DIEHL
Metering

HYDRUS 2.0

Ultrasonic meter



APPLICATION

HYDRUS 2.0 is a static ultrasonic water meter designed for all applications of domestic 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 and Australian regulations and holds sanitary conformity certificates (UBA, ACS, WaterMark, 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 excellent coverage, high data granularity and timeliness will be maintained. This is what makes it a high responsive infrastructure to take actions immediately.

FEATURES

- DN 15 to 40
- NMI approved with dynamic range up to R 800
- 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 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

GENERAL

			HYDRUS 2.0
Medium temperature range		°C	+0.1 ... +90 (T90)
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
Housing material			With thread connection: CW724R (lead-free); with flange connection: CC770S
Nominal pressure	PN	bar	16
Power supply			Two 3.6 VDC lithium batteries
Battery lifetime T30[1]/T50[1]			Up to 16 years
Battery lifetime T70[1]/T90[1]			Up to 16 years
Communication interfaces			Optical, OMS wM-Bus / Long range radio (R4, R4+, mioty® for Metering) 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 1024 daily values +32 monthly values and two annual due dates
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
Display indication	LCD, 9-digit, additional symbols/display counter/unit
Units displayed DN 15 - DN 40	Volume (m^3 + 3 decimal places) and flow rate (m^3/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 - billing value indication - and more display loop options to choose from.

INTERFACES - OVERVIEW

	HYDRUS 2.0
Optical	For switching the display loop and configuring / reading the meter via IZAR@MOBILE
wMBus (R3)	434 or 868 MHz, Open Metering radio as standard (R3) for mobile reading sent every 14 / 64 seconds (default)
Long range radio R4 / R4+ / mioty® for Metering	434 or 868 MHz, OMS for fixed network sent every 5 / 15 / 60 minutes
M-Bus	2400 baud, cable length 1.5 m, power supply only via built-in battery - can be 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 5 m

SECURITY

	HYDRUS 2.0
wM-Bus (R3), R4, R4+, mioty® for Metering	OMS Generation 3 or OMS Generation 4 Profile B, selectable

PRIVACY

The HYDRUS 2.0 saves 1024 consumption values with a daily interval. This data can be read locally and accessed only by using the IZAR@MOBILE. As a second logging, a small amount of 32 consumption values can be stored. The HYDRUS 2.0 has a minimal sending interval of about 14 seconds and uses the OMS Generation 3 or 4, Profile B security level. Both, the radio protocol and the optical interface are encrypted by default.

VOLUME / PULSE OPEN DRAIN

		HYDRUS 2.0
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	l/pulse	Decadic 1 / 10 (depending on nominal diameter)
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		50 - 125 ms

POSSIBLE COMMUNICATION INTERFACES

	HYDRUS 2.0
wM-Bus/Pulse/L-Bus	3 wire
wM-Bus only	without wire
R4 / R4+ / mioty® for Metering	without wire
M-Bus only	2 wire
M-Bus/Pulse/Pulse	5 wire
Pulse/Pulse	3 wire
IZAR BE PULSE	4 wire

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 (only for the flange variants) - (CAS no.: 7439-92-1)
- Lead titanium zirconium oxide (CAS no.: 12626-81-2)

TECHNICAL DATA

Nominal diameter	DN	mm	15	20	20	20	20
Permanent flow rate	Q_3	m^3/h	2.5	2.5	2.5	4	4
Overall length	L	mm	110	154	154	154	154
Dynamic (Q_3/Q_1)	R		800	400	800	400	800
Overload flow rate	Q_4	m^3/h	3.125	3.125	3.125	5	5
Transitional flow rate	Q_2	l/h	5	10	5	16	8
Minimum flow rate	Q_1	l/h	3.13	6.25	3.13	10	5
Starting flow rate		l/h	1.4	1.4	1.4	3	2.5
Pressure loss at Q_3		bar	0.46	0.4	0.4	0.55	0.4
Pressure loss at Q_4		bar	0.72	0.63	0.63	0.86	0.6
Maximum flow rate[2]	Q_{high}	m^3/h	4.37	4.37	4.37	7	7
Flow rate at ΔP = 1 bar			3.69	3.95	3.95	5.39	5.39

