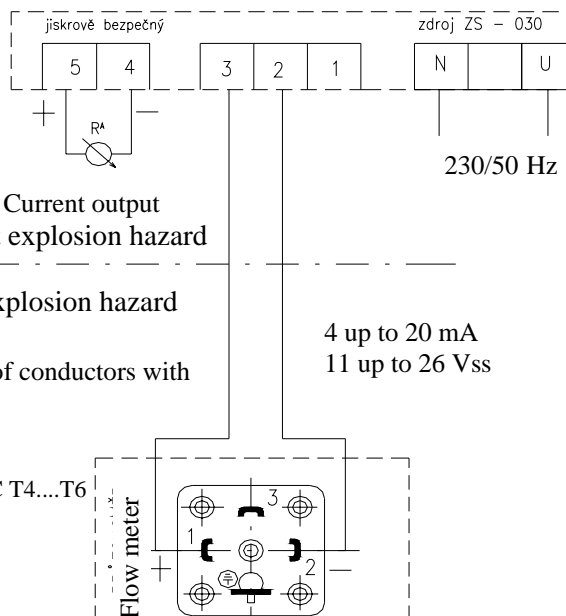
Parameters of the converter

Sparking safety stage:

Ex IIIG EEX ia IIC T4....T6

Output (current loop):

$U_i=26\text{ V DC}$
 $I_i=100\text{ mA}$
 $P_i=0,9\text{ W}$
 $L_i=350\text{ }\mu\text{H}$
 $C_i=55\text{ nF}$



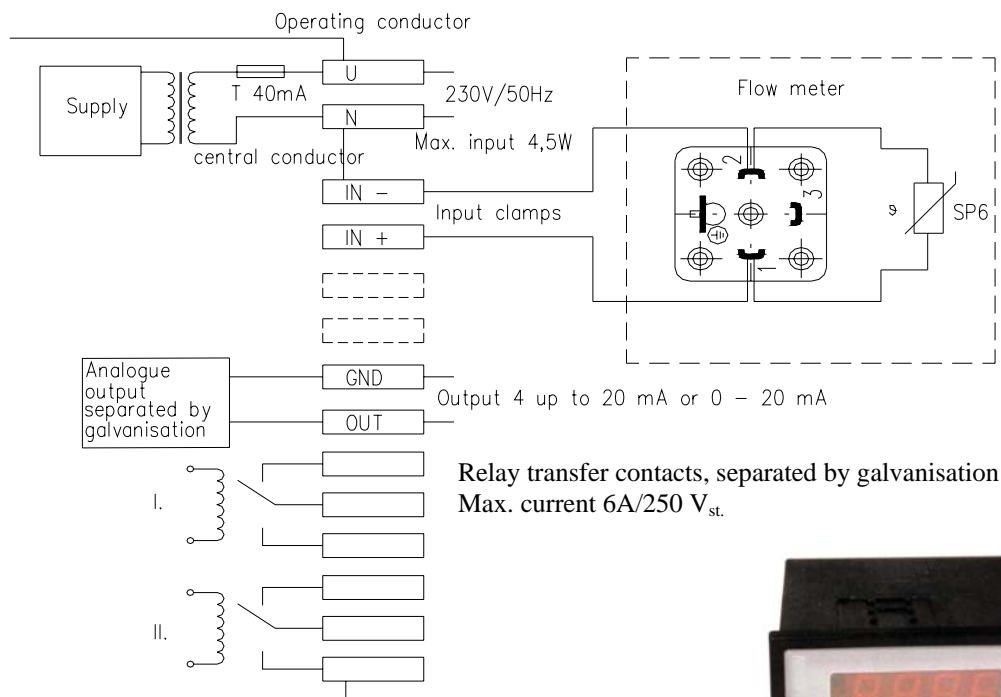
0(4) - 20 mA Current output
 Ambient without explosion hazard

Ambient with explosion hazard

4 up to 20 mA
 11 up to 26 Vss

The flow meter connector for the current

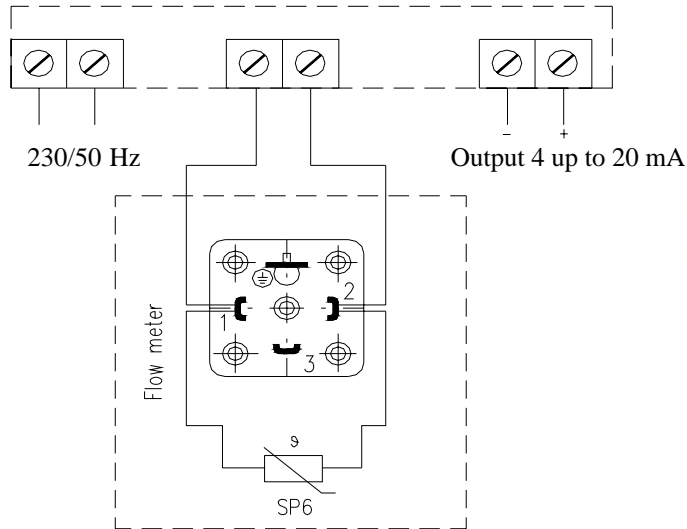
Wiring diagram of the flow meter to the converter with separated indication of momentary flow and with the signalling of two comparative values – type **DMK with contacts**, sectional unit



Relay transfer contacts, separated by galvanisation
 Max. current 6A/250 V_{st}.



