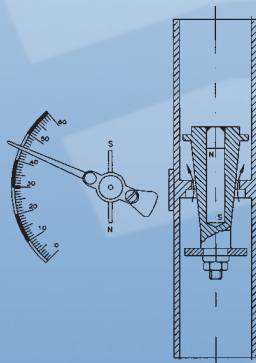




## Flow Meter for low flows of Gases, Liquids and Steam

- All metal construction SS (AISI-316L)
- Indication via magnetic coupling (no seals)
- Linear scales, calibrated in l/h, m<sup>3</sup>/h, kg/h, %, etc.
- Connections for standard threads, Clamp & sanitary fittings, etc.
- Flow rates for:
  - Water: 0.1 l/h up to 1000 l/h
  - Air: 4 NI/h up to 30 Nm<sup>3</sup>/h
- Low Pressure drop
- Local indication only, or with:
  - 1 or 2 Alarm settings (Hi/Lo Flow)
  - 4-20 mA output (2 wire system)
- Optional with:
  - Regulating needle valve
  - Constant flow regulator, RCA or RCD
- Connection types:
  - BSP, NPT, Clamp, Naue, DIN, FYL, SMS
- Length: 160 mm





## M-21 Flowmeter

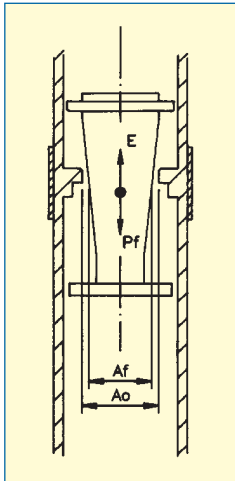
The M-21 is a variable area flowmeter designed for low flow rates. Its standard design provides a simple and robust high precision measurement well suited to harsh industrial process applications.

### Operation

The metering system is made up of a calibrated orifice and a conical float. The lifting force from the fluid, as it flows upwards, displaces the float until it reaches an equilibrium point that is a function of:

- The weight of the float: Pf
- The force of the fluid flow: E
- The free area of flow: SL

Each float position represents a different equilibrium point which is related to the flow rate. The position of the float is transmitted to the indicator through a magnetic coupling between a permanent magnet in the float and another on the indicator.



Ao = Area of the Orifice • Af = Float Area • Pf = Weight of the Float  
E = Force of flow • SL = Ao-Af = Free Area

Item	Description	Material
1	Flow Tube	AISI-316L (1.4404)
2	Float	AISI-316L (1.4404)
3	Float Guide	AISI-316L (1.4404)
4	Housing	PTFE Coated Aluminium
5	Damping Disk	Aluminium
6	Counterweight	Brass
7	Pointer Shaft	AISI-316
8	Shaft Support	Brass
9	Indicator Needle	Aluminium
11	Scale / Plate	Aluminium
12	Damper Magnet	Neodymium
13	Housing Cover	Polycarbonate
14	Housing Seal	Nitrile Rubber
15	Indicator Magnet	Neodymium
16	Float Magnet	AlNiCo

### Technical Data

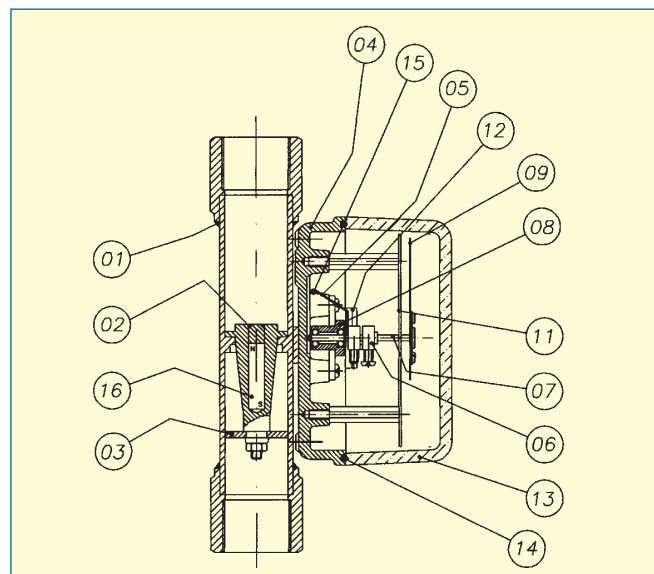
- Accuracy Class 4 according to VDI / VDE 3513
- Scales directly in l/h, kg/h, % of scale, etc.
- Length of scale: 60 mm
- Working temperature:
  - Without electronics: -80°C to + 210°C
  - With electronics: -20°C to + 180°C
  - At ambient temperature of 20°C
- Working Pressures:
  - With valve: standard PN16 (others on demand)
  - Without valve: standard PN40 (On request up to PN400)
- Connection types:
  - BSP, NPT, Clamp, Naue, DIN, FYL, SMS
  - others on request
- Length: 160 mm
- Housing: IP-65 in PTFE Coated Aluminium

