HYDRUS 1.3

ULTRASONIC METER

DIEHL
Metering

APPLICATION

Static ultrasonic water meter for accurate measuring and recording for all applications of water supply.

FEATURES

- Ultrasonic water meter with long-term stability under difficult conditions (no measurement of air and insensitive against sedimentation)
- Higher performance than class D requirements
- Metrological class 2 and dynamic range up to R 400
- Compliant with MID, OIML R49 and EN 14154
- Mounting in any installation position, no calming sections required
- Housing with thread connection lead-free brass
- IP68 suitable for outdoor installations
- Certified for drinking water (AoC DEU and ACS)
- Wired M-Bus, Radio OMS, Radio/L-Bus and Pulse interface available
- Radio communication based on Open Metering telegram (OMS-Generation 3, Profile A, or OMS-Generation 4, Profile B, selectable)
- Highest data security for AMR communication
- Displaying of error- and alarm codes, including leakage detection
- Battery lifetime up to 16 years
- Data logging capabilities to record up to 1.024 daily values + 32 configurable values (hourly, daily, weekly, monthly) and an annual due date

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GENERAL

			HYDRUS 1.3
Medium temperature range		°C	0.1 ... 90
Ambient operating temperature		°C	1 ... 70
Ambient storage temperature		°C	-10 ... +70 (>35 °C max. 4 weeks)
Environmental class			O (Outdoors)
Mechanical environmental class			M2
Electromagnetic environmental class			E2
Nominal pressure	PN	bar	16
Power supply			Two 3.6 VDC lithium-batteries (only one battery with M-Bus possible)
Battery lifetime T30[1]/T50[1]			Up to 12 years (one battery), up to 16 years (two batteries)
Battery lifetime T90[1]			Up to 12 years (all interfaces)
Interfaces			Optical, radio 434 or 868 MHz, M-Bus, L-Bus, pulse
Data storage			For events and for 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

TECHNICAL DATA DISPLAY

	HYDRUS 1.3
Display indication	LCD, 8-digit
Units DN 15 - DN 32	Flow and volume (m^3 + 3 digits after the comma)
Units DN 40 + DN 50	Flow (m^3 + 3 digits after the comma); Volume (m^3 + 2 digits after the comma)
Values displayed (depending on configuration)	Volume[2] - flow - mediums temperature - display test[2] - current error and alarm status[2] - date - primary and secondary address - radio signal ON/OFF - battery lifetime[2] - accounting day - error hour counter - pulse values - software checksum[2]

[2] Display according to approval (always on)

INTERFACES - OVERVIEW

	HYDRUS 1.3
Optical	For configuration of display information and radio telegram, to switch to the various display loops
Radio	434 or 868 MHz, real data telegram (configurable), Open Metering Standard (OMS-Generation 3, Profile A, or OMS-Generation 4, Profile B, selectable)
M-Bus	2400 Baud (adjustable to 300 Baud), configurable telegram, cable length 1.5 m, power supply only via built-in battery
L-Bus	In combination with radio, cable length 1.5 m
Pulse (Open collector)	Two configurable pulse outputs, cable length 1.5 m

VOLUME- / PULSE OPEN COLLECTOR

		HYDRUS 1.3
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
Pulse rates	l/pulse	Decadic 0.1 ... 100
Pulse output 1 variants		Total volume or forward volume
Pulse output 2 variants		Forward volume, direction[3] or error
Pulse duration		Depending on device configuration[4]
Pulse break		Depending on device configuration[4]
Pulse frequency		Depending on device configuration[4]

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[3] when total volume on pulse output 1, only direction possible on pulse output 2
[4] detailed description on request

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 articles with the following substances in a concentration of more than 0.1% weight by weight (w/w):
- Lead (CAS no.: 7439-92-1)
- Lead titanium zirconium oxide (CAS no.: 12626-81-2)

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HYDRUS 1.3 DN 15 - 20

ULTRASONIC METER

TECHNICAL DATA

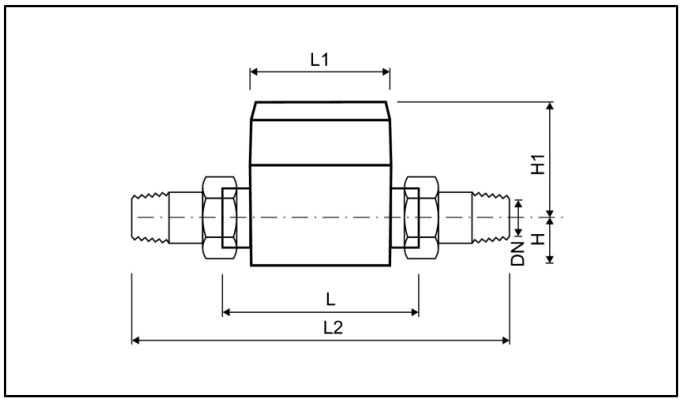
Nominal diameter	DN	mm	15	15	15	20[7]	20	20
Permanent flow rate	Q_3	m^3/h	2.5	2.5	2.5	4[7]	4	4
Overall length[5]	L	mm	110	165	170	110[7]	130	190
Overload flow rate	Q_4	m^3/h	3.125	3.125	3.125	5	5	5
Transitional flow rate	Q_2	l/h	16	16	16	25.6	25.6	25.6
Minimum flow rate[6]	Q_1	l/h	10	10	10	16	16	16
Starting flow rate		l/h	2.6	2.6	2.6	4.3	4.3	4.3
Pressure loss at Q_3		bar	0.33	0.33	0.33	0.3	0.3	0.3

