DIEHL
Metering

HYDRUS 2.0 BULK

ULTRASONIC METER



APPLICATION

HYDRUS 2.0 BULK is a static ultrasonic bulk water meter designed for applications of cold and hot water supply enabling accurate measuring with long-term stability under difficult conditions (no measurement of air and insensitive to sedimentation). Developed within the framework of the MID, it complies with the European regulations and holds sanitary conformity certificates (AoC DEU, ACS, WRAS and others). The integrated communication function supports meter data provision via mobile reading (walk-by/drive-by/passive drive-by) or fixed network (upgrade without on-site configuration). In combination with Diehl Metering's IZAR fixed network system, which stands out with extra high coverage and strong performance to reach hard-to-read locations, high data granularity and timeliness will be maintained. This is what makes it a high responsive infrastructure to take actions immediately.

FEATURES

- DN 50 to 200
- MID approved with dynamic range up to R 800
- IP 68 suitable for outdoor installations
- Integrated communication based on OMS specification
- Wireless M-Bus for mobile reading in parallel to Fixed Network
- mioty® for Metering for extended radio range
- Wired M-Bus/Pulse/Pulse, wireless M-Bus, wireless M-Bus in combination with wired L-Bus/Pulse interface
- Display with error and alarm codes including leakage detection
- Battery lifetime up to 16 years
- U0 / D0, no need for calming sections

TECHNICAL DATA

			HYDRUS 2.0 BULK
Medium temperature range		°C	+0.1 ... +50 (T30 / T50), +0.1 ... +90 (T90)
Accuracy			Accuracy class 2 acc. to ISO 4064:2014 / OIML R49:2013
Ambient operating temperature		°C	-10 ... +55
Ambient storage temperature		°C	-10 ... +70 (>35 °C max. 4 weeks)
Environmental class			O (Outdoors)
Mechanical environmental class			M2
Electromagnetic environmental class			E2
Flow profile sensitivity class			U0/D0 (no calming sections required)
Installation position			Horizontal, inclined 45°, inclined 90°, vertical
Maximum admissible pressure	MAP	bar	16
Minimum operating pressure		bar	0.3
Pressure loss class	Δp	bar	0.16
Power supply			3.6 V lithium battery (D-cell)
Battery lifetime[1]			Up to 16 years
Communication interfaces			Optical, OMS Generation 3/4 wireless M-Bus 434/868 MHz, mioty® for Metering 434/868 MHz, M-Bus, L-Bus
Data storage			For errors, alarms and measuring values, data logging capabilities to record up to 1024 daily +32 monthly values
Protection class			IP 68

[1] Depends on the sending interval of the radio telegram, the telegram length and the ambient temperature at the installation

TECHNICAL DATA DISPLAY

	HYDRUS 2.0 BULK
Display indication	LCD, 9-digit, additional symbols/display counter/unit
Units displayed DN 50 - 80	Volume (m^3 + 2 decimal places) and flow rate (m^3/h + 3 decimal places)
Units displayed DN 100	Volume (m^3 + 2 decimal places) and flow rate (m^3/h + 2 decimal places)
Units displayed DN 125 - 200	Volume (m^3 + 1 decimal place) and flow rate (m^3/h + 2 decimal places)
Values displayed	Display test - volume - battery lifetime - firmware version - software checksum - flow - current/continuous/historical error - alarm status - high resolution volume - due date - due date volume - reverse volume - display counter - low battery indication - leakage indication - metrological log access - radio signal ON/OFF - alarm indication - meter lock ON/OFF

INTERFACES - OVERVIEW

	HYDRUS 2.0 BULK
Optical	For switching the display loop and configurating/reading via IZAR@MOBILE
wireless M-Bus	434 or 868 MHz, OMS Generation 3/4, OMS radio as standard for mobile reading (R3) sent every 14 / 64 seconds (default) and wireless M-Bus for fixed network (R4/ R4+) sent every 5 / 15 / 60 minutes
mioty® for Metering	434 or 868 MHz, OMS Generation 3/4, OMS radio as standard for mobile reading (R3) sent every 64 seconds (default) and mioty® for Metering for fixed network (L1C) sent every 60 minutes
M-Bus	2400 baud, cable length 5m, power supply only via built-in battery - is combined with two Pulse outputs
L-Bus	In combination with radio, cable length 5m (only one interface communicating at the same time)
Pulse (Open drain)	Two Pulse outputs, or one Pulse and one L-Bus output, Pulse cable length 5m

