

## Flowmeter

# M-21



## OVERVIEW

### Operation

- Float measuring principle

### Optional:

- with valve for flow regulation

### Application

- Water treatment
- Chemical industry
- Food industry
- Heating systems and cooling systems
- Paper industry

### Features

- Easy installation
- Small size
- Low pressure drop
- Media specific scale

### Options:

- Adjustable limit switch
- Analog transmitter
- Damping system
- Hygienic version
- Pressure regulators RCA and RCD (constant flow at varying pressures)

### Installation information

- The operating instructions for M-21 must be observed!
- **Download: [www.meister-flow.com](http://www.meister-flow.com)**

## OPERATING DATA

<b>Operating pressure, max. <sup>(1)</sup></b>	PN 16 (with needle valve)
	PN 40 (without needle valve)
<b>Pressure drop</b>	see table on page 2
<b>Media temperature</b>	
without electronics	-80 °C - 250 °C
with electronics	-20 °C - 200 °C
<b>Ambient temperature</b>	-20 °C - 80 °C
<b>Measuring accuracy <sup>(2)</sup></b>	4,0 % ( $q_G = 50$ %)

<sup>(1)</sup> other operating pressures on request

<sup>(2)</sup> in accordance with VDE / VDI 3513

Changed operating data apply for EX-version in accordance with ATEX-Directives!

The Operating Instructions for M-21 and the applicable Declarations of Conformity must be observed!

Download: [www.meister-flow.com](http://www.meister-flow.com)

## MEASURING RANGES

Type	for H <sub>2</sub> O <sup>(3)</sup>	for Air <sup>(4)</sup>	$\Delta p$ mbar
	l/h	NI/h	
M21004	0,4 – 4	12 – 120	28
M21006	0,6 – 6	18 – 180	28
M21010	1 – 10	30 – 300	30
M21016	1,6 – 16	50 – 490	30
M21025	2,5 – 25	80 – 770	30
M21040	4 – 40	120 – 1200	32
M21060	6 – 60	160 – 1800	32
M21100	10 – 100	300 – 3000	32
M21160	16 – 160	500 – 4900	34
M21250	25 – 250	800 – 7700	34
M21400	40 – 400	1200 – 12000	40
M21630	60 – 630	1800 – 18000	40
M21M01	100 – 1000	3000 – 30000	40

<sup>(3)</sup> Water at 20 °C

<sup>(4)</sup> Air at 20 °C and 1,013 bar absolute

Special scales for deviating media and operating conditions are available upon request.

**Units:** l/h, m<sup>3</sup>/h, kg/h, % and others

**Measuring range:** 10 : 1

## MATERIALS

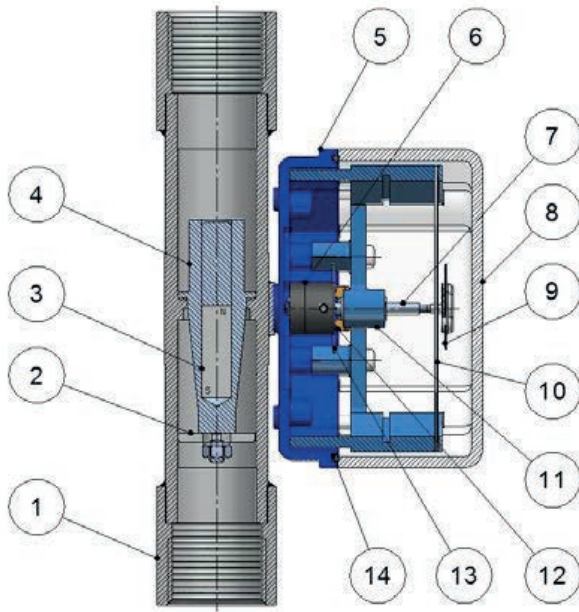
see table on page 3

## OPTIONS

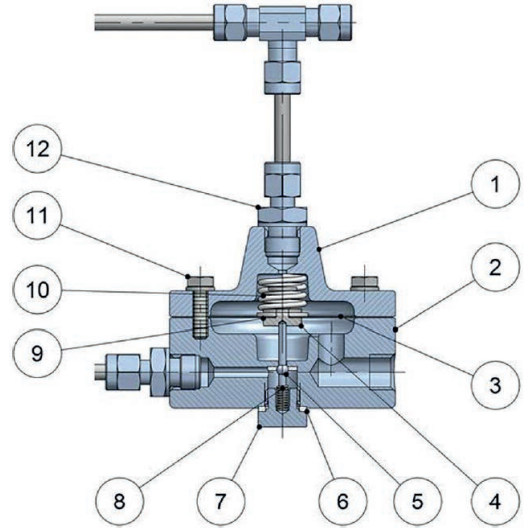
<b>M1-AMD</b>	Inductive contact 1 or 2 adjustable limit switch contacts
<b>TH6</b>	Analog transmitter 4 - 20 mA
<b>Damping system</b>	Metallic piston system to prevent float oscillation when using gaseous media or steam
<b>RCA</b>	Regulator (constant flow at varying inlet pressure)
<b>RCD</b>	Regulator (constant flow at varying outlet pressure)
<b>Hygienic process connections</b>	
	DIN 11851, SMS ISO 1145 CLAMP ISO 2852, TRI-CLAMP®
<b>Stainless steel housing</b>	

