DIEHL
Metering

# HYDRUS 2.0

## ULTRASONIC METER



### APPLICATION

HYDRUS 2.0 is a static ultrasonic water meter designed for all applications of domestic 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 (AoC DEU, 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 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 50 (brass), DN 15 to 20 (composite)
- MID approved with dynamic range up to R 800
- IP 68 suitable for outdoor installations
- Integrated communication based on OMS specifications
- Wireless M-Bus for mobile reading in parallel to Fixed Network
- mioty®4OMS for OMS Generation 5 Fixed Network
- OMS over LoRaWAN® for LoRaWAN Fixed Network
- M-Bus/Pulse/Pulse, wireless M-Bus, wireless M-Bus along with L-Bus/Pulse
- Display with error and alarm codes including leakage detection
- Battery lifetime up to 16 years
- U0 / D0, no need for calming sections
- Housing with thread connection lead-free brass

## GENERAL

| | | | HYDRUS 2.0 |
|---|---|---|---|
| Medium temperature range | | °C | +0.1 ... +90 |
| 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 | | | Composite; Brass |
| Nominal pressure | MAP | bar | 16 |
| Power supply | | | Two 3.6 VDC lithium batteries |
| Battery lifetime[1] | | | Up to 16 years |
| Communication interfaces | | | Optical, OMS Generation 5 (mioty®4OMS) 868 MHz, OMS Generation 3/4 wireless M-Bus 434/868 MHz, M-Bus, L-Bus and Pulse, LoRaWAN® 868 MHz, mioty® for Metering 434/868 MHz |
| 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 50 | 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 |
| Wireless M-Bus | 434 or 868 MHz, OMS Generation 3/4, OMS radio as standard for mobile reading (R3) sent every 14 / 64 seconds (default) and wireless M-Bus for fixed network (R4/ R4+) sent every 5 / 15 / 60 minutes |
| mioty®4OMS | 868 MHz, OMS Generation 5, OMS as standard for mobile reading (R3) sent every 64 seconds (default) and mioty®4OMS for fixed network sent every 60 minutes |
| mioty® for Metering | 434 or 868 MHz, OMS Generation 3/4, OMS radio as standard for mobile reading (R3) sent every 64 seconds (default) and mioty® for Metering for fixed network (L1C) sent every 60 minutes |
| LoRaWAN® | 868 MHz, OMS over LoRaWAN® for fixed network sent every 3 h / 5 h / 6 h (default) and OMS as standard for mobile reading (R3) sent every 64 seconds (default); Complies to v1.0.3, certified to v1.0.2, Class A, supports Adaptive data rate (ADR) and Over The Air (OTA) activation |
| M-Bus | 2400 baud, cable length 1.5 m, power supply only via built-in battery combined with two Pulse outputs |
| L-Bus | In combination with radio models, 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 |

## SECURITY

| | HYDRUS 2.0 |
|---|---|
| Wireless M-Bus | OMS Generation 4 Profile B, individual keys (default) / OMS Generation 3 (selectable) |
| mioty®4OMS | OMS Generation 4 Profile B, individual keys (default) |
| mioty® for Metering | OMS Generation 4 Profile B, individual keys (default) / OMS Generation 3 (selectable) |
| LoRaWAN® | Fixed Network uses internal LoRaWAN® transport encryption; Mobile Network uses OMS Generation 4 Profile B, individual keys (default) |

## PRIVACY

The HYDRUS 2.0 stores internally historical consumption values. Logging data is available by local reading with IZAR@MOBILE and remote reading. Optical and radio communication implements encryption and authentification according to OMS Specification and LoRaWAN® specification.