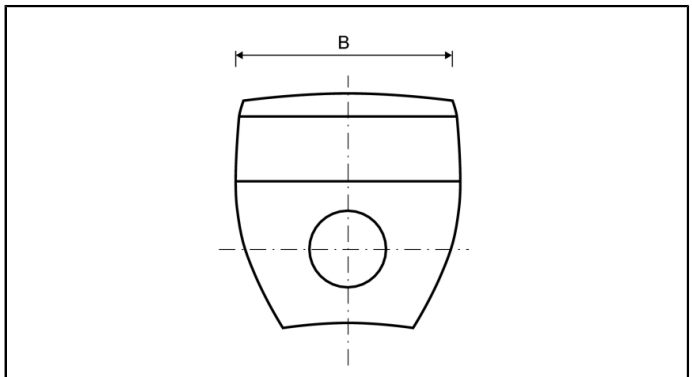
[5] further overall lengths on request
[6] at dynamic range R 250
[7] substitute for body length 105 mm rising pipe

APPROVAL

		DN 15 - 20
Approval		MID LNE 14586, OIML R49, EN 14154, AoC DEU, ACS, TVO, WRAS
Dynamic range (Q_3/Q_1) - Q_3 1.6 m^3/h (T30 - T50)	R	160 / 200 / 250
Dynamic range (Q_3/Q_1) - Q_3 2.5 m^3/h (T30 - T50)	R	160 / 200 / 250 / 315 / 400
Dynamic range (Q_3/Q_1) - Q_3 4 m^3/h (T30 - T50)	R	160 / 200 / 250 / 315 / 400
Dynamic range (Q_3/Q_1) - Q_3 1.6 - 4 m^3/h (T90)	R	160 / 200

DIMENSIONS





Nominal diameter	DN	mm	15	15	15	20[7]	20	20
Permanent flow rate	Q_3	m^3/h	2.5	2.5	2.5	4[7]	4	4
Overall length[5]	L	mm	110	165	170	110[7]	130	190
Counter length	L1	mm	88	88	88	88	88	88
Counter width	B	mm	94	94	94	94	94	94
Overall length with coupling	L2	mm	190	245	250	210	230	290
Connection thread on meter		Inch	G¾B	G¾B	G¾B	G1B	G1B	G1B
Connection thread of coupling		Inch	R½	R½	R½	R¾	R¾	R¾
Height	H1	mm	67	67	67	65	65	65
Weight without coupling (approx.)		kg	0.8	1	1	0.9	0.9	1.1
Weight with coupling (approx.)		kg	1	1.4	1.4	1.3	1.3	1.5
Height	H	mm	32	32	32	34	34	34

[7] substitute for body length 105 mm rising pipe

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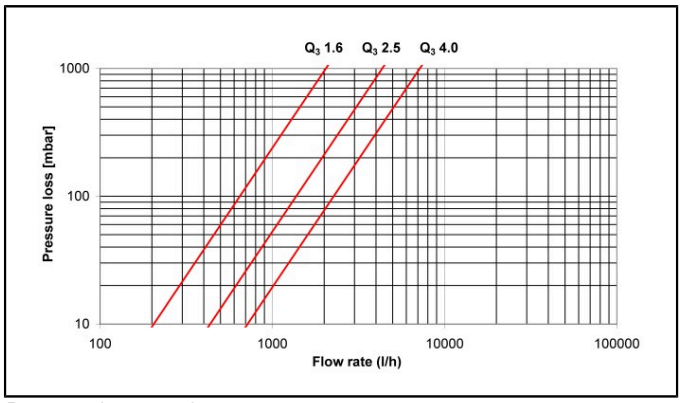
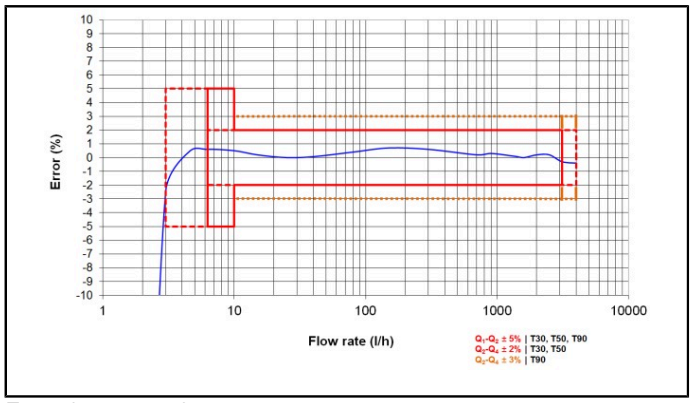
HYDRUS 1.3 DN 15 - 20

