

## Description

This Flow Monitor operates on the calorimetric principle and is suitable for liquids and gases. With one switch point (MIN function), a trend output and additional temperature monitoring of media.

## Features

- Adjustable to a wide range of flow rates
- Temperature monitoring
- No moving parts in the flow stream
- Operation largely independent of pipe diameter
- LED status indication
- Relay output for flow
- Pressure resistant monitoring head
- Fast response time
- Wire break sensing included
- Suitable for liquids of all viscosities and gases
- Analogue output (non-linear)
- Monitoring heads MK and MKV for various applications



**SW201**

## TECHNISCHE DATEN

General data		SW201
Suitable for		gases or liquids
Monitoring function	flow rate	1 switch point (MIN)
	medium temperature	1 switch point (MAX)
Display	flow rate	2 LED's (green + red)
	wire break	1 LED (green)
	temperature	1 LED (green)
Temperature range	gas/liquid	-40 °C ... +100 °C/-40 °F ... +212 °F
	electronic control unit	-10 °C ... +45 °C/+14 °F ... +113 °F
<b>Electrical data</b>		
Supply voltage		AC 230/115/24 V +10 %, -15 %; DC 24 V ±10 %
Power consumption		approx. 7 VA
Relay outputs	flow rate	1 change over contact AC 250 V/DC 28 V, overvoltage category II, Max. load 1 A
	medium temperature	
	wire break/circuit failure	
Analogue output	flow rate	0/4-20 mA trend output with amplifying factor
<b>Flow Monitoring</b>		
Flow response level adjustment (steplessly by means of a potentiometer)		liquids: 0,01 m/s ... 5 m/s / 0.0328 fps ... 16.4 fps gases: 0,5 m/s ... 100 m/s / 1.64 fps ... 328 fps
Repeatability <sup>(1)</sup>		± 2 %
Response delay		water: 2,5 s <sup>(2)</sup>
		air: 6 s <sup>(3)</sup>
Switch point drift through temperature change of the medium		ca. ±0,5 %/°C / 0,9 %/°F (MK- and MKV-monitoring heads) ca. ±2,3 %/°C / 4,14 %/°F (Ermeto-monitoring head)
<b>Mechanical data</b>		
Type and size of monitoring head		G1/2A, 1/2"NPT, Ermeto EF6-EF12, push-in type MKV
Pressure resistance	MK- and MKV monitoring heads <sup>(4)</sup>	100 bar/1450 psi
	Ermeto-monitoring head <sup>(4)</sup>	6 bar/87 psi
Degree of protection	monitoring head	IP67 (connector)
	electronic control unit	IP20
Materials	fitting/sensor support	stainless steel DIN 1.4571/AISI 316 Ti
	sensor	stainless steel DIN 1.4571/AISI 316 Ti
	seals	laser welded
	electronic control unit	ABS, blue, with black aluminium cover
Housing dimensions (electronic control unit)		160 x 100 x 85 mm/6.30 x 3.94 x 3.35 in.
Cable	standard (length to monitoring head)	2 m (6x0,14 mm <sup>2</sup> )/6.56 ft (6x0.217·10 <sup>-3</sup> in. <sup>2</sup> )
	max. length	100 m/328 ft

<sup>(1)</sup> Of the set value, at constant temperature and flow conditions, and stable thermal conductivity.

<sup>(2)</sup> Delay with the switch point set to 1 m/s / 3.28 fps and the flow at 2 m/s / 6.56 fps, after a sudden complete stop.

<sup>(3)</sup> Delay with the switch point set to 10m/s / 32.8 fps and the flow at 20 m/s / 65.6 fps, after a sudden complete stop.

<sup>(4)</sup> Admissible operating pressure to DIN 2401, measured at the max. admissible temperature (= max. medium temperature)

**Ordering information**

**Electronic Control Unit**

**SW201** standard version, relays for wire breakage, flow and temperature

**Supply voltage**

**AC 230 V** supply voltage AC 230/240 V, 50/60 Hz

**AC 115 V** supply voltage AC 115 V, 50/60 Hz

**AC/DC24 V** supply voltage AC/DC 24 V

**Non-linear analogue output**

**1** 0...20 mA

**2** 4...20 mA

**SW201 AC230 V - 1** ordering example

**Monitoring head MK - standard versions**

**MKG1/2A** G1/2" thread (MKG3/4A please enquire)

**MK1/2"NPT** NPT1/2" thread

**Monitoring head versions**

**ST01** for liquids and gases (NPT only)

**ST02** for liquids and gases (standard) (not for NPT)

**MKG1/2A - ST02** ordering example

**Monitoring head - Ermeto versions**

**MKEF06N** 6/4 mm

**MKEF08N** 8/5 mm

**MKEF10N** 10/7 mm

**MKEF12N** 12/9 mm

} outer/inner  
pipe diameter

**MKEF06N** ordering example

**Monitoring head MKV-03 and accessories (see separate page)**

**Cable type 1 with connectors**

**Cable and plug** between monitoring head and control unit

**Do + Ka type 1** 7-pole round connector, PVC insulated cable type LiYCY 6x0.14 mm<sup>2</sup>/6x0.217·10<sup>-3</sup> in.<sup>2</sup>, AWG 26, RAL 7032