## 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 or reverse volume |
| Pulse frequency | | Max. frequency 10 Hz |
| Pulse width | | 50 - 500 ms |

## POSSIBLE COMMUNICATION INTERFACES

| | HYDRUS 2.0 |
|---|---|
| Wireless M-Bus/Pulse/L-Bus | 434 or 868 MHz + 3 wires |
| Wireless M-Bus only | 434 or 868 MHz + without wire |
| mioty®4OMS and OMS radio/Pulse/L-Bus | 868 MHz + 3 wires |
| mioty®4OMS and OMS radio only | 868 MHz + without wire |
| mioty® for Metering and OMS radio/Pulse/L-Bus | 434 or 868 MHz + 3 wires |
| mioty® for Metering and OMS radio only | 434 or 868 MHz + without wire |
| LoRaWAN® and OMS radio only | 868 MHz + without wire |
| M-Bus only | 2 wires |
| M-Bus/Pulse/Pulse | 5 wires |
| Pulse/Pulse | 3 wires (without fraud) or 4 wires (with fraud) |
| IZAR BE PULSE | 4 wires (with fraud) |

## 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 | 15[2] | 15 | 15 | 20 | 20 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Overall length | L | mm | 110 | 115 | 165 | 170 | 115 | 130 | 190 |
| Dynamic ($Q_3/Q_1$) | R | | 800 | 800 | 800 | 800 | 400 | 800 | 800 |
| Overload flow rate | $Q_4$ | $m^3/h$ | 3.125 | 3.125 | 3.125 | 3.125 | 3.125 | 3.125 | 3.125 |
| Transitional flow rate | $Q_2$ | l/h | 5 | 5 | 5 | 5 | 10 | 5 | 5 |
| Minimum flow rate | $Q_1$ | l/h | 3.13 | 3.13 | 3.13 | 3.13 | 6.25 | 3.13 | 3.13 |
| Starting flow rate | | l/h | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| Pressure loss at $Q_3$ | | bar | 0.46 | 0.46 | 0.46 | 0.46 | 0.4 | 0.4 | 0.4 |
| Pressure loss at $Q_4$ | | bar | 0.72 | 0.72 | 0.72 | 0.72 | 0.63 | 0.63 | 0.63 |
| Maximum flow rate[1] | $Q_{high}$ | $m^3/h$ | 4.37 | 4.37 | 4.37 | 4.37 | 4.37 | 4.37 | 4.37 |
| Flow coefficient | $K_v$ | $m^3/h$ | 3.69 | 3.69 | 3.69 | 3.69 | 3.95 | 3.95 | 3.95 |

| Nominal diameter | DN | mm | 20 | 20 | 20 | 20 | 20 | 20 |
|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 4 | 4 | 4 | 4 | 4 | 4 |
| Overall length | L | mm | 105 | 115 | 130 | 175 | 190 | 220 |
| Dynamic ($Q_3/Q_1$) | R | | 400 | 630 | 800 | 800 | 800 | 800 |
| Overload flow rate | $Q_4$ | $m^3/h$ | 5 | 5 | 5 | 5 | 5 | 5 |
| Transitional flow rate | $Q_2$ | l/h | 16 | 10 | 8 | 8 | 8 | 8 |
| Minimum flow rate | $Q_1$ | l/h | 10 | 6.3 | 5 | 5 | 5 | 5 |
| Starting flow rate | | l/h | 3.0 | 3.0 | 2.5 | 2.5 | 2.5 | 2.5 |
| Pressure loss at $Q_3$ | | bar | 0.37 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Pressure loss at $Q_4$ | | bar | 0.58 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| Maximum flow rate[1] | $Q_{high}$ | $m^3/h$ | 7 | 7 | 7 | 7 | 7 | 7 |
| Flow coefficient | $K_v$ | $m^3/h$ | 6.58 | 6.32 | 6.32 | 6.32 | 6.32 | 6.32 |

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

## APPROVAL

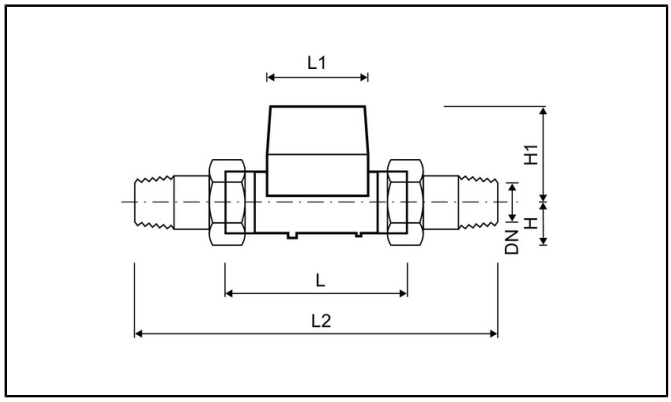
| | | DN 15 - 20 |
|---|---|---|
| Approval | | MID DE-19-MI001-PTB012 |
| Dynamic range ($Q_3/Q_1$) | R | Up to 800 |
| Standards | | EN 4064, EN 14154, OIML R49 |
| Sanitary conformity | | AoC DEU, ACS, WRAS, Belgaqua, KIWA Netherlands, OTH, PZH, SVGW |
| OMS Certification | | OMS Generation 4 |
| LoRaWAN® certification | | 1.0.2 |

