HYDRUS

ULTRASONIC METER

DIEHL
Metering

APPLICATION

HYDRUS is a static water meter based on the ultrasonic technology. This technology enables accurate calculation of water consumption and eliminates measuring deviations caused by sand, suspended particles or air pockets.

FEATURES

- Long-term stability under difficult conditions
- Leak and pipe burst detection
- MID approval up to R=400 (cold water) and R=160 (hot water)
- No straight line required
- No measurement of air
- Insensitive to scale and sand
- Installation in any position
- Battery lifetime up to 16 years
- Available in cold water version and hot water version
- Available with integrated radio 434 or 868 MHz, M-Bus or pulse
- Data communication in Prios, Real data or Open Metering protocol (selectable OMS Generation 3 profile A or OMS Generation 4 profile B)

smart in solutions

HYDRUS
ULTRASONIC METER

GENERAL

			HYDRUS
Medium temperature range		°C	+1 ... +50 (cold water) / +1 ... +90 (hot water)
Ambient operating temperature		°C	+1 ... +70
Ambient storage temperature		°C	-10 ... +70 (>35 °C max. 4 weeks)
Nominal pressure	PN	bar	16
Power supply			2 x 3.6 VDC lithium-batteries (only 1 battery with M-Bus possible)
Battery lifetime T30[1]/T50[1]			Up to 12 years (1 battery), up to 16 years (2 batteries)
Battery lifetime T90[1]			Up to 12 years (all interfaces)
Interfaces			Optical, radio (434 or 868 MHz), M-Bus, 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

TECHNICAL DATA DISPLAY

	HYDRUS
Display indication	LCD, 8-digit
Units DN 15 - DN 32	Flow and volume (m^3 + 3 digits after the decimal point)
Units DN 40 + DN 50	Flow (m^3 + 3 digits after the decimal point); Volume (m^3 + 2 digits after the decimal point)
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

	HYDRUS
Optical	For configuration of display information and radio telegram, to switch to the various display loops
Radio	434 or 868 MHz, Prios, Real data, 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
Pulse (Open collector)	2 configurable pulse outputs, cable length 1.5 m

VOLUME- / PULSE OPEN COLLECTOR

		HYDRUS
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]

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

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HYDRUS DN 15 - 20
ULTRASONIC METER

TECHNICAL DATA*

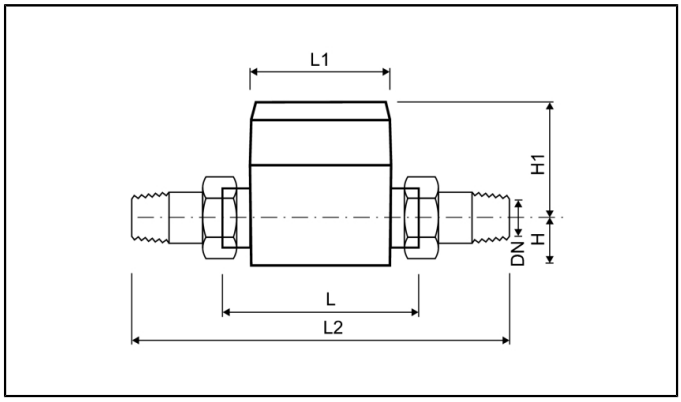
Nominal diameter	DN	mm	15	15	15	20	20
Nominal flow rate	Q_3	m³/h	2.5	2.5	2.5	4	4
Overall length	L	mm	110	165	170	130	190
Overload flow rate	Q_4	m³/h	3.125	3.125	3.125	5	5
Transitional flow rate	Q_2	l/h	16	16	16	25.6	25.6
Minimum flow rate	Q_1	l/h	10	10	10	16	16
Starting flow rate		l/h	2.6	2.6	2.6	4.3	4.3
Pressure loss at Q_3		bar	0.33	0.33	0.33	0.3	0.3

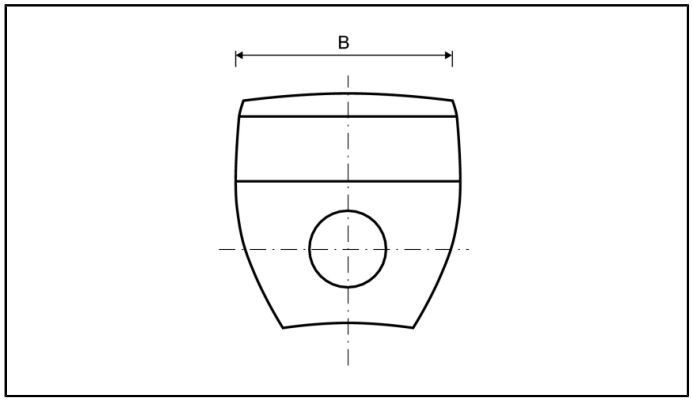
* at dynamic range R=250 / further overall lengths on request

