

MWN Nubis IP68/IP65

MWN horizontal rotor axis propeller
water meter (Woltman) DN40 to DN300

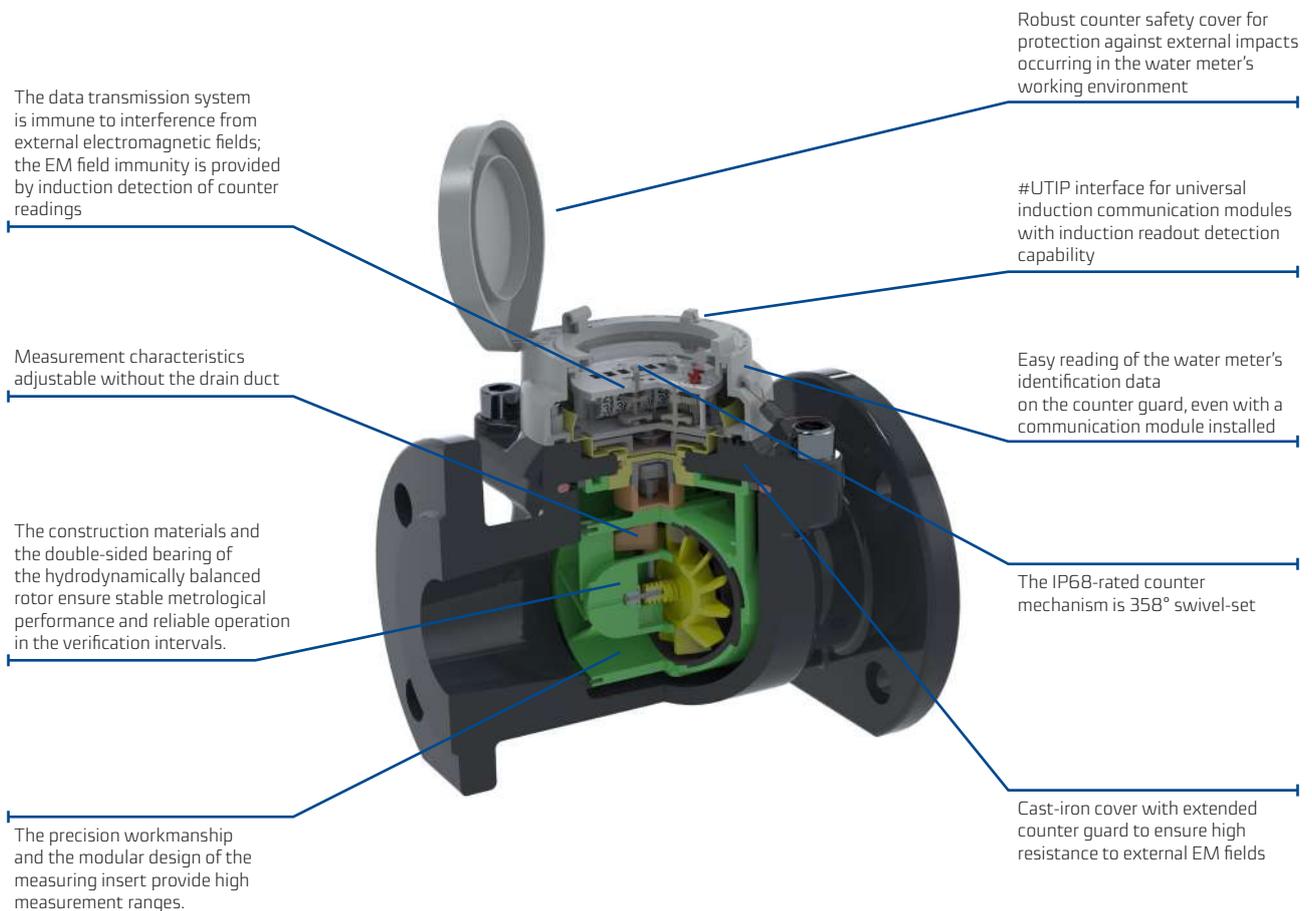


The MWN Nubis is a horizontal rotor axis propeller dry water meter of the Woltman design. The propeller axis is parallel to the piping centreline once installed. The Nubis water meters feature state-of-the-art design and processing solutions which provide a long operating life with resistance to strong external electromagnetic fields. The water meter is compatible with clip-on communication modules for automatic wired or wireless meter reading. The water meter has been designed and manufactured to the MID (Measuring Instruments Directive) and in compliance with EN14154, ISO4064 and OIML R49 for the maximum measurement range of R200.