Nominal diameter	DN	mm	20	20	25	32	40
Permanent flow rate	Q_3	m^3/h	4	4	6.3	10	16
Overall length	L	mm	190	190	178	190	232
Dynamic (Q_3/Q_1)	R		400	800	500	800	800
Overload flow rate	Q_4	m^3/h	5	5	7.875	12.5	20
Transitional flow rate	Q_2	l/h	16	8	20.2	20	32
Minimum flow rate	Q_1	l/h	10	5	12.60	12.50	20
Starting flow rate		l/h	3	2.5	5	5	8.7
Pressure loss at Q_3		bar	0.55	0.4	0.22	0.33	0.2
Pressure loss at Q_4		bar	0.86	0.6	0.34	0.53	0.31
Maximum flow rate[2]	Q_{high}	m^3/h	7	7	11	17.5	28
Flow rate at ΔP = 1 bar			5.39	5.39	13.4	10.95	36.0

[2] Outlet pressure minimum 3 bar, maximum 100 hours per year, closed pipeline network
[3] Please see table DIMENSIONS

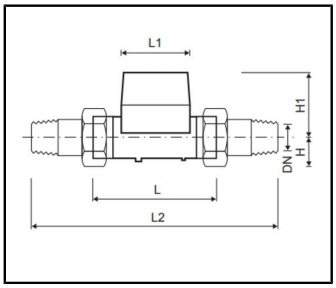
APPROVAL

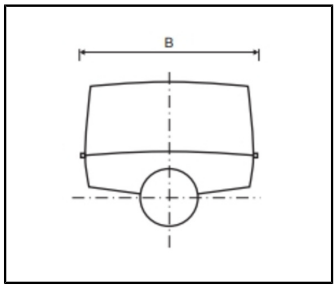
		DN 15 - 40
Approval		NMI 14/3/65
WaterMark Certificate		GM-WM-040207
Dynamic range (Q_3/Q_1)	R	Up to 800
Standards		EN 4064, EN 14154, OIML R49, AS 3565
Sanitary conformity		UBA, ACS, WRAS, Belgaqua, KIWA Netherlands, OTH, PZH, SVGW

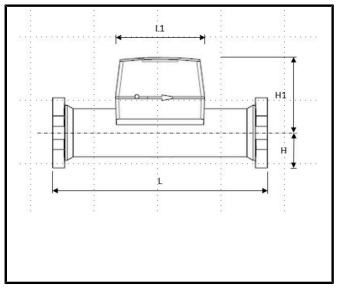
DYNAMIC RANGE (R=Q3/Q1)

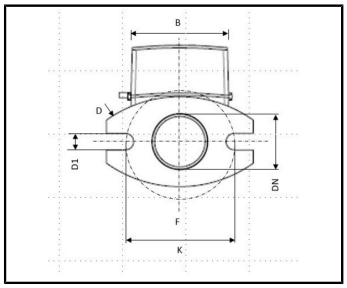
		DN 15 - 40
Q_3 2.5 m^3/h - T50	R	160; 800 (400 for L 115 mm)
Q_3 2.5 m^3/h - T90	R	160; 400; 800H / 400V (250 for L 115 mm)
Q_3 4 m^3/h - T50 / T90	R	160; 400; 800H / 400V (630H for L 105 mm and 115 mm)
Q_3 6.3 m^3/h - T50 / T90	R	160; 400H / 250V
Q_3 10 m^3/h - DN 25, DN 32 - T50 / T90	R	160; 400; 800H / 400V
Q_3 16 m^3/h - DN 40 - T50 / T90	R	160; 400; 800H / 400V

