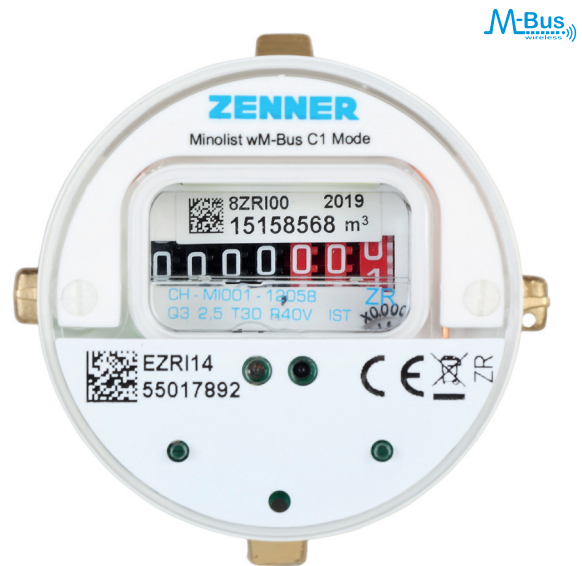


# Minolist, Minomuk, Minomoc, Minotec, Minomet - measuring capsule meter with wireless M-Bus-interface

## for cold and hot water

The ZENNER flush-mounted meters are coaxial measuring capsule water meters with rotatable register. The meters can be used both in the initial equipment as well as the exchange outstanding. The current connection dimension allows for use in both flush-mounted connection interfaces as well as in surface-mounted fittings. The insert is intended for the vertical installation position, for the connection interfaces according to DIN EN ISO 4064. All meter types are equipped with a wireless M-Bus radio module ex works and can be integrated in wireless M-Bus readout-systems.

All materials, which are used in the drinking water section, comply with the required standards, guidelines and the current German drinking water approval (Other country-specific drinking water approvals on request).



Picture similar

### Performance characteristics at a glance

- Coaxial-Capsule meter
- Easy installation and quick exchange
- Can be installed in the narrowest of spaces
- Compatibility with existing systems
- High level of measurement stability due to high-quality sapphire bearing for the impeller
- Thanks to the rotary counter can be read in any position (360°)
- For vertical installation
- Approved according to MID
- Certification: CH-MI001-12058
- Equipped with wireless M-Bus-interface

### Applications

- For the consumption measuring of cold potable water up to 30 °C
- For the consumption measuring of hot potable water up to 90 °C

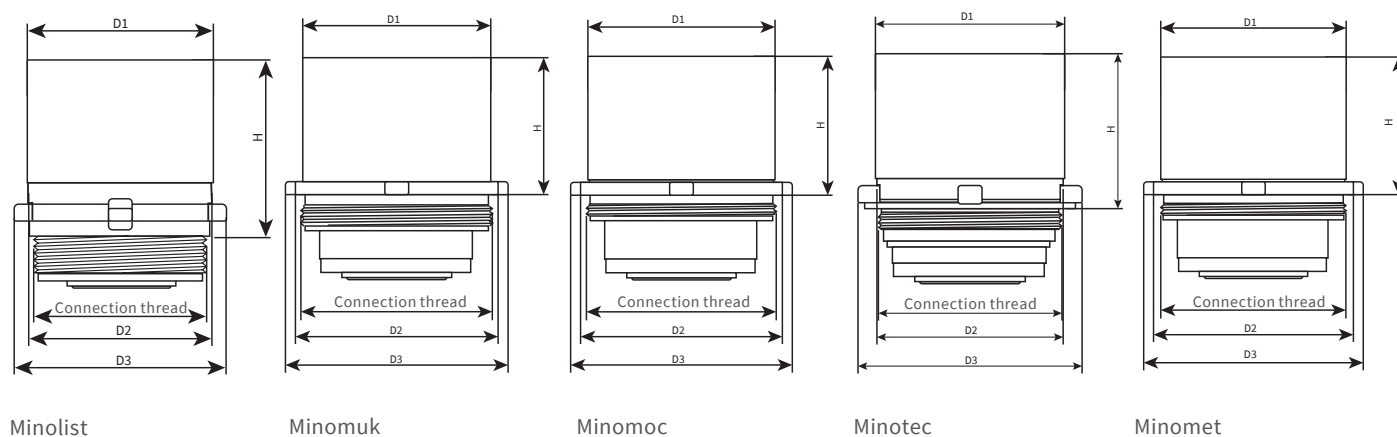
### Smart Metering functions

- Self-monitoring
- Tampering detection
- Reverse water flow detection
- Leakage detection
- Meter Stop detection
- Meter oversized detection
- Meter undersized respectively pipe burst detection