# ASSEMBLY DRAWING

## Flowmeter



## Regulator



# MATERIALS / PARTS DESCRIPTION

### Stainless steel version, wetted parts

Item	Description	Material
01	Connection:	1.4404
02	Lower float guide:	1.4404
03	Magnet:	AlNiCo
04	Float:	1.4404

### Stainless steel version, non-wetted parts

Item	Description	Material
05	Housing base:	Coated aluminum <sup>(3)</sup>
06	Magnet (Needle):	Neodymium
07	Needle shaft:	1.4401
08	Housing cover:	Polycarbonate <sup>(3)</sup>
09	Needle:	Aluminum
10	Scale / data plate:	Aluminum
11	Support:	Polycarbonate
12	Bearing holder:	Brass
13	Brake disk:	Aluminum
14	Gasket:	NBR

<sup>(3)</sup> Standard: Aluminium version, IP65  
 Optional: Stainless steel version, IP67  
 Housing 1.4404 with housing cover, see page 7

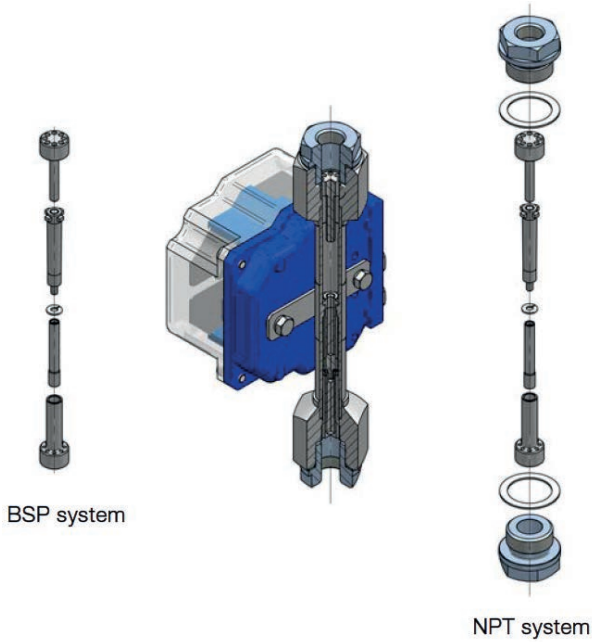
### Regulator RCA / RCD

Item	Description	Material
01	Membrane housing:	1.4404
02	Valve housing:	1.4404
03	Membrane:	NBR / FKM / PTFE
04	Valve guide:	1.4404
05	Control valve:	1.4404
06	Gasket:	NBR / PTFE
07	Spring stop:	1.4404
08	Valve spring:	1.4319
09	Membrane disc:	1.4404
10	Membrane spring:	1.4319
11	Screws:	1.4401
12	Connection:	1.4401

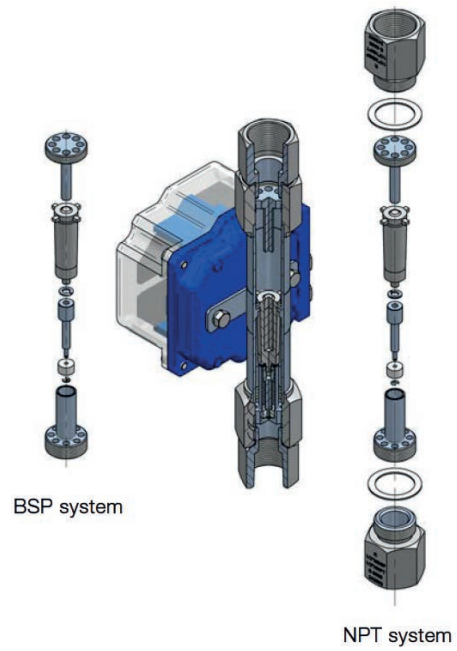
# FLOAT DAMPING SYSTEM (FOR GASES AND STEAMS)

Ceramic, PEEK or metallic piston system to avoid float oscillations in flowmeters for gas and steam service, obtaining stable readings even with very low working pressures and low gas densities.