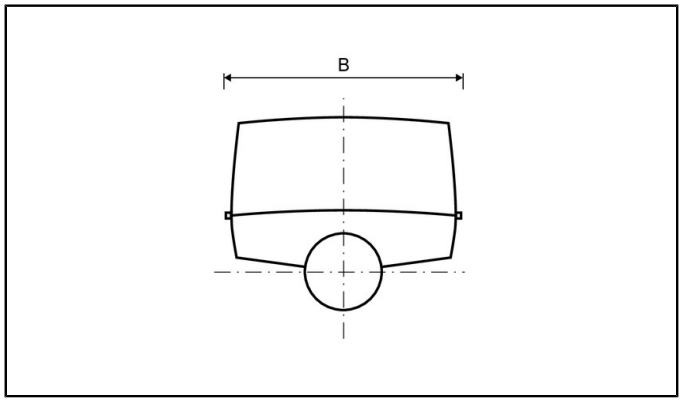
## DYNAMIC RANGE (R=Q3/Q1)

| | | DN 15 - 20 |
|---|---|---|
| $Q_3$ 1.6 $m^3/h$ - T30 / T50 | R | 400 |
| $Q_3$ 1.6 $m^3/h$ - T70 / T90 | R | 400H; 250V |
| $Q_3$ 2.5 $m^3/h$ - T30 / T50 | R | 160; 800 (400 for L 115 mm) |
| $Q_3$ 2.5 $m^3/h$ - T70 / T90 | R | 160; 400; 800H / 400V (250 for L 115 mm) |
| $Q_3$ 4 $m^3/h$ - T30 | R | 160; 400; 800 (630 for L 105 mm and 115 mm) |
| $Q_3$ 4 $m^3/h$ - T50 / T70 / T90 | R | 160; 400; 800H / 400V (630H for L 105 mm and 115 mm) |

H = horizontal installation position / V = vertical installation position
Other values on request

## DIMENSIONS



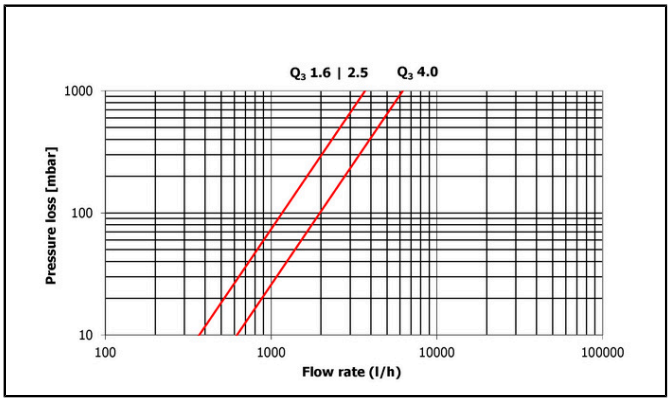




| Nominal diameter | DN | mm | 15 | 15[2] | 15 | 15 | 20 | 20 | 20 |
|---|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| Overall length | L | mm | 110 | 115 | 165 | 170 | 115 | 130 | 190 |
| Housing | | | brass/ composite | brass/ composite | brass/ composite | brass/ composite | brass | brass | brass/ composite |
| Counter length | L1 | mm | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Counter width | B | mm | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| Overall length with coupling | L2 | mm | 190 | 195 | 245 | 250 | 215 | 230 | 290 |
| Connection thread on meter | | Inch | G¾B | G¾B | G¾B | G¾B | G1B | G1B | G1B |
| Connection thread of coupling | | Inch | R½ | R½ | R½ | R½ | R¾ | R¾ | R¾ |
| Height | H1 | mm | 71 | 71 | 71 | 71 | 74 | 74 | 74 |
| Weight without coupling (approx.) | | kg | 0.7 / 0.5 | 0.7 / 0.5 | 0.8 / 0.6 | 0.8 / 0.6 | 0.8 | 0.8 | 0.9 / 0.6 |
| Weight with coupling (approx.) | | kg | 1.1 / 0.9 | 1.1 / 0.9 | 1.2 / 1.0 | 1.2 / 1.0 | 1.2 | 1.2 | 1.3 / 1.0 |
| Height | H | mm | 18 | 18 | 18 | 18 | 21 | 21 | 21 |