APPROVAL

		DN 15 - 20
Approval		MID LNE 14586 | OIML R49 | EN 14154 | TVO | KTW | ACS | WRAS
Dynamic range (Q_3/Q_1) - Q_3 2.5 m³/h (T30 - T50)	R	160 / 200 / 250 / 315 / 400
Dynamic range (Q_3/Q_1) - Q_3 4 m³/h (T30 - T50)	R	160 / 200 / 250 / 315 / 400
Dynamic range (Q_3/Q_1) - Q_3 1.6 - 4 m³/h (T90)	R	160 / 200

DIMENSIONS





Nominal diameter	DN	mm	15	15	15	20	20
Nominal flow rate	Q_3	m³/h	2.5	2.5	2.5	4	4
Overall length	L	mm	110	165	170	130	190
Counter length	L1	mm	88	88	88	88	88
Counter width	B	mm	94	94	94	94	94
Overall length with coupling	L2	mm	190	245	250	230	290
Connection thread on meter		inch	G¾B	G¾B	G¾B	G1B	G1B
Connection thread of coupling		inch	R½	R½	R½	R¾	R¾
Height	H1	mm	67	67	67	65	65
Weight without coupling (approx.)		kg	0.8	1	1	0.9	1.1
Weight with coupling (approx.)		kg	1	1.2	1.4	1.3	1.5
Height	H	mm	32	32	32	34	34

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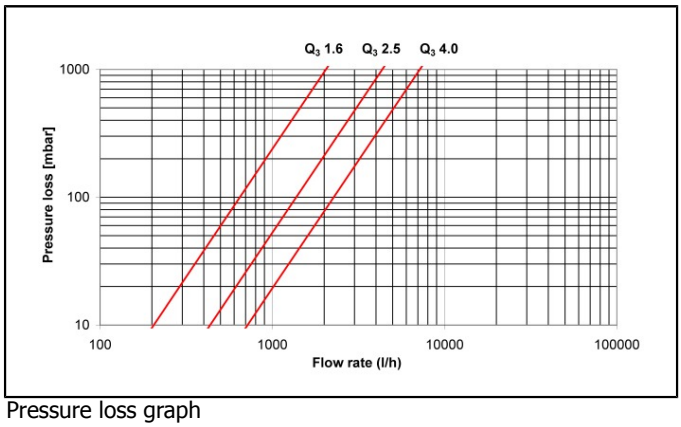
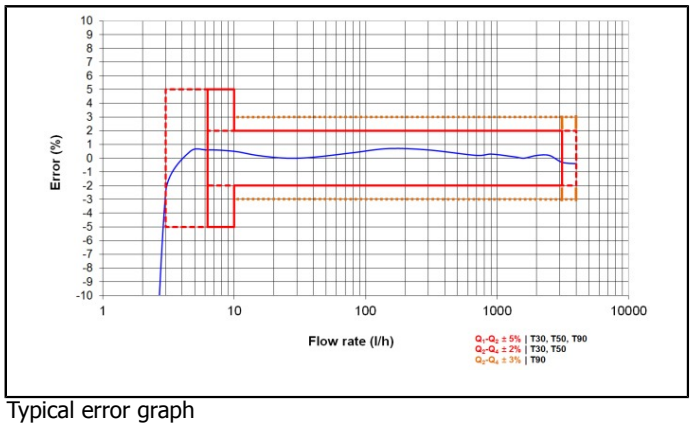
PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph

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HYDRUS DN 25 - 50
ULTRASONIC METER

TECHNICAL DATA*

Nominal diameter	DN	mm	25	32			25	32
Nominal flow rate	Q_3	m³/h	6.3	6.3			10	10
Overall length	L	mm	260	260			260	260
Overload flow rate	Q_4	m³/h	7.87	7.87			12.5	12.5
Transitional flow rate	Q_2	l/h	50.4	50.4			80	80
Minimum flow rate	Q_1	l/h	31.5*	31.5			50*	50*
Starting flow rate		l/h	10	10			10	10
Pressure loss at Q_3		bar	0.25	0.25			0.55	0.55

Nominal diameter	DN	mm	40	40	50	50	50
Nominal flow rate	Q_3	m³/h	10	16	16	25	25
Overall length	L	mm	300	300	270	270	300
Overload flow rate	Q_4	m³/h	12.5	20	20	31.25	31.25
Transitional flow rate	Q_2	l/h	80	128	128	200	200
Minimum flow rate	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	0.1	0.25	0.25

* at dynamic range R=200; for other dynamics please contact your Diehl Metering agency.