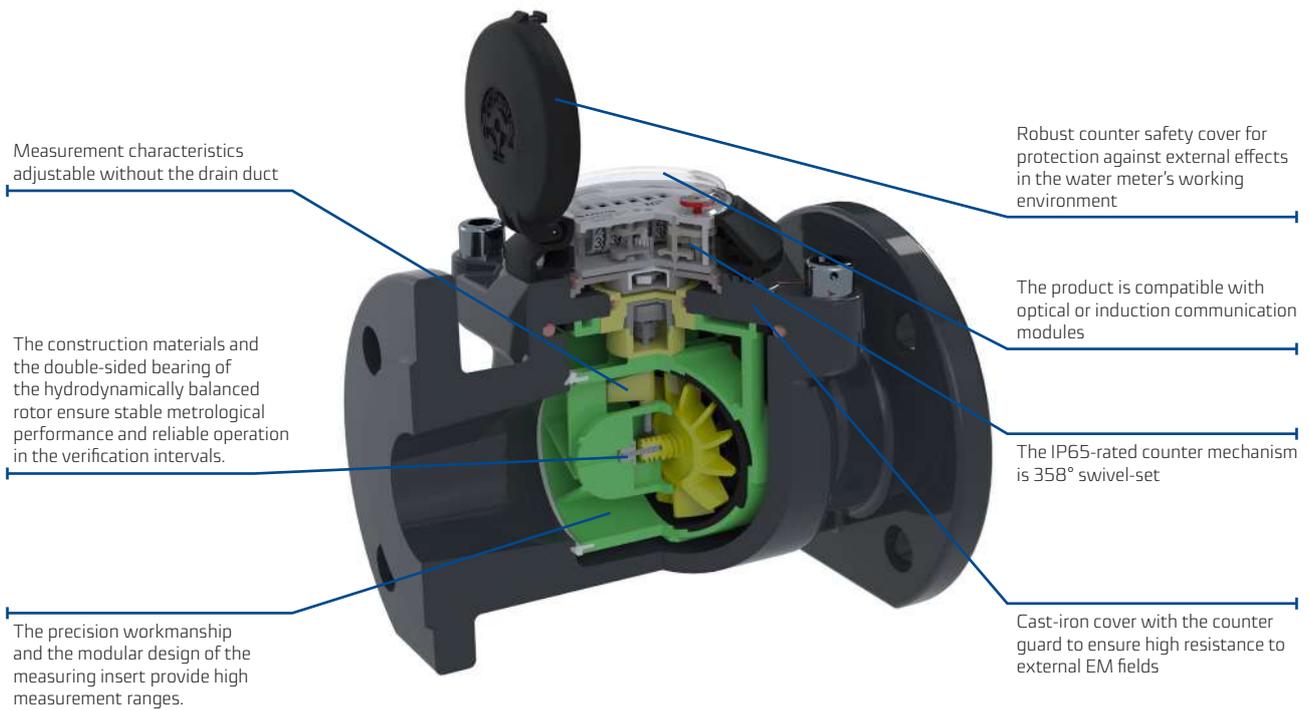
Application

The water meters are intended for metering in industrial supply systems of cold water operating at temperatures up to 50°C and hot water operating at temperatures up to 130°C at low pressure losses with relatively constant and high flow rates. The maximum admissible pressure (MAP) is 16 bar. The water meter design enables installation in horizontal piping with the counter pointing upward (H) or sideways (V) and in vertical pipelines with the counter pointing sideways (V). The rotary counter provides indications that are easily readable directly from the front face in different installation orientations. The water meters designed to IP68 are excellent for operation in difficult ambient conditions, and the standard version is compatible with universal induction communication modules which feature #UTIP (Universal TI Plug). The IP65 water meters are compatible with optical and induction communication modules.

