HYDRUS 2.0 BULK

ULTRASONIC METER

DIEHL
Metering

APPLICATION

HYDRUS 2.0 BULK is a static ultrasonic bulk water meter designed to enable accurate measuring with long-term stability under difficult conditions (no measurement of air and insensitive to sedimentation).

FEATURES

- DN 50 to 200
- MID approved with dynamic range up to R 1000
- IP 68 suitable for outdoor installations
- Compliant with MID, OIML R49 and EN 14154
- Certified for drinking water (KTW/W270, ACS, WRAS, OVGW, NSF)
- Highest security on meter logs and internal memory
- Integrated radio communication based on Open Metering telegram (OMS Generation 3 or 4, Profile B)
- Wired M-Bus, wireless M-Bus, wireless M-Bus/L-Bus and Pulse interface
- Display with error and alarm codes including leakage detection and self-monitoring function
- Battery lifetime up to 16 years (minimum 10 years)
- Data logging capabilities with 2 configurable independent memories
- Replaceable battery
- Cast iron epoxy coated body

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GENERAL

			HYDRUS 2.0 BULK
Medium temperature range		°C	+0.1 ... +50
Ambient operating temperature		°C	1 ... +70
Ambient storage temperature		°C	-10 ... +70 (>35 °C max. 4 weeks)
Nominal pressure	PN	bar	16
Power supply			3.6 V lithium battery (D-cell)
Battery lifetime			Up to 16 years[1]
Communication interfaces			Optical, OMS wireless M-Bus 434 or 868 MHz, M-Bus, L-Bus and Pulse
Data storage			For events and consumption 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 (minimum 10 years)

TECHNICAL DATA DISPLAY

	HYDRUS 2.0 BULK
Display indication	LCD, 9-digit, additional symbols/display counter/unit
Units displayed DN 50 - 100	Volume (m^3 + 2 decimal places) and flow rate (m^3/h + 3 decimal places)
Units displayed DN 125 - 200	Volume (m^3 + 1 decimal place) and flow rate (m^3/h + 3 decimal places)
Values displayed (depending on configuration)	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 configuration of Radio/M-Bus telegram, to switch to the various display loops, reading of logs
Radio	434 or 868 MHz, OMS, configurable data telegram and transmission intervals up to 14 seconds
M-Bus	2400 baud, configurable telegram, cable length 1.5 m, power supply only via built-in battery - is combined with two Pulse outputs
L-Bus	In combination with radio 868 or 434 MHz, cable length 1.5 m
Pulse (Open drain)	Two configurable Pulse outputs, or one Pulse and one L-Bus output, Pulse cable length 1.5 m

SECURITY

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Versions	OMS Generation 3 or OMS Generation 4, Profile B, selectable

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VOLUME / PULSE OPEN DRAIN

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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 - 125	l/pulse	1 / 10 / 100 / 1000
Pulse rates DN 150	l/pulse	10 / 100 / 1000
Pulse rates DN 200	l/pulse	100 / 1000
Pulse output 1 variants		Total volume or forward volume
Pulse output 2 variants		Flow direction or error, reverse volume
Pulse frequency		Max. frequency 10 Hz
Pulse width		125 ms

POSSIBLE COMMUNICATION INTERFACES

	HYDRUS 2.0 BULK
Wireless M-Bus/Pulse/L-Bus	3 wire
Wireless M-Bus only	without wire
M-Bus/Pulse/Pulse	5 wire
IZAR BE PULSE	4 wire

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TECHNICAL DATA

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	m³/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	250	400
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
Flow rate at ΔP = 1 bar		m³/h	63	105	158	280	420	747	1140

APPROVAL

		DN 50 - 200
Approval		MID DE-19-MI001-PTB011
Dynamic range (Q_3/Q_1)	R	Up to 1000 (Standard R800)
Standards		ISO 4064, EN 14154, OIML R49
Sanitary conformity		KTW/W270, ACS, WRAS

DYNAMIC RANGE

		DN 50 - 200
Q_3 25 ... 400 m³/h - T30	R	800
Q_3 25 ... 400 m³/h - T50	R	800H / 250V

