NEXT METERS

Response to:

REQUEST FOR PROPOSAL:
AUTOMATIC WATER METERING SOLUTION

Prepared for:

Town of Jerome, AZ

Attn: Brett Klein, Town Clerk
PO Box 335
Jerome, AZ 86331
928-634-7943

Innovative Utility Solutions

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IUS & NEXT Meters: Letter of Intent

Dear Town Manager Brett Klein and Town Council Members,

Get ready to transform your utility infrastructure with NEXT Meters' cutting-edge response an Automatic Water Metering Solution! Innovative Utility Solutions& Next are thrilled to introduce our Fenix Radio Frequency (RF) and LTE-M Cellular Solution—a game-changer designed to empower the Town of Jerome with smart, scalable, and sustainable metering technology. At NEXT, we're not just redefining metering; we're building stronger communities through innovation, reliability, and future-proof solutions.

Why Choose NEXT's Fenix Solution?

Our Fenix system is a powerhouse, blending RF, Cellular, Drive-by, and Walk-by reading capabilities into a single, versatile unit. With seamless communication and autonomous network switching, Next ensures your meter reads are always delivered 24/7, rain or shine. Here's why Fenix stands out:

- Unmatched Versatility: Supports water, gas, and electric metering on the same infrastructure, offering Jerome the flexibility to upgrade the electric AMI system in the future with minimal changes.
- Nationwide Reach: Following NEXT's 2025 acquisition of Fenix USA, we proudly serve over 5 million radio services and 1,000+ metering systems across the U.S., including: 400+ locations across Arizona, totaling 75,000+ endpoints.
- Resilient Connectivity: Combines primary 900 MHz RF for robust fixed AMI reading, multi-carrier LTE-M cellular for plug-and-play deployment, plus drive-by and walk-by options for one-off or off cycle reads. Backwards Compatibility:
- Since inception, all NEXT products have been backwards compatible, ensuring long-term support for your investment.
- Industry-Leading Warranty: The only AMI provider offering a full 20-year warranty (not prorated) on our products if 20 years of service are prepaid.
- Flexible Pricing: Prepay options lock in rates for up to 20 years, freeing up future capital for other town projects.
- Ready When You Are: Materials are stocked at our 70,000 sq ft warehouse in Tampa, FL, ready to ship within 72 hours of order.

Who We Are: NEXT Meters

Founded 14 years ago, NEXT is a U.S.-designed, vertically integrated AMI leader dedicated to sustainable utility solutions. With corporate offices in Logan, Utah, and warehousing, labs, and testing in Tampa, Florida, we're equipped to support utilities nationwide. To date, we've deployed nearly 5 million metering devices across the U.S. and Canada, serving 190+ utility customers with over 40,000 devices manufactured and deployed monthly.

Seamless Installation with NEXT's Mobile App

Our industry-leading mobile app (available on iOS and Android) is your all-in-one tool for installation and maintenance, streamlining deployment with:

- Up to 20 photos per site (before and after installation).
- GPS coordinates captured during each install.
- Pipe surveys with dropdown options for type, size, and material.
- Mobile reading and data downloads via Bluetooth.
- Old meter reading documentation for accuracy.

Best-in-Class Supply Chain & Deployment Certainty

NEXT's robust supply chain ensures timely delivery with minimal risk. With radios stocked in Tampa, FL, we guarantee shipment within 72 hours of order, so your project stays on track.

Expert Integration & Project Management

Our team brings decades of experience in utility integration and deployment. Fenix has a proven track record of seamless integration with Caselle, ensuring a fast, low-risk transition. We'll work closely with the Town of Jerome to identify the optimal path for deployment, minimizing disruptions and maximizing efficiency.

A Win-Win Partnership for the Future

NEXT's Fenix solution isn't just about meeting today's needs—it's about building a long-term partnership. Our multi-utility AMI solutions for water, gas, and electric integrate seamlessly with your CIS provider, delivering unmatched reliability and scalability. With NEXT, the Town of Jerome gains a trusted partner committed to innovation, sustainability, and community growth.

We're excited to bring our cutting-edge technology to the Town of Jerome and look forward to powering a smarter, more connected future together!

Sincerely,

Stan Pachorek
Sales Director
Innovative Utility Solutions
Gilbert, Arizona
Cell/text: 480-678-1668
Email: Stan@iuswater.com

BUSINESS OVERVIEW

NEXT Meters is redefining the utility metering industry with smart, open, and future-proof solutions that empower water, gas, and electric utilities to modernize their infrastructure, unlock real-time insights, and conserve resources for stronger communities.

Our Mission:
"To promote conservation of utilities for the betterment of our communities."
This mission is at the heart of every product and innovation we deliver — helping utilities operate more efficiently, reduce waste, and ensure reliable service for generations to come.

The Flagship: Ultrasonic Smart Meters
NEXT's primary offering is its advanced Ultrasonic Smart Meter — a state-of-the-art device with no moving parts, delivering unmatched measurement precision, long-term reliability, and continuous real-time consumption data. Ideal for full-scale AMI deployments, this meter enables utilities to achieve maximum accuracy, detect leaks faster, and support proactive conservation goals.

Complementing this flagship line, NEXT also provides trusted Positive Displacement (PD) meters, widely used for residential and commercial services. By pairing these with the Next Register (NR4), utilities can cost-effectively transform existing mechanical meters into smart endpoints, extending asset life while migrating to AMI on their own terms.

Powerful MDM and Advanced Analytics
NEXT's intelligent Head-End System (HES) is designed as a cloud-native, API-driven platform that securely aggregates, processes, and analyzes meter data in real time. At the HES level, AI and machine learning tools detect usage anomalies, identify leaks or tampering, optimize demand forecasting, and help utilities make data-driven operational decisions.

The NEXT HES integrates seamlessly with GIS, SCADA, billing (CIS), asset management, and customer engagement systems through secure RESTful APIs, webhooks, and modern data pipelines — ensuring utilities gain enterprise-wide visibility and automation without vendor lock-in.

Always Connected — The NEXT Communication Stack
Every NEXT device comes equipped with a robust, layered communication stack for maximum uptime:

- Primary 900 MHz RF for fixed AMI reading.
- Backup multi-carrier LTE-M cellular for plug-and-play deployment and nationwide coverage.
- Drive-by and walk-by options for efficient reading in remote or low-density areas.
- Autonomous network switching that automatically selects the best available channel to keep data flowing 24/7.

Customer Service: The Key to Long-Term Success
NEXT pairs advanced technology with exceptional customer service to help utilities succeed for the long term. From deployment to daily operations and future upgrades, our team stands ready with responsive support, training, and expert guidance. By backing every product with reliable service, we help utilities build trust, improve service quality, and ensure resilient, sustainable operations for years to come.

NEXT's Vision for the Future:
At NEXT, we are not just delivering AMI solutions — we are shaping the future of utility management. By combining innovative technology, seamless integration, and unparalleled support, NEXT empowers utilities to enhance operational efficiency, strengthen customer relationships, and build a more sustainable future.

EXECUTIVE SUMMARY

The NEXT Solution for Advanced Metering Infrastructure (AMI) leverages a robust, multi-network solution, highest quality ultrasonic meters, and an advanced, cloud-based Head-End System (HES) to provide utilities with a comprehensive, future-ready AMI platform.

NEXT's system includes an intuitive Field Mobile Application and a Customer Portal, enabling advanced control, remote configuration, and detailed usage reporting. By using open architecture and multi-layer connectivity — including LTE-M, 900 MHz RF, and drive-by options — the NEXT solution eliminates the need for costly proprietary network investments and accelerates the timeline to full AMI deployment.

NEXT's modular HES and communication stack support robust reporting and AI-powered analytics, which can be customized by utilities without the need for specialized proprietary scripting. Seamless integration with third-party systems — including CIS/billing, SCADA, GIS, and payment platforms — ensures smooth data exchange and real-time synchronization across utility operations.
The NEXT platform is designed to be user-friendly, scalable, and secure, giving utilities the tools they need for effective system management, greater operational efficiency, and deeper customer engagement.

120 team members

190 Utility customers

2 Locations

5 Million Devices Deployed

$46 million donated to community causes

14 years in operation

About NEXT

Founded over 14 years ago, NEXT is a leading, U.S.-designed, vertically integrated AMI company dedicated to delivering sustainable utility solutions across North America. With corporate offices and engineering based in Logan, Utah, and warehousing, labs, and testing operations in Tampa, Florida, NEXT supports utilities with a strong nationwide presence and robust operational backbone.

To date, NEXT has deployed nearly 5 million metering devices, with a total installed base exceeding 10 million meters across the United States and Canada, serving over 190 utility customers. Each month, NEXT manufactures and deploys more than 40,000 devices, ensuring utilities have access to reliable, scalable smart metering technology when and where they need it.

NEXT's dedicated team brings together over 200 years of combined AMI experience, united by a mission to help communities conserve critical resources for the betterment of future generations. Backed by resilient U.S. and global manufacturing partners, NEXT combines proven technology, operational excellence, and a strong commitment to sustainability to help utilities modernize responsibly and efficiently.