Flow indicator ERT50000

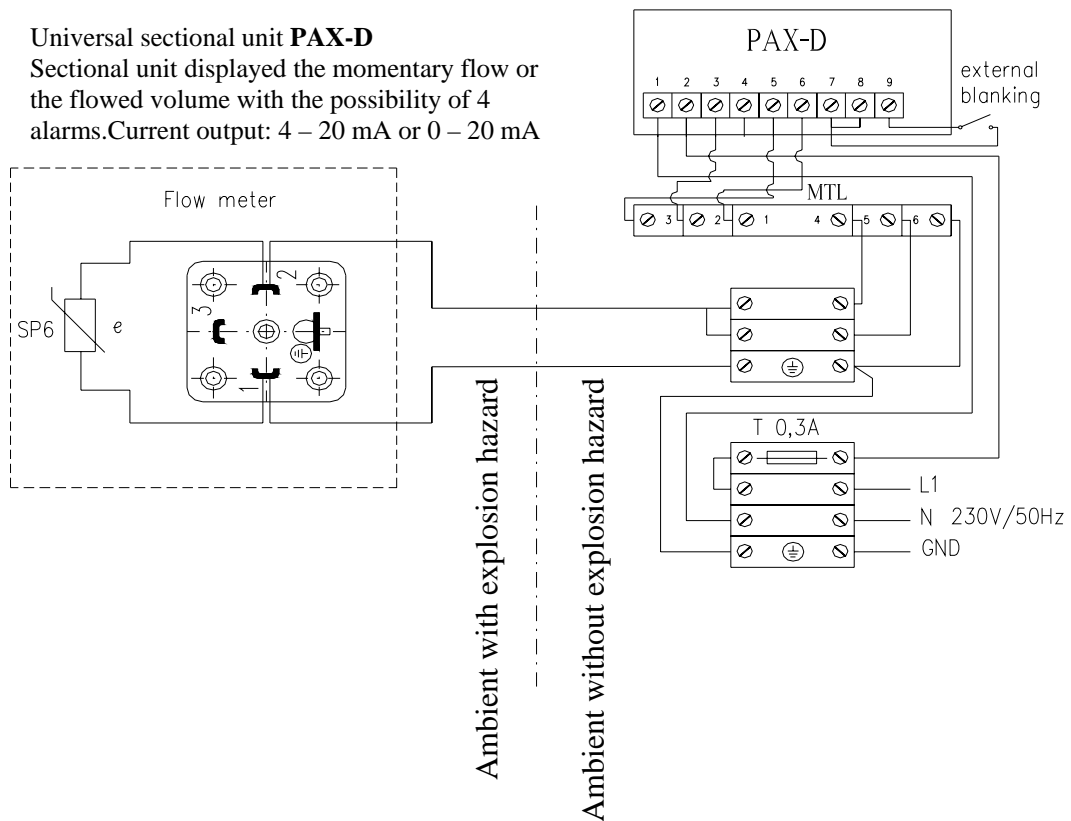


Technical data:

- Power supply: 230V/50Hz
- Input: 3VA
- Display: 8 digits LCD height 11,7 mm
- Current output: active 4 – 20 mA or 0 – 20 mA
- $R_{max}=500\Omega$

Universal sectional unit PAX-D

Sectional unit displayed the momentary flow or the flowed volume with the possibility of 4 alarms. Current output: 4 – 20 mA or 0 – 20 mA



VI. ACCESSORIES

EMKO – flow meter – flow-keeper is possible to equip with sensors of flow volume

a) limit contacts -SP 5 min contact closed at the flow fall

-SP 5 max contact closed at the flow increase

Limit contacts SP 5 are monostable and adjustable in 10 – 20% of max. value of momentary flow measuring. Make it as follows:

a) Indicator P with dimensions 130 x 115 mm - screw off 3 pcs bolts M 5 with an internal hexagon on the back side of the case

b) Indicator V with dimensions 178 x 272 mm - screw off 4 pcs bolts M 4 on the front side of the case

- Remove the front part of the case
- Screw off 2 pcs bolts of the sensor SP5
- By the sensor SP 5 moving in v arc-channel adjust the required flow value, which evokes the contact closing – opening. To adjust the sensor to higher value, it is possible to evoke the contact opening, closing and opening during the operation.
- Retighten 2 pcs bolts of the sensor SP5 thereby fix the sensor.
- Check the free movement of the pointer by its slight turning.
- Close the case in opposite way.

Max. closing current of contact 0,3 A (1 A by request)

Max. voltage 60 V

Max. closing output 10 W

Max. medium temperature 130 °C

We recommend protecting the switch SP5 by connection to locking relay.

- **b)** continuous reading - SP 6 + converter ECLM with linear output 4 – 20 mA,
twin wire wiring

11 – 26 V_{ss} for Ex

11 – 36 V_{ss} ambient without explosive
hazard

c) Evaluation device DMK - Display of momentary flow, converter with the output e.g. 4
-20 mA or 0 – 20 mA;
Output – contact 250 V 6A

d) Flow indicator ERT 50000 - Display of momentary flow -6 digits
Display of flowed volume, counter A -8 digits
Counter B -7 digits – daily counter
Converter 4 -20 mA , 0 – 20 mA
Power supply 230 V

e) Universal sectional unit PAX – D - Sectional unit displayed the momentary flow or
the flowed volume with the possibility of 4
alarms.
Current output: 4 - 20 mA or 0 - 20 mA

VII. TESTING

The flow meters production covers following tests: material, dimensions, design, surface finish, assembly and marking correctness, tightness and pressure tests. Each device is calibrated individually.

