GHMGROUP
Specialists by Competence.

PRODUCT INFORMATION
GHM GROUP

Flow.
Paddle.

Characteristics

System
- Paddle

Evaluation
- Displays, Switching, Measuring

Nominal widths
- DN 10..200

Range
- 2..3600 l/min

Media
- Water, Oils, Gases, Aggressive media

Pressure resistance
- Max. 25 bar

Temperature
- -20..+200 °C

Approvals
- ATEX

Applications

- **Flow switching in transformers**
- **Flow switching in heat exchangers**
- **Flow display and monitoring in hot water installations**
- **Testing equipment monitoring**
- **applications**

Function and benefits

The HONSBERG paddle system for the monitoring and measurement of liquid and gaseous media is an economical alternative with a high level of operational safety for industrial plant construction.

A spring-supported paddle is positioned in the volume flow and covers a path proportional to the flow value. The contact is triggered when the selected flow value is reached.

With a change of the position of the contact, an infinitely variable adjustment of the switching point is possible.

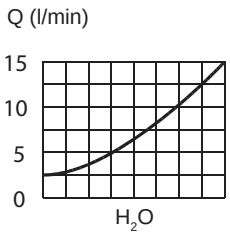
The paddle devices are predominantly used in liquid media. The influence of viscosity is less than with unmodified piston systems.

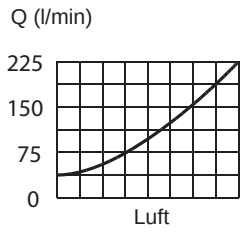
Typical switching point change of a paddle switch with a change of viscosity.

H_2O	Viscosity mm2/s				
	30	60	115	220	
4	4,0	3,8	3,5	3,0	l/mm
8	8,0	7,6	7,0	6,6	
10	10,0	9,0	8,5	8,0	
20	20,0	19,0	18,0	17,5	

Based on the low reduction in cross-section from the paddle in the flow area, both a good resistance to dirt particles and low pressure losses result.

The functional ratio for air and gases in relation to water is approx. 1:15, which means 1 l/min water corresponds to approximately 15 Sl/min air at 20 °C.





Device overview

Device	Switch	Connection	Range l/min	Pressure resistance in bar	Medium temperature	Supply voltage	Switching	Page
UR1- / UR2-...G / A	Reed switch	Female thread G 3/8..G 2 Male thread G 1/2 A	1,3..53	PN 25	-20..+110 °C (-20..+150 °C)	-	normally open or normally closed 250 V AC, 1 A, 50 VA	5
UR1 / UR2-...V	Reed switch	Soldered or welded nozzle for DN 15..80	5..179	PN 25	-20..+80 °C	-	normally open or normally closed 250 V AC, 1 A, 50 VA	7
UR1-...HM / HK	Reed switch	thread G 11/4..G 11/2 oder G2“..G3“	23..118	PN 25	-20..+110^C	-	normally open or normally closed	9
A-U1-1	ATEX switching unit I M1 Ex ia I II 1G Ex ia IIC T4 II 1D Ex iaD 20 T135				-20..+110 °C	-	normally open or normally closed	11
UR3K-...G / A	Reed switch	Female thread G 3/8..G 2	3,5..69	PN 25	-20..+110 °C	-	normally open (n.o.) 250 V AC, 1 A, 50 VA	12
UR3K-...V	Reed switch	Soldered or welded nozzle for DN 15..80	8,5..248	PN 25	-20..+110 °C	-	normally open (n.o.) 250 V AC, 1 A, 50 VA	14
UM3K-...G / A	Micro switch	Female thread G 3/8..G 2	4..93	PN 25	-20..+110 °C	-	changeover 250 V AC, 5 A	16
UM3K-...V	Micro switch	Soldered or welded nozzle for DN 15..80	10..268	PN 25	-20..+110 °C	-	changeover 250 V AC, 1 A, 50 VA	18
UI-...G / A	Proximity switch	Female thread G 3/8..G 2 Male thread G 1/2 A	1,7..55 adjusted	PN 16	-20..+60 °C	10..30 V DC	PNP / NPN	20
UB1	Micro switch	Threaded nozzle R1 “ or installation flange	20..566	PN 16	-20..+140 °C	-	changeover 250 V AC, 6 A	22
UBX	Micro switch	Oval flange or male thread R1“	Adjustment	PN 16	-40..+140 °C -50..+125 °C	-	changeover 250 V AC, 6 A	24
CRE	Micro switch	Threaded nozzle R 1 “	3,2..2760	PN 5..13	-20..+120 °C	-	changeover 250 V AC, 15 A	26
CRG	Micro switch	Threaded nozzle R 1 “	3,2..2760	PN 11	-20..+120 °C	-	changeover 250 V AC, 15 A	28

Geräteübersicht

Device	Switch	Connection	Range l/min	Pressure resistance in bar	Medium temperature	Supply voltage	Switching	Page
VM-...E	Micro switch	Installation flange	40..3600	PN 16	-20..+90 °C (-20..+200 °C)	-	changeover 250 V AC, 5 A	30
A-V2	ATEX switching head I M1 Ex ia I / II 1G Ex ia IIC T4 / II 1D Ex iaD 20 T135				20..+90 °C	-	Changeover 15..36 V, 1.5..5 A	32
A-V3	ATEX switching head II 2G Ex d IIC T6				-20..+90 °C	-	changeover 250 V AC, 5 A	33
UZ	micro switch or potentio-meter	female thread G 1/2..G 2	3..500	PN 16	-20..+100 °C	-	changeover 250 V AC, 5 A 2 x normally open 2 x nor-mally closed 250 V AC, 0,6 A, 50 VA	34
	Additional devices for UZ						potentiometer	36
TZ1-...E	micro switch or potentio-meter	installation flange	50..1050	PN 16	-20..+90 °C (-20..+200 °C)	-	changeo-ver250 V AC, 5 A 2 x normally open 2 x normally closed 250 V AC, 0,6 A, 50 VA	37
	Additional devices for TZ1						potentiometer	39
Options	○ Special connection ○ Temperature up to 250 ° ○ Plug DIN 43650-A / ISO 4400 with Diodes							24 40 38
Accessories	○ Typ ZV / ZE (Filter) ○ FL-032.... (Flange connection) ○ KB...(Round plug connector 4-pin)							41 39 42

Errors and technical modifications reserved.

Flow Switch
UR1- / UR2-...G / A

- **Low pressure loss**
- **Compact design**
- **Threaded connection**

Characteristics

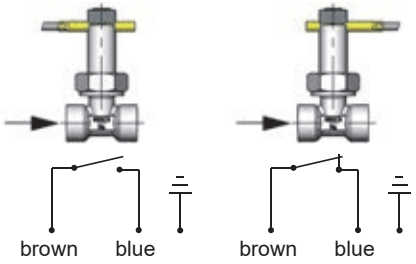
The devices function via the principle of a spring-supported paddle, and the magnetic triggering of a reed switch.

Technical data

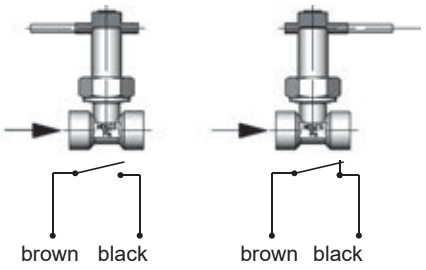
Switch	reed switch	
Nominal width	DN 10..50	
Process connection	brass / stainless steel - female thread G $^{3}/_{8}$..G 1 brass / POM - male thread G $^{1}/_{2}$ A (further process connections available on request)	
Switching range	1.3..35 l/min	for details see table "Ranges"
$Q_{max.}$	to 150 l/min	
Tolerance	±15 % of full scale value	
Pressure	Brass Stainless steel	PN 25 bar (UR1)
	POM PPS	PN 10 bar (UR2)
Medium temperature	Brass Stainless steel	-20..+110 °C (optionally 150 °C) (UR1)
	POM PPS	-20..+80 °C (UR2)
Ambient temperature	-20..+70 °C	
Media	water (oils, gases and aggressive media available on request)	
Electrical data	see "UR1 brass switching unit" or "UR1 plastic switching unit"	
Materials medium-contact	*Brass construction*: CW617N nickelled, CW614N nickelled, 1.4310, 1.4301, hard ferrite, NBR	*Stainless steel construction*: 1.4305, 1.4571, 1.4310, 1.4310, hard ferrite PTFE-coated, FKM
	Optional: Body made from POM (PN 10) Body made from PPS (PN 10) Connection G 1 /2 A POM (PN 10)	
Non-medium-contact materials	see "UR1 brass switching unit" or "UR1 plastic switching unit"	
Weight	see table "Dimensions and weights"	

Installation location	Standard: horizontal inwards flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range

UR1 Brass switching unit

Wiring	normally open (n.o.) or normally closed (n.c.),no. 0.225 
Switching voltage	max. 230 V AC
Switching current	max. 1 A
Switching capacity	max. 50 VA
Protection class	1 - PE connection
Ingress protection	IP 65
Electrical connection	cable 1.5 m, optionally for round plug connector M12x1, 4-pole
Materials, non-medium-contact	CW614N, nickelled, CW614N, NBR, PVC, POM

UR2 Plastic switching unit

Wiring	'Normally open', no. 0.446 Normally closed (n.c.) no. 0.447 
Switching voltage	max. 230 V AC
Switching current	max. 1 A
Switching capacity	max. 50 VA
Protection class	2 - safety insulation
Ingress protection	IP 65
Electrical connection	cable 1.5 m
Materials, non-medium-contact	PA, PVC, POM

pi-ho_fpa-ur1-g_d.pdf

Ranges

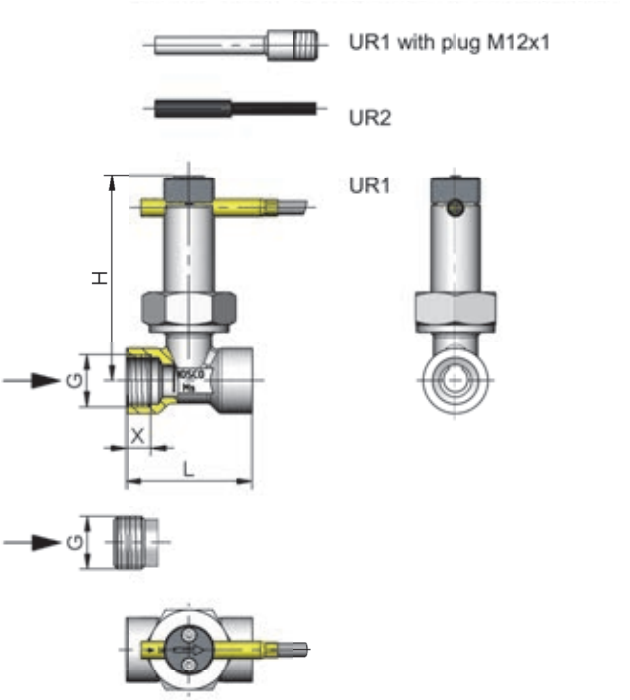
Details in the table correspond to horizontal inwards flow with decreasing flow rate.
UR2 (Plastic switching unit) is adjusted in the factory; please specify switching value.

G	DN	Switching range l/min H_2O	Types	$Q_{max.}$ recommended
G 3/8	DN 10	2.5 - 3.5	UR.-010G.	10
G 1/2 A	DN 15	1.3 - 2.1	UR.-015A.	
G 1/2		4.0 - 4.5	UR.-015G.	20
G 3/4	DN 20	5.0 - 6.0	UR.-020G.	40
G 1	DN 25	9.5 - 11.5	UR.-025G.	60
G 1 1/4	DN 32	13.5 - 17.5	UR.-032G.	80
G 1 1/2	DN 40	30.0 - 38.0	UR.-040G.	100

Special ranges are available.

Dimensions and weights

G	Types	H	L	X	Weight kg	
					UR1	UR2
G 3/8	UR.-010GM	82	50	10	0.35	0.35
	UR.-010GK				0.40	0.40
G 1/2 A	UR.-015AM		60	12	0.35	0.30
	UR.-015AP				0.15	0.15
G 1/2	UR.-015GM		50	10	0.35	0.30
	UR.-015GK				0.40	0.40
G 3/4	UR.-020GM	83		12	0.35	0.35
	UR.-020GK					
G 1	UR.-025GM	87			0.40	0.40
	UR.-025GK				0.45	0.45
G 1 1/4	UR.-032GM	91				0.40
	UR.-032GK				0.50	0.50
G 1 1/2	UR.-040GM	94			0.55	
	UR.-040GK				0.65	0.65
G 2	UR.-050GM	103			0.80	0.75
	UR.-050GK				0.95	0.95



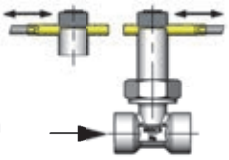
Handling and operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- Include a filter if the media are dirty (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment

UR1 - loosen bolts, push the switching current tube into the desired position.
Retighten the bolts.
Normally closed (n.c.) or normally open (n.o.) as per table "Technical data"



Flow Switch
UR1 / UR2-...V

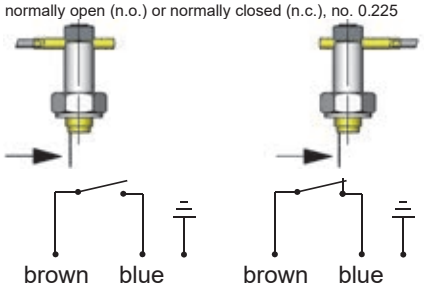
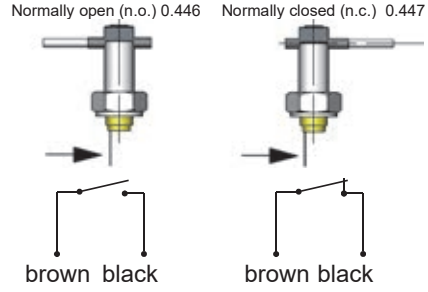
- **Low pressure loss**
- **Compact design**
- **Soldered/welded connection**

Characteristics

The devices function via the principle of a spring-supported paddle, and the magnetic triggering of a reed switch.