### Models

- M-21/R BSP, End connections
- M-21/N NPT, End connections
- M-21/HR BSP, Rear connections (without valve)
- M-21/HN NPT, Rear connections (without valve)
- M-21/HRA BSP, Rear connections + Valve
- M-21/HNA NPT, Rear connections + Valve
- M-21/1 DIN 11851, End connections
- M-21/3 ISO 2852 (Clamp), End connections
- M-21/5 ISO 4200, End connections
- M-21/7 ISO 1145 (SMS), End connections (BSP parallel according to standard ISO 228-1) (NPT according to ANSI B2 1968)

### Alarms and Transmitter

- 1 AMD, Hi or Lo Flow Detection
- 2 AMD, Hi and Lo Flow Detection
- Relay DIN 19234 or NAMUR
- Transmitter 4-20 mA, TEH2 (HALLTEC II, 2 wire System)



## Standard Scales

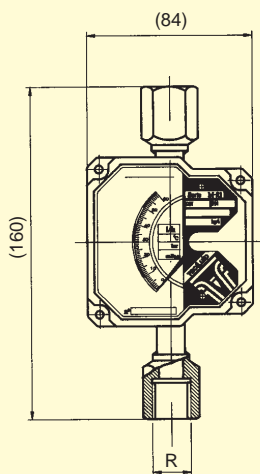
Tube N°.	Float AISI-316 $d=7.950 \text{ g/cm}^3$		$\Delta p$ mm Water	DN					BSP / NPT
	l/h H <sub>2</sub> O 20°C	NI/h AIR 20°C 1.013 bar abs		DIN	Naue	CLAMP	FYL	SMS	
M 21001	0.1 - 1	4 - 30	280	10	10	12	12	-	1/4"
M 21002	0.2 - 2.5	8 - 80	280	10	10	12	12	-	1/4"
M 21004	0.4 - 4	12 - 120	280	10	10	12	12	-	1/4"
M 21006	0.6 - 6	18 - 180	280	10	10	12	12	-	1/4"
M 21010	1 - 10	30 - 300	300	10	10	12	12	-	1/4"
M 21016	1.6 - 16	50 - 500	300	10	10	12	12	-	1/4"
M 21025	2.5 - 25	80 - 800	300	10	10	12	12	-	1/4"
M 21040	4 - 40	120 - 1200	320	10	10	12	12	-	1/4"
M 21060	6 - 60	160 - 1800	320	10	10	12	12	-	1/4"
M 21100	10 - 100	300 - 3000	320	10	10	12	12	-	1/4"
M 21160	16 - 160	500 - 5000	340	15	15	21.3	21.3	-	1/2"
M 21250	25 - 250	750 - 7500	340	15	15	21.3	21.3	-	1/2"
M 21400	40 - 400	1200 - 12000	400	25	20	25	25	25	1/2"
M 21630	60 - 630	1800 - 18000	400	25	20	25	25	25	1/2"
M 21M01	100 - 1000	3000 - 30000	400	25	20	25	25	25	3/4"

### BSP, NPT (Female) End Connections

Series:

M21/R  
M21/N

R	A
1/4"	63
1/2"	67
3/4"	72

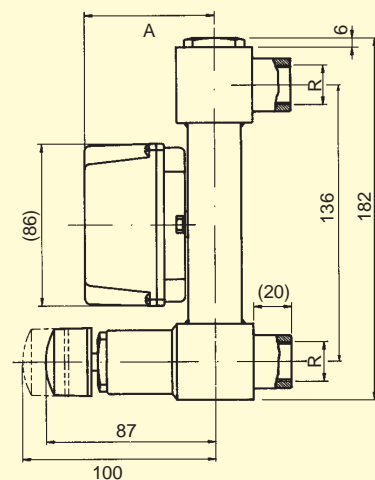


### BSP, NPT (Female) Rear Connections with Valve

Series:

M21/HR  
(without valve)  
M21/HN  
(without valve)  
M21/HRA  
M21/HNA

R	A
1/4"	63
1/2"	67
3/4"	72



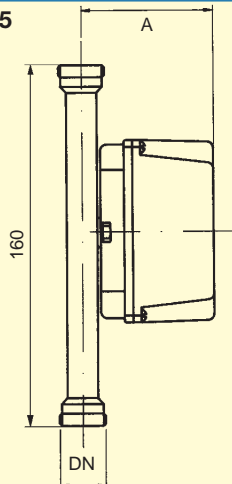
### DIN 11851, ISO 4200, ISO 1145

Connections

Series:

M21/1  
M21/5  
M21/7

DN	A
10	66
15	68
20	72

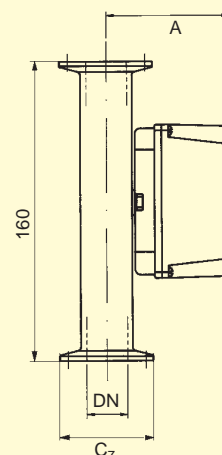


### ISO 2852 CLAMP

Series:

M21/3

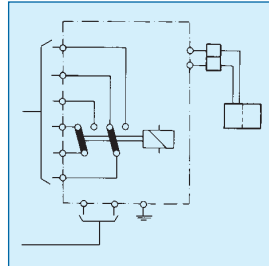
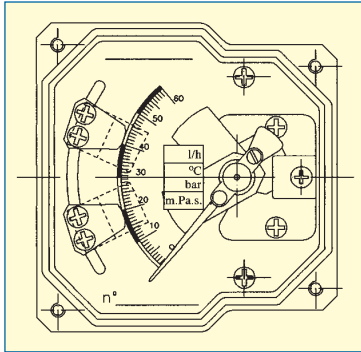
DN	A	C7
12	66	34
21.3	68	34
25	72	50.5



### Adjustable Inductive Sensor, Series M21-AMD

Inductive proximity sensor, 3.5 mm, according to standard NAMUR DIN 19234, mounted in the indicator housing of the flow meter.

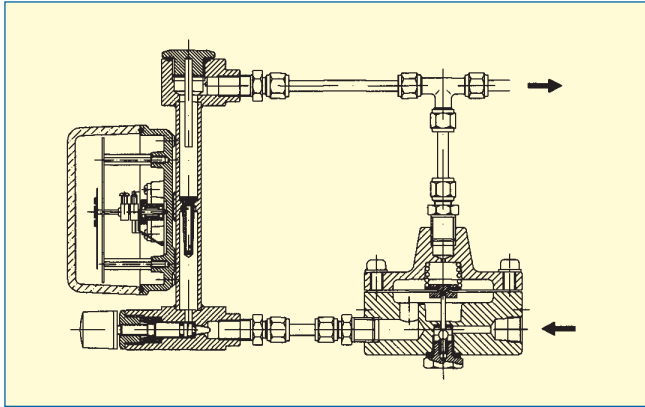
- M21-AMD1 ... -AMD2 1 ... 2 adjustable sensors contact (+ amplifier Ex1 or Ex2 on demand)



Ex1 or Ex2

### Relay for Inductive Proximity Sensor (DIN 19234 or NAMUR)

- Supply voltage: 24 ... 230 V ac 50 / 60 Hz  
24 ... 250 V dc
- Power consumption: < 1W
- I.S. Standard control circuit: EEx ia IIC (Zone 0)



### RCA Series: M21/HRA, M21/HNA

Constant flow regulator to provide control of gas flow when the pressure on the inlet side varies. The RCA is always used for control of liquids, regardless of the source of pressure variation.

Correct operation of the RCA and RCD requires an available pressure drop of 200 mbar or more.

- Outputs: 1 or 2 contacts
- Load: 2 ... 5 A ac / 40 V dc
- Temperature: -25° to +70°C.
- Power Supply to inductive sensor: 8 V dc

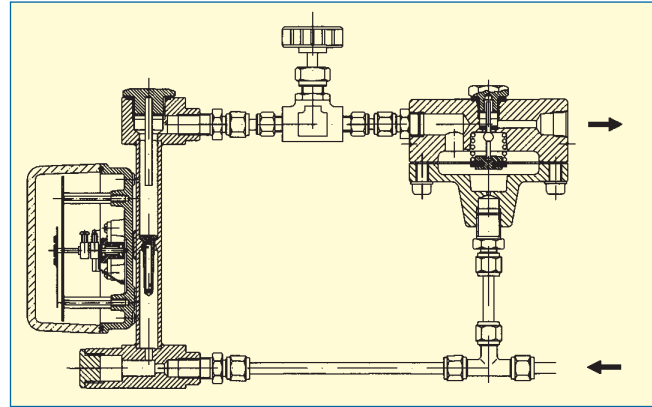
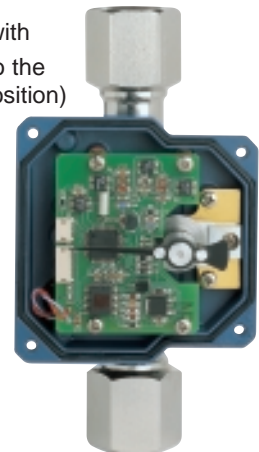
### Analog Transmitter 4-20 mA (HALLTEC II) Series TEH2 (2 wire system)

- Power Supply: 15-50 V dc
- Output: 4-20 mA (2 wire system)
- Ambient Temperature: -5° to +70°C
- Error: < 0.6% (with regards to the pointer position)

- IP 65 Connector
- Maximum loop load:

$$R_L = \frac{V_s - 10}{0.02} \Omega$$

(Vs = power supply voltage)



### RCD Series: M21/HRA, M21/HNA

Constant flow regulator to provide control of gas flow when the pressure on the outlet side varies.

We are at your service, please consult us.

TECFLUID develops and manufactures instruments for gases and liquids, using the most advanced techniques.

Request Information by telephone n° 01 34 64 38 00