DIMENSIONS







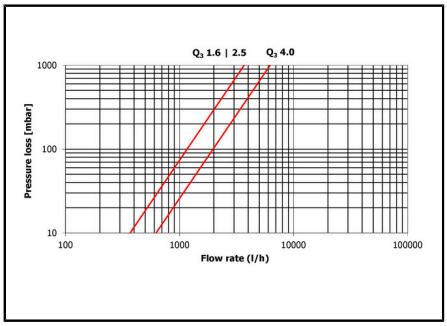


Nominal diameter	DN	mm	15	20	20	20	20
Permanent flow rate	Q_3	m^3/h	2.5	2.5	2.5	4	4
Overall length	L	mm	110	154	154	154	154
Counter length	L1	mm	89	89	89	89	89
Counter width	B	mm	89	89	89	89	89
DIMENSIONS - THREAD			.	.	.	.	.
Overall length with coupling	L2	mm	190	-	-	-	-
Connection thread on meter		Inch	G¾B	1.28" BSW	1.28" BSW	1.28" BSW	1.28" BSW
Connection thread of coupling		Inch	R½	-	-	-	-
Height	H1	mm	71	74	74	74	74
Weight without coupling (approx.)		kg	0.7	0.9	0.9	0.9	0.9
Weight with coupling (approx.)		kg	1.1	-	-	-	-
DIMENSIONS - FLANGE			.	.	.	.	.
Height	H	mm	18	21	21	21	21
Flange diameter	D	mm	-	-	-	-	-
Hole circle diameter	K	mm	-	-	-	-	-
Number of screwholes		pcs	-	-	-	-	-
Screwhole diameter	D1	mm	-	-	-	-	-
Width	F	mm	-	-	-	-	-

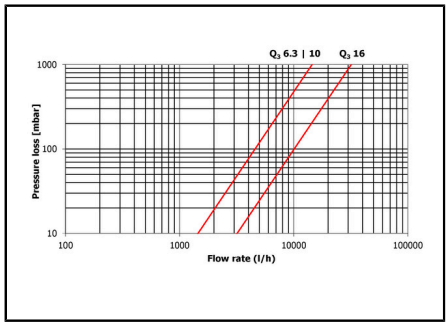
Nominal diameter	DN	mm	20	20	25	32	40
Permanent flow rate	Q_3	m^3/h	4	4	6.3	10	16
Overall length	L	mm	190	190	178	190	232
Counter length	L1	mm	89	89	89	89	96
Counter width	B	mm	89	89	89	89	89
DIMENSIONS - THREAD			.	.	.	.	.
Overall length with coupling	L2	mm	290	290	-	-	-
Connection thread on meter		Inch	G1B	G1B	1.53" BSW	Oval FL	Oval FL
Connection thread of coupling		Inch	R¾	R¾	-	-	-
Height	H1	mm	74	74	78	84	87
Weight without coupling (approx.)		kg	0.9	0.9	1.1	4.2	6.0
Weight with coupling (approx.)		kg	1.3	1.3	-	-	-
DIMENSIONS - FLANGE			.	.	.	.	.
Height	H	mm	21	21	27	62.5	69
Flange diameter	D	mm	-	-	-	140	148
Hole circle diameter	K	mm	-	-	-	100	100
Number of screwholes		pcs	-	-	-	2	2
Screwhole diameter	D1	mm	-	-	-	14	18
Width	F	mm	-	-	-	125	138

[3] Further version with connection thread on meter inlet G7/8B and meter outlet G3/4B on request.
[4] Wrench size should not be bigger than 38 mm

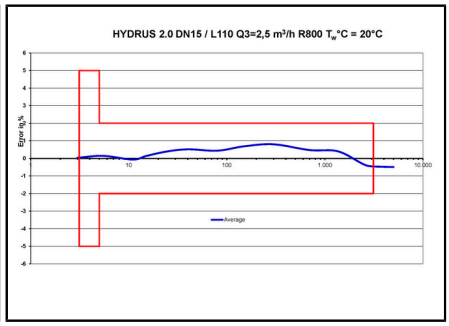
PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph DN 15 – 20



Pressure loss graph DN 25 – 40



Typical error graph

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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