Our Mission

"To promote conservation of utilities for the betterment of our communities."

Beautifully Simple Affordable Quality Effortless Integration

Continuous Innovation Unparalleled Service Reaching for the Stars

Beautifully Simple

We believe that advanced technology shouldn't feel complicated. Every solution we build is designed to be intuitive and easy to deploy, so our partners and customers spend less time figuring things out and more time seeing results. From plug-and-play hardware to user-friendly software, we make complex utility management beautifully simple.

Affordable Quality

Quality shouldn't come at a premium that limits access. Our products combine durable engineering and rigorous standards with practical pricing, making high-performance metering and communication accessible for utilities of every size. We focus on cost-effectiveness without ever cutting corners on what matters most: accuracy, reliability, and long-term value.

Effortless Integration

Seamless compatibility is at the heart of our open architecture. Whether retrofitting legacy systems or building new networks, our solutions drop in and work smoothly with existing meters, infrastructure, and utility platforms. Our intuitive software and mobile apps make configuration, monitoring, and data collection easy for field teams and office staff alike — so integration isn't just technical, it's practical and user-friendly every step of the way.

Continuous Innovation

Standing still isn't an option. We are committed to pushing the boundaries of what's possible in smart metering and utility technology. Through relentless R&D, customer-driven feedback, and forward-thinking partnerships, we deliver features and improvements that keep our solutions ahead of tomorrow's challenges.

Unparalleled Service

Technology is only half the story — our people and our commitment complete it. We pride ourselves on providing personal, responsive service that solves problems quickly and builds lasting trust. From project kickoff to long-term support, we stand with our customers every step of the way.

Reaching for the Stars

Our mission is bigger than meters and modules — we aim to transform the way communities manage energy and water for a smarter, more sustainable future. By staying bold, adaptable, and visionary, we reach beyond today's limits and help our partners do the same

Strategy & Vision

Vertically integrated business strategy

NEXT Meters is a vertically integrated company — designing, developing, and supporting our hardware, software, and communication solutions under one roof. This structure delivers clear value to our utility partners: greater quality control, faster innovation cycles, and streamlined support.

Industry leaders across sectors — from Apple to Tesla — have demonstrated how vertical integration reduces supply chain risks, accelerates time to market, and ensures tighter alignment between design and manufacturing. According to Harvard Business Review and Forbes, vertically integrated companies consistently outperform fragmented supply chains when resilience, reliability, and cost control are critical.

NEXT applies these same principles in the utility metering space. By owning the design of our meters, registers, communication stack, and software platform — and backing this with both domestic and global manufacturing — we ensure unmatched interoperability, consistent product quality, and unmatched lead times, even in challenging supply chain environments.

The result: Utilities gain a single trusted partner for their complete AMI ecosystem — with one point of accountability, faster service, and solutions built to work seamlessly together from day one.

Engineering **Manufacturing** **Sales** **Delivery** **Support**

NEXT's Vision for the Future

NEXT's vision is to empower utilities to build smarter, more resilient, and more sustainable communities through open, future-ready metering solutions enhanced by intelligent data and continuous innovation. We believe the future of utility management must be flexible, transparent, and conservation-driven — free from vendor lock-in and designed to maximize the life and value of existing infrastructure.

NEXT is leading this transformation by combining advanced ultrasonic metering hardware, a robust multi-layer communication stack, and an intelligent Head-End System (HES) enhanced with AI and machine learning. These capabilities help utilities detect leaks sooner, identify anomalies, optimize maintenance, and make proactive operational decisions to conserve resources and manage costs.

NEXT continues to invest in our utility partners by developing tools that extend value beyond the meter. This includes behind-the-meter homeowner awareness and alerting, giving end-users clear visibility into usage and leak events, as well as in-front-of-the-meter distribution management tools like pressure monitoring, Outage Management System (OMS) integration, and peak usage analytics. Together, these innovations provide deeper network intelligence and help utilities maintain safe, efficient, and resilient distribution systems.

Setting a New Standard in Quality Assurance

Why Our QA Process Exists

At Next Meters, we believe in progress through continuous improvement. With every product we've developed, we use real-world experience to refine and perfect our approach. The launch of the Next Meter represents the latest and most advanced step in that ongoing evolution. It's an evolution built on rigorous testing, constant learning, and a commitment to delivering the most reliable metering technology in the industry.

Key Takeaways:

- ✓ Every meter undergoes 13 QA checkpoints to deliver proven reliability.
- ✓ Gigabytes of data are captured per meter to help us achieve a near-zero failure rate.
- ✓ The NM4 sets a new standard for quality assurance, ensuring each unit is built, tested, and trusted to last.

What We Built From That Commitment

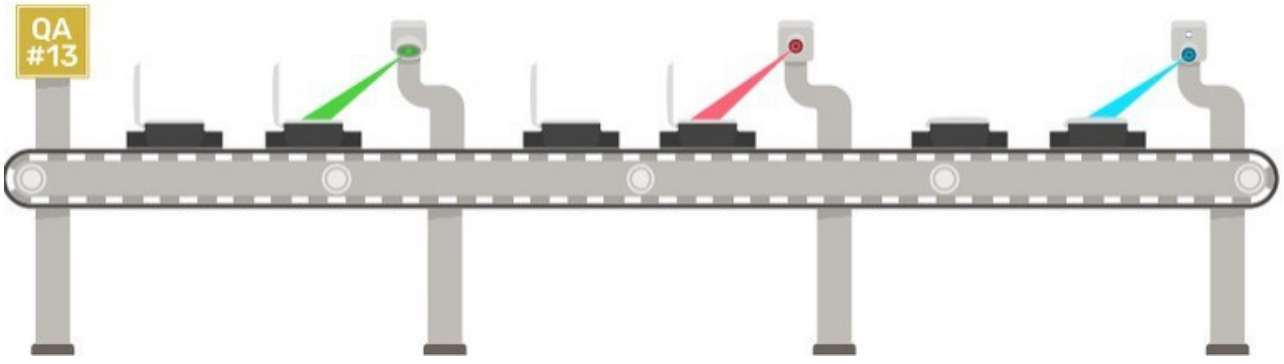
Beyond the Industry Standard

Through years of refinement, we've created the most rigorous Quality Assurance system the metering industry has ever seen. The QA process behind every NM4 is modeled more after a surgical device or aerospace component than a utility meter. While most companies aim to meet the bare minimum, we exceed it at every stage.

Inside the QA Process

We gather gigabytes of data on every NM4 produced—serial numbers, flow testing, timestamps, visual records, firmware versions, calibration stats, and more. This data fuels our commitment to a near-zero failure rate and gives us unmatched insight into the performance of each individual unit.

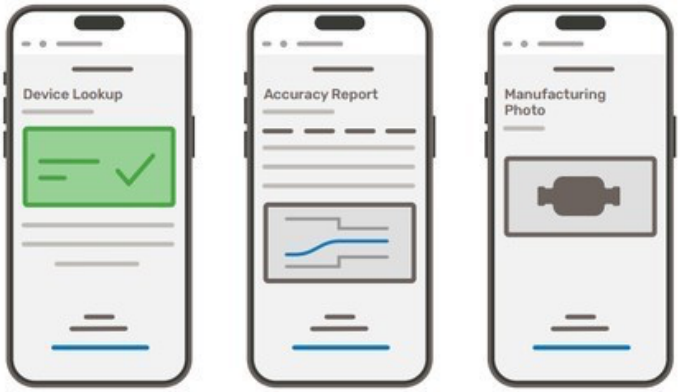
- 13 Dedicated QA Stations:
  The NM4 is subjected to 13 different QA checks. At each station, hundreds of parameters are verified. If anything is off, even by a fraction, the unit is flagged and held until fixed or scrapped entirely.
- Total Traceability:
  Every part of the meter carries a specific serial number. This allows us to trace each NM4 back to when it was assembled, where each part came from, and even what batch of raw material was used.
- Laser-Printed Accuracy:
  Once the NM4 passes final flow testing, we laser-print the accuracy results inside the meter cover. While competitors only ensure their meters are "within range," we share exactly how your specific unit performed.
- Photographic Evidence:
  Dozens of photos are taken during assembly to document visual quality and verify correct build at key milestones. Customers can view their product's photo in the Warranty Lookup section of our app by scanning the NM4.



Customer-Facing Transparency

Through the "Warranty Lookup" section of our app, customers can:

- Customers can Scan the barcode to see the actual factory photo of their NM4
- View flow testing and accuracy results of their particular meter See
- warranty status & expiration



Tests We Perform

Here's a sample of what happens during the manufacturing process:

- Flatness & fit validation of meter body
- Microscopic reflector tube check
- Flow tube spacing verification
- LCD display check & photo validation
- X-ray inspection of soldering
- Circuit board testing & programming
- Wire connection continuity check Low-power current testing
- Pressure testing for leak prevention
- Calibration testing at low, mid, & high flow rates

Quality Assurance Goal: Zero Failures

The Next Meters Expectation

While hitting 0% failure is a stretch in any industry, it's our expectation. Others build in acceptable failure rates. We don't. We test, retest, and push every NM4 unit to the edge so chances are you'll never need the warranty. That said, every NM4 is backed by a 20-year warranty.