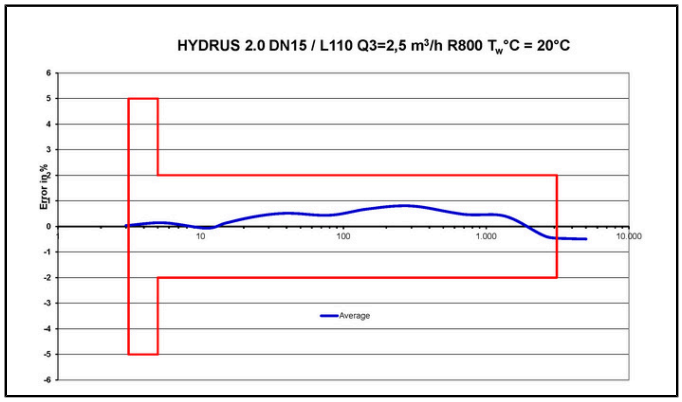
| Nominal diameter | DN | mm | 20 | 20 | 20 | 20 | 20 | 20 |
|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 4 | 4 | 4 | 4 | 4 | 4 |
| Overall length | L | mm | 105 | 115 | 130 | 175 | 190 | 220 |
| Housing | | | brass | brass | brass | brass | brass/ composite | brass |
| Counter length | L1 | mm | 89 | 89 | 89 | 89 | 89 | 89 |
| Counter width | B | mm | 89 | 89 | 89 | 89 | 89 | 89 |
| Overall length with coupling | L2 | mm | 205 | 215 | 230 | 295 | 290 | 320 |
| Connection thread on meter | | Inch | G1B | G1B | G1B | G1¼B | G1B | G1B |
| Connection thread of coupling | | Inch | R¾ | R¾[1] | R¾ | R1 | R¾ | R¾ |
| Height | H1 | mm | 74 | 74 | 74 | 74 | 74 | 74 |
| Weight without coupling (approx.) | | kg | 0.8 | 0.8 | 0.8 | 1.0 | 0.9 / 0.6 | 1.2 |
| Weight with coupling (approx.) | | kg | 1.2 | 1.2 | 1.2 | 1.6 | 1.3 / 1.0 | 1.4 |
| Height | H | mm | 21 | 21 | 21 | 27 | 21 | 21 |

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

## PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH




Pressure loss graph




Typical error graph

## TECHNICAL DATA

| Nominal diameter | DN | mm | 25 | 25 | 25 | 25 | 25 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 6.3 | 6.3 | 6.3 | 6.3 | 10 | 10 | 10 | 10 |
| Overall length | L | mm | 135 | 150 | 175 | 260 | 175 | 260 | 260 | 200 |
| Dynamic ($Q_3/Q_1$) | R | | 400 | 400 | 400 | 400 | 800 | 800 | 800 | 400 |
| Overload flow rate | $Q_4$ | $m^3/h$ | 7.87 | 7.87 | 7.87 | 7.87 | 12.5 | 12.5 | 12.5 | 12.5 |
| Transitional flow rate | $Q_2$ | l/h | 25.2 | 25.2 | 25.2 | 25.2 | 20 | 20 | 20 | 40 |
| Minimum flow rate | $Q_1$ | l/h | 15.8 | 15.8 | 15.8 | 15.8 | 12.5 | 12.5 | 12.5 | 25 |
| Starting flow rate | | l/h | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 8.7 |
| Pressure loss at $Q_3$ | | bar | 0.19 | 0.19 | 0.19 | 0.19 | 0.48 | 0.48 | 0.33 | 0.1 |
| Pressure loss at $Q_4$ | | bar | 0.3 | 0.3 | 0.3 | 0.3 | 0.75 | 0.75 | 0.51 | 0.16 |
| Maximum flow rate[1] | $Q_{high}$ | $m^3/h$ | 11.02 | 11.02 | 11.02 | 11.02 | 17.5 | 17.5 | 17.5 | 17.5 |
| Flow coefficient | $K_v$ | $m^3/h$ | 14.45 | 14.45 | 14.45 | 14.45 | 14.43 | 14.43 | 17.41 | 31.62 |