Technical data

Switch	reed switch		
Nominal width	DN 15..80		
Process connection	soldered/welded nozzle (further process connections available on request)		
Switching range	5..174 l/min		for details see table "Ranges"
$Q_{max.}$	to 600 l/min		
Tolerance	±15 % of full scale value		
Pressure	Brass Stainless steel	PN 25 bar (UR1)	
	PVC PPS	PN 10 bar (UR2)	
Medium temperature	-20..+110 °C (optionally 150 °C)		
Ambient temperature	-20..+70 °C		
Media	water (oils, gases and aggressive media available on request)		
For electrical data see "UR1 Brass switching unit" or "UR1 Plastic switching unit"	see "UR1 Brass switching unit" or "UR1 Plastic switching unit"		
Materials medium-contact	*Brass construction*: CW617N nickelled, CW614N, 1.4310, 1.4301, hard ferrite, NBR	*Stainless steel construction*: 1.4305, 1.4571, 1.4310, 1.4310, hard ferrite PTFE-coated, FKM	
	Optional: Body made from POM (PN 10) Body made from PPS (PN 10)		

Non-medium-contact materials	see "UR1 Brass switching unit" or "UR1 Plastic switching unit"
Weight	see table "Dimensions and weights"
Installation location	Standard: horizontal inwards flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.
UR1 Brass switching unit	
Wiring	normally open (n.o.) or normally closed (n.c.), no. 0.225 
Switching voltage	max. 230 V AC
Switching current	max. 1 A
Switching cap.	max. 50 VA
Protection class	1 - PE connection
Ingress protection	IP 65
Electrical connection	cable 1.5 m, optionally for round plug connector M12x1, 4-pole
Materials,non-medium-contact	CW614N, nickelled, CW614N, NBR, PVC, POM
UR2 Plastic switching unit	
Wiring	Normally open (n.o.) 0.446 Normally closed (n.c.) 0.447 
Switching voltage	max. 230 V AC
Switching current	max. 1 A
Switching cap.	max. 50 VA
Protection class	2 - Safety insulation
Ingress protection	IP 65
Electrical connection	cable 1.5 m
Materials, non-medium-contact	PA, PVC, POM

Ranges

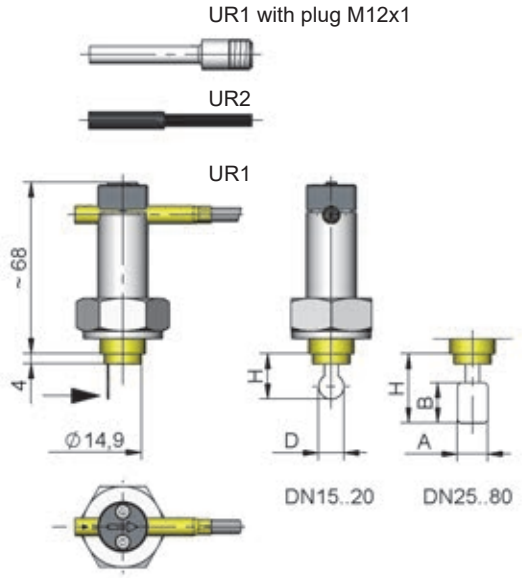
Details in the table correspond to horizontal inwards flow with decreasing flow rate. UR2 (Plastic switching unit) is adjusted in the factory; please specify switching value.

DN	Switching range l/min H_2O	Types	$Q_{max.}$ recommended
DN 15	5.0 - 6.5	UR.-015V.	20
DN 20	10.0 - 15.5		40
DN 25	11.0 - 13.0	UR.-025V.	80
DN 32	26.0 - 33.0		100
DN 40	37.0 - 42.5		150
DN 50	47.5 - 60.0	UR.-050V.	200
DN 65	95.0 - 117.0		400
DN 80	147.0 - 179.0		600

Special ranges are available.

Dimensions and weights

DN	Types	H	D	A	B	Weight kg	
						UR1	UR2
DN 15..20	UR.-015V.	18.0	13	-	-	0.25	0.20
DN 25..50	UR.-025V.	27.5	-	12	16		
DN 50..80	UR.-050V.	42.0			19		



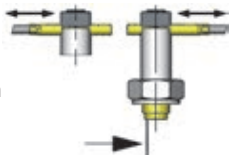
Handling and operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- If the media are dirty, install a filter (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment

UR1 - loosen bolts, push the switching current tube into the desired position. Retighten the bolts.
Normally closed (n.c.) or normally open (n.o.) as per table "Technical data"



Ordering code

	1.		2.	3.	4.	5.
UR		-		**V**		

❍=Option

1.	**Switching unit**		
	1		brass
	2	❍	plastic (already adjusted, specify switching value and normally closed (n.c.) or normally open (n.o.))
2.	**Nominal width**		
	015		DN 15..25
	025		DN 25..40
	050		DN 50..80
3.	**Process connection**		
	V		soldered/welded nozzle
4.	**Connection material**		
	M		brass
	K		stainless steel
5.	**Switching unit options**		
	A		for switching unit ATEX A-U1.1 The switching head is ordered in addition.
	S	❍	for round plug connector M12x1, 4-pole

Options

- Switching ranges for oil or gas
- Special quantity
- Adhesive PVC fitting

Ordering information

- Specify direction of flow, medium, and switching range, UR1 or switching value UR2.
- For UR2 specify normally closed (n.c.) or normally open (n.o.).
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).
- For gases, state pressure (relative or absolute), temperature and medium (e.g. air) (enquire about range).

Flow switch UR1-...HM / HK

UR1-015HM

UR1-032HM

- **Highly reproducible**
- **Low pressure loss**
- **Hermetic separation between electrical and hydraulic component**
- **Stress-fixing of the switching unit by means of plastic head**

Characteristics

The devices function via the principle of a spring-supported paddle, and the magnetic triggering of a reed switch.

Technical data

Switch	Reed switch	
Nominal width	DN 32..80	
Process connection	brass / stainless steel - Screw-in thread G $1^{1}/_{4}$..G $1^{1}/_{2}$ or G2“..G3“	
Switching range	23..118 l/min	For details see table "Ranges"
$Q_{max.}$	up to 600 l/min	
Hysteresis	Depending on the switching value, minimum ±0.7 l/min	
Tolerance	±15 % of full scale value	
Pressure resistance	PN 25 bar	
Medium temperature	-20..+110 °C	
Ambient temperature	-20..+70 °C	
Media	Water, oils (gases and aggressive media available on request)	

Wiring	Wiring 0.225 normally opened  1 2 brown blue (white)	or 'normally closed'  1 2 brown blue (white)
Switching voltage	230 V AC	
Switching current	1 A	
Switch performance	50 VA	
Cable length	1.5 m	
Ingress protection	IP 65	
Protection class	(1PE connection)	
Materials medium-contact	*Brass construction*: CW614N , 1.4301, 1.4571, 1.4310, Hard ferrite, NBR	*Stainless steel construction*: 1.4305, 1.4571, 1.4301, 1.4310, Hard ferrite, Viton
Non-medium-contact materials	POM	
Weight	UR1-015HM / HK: 0.18 kg UR1-032HM / HK: 0.38 kg	
Installation location	Standard: horizontal inwards flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.	

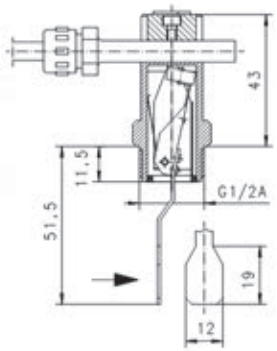
Ranges

The adjustment range is suitable for horizontally decreasing flows. Measured in DIN 2448 tube with normal wall thickness.

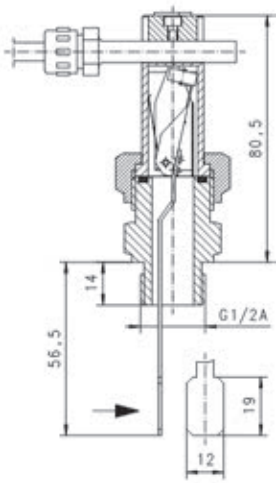
Types	DN	Adjustment range l/min H_2O	$Q_{max.}$ recommended
UR1-015HM	DN 32	23 - 30	100
	DN 40	33 - 44	150
UR1-032HM	DN 50	38 - 48	200
	DN 65	60 - 84	400
	DN 80	81 - 118	600
UR1-015HK	DN 32	23 - 30	100
	DN 40	33 - 44	150
UR1-032HK	DN 50	38 - 48	200
	DN 65	60 - 84	400
	DN 80	81 - 118	600

Dimensions

UR1-015H.



UR1-032H.

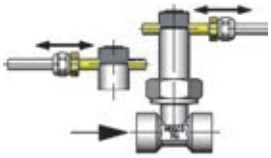


Handling and operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- Include a filter if the media are dirty (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment



UR1 - loosen bolts, push the switching current tube into the desired position. Retighten the bolts.
Normally closed or normally open
Normally closed

Ordering code

	1.	2.	3.	4.
UR1-				

❍=Option

1.	**Nominal widths**		
	015	DN 32..40	
	032	DN 50..80	
2.	**Process connection**		
	H	Screw-in thread	
3.	**Connection material**		
	M	Brass	
	K	stainless steel	
4.	**Switching unit options**		
	A ❍	For switching unit ATEX A-U1.1 The switching head is ordered in addition.	

Options

- Switching ranges for oil or gas
- Special values
- Soldered copper fitting
- Adhesive PVC fitting

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).
- For gases, state pressure (relative or absolute), temperature and medium (e.g. air) (enquire about range).

Switching Head A-U1-1

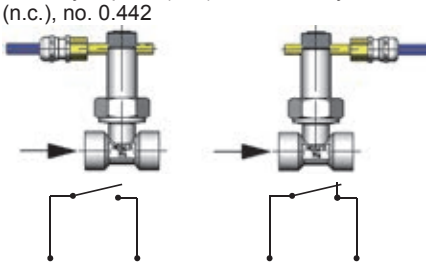
For device UR1

- **I M1 Ex ia I Ma**
- **II 1G Ex ia IIC T4 Ga**
- **II 1D Ex IIIC T135°C Da**

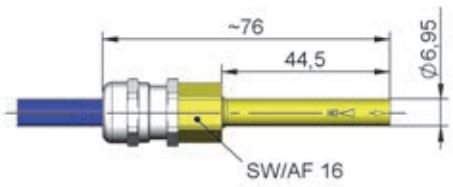
Characteristics

Intrinsically safe switching unit with reed switch and ATEX approval, for the UR1 range of devices, for use in intrinsically safe power circuits.

Technical data

Switch	reed switch
Medium temperature	-20..+110 °C
Ambient temperature	-20..+50 °C
Weight	0.05 kg additionally
Wiring	normally open (n.o.) or normally closed (n.c.), no. 0.442 
Switching voltage	max. 30 V
Switching current	max. 1 A
Switching capacity	max. 50 W
Protection class	3
Ingress protection	IP 65
Electrical connection	cable 2.5 m, other cable lengths up to max. 5 m are optionally available

Dimensions



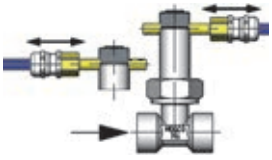
Handling and operation

Note

- For use only in intrinsically safe power circuits - Provide a suitable isolating amplifier.
- Cable lengths max. 5 m.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment

Loosen bolt(s), push the switching current tube into the desired position. Retighten the bolt(s). Normally closed (n.c.) or normally opened (n.o.) as per table "Technical data"



Ordering code

The base device is ordered, e.g. UR1-015GMA with switching head A-U1-1.

	1.
A-U1 -	**1**

1.	**Device series**	
	1	for UR1

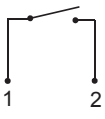
Flow Switch UR3K-...G / A

- **Threaded connection**
- **Reed switch**
- **Low pressure loss**
- **Compact design**
- **Threaded connection**
- **Plug DIN 43650-A / ISO 4400**

Characteristics

The devices function via the principle of a spring-supported paddle, and the magnetic triggering of a reed switch.