SECURITY

	HYDRUS 2.0 BULK
Wireless M-Bus	OMS Generation 4 Profile B, individual keys (default) / OMS Generation 3 (selectable)
mioty® for Metering	OMS Generation 4 Profile B, individual keys (default) / OMS Generation 3 (selectable)

PRIVACY

The HYDRUS 2.0 BULK stores internally historical consumption values. Logging data is available by local reading with IZAR@MOBILE and remote reading. Optical and radio communication implements encryption and authentification according to OMS Specification.

VOLUME / PULSE OPEN DRAIN

		HYDRUS 2.0 BULK
Max. input voltage	V	30
Max. input current	mA	27
Max. voltage drop at active output	V/mA	2/27
Max. current through inactive output	µA/V	5/30
Max. reverse voltage without destroying outputs	V	6 (in case current does not exceed 27 mA)
Pulse rates DN 50 - 100	l/pulse	1 / 10 / 100 / 1000
Pulse rates DN 65 - 200	l/pulse	10 / 100 / 1000
Pulse output 1 variants		Net volume/ forward volume / total volume
Pulse output 2 variants		Net volume / forward volume / reverse volume / total volume / direction flag / error flag
Pulse frequency		Max. frequency 35 Hz
Pulse width		Min. 14 ms

POSSIBLE COMMUNICATION INTERFACES

	HYDRUS 2.0 BULK
mioty® for Metering and OMS radio/Pulse/L-Bus	434 or 868 MHz + 3 wires
M-Bus/Dual pulse	5 wires
IZAR BE PULSE	-
Dual pulse	4 wires

PERFORMANCE DATA - COLD WATER (T30 / T50) HORIZONTAL

Nominal diameter	DN	mm	50	65	80	100	125	150	200
Permanent flow rate	Q_3	m^3/h	25	40	63	100	160	250	400
Dynamic (Q_3/Q_1)	R		800	800	800	800	800	800	800
Overload flow rate	Q_4	m^3/h	31.25	50	78.75	125	200	312.50	500
Transitional flow rate	Q_2	l/h	50	80	126	200	320	500	800
Minimum flow rate	Q_1	l/h	31.25	50	78.75	125	200	312.50	500
Starting flow rate		l/h	15	27	35	45	70	140	200
Pressure loss at Q_3		bar	0.16	0.15	0.16	0.13	0.15	0.11	0.12
Pressure loss at Q_4		bar	0.25	0.23	0.25	0.2	0.23	0.18	0.19
Maximum flow rate [2]	Q_{high}	m^3/h	54	87	134	250	400	625	1000
Flow coefficient	K_v	m^3/h	63	105	158	280	420	747	1140

[2] Outlet pressure minimum 3 bar, closed pipeline network

PERFORMANCE DATA - HOT WATER (T90) HORIZONTAL

Nominal diameter	DN	mm	50	65	80	100	125	150	200
Permanent flow rate	Q_3	m^3/h	25	40	63	100	-	-	-
Dynamic (Q_3/Q_1)	R		400	400	400	400	-	-	-
Overload flow rate	Q_4	m^3/h	31.25	50	78.75	125	-	-	-
Transitional flow rate	Q_2	l/h	100	160	250	400	-	-	-
Minimum flow rate	Q_1	l/h	63	100	160	250	-	-	-
Starting flow rate		l/h	15	27	35	45	-	-	-
Pressure loss at Q_3		bar	0.16	0.15	0.16	0.13	-	-	-
Pressure loss at Q_4		bar	0.25	0.23	0.25	0.2	-	-	-
Flow coefficient	K_v	m^3/h	63	105	158	280	-	-	-