| Nominal diameter | DN | mm | 40 | 40 | 40 | 50 | 50 | 50 | 50 |
|---|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 10 | 16 | 16 | 16 | 16 | 25 | 25 |
| Overall length | L | mm | 300 | 200 | 300 | 270 | 300 | 270 | 300 |
| Dynamic ($Q_3/Q_1$) | R | | 400 | 800 | 800 | 250 | 250 | 400 | 400 |
| Overload flow rate | $Q_4$ | $m^3/h$ | 12.5 | 20 | 20 | 20 | 20 | 31.25 | 31.25 |
| Transitional flow rate | $Q_2$ | l/h | 40 | 32 | 32 | 102 | 102 | 100 | 100 |
| Minimum flow rate | $Q_1$ | l/h | 25 | 20 | 20 | 64 | 64 | 62.5 | 62.5 |
| Starting flow rate | | l/h | 8.7 | 8.7 | 8.7 | 25 | 25 | 25 | 25 |
| Pressure loss at $Q_3$ | | bar | 0.1 | 0.2 | 0.2 | 0.14 | 0.14 | 0.33 | 0.33 |
| Pressure loss at $Q_4$ | | bar | 0.16 | 0.31 | 0.31 | 0.22 | 0.22 | 0.52 | 0.52 |
| Maximum flow rate[1] | $Q_{high}$ | $m^3/h$ | 17.5 | 28 | 28 | 32.13 | 32.13 | 32.13 | 32.13 |
| Flow coefficient | $K_v$ | $m^3/h$ | 31.62 | 36.0 | 36.0 | 44.0 | 44.0 | 44.0 | 44.0 |

[1] Outlet pressure minimum 3 bar, maximum 100 hours per year, closed pipeline network

## APPROVAL

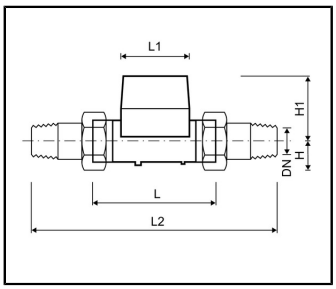
| | | DN 25 - 50 |
|---|---|---|
| Approval | | MID DE-19-MI001-PTB012 |
| Dynamic range ($Q_3/Q_1$) | R | Up to 800 |
| Standards | | EN 4064, EN 14154, OIML R49 |
| Sanitary conformity | | AoC DEU, ACS, WRAS, Belgaqua, KIWA Netherlands, OTH, PZH, SVGW |
| OMS Certification | | OMS Generation 4 |
| LoRaWAN® certification | | 1.0.2 |

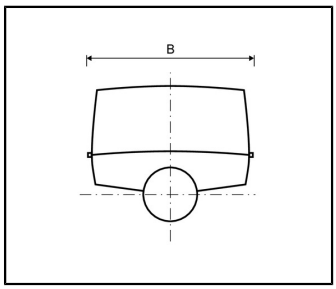
## DYNAMIC RANGE (R=Q3/Q1)