Technical data

Switch	reed switch	
Nominal width	DN 10..50	
Process connection	female thread G $^3/_8$..G 1 (further process connections available on request)	
Switching range	3.5..69 l/min	for details see table "Ranges"
$Q_{max.}$	to 150 l/min	
Tolerance	±15 % of full scale value	
Pressure resistance	PN 25 bar	
Medium temperature	-20..+110 °C	
Ambient temperature	-20..+70 °C	
Media	water (oils, gases and aggressive media available on request)	
Wiring	normally open (n.o.) No. 0.372 	
Switching voltage	max. 230 V AC	
Switching current	max. 1 A	
Switching capacity	max. 50 VA	
Protection class	2 - safety insulation	
Ingress protection	IP 65	
Electrical connection	plug DIN 43650-A / ISO 4400, optionally for round plug connector M12x1, 4-pole	
Materials medium-contact	*Brass construction*: CW617N nickelled, CW614N nickelled, 1.4310, 1.4301, hard ferrite, NBR	*Stainless steel construction*: 1.4305, 1.4571, 1.4310, 1.4310, Hard ferrite PTFE coated, FKM
Non-medium contact materials	ABS, PA, NBR	
Weight	see table "Dimensions and weights"	
Installation location	Standard: horizontal inwards flow; switching head not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.	

Ranges

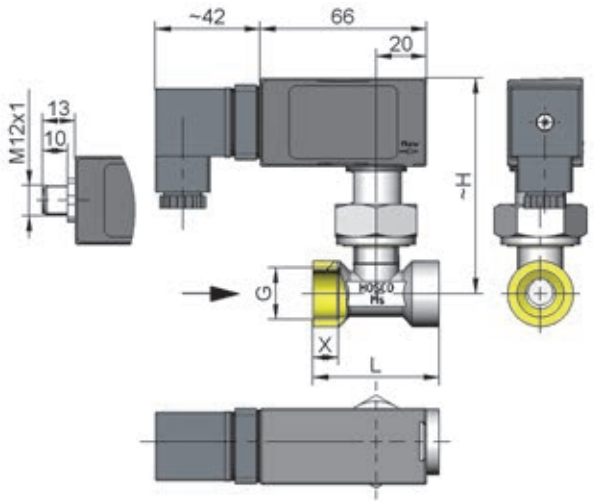
Details in the table correspond to horizontal inwards flow with decreasing flow rate.

G	DN	Switching range l/min H_2O	Types	$Q_{max.}$ recommended
G $^3/_8$	DN 10	3.5 - 5.0	UR3K-010G.050	10
G $^1/_2$	DN 15	5.0 - 6.5	UR3K-015G.065	20
G $^3/_4$	DN 20	6.0 - 8.5	UR3K-020G.085	40
G 1	DN 25	12.0 - 15.0	UR3K-025G.150	60
G 1 $^1/_4$	DN 32	20.0 - 27.0	UR3K-032G.270	80
G 1 $^1/_2$	DN 40	34.0 - 44.0	UR3K-040G.440	100
G 2	DN 50	54.0 - 69.0	UR3K-050G.690	150

Special ranges are available.

Dimensions and weights

G	Types	H	L	X	Weight kg
G $^3/_8$	UR3K-010GM	87	50	10	0.45
	UR3K-010GK				0.50
G $^1/_2$	UR3K-015GM		50	10	0.40
	UR3K-015GK				0.45
G $^3/_4$	UR3K-020GM	88		12	
	UR3K-020GK				
G 1	UR3K-025GM	92			
	UR3K-025GK				0.50
G 1 $^1/_4$	UR3K-032GM	96			
	UR3K-032GK				0.60
G 1 $^1/_2$	UR3K-040GM	99			
	UR3K-040GK				0.75
G 2	UR3K-050GM	108			0.85
	UR3K-050GK				1.05

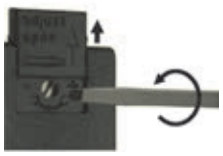


Handling and operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- When tightening the union nut, the connection piece must be countered using an open-ended spanner (SW 19).
- If the media are dirty, install a filter (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment



To adjust, open the slider. Adjustment is made using the adjustment screw with a lengthways slot; this is located under the valve.

Turn clockwise for a lower switching point; turn anticlockwise for a higher switching point.
After adjustment, close the slider again.

Example: The adjustment range 20 to 27 l/min corresponds to 7 l/min Adjustment option in 7 revolutions. Adjustment is therefore 1 l/min for each revolution.

Ordering code

	1.	2.	3.	4.
UR3K -		G		

1.	**Nominal width**		
	010	DN 10 - G $^3/_8$	
	015	DN 15 - G $^1/_2$	
	020	DN 20 - G $^3/_4$	
	025	DN 25 - G 1	
	032	DN 32 - G $1^1/_4$	
	040	DN 40 - G $1^1/_2$	
	050	DN 50 - G 2	
2.	**Process connection**		
	G	female thread	
3.	**Connection material**		
	M	brass	
	K	stainless steel	
4.	**Switching range H_2O for horizontal inwards flow**		
	050	3.5 - 5.0 l/min	●
	065	5.0 - 6.5 l/min	●
	085	6.0 - 8.5 l/min	●
	150	12.0 - 15.0 l/min	●
	270	20.0 - 27.0 l/min	●
	440	34.0 - 44.0 l/min	●
	690	54.0 - 69.0 l/min	●

Options

- Connection for round plug-in connector
- Signal lamp red or red/green in the plug DIN 43650-A
- Protective bellows
- Switching ranges for oil or gas
- Special values
- Soldered copper fitting
- Adhesive PVC fitting
- Male thread G $^1/_2$ A - brass

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).
- For gases, state pressure (relative or absolute), temperature and medium (e.g. air) (enquire about range).

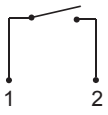
Flow Switch UR3K-...V

- **Soldered/welded connection**
- **Reed switch**
- **Low pressure loss**
- **Compact design**
- **Threaded connection**
- **Plug DIN 43650-A / ISO 4400**

Characteristics

The devices function via the principle of a spring-supported paddle, and the magnetic triggering of a reed switch.

Technical data

Switch	reed switch	
Nominal width	DN 15..80	
Process connection	soldered/welded nozzle (further process connections available on request)	
Switching range	8.5..248 l/min	for details see table "Ranges"
$Q_{max.}$	to 600 l/min	
Tolerance	±15 % of full scale value	
Pressure resistance	PN 25 bar	
Medium temperature	-20..+110 °C	
Ambient temperature	-20..+70 °C	
Media	water (oils, gases and aggressive media available on request)	
Wiring	normally open (n.o.) No. 0.372 	
Switching voltage	max. 230 V AC	
Switching current	max. 1 A	
Switching capacity	max. 50 VA	
Protection class	2 - safety insulation	
Ingress protection	IP 65	
Electrical connection	plug DIN 43650-A / ISO 4400, optionally for round plug connector M12x1, 4-pole	

Materials medium-contact	*Brass construction*: CW614N, CW614N nickelled, 1.4310, 1.4301, hard ferrite, NBR	*Stainless steel construction*: 1.4305, 1.4571, 1.4310, NBR, hard ferrite PTFE coated, FKM
Non-medium contact materials	ABS, PA, NBR	
Weight	0.3 kg	
Installation location	Standard: horizontal inwards flow; switching head not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.	

Ranges

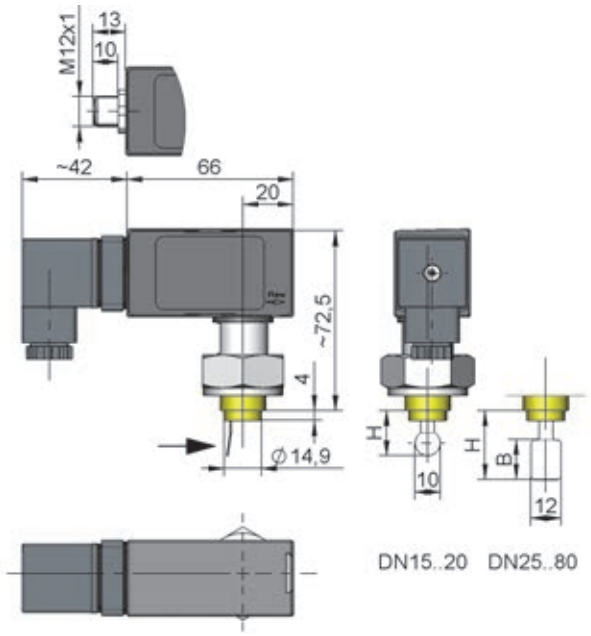
Details in the table correspond to horizontal inwards flow with decreasing flow rate.

DN	Switching range l/min H_2O	Types	$Q_{max.}$ recommended
DN 15	8.5 - 11.0	UR3K-015V.	20
DN 20	14.0 - 19.0		40
DN 25	15.0 - 20.0	UR3K-025V.	80
DN 32	39.0 - 52.0		100
DN 40	49.0 - 64.0		150
DN 50	68.0 - 84.0	UR3K-050V.	200
DN 65	127.0 - 163.0		400
DN 80	189.0 - 248.0		600

Special ranges are available.

Dimensions

DN	Types	H	D	A	B
DN 15..20	UR3K-015V.	18.5	13	-	-
DN 25..40	UR3K-025V.	27.0	-	12	16
DN 50..80	UR3K-050V.	40.5			19

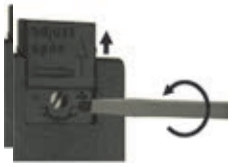


Handling and Operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- When tightening the union nut, the connection piece must be countered using an open-ended spanner (SW 19).
- Include a filter if the media are dirty (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment



To adjust, open the slider. Adjustment is made using the adjustment screw with a lengthways slot; this is located under the valve.

Turn clockwise for a lower switching point; turn anticlockwise for a higher switching point.
After adjustment, close the slider again.

Example: The adjustment range 20 to 27 l/min corresponds to 7 l/min Adjustment option in 7 revolutions. Adjustment is therefore 1 l/min for each revolution.

Ordering code

	1.	2.	3.
UR3K -		**V**	

❍=Option

1.	**Nominal width**		
	015	DN 15..20	
	025	DN 25..40	
	050	DN 50..80	
2.	**Process connection**		
	V	soldered/welded nozzle	
3.	**Connection material**		
	M	brass	
	K	stainless steel	

Options

- Connection for round plug-in connector
- Signal lamp red or red/green in the plug DIN 43650-A
- Protective bellows
- Switching ranges for oil or gas
- Special quantity
- Adhesive PVC fitting

Ordering information

- Specify direction of flow, medium, and switching range.
- For UR2 specify normally closed (n.c.) or normally open (n.o.).
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).
- For gases, state pressure (relative or absolute), temperature and medium (e.g. air) (enquire about range).

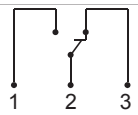
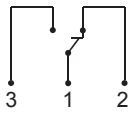
Flow Switch UM3K-...G / A

- **Threaded connection**
- **Micro switch**
- **Low pressure loss**
- **Compact design**
- **Threaded connection**
- **Plug DIN 43650-A / ISO 4400**

Characteristics

The devices function via the principle of a spring-supported paddle, and the magnetic triggering of a micro switch.

Technical data

Switch/sensor	micro switch	
Nominal width	DN 10..50	
Process connection	female thread G $^3/_8$..G 1 (further process connections available on request)	
Switching range	4..93 l/min	for details see table "Ranges"
$Q_{max.}$	to 150 l/min	
Tolerance	±15 % of full scale value	
Pressure resistance	PN 25 bar	
Medium temperature	-20..+110 °C	
Ambient temperature	-20..+70 °C	
Media	water (oils, gases and aggressive media available on request)	
Wiring	changeover no. 0.371  optionally changeover no. 0.282  optionally red or red / green diode in the DIN 43650-A plug	
Switching voltage	max. 250 V AC	
Switching current	max. 5 A (round plug connector max. 4 A)	
Protection class	2 - safety insulation	
Ingress protection	IP 65	
Electrical connection	plug DIN 43650-A / ISO 4400, optionally for round plug connector M12x1, 4-pole	

Materials medium-contact	*Brass construction*: CW617N nickelled, CW614N nickelled, 1.4310, 1.4301, hard ferrite, NBR	*Stainless steel construction*: 1.4305, 1.4571, 1.4301, 1.4310, hard ferrite PTFE-coated, FKM
Non-medium contact materials	ABS, PA, NBR	
Weight	see table "Dimensions and weights"	
Installation location	Standard: horizontal inwards flow; switching head not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.	