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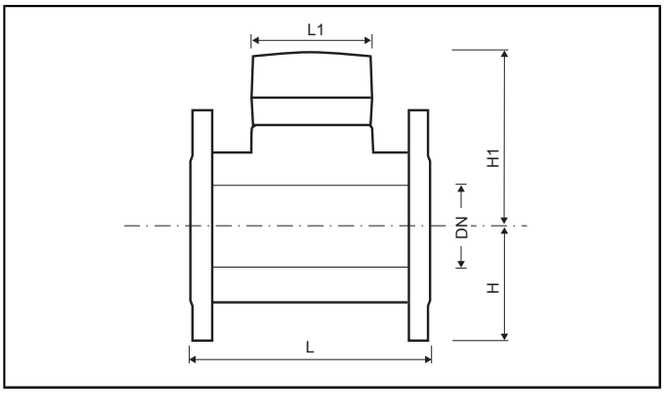
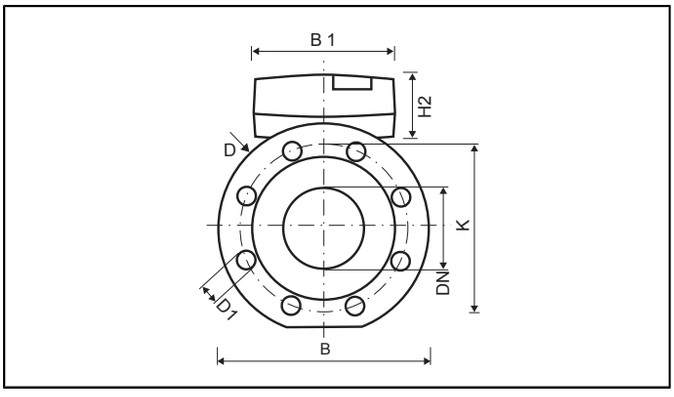
DIMENSIONS

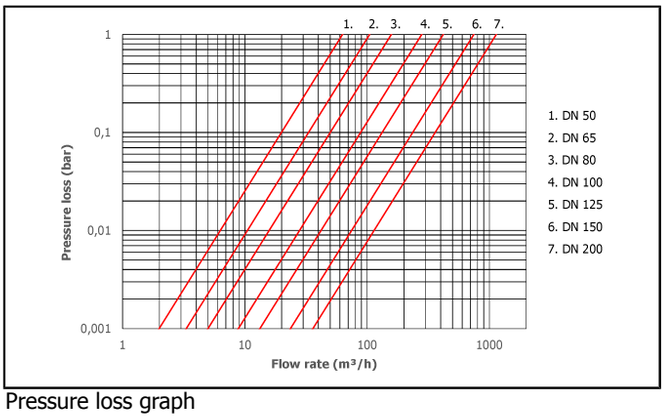




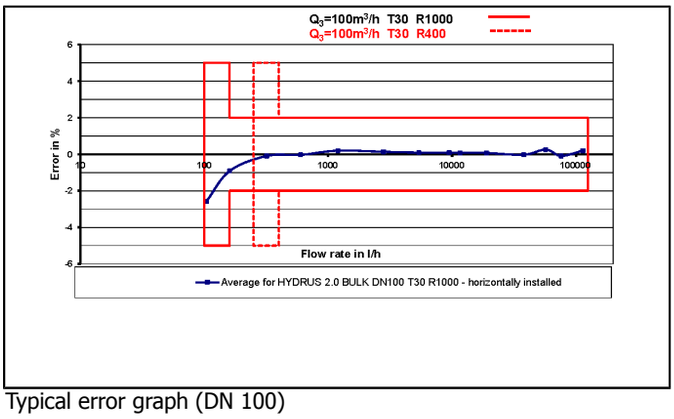
Nominal diameter	DN	mm	50	65	80	100	125	150	200
Permanent flow rate	Q_3	m³/h	25	40	63	100	160	250	400
Overall length	L	mm	200/ 270 / 300[2]	200 / 300[2]	200 / 225 / 300 / 350[2]	250 / 350[2] / 360	250	300 / 500	350
Flange diameter	D	mm	165	185	200	220	250	285	340
Hole circle diameter	K	mm	125	145	160	180	210	240	295
Number of screwholes		pcs	4	4	8	8	8	8	12
Screwhole diameter	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

[2] Rotatable flange

PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph (DN 100)

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