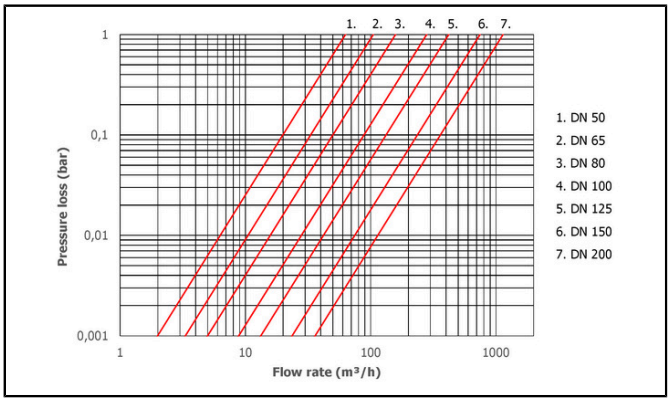
APPROVAL

	DN 50 - 200
Approval	MID DE-19-MI001-PTB011
Standards	ISO 4064, OIML R49
Sanitary conformity	AoC DEU, ACS, WRAS

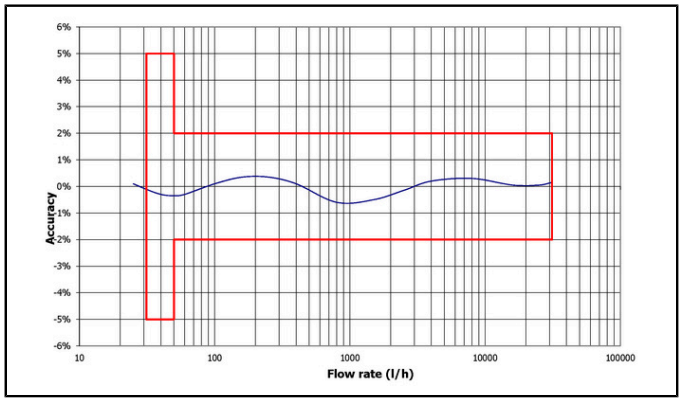
DYNAMIC RANGE

		DN 50 - 200
Q_3 25 ... 400 m^3/h - T30	R	800
Q_3 25 ... 400 m^3/h - T50	R	800H / 250V
Q_3 25 ... 100 m^3/h - T90	R	400H / 160V

PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH

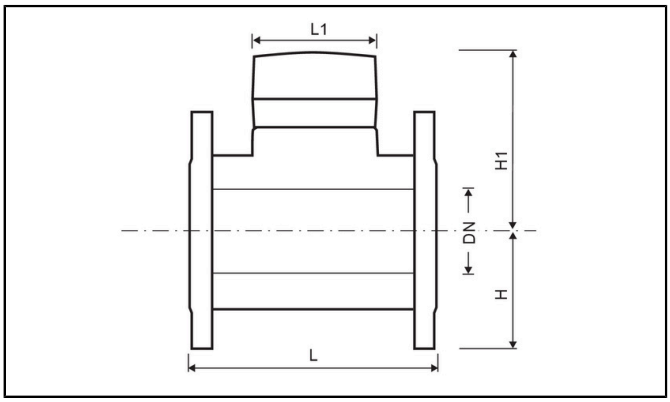


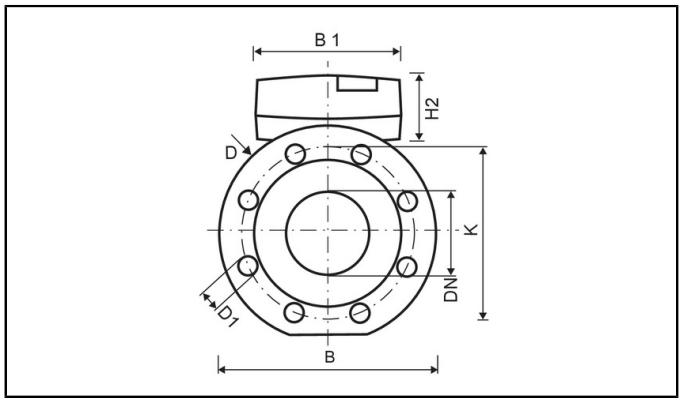
Pressure loss graph



Typical error graph - Q_3 25 m³/h

DIMENSIONS

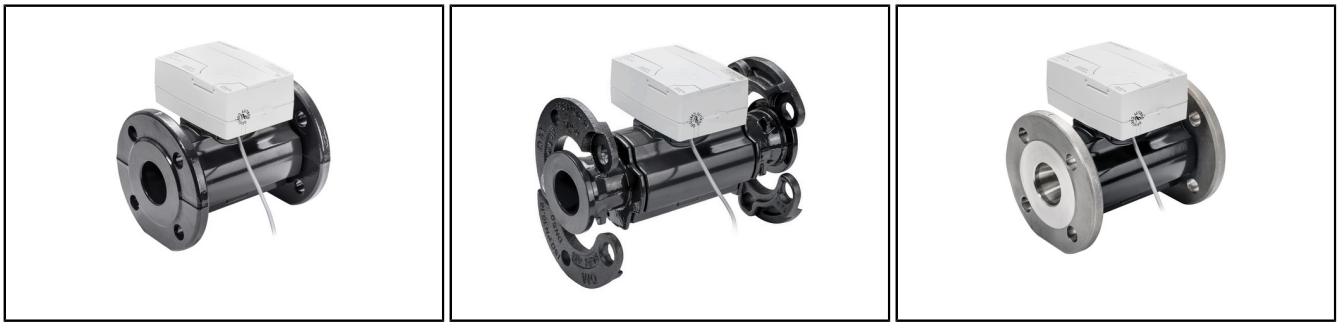




Nominal diameter	DN	mm	50	65	80	100	125	150	200
Overall length (T30 / T50)	L	mm	200/ 270 / 300[3]	200 / 300[3]	200 / 225 / 300 / 350[3]	250 / 350[4] / 360	250	300 / 500	350
Overall length (T90)	L	mm	200	200	200 / 225	250	-	-	-
Flange diameter [5]	D	mm	165	185	200	220	250	285	340
Hole circle diameter [5]	K	mm	125	145	160	180	210	240	295
Number of screwholes [5]		pcs	4	4	8	8	8	8	12[6]
Screwhole diameter [5]	D1	mm	19	19	19	19	19	23	23
Height	H	mm	74	87	95	105	120	135	161
Height	H1	mm	121	143	147	165	177	185	215
Height	H2	mm	61	61	61	61	61	61	61
Counter length	L1	mm	98	98	98	98	98	98	98
Meter width	B	mm	165	185	200	220	250	285	340
Counter width	B1	mm	139	139	139	139	139	139	139
Overall weight (approx.)		kg	7 / 9 / 9	8 / 11	11 / 13 / 14 / 15	17 / 19 / 20	23	38 / 45	51

[3] Optionally with rotatable flange
[4] Rotatable flange
[5] Flanges according to EN 1092, PN 10/16
[6] 8 Screwholes for PN 10

METER BODY VARIANTS



a) b) c)

a) The cold water meters come with an epoxy-coated cast iron housing as standard. ISO short length variants can optionally be manufactured with a stainless steel housing.
b) ISO long length meters with diameters up to DN 100 can optionally come with rotatable flanges.
c) Hot water meters are always provided with stainless steel housings (EN 1.4408, AISI 316).

REACH

Information pursuant to Article 33 (1) of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006:
This product series contains components with the following substances in a concentration of more than 0.1% weight by weight (w/w):
- Lead titanium zirconium oxide (CAS no.: 12626-81-2)

Economic Actor Information

Applicable regulation and legal obligations for products may change.

DIEHL METERING monitors applicable regulation to ensure their products comply at the date of placing on the market.

Each economic actor making products available on the market thereafter must independently keep informed about the current applicable regulation.

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