Ranges

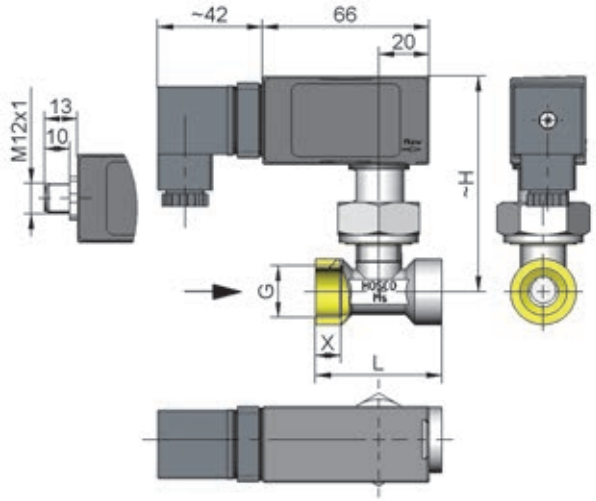
Details in the table correspond to horizontal inwards flow with decreasing flow rate

G	DN	Switching range l/min H_2O	Types	$Q_{max.}$ recommended
G $^3/_8$	DN 10	4.0 - 5.5	UM3K-010G.055	10
G $^1/_2$	DN 15	5.5 - 7.0	UM3K-015G.070	20
G $^3/_4$	DN 20	7.5 - 10.0	UM3K-020G.100	40
G 1	DN 25	14.0 - 18.0	UM3K-025G.180	60
G 1$^1/_4$	DN 32	22.0 - 30.0	UM3K-032G.300	80
G 1$^1/_2$	DN 40	37.0 - 50.0	UM3K-040G.500	100
G 2	DN 50	67.0 - 93.0	UM3K-050G.930	150

Special ranges are available.

Dimensions and weights

G	Types	H	L	X	Weight kg
G $^3/_8$	UM3K-010GM	87	50	10	0.45
	UM3K-010GK				0.50
G $^1/_2$	UM3K-015GM		50	10	0.40
	UM3K-015GK				0.45
G $^3/_4$	UM3K-020GM	88		12	
	UM3K-020GK				
G 1	UM3K-025GM	92			
	UM3K-025GK				0.50
G 1$^1/_4$	UM3K-032GM	96			
	UM3K-032GK				0.60
G 1$^1/_2$	UM3K-040GM	99			
	UM3K-040GK				0.75
G 2	UM3K-050GM	108			0.85
	UM3K-050GK				1.05

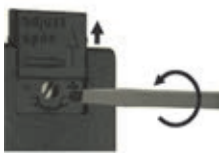


Handling and operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- When tightening the union nut, the connection piece must be countered using an open-ended spanner (SW 19).
- If the media are dirty, install a filter (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive and inductive loads must be operated using a protective circuit.

Adjustment



To adjust, open the slider. Adjustment is made using the adjustment screw with a lengthways slot; this is located under the valve.

Turn clockwise for a lower switching point; turn anticlockwise for a higher switching point.
After adjustment, close the slider again.

Example: The adjustment range 20 to 27 l/min corresponds to 7 l/min Adjustment option in 7 revolutions. Adjustment is therefore 1 l/min for each revolution.

Ordering code

UM3K - [1.] [G] [2.] [3.] [4.]

			1.	2.	3.	4.
1.	**Nominal width**					
	010	DN 10 - G 3/8				
	015	DN 15 - G 1/2				
	020	DN 20 - G 3/4				
	025	DN 25 - G 1				
	032	DN 32 - G 1 1/4				
	040	DN 40 - G 1 1/2				
	050	DN 50 - G 2				
2.	**Process connection**					
	G	female thread				
3.	**Connection material**					
	M	brass				
	K	stainless steel				
4.	**Switching range H_2O for horizontal inwards flow**					
	055	4.0 - 5.5 l/min				●
	070	5.5 - 7.0 l/min				●
	100	7.5 - 10.0 l/min			●	
	180	14.0 - 18.0 l/min			●	
	300	22.0 - 30.0 l/min		●		
	500	37.0 - 50.0 l/min	●			
	930	67.0 - 93.0 l/min	●			

Options

- Connection for round plug-in connector
- Signal lamp red or red/green in the plug DIN 43650-A
- Gold contact 125 V AC / 30 V DC, 100 mA
- Protective bellows
- Switching ranges for oil or gas
- Special values
- Soldered copper fitting
- Adhesive PVC fitting
- Male thread G 1/2 A - brass

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).
- For gases, state pressure (relative or absolute), temperature and medium (e.g. air) (enquire about range).

Flow Switch UM3K-...V

- **Soldered/welded connection**
- **Micro switch**
- **Low pressure loss**
- **Compact design**
- **Threaded connection**
- **Plug DIN 43650-A / ISO 4400**

Characteristics

The devices function via the principle of a spring-supported paddle, and the magnetic triggering of a micro switch.

Technical data

Switch	micro switch	
Nominal width	DN 15..80	
Process connection	soldered/welded nozzle (further process connections available on request)	
Switching range	10..268 l/min	for details see table "Ranges"
$Q_{max.}$	to 600 l/min	
Tolerance	±15 % of full scale value	
Pressure	PN 25 bar	
Medium temperature	-20..+110 °C	
Ambient temperature	-20..+70 °C	
Media	water (oils, gases and aggressive media available on request)	
Wiring	changeover no. 0.371 1 2 3 optionally changeover No. 0.282 3 1 2 optionally red or red / green diode in the DIN 43650-A plug	
Switching voltage	max. 250 V AC (gold contact max. 125 V AC / 30 V DC)	
Switching current	max. 5 A (round plug connector max. 4A) (gold contact max. 100 mA)	
Protection class	2 - safety insulation	
Ingress protection	IP 65	
Electrical connection	plug DIN 43650-A / ISO 4400, optionally for round plug connector M12x1, 4-pole	

Materials medium-contact	*Brass construction*: CW617N, CW614N nickelled, 1.4310, 1.4301, hard ferrite, NBR	*Stainless steel construction*: 1.4305, 1.4571, 1.4310, 1.4310, Hard ferrite PTFE coated, FKM
Non-medium-contact materials	ABS, PA, NBR	
Weight	0.3 kg	
Installation location	Standard: horizontal inwards flow; switching head not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.	

Ranges

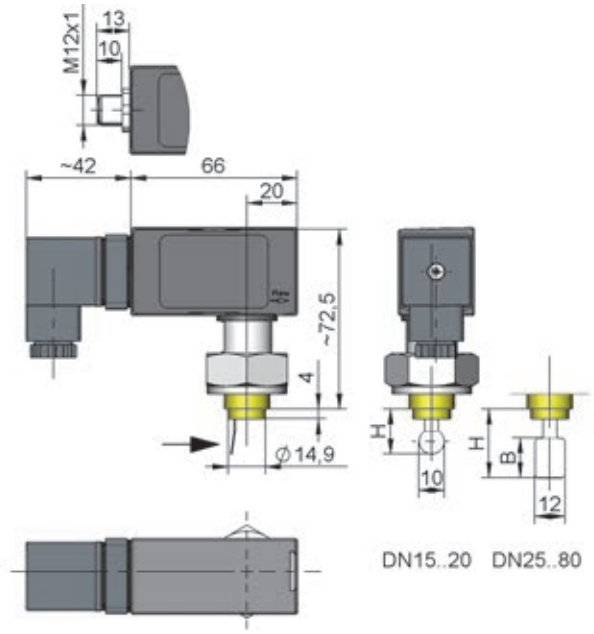
Details in the table correspond to horizontal inwards flow with decreasing flow rate

DN	Switching range l/min H_2O	Types	$Q_{max.}$ recommended
DN 15	10.0 - 13.0	UM3K-015V.	20
DN 20	17.5 - 22.0		20
DN 25	18.0 - 22.5	UM3K-025V.	40
DN 32	44.0 - 55.5		40
DN 40	55.5 - 72.0		40
DN 50	75.0 - 90.0	UM3K-050V.	80
DN 65	151.0 - 186.0		80
DN 80	228.0 - 238.0		80

Special ranges are available.

Dimensions

DN	Types	H	D	A	B
DN 15..20	UM3K-015V.	18.5	13	-	-
DN 25..40	UM3K-025V.	27.0	-	12	16
DN 50..80	UM3K-050V.	40.5			19



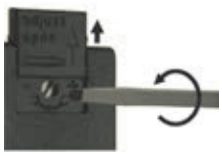
Handling and Operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- When tightening the union nut, the connection piece must be countered using an open-ended spanner (SW 19).
- If the media are dirty, install a filter (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive and inductive loads must be operated using a protective circuit.

Adjustment

To adjust, open the slider. Adjustment is made using the adjustment screw with a lengthways slot; this is located under the valve.



Turn clockwise for a lower switching point; turn anticlockwise for a higher switching point.
After adjustment, close the slider again.

Example: The adjustment range 20 to 27 l/min corresponds to 7 l/min Adjustment option in 7 revolutions. Adjustment is therefore 1 l/min for each revolution.

Ordering code

	1.	2.	3.
UM3K -		**V**	

❍=Option

1.	**Nominal width**		
	015	DN 15..20	
	025	DN 25..40	
	050	DN 50..80	
2.	**Process connection**		
	V	soldered/welded nozzle	
3.	**Connection material**		
	M	brass	
	K	stainless steel	

Options

- Connection for round plug-in connector
- Signal lamp red or red/green in the plug DIN 43650-A
- Gold contact 125 V AC / 30 V DC, 100 mA
- Protective bellows
- Switching ranges for oil or gas
- Special values
- Adhesive PVC fitting

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).
- For gases, state pressure (relative or absolute), temperature and medium (e.g. air) (enquire about range).

Flow Switch UI-...G / A

- **For media with ferritic components**
- **Low pressure loss**
- **Compact design**
- **Inductive proximity switch**

Characteristics

The devices function via the principle of a spring-supported paddle, and the triggering of an inductive proximity switch.

Technical data

Switch	inductive proximity switch	
Nominal width	DN 10..50	
Process connection	brass / stainless steel - female thread G $^3/_8$..G 1 brass / POM - male thread G $^1/_2$ A (further process connections available on request)	
Adjustment range	1.7..55 l/min	for details see table "Ranges"
$Q_{max.}$	to 150 l/min	
Tolerance	±5 % of full scale value	
Pressure resistance	PN 16 bar	
Medium temperature	-20..+60 °C	
Ambient temperature	-20..+60 °C	
Media	water (oils and gases available on request)	
Wiring	no. 0.319 (Z=Load) **PNP** 1 brown + 4 black output 3 blue 0 V optionally **NPN** 1 brown + 4 black output 3 blue 0 V	
Supply voltage	10..30 V DC	
Current consumption	< 10 mA	
Current under load	max. 100 mA	
Voltage drop	< 3 V	
Ingress protection	IP 67	
Electrical connection	Cable 2 m	
Materials medium-contact	POM GV, 1.4310, 1.4301, NBR Connection: CW614N nickelled or POM	
Non-medium-contact materials	POM, CW614N nickelled, PVC	
Weight	see table "Dimensions and weights"	
Installation location	Standard: horizontal inwards flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.	

Ranges

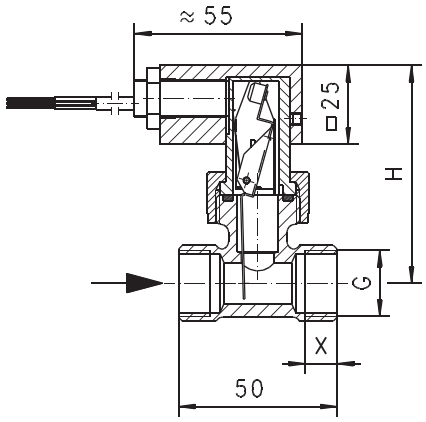
Details in the table correspond to horizontal inwards flow with decreasing flow rate.

G	DN	Switching value l/min H_2O Choose between	Types	$Q_{max.}$ recommended
G $^3/_8$	DN 10	2.0 - 4.0	UI-010G040	10
G $^1/_2$ A	DN 15	1.7 - 2.5	UI-015A025	
G $^1/_2$		4.0 - 6.0	UI-015G060	20
G $^3/_4$	DN 20	6.0 - 8.0	UI-020G080	40
G 1	DN 25	10.0 - 17.0	UI-025G170	60
G 1 $^1/_4$	DN 32	18.0 - 27.0	UI-032G270	80
G 1 $^1/_2$	DN 40	28.0 - 37.0	UI-040G370	100
G 2	DN 50	45.0 - 55.0	UI-050G550	150

Special ranges are available.

Dimensions and weights

G	Types	H	L	X	Weight kg
G 3/8	UI.-010GM	69	50	10	0.40
G 1/2 A	UI.-015AM		60	12	
	UI.-015AP				0.15
G 1/2	UI.-015GM		50	10	0.40
G 3/4	UI.-020GM	71		12	
G 1	UI.-025GM	74			0.45
G 1 1/4	UI.-032GM	79			0.50
G 1 1/2	UI.-040GM	82			0.60
G 2	UI.-050GM	91			0.80



Handling and operation

- Include straight calming section of 5 x DN in inlet and outlet
- If the media are dirty, install a filter.

Ordering code

UI - 1. - 2. 3. 4. 5.