20 YEAR FULL WARRANTY

Backwards Compatible.
Forward Thinking.

We don't build products that force you to upgrade. Every NEXT product is fully backwards compatible with existing systems. We believe products should last and integrate, not expire.

The New Standard in Metering

The NM4 is the result of years of iteration and dedication to make the best ultrasonic water meter on the market. It's what happens when you never stop improving.

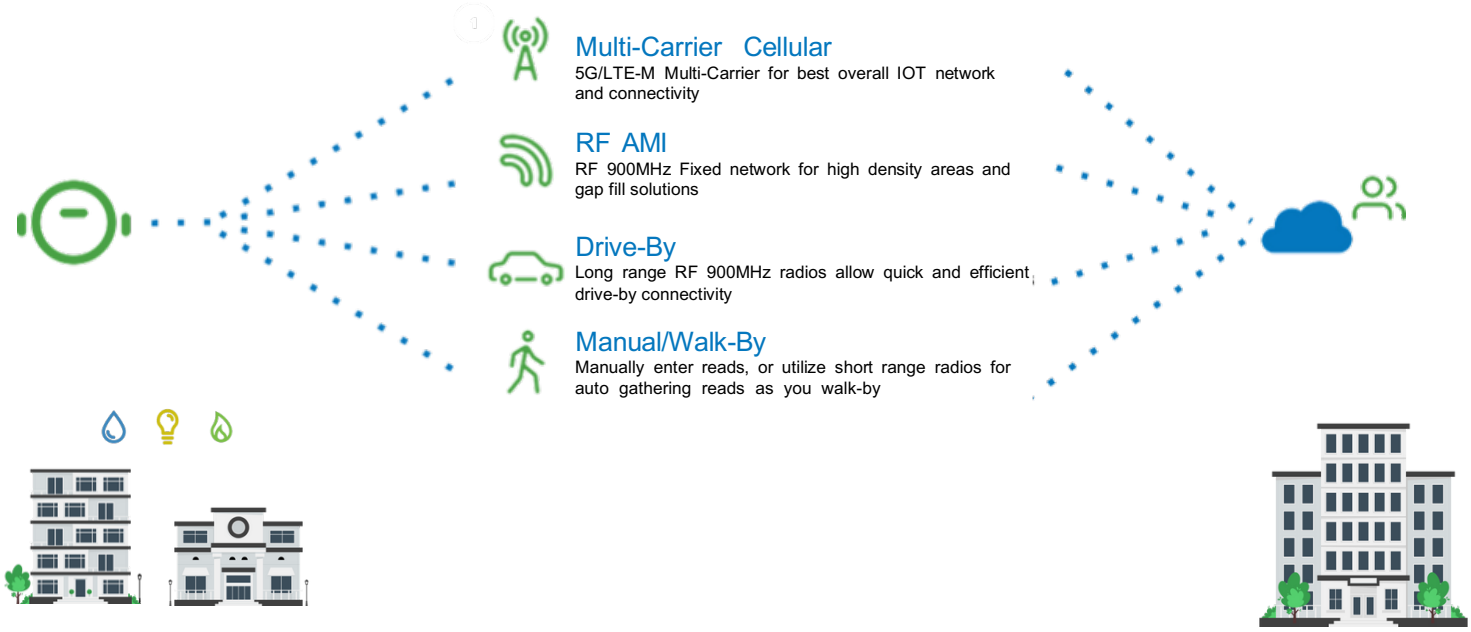
The NM4 isn't just a product. It's a commitment. And we can't wait to show you why.

Built for Scale. Made for America.

NEXT leverages a combination of global manufacturing capabilities and Build America, Buy America (BABA) compliant production to deliver high-quality utility metering solutions. With our dedicated U.S. production facility in Atlanta and all products designed and tested here in the United States, we ensure the highest standards of performance and reliability. This balanced approach allows us to scale quickly to meet demand, reduce lead times, and ensure our solutions align with local and federal requirements. By combining global efficiency with local compliance and innovation, we help our customers get the right products when they need them — without compromise.

Next-Connect — The Industry's Most Resilient Communication Stack

Historically, AMI systems have forced utilities to choose a single network — RF, LoRa, or cellular — each with limitations and coverage gaps. NEXT eliminates that risk with a fully integrated, multi-layer communication stack built into every device. Each endpoint connects first through multi-carrier LTE-M cellular, then seamlessly switches to 900 MHz RF for AMI or AMR networks when needed. This design answers every "what-if" scenario for connectivity — no matter the topography, density, or location. With NEXT, connectivity is no longer a problem — it's solved.



1 Multi-Carrier Cellular

NEXT Meters use built-in multi-carrier LTE-M technology that automatically connects to major cellular networks like Verizon, AT&T, or T-Mobile—whichever has the strongest signal—ensuring every meter stays online, anywhere, without extra infrastructure or repeaters.

2 900 Band RF AMI

NEXT Meters also support long-range 900 MHz RF AMI networks, using solar-powered gateways to collect meter data in real time—ideal for covering wide service areas or remote zones without relying on grid power or costly wired infrastructure.

3 900 Band RF AMR

NEXT Meters use secure 900 MHz RF for walk-by and drive-by AMR, providing reliable wireless meter reading over long distances—perfect for quick, efficient route reads without needing line-of-sight or expensive handheld upgrades.

4 Manual read via mobile app

For meters not yet upgraded to AMI, NEXT provides a simple manual read option—utility staff can securely collect accurate reads on-site using the NEXT Mobile App, ensuring smooth operations during phased rollouts or mixed-system deployments.

Power of Choice

Whether you need cellular with RF-AMI backup, RF-AMI with cellular gap-fill, or want to start with cost-effective AMR Drive-By and upgrade to full AMI later—NEXT Meters deliver the flexibility to match any utility's strategy, budget, and timeline. Roll out at your pace, control your costs, and future-proof your system with confidence.

2 PRODUCT OVERVIEW

NEXT offers a flexible, future-ready portfolio of utility metering solutions for water, gas, and electric applications. The portfolio combines proven meter technologies with advanced, interoperable smart registers and a robust multi-layer communication stack to support AMI and AMR deployments at any scale.

Core Water Product Families

Ultrasonic (NM4)

NEXT's ultrasonic meters are designed for high-accuracy measurement with no moving parts. They deliver precise, real-time consumption data, exceptional durability, and long service life — making them ideal for utilities transitioning to advanced metering infrastructure (AMI) with minimal maintenance requirements. Available through in 3/4'' and 1'' configurations.

Positive Displacement (PD) Meters

NEXT's PD meter line includes residential, commercial, and industrial water meters with oscillating piston measuring chambers, available in lead-free bronze or polymer main cases. These meters meet or exceed AWWA C700 standards and are NSF/ANSI certified for potable water. They deliver reliable measurement across wide flow ranges and are approved for horizontal or vertical installation.

Next Register (NR4)

The NR4 is a universal, fully programmable smart register designed to retrofit onto most existing mechanical water meters in the field — including popular brands like Badger, Neptune, Sensus, and Master Meter. By reading the magnetic signature of the meter's measuring chamber, the NR4 converts conventional meters into smart meters without needing full meter replacements.

NEXTConnect

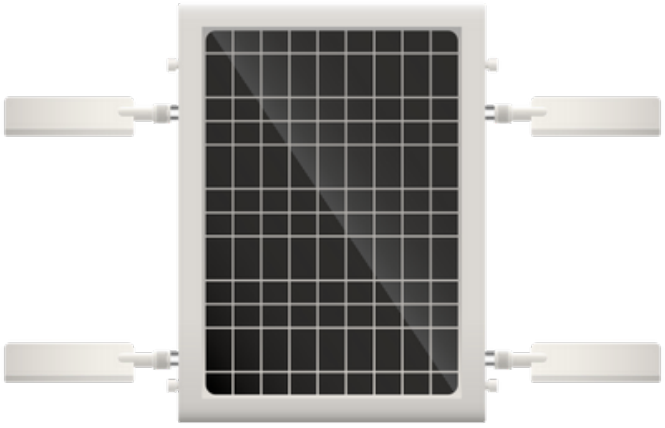
For completely new meter deployment or to re-automate existing investments by embracing a meter-neutral, open architecture. Connect to any register with encoded or pulse output and enjoy the benefits of true next-generation AMI, regardless of existing meter brand, footprint, or age.