MWN-08 (IP68)



MWN; MWN130 (IP65)



Advantages

Economic

- Excellent metrological parameters
- Remote meter reading via wired or wireless interfaces
- Low overall water meter weight
- Interchangeable, unified design of the measuring insert: compatible with several body sizes for optimum water meter installation management
- Possibility to install the water meter in many positions, without affecting the metrological parameters, allowing a more liberal design of new and existing water meter connections
- High anti-corrosive and damage resistance performance of the paint coat (made by epoxy powder coating)

Convenience of use

- The standard water meter version is AMR (MDMS)-capable (automatic meter reading), while the IP68 version is provided with #UTIP for compatibility with universal induction communication modules
- Easy reading of indications and parameters by:
 - Any orientation of the counter mechanism within 0 to 358°
 - Hermetically sealed, non-fogging counter in the IP68 version
 - Location of the water meter parameter legend on the top surface of the counter cover in the IP68 version
- Remote wireless indication reading with a portable terminal or a stationary reading system
- Possibility of reading indications in a wired or wireless system, using:
 - NK and NO transmitters
 - optical modules (IR)
 - induction modules (Ti)

- Alarm output capability: the meter with a universal induction communication module is capable of remote indication of any removal of or damage to the module, disruption of operation, reverse flows, leakages, external EM fields, and more

Reliability

- Tested and robust design
- Long operating life thanks to advanced materials:
 - with high resistance to wearing (in bearings and pivots)
 - with a surface texture which minimises flow resistance (on the rotor and the sealing disc)
 - with a revised construction and the applied hydrodynamically balanced rotor in the measurement chamber
- the counter mechanism is protected against mechanical damage
- the snap-locked counter cover of the IP68 version features the verification marking to eliminate traditional tamper seals

Key features

- IP68 rated: capable of operation in extremely difficult ambient conditions (including full immersion in water) alone or with a communication module installed
- IP68 rated: highly aesthetic droplet-shaped design for the counter safety cover and guard
- EN14154-3 compliant resistance to external magnetic fields
- High performance and reliability with stable metrological parameters in the entire service life
- Low starting flow
- Wide metering range
- Electronic diagnostics of metrological parameters
- Modular design
- Removable measuring insert
- Magnetic coupling

Regulatory and standards compliance

- Directive 2014/32/EC of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments
- Polish Act of 13/04/2016 on market surveillance and compliance assessment systems
- OIML R 49-1:2006 – Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
- OIML R 49-2:2004 – Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
- OIML R 49-2:2013 – Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
- OIML R 49-3:2013 – Water meters intended for the metering of cold potable water and hot water. Part 3: Test report format
- EN 14154-1:2005+A2:2011 – Water meters. Part 1: General requirements
- EN 14154-2:2005+A2:2011 – Water meters. Part 2: Installation and conditions of use
- EN 14154-3:2005+A2:2011 – Water meters. Part 3: Test methods and equipment
- EN ISO 4064-1:2017 – Water meters for cold potable water and hot water. Part 1: Metrological and technical requirements
- EN ISO 4064-2:2017 – Water meters for cold potable water and hot water. Part 2: Test methods
- EN ISO 4064-5:2017 – Water meters for cold potable water and hot water. Part 5: Installation requirements
- EU type test certificate – Cold water, no. SK08-MI001-SMU002
- PZH National Institute of Hygiene and WRAS certificates (all materials used in MWN water meters have Hy-



giene Certificates for use with potable water)

- Classification of environmental climate and mechanical conditions: Class B (ref. EN-ISO 4064-1:2014 (E))
- Classification of mechanical environmental conditions: Class M1, as per Directive 2014/32/EC of the European Parliament and of the Council of 26 February 2014
- Classification of electromagnetic environmental conditions: class E1 and E2, per EN-ISO 4064: 2014 and Directive 2014/32/EC of the European Parliament and of the Council of 26 February 2014