❍=Option

1.	**Nominal width**								
	010	DN 10 - G 3/8							
	015	DN 15 - G 1/2							
		DN 15 - G 1/2 A							
	020	DN 20 - G 3/4							
	025	DN 25 - G 1							
	032	DN 32 - G 1 1/4							
	040	DN 40 - G 1 1/2							
	050	DN 50 - G 2							
2.	**Process connection**								
	G	female thread				●		●	●
	A	male thread					●		
3.	**Connection material**								
	M	brass	●	●	●	●	●	●	●	●
	K	stainless steel	●	●	●	●	●		●	●
	P	POM (PN 10)						●		
4.	**Switching range H_2O for horizontal inwards flow**									
	025	1.7 - 2.5 l/min						●		
	040	2.0 - 4.0 l/min								●
	060	4.0 - 6.0 l/min							●	
	080	6.0 - 8.0 l/min					●			
	170	10.0 - 17.0 l/min				●				
	270	18.0 - 27.0 l/min			●					
	370	28.0 - 37.0 l/min		●						
	550	45.0 - 55.0 l/min	●							
5.	**Output signal**									
	P	PNP								
	N ❍	NPN								

Options

- Switching ranges for oil or gas
- Special quantity

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).
- For gases, specify pressure (relative or absolute), temperature and medium (e.g. air) (enquire about range).

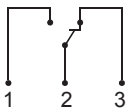
Flow Switch UB1

- **Can be used from nominal width DN 25..200**
- **Micro switch with gold-plating for small currents, and silver-plating for larger currents**
- **Visual function control through transparent cover**
- **Suitable for media with ferritic particles.**

Characteristics

The devices function via the principle of a paddle supported by a metal bellows, and the triggering of a microswitch.

Technical data

Switch	Micro switch			
Nominal width	DN 25..200			
Process connection	male thread R 1 " or installation flange DIN 2527 DN 32 PN 16 sealing surface as per DIN 2526 form C			
Switching range	1.2..34 m³/h		for details see table "Ranges"	
$Q_{max.}$	up to 75 m³/h			
Tolerance	±15 % of full scale value			
Pressure resistance	PN 16 bar			
Medium temperature	-20..+140 °C (no superheated steam)			
Ambient temperature	-20..+70 °C			
Media	water (oils and aggressive media available on request)			
Wiring	changeover no. 0.371 			
Switching voltage/ Switching current			A max. ohmic	A max. inductive
	max.	250 V AC/DC	6 A	1.5 A
		125 V AC/DC	6 A	2 A
		24 V DC	6 A	5 A
		12 V DC	6 A	6 A
			A min.	
	min.	4 V	1 mA	
Protection class	2 - safety insulation			
Ingress protection	IP 65			

Electrical connection	plug DIN 43650-A / ISO 4400, optionally for round plug connector M12x1, 4-pole (max. 4A)	
Materials medium-contact	*Brass construction:* CW614N nickelled, 1.4305, 1.4310, 1.4541, FVMQ	*Stainless steel construction:* 1.4305, 1.4310, 1.4541, FKM
Non-medium-contact materials	PC, PA	
Weight	Threaded type: 1.3 kg Flanged type: 2.5 kg	
Installation location	Standard: horizontal inwards flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.	

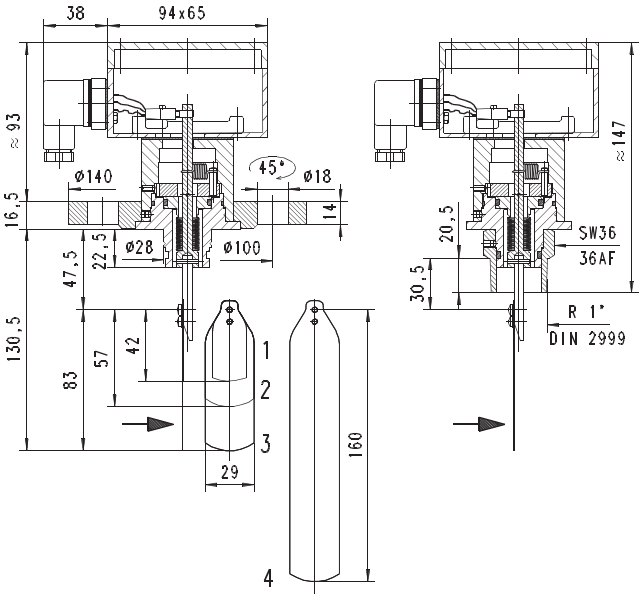
Ranges

Details in the table correspond to horizontal inwards flow with decreasing flow rate.

DN 25..32 threaded type only. DN 125..200 available on request

DN	Switching range m³/h H_2O			$Q_{max.}$ recommended
	Paddle 1	Paddle 1,2	Paddle 1,2,3	
25	2.0 - 2.5			4
32	3.0 - 3.5			8
40	4.0 - 5.0			12
50	8.8 - 10.2	3.5 - 4.3		20
65	16.5 - 20.0	9.2 - 11.0		30
80	25.5 - 31.0	14.0 - 18.0	8.7 - 11.0	45
100	44.0 - 55.0	27.0 - 32.0	17.0 - 22.0	75

Dimensions



Adapt paddle 1 for DN 25.
From DN 100, adapt paddle 4:
DN 100 Paddle length 92
DN 125 Paddle length 117
DN 150 Paddle length 143
from DN 175 unshortened

Attention! Flange seal not included in scope of delivery

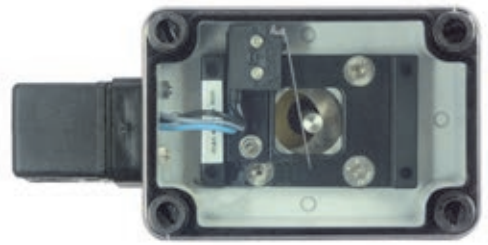
Handling and operation

Note

- Attention! Paddle fixing unsecured. For critical conditions (e.g. vibration), fit a bolted fixing.
- Include straight calming section of 10 x DN in inlet and outlet
- If the media are dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads.
  Capacitive and inductive loads must be operated using a protective circuit.

Loosen adjustment

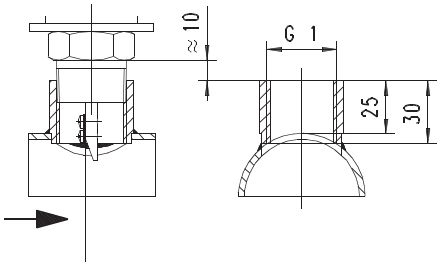
Open cover, loosen the screw slightly on the micro switch fixing. Push the switch into the desired position. Retighten the screw.



Installation recommendation

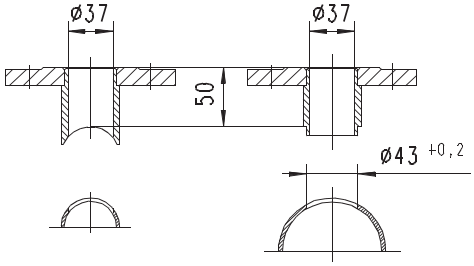
Threaded type

Use a tube with standard wall thickness as per DIN 2448



Flanged type

Use a tube with standard wall thickness as per DIN 2448



The type FL installation flanges are available as an accessory.

Ordering code

UB1 - [1.] [2.]

1.	Process connection	
	025H	threaded connection DN 25 - R 1 "
	032E	flange DN 32
2.	**Connection material**	
	M	brass
	K	stainless steel

Options

- Signal lamp red or red/green in the plug DIN 43650-A
- Double contact
- Aluminium hood with IP 67
- Opaque cover
- Switching ranges for oil
- Special values
- TÜV-certification 0000021402

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).

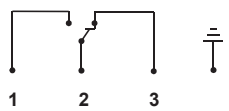
Flow Switch UBX

- **Suitable for nominal sizes DN 65, DN 80 und DN 100**
- **Mikroswitch with bi-level gold contact**
- **System connection with oval flange or male thread R 1“**
- **For temperature range -40 °C bis +140 °C**

Characteristics

The devices work via the principle of a bellow-supported paddle which triggers directly a microswitch in case of flow.

Technical Data

Switch	Mikroswitch
Nominal diameter	DN 65, DN 80, DN 100
Process connection	Oval flange or male thread R1“
Adjustable range (for decreasing flow)	DN 65: 6.0 m³/h ± 2.0 DN 80: 10.5 m³/h ± 2.5 DN 100: 20.5 m³/h ± 3.0
$Q_{max.}$ (recommended)	DN 65: 33 m³/h DN 80: 45 m³/h DN 100: 65 m³/h (all values for v = 2 m/s)
Pressure rate	PN 16 bar
Medium temperature	-40..+140 °C (no superheated steam)
Ambient temperature	-40..+90 °C
Media	Water, mineral oil, silicone oil, ester oil
Connection diagram	Single changeover contact (wiring 0.371-2)  Double changeover contact (wiring 0.409-1) 

Switching voltage/ Switching current			A max. ohmic	A max. inductive
	max.	250 V AC/DC	6 A	1,5 A
		125 V AC/DC	6 A	2 A
		24 V DC	6 A	5 A
		1 2 V DC	6 A	6 A
				A min.
	min.	4 V		1 mA
Protection class	2 – Safety insulation			
Ingress protection	IP 65 / IP 67 (When using a permissible supply cable)			
Electrical connection	Cable gland M16x1,5			
Materials with medium contact	*Brass version:* CW614N vernickelt, 1.4305, 1.4310, 1.4541, FVMQ		*Stainless steel version* 1.4305, 1.4310, 1.4541, FVMQ	
Housing material	Die-cast aluminium			
Weight	1,3 kg			
Mounting position	Standard: horizontal flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.			

Dimensions

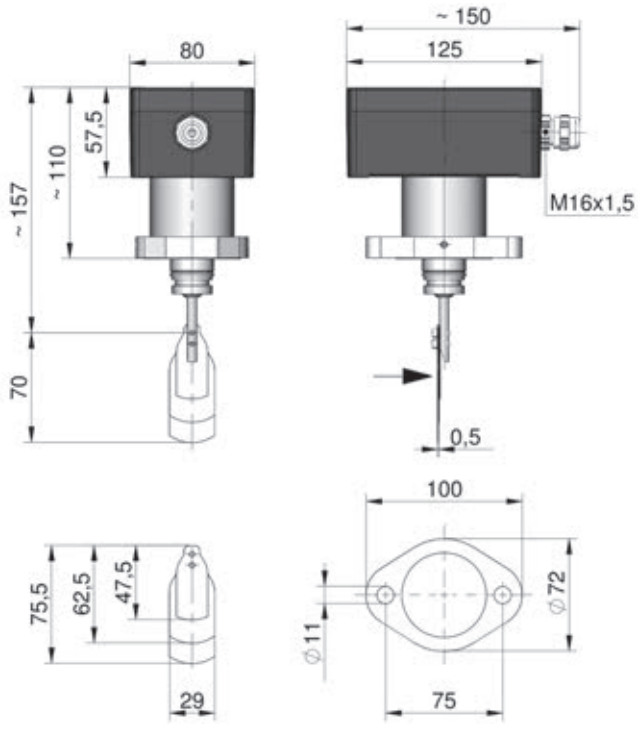


Figure shows flow switch for DN 65 with oval flange!

Attention! Process gasket not included !

Handling and operation

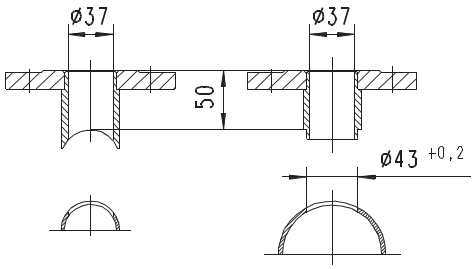
Notes

- Attention! Paddle fixing unsecured. For critical conditions (e.g. vibration), fit a bolted fixing.
- Include straight calming section of 10 x DN in inlet and outlet
- If the media are dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads.
  Capacitive and inductive loads must be operated using a protective circuit..

Installation recommendation

Flange design

Use a tube with standard wall thickness as per DIN 2448.



Ordering code

UBX - 1. 2. 3.

1.	**Process connection**	
	025H	Male thread R1“
	032E	Flange
2.	**Anschlusswerkstoff**	
	M	Brass
	K	Stainless steel
3.	**Contacts**	
	S	Single changeover contact
	D	Double changeover contact

Options

- Adjustment
- Optional temperature range -50 °C … +50 °C
- Other process connections on request

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).

Flow Switch CRE

- **Can be used from nominal width DN 25..200**
- **Suitable for media with ferritic particles**

Characteristics

The devices function via the principle of a paddle supported by a metal bellows, and the triggering of a micro switch.