VIII. ORDER

Necessary data:

- Type of the flow meter
- Flow values to be measured during the operation (max, min)
- Measured material
- Pressure
- Temperature
- If it is necessary to sense the flow value – cable length
- Delivery time
- Quantity (pcs)

Example:

We order 1 pc of all-metal flow meter type K 21 for the measuring of the airflow 1600 – 16000 Nl/hr, temperature 20° C, and absolute pressure 201,35 kPa (overpressure 100 kPa).

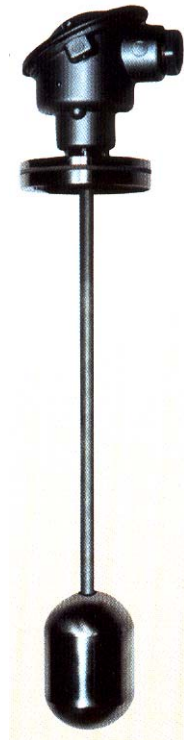
Submersible Level Indicator L11

I. Usage

Level gauge L 11 is used for the measuring of the liquid level in opened and pressure tanks. This level gauge makes possible to measure also flicking and whirling levels, aggressive, toxic and flammable materials. The position of a float with magnet is by means of the magnetic field medium transferred to the sensor located in a water pipe. The level indicator can be equipped with the monostable contact (KM) or bistable one (SP1, SP2) to follow one or also some few levels up, or it can be equipped with the SP4 sensor to follow a level continuously and to make possible current outlet.

Benefits of the level indicator L11:

- Simple and rugged design.
- Pressure – resistant and gasproof separating of the indicator and measuring part.
- Suitable for difficult service conditions and for contrary conditions rounds the equipment.
- It measures liquids and liquefied gases with the density more than 400 kg m⁻³ reliably.
- It bears up against pressure up to 4 MPa, and more by request of Customer.



Type description

L 11/ ... / ... / ... / ... / ... / ...

0. 1. 2. 3. 4. 5.

0. Length of the guide bar (mm)

1. Equipment connection

- A Thread G1"
- B Flange DN50/PN16
- C Flange DN125/PN16
- D Flange DN200/PN16

2. Material

- N Stainless steel ČSN 17 246
- PP Polypropylene
- other material by request

3. Data communication of measured merits – quantity and type of contacts

- KM Monostable contact
- SP1 - min Limit contacts e.g. 2 x SP1-min, connected, when min. level is achieved
- (SP2 - max)
- SP4 Electric output for display and converter (see technical data)

4. Field of application

- NO Standard
- EX For ambient with explosion hazard
- ZO Impurifying, settling and crystallising liquids

5. Special types

- HP0 Max. pressure 1,6 MPa
- HP1 Max. pressure 2,5 Mpa
- HP2 Max. pressure 4 MPa
- HP3 Max. pressure 0,8 MPa - PP float

Offered types

Type	Material of measured pipe and float	Flange	Max. operational pressure [MPa]	Max. liquid temperature [°C]
L 11/N	Corrosion-proof steel	Steel	1,6	100
L 11/PP	Polypropylene	Polypropylene	0,8 0,2	60 100

II. Technical data

Medium	liquids, liquefied gases
Measured range <u>Standard</u> Stainless steel type Type PVC, PP <u>By request</u> Stainless steel type	From 0,1 to 9 m From 0,1 to 6 m From 0,1 to 16 m
Tolerance	± 5 mm
Viscosity <u>Standard</u>	± 5000 m.Pa.s
Max. operational pressure Depends on material type, PN flanges and float resistance	1,6 MPa standard for stainless steel type 0,2 - 0,8 MPa standard for PP type (higher by request)
Assembly position	Vertical
Max. temperature of measured liquid <u>Standard</u>	From -20 to +150 °C Higher by request
Material type	Stainless steel, PP, PVC, other by request
Connection <u>Standard</u> <u>By request</u>	By means of flanges G1" From DN 50 to 200/PN 16 or PN 40
Data communication of measured merits - Sensor SP4 - Evaluation equipment VZI 211 R with converter into panel - Converter ECLM to DIN	Ambient temperature max. 100°C Display of level high, volume, 2 limits, active output 0/4 – 20 mA, Power supply 220 V 50Hz Active output 0/4 - 20 mA, Power supply 15 - 30V
Limit contacts Contact KM Sensor SP1-min, SP2-max	Monostable Bistable, contacts for min./max. Max. 0,2 A; max. 60V; max. 10W Ambient temperature max. 90°C - PVC cable Ambient temperature max. 120°C - silicone cable Higher by request

Float choice

Choose the float in dependence of pressure, temperature and density of measured liquid. Except this you have to choose material according to the liquid corrosive grade.

III. Order

In the order please fulfil:

- kind of medium, concentration in %
- density, viscosity
- temperature and pressure
- measured range and the length of guide bar
- units
- electrical outputs
- connection type, thread or flange DN/PN

PADDLE FLOW METERS – type P, PP and PPP – flow-keepers

- ◆ For measuring of liquid and fluent materials
- ◆ Horizontal and vertical operating position
- ◆ Resistant to contamination
- ◆ Resistant to force impacts
- ◆ Massive all-metal design including case of indicator for industry
- ◆ Specified flow adjustment (according to the scale), which activates the limit contact
- ◆ Individual calibration
- ◆ Data about momentary flow
- ◆ Short building length – straight piping, 6D prior to device 3 D after one
- ◆ Extended building length for higher accuracy of measuring
- ◆ Sectional system, possibility of outlets, indication etc.
- ◆ Measuring in extreme conditions



I. APPLICATION

Paddle flow meters – flow-keepers are used to indication of momentary flow of liquid and fluent materials in all industrial branches. The flow meter with the switch SP5 is possible to use as a flow-keeper of pre-set flow level. The flow meter is possible to equip with the switch SP6 and evaluation devices e.g. ECLM, DMK, ERT 50000, PAX-D for continuous indication of momentary flow, or flowed volume with the possibility of analogue output (see catalogues of single equipment).