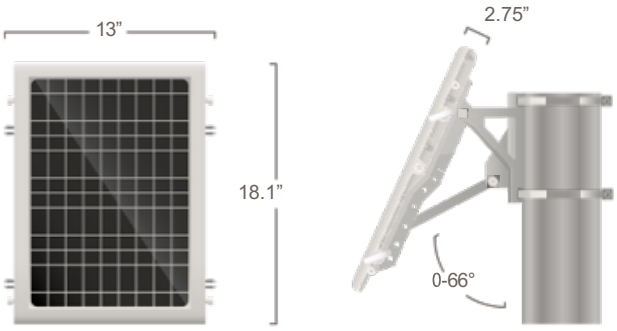
Smart Valve

Meter-neutral for retrofits or new installs that even use multiple meter brands within the same system. Extended antenna to accommodate pit and non-pit settings for optimum connectivity.
Benefit from meter-neutral remote shutoff.

NextLink

Solar-Powered Connectivity





The NextLink (NL4) is the ultimate all-in-one solar-powered Gateway and Repeater. Featuring the fastest charging and longest-lasting battery in its class, the NextLink ensures seamless connectivity with the simplest deployment.

Flexible Deployment

Recognizing the critical need for reliable connections, especially in areas with limited power and network access, we have designed the NextLink to integrate effortlessly into diverse environments.

The NextLink’s all-in-one design combines an efficient solar panel, a high-capacity battery, and powerful radios, enabling installation in virtually any location—regardless of wired power or network infrastructure availability.

Extending Communication

NextLinks work seamlessly together to extend your wireless meter network even into areas outside of cellular coverage.

Powerful external antennas ensure reliable communication for meter points spread over long distances as well as in high-density submetering applications.

Sustainable Longevity

Built with a robust cast-aluminum housing and fully waterproof design, the NextLink is engineered to withstand even the harshest conditions. Through rain or shine, the NextLink delivers connectivity using renewable solar power, making it both a practical and eco-friendly fixed-wireless solution.

Key Benefits

- Built-in 5G LTE cellular
- Operates as a Gateway and Repeater to expand coverage
- Fully recharges with only 6 hours of full sunlight
- Efficient power management provides up to 7 days of operation without sunlight
- 2-way meter communication
- High-gain external antennas for extended range
- Battery will continue to charge in freezing temperatures
- IP-68 rated for outdoor use
- All-in-one unit eliminates the headache and problems associated with piecemeal kits
- 5-year standard warranty

Programming and Additional Information

Programming & Verification

Programming is the process of associating the NextLink’s serial number with the property where it is installed. This ensures it can communicate with the NextCity Cloud.

To quickly program a large number of devices at once, you can use the CSV file uploader tool on the NextCity web portal. The web portal also offers a rapid programming interface to program additional devices later on.

The NextCity mobile app is ideal for on-site programming and verification.

App Store iOS App

Google Play Android App

You can check the NextLink’s current battery status by viewing the LED on the device. When a magnet is held by the device’s battery indicator LED (located just below the antenna on the upper right-hand side of the device), it will light up to indicate the device’s current battery.

- FULL BATTERY
- LOW BATTERY
- VERY LOW (Radios are turned off)

Current battery levels can also be checked in the NCSS mobile app or on the NextCentury web platform.

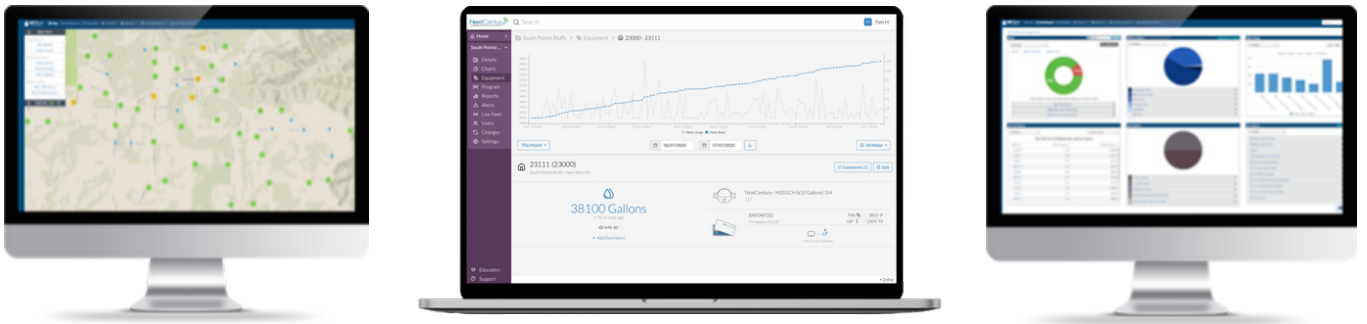
Software Portfolio

NextCity™ HES

NextCity™ is a versatile, cloud-based Meter Data Management System (MDMS) that powers your entire AMI network. It goes beyond storage — providing clear, actionable insights through intuitive widget-based dashboards, GPS mapping, configurable device health alerts, and flow alarms.

Fully integrated with all NEXT mobile apps, NextCity™ lets utilities manage, configure, and control every device in the field — from leak detection to network tools — anytime, anywhere. Updates, network management, and remote configuration are all at your fingertips, reducing truck rolls and maximizing efficiency.

Built on open architecture, NextCity™ connects seamlessly with billing, GIS, SCADA, and customer portals, ensuring you stay flexible as your system grows. From a few hundred meters to citywide deployments, NextCity™ keeps your data working for you — smarter, faster, and always connected.



NCSS Field Installation

The NextCity™ Field Mobile Application is a wireless workforce provisioning tool that supports the deployment, configuration, and management of all NEXT AMI hardware. No proprietary handheld device is required — the app works seamlessly on standard Apple and Android smart devices and is included as part of the NextCity™ software suite.

NCSS Manual Read

The NEXT Manual Meter Read Application gives utility field technicians an easy, modern way to collect reads from meters that have not yet automated or require manual verification. Technicians can receive assigned routes directly on their Apple or Android devices, collect reads in the field, capture photos for visual validation, and add notes for each service address. All collected data is automatically synced back to the NEXT Head-End System (HES) in real time, ensuring accurate records and seamless integration with the utility's billing and operational systems.

Smarter AMI.
Smarter Homes.

Overview

The NEXT Customer Portal is a secure, web-based platform that gives homeowners direct access to their water usage data—empowering them to take control, set alerts, and conserve water more effectively.

When a utility enables the Customer Portal, every household can easily view detailed meter reads, monitor daily and hourly trends, and spot unusual spikes that may signal leaks or waste. Homeowners can set up custom alerts for high usage, backflow, or freezing conditions—helping them catch issues early and avoid costly surprises.

Accessible anytime on a smartphone, tablet, or computer, the NEXT Customer Portal puts the power of water conservation directly in the hands of homeowners

2024
By the Numbers
Together, we're creating a better world.

31,158,511,608
Gallons of Water Saved

4,038
Properties Saved from Abandoned 3rd Party Hardware

19,238
Leaks Detected

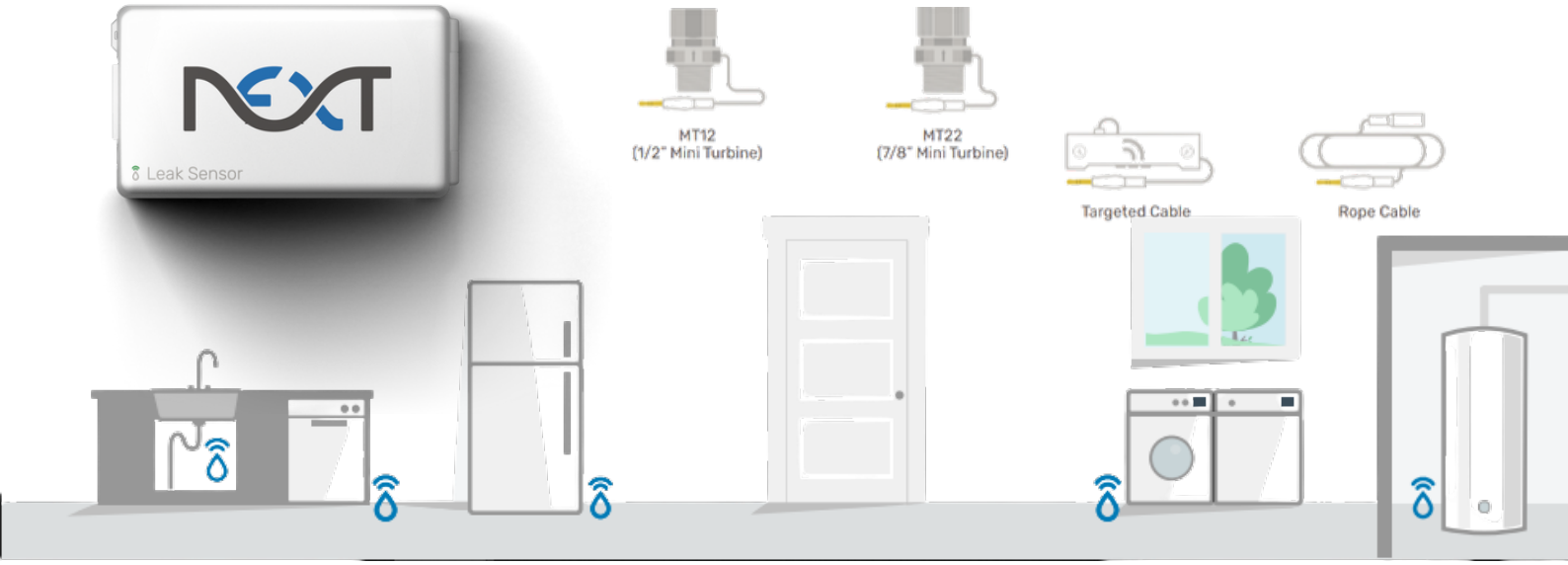
27,119
Freezing Meters Detected and Reported

Seamless In-Home Leak Monitoring

The NEXT Leak Monitoring Solution extends advanced water leak detection directly into each home, providing a simple and reliable way for utilities to help residents protect their property and conserve water.