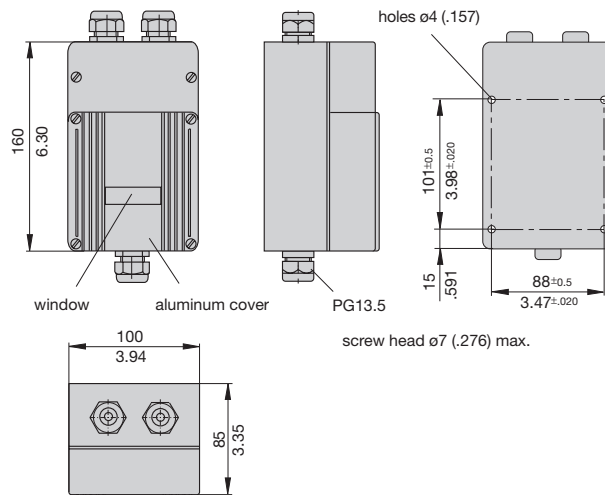
**Available cable lengths**

...m 2 m, 3 m, 5 m, 8 m, 10 m, 15 m, 20 m, 25 m, 30 m, 40 m, 50 m, 60 m, 70 m, 80 m, 90 m and 100 m (up to 100m/328 ft)

**Do + Ka type 1 - 2 m** ordering example

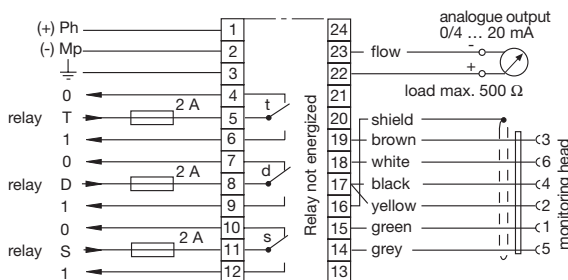
Please also see datasheet for monitoring head type MKV.

**Dimensions of Electronic Control Unit SW201**



This is a metric design and millimeter dimensions take precedence ( $\frac{mm}{inch}$ )

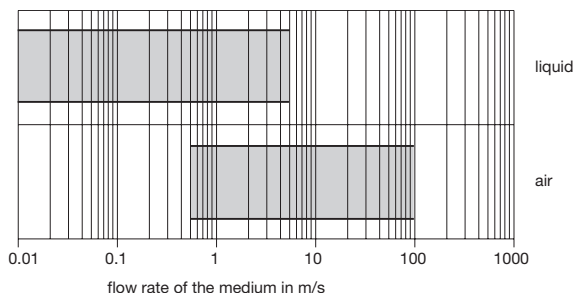
**Connection diagram**



relay S = flow rate  
relay D = wire break sensing  
relay T = temperature monitoring

Contact positions:  
0 = medium to be monitored is in the inadmissible range  
1 = medium to be monitored is in the operating range

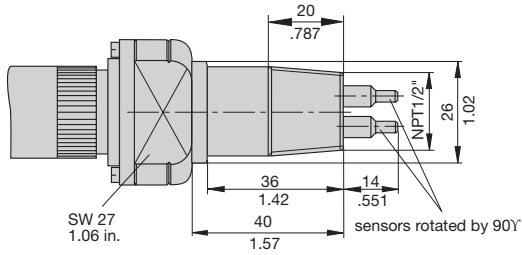
**Flow ranges**



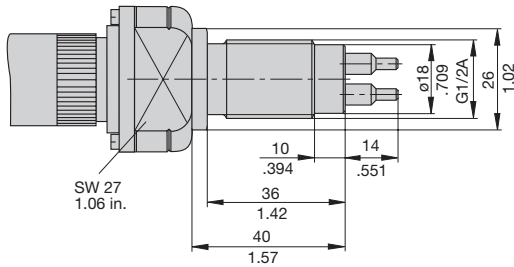
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**Dimensions of Monitoring Heads MK**

ST01 for water, oil and air (NPT only)



ST02 for water, oil and air (not for NPT)