Descriptions of single types of paddle flow meters.

Type P – function of the flow meter consists in the measuring of the reaction board turning, that is deflected in the material flow and stopped in the position, where all forces are in balance, including gravity of the board. This type of flow meter has been designed only for the horizontal operating position and is good at small pressure loss.

Type PP – similar function to type P, but the force transmitted to the reaction board from the torsion spring is increased. This type has been designed for horizontal and vertical operating positions and has small building length.

Type PPP – it is the flow meter with the spring and in an extended building length, which can increase the measuring accuracy. This type has been designed for horizontal and vertical operating positions.

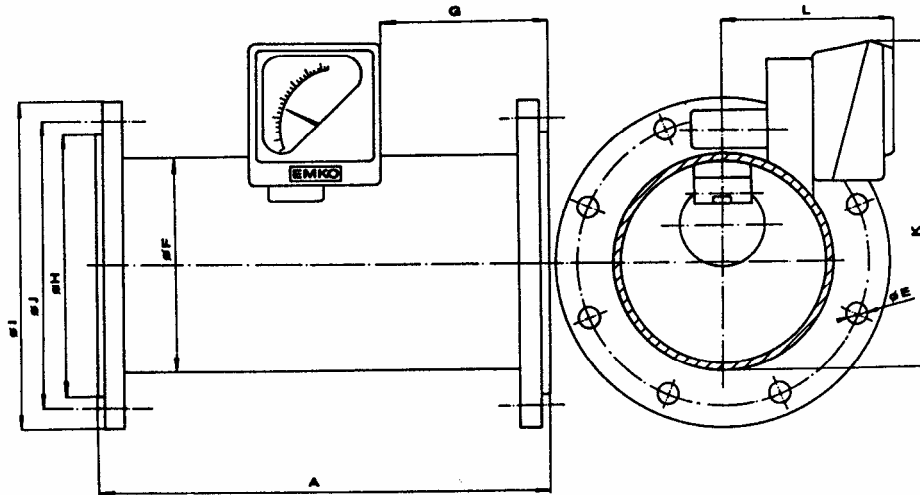
In all types of flow meters, the turning of a reaction board is transmitted by means of the magnetic connector from the hermetical space to the pointer of the separated indicator.

In the ambient with explosion hazard, there is possible to use flow meters with all-metal measuring parts. The device may be connected only in a circuit followed with the sparking safeguarding device, which is certified for the design II(2) G [EEx ia] II C T6 with the supply secured from sparking at least. Practically the device produces no warming.

II. TECHNICAL DATA:

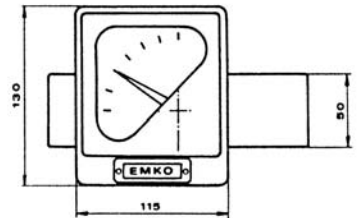
Type	P, PP, PPP
Measuring range (100% of flow) choose from the table Water 20°C Air 101,3 kPa abs. , 20°C	2 up to 1000 m ³ /hr 20 up to 4500 m ³ / hr
Rate of max. and min. measured values	7 : 1 (10 :1 by request)
Measuring fault (in % from the rate) Additional fault of electrical outlet	± 2,5% ± 1%
Measuring part Reaction board Spring Body annulus	Stainless steel ČSN 17 246, DIN 1.4541, titanium Stainless steel Stainless steel ČSN 17 246, DIN 1.4541, titanium, from DN 65 standard carbon steel with surface finish
Scale	In flow units (by the Customer's request)
Rated diameters	DN 25 up to DN 400 (higher by request)
Shielding	IP 65, with angular connector IP 54
Flange connection acc. to CSN, DIN	DN 25 up to DN 400, PN 16 standard
Max. working temperature of measured material in accordance with thermal category, type in explosive medium Thermal category T6 Thermal category T5 Thermal category T4 Thermal category T3	85 °C 100 °C 125 °C 150 °C
Max. working temperature of measured material without sensors using, max. ambient temperature ≤120°C P, PP, PPP	350 °C higher by request
Max. ambient temperature with using of SP6 sensors + connector with an analogue output in the flow meter case Max. ambient temperature with using of sensors in medium with explosion hazard zone 1 Max. ambient temperature without explosion hazard with using of sensors SP5, SP6 – analogue output, converter outside flow meter	85 °C 60 °C 130°C
Max. working pressure	1,6 MPa – stainless 20 MPa by request

Requirements to other technical data have to be discussed with the producer.