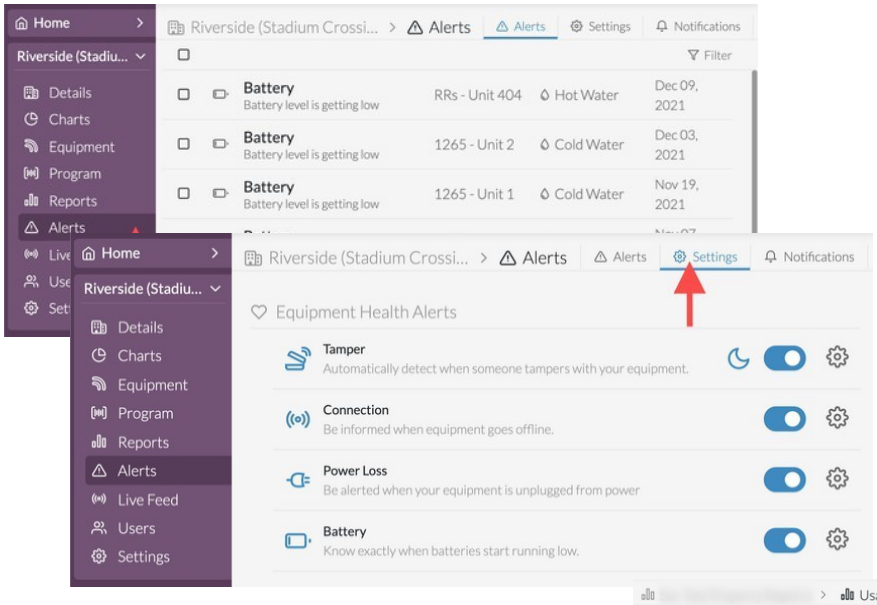
Homeowners receive real-time alerts via phone call, text, or email whenever a potential leak is detected—enabling immediate action to prevent water loss or damage. In-home devices also provide an audible chirp to ensure no alert goes unnoticed.

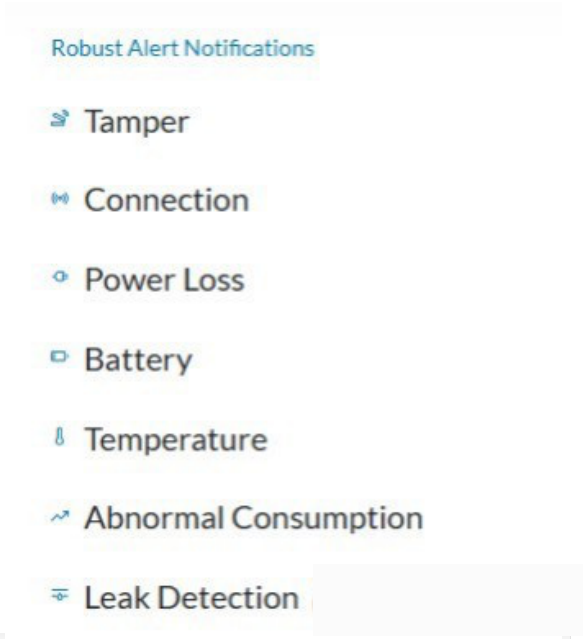
Fully integrated with the NEXT Customer Portal, this solution gives residents complete visibility and control over leak alerts and usage trends, putting water conservation and property protection at their fingertips—without the need for costly third-party sensors or separate systems.



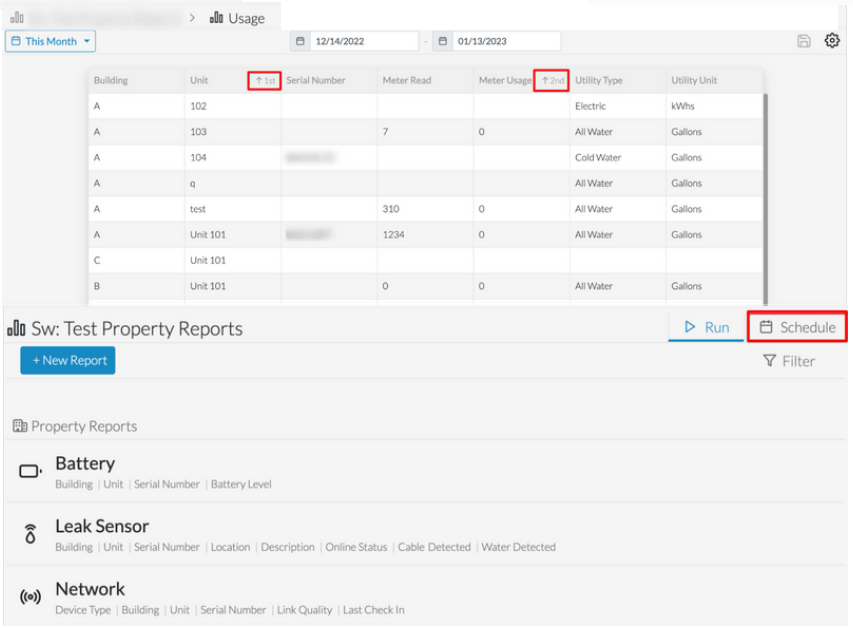
Alerts and Reports

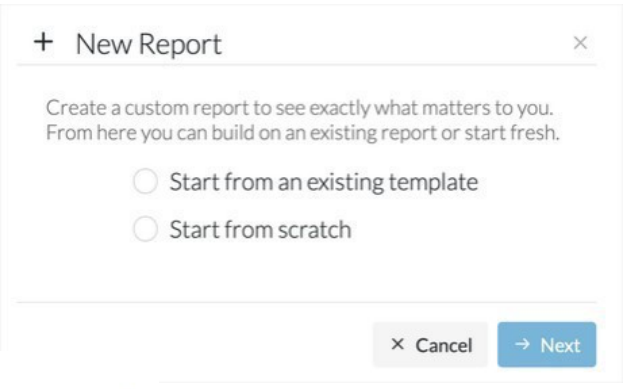
The NextCity™ platform provides a comprehensive suite of configurable alerts and alarms as part of its standard offering. Utilities can set custom parameters for each alert — including recipients, timing, and communication methods (such as email or text). The system also enables utilities to track whether notifications have been successfully delivered to consumers, supporting proactive customer engagement and faster issue resolution.





The available standard reports include: Alarm Report, All Valves with Failed ACKS, AMR Updates, Battery Levels, Consumption Report, Daily Readings Report, Device Changes, Device Commands, Device Group Report, Devices with Lost Communication, Firmware Version, Inactive Flow, Meter Alarm Report, Meters by Size, QA Report, Radio Communication Failure, Skipped Install Report, Valves Turned in the last 24 Hours, Valves with Failed ACKS, Valves with Queued Commands, and Wake Up Interval Report. The system dashboard view is configurable, allowing users to change the thresholds for each widget to create their desired view of the full system health at a glance.





Custom Reports:
NextCity™ makes advanced reporting simple and flexible. Utilities can easily create custom reports tailored to their specific operational or regulatory needs and schedule them for automatic delivery to the right team members or stakeholders. Reports can be generated on a recurring basis — daily, weekly, or monthly — and securely delivered by email or direct system integration, ensuring that decision-makers always have up-to-date insights without manual effort.