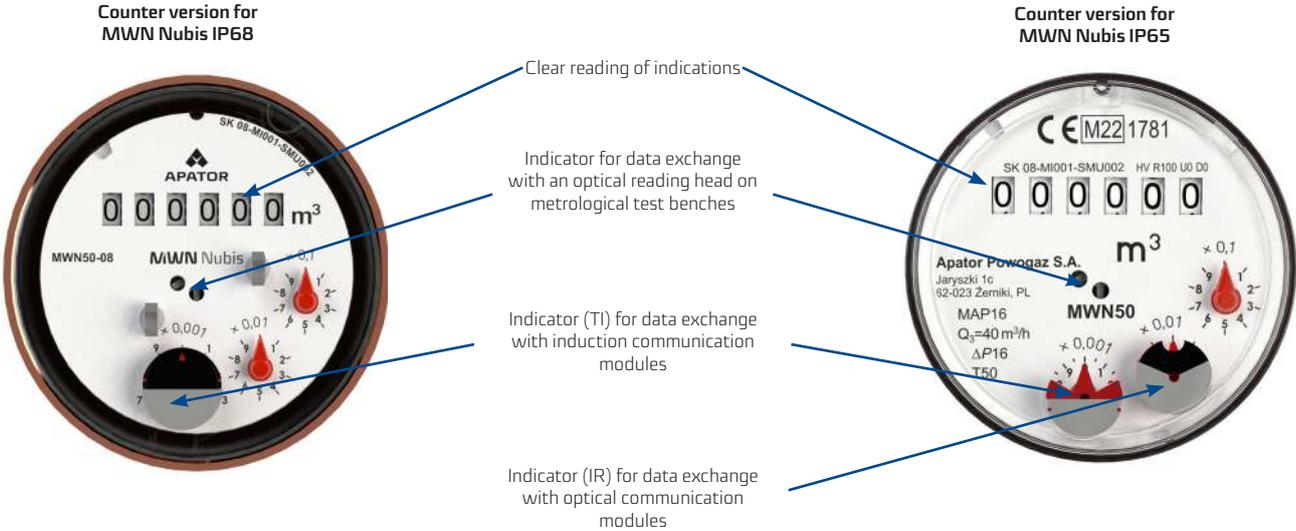


Table 1. Specifications

| Parameter | | | MWN-08 (IP68); MWN (IP65) | | | | | | | | | | | |
|--|--------------------------------------|------------------------|---|-------|-------|----------|------------|-------|----------------------------|-------|-------|------------|-------|--|
| Nominal diameter | DN | mm | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | | |
| Temperature class (operating temperature range) | T30 (0.1 to 30°C); T50 (0.1 to 50°C) | | MWN-08 or MWN; MWN (version)-NKOP | | | | | | | | | | | |
| Permanent flow rate | Q ₃ | m ³ /h | 25 | 40 | 63 | 100 | 160 | 250 | 400 | 630 | 1000 | 1600 | | |
| Overload flow rate | Q ₄ | m ³ /h | 31.25 | 50 | 78.75 | 125 | 200 | 312.5 | 500 | 787.5 | 1250 | 2000 | | |
| Transitional flow rate | Q ₂ | m ³ /h | 0.4 | 0.64 | 0.806 | 1 | 1.28 | 2.5 | 3.2 | 8.064 | 16 | 20.48 25.6 | | |
| Minimum flow rate | Q ₁ | m ³ /h | 0.25 | 0.4 | 0.504 | 0.625 | 0.8 | 1.563 | 2 | 5.04 | 10 | 12.8 16 | | |
| Starting flow | – | m ³ /h | 0.15 | 0.15 | 0.2 | 0.25 | 0.25 | 0.5 | 1.0 | 1.5 | 3 | 8 | | |
| Measurement range, R | Q ₃ /Q ₁ | – | 100 | 100 | 125 | 160 | 200 | 160 | 200 | 125 | 100 | 125 100 | | |
| Coefficient | Q ₂ /Q ₁ | – | 1.6 | | | | | | | | | | | |
| Maximum pressure loss | ΔP | kPa | ΔP10 | ΔP16 | ΔP40 | ΔP10 | ΔP25 | ΔP25 | ΔP25 | ΔP16 | ΔP10 | ΔP10 | | |
| Temperature class (operating temperature range) | T130 (0.1 to 130°C) | | MWN130 or MWN130 (version)-NKP | | | | | | | | | | | |
| Permanent flow rate | Q3 | m3/h | 25 | 25 | 40 | 63 | 100 | 160 | 250 | 400 | 630 | 1000 | | |
| Overload flow rate | Q4 | m3/h | 31.25 | 31.25 | 50 | 78.75 | 125 | 200 | 312.5 | 500 | 787.5 | 1250 | | |
| Transitional flow rate | Q2 | m3/h | 1 | 1 | 1.6 | 2.52 | 4 | 6.4 | 10 | 16 | 40.32 | 64 | | |
| Minimum flow rate | Q1 | m3/h | 0.625 | 0.625 | 1 | 1.575 | 2.5 | 4 | 6.25 | 10 | 25.2 | 40 | | |
| Starting flow | – | m3/h | 0.25 | 0.25 | 0.3 | 0.35 | 0.6 | 1.1 | 2 | 4 | 8 | 15 | | |
| Measurement range, R | Q3/Q1 | - | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 25 | 25 | | |
| Coefficient | Q2/Q1 | - | 1.6 | | | | | | | | | | | |
| Maximum pressure loss | ΔP | kPa | ΔP10 | ΔP16 | ΔP40 | ΔP10 | ΔP25 | ΔP25 | ΔP25 | ΔP16 | ΔP10 | ΔP10 | | |