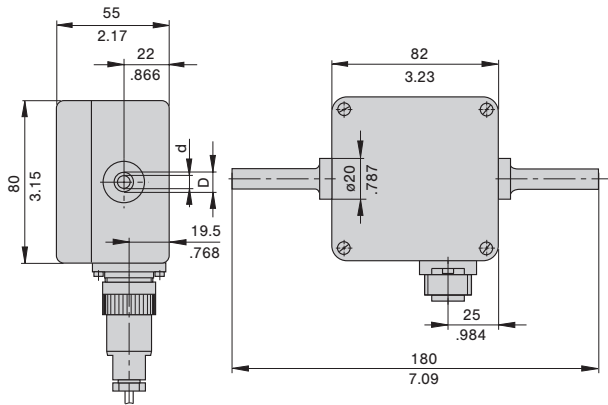


**Material of Monitoring Heads SW201**

Type	Sensors	Fitting	Seals	Suitable for
ST 01 ST 02	stainless steel 1.4571/ AISI 316Ti	stainless steel 1.4571/ AISI 316Ti	laser welded	water oil air
Ermeto	stainless steel 1.4571/ AISI 316 Ti	PVDF (measuring pipe)	sealing FPM (Viton® teflon coated)	small liquid quantities

**Dimensions of Monitoring Heads Ermeto**

Ermeto (10 mm/0.394 in. inner pipe diameter)



This is a metric design and millimeter dimensions take precedence ( $\frac{mm}{inch}$ )

**Calorimetric monitoring head**



**MKV-03**

**Technical data**

Type of head	push-in
Nominal shank diameter	18 mm/0.709 in. (without thread)
Length of shank	300 mm/11.8 in.
Length of sensor	14 mm/0.551 in.
Suitable for	liquids and gases
Temperature range *)	-40 ... +100 °C/-40 °F ... +212 °F
(of gas/liquid)	
Pressure resistance <sup>(1)</sup>	100 bar/1450 psi
of sensor	
Pressure resistance <sup>(1)</sup>	25 bar/363 psi
(installation)	(with threaded installation bush)
Degree of protection <sup>(2)</sup>	IP67 (connector)
Material	stainless steel 1.4571
Cable to electronic control unit	Do + Ka type 2 – 2 m/6.56 ft
	(up to max. 100 m/328 ft)
Weight	710 g/1.57 lb

<sup>(1)</sup> Admissible operating pressure DIN 2401, measured at max. temperature (= max. medium temperature)  
<sup>(2)</sup> with mating connector  
<sup>\*)</sup> max. +80 °C/176 °F in the connector area

**Description**

Extended calorimetric monitoring head with variable immersion depth for use in systems with larger pipe sizes (DN50 plus).

**Caution:** Fix with locking set 01 (see accessories).

**Features**

- Temperature range (gas/liquid)  
Stainless steel version: -40 °C ... +100 °C
- Material: stainless steel 1.4571

