

HYDRUS 2.0 BULK

ULTRASONIC METER

DIEHL
Metering



APPLICATION

HYDRUS 2.0 BULK is a static water meter operating on ultrasonic measuring technology. This technology enables accurate calculation of water consumption with long-term stability and eliminates measuring deviations caused by sand, suspended particles, scale or air pockets. Moreover it does not require any earthing.

Developed within the framework of the MID, HYDRUS 2.0 BULK complies with the European regulations and holds sanitary conformity certificates (ACS, WRAS, KTW/W270 and others).

Its integrated radio enables remote reading of the meter's index and alarms both in mobile (walk-by, drive-by, passive drive-by) and fixed network mode.

HYDRUS 2.0 BULK offers a wide choice of connectivities compatible with the different IZAR reading modes.

A complete Diehl Metering solution is thus available to meet your needs.

FEATURES

- ▶ DN 50 to 200
- ▶ MID approval up to R=1,000
- ▶ IP 68
- ▶ Wireless M-Bus radio, Wireless M-Bus radio/Pulse, Wired M-Bus/Pulse/Pulse, Wireless M-Bus radio/L-Bus/Pulse, IZAR BE PULSE compatible
- ▶ Display with alarm codes including leakage detection, radio on and error codes
- ▶ Self-monitoring function
- ▶ Battery lifetime up to 16 years

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GENERAL

HYDRUS 2.0 BULK			
Water temperature	°C	+0.1 ... +50	
Ambient operating temperature	°C	-10 ... +55	
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 ¹	Up to 16 years (all communication interfaces)		
Communication interfaces	Optical, OMS wireless M-Bus 434 or 868 MHz, M-Bus, L-Bus and Pulse		
Data storage	For errors, alarms and measuring values, data logging capabilities to record up to 512 daily +32 monthly values		
Protection class	IP 68		

¹ Theoretical lifetime, 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 - 100	Volume (m ³ + 2 digits after decimal point) and flow rate (m ³ /h + 3 digits after decimal point)
Units displayed DN 125 - 200	Volume (m ³ + 1 digit after decimal point) and flow rate (m ³ /h + 3 digits after decimal point)
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 - flow direction - display counter - low battery indication - leakage indication - metrological log access - radio signal ON/OFF - alarm indication - calibrated value

COMMUNICATION INTERFACES

HYDRUS 2.0 BULK	
Optical	For switching the display loop, reading and configuration with IZAR@MOBILE 2
Radio	434 or 868 MHz, Open Metering Standard radio frame (short frame) for mobile reading sent every 14 seconds, long range radio frame (R4) for fixed network sent every 5 minutes, extra long range radio frame for fixed network sent every 15 minutes
M-Bus	2,400 baud, cable length 1.5 m*, power supply only via built-in battery - is combined with 2 pulse outputs
L-Bus	In combination with radio, cable length 1.5 m* (only 1 interface communicating at the same time)
Pulse (Open drain)	2 Pulse outputs, or 1 Pulse and 1 L-Bus output, Pulse cable length 1.5 m*

*May vary by up to ±3.5% due to manufacturing tolerances.

SECURITY

HYDRUS 2.0 BULK	
Versions	OMS Generation 3 - Profile A or OMS Generation 4 - Profile B

PRIVACY

The HYDRUS 2.0 BULK saves 512 consumption values daily. This data can be read locally and accessed only by using the IZAR@MOBILE 2. As a second logging, a small amount of 32 monthly consumption values can be stored. Both the radio protocol and the optical interface are encrypted by default.

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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 / 1,000 (depending on nominal size)
Pulse rates DN 150	l/pulse	10 / 100 / 1,000 (depending on nominal size)
Pulse rates DN 200	l/pulse	100 / 1,000 (depending on nominal size)
Pulse output - variant 1	Total volume or forward volume	
Pulse output - variant 2	Flow direction or error, reverse volume	
Pulse frequency	Max. frequency 10 Hz	
Pulse width	125 ms	

AVAILABLE VERSIONS

HYDRUS 2.0 BULK	
Wireless M-Bus radio/Pulse/L-Bus	3 wire
Wireless M-Bus radio only	without wire
Wired M-Bus/Pulse/Pulse	5 wire
IZAR BE PULSE compatible	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	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	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		m ³ /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
Standards		ISO 4064 EN 14154 OIML R49
Sanitary conformity		KTW/W270 ACS WRAS