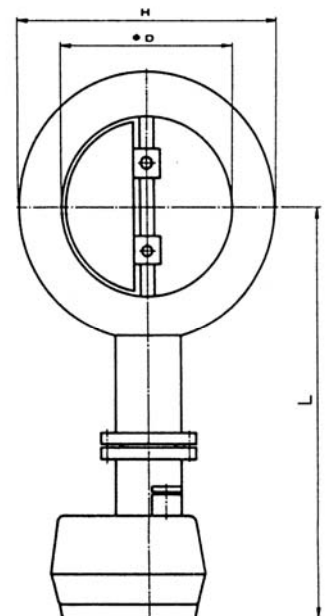
Values of measuring ranges and dimensions - type P

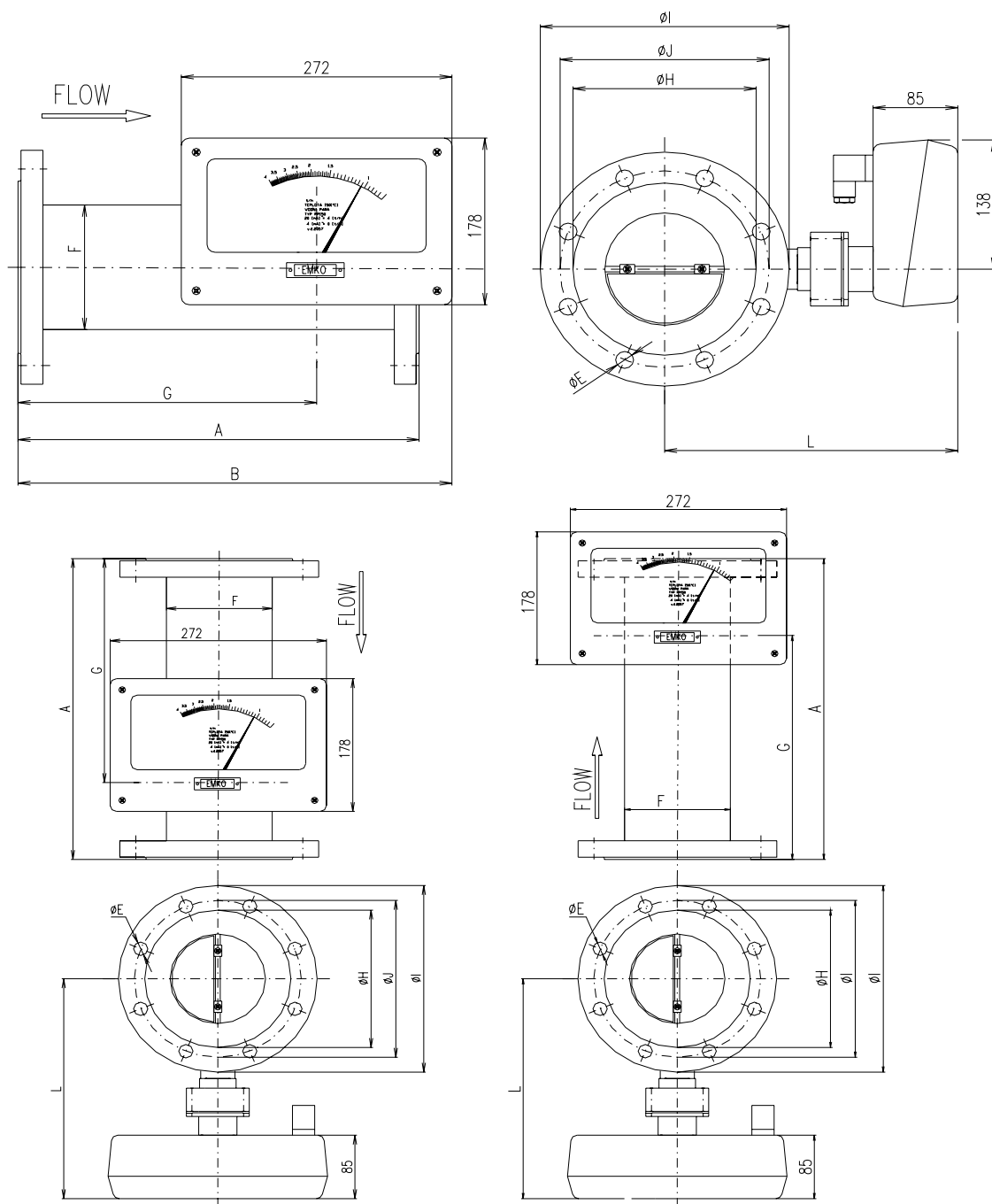
DN	Measuring range - max. flow		A	H	J	I	F	G	E	L	K
	Water 15 °C m ³ /hr	Air 20 °C 101,3 kPa m ³ /hr									
80	60	500	300	136	160	195	90	115	8 x φ18	112	206
100	90	1 000	300	156	180	210	110	115	8 x φ18	129	206
125	130	1 800	400	186	210	245	140	165	8 x φ18	154	236
150	200	2 400	400	208	240	280	160	165	8 x φ23	154	255
200	300	3 000	500	268	295	335	225	215	8 x φ23	154	295
300	500	4 500	500	370	410	460	315	215	12xφ23	200	410
400	1 000		500	490	525	580	450	215	16xφ27	200	550



Values of measuring ranges and dimensions - type PP

DN	Measuring range - max. flow		D	L	H
	Water 15 °C m ³ /hr	Air 20 °C 101,3 kPa m ³ /hr			
25	3	20	25	210	70
32	8	80	32	232	80
40	20	100	300	156	180
50	30	200	50	243	102
65	70	300	65	253	122
80	80	500	80	262	140
100	100	1000	100	272	160
125	150	1800	125	287	190
150	200	2400	150	300	212
200	300	3000	200	330	270
300	600	4500	300	380	380
400	1000		400	430	500