Technical data

Switch	micro switch	
Nominal width	DN 25..200	
Process connection	male thread R 1 "	
Switching range	0.19..165.7 m³/h	for details see table "Ranges"
$Q_{max.}$	up to 240 m³/h	
Tolerance	±15 % of full scale value	
Pressure resistance	brass construction	PN 8 bar , reduced switching range PN 5 bar
	stainless steel construction	PN 13 bar , reduced switching range PN 5 bar
Medium temperature	-20..+120 °C	
Ambient temperature	-20..+85 °C	
Media	water (oils and aggressive media available on request)	
Wiring	changeover no. 0.374	white red blue
Switching voltage	250 V AC	
Switching current	15(8) A	
Protection class	1 - PE connection	
Ingress protection	IP 65	
Electrical connection	cable screw gland M16x1.5	
Materials medium-contact	*Brass construction:* CW614N, 1.4571, Tombak	*Stainless steel construction:* 1.4571
Non-medium-contact materials	ABS	
Weight	Brass construction:	0.95 kg
	Stainless steel construction:	1.1 kg

Installation location	Standard: horizontal inwards flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.

Ranges

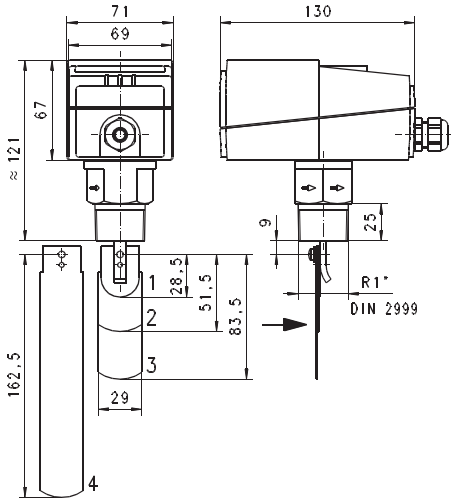
Details in the table correspond to horizontal inwards flow with decreasing flow rate.

● = Standard ❍ = Option for reduced switching range

DN		Switching range m³/h H_2O				$Q_{max.}$ recommended
		Paddle 1	Paddle 1,2*	Paddle 1,2,3*	Paddle 1,2,3,4*	
25	❍	0.19 - 1.0				3.6
	●	0.55 - 2.0				
32	❍	0.24 - 1.4				6.0
	●	0.82 - 2.8				
40	❍	0.50 - 1.9				9.0
	●	1.10 - 4.0				
50	❍		0.9 - 3.6			15.0
	●		2.1 - 7.3			
65	❍		1.2 - 4.9			24.0
	●		2.8 - 9.8			
80	❍			2.1 - 7.4		36.0
	●			4.0 - 13.8		
100	❍			4.9 - 17.1	3.3 - 11.6	60.0
	●			10.4 - 32.0	7.0 - 21.7	
125	❍			9.7 - 34.0	5.0 - 17.5	90.0
	●			20.8 - 63.5	10.7 - 33.3	
150	❍			13.6 - 47.6	6.1 - 21.4	120.0
	●			29.2 - 89.1	13.1 - 39.9	
200	❍			25.7 - 90.1	21.7 - 55.3	240.0
	●			72.6 - 165.7	38.6 - 90.8	

*must be used together

Dimensions



Adapt paddle 1 for DN 25.
From DN 100, adapt paddle 4:
DN 100 Paddle length 92
DN 125 Paddle length 117
DN 150 Paddle length 143
from DN 175 unshortened

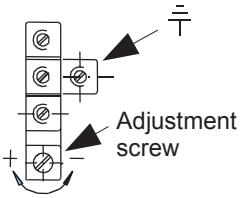
Handling and operation

Note

- Attention! Paddle fixing unsecured. For critical conditions (e.g. vibration), fit a bolted fixing.
- Include straight calming section of 10 x DN in inlet and outlet
- If the media are dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive and inductive loads must be operated using a protective circuit.

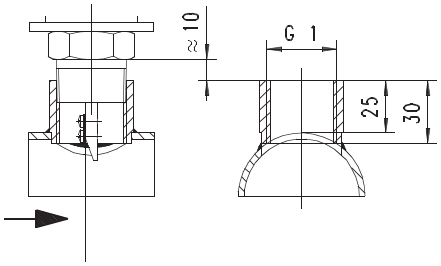
Loosen adjustment

Screw, and remove hood; set the desired switching value using the adjustment screw, and refasten the hood.



Installation recommendation

Use a tube with standard wall thickness as per DIN 2448



Ordering code

	1.	2.	3.	4.
CRE -	025H		S	

❍=Option

1.	**Process connection**	
	025H	threaded connection DN 25 - R 1 "
2.	**Connection material**	
	M	brass
	K	stainless steel
3.	**Cable screw gland**	
	S	to the side
4.	**Switching range**	
	R ❍	reduced

Options

- TÜV certification
  CRE-025HMS / CRE-025HKS TÜV.SW.14-028
  CRE-025HMSR / CRE-025HKSR TÜV.SW.14-029
- Switching ranges for oil
- Special values

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).

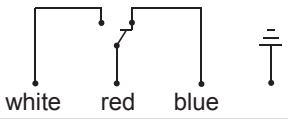
Flow Switch CRG

- **Can be used from nominal width DN 25..200**
- **Suitable for media with ferritic particles.**

Characteristics

The devices function via the principle of a paddle supported by a metal bellows, and the triggering of a micro switch.

Technical data

Switch	micro switch	
Nominal width	DN 25..200	
Process connection	male thread R 1 "	
Switching range	0.2..165.7 m³/h	for details see table "Ranges"
$Q_{max.}$	up to 240 m³/h	
Tolerance	±15 % of full scale value	
Pressure resistance	PN 11 bar	
Medium temperature	-20..+120 °C	
Ambient temperature	-20..+85 °C	
Media	water (oils and aggressive media available on request)	
Wiring	changeover no. 0.374 	
Switching voltage	250 V DC	
Switching current	15(8) A	
Protection class	1 - PE connection	
Ingress protection	IP 65	
Electrical connection	cable screw gland M20x1.5	
Materials medium-contact	*Brass construction:* CW614N, 1.4571, Tombak	*Stainless steel construction:* 1.4571
Non-medium-contact materials	ABS, PC transparent	
Weight	Brass construction: 0.95 kg Stainless steel construction: 1.1 kg	

Installation location	Standard: horizontal inwards flow; switching unit not recommended underneath; other installation positions are possible; the installation position affects the switching point and range.

Ranges

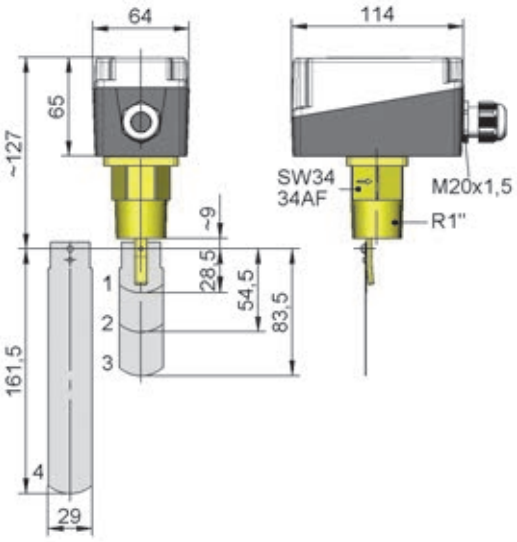
Details in the table correspond to horizontal inwards flow with decreasing flow rate.

● = Standard ❍ = Option for reduced switching range

DN		Switching range m³/h H_2O				$Q_{max.}$ recommended
		Paddle 1	Paddle 1,2*	Paddle 1,2,3*	Paddle 1,2,3,4*	
25	❍	0.20 - 1.0				3.6
	●	0.60 - 2.0				
32	❍	0.25 - 1.4				6.0
	●	0.80 - 2.8				
40	❍	0.50 - 1.6				9.0
	●	1.10 - 3.7				
50	❍		0.9 - 3.6			15.0
	●		2.2 - 5.7			
65	❍		1.2 - 4.9			24.0
	●		2.7 - 6.5			
80	❍			2.1 - 7.4		36.0
	●			4.3 - 10.7		
100	❍			4.9 - 17.1	3.3 - 11.6	60.0
	●			11.4 - 27.7	6.1 - 17.3	
125	❍			9.7 - 34.0	5.0 - 17.5	90.0
	●			22.9 - 53.3	9.3 - 25.2	
150	❍			13.6 - 47.6	6.1 - 21.4	120.0
	●			35.9 - 81.7	12.3 - 30.6	
200	❍			25.7 - 90.1	21.7 - 55.3	240.0
	●			72.6 - 165.7	38.6 - 90.8	

*must be used together

Dimensions



Adapt paddle 1 for DN 25.
From DN 100, adapt paddle 4:
DN 100 Paddle length 92
DN 125 Paddle length 117
DN 150 Paddle length 143

From DN 175 unshortened

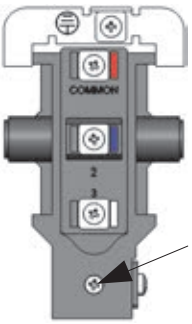
Handling and operation

Note

- Attention! Paddle fixing unsecured. For critical conditions (e.g. vibration), fit a bolted fixing.
- Include straight calming section of 10 x DN in inlet and outlet
- If the media are dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads.
  Capacitive and inductive loads must be operated using a protective circuit.

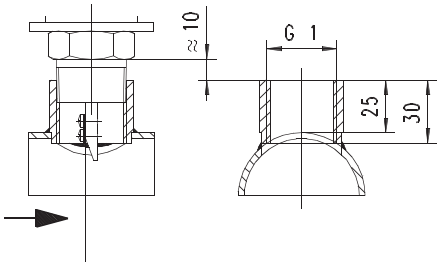
Loosen adjustment

Screws, and remove hood; set the desired switching value using the adjustment screw, and refasten the hood.



Installation recommendation

Use a tube with standard wall thickness as per DIN 2448



Ordering code

	1.	2.	3.	4.
CRG -	025H		S	

❍=Option

1.	**Process connection**	
	025H	threaded connection DN 25 - R 1 "
2.	**Connection material**	
	M	brass
	K	stainless steel
3.	**Cable screw gland**	
	S	to the side
4.	**Switching range**	
	R ❍	reduced

Options

- Switching ranges for oil
- Special values

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).

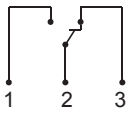
Flow Switch VM-...E

- **Can be used from nominal width DN 40..200**
- **Precise, stepless adjustment of the switching value**

Characteristics

The paddle movement of the flow switch is transmitted via a magnetic coupling to an adjustably arranged micro switch.

Technical data

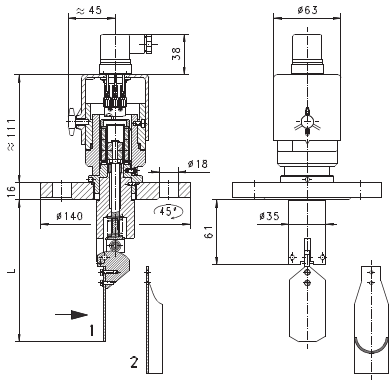
Switch	micro switch	
Nominal width	DN 40..200	
Process connection	installation flange DIN 2527 DN 32 PN 16 sealing surface as per DIN 2526 form C	
Switching range	40..3600 l/min	for details see Table "Ranges and dimensions"
$Q_{max.}$	up to 5400 l/min	
Tolerance	±5 % of full scale value	
Pressure resistance	PN 16 bar	
Medium temperature	-20..+90 °C, optionally -20..+200 °C, type VMX on request	
Ambient temperature	-20..+70 °C	
Media	water (oils available on request)	
Wiring	changeover no. 0.213 	
Switching voltage	max. 250 V AC	
Switching current	max. 5 A	
Protection class	2 - safety insulation	
Ingress protection	IP 65	
Electrical connection	plug DIN 43650-A / ISO 4400	
Materials medium-contact	*Brass construction:* Rg 5, CW614N nickelled, 1.4305, 1.4301, 1.4310, 1.4571, NBR, hard ferrite	*Stainless steel construction:* 1.4305, 1.4301, 1.4310, 1.4571, FKM, hard ferrite
Non-medium-contact materials	ABS, PA	

Weight	DN 40..150 DN 200	3.0 kg 3.5 kg
Installation location	Standard: horizontal inwards flow; display downwards and inwards flow from above not recommended; other installation positions are possible; the installation position affects the switching point and display range.	

Ranges and dimensions

Details in the table correspond to horizontal inwards flow with decreasing flow rate.

DN	Switching range l/min H_2O	$Q_{max.}$ recommended	Types	Paddle form	L
DN 40	40 - 150	250	VM-040E.150	1	93
DN 50	50 - 150	450	VM-050E.150		104
	100 - 300		VM-050E.300		96
DN 65		550	VM-065E.300		115
	125 - 375		VM-065E.375		90
DN 80	150 - 400	900	VM-080E.400		118
	200 - 600		VM-080E.600		115
DN 100	250 - 750	1400	VM-100E.750	2	158
	300 - 900		VM-100E.900		122
DN 150	500 - 1500	2700	VM-150E.1500		198
	600 - 1800		VM-150E.1500		
DN 200	1000 - 3000	5400	VM-200E.3000		213
	1200 - 3600		VM-200E.3600		



Attention! Flange seal not included in scope of delivery

Handling and operation

Note

- Include straight calming section of 10 x DN in inlet and outlet
- If the media are dirty, install a filter (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive and inductive loads must be operated using a protective circuit.

