

# HYDRUS 2.0 BULK

ULTRASONIC METER

**DIEHL**  
Metering



## APPLICATION

HYDRUS 2.0 BULK is a static ultrasonic bulk water meter designed for all applications of cold 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 (KTW/W270, 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 125
- ▶ MID approved with dynamic range up to R 1000
- ▶ IP 68 suitable for outdoor installations
- ▶ Integrated radio communication based on Open Metering telegram (OMS Generation 3 or 4, Profile B)
- ▶ Wired M-Bus/Pulse/Pulse, wireless M-Bus, wireless M-Bus/L-Bus/Pulse interface
- ▶ Display with error and alarm codes including leakage detection and self-monitoring function
- ▶ Battery lifetime up to 12 years

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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 T50 <sup>1</sup>	Up to 12 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		

<sup>1</sup> 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 - DN 100	Volume (m <sup>3</sup> + 2 decimal places) and flow rate (m <sup>3</sup> /h + 3 decimal places)		
Units displayed DN 125	Volume (m <sup>3</sup> + 1 decimal place) and flow rate (m <sup>3</sup> /h + 3 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		
Radio	434 or 868 MHz, Open Metering Standard radio frame (R3) for mobile reading sent every 14 <sup>2</sup> /64 <sup>3</sup> seconds, long range radio frame (R4) for fixed network sent every 15 <sup>2</sup> /5 <sup>3</sup> minutes, extra long range radio frame (R4+) for fixed network sent every 60 <sup>2</sup> /15 <sup>3</sup> minutes		
M-Bus	2400 baud, cable length 1.5 m, power supply only via built-in battery - is combined with two Pulse outputs		
L-Bus	In combination with radio, cable length 1.5 m (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 1.5 m		

<sup>2</sup> Fixed Network ready

<sup>3</sup> Fixed Network

### SECURITY

		HYDRUS 2.0 BULK	
Versions	OMS Generation 3 or OMS Generation 4, Profile B, selectable		

### PRIVACY

The HYDRUS 2.0 BULK saves daily 512 consumption values. 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. The HYDRUS 2.0 BULK has a minimal sending interval of about 14 seconds and uses the OMS Generation 3 or 4, Profile B security level. The device uses five keys for the protection of values which are sent out by radio.

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## 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 - 125)	l/pulse 1 / 10 / 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

## 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

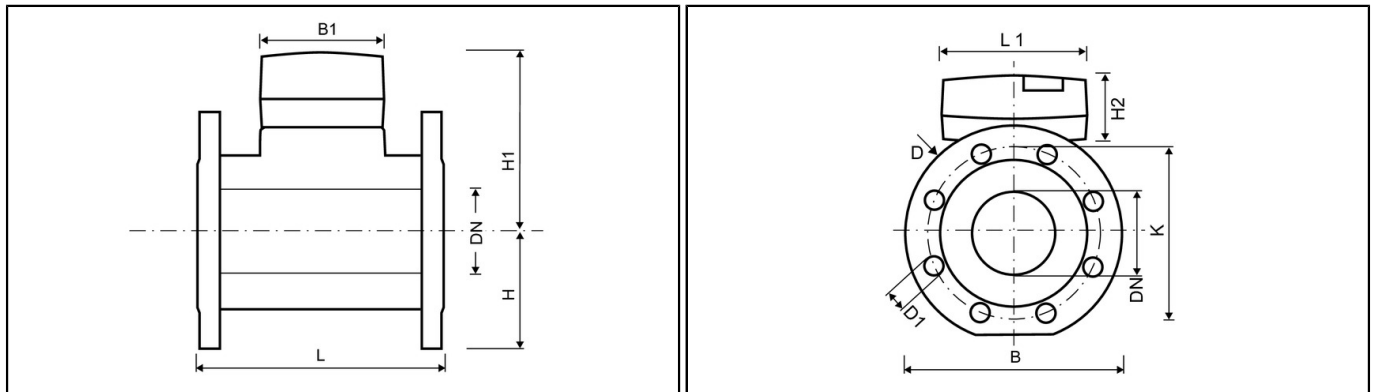
Nominal diameter	DN	mm	50	65	80	100	125
Permanent flow rate	Q <sub>3</sub>	m <sup>3</sup> /h	25	40	63	100	160
R standard			800	800	800	800	800
Overload flow rate	Q <sub>4</sub>	m <sup>3</sup> /h	31.25	50	78.75	125	200
Transitional flow rate	Q <sub>2</sub>	l/h	50	80	126	200	320
Minimum flow rate	Q <sub>1</sub>	l/h	31.25	50	78.75	125	200
Starting flow rate		l/h	15	27	35	45	70
Pressure loss at Q <sub>3</sub>		bar	0.16	0.16	0.16	0.16	0.16
Pressure loss at Q <sub>4</sub>		bar	0.25	0.25	0.25	0.25	0.25
Max. flow rate <sup>4</sup>	Q <sub>high</sub>	m <sup>3</sup> /h	50	78.75	120	195	315
Kv (ΔP=Q <sup>2</sup> /Kv <sup>2</sup> )			63	103	158	267	413