| Connection ends: K – flanged*** G – threaded | | | K | K/G | K | K | K | K | K | K | K | K | | |
| Flow profile sensitivity class | – | – | U0, D0 | | | | | | | | | | | |
| Indicating range | – | m ³ | 10 ⁶ | | | | | | 10 ⁷ | | | | | |
| Resolution of reading | – | m ³ | 0.0005 | | | | | | 0.005 | | | 0.05 | | |
| Maximum allowable pressure | P _{max} | – | MAP16 = (16bar) | | | | | | | | | | | |
| Operating pressure range | – | bar | 0.3 to 16 | | | | | | | | | | | |
| Operating orientation | – | – | H, V | | | | | | | | | | | |
| Maximum permissible error range: (Q2 ≤ Q ≤ Q4) | ε | % | ± 2 for 0.1°C ≤ T ≤ 30°C cold water ± 3 T > 30°C water | | | | | | | | | | | |
| Maximum permissible error range: (Q1 ≤ Q < Q2) | ε | % | ±5 | | | | | | | | | | | |
| Reed relay pulse transmitter NK (IP65 only) | – | dm ³ /pulse | 100 (standard pulsing) 10 (available on request) | | | | | | 1000 (standard pulsing) | | | | | |
| | | | | | | | | | 100 (available on request) | | | - | | |
| Optoelectronic pulse transmitter NO (for IP65 T30 or T50 only) | – | dm ³ /pulse | 1 | | | | | | | | | | | |
| | | | 10 | | | 105.2632 | | | | | | | | |
| Dimensions | L | mm | 200 | 200 | 200 | 225/200* | 250 | 250 | 300 | 350 | 450 | 500 | | |
| | | h | mm | 65 | 72 | 83 | 95 | 105 | 120 | 135 | 160 | 193 | 230 | |
| | Height (IP68) | H | mm | 179.5 | 186.5 | 197.5 | 218 | 228 | 255.5 | 350 | 375 | 422 | 489 | |
| | | H1 | mm | 187.5 | 194.5 | 205.5 | 226 | 236 | 263.5 | 357 | 382 | 429 | 496 | |
| | | H2 | mm | 264.5 | 271.5 | 282.5 | 303 | 313 | 340.5 | 434.1 | 459.1 | 506.1 | 573.1 | |
| | Height (IP65) | H | mm | 168.6 | 175.6 | 186.6 | 207.1 | 217.1 | 244.6 | 338.9 | 363.9 | 410.9 | 477.9 | |
| | | H1 | mm | 173.6 | 180.6 | 191.6 | 212.1 | 222.1 | 249.6 | 343.6 | 368.6 | 415.6 | 482.6 | |
| | | H2 | mm | 236 | 243 | 254 | 274.5 | 284.5 | 312 | 406 | 431 | 478 | 545 | |
| | | H3** | mm | 283 | 290 | 301 | 347.5 | 358 | 385 | 580 | 604 | 650 | 720 | |
| | Dz | mm | 150 | 165 | 185 | 200 | 220 | 250 | 285 | 340 | 400 | 460 | | |
| Weight | W/o transmitter | | kg | 7.9 | 9.9 | 10.6 | 13.3/13.8* | 15.6 | 18.1 | 40.1 | 51.1 | 75.1 | 103.1 | |
| | w/NK or NO transmitter | | | 8.3 | 10.3 | 11 | 13.7/14.2* | 16 | 18.5 | 40.5 | 51.5 | 75.5 | 103.5 | |

* ISO 4064 standardised body length available on request.