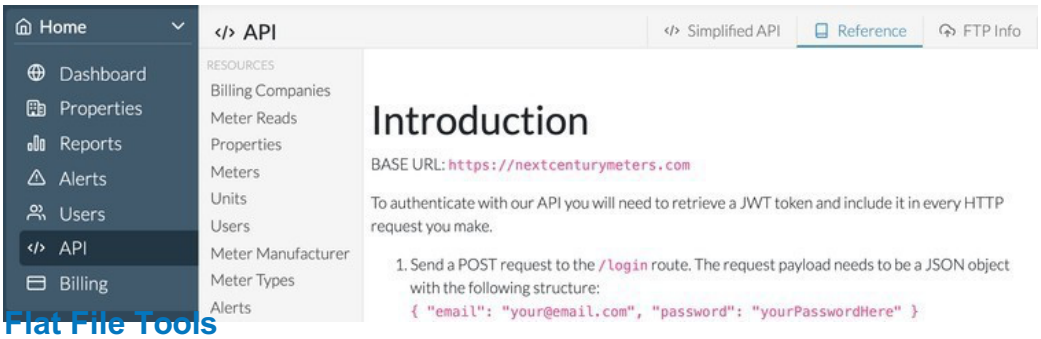
SYSTEM INTEGRATIONS

System among Systems

A critical, yet often underemphasized, aspect of AMI implementation is the integration with other key systems, such as CIS, payment vendors, and GIS. NEXT's approach prioritizes identifying all essential integration points and thoroughly assessing their impact on connected systems. Through structured discussions, the project team will collaboratively develop a comprehensive integration plan, addressing each phase—Build, Test, Initial Deployment, and Mass Deployment—while focusing on core characteristics, including objectives, capabilities, values, and technology requirements.

To further streamline the process, NextCity™ includes an embedded custom file mapping tool, which accelerates integration timelines and allows for quick adjustments as needed, ensuring a seamless, efficient integration experience.

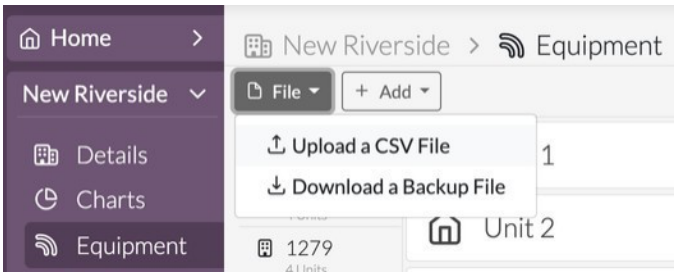
Imbedded API Tools



NEXT offers over 150 pre-built API integration pathways, ready for seamless implementation. Our library of APIs is continually expanding, ensuring transparent data access and comprehensive integration with third-party applications.

Flat File Tools

Many water utilities prefer flat file integrations, especially for their Customer Information Systems (CIS). This approach involves exchanging a text-based file between NextCity™ and the CIS vendor. The two common types of flat file exchanges are: (1) a Comma Separated Values (CSV) file, which is typically preferred, and (2) a fixed-length field file.



CIS Integrations

There are four common integrations that enable the NextCity™ headend and the CIS to function properly. These integrations are:

- **Premise Upload**. One-time integration that extracts the customer and premise information from the utility's CIS and imports it into NextCity™,
- **Meter Change Out:** Meter change out (i.e. installation) information from NextCity™ that is sent to CIS,
- **Billing Response:** Recurring data file NextCity™ sends to the CIS and contains the meter read for the specified time at the specified accounts,
- **Data Synchronization:** Sent from CIS and contains changes in customer/account information.

Advanced Integrations While flat files are the standard, NEXT can support advanced file formats (e.g., XML, JSON) or custom integrations. However, advanced integrations beyond flat files require a discovery call and a defined scope of work to accommodate additional development efforts, ensuring compatibility and functionality.

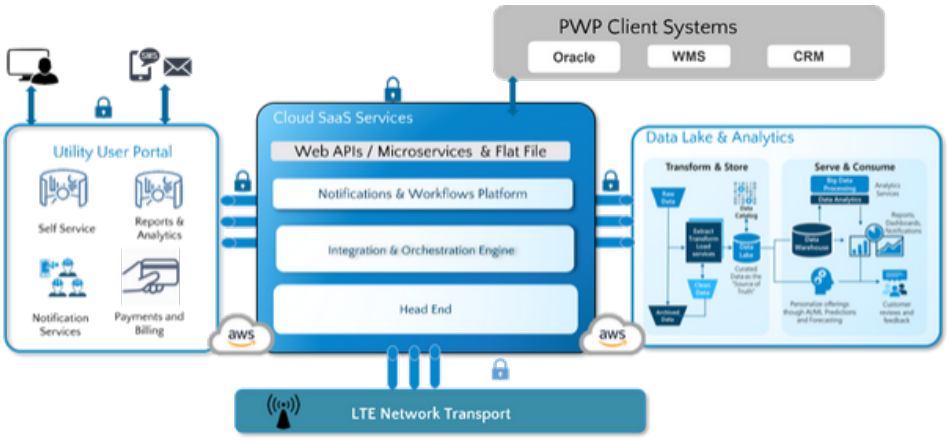
Robust | Secure | Scalable

NEXT partners with AWS to deliver a reliable, secure, and scalable solution that empowers utilities to maximize their operational efficiency. By leveraging AWS's advanced infrastructure, the NEXT Platform ensures that your data is securely managed with industry-leading encryption and compliance standards. AWS's robust architecture allows NEXT to provide highly resilient connectivity and seamless scalability, handling everything from AMI endpoints to data management and software integration.

Amazon Web Services (AWS) provides robust security measures for hosting, including ISO/IEC 27018 certification and Tier IV SSAE 16-certified data centers. With over 15 security certifications in the U.S. and 14 global certifications, AWS upholds stringent standards across multiple countries. All data hosted on AWS is backed up and stored securely, with failover and disaster recovery protocols ensuring resilience against both natural and man-made threats. AWS data centers are located in the United States and designed for redundancy, with published disaster recovery testing results to ensure transparency and reliability.

Telecom carriers, including AT&T, Verizon, and T- Mobile, ensure robust data transmission security through AES 256 encryption and substantial investments in advanced cybersecurity measures.
These carriers, recognized for their leadership in IoT security, provide secure connectivity from IoT endpoints to enterprise systems, keeping customer data isolated from the open internet. LTE CAT-M
networks, dedicated to IoT applications, offer secure and private connectivity options like VPN and private network configurations, reducing security risks by limiting exposure to potential threats. Each carrier follows stringent security protocols, with practices that are proprietary and certified to meet industry standards such as ISO 27001. This commitment to security ensures that all data transmissions are fully secured from endpoint devices to cellular networks, providing reliable, isolated, and safe data handling across the IoT ecosystem.

The NextCity™ platform is built for scalability and security, utilizing AWS's big data applications, databases, and monitoring tools, like DynamoDB and EC2, to enable automatic scaling and advanced security. AWS Auto Scaling services ensure optimal performance and availability, while real-time system monitoring via the AWS dashboard provides full visibility into performance and uptime.



Data security is integral at every stage, with SSL-encrypted sessions, role-based authentication, public/private key-pair access, and optional features like two-factor authentication and customizable password reset intervals for enhanced protection. Comprehensive access logs and an auditing tool allow utilities to monitor all user activity for thorough oversight. This design ensures that as the utility's needs grow, the NextCity™ platform scales seamlessly, maintaining robust security and performance standards
across all levels.

3 PROJECT DEPLOYMENT

Project Deployment Overview

Next Meters will deliver a phased and structured deployment designed to provide the Town of Jerome with a reliable, future-ready AMI system. The backbone of the solution will be a robust RF network built on strategically placed gateways to ensure system-wide coverage and performance. To further enhance resiliency, the network design incorporates cellular backhaul as a backup, ensuring continuous data transmission even in the unlikely event of primary network disruption.

Following Notice of Award, NEXT will lead the deployment of the network infrastructure, including propagation studies, delivery, installation, and commissioning of RF gateways. System integration and CIS validation will run in parallel, ensuring the new AMI platform seamlessly connects with the Town's existing Caselle CIS. Once gateways are active and validated, the Town may begin deploying endpoints at its preferred pace. NEXT will fully support this process with training, data management, and system project oversight.

This approach offers the Town several key benefits:

- Guaranteed Performance: NEXT guarantees a minimum 98.5% connectivity rate for all deployed endpoints within a four-day billing window.
- Reliability and Redundancy: RF gateways provide stable coverage, while cellular backhaul ensures uninterrupted data flow.
- Flexibility: The Town controls the pace of endpoint deployment, supported by NEXT's training and system expertise.
- Seamless Integration: Parallel CIS testing and validation guarantee that billing, reporting, and operational workflows are fully aligned before large-scale deployment.
- Future-Ready Architecture: A scalable network design capable of supporting advanced applications such as pressure monitoring, temperature sensing, and proactive leak detection.
- Knowledge Transfer: Town staff gain hands-on training during the initial rollout and ongoing support, ensuring long-term ownership and operational independence.

Through this deployment model, NEXT provides Jerome with a proven, resilient AMI foundation that balances town-led flexibility with vendor-backed expertise, redundancy safeguards, and a performance guarantee that exceeds industry standards.

Next Installation & Deployment Approach

Next Meters will provide project management focused on data integration, system configuration, and overall deployment support rather than on-site day-to-day supervision. Our team will coordinate closely with the Town to ensure the AMI system is properly configured, tested, and aligned with the Town's CIS and MDM requirements. We will deliver clear communication, documentation, and reporting to support the Town's internal deployment schedule and long-term system success.