Damping system for M-21 1/4"



Damping system for M-21 1/2" and 3/4"



Total length M-21 with damping system NPT 1/4": 186 mm

Total length M-21 with damping system NPT 1/2": 212 mm  
Total length M-21 with damping system NPT 3/4": 222 mm

## Description

Upper float stop

Float

Piston

Piston locking circlip

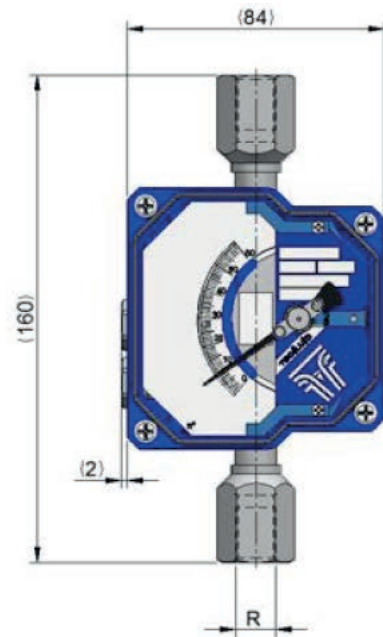
Guide cylinder

# TECHNICAL DRAWING

## M-21 with internal thread (BSP / NPT)

### Overall dimensions [mm]

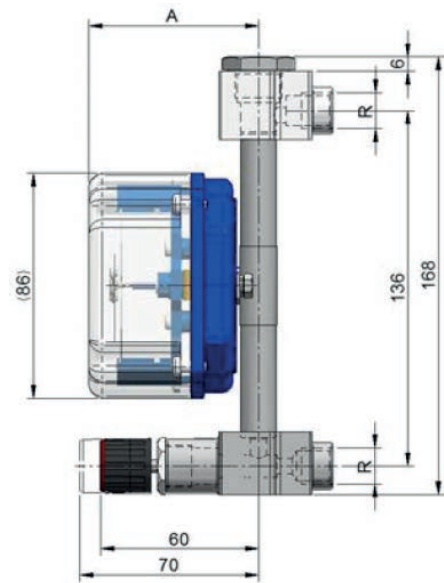
R	A
1/4"	-
1/2"	-
3/4"	-



## M-21 with valve and threaded connection (BSP / NPT)

### Overall dimensions [mm]

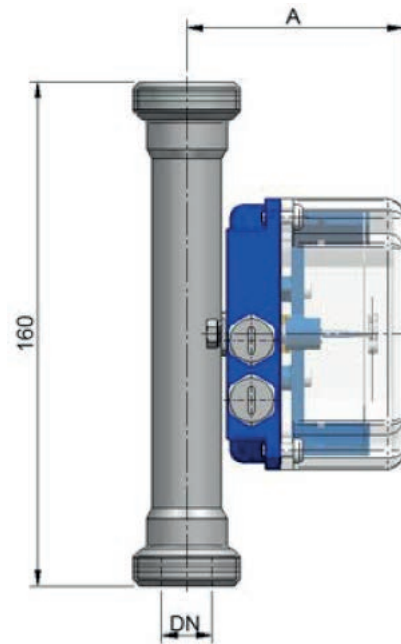
R	A
1/4"	65
1/2"	69
3/4"	72



**M-21 with pipe connection for milk (DIN 11851)**  
**M-21 with SMS-connection (ISO 1145)**

**Overall dimensions [mm]**

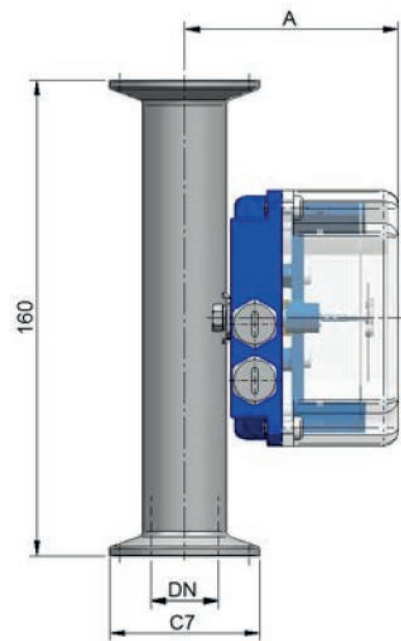
DN	A
10	66
15	68
20 / 25	69



**M-21 with CLAMP - connection (ISO 2852)**  
**M-21 with TRI-CLAMP® - connection**

**Overall dimensions [mm]**

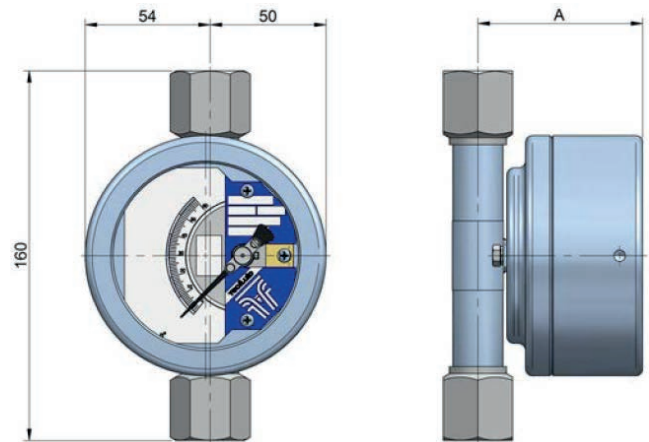
DN		A	C <sub>7</sub>
Clamp	TRI-CLAMP		
12	3/4"	65	34
21,3	1"	69	34
22,6	1"	72	50,5



## M-21 Stainless steel housing

### Overall dimensions [mm]

Rp	A
1/4"	67
1/2"	71
3/4"	74



## SUMMARY OF TYPES

Type	Overall dimensions [mm]				
	G			DN	