<sup>4</sup> Based on pressure in distribution network and temperature (3 bar / 20 °C)

### APPROVAL

DN 50 - 125		
Approval		MID DE-19-MI001-PTB011
Dynamic range (Q <sub>3</sub> /Q <sub>1</sub> )	R	Up to 1000
Standards		ISO 4064, EN 14154, OIML R49
Sanitary conformity		KTW/W270, ACS, WRAS

### DIMENSIONS



Nominal diameter	DN	mm	50	65	80	100	125
Permanent flow rate	Q <sub>3</sub>	m <sup>3</sup> /h	25	40	63	100	160
Overall length	L	mm	200 <sup>5</sup> / 270 / 300 <sup>6</sup>	200 <sup>5</sup> / 300 <sup>6</sup>	200 / 225 <sup>5</sup> / 300 / 350 <sup>6</sup>	250 <sup>5</sup> / 350 <sup>6</sup> / 360	250 <sup>5</sup>
Flange diameter	D	mm	165	185	200	220	250
Hole circle diameter	K	mm	125	145	160	180	210
Number of screwholes		pcs	4	4	8	8	8
Screw hole diameter	D1	mm	19	19	19	19	19
Height	H	mm	74	87	95	105	120
Height	H1	mm	121	143	147	165	177
Height	H2	mm	61	61	61	61	61
Counter length	L1	mm	139	139	139	139	139
Meter width	B	mm	165	185	200	220	250
Counter width	B1	mm	98	98	98	98	98
Overall weight (approx.)		kg	7 / 9 / 9	8 / 11	11 / 13 / 14 / 15	17 / 19 / 20	23

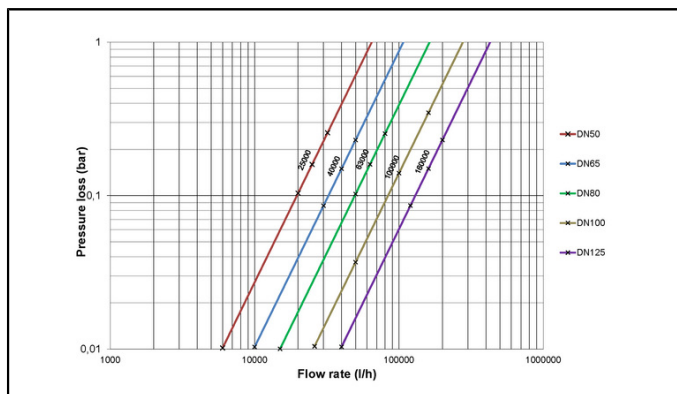
<sup>5</sup> ISO length

<sup>6</sup> Rotatable flange

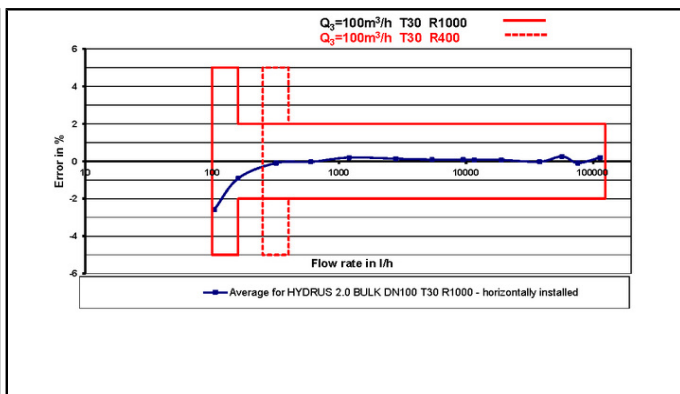
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## PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph (DN 100)