As part of our scope, Next Meters will install the network infrastructure—including gateways, base stations, and antennae—to ensure reliable system coverage and performance. This includes propagation studies, site verification, physical installation, configuration, and commissioning. Once installed, we will validate system functionality and provide the Town with all necessary documentation and training.

Meter installation will be managed at the Town's chosen pace. Next Meters is working with a qualified third-party installer to provide the Town with a full Turn-key solution.

IUS & NEXT Key Personnel

Stan Pachorek, Regional Sales Director
With 40 years of dedicated experience in the utility services industry, Stan has built a distinguished career working with industry leaders, including Elster, Honeywell, Krause, and Mueller. His expertise spans advanced metering infrastructure (AMI), metering technologies, and utility solutions, with a strong focus on serving the unique needs of the Southeastern United States. Throughout his career, Stan has cultivated deep relationships with utilities, municipal leaders, and industry partners, earning a reputation for delivering innovative, reliable, and cost-effective solutions. His commitment to customer success and industry knowledge has positioned him as a trusted advisor in the utility sector.

Arek Ryzak, Regional Sales Director
With more than ten years dedicated to metering and Advanced Metering Infrastructure (AMI), Arek brings deep expertise in both water and electrical systems. His career has been built on advancing metering technologies while fostering strong client relationships and delivering solutions that provide lasting value. Arek thrives on working closely with customers to understand their needs, overcome challenges, and ensure long-term success. A graduate of Purdue University, he now resides in Colorado and enjoys contributing to the growth and innovation of the communities he serves.

Julie Harper, NEXT Training Specialist
Formerly a utility billing manager herself, Julie arrives with insider knowledge of what utility billing teams deal with on a day-to-day basis and 24 years of management and training experience. Julie's attention to detail and personal experience help deliver a training experience for the utility team that connects NEXT's functionality to real life scenarios.

Drew Fosler, Integration Specialist/NEXT Customer Service
Drew possesses a unique value as he has both field experience and software integration expertise specifically for the NEXT solution. Whether Drew is onsite or remote, he has a talent for communicating education and solutions in a way that connects with everyone from the field team to the IT team to the billing team. Drew's good-natured, conscientious approach puts everyone at ease and elevates the customer experience. He has been in this role for over 5 years.

Jason Barretto, NEXT Customer Experience Manager
Jason has provided product engineering, customer service, and tech support to the tech industry for over 9 years. With a deep knowledge and talent for solutions, he has worked with a vast range of advancing and innovative tech allowing him to troubleshoot and solve any and all obstacles with the utmost knowledge and care. Arriving to NEXT and specializing in AMI technology and utility operations since 2018, Jason personally built the customer service division, ensuring the NEXT team intricately understands the AMI solution, utility objectives and solution delivery. Jason has delivered analytic, measurable success rates on customer inquiries with his division, maintaining an average of 30-60 seconds for an initial response on the chat window, and a full 5-star customer rating for the division.

DCC Installation Partner's Resume

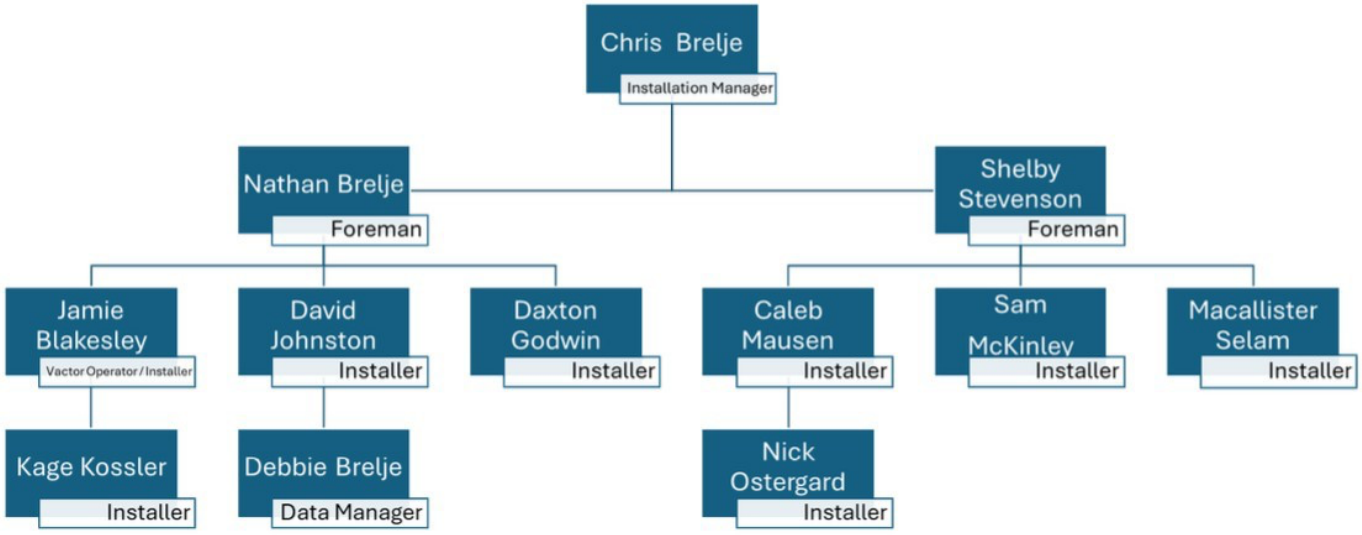
Chris Brelje is the owner of Diversified Construction and Consulting LLC. Chris will be the responsible installation manager for Breckenridge Colorado's meter installation project. He has 31 years of experience in the water municipality industry.

Chris Brelje's experience is as follows:
City of Gresham – Field Foreman (1988- 2006)
Starting as an entry level staff member, I quickly worked my way to a Field Foreman running installation and repair crews that installed residential water meters up to and including 24"commercial mag meters. I did hot taps, fire hydrant installs / rebuilds, repaired main breaks, completed vault installs and solved any other problems that a large water district would typically encounter.

City of Bend - Water Operations Supervisor (2006–2014)
I held a State of Oregon Distribution level 4 and was the city's DRC (Direct Responsible Charge). I worked with the public, delivering safe drinking water with my staff that included over60 people in the Meter and Backflow Specialist Department, Customer Service Department, R&M Field Crews, Field Inspectors, Water Billing and the Water Treatment Plant. I developed SOP's (Standard Operating Procedures) for all new staff on how to address the public. I also trained existing staff in customer service expectations as well as how to deal with hostile people and conflict resolution.

Diversified Construction and Consulting LLC – Owner (2020 – present)
We currently install water meter systems 90% of the year in Oregon, Washington, and Utah. Our operations are based out of Sunriver, OR. Staff varies in size, but we usually have 8 full-time employees and up to 9 part-time employees. Many of the part time employees live in other states and have seasonal jobs with extremely flexible work schedules.

Recent cities that we have installed AMR/AMI meters systems for are
Coos Bay, OR - 6,100 meters with mixed service line materials.
Toppenish, WA - 2,300 meters with galvanized service materials.
Cedar Hills, UT - 2,400 "Culinary" (Potable) meters with mixed service line materials and an additional 2,200 cut in "PI" (Pressure Irrigation meters). Most of those PI meters required hydro excavation ranging from 3' to 9' deep.
Our business is built on equal opportunities for all staff. We currently have 4 women on staff and 2 Native Americans. That represents 50% of our staff that has worked as installers of water meters and services for the last 4 years.



Proposed Project Timeline and Key Dates

Proposed Deployment Timeline

- December 1st, 2025 – Proposal Due
- December 2025 – Evaluation, Interviews, and Selection
- January 14, 2025 – Anticipated Notice of Award

Gateway & Infrastructure Deployment (Next Meters)

- February 15th, 2026 – Notice to Proceed (Day 0)
- By April 15th, 2026 (+60 days): Delivery of gateways, base stations, and antennae to Jerome.
- April- May 2026: On-site installation and commissioning of all gateways and supporting infrastructure, including propagation study verification.
- Late May 2026: Infrastructure validation and turnover to the Town.

CIS Integration, Testing& Validation (in parallel with gateway deployment)

- February 2026 – May 2026: Next Meters will work with Town IT to configure and validate data integration with the current Caselle CIS.
- Integration tasks will proceed in parallel with gateway installation to compress the overall schedule. Activities include:
  - Establishing secure data paths from gateways to the hosted AMI platform.
  - Conducting end-to-end validation of meter data, billing extracts, and reconciliation processes.
- This parallel track ensures that by the time gateways are commissioned, the system is already tested and aligned with CIS workflows.

Training & Knowledge Transfer

- May 2026: Initial training sessions for Town staff on installation, programming, troubleshooting, and CIS/MDM workflows.
- May – July 2026: Ongoing field-based and classroom training during the first three months of meter deployment to reinforce knowledge and address real-world scenarios.
- Deliverables include course materials, job aids, and documentation for long-term reference.

Meter Deployment (DCC)

- May 2026: With gateways live and CIS validated, the town's meter deployment beings
- Ongoing: Next Meters will provide system project management, training, and communication verification support, and will coordinate with a qualified third-party installer if requested.