Values of measuring ranges and dimensions – type PPP

DN	Measuring range - max. flow		A	H	J	I	F	G	G1	E	L	B
	Water 15 °C m ³ /hr	Air 20 °C 101,3 kPa m ³ /hr										
80	80	500	300	136	160	195	90	220	80	8 x Ø18	273	356
100	100	1 000	300	156	180	210	110	210	90	8 x Ø18	283	346
125	150	1 800	400	186	210	245	140	300	100	8 x Ø18	295	436
150	200	2 400	400	208	240	280	160	285	115	8 x Ø23	308	421
200	300	3 000	500	268	295	335	225	360	140	8 x Ø23	333	496
300	600	4 500	500	370	410	460	315	310	190	12 x Ø23	383	446
400	1 000		500	490	525	580	450	260	240	16 x Ø27	433	396

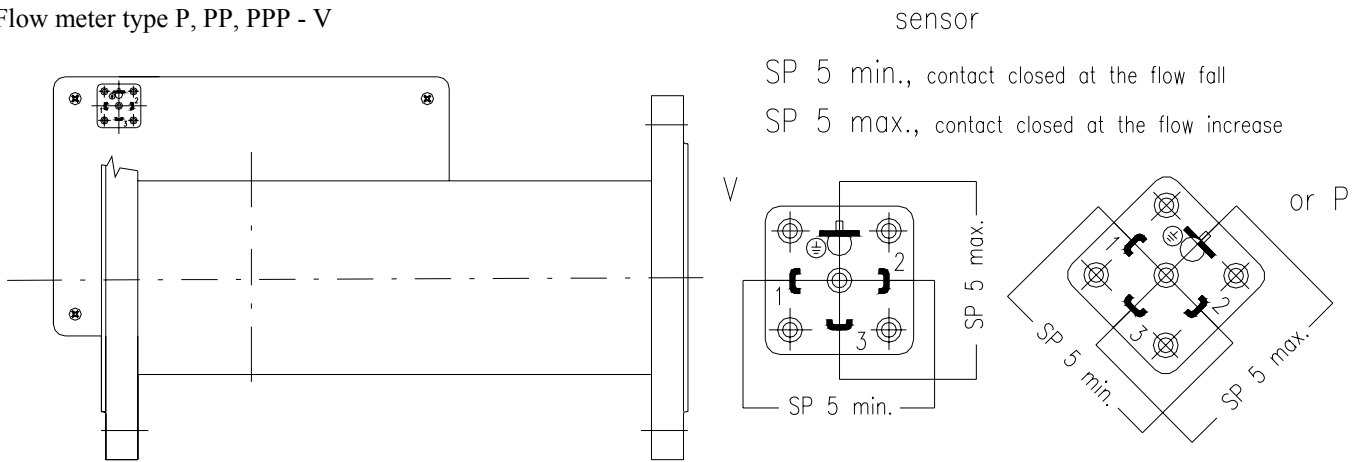
III. ASSEMBLY, SERVICE AND MAINTENANCE

The flow meter is inserted between the packing and flanges so, to be centered between flanges. This flow meter requires straight smooth piping in lengths 6D prior to the device and 3D after one. Before the flow meter installation it is necessary to **clean** the pipe and **rinse** it out. Service and maintenance present only the inspection of the tightness, paddle cleaning. During the flow meter installation it is necessary to keep the marked flow direction, data mentioned on the scale, especially material, temperature and overpressure. Install the flow meter so, the paddle rotation axis is horizontal.

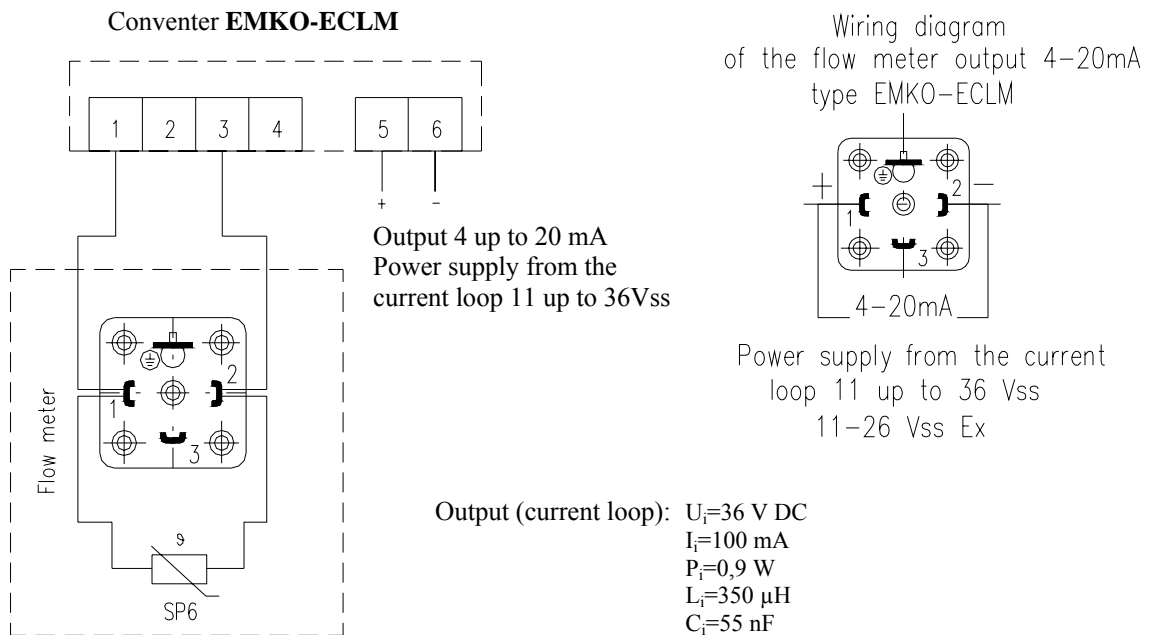
The permanent magnets secure the transmission to the indication case that's why the flow meter is not suitable into the ambient with strong magnetic field.