APPROVAL

		DN 25 - 50
Approval		MID LNE 14586 | OIML R49 | EN 14154 | TVO | KTW | ACS | WRAS
Dynamic range (Q_3/Q_1) - Q_3 6.3 m³/h (T30 - T50)	R	40 / 80[7] / 160 / 200
Dynamic range (Q_3/Q_1) - Q_3 10 m³/h (T30 - T50)	R	40 / 80[7] / 160 / 200 / 250
Dynamic range (Q_3/Q_1) - Q_3 16 m³/h (T30 - T50)	R	40 / 80 / 160 / 200 / 250 / 315[8] / 400[8]
Dynamic range (Q_3/Q_1) - Q_3 25m³/h (T30 - T50)	R	40 / 80 / 160 / 200 / 250 / 315 / 400
Dynamic range (Q_3/Q_1) - Q_3 6.3 - 25 m³/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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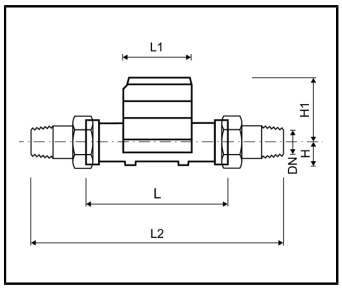
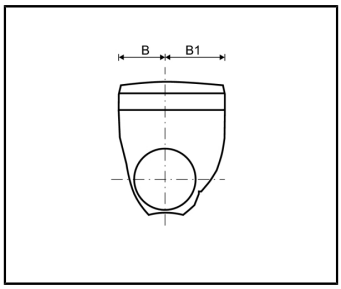
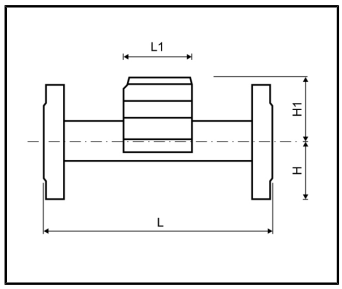
HYDRUS DN 25 - 50

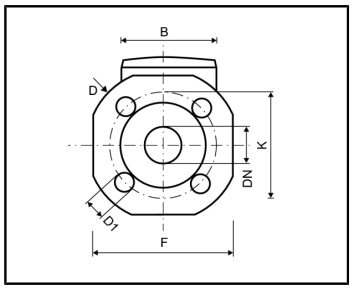
ULTRASONIC METER

DIMENSIONS









Nominal diameter	DN	mm	25	32	25	32
Nominal flow rate	Q_3	m³/h	6.3	6.3	10	10
Overall length	L	mm	260	260	260	260
Counter length	L1	mm	92	92	92	92
Counter width	B	mm	94	94	94	94
DIMENSIONS - THREAD			.	.	.	.
Overall length with coupling	L2	mm	380	380	380	380
Connection thread on meter		inch	G1¼B	G1½B	G1¼B	G1½B
Connection thread of coupling		inch	R1	R1¼	R1	R1¼
Height	H1	mm	84	84	84	84
Weight without coupling (approx.)		kg	1.6	1.8	1.6	1.8
Weight with coupling (approx.)		kg	2.2	2.4	2.2	2.4
Height	H	mm	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

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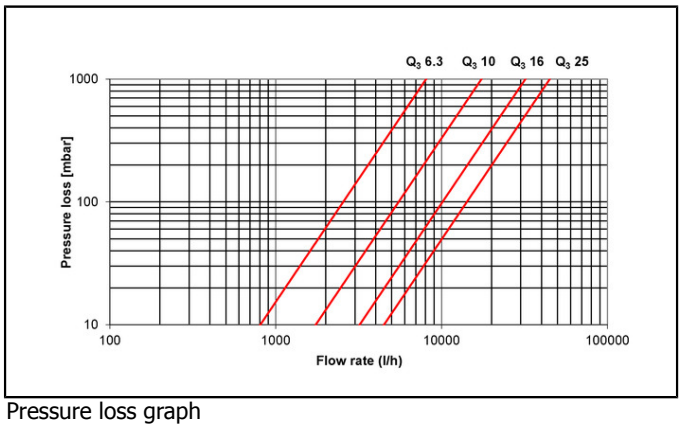
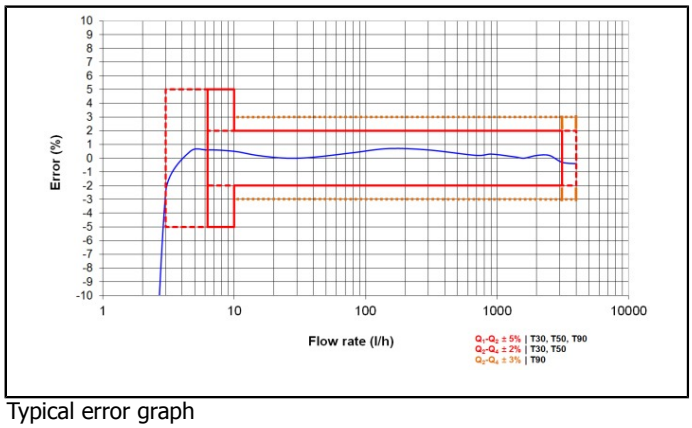
HYDRUS DN 25 - 50
ULTRASONIC METER

Nominal diameter	DN	mm	40	40	50	50	50
Nominal flow rate	Q_3	m³/h	10	16	16	25	25
Overall length	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

PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH



Pressure loss graph



Typical error graph

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