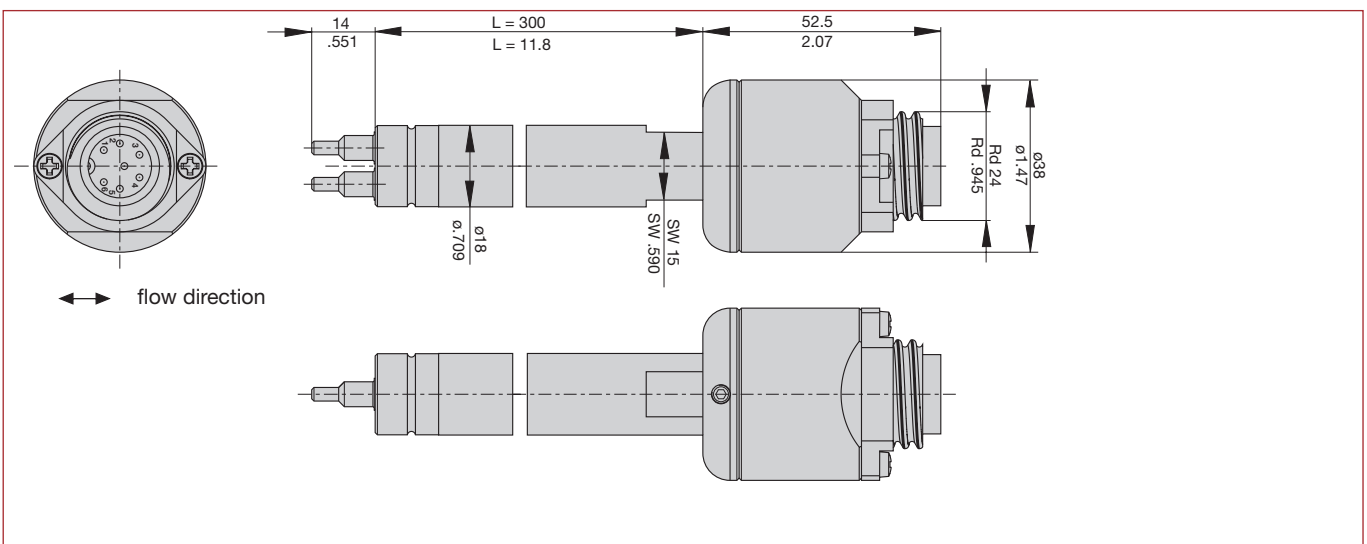
**Ordering information**

<b>Type</b>	Push-in type monitoring head with calorimetric sensors
<b>MKV</b>	Monitoring head design
<b>03</b>	Monitoring head with variable immersion depth
<b>Medium</b>	
<b>X</b>	Liquids und gases
<b>Material of areas exposed to medium</b>	
<b>M1</b>	stainless steel 1.4571
<b>Process connection</b>	
<b>00</b>	without flange; see accessories for cable gland**)
<b>Length of shank</b>	
<b>L30</b>	300 mm/11.8 in. (standard) other lengths upon request
<b>Electrical connection</b>	
<b>E30</b>	round connector Rd24, 7-pole (plug and cable to separate order)
<b>Certification</b>	
<b>T0</b>	without certificate (standard) *)
<b>Specification of medium</b>	
<b>xxx</b>	

**MKV - 03 X M1 00 L30 E30 T0 - ...** ordering example

\*) for detailed information please see section 0.  
 \*\*) see next page.

**Dimensions**



**1**

**Description**

Cable between push-in type monitoring head MKV and flow monitor SW201.

1

**Cable type 1 with connectors**



**Ordering information**

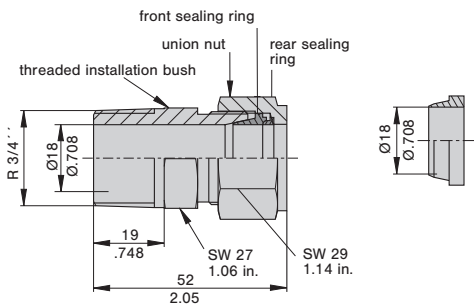
<b>Cable and plug</b>	between monitoring head and control unit
<b>Do + Ka type 1</b>	7-pole round connector, PVC insulated cable type LiYCY 2 m (6x0,14 mm <sup>2</sup> )/6.56 ft (6x0.217·10 <sup>-3</sup> in. <sup>2</sup> ) AWG 26, RAL 7032
	<b>Available cable lengths</b>
<b>...m</b>	2 m, 3 m, 5 m, 8 m, 10 m, 15 m, 20 m, 25 m, 30 m, 40 m, 50 m, 60 m, 70 m, 80 m, 90 m and 100 m (up to 100 m/328 ft)
<b>Do + Ka type 1 - 2 m</b>	ordering example

**Technical data**

<b>Cable type 1</b>	<b>Features:</b> flexible, fully shielded, electrical and thermal properties at +20 °C
<b>Conductor resistance:</b>	< 131 Ω/km
<b>Insulation resistance:</b>	> 200 MΩ
<b>Operating voltage:</b>	max. 350 V
<b>Withstand voltage:</b>	1200 V
<b>Max. load:</b>	1.5 A
<b>Temperature range:</b>	-10 °C ... +80 °C (processing and operation) -30 °C ... +80 °C (transport and storage)

**Threaded installation bush**  
0Z122Z000196

**Teflon sealing ring**  
0Z122Z000197

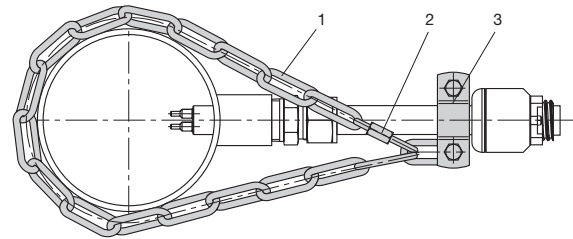


Suitable up to 25 bar/2.5 MPa/363 psi if used with stainless steel MK monitoring head. (Observe instructions for installation.)

**Caution:** Stainless steel ring is designed to cut into monitoring head. Pressure resistant to 25 bar/2.5 MPa/363 psi. Teflon ring can only be used from 0 to 2 bar/0,2 MPa/29 psi.

Please observe user manual and safety guidelines!

**Locking set 01**  
0Z122Z000204



- 1 chain 4 x 32 DIN 5685 (approx. 1 m)
- 2 catch for chain NG 5
- 3 clip with screw and nuts DN15 to DIN 11850

This is a metric design and millimeter dimensions take precedence ( $\frac{mm}{inch}$ )

All dimensions without tolerances are for reference only. In the interest of improved design, performance and cost effectiveness the right to make changes in these specifications without notice is reserved. Product markings may not be exactly as the ordering codes. Errors and omissions excepted.