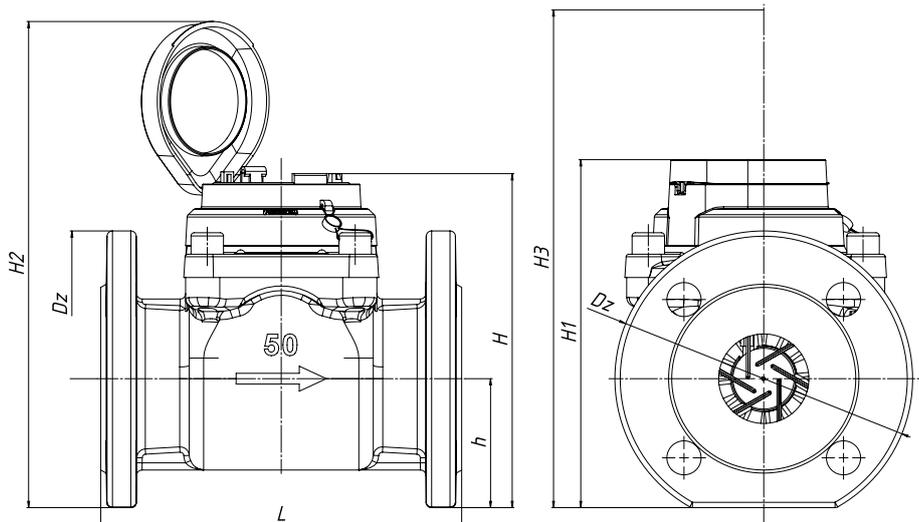
** Measuring insert removal clear height.

*** Connection flange bolt hole pattern:

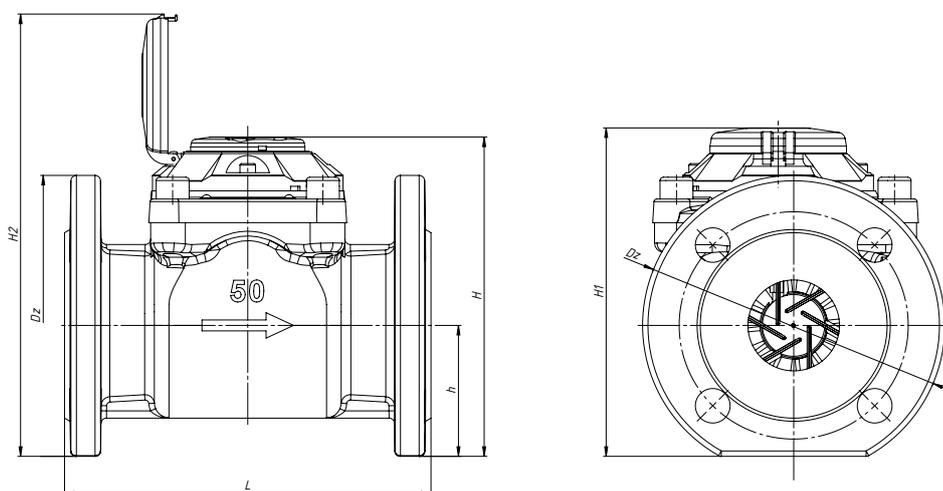
- Standard: PN-EN 1092-2 (PN10), DIN 2532, DIN2501 (PN10), BS4504 (PN10)

- Special: PN-EN 1092-2 (PN16) (available on request)

- Extra: ANSI B16.5 Class 150 (DN40-300) (available on request)

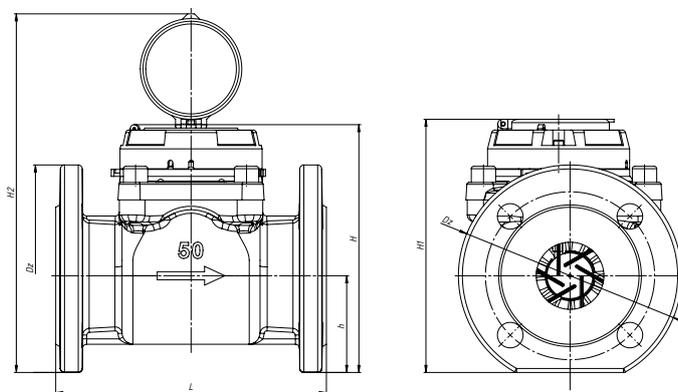


MWN version – 08 (IP68)



MWN version – (IP65)