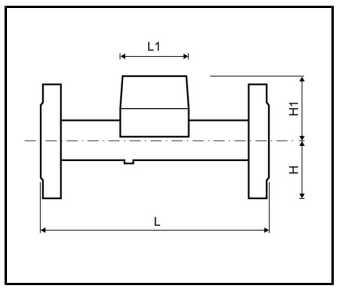
| | | DN 25 - 50 |
|---|---|---|
| $Q_3$ 6.3 $m^3/h$ - T30 | R | 160; 400 |
| $Q_3$ 6.3 $m^3/h$ - T50 / T70 / T90 | R | 160; 400H / 250V |
| $Q_3$ 10 $m^3/h$ - DN 25, DN 32 - T30 | R | 160; 400; 800 |
| $Q_3$ 10 $m^3/h$ - DN 25, DN 32 - T50 / T70 / T90 | R | 160; 400; 800H / 400V |
| $Q_3$ 16 $m^3/h$ - DN 40 - T30 | R | 160; 400; 800 |
| $Q_3$ 16 $m^3/h$ - DN 40 - T50 / T70 / T90 | R | 160; 400; 800H / 400V |
| $Q_3$ 16 $m^3/h$ - DN 50 | R | 250 |
| $Q_3$ 25 $m^3/h$ - DN 50 | R | 400 |

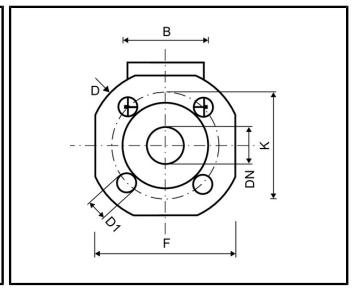
H = horizontal installation position / V = vertical installation position
Other values on request