To connect conductors to angular connector located at the backside of the flow meter, in case of using limited contacts, current outlet or connection of external evaluation devices, follow this chart.

Flow meter type P, PP, PPP - V



Wiring diagram of the flow meter to the converter with separated indication of momentary flow, type EMKO-ECLM with the display.



Screw Possible corrections of a circuit resistance:

Specify in your order or during the adjusting the size of the total circuit resistance

Rv.clamps are instrumental to the connection of conductors with profile from 0,5 to 1,5 mm².

Wiring diagram of the flow meter and the converter Ex to following equipment, which max. output parameters have to be smaller or equal to corresponding converter max. input parameters of.

$U_i=26\text{ V DC}$
 $I_i=100\text{ mA}$
 $P_i=0,9\text{ W}$
 $L_i=350\text{ }\mu\text{H}$
 $C_i=55\text{ nF}$

Converter Ex 5102

Screw clamps are instrumental to the connection of conductors with profile from 0,5 to 1,5 mm².

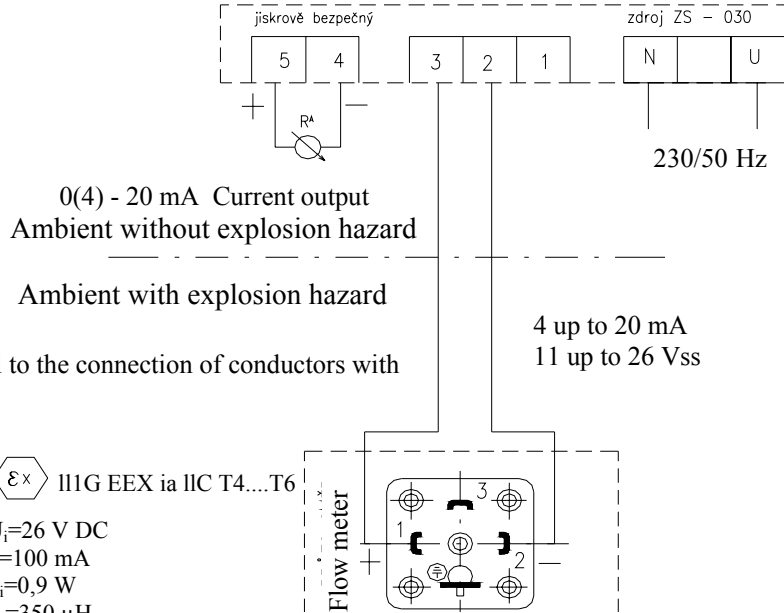
Parameters of the converter

Sparking safety stage:

Ex III G EEX ia IIC T4...T6

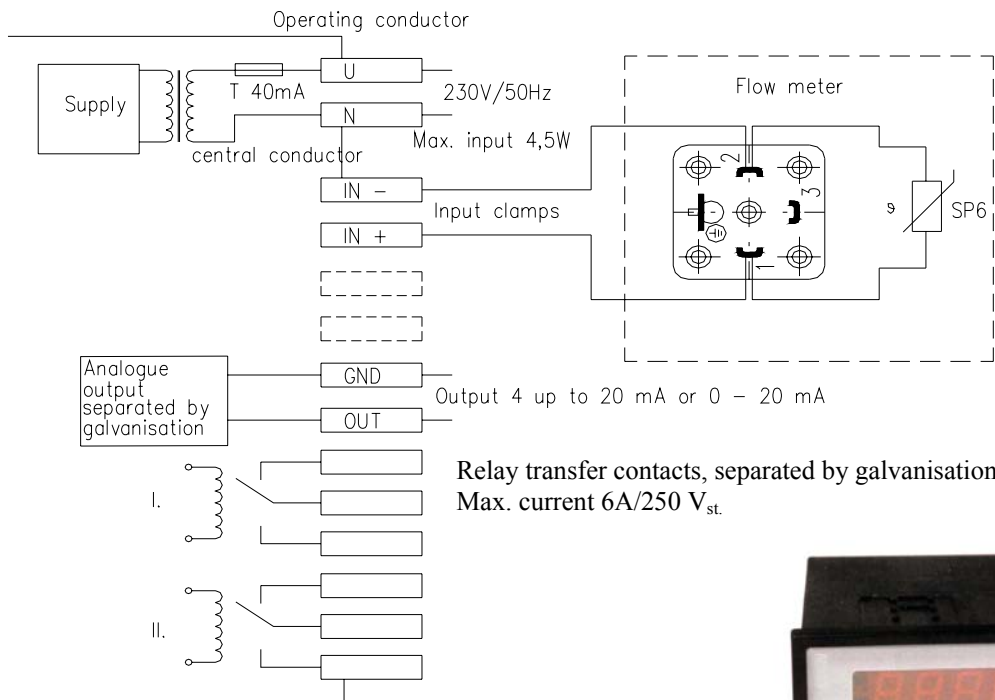
Output (current loop):

$U_i=26\text{ V DC}$
 $I_i=100\text{ mA}$
 $P_i=0,9\text{ W}$
 $L_i=350\text{ }\mu\text{H}$
 $C_i=55\text{ nF}$