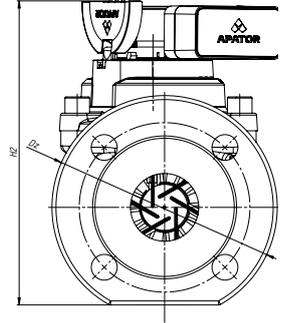
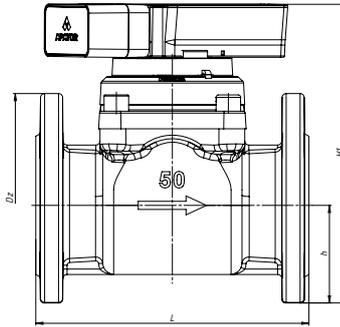
IP65-rated water meter, NKOP



| DN | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| H | mm | 213.5 | 220.5 | 231.5 | 252 | 262 | 289.5 | 384 | 409 | 456 | 523 |
| H1 | mm | 217.5 | 224.5 | 235.5 | 256 | 266 | 293.5 | 388 | 503 | 500 | 527 |
| H2 | mm | 260 | 267 | 278 | 298.5 | 308.5 | 336 | 430.5 | 455.5 | 502.5 | 569.5 |

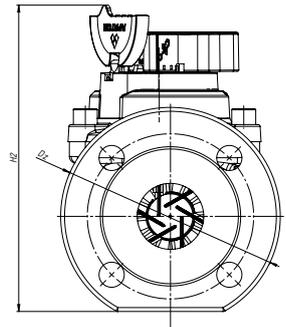
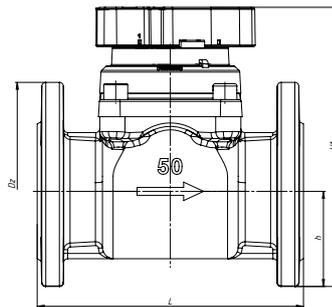
Example of MWN IP68 water meter compatibility with induction communication modules:

IN-GSM induction module, #UTIP (Universal TI Plug)



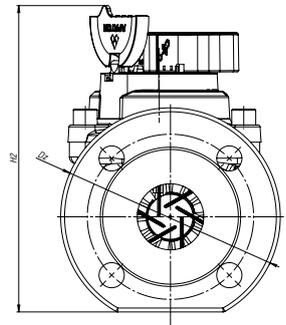
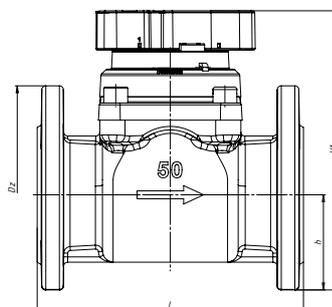
| DN | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|----|-------|-------|-------|-----|-----|-------|-----|-----|-----|-----|
| H1 | mm | 213.5 | 220.5 | 231.5 | 252 | 262 | 289.5 | 384 | 409 | 456 | 523 |
| H2 | mm | 217.5 | 224.5 | 235.5 | 256 | 266 | 293.5 | 388 | 503 | 500 | 527 |

APT-WMBUS-NA-1 induction module, #UTIP (Universal TI Plug)



| DN | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| H1 | mm | 204.1 | 211.1 | 222.1 | 242.6 | 252.6 | 280.1 | 374.6 | 399.6 | 446.6 | 513.6 |
| H2 | mm | 225.1 | 232.1 | 243.1 | 263.1 | 273.6 | 301.1 | 395.6 | 420.6 | 467.6 | 534.6 |

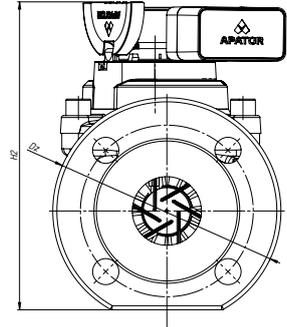
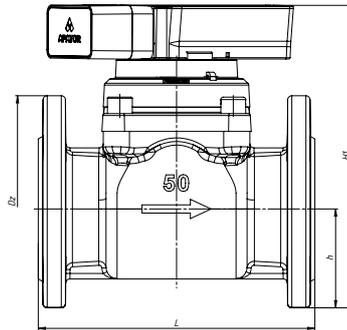
IN-PULSE induction module



| DN | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| H1 | mm | 204.1 | 211.1 | 222.1 | 242.6 | 252.6 | 280.1 | 374.6 | 399.6 | 446.6 | 513.6 |
| H2 | mm | 225.1 | 232.1 | 243.1 | 263.1 | 273.6 | 301.1 | 395.6 | 420.6 | 467.6 | 534.6 |