Technical data			
Permanent Flowrate	$Q_3$	m <sup>3</sup> /h	2.5
Comparable to nominal flow (EWG)	$Q_n$	m <sup>3</sup> /h	1.5
Overload Flowrate	$Q_4$	m <sup>3</sup> /h	3.125
Transitional Flowrate	$Q_2$	l/h	100
Minimum flow	$Q_1$	l/h	62.5
Standard measuring range	$Q_3 / Q_1$	R	40V
Starting flow approx.		l/h	24
Display value min.		l	0.05
Display value max.		m <sup>3</sup>	9.999
Measurement accuracy class	Cold and hot water		± 5 % ( $Q_1 \leq Q < Q_2$ )
	Cold water		± 2 % ( $Q_2 \leq Q \leq Q_4$ )
	Hot water		± 3 % ( $Q_2 \leq Q \leq Q_4$ )

Dimensions/Weight			Minolist	Minomuk	Minomoc	Minotec	Minomet
Connection interface DIN EN ISO 4064			IST	MUK	MOC/MOE	TE1	MET
Threaded connection			G2"	G2 1/4"	M65x2	M62x2	M64x2
Nominal size	DN	mm	15	15	15	15	15
Height	H	mm	63	47	51.4	54.6	51.4
Diameter	D1	mm	64	64	64	64	64
	D2	mm	66.5	69	69	63	69
	D3	mm	73	79	78	75.8	78
Weight		kg	0.36	0.32	0.31	0.33	0.30

Dimensions:



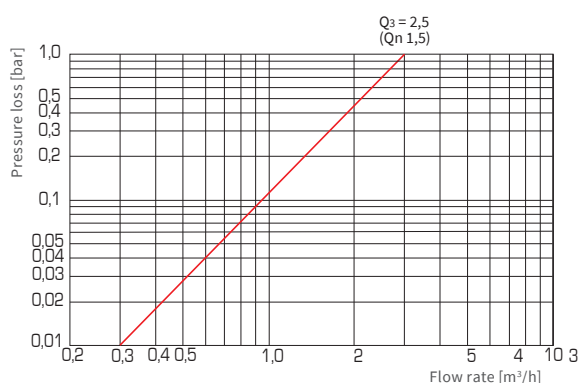
### Nominal operating conditions

Temperature range	Cold water Hot water	°C	0.1 - 30 30 - 90
Pressure stage	MAP	bar	10
Test pressure	P	bar	16
Pressure loss class at $Q_3$	$\Delta p$	bar	0.63
Pressure loss class at $Q_4$	$\Delta p$	bar	1.0
Mechanical environmental conditions			M2
Climatic conditions			5 °C to 70 °C – Condensation possible
Magnet protection			PTB tested acc. VDDW and EN 14154-3
Flow profile sensitivity			U0 / D0

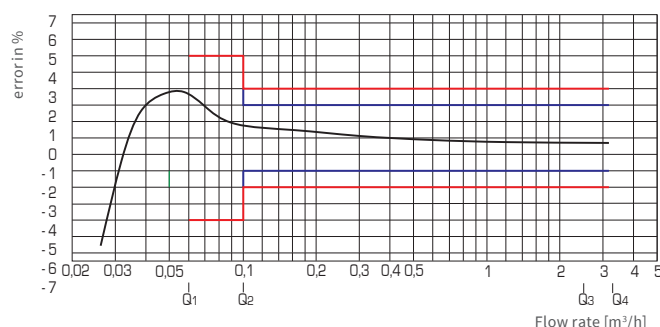
### Technical data wireless M-Bus-radio module

Operating frequency	868 MHz
Transmission power	~ 14 dBm
Duration of transmission telegram	~ 10 ms
Sending interval	all 180 s*
Data transmission procedure	wireless M-Bus (C1-Mode)
Encryption of radio protocols	yes (encryption mode 5)
Error detection	CRC
Telegram content	Serial number, date, meter reading, mid-month value, previous month (max. 15), status information radio module
Optional IR interface	yes
Battery capacity	10 years plus reserve
Display	-
Energy supply	Lithium battery
Reverse flow detection	yes
Protection class	IP68
Ambient conditions	+5 °C to +55 °C
CE conformity	according to directive 2014/53/EU (RED)
Radio activation	Illuminating > 8s; Autostart after flow of 30 l; using Zenner opto head and MSS software

\*After activation, the module transmits for a period of one hour with a quicker transmission interval of 20 s (commissioning scenario).



Pressure loss curve



Error curve

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