	BSP / NPT	DIN 11851	TRI-CLAMP®	Clamp ISO 2852	SMS ISO 1145
M21004	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21006	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21010	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21016	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21025	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21040	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21060	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21100	1/4"	DN 10 / Rd28 x 1/8"	3/4" Ø 15,7 / 25	DN 12 / C <sub>7</sub> = 34	–
M21160	1/2"	DN 20 / Rd44 x 1/6"	1" Ø 22,1 / 50,5	DN 21,3 / C <sub>7</sub> = 34	DN 25 / Rd40 x 1/6"
M21250	1/2"	DN 20 / Rd44 x 1/6"	1" Ø 22,1 / 50,5	DN 21,3 / C <sub>7</sub> = 34	DN 25 / Rd40 x 1/6"
M21400	1/2"	DN 20 / Rd44 x 1/6"	1" Ø 22,1 / 50,5	DN 21,3 / C <sub>7</sub> = 34	DN 25 / Rd40 x 1/6"
M21630	1/2"	DN 20 / Rd44 x 1/6"	1" Ø 22,1 / 50,5	DN 21,3 / C <sub>7</sub> = 34	DN 25 / Rd40 x 1/6"
M21M01	3/4"	DN 20 / Rd44 x 1/6"	1" Ø 22,1 / 50,5	DN 22,6 / C <sub>7</sub> = 50,5	DN 25 / Rd40 x 1/6"



# LIMIT SWITCH

## Adjustable inductive limit switch M1-AMD

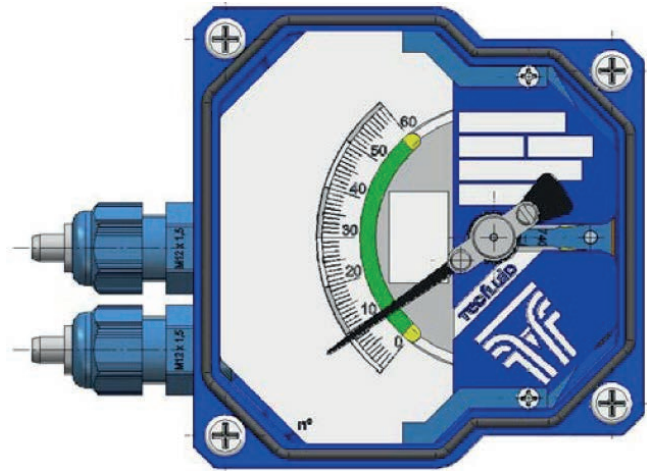


Inductive proximity switch, 3.5 mm in accordance with NAMUR (EN 60947-5-6) vane activated, installed in the display housing.