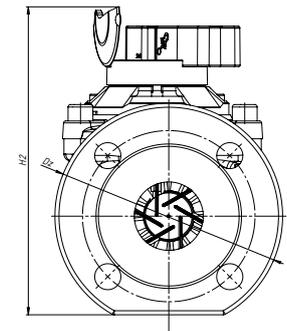
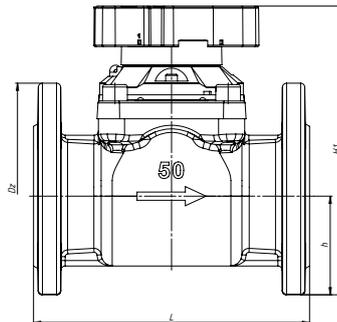
Example of MWN IP65 water meter compatibility with induction communication modules:

IN-GSM induction module



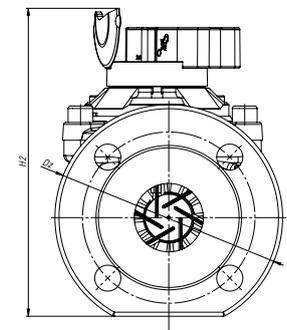
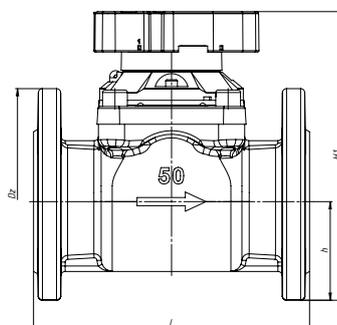
| DN | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| H1 | mm | 213 | 220 | 231 | 251.5 | 261.5 | 289 | 383.5 | 408.5 | 455.5 | 522.5 |
| H2 | mm | 217.9 | 224.9 | 235.9 | 256.4 | 266.4 | 293.9 | 388.4 | 413.4 | 460.4 | 527.4 |

APT-WMBUS-NA-1 induction module



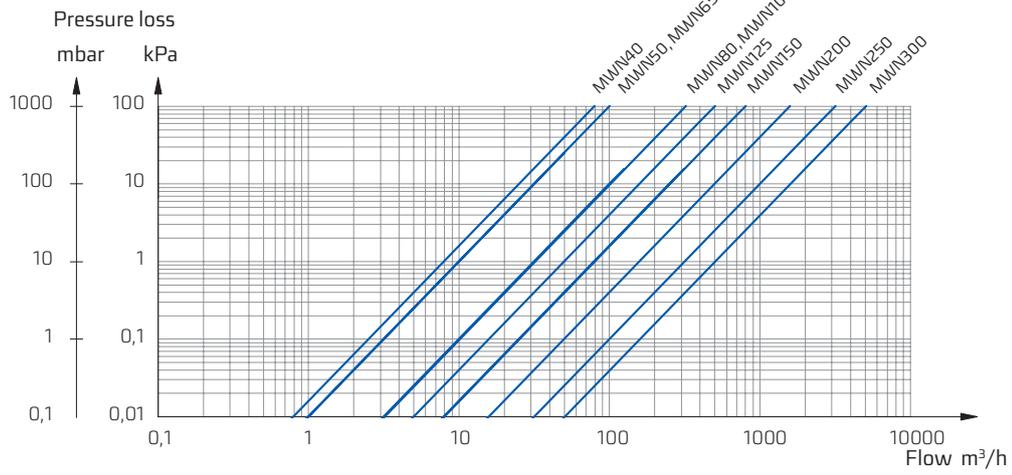
| DN | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| H1 | mm | 203.8 | 210.8 | 221.8 | 242.3 | 252.3 | 279.8 | 374.3 | 399.3 | 446.3 | 513.3 |
| H2 | mm | 217.9 | 224.9 | 235.9 | 256.4 | 266.4 | 293.9 | 388.4 | 413.4 | 460.4 | 527.4 |

IN-PULSE induction module



| DN | | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 |
|----|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| H1 | mm | 203.8 | 210.8 | 221.8 | 242.3 | 252.3 | 279.8 | 374.3 | 399.3 | 446.3 | 513.3 |
| H2 | mm | 217.9 | 224.9 | 235.9 | 256.4 | 266.4 | 293.9 | 388.4 | 413.4 | 460.4 | 527.4 |

Pressure loss chart



Typical error chart