DYNAMIC RANGE

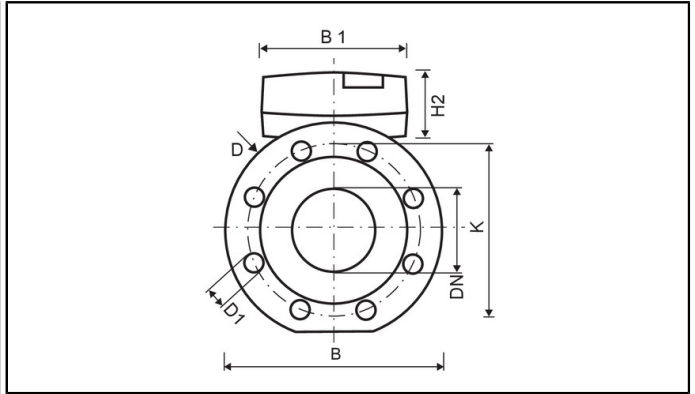
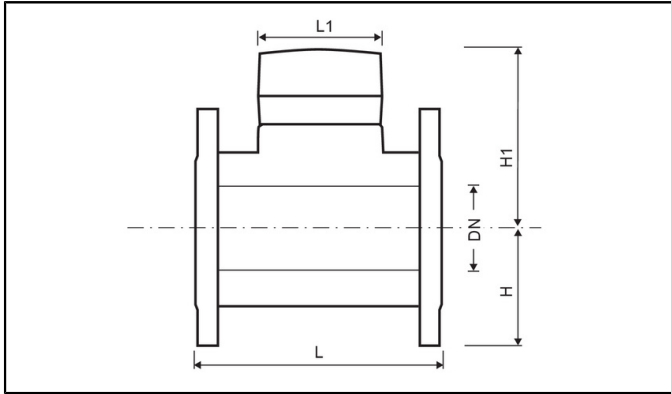
DN 50 - 200		
Q ₃ 25 ... 400 m ³ /h - T30	R	800
Q ₃ 25 ... 400 m ³ /h - T50	R	800H / 250V

H=horizontal installation position / V=vertical installation position

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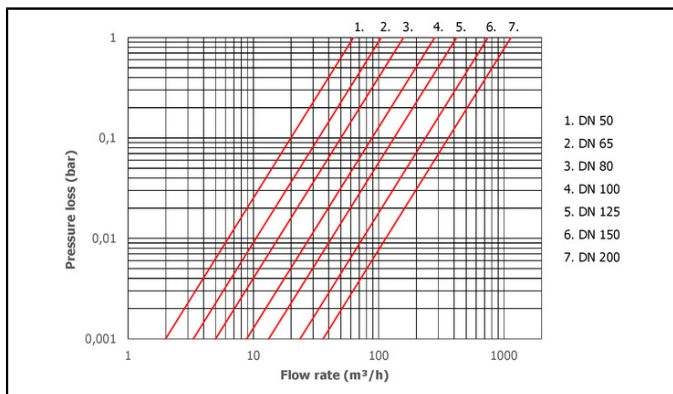
DIMENSIONS



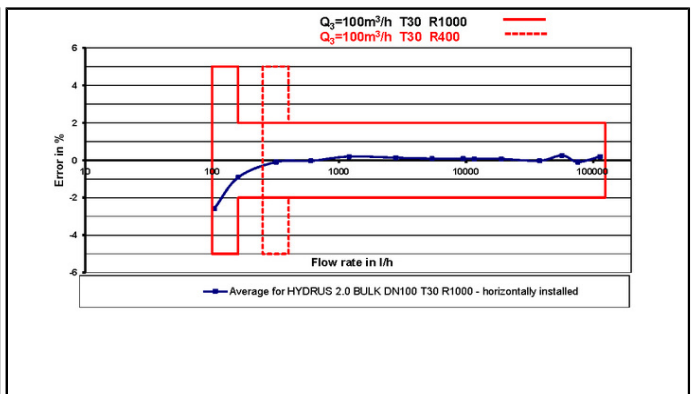
Nominal diameter	DN	mm	50	65	80	100	125	150	200
Permanent flow rate	Q ₃	m ³ /h	25	40	63	100	160	250	400
Overall length	L	mm	200 / 270 / 300 ²	200 / 300 ²	200 / 225 / 300 / 350 ²	250 / 350 ² / 360	250	300 / 500	350
Flange diameter	D	mm	165	185	200	220	250	285	340
Hole circle diameter	K	mm	125	145	160	180	210	240	295
Number of screwholes		pcs	4	4	8	8	8	8	12
Screw hole 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)