ULTRASONIC METER

PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph

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HYDRUS 1.3 DN 25 - 50

ULTRASONIC METER

TECHNICAL DATA

Nominal diameter	DN	mm	25	32	25	25	25	32
Permanent flow rate	Q_3	m^3/h	6.3	6.3	10	10	10	10
Overall length[5]	L	mm	260	260	135	150	260	260
Overload flow rate	Q_4	m^3/h	7.87	7.87	12.5	12.5	12.5	12.5
Transitional flow rate	Q_2	l/h	50.4	50.4	80	80	80	80
Minimum flow rate[6]	Q_1	l/h	31.5	31.5	50	50	50	50
Starting flow rate		l/h	10	10	10	10	10	10
Pressure loss at Q_3		bar	0.25	0.25	0.55	0.55	0.55	0.55

Nominal diameter	DN	mm	40	40	50	50	50
Permanent flow rate	Q_3	m^3/h	10	16	16	25	25
Overall length[5]	L	mm	300	300	270	270	300
Overload flow rate	Q_4	m^3/h	12.5	20	20	31.25	31.25
Transitional flow rate	Q_2	l/h	80	128	128	200	200
Minimum flow rate[6]	Q_1	l/h	50	80	80	125	125
Starting flow rate		l/h	16	16	25	25	25
Pressure loss at Q_3		bar	0.25	0.4	0.4	0.4	0.4

[5] further overall lengths on request
[6] at dynamic range R 200

APPROVAL

		DN 25 - 50
Approval		MID LNE 14586, OIML R49, EN 14154, AoC DEU, ACS, TVO, WRAS
Dynamic range (Q_3/Q_1) - Q_3 6.3 m^3/h (T30 - T50)	R	40 / 80[7] / 160 / 200
Dynamic range (Q_3/Q_1) - Q_3 10 m^3/h (T30 - T50)	R	40 / 80[7] / 160 / 200 / 250
Dynamic range (Q_3/Q_1) - Q_3 16 m^3/h (T30 - T50)	R	40 / 80 / 160 / 200 / 250 / 315[8] / 400[8]
Dynamic range (Q_3/Q_1) - Q_3 25m^3/h (T30 - T50)	R	40 / 80 / 160 / 200 / 250 / 315 / 400
Dynamic range (Q_3/Q_1) - Q_3 6.3 - 25 m^3/h (T90)	R	40 / 80 / 160

[7] variant DN 25 with body length 135 mm and 150 mm only in R 80
[8] not for DN 50

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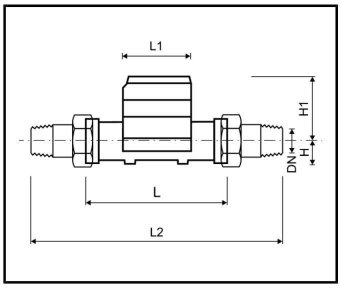
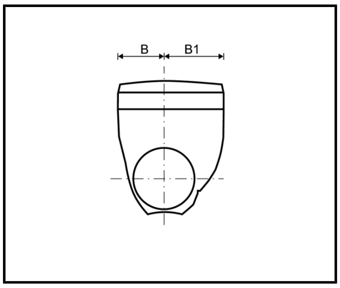
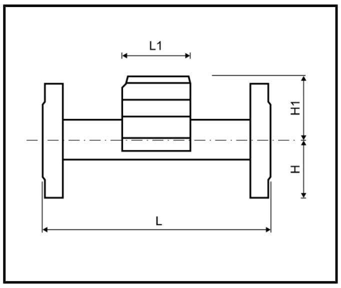
HYDRUS 1.3 DN 25 - 50