Adjustment

To adjust the switching point, the fixing screw for the switching head must be loosened. The switching head can then be rotated. Turning to the right increases the switching point, and vice-versa. Then retighten the fixing screw.

Installation recommendation

Use a tube with standard wall thickness as per DIN 2448
The type FL installation flanges are available as an accessory.

Ordering code

VM - [1.] [2. E] [3.] [4.] [5.]

1.	**Nominal width**	
	040	DN 40
	050	DN 50
	065	DN 65
	080	DN 80
	100	DN 100
	150	DN 150
	200	DN 200
2.	**Process connection**	
	E	installation flange
3.	**Connection material**	
	M	brass
	K	stainless steel
5.	**Optional for ATEX**	
	A	for switching head ATEX A-V2 or A-V3 (The switching head is ordered in addition)

4. Switching range H_2O for horizontal inwards flow

Code	Range	DN 200	DN 150	DN 100	DN 80	DN 65	DN 50	DN 40
150	40 - 150 l/min							●
	50 - 150 l/min						●	
300	100 - 300 l/min					●	●	
375	125 - 375 l/min					●		
450	150 - 450 l/min				●			
600	200 - 600 l/min				●			
750	250 - 750 l/min			●				
900	300 - 900 l/min			●				
1500	500 - 1500 l/min		●					
1800	600 - 1800 l/min		●					
3000	1000 - 3000 l/min	●						
3600	1200 - 3600 l/min	●						

Options

- Special plugs, Tuchel / Harting
- Signal lamp red or red / green in the plug DIN 43650-A
- Signal lamp, miscellaneous
- Temperature display
- Temperature monitoring
- Temperature up to 150 °C
- Metal cap
- Gold contact micro switch 125 V AC / 30 V DC, 100 mA
- Germanischer Lloyd
- Switching ranges for oil
- Special values

Ordering information

- Specify direction of flow, medium, and switching range.
- For oils, state viscosity, temperature and designation (e.g. ISO VG 68) (enquire about range).

Switching Head A-V2

pi-ho_ze-a-v3_d.pdf

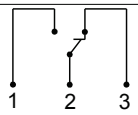
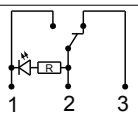
For devices VM-

- **I M1 Ex ia Ma**
- **II 1G Ex ia IIC T4 Ga**
- **II 1D Ex ia IIIC T135°C Da**

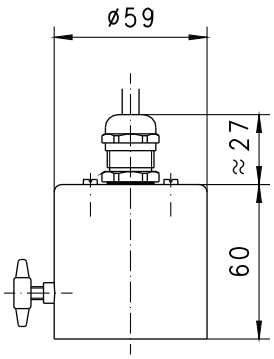
Characteristics

Intrinsically safe switching head with reed switch and ATEX approval, for the VM range of devices, for use in intrinsically safe power circuits.

Technical data

Switch	micro switch
Medium temperature	-20..+90 °C
Ambient temperature	-20..+50 °C
Weight	0.5 kg additionally
Without diode	
Wiring	changeover no. 0.213 
Switching voltage	max. 30 V
Switching current	max. 1.5 A
Switching capacity	max. 50 W
Protection class	3 -protective extra low voltage
With diode	
Wiring	changeover with diode No. 0.208 
Switching voltage	max. 15 V, 28 V or 36 V
Switching current	max. 1.5 A
Switching capacity	max. 50 W
Protection class	3 - protective extra low voltage
Ingress protection	IP 65
Electrical connection	cable 2.5 m, other cable lengths optionally available

Dimensions



Handling and operation

Note

- For use only in intrinsically safe power circuits; provide a suitable isolating amplifier.
- Cable lengths max. 5 m.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment

To adjust the switching point, the fixing screw for the switching head must be loosened. The switching head can then be rotated. Turning to the right increases the switching point, and vice-versa. Then retighten the fixing screw.

Ordering code

The base device is ordered, e.g. VM-015GR020A with switching head e.g. A-V2-1.

A-V2 - ☐ (1.)

1.	Wiring - switching voltage	
	1	wiring no. 0.213 - 30 V
	2	wiring no. 0.208 - 15 V
	3	wiring no. 0.208 - 28 V
	4	wiring no. 0.208 - 36 V

Use for devices

Switching head	Device type
A-V2	VM-...

Switching Head A-V3

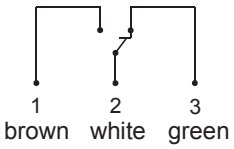
For devices VM-

- **II 2G Ex d IIC T6 Gb**

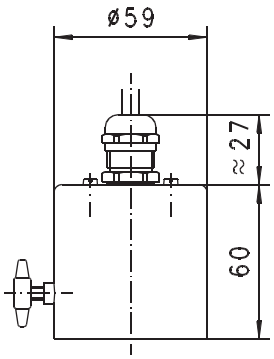
Characteristics

Switching head with pressure-resistant encapsulation and ATEX approval for the VM range of devices.

Technical data

Switch	micro switch
Medium temperature	-20..+90 °C
Ambient temperature	-20..+50 °C
Weight	0.5 kg additionally
Wiring	changeover no. 0.283 
Switching voltage	max. 250 V AC
Switching current	max. 5 A
Protection class	2 - safety insulation
Ingress protection	IP 65
Electrical connection	cable 2.5 m, other cable lengths optionally available

Dimensions



Handling and operation

Note

- Cable lengths max. 5 m.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads.
  Capacitive, inductive and lamp loads must be operated using a protective circuit.

Adjustment

To adjust the switching point, the fixing screw for the switching head must be loosened. The switching head can then be rotated. Turning to the right increases the switching point, and vice-versa. Then retighten the fixing screw.

Ordering code

The base device is ordered, e.g. VM-015GR020A with switching head e.g. A-V3-1.

	1.
A-V3 -	**1**

1.	**Wiring**	
	1	No. 0.283

Use for devices

Switching head	**Device type**
A-V3	VM-...

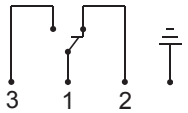
Flow Meter UZ

- **Monitor and display**
- **Simple switching point adjustment by means of drag indicator**
- **Insensitive to dirt**
- **Suitable for media with ferritic particles.**

Characteristics

With the UZ paddle flow display, the flow strength of the medium presses the paddle against a spring force. Hermetically separated by the bellows, the paddle's deflection is transmitted to a display movement, and may optionally be monitored with an adjustable micro switch. There is no magnet in the area of flow.

Technical data

Switch	optionally micro switch	
Nominal width	DN 15..50	
Process connection	female thread G $^1/_2$..G 2	
Metering range	2..500 l/min	for details see table "Ranges"
$Q_{max.}$	to 600 l/min	
Tolerance	±3 % of full scale value	
Pressure resistance	Dynamic PN 6 bar Static PN 16 bar	
Medium temperature	-20..+100 °C	
Ambient temperature	-20..+70 °C	
Media	water (oils and aggressive media available on request)	
Wiring	changeover no. 0.342 	
Switching voltage	max. 250 V AC	
Switching current	max. 5 A	
Protection class	2	
Ingress protection	IP 65	
Electrical connection	plug DIN 43650-A / ISO 4400	

Materials medium-contact	*Brass construction:* CW614N nickelled, 1.4571, 1.4305 *Stainless steel construction:* 1.4571, 1.4305
Non-medium-contact materials	CW614N chromed, steel chromed, acrylic, FKM
Weight	see table "Dimensions and weights"
Installation location	Standard: horizontal inwards flow; display downwards not recommended; other installation positions are possible; the installation position affects the switching point and display range.

Ranges

Details in the table correspond to horizontal inwards flow with increasing flow rate.

Flow from the left.

G	Nominal width	Metering range l/min H_2O	$Q_{max.}$ recommended	Type
G $^1/_2$	DN 15	3 - 50	60	UZ-015G.050
G $^3/_4$	DN 20	4 - 60	100	UZ-020G.060
G 1	DN 25		200	UZ-025G.060
		10 - 100		UZ-025G.100
G 1 $^1/_4$	DN 32		300	UZ-032G.100
		20 - 200		UZ-032G.200
G 1 $^1/_2$	DN 40		400	UZ-040G.200
		10 - 300		UZ-040G.300
G 2	DN 50	20 - 300	600	UZ-050G.300
		30 - 500		UZ-050G.500

Special ranges are available

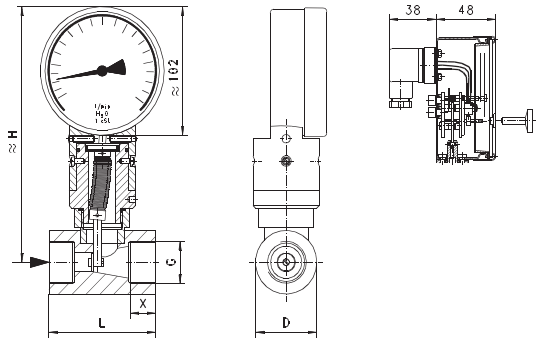
Optional: Flow from the right (please specify when ordering)

G	Nominal width	Metering range l/min H_2O	$Q_{max.}$ recommended	Type
G $^1/_2$	DN 15	2 - 35	60	UZ-015G.035
G $^3/_4$	DN 20	4 - 45	100	UZ-020G.045
		6 - 70		UZ-020G.070
G 1	DN 25	4 - 50	200	UZ-025G.050
		10 - 100		UZ-025G.100
G 1 $^1/_4$	DN 32		300	UZ-032G.100
		20 - 200		UZ-032G.200
G 1 $^1/_2$	DN 40		400	UZ-040G.200
		10 - 300		UZ-040G.300
G 2	DN 50	60 - 300	600	UZ-050G.300
		100 - 500		UZ-050G.500

Special ranges are available

Dimensions and weights

G	Types	H	L	SW	X	Weight kg
G 1/2	UZ-015G.	201	70	30	16	2.0
G 3/4	UZ-020G.	206	74	36	18	
G 1	UZ-025G.	201	87	46	19	2.5
G 1 1/4	UZ-032G.	209	104	55	22	3.0
G 1 1/2	UZ-040G.	215	111	65	24	4.5
G 2	UZ-050G.	227	130	70	28	5.0



Handling and operation

Note

- Include straight calming section of 5 x DN in inlet and outlet
- If the media are dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive and inductive loads must be operated using a protective circuit.

Adjustment

The micro switch (optional) is adjusted by means of the knurled adjusting screw provided. The screw allows the drag indicator to be set to the desired switching value. The value displayed corresponds to a switching point for a decreasing flow rate.

Ordering code

UZ [1.] [2.] [3. G] [4.] [5.]

❍=Option

1.	**Additional devices**			
	-		only analog display	
	M-		with integrated micro switch	
	P-	❍	with potentiometer	see „Additional devices for UZ"
	M2-	❍	with 2 x normally open (n.o.)	
	M3-	❍	with 2 x normally closed (n.c.)	
2.	**Nominal width**			
	015		DN 15 - G 1/2	
	020		DN 20 - G 3/4	
	025		DN 25 - G 1	
	032		DN 32 - G 1 1/4	
	040		DN 40 - G 1 1/2	
	050		DN 50 - G 2	
3.	**Process connection**			
	G		female thread	
4.	**Connection material**			
	M		brass	
	K		stainless steel	
5.	**Metering range H_2O for horizontal inwards flow**			
	035		from the right	2 - 35 l/min
	045		from the right	4 - 45 l/min
	050		from the left	3 - 50 l/min
			from the right	4 - 50 l/min
	060		from the left	4 - 60 l/min
	070		from the right	6 - 70 l/min
	100		from left/right	10 - 100 l/min
	200		from left/right	20 - 200 l/min
	300		from left/right	10 - 300 l/min
			from the left	20 - 300 l/min
			from the right	60 - 300 l/min
	500		from the left	30 - 500 l/min
			from the right	100 - 500 l/min

015	020	025	032	040	050
					●
				●	
					●
			●		
			●	●	
				●	
		●	●		
	●	●			
	●				
●					
●					
●					
●					

Options

- Metering ranges for oil or gas
- Special values
- Gold contact
  - min: 5 V DC, 1 mA
  - max: 125 V AC, 30 V DC, 1 A
- Special Harting plug

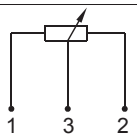
Ordering information

- Specify direction of flow, medium, and metering range.
- For oils. State viscosity, temperature and designation (e.g. ISO VG 68) (enquire about metering range).
- For gases, state pressure (relative or absolute), temperature and medium (e.g. air) (request metering range)

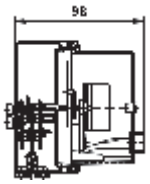
Additional Devices For UZ

UZP - 10 kOhm potentiometer

Technical data

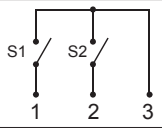
Switch/sensor	potentiometer
Wiring	no. 0.269 
Switching voltage	max. 50 V
Switching current	max. 1 mA
Switching capacity	Max. 1,5 W
Protection class	2 - safety insulation
Additional Tolerance	±3 %
Resistance tolerance	±1 %
Linearity tolerance	±0,3 %
Ingress protection	IP 60
Electrical connection	plug Hirschmann G 4
Additional Weight	0.3 kg

Dimensions

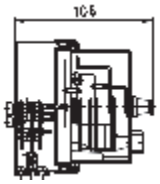


UZM2 - 2-pole normally open (n.o.)