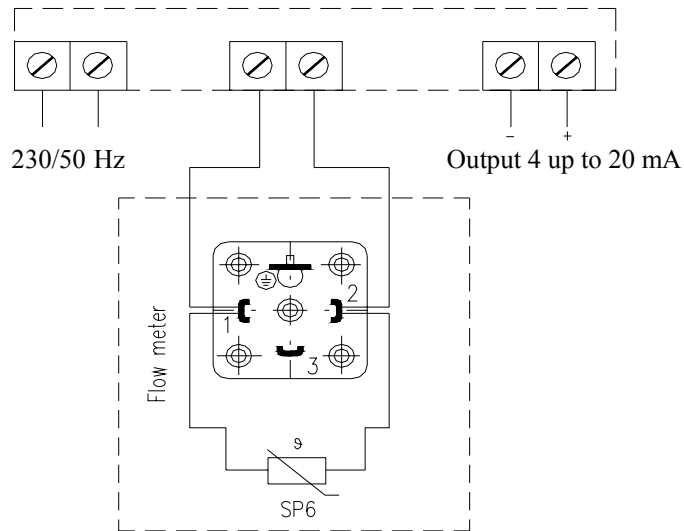


The flow meter connector for the current

Wiring diagram of the flow meter to the converter with separated indication of momentary flow and with the signalling of two comparative values – type **DMK with contacts**, sectional unit



Flow indicator ERT50000

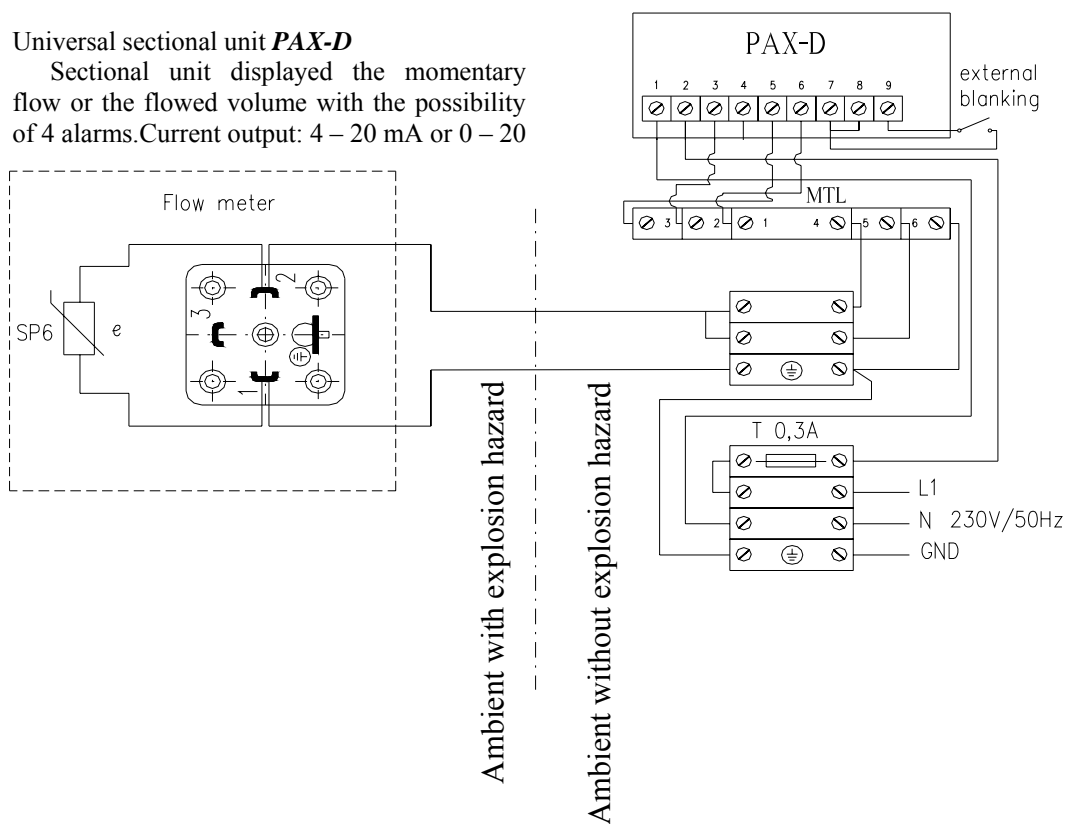


Technical data:

Power supply: 230V/50Hz
 Input: 3VA
 Display: 8 digits LCD height 11,7 mm
 Current output: active 4 – 20 mA or 0 – 20 mA
 $R_{max}=500\Omega$

Universal sectional unit **PAX-D**

Sectional unit displayed the momentary flow or the flowed volume with the possibility of 4 alarms. Current output: 4 – 20 mA or 0 – 20 mA



V. TESTING

The flow meters production covers following tests: material, dimensions, design, surface finish, assembly and marking correctness, tightness and pressure tests. Each device is calibrated individually.

VI. ORDER

Necessary data:

- Type of the flow meter
- Flow values to be measured during the operation (max, min)
- Measured material
- Pressure
- Temperature
- If it is necessary to sense the flow value – cable length
- Delivery time
- Quantity (pcs)

Example:

We order 1 pc of paddle flow meter type PP for the measuring of the airflow 16 – 160 Nm³/hr, temperature 20° C, and absolute pressure 201,35 kPa (overpressure 100 kPa).

We recommend using questionnaires that we will send by request. We are ready to help you with the suitable type of a flow meter finding.