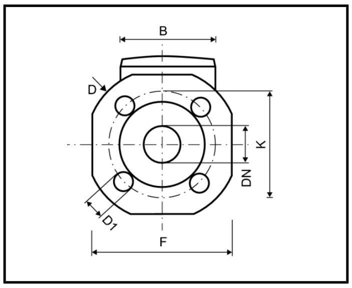
ULTRASONIC METER

DIMENSIONS









Nominal diameter	DN	mm	25	32	25	25	25	32
Permanent flow rate	Q_3	m^3/h	6.3	6.3	10	10	10	10
Overall length[5]	L	mm	260	260	135	150	260	260
Counter length	L1	mm	92	92	92	92	92	92
Counter width	B	mm	94	94	94	94	94	94
DIMENSIONS - THREAD			.	.	.	.	.	.
Overall length with coupling	L2	mm	380	380	255	270	380	380
Connection thread on meter		Inch	G1¼B	G1½B	G1¼B	G1¼B	G1¼B	G1½B
Connection thread of coupling		Inch	R1	R1¼	R1	R1	R1	R1¼
Height	H1	mm	84	84	84	84	84	84
Weight without coupling (approx.)		kg	1.6	1.8	1.17	1.24	1.6	1.8
Weight with coupling (approx.)		kg	2.2	2.4	1.77	1.84	2.2	2.4
Height	H	mm	26	26	26	26	26	26
DIMENSIONS - FLANGE			.	.	.	.	.	.
Flange diameter	D	mm	115	140	-	-	115	140
Hole circle diameter	K	mm	85	100	-	-	85	100
Number of screwholes		pcs	4	4	-	-	4	4
Screwhole diameter	D1	mm	14	18	-	-	14	18
Height	H	mm	50	62.5	-	-	50	62.5
Height	H1	mm	84	84	-	-	84	84
Width	F	mm	100	125	-	-	100	125
Weight with flanges (approx.)		kg	3.45	4.7	-	-	3.45	4.7

Nominal diameter	DN	mm	40	40	50	50	50
Permanent flow rate	Q_3	m^3/h	10	16	16	25	25
Overall length[5]	L	mm	300	300	270	270	300
Counter length	L1	mm	92	92	92	92	92
Counter width	B	mm	94	94	94	94	94
DIMENSIONS - THREAD			.	.	.	.	.
Overall length with coupling	L2	mm	440	440	390	390	420
Connection thread on meter		Inch	G2B	G2B	G2½B	G2½B	G2½B
Connection thread of coupling		Inch	R1½	R1½	R2	R2	R2
Height	H1	mm	87	87	90	90	90
Weight without coupling (approx.)		kg	3.05	3.05	3.9	3.9	4,05
Weight with coupling (approx.)		kg	4.25	4.25	5.5	5.5	5,65
Height	H	mm	31	31	41	41	41
DIMENSIONS - FLANGE			.	.	.	.	.
Flange diameter	D	mm	148	148	163	163	163
Hole circle diameter	K	mm	110	110	125	125	125
Number of screwholes		pcs	4	4	4	4	4
Screwhole diameter	D1	mm	18	18	18	18	18
Height	H	mm	69	69	73.5	73.5	73.5
Height	H1	mm	87	87	90	90	90
Width	F	mm	138	138	147	147	147
Weight with flanges (approx.)		kg	6.67	6.67	7.23	7.23	7.47

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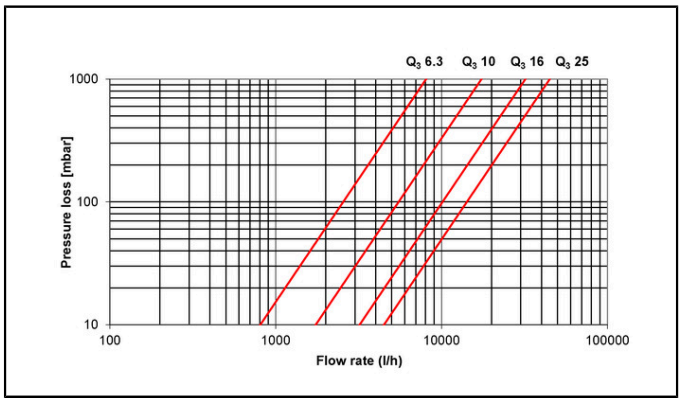
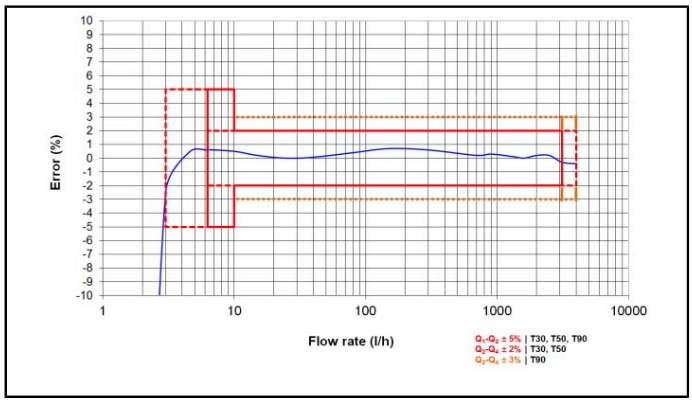
HYDRUS 1.3 DN 25 - 50

ULTRASONIC METER

PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph

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