Technical data

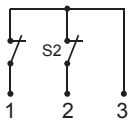
Switch/sensor	micro switch
Wiring	2 x normally open (n.o.) no. 0.268 
Switching voltage	max. 250 V AC
Switching current	max. 0.6 A
Switching capacity	max. 50 VA
Protection class	2 - safety insulation
Ingress protection	IP 60
Electrical connection	plug Hirschmann G 4
Additional Weight	0.3 kg

Dimensions

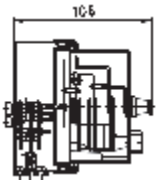


UZM3 - 2-pole normally open (n.o.)

Technical data

Switch/sensor	micro switch
Wiring	2 x normally closed (n.c.) wiring 0.285 
Switching voltage	max. 250 V AC
Switching current	max. 0.6 A
Switching capacity	max. 50 VA
Protection class	2 - safety insulation
Ingress protection	IP 60
Electrical connection	plug Hirschmann G 4
Additional Weight	0.3 kg

Dimensions



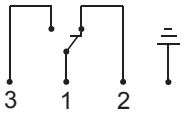
Flow Meter TZ1-...E

- **Large analog display**
- **Monitor and display**
- **Simple adjustment by means of drag indicator**
- **Can be used from nominal width DN 40..100**

Characteristics

Mechanical flow meter, for fluid or gaseous media, with no-contact triggering of an display device with 270 ° pointer deflection. Robust construction in brass or stainless steel.

Technical data

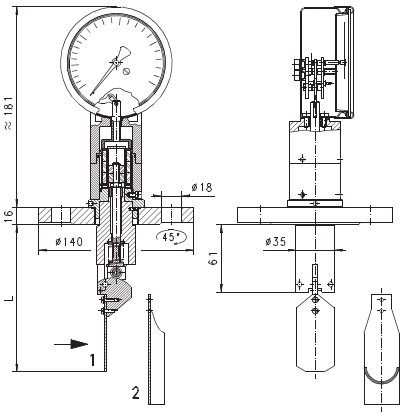
Switch	optionally micro switch	
Nominal width	DN 40..100	
Process connection	installation flange DIN 2527 DN 32 PN 16 sealing surface as per DIN 2526 form C	
Metering range	50..1050 l/min	for details see table "Ranges and dimensions"
$Q_{max.}$	up to 1400 l/min	
Tolerance	±5 % of full scale value	
Pressure resistance	PN 16 bar	
Medium temperature	-20..+90 °C, optionally -20..+200 °C, type TZ1X on request	
Ambient temperature	-20..+70 °C	
Media	water (oils available on request)	
Wiring	changeover no. 0.342 	
Switching voltage	max. 250 V AC	
Switching current	max. 5 A	
Protection class	2 - safety insulation	
Ingress protection	IP 65	
Electrical connection	plug DIN 43650-A / ISO 4400	

Materials medium-contact	*Brass construction:* Rg 5, CW614N nickelled, 1.4305, 1.4301, 1.4310, 1.4571, NBR, hard ferrite	*Stainless steel construction:* 1.4305, 1.4301, 1.4310, 1.4571, FKM, hard ferrite
Non-medium-contact materials	CW614N chromed, steel chromed, Acrylic, NBR	
Weight	3 kg	
Installation location	Standard: horizontal inwards flow; display downwards and inwards flow from above not recommended; other installation positions are possible; the installation position affects the switching point and display range.	

Ranges and dimensions

Details in the table correspond to horizontal inwards flow with increasing flow rate.

DN	Metering range l/min H_2O	$Q_{max.}$ Recommended	Types	Paddle form	L
DN 40	50 - 250	450	TZ1-040G.250	1	93
	100 - 350		TZ1-040G.350		87
DN 50	80 - 350		TZ1-050G.350		98
	100 - 450		TZ1-050G.450		
DN 65	100 - 350	550	TZ1-065G.350		111
	150 - 500		TZ1-065G.500		101
DN 80	130 - 450	900	TZ1-080G.450		126
	200 - 600		TZ1-080G.600		112
DN 100	300 - 800	1400	TZ1-100G.800	2	158
	350 - 1050		TZ1-100G.1050		148



Attention! Flange seal not included in scope of delivery

Handling and Operation

Note

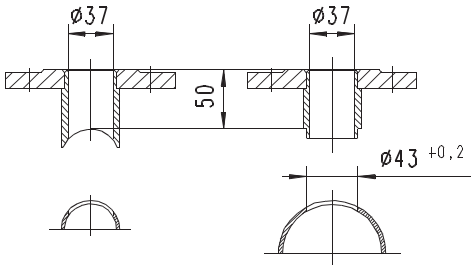
- Include straight calming section of 10 x DN in inlet and outlet
- If the media are dirty, install a filter (use magnetic filter for ferritic components).
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- When switched on, a load must be connected in series.
- The electrical details apply to ohmic loads. Capacitive and inductive loads must be operated using a protective circuit.

Loosen adjustment

The microswitch (optional) is adjusted by means of the knurled adjusting screw provided. The screw allows the drag indicator to be set to the desired switching value. The value displayed corresponds to a switching point for a decreasing flow rate.

Installation recommendation

Use a tube with standard wall thickness as per DIN 2448



The type FL installation flanges are available as an accessory.

Ordering code

	1.	2.	3.	4.	5.
TZ1			E		

❍=Option

1.	**Additional devices**			
	-	only analog display		
	M-	with integrated micro switch		
	P- ❍	with potentiometer	see „Additional devices for TZ1"	
	M2- ❍	with 2 x normally open (n.o.)		
	M3- ❍	with 2 x normally closed (n.c.)		
2.	**Nominal width**			
	040	DN 40		
	050	DN 50		
	065	DN 65		
	080	DN 80		
	100	DN 100		
3.	**Process connection**			
	E	installation flange		
4.	**Connection material**			
	M	brass		
	K	stainless steel		
5.	**Metering range H_2O for horizontal inwards flow**			
	250	50 - 250 l/min		●
	350	80 - 350 l/min		●
		100 - 350 l/min		● ●
	450	100 - 450 l/min		●
		130 - 450 l/min	●	
	500	150 - 500 l/min		●
	600	200 - 600 l/min	●	
	800	300 - 800 l/min	●	
	1050	350 - 1,050 l/min		

Options

- Metering ranges for oil
- Special values
- Gold contact
  - min: 5 V DC, 1 mA
  - max: 125 V AC, 30 V DC, 1 A
- Special Harting plug

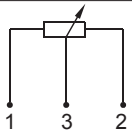
Ordering information

- Specify direction of flow, medium, and metering range.
- For oils. State viscosity, temperature and designation (e.g. ISO VG 68) (enquire about metering range).

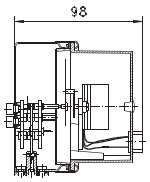
Additional Devices for TZ1

TZ1P - 10 kOhm potentiometer

Technical data

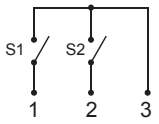
Switch/sensor	potentiometer
Wiring	no. 0.269 
Switching voltage	max. 50 V
Switching current	max. 1 mA
Switching capacity	max. 1.5 W
Protection class	2 - safety insulation
Additional Tolerance	±3 %
resistance tolerance	±1 %
Linearity tolerance	±0,3 %
Ingress protection	IP 60
Electrical connection	plug Hirschmann G 4
Additional Weight	0.3 kg

Dimensions

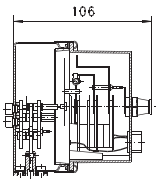


TZ1M2 - 2-pole normally open (n.o.)

Technical data

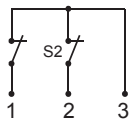
Switch/sensor	micro switch
Wiring	2 x normally open (n.o.) no. 0.268 
Switching voltage	max. 250 V AC
Switching current	max. 0.6 A
Switching capacity	max. 50 VA
Protection class	2 -safety insulation
Ingress protection	IP 60
Electrical connection	plug Hirschmann G 4
Additional Weight	0.3 kg

Dimensions

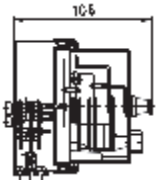


TZ1M3 - 2-pole normally closed (n.c.)

Technical data

Switch/sensor	Micro switch
Wiring	2 x normally closed (n.c.) wiring 0.285 
Switching voltage	max. 250 V AC
Switching current	max. 0.6 A
Switching capacity	max. 50 VA
Protection class	2 -safety insulation
Ingress protection	IP 60
Electrical connection	plug Hirschmann G 4
Additional Weight	0.3 kg

Dimensions



Special connections

Examples:

UM3K / UR3K
with soldered fitting

UB1
with flange DIN 2558

Customer-specific connections are available e.g. soldered fittings, male thread, female thread NPT, hose connections or system connections.

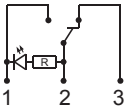
Temperature up to 250 °C

VMX-
TZ1X-

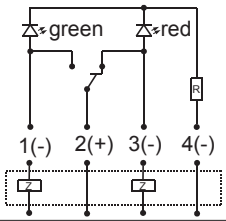
In order to operate in a higher temperature range, a special device series with an additional cooling element is available. Please request documentation.

Plug DIN 43650-A / ISO 4400 with diodes

Diode red

Wiring	changeover with diode No. 0.208 
Switching voltage	max. 12 V AC, 24 V AC, 48 V AC, 115 V DC or 230 V DC (when ordering please state)

Red / green diode

Wiring	changeover with diode No. 0.347 
Switching voltage	max. 12 V AC, 24 V AC, 48 V AC, 115 V DC or 230 V DC (when ordering please state)

Filter

Type ZV

Type ZE

The HONSBERG filters are offered for the protection of the devices from dirt or as independent components for coarse and fine filtration of liquids.

For more information, see additional product information.

Flange connection FL

Characteristics

Installation flange with weld-on nozzle for the appropriate installation of flow monitors and measuring devices. Can be combined with all devices with installation flange according to DIN 2526, PN 16, DN 32.

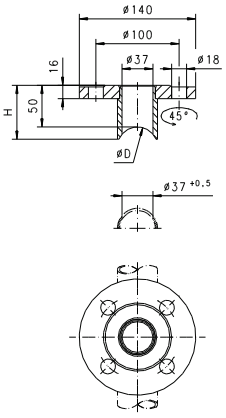
Technical data

Flange	DIN 2527, PN 16, DN 32	
Seal surface	DIN 2526 Form C	
Flat seal	Ø82 / 43 x 2 Novapress 200	
Screw	Hexagon screw DIN EN 24017 M16x50-5.6	
Nut	Hexagon nut DIN EN 24032 M16-5	
Pressure	PN 16	
Medium temperature	-40..+200 °C	
Ambient temperature	-40..+200 °C	
Materials medium-contact	*Steel construction:* RSt 37 Novapress 200 Steel 5.6 + 5	*Stainless steel construction:* 1.4305 Novapress 200 Steel 5.6 + 5
Weight	2.3 kg	

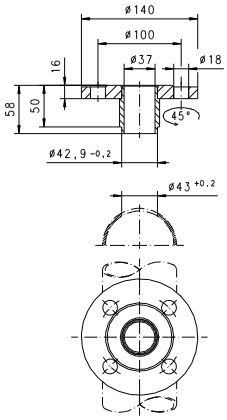
Dimensions and weights

For	Types	ØD	H
DN 40	FL-032.040	48.3	65
DN 50	FL-032.050	60.3	61
DN 65	FL-032.065	76.1	57
DN 80 - 300	FL-032.080	-	58

DN 40 - 65



DN 80 - 500



Ordering code

	1.	2.	3.
FL -	**032**		

❍=Option

1.	**Flange size**	
	032	DN 32, PN 16, flange DIN 2527
3.	**Construction material**	
	S	steel
	K ❍	stainless steel
4.	**For nominal width**	
	040	DN 40
	050	DN 50
	065	DN 65
	080	DN 80 - 300

Round plug connector 4-pin

1 brown
2 white
3 blue
4 black

Ordering code

Packaged

	1.	2.	3.	4.	5.	
K	**04**	**PU-**				❍= Option

1.	**Number of pins**	
	04	4-polig
2.	**Cable material**	
	PU-	PUR
3.	**Cable length**	
	02	2 m
	05	5 m
	10	10 m
		Others on request
4.	**Shielding**	
	S	shielding applied to coupling
	U	unshielded
	N ❍	shielding not applied to coupling
5.	**Steckerabgang**	
	G	straight
	W	elbow 90 °

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