## DIMENSIONS



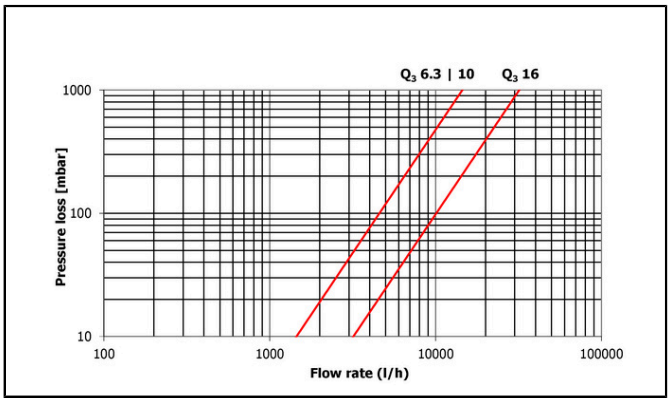



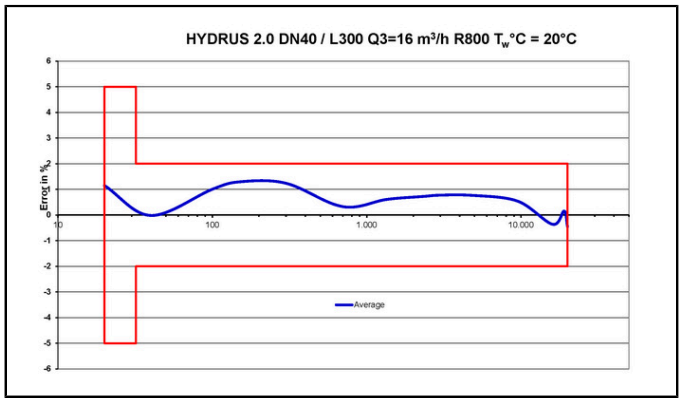

| Nominal diameter | DN | mm | 25 | 25 | 25 | 25 | 25 | 25 | 32 | 40 |
|---|---|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 6.3 | 6.3 | 6.3 | 6.3 | 10 | 10 | 10 | 10 |
| Overall length | L | mm | 135 | 150 | 175 | 260 | 175 | 260 | 260 | 200 |
| Housing | | | brass | brass | brass | brass | brass | brass | brass | brass |
| Counter length | L1 | mm | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 96 |
| Counter width | B | mm | 89 | 89 | 89 | 89 | 89 | 89 | 89 | 89 |
| DIMENSIONS - THREAD | | | . | . | . | . | . | . | . | . |
| Overall length with coupling | L2 | mm | 255 | 270 | 295 | 380 | 295 | 380 | 380 | 340 |
| Connection thread on meter | | Inch | G1¼B | G1¼B | G1¼B | G1¼B | G1¼B | G1¼B | G1½B | G2B |
| Connection thread of coupling | | Inch | R1 | R1 | R1 | R1 | R1 | R1 | R1¼ | R1½ |
| Height | H1 | mm | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 82 |
| Weight without coupling (approx.) | | kg | 1.0 | 1.0 | 1.1 | 1.4 | 1.4 | 1.4 | 1.5 | 1.8 |
| Weight with coupling (approx.) | | kg | 1.6 | 1.6 | 1.7 | 2.0 | 2.0 | 2.0 | 2.1 | 3.0 |
| Height | H | mm | 27 | 27 | 27 | 27 | 27 | 27 | 30 | 36 |
| DIMENSIONS - FLANGE | | | . | . | . | . | . | . | . | . |
| Flange diameter | D | mm | - | - | - | 115 | - | 115 | 140 | - |
| Hole circle diameter | K | mm | - | - | - | 85 | - | 85 | 100 | - |
| Number of screwholes | | pcs | - | - | - | 4 | - | 4 | 4 | - |
| Screwhole diameter | D1 | mm | - | - | - | 14 | - | 14 | 18 | - |
| Height | H | mm | - | - | - | 50 | - | 50 | 62.5 | - |
| Height | H1 | mm | - | - | - | 84 | - | 84 | 84 | - |
| Width | F | mm | - | - | - | 100 | - | 100 | 125 | - |
| Weight with flanges (approx.) | | kg | - | - | - | 3.4 | - | 3.4 | 4.6 | - |

| Nominal diameter | DN | mm | 40 | 40 | 40 | 50 | 50 | 50 | 50 |
|---|---|---|---|---|---|---|---|---|---|
| Permanent flow rate | $Q_3$ | $m^3/h$ | 10 | 16 | 16 | 16 | 16 | 25 | 25 |
| Overall length | L | mm | 300 | 200 | 300 | 270 | 300 | 270 | 300 |
| Housing | | | brass | brass | brass | brass | brass | brass | brass |
| Counter length | L1 | mm | 96 | 96 | 96 | 92 | 92 | 92 | 92 |
| Counter width | B | mm | 89 | 89 | 89 | 94 | 94 | 94 | 94 |
| DIMENSIONS - THREAD | | | . | . | . | . | . | . | . |
| Overall length with coupling | L2 | mm | 440 | 340 | 440 | 390 | 420 | 390 | 420 |
| Connection thread on meter | | Inch | G2B | G2B | G2B | G2½B | G2½B | G2½B | G2½B |
| Connection thread of coupling | | Inch | R1½ | R1½ | R1½ | R2 | R2 | R2 | R2 |
| Height | H1 | mm | 82 | 82 | 82 | 90 | 90 | 90 | 90 |
| Weight without coupling (approx.) | | kg | 2.6 | 1.8 | 2.6 | 3.9 | 4.05 | 3.9 | 4.05 |
| Weight with coupling (approx.) | | kg | 3.8 | 3.0 | 3.8 | 5.5 | 5.65 | 5.5 | 5.65 |
| Height | H | mm | 36 | 36 | 36 | 41 | 41 | 41 | 41 |
| DIMENSIONS - FLANGE | | | . | . | . | . | . | . | . |
| Flange diameter | D | mm | 148 | - | 148 | - | - | - | - |
| Hole circle diameter | K | mm | 110 | - | 110 | - | - | - | - |
| Number of screwholes | | pcs | 4 | - | 4 | - | - | - | - |
| Screwhole diameter | D1 | mm | 18 | - | 18 | - | - | - | - |
| Height | H | mm | 69 | - | 69 | - | - | - | - |
| Height | H1 | mm | 87 | - | 87 | - | - | - | - |
| Width | F | mm | 138 | - | 138 | - | - | - | - |
| Weight with flanges (approx.) | | kg | 6.3 | - | 6.3 | - | - | - | - |

## PRESSURE LOSS GRAPH / TYPICAL ERROR GRAPH




Pressure loss graph




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.

For questions, please contact:  metering-germany-info@diehl.com

Diehl Metering ApS
Glentevej 1
6705 Esbjerg Ø
Denmark
Phone: +45 76 13 43 00
Fax: +45 76 13 43 01
metering-denmark-info@diehl.com
www.diehl.com/metering

EMPOWER A SUSTAINABLE FUTURE