- M1-AMD1: 1 adjustable limit switch
- M1-AMD2: 2 adjustable limit switches
- Power supply: 8 VDC (via switch amplifier)
- Ambient temperature: -25 °C - 70 °C
- ATEX certification: Ex ia IIC T4...T6 Ga /  
Ex ia IIIC T85°C Da

Switch amplifier (on request)

- NAMUR (EN 60947-5-6) for 1 or 2 adjustable inductive detectors
- Power supply: 24 ... 253 VAC, 50 - 60 Hz  
24 ... 300 VDC
- Input: NAMUR Ex ia IIC
- Output: 1 or 2 relay contacts
- Output rating: 2 A / 250 VAC / 100 VA  
1 A / 24 VDC
- Ambient temperature: -20 °C - 60 °C



# EVALUATION ELECTRONICS

## Transducer TH6

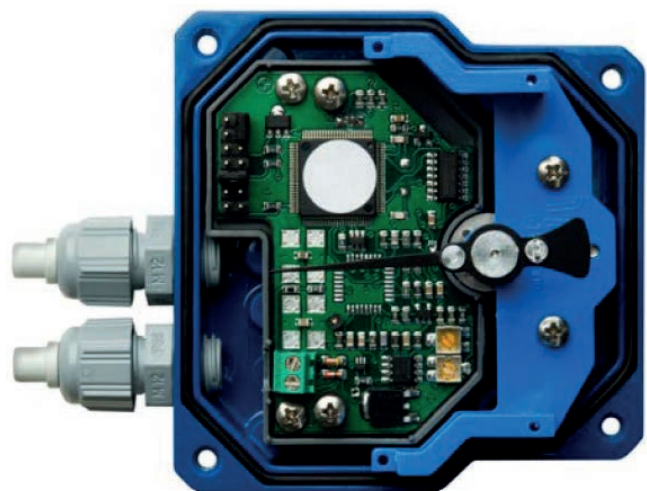


The electrical transducer TH6 provides an analog output signal proportional to the flow rate. The sensor is based on the Hall effect and is mounted inside the display case.

- TH6 Transducer

### Technical data

- Power supply: 2-wire, 12 - 36 VDC
- Power consumption: max. 20 mA
- Analog output: 4 - 20 mA
- Error: < 0,6% of the magnet position
- Maximum load in 4-20 mA loop: 1100 Ω  
(with 36 VDC power supply)
- Ambient temperature: -5 °C - 70 °C
- Connector: Cable gland M12x1,5



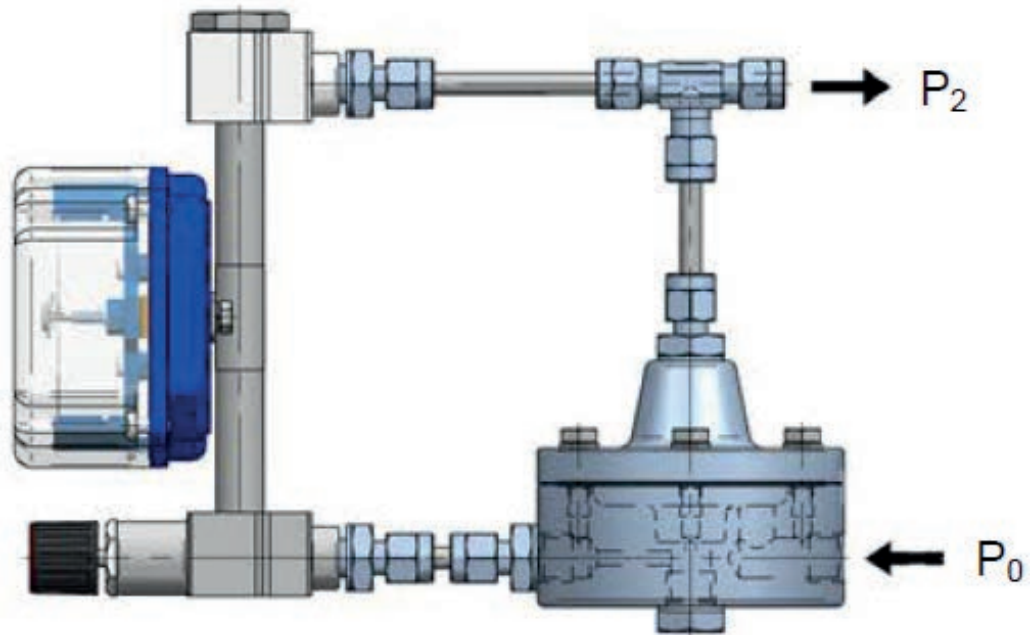


## REGULATOR RCA

The design of the M-21 series flow meter enables the use of RCA- or RCD-type regulators, which maintain a constant flow at fluctuating pressure.

The RCA-type regulator is used for gases and liquids when the inlet pressure is variable and the outlet pressure is constant.

## TECHNICAL DRAWING



## REGULATOR RCD

The design of the M-21 series flow meter enables the use of RCA- or RCD-type regulators, which maintain a constant flow at fluctuating pressure.

The RCD-type regulator is used for gases, when the inlet pressure is constant and the outlet pressure is variable.

## TECHNICAL DRAWING