4 TRAINING AND SUPPORT

NEXT University - New Customer Training Program

We are thrilled to support your onboarding with a comprehensive training proposal designed to ensure each team member can efficiently utilize our platform. This proposal outlines a structured training program to guide administrators, users, and field installers, maximizing their productivity and familiarity with NEXT's user-friendly tools. Our goal is to equip your team with the skills and knowledge to leverage the full capabilities of our platform from day one.

Sample of Training Sessions Overview:

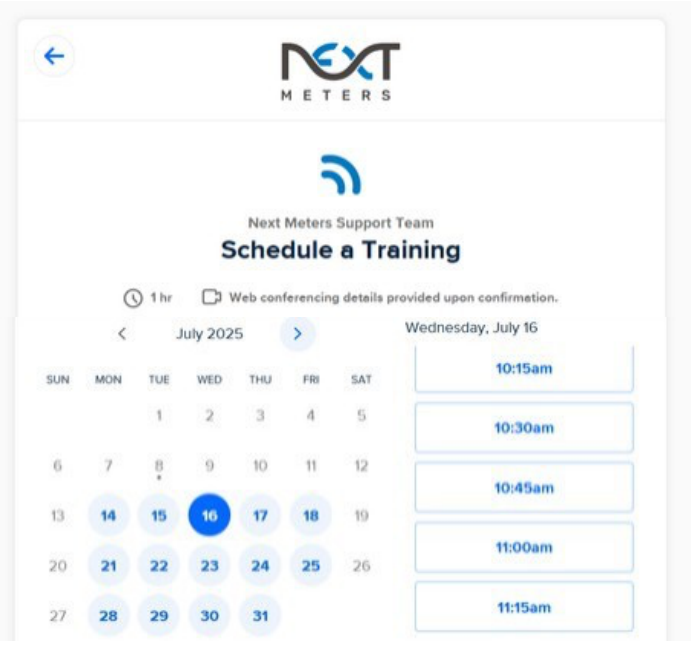
- Management/Admin Training (30 Min)
- User Training 1 - User Setup/Platform Basics (60 Min)
- User Training 2 – Advanced Controls and Features (60 Min)
- Billing Process Training
- Customer Portal Setup and Service
- Hardware Install/Field Training

"In 20+ years of AMI, as a vendor, user and salesman this was the best AMI system training I have ever been a part of"

Gregg Smith - PSI

Continuous Training for Continuous Confidence

To keep your team sharp and up to date long after the initial rollout, we also provide flexible refresher trainings tailored to every user role — whether it's a deep dive for network administrators, practical sessions for customer service staff, or hands-on guidance for field technicians. These retraining sessions help reinforce best practices, introduce new features as they're released, and ensure that every team member can confidently operate, configure, and troubleshoot the system as your needs evolve. Sessions can be easily scheduled anytime through our website, giving your utility the peace of mind that expert support and continuous improvement are always just a click away.



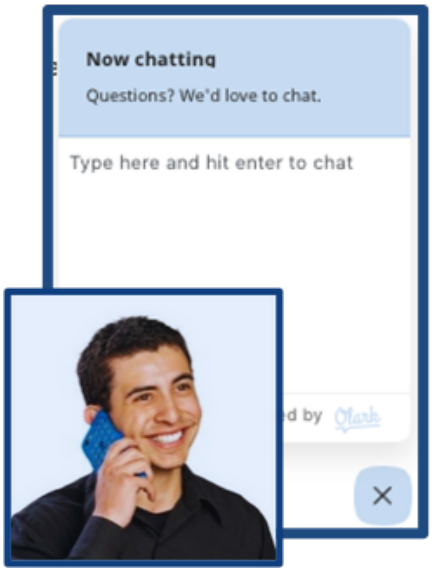
IUS

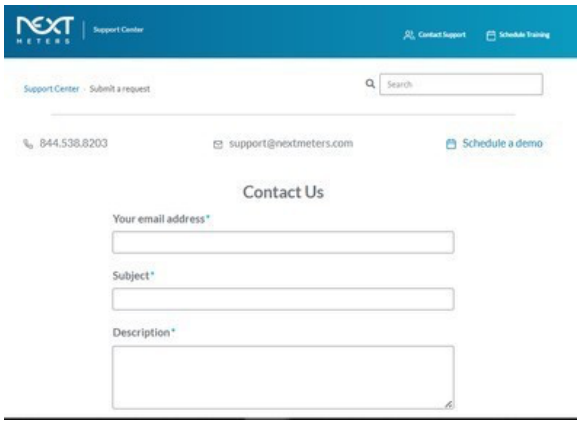
On-going Support

Committed to Long Term Success

NEXT is committed to partnering with utilities for the entire lifespan of the system. This support encompasses every aspect of the NEXT Platform, including AMI endpoints, connectivity, onboarding, installation, integration, software, and ongoing assistance. Our dedicated experts are available on demand, ensuring the success of each utility.

NEXT takes an account manager approach to every customer relationship, assigning a dedicated account manager who serves as the single point of contact after installation is complete. This account manager's mission is to ensure each customer stays fully trained, properly installed, and continuously supported — and that our solutions consistently meet or exceed expectations. Backed by direct access to our technical, integration, and training teams, your account manager will coordinate any additional support you need, acting as a trusted partner committed to your utility's long-term success.



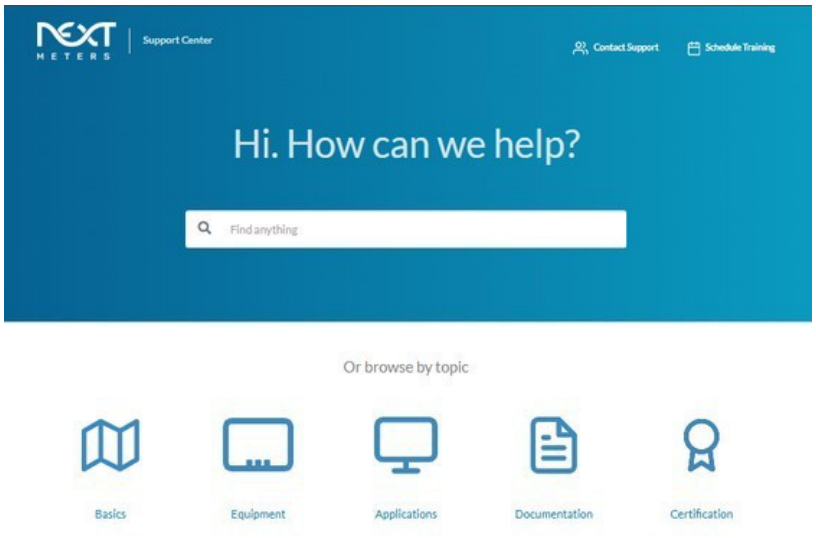


Immediate Support

We provide live phone, chat, and email support from 5 a.m. to 4 p.m. PST on weekdays. Our support team delivers prompt, real-time assistance at no additional cost for the entire lifespan of your system. Average response time for live chat is just 30–60 seconds, with a consistent 5-star satisfaction rating. Extended email support is available 24/7, with guaranteed responses within 48 business hours. For critical system emergencies, our 24/7 support line ensures issues are resolved quickly and efficiently.

Support Center

In addition, NEXT includes an online Knowledge Center with FAQs, instructional videos, and step-by-step tutorials, providing easy access to information whenever you need it. Our Support Center also offers a comprehensive library of product documentation, how-to guides, installation manuals, videos, and white papers — ensuring your team always has the resources to work smarter and solve problems fast.



5 FINANCIAL HEALTH

Statement of Financial Health

Next Meters Global LLC

Next Meters Global LLC, operating as Next Meters and Next Century Submetering Systems, is a financially stable and well-capitalized organization with a strong track record in delivering metering technology solutions to commercial, residential, and municipal clients across North America and Canada. Our mission is to promote the conservation of utilities for the betterment of our communities. We stand out as we design both the hardware and the software for our products which provides a fully integrated product and a seamless customer experience. We have an amazing support team that provides top shelf service. We'll help get our system implemented as well as keep it running day in day out. We have been operating for over 10 years. We have over 3.5 million devices deployed. Metering is about accountability and we hold ourselves accountable for our products as well as our customers' experience with those products.

Our financial health is demonstrated by the following key indicators:

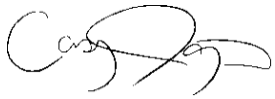
1. Strong Capital Base
   The company maintains a healthy balance sheet, supported by equity investments and consistent reinvestment in operations and product innovation. Our financial structure ensures long-term viability and scalability for large infrastructure projects such as municipal metering initiatives.
2. Consistent Revenue Growth
   Over the past several years, Next Meters Global has achieved year-over-year revenue growth driven by increasing adoption of our wireless metering technologies and expanding customer base. We invest in our products, staying on the leading edge of technology. We take on the difficult things so that the customer can enjoy a product that works and is simple to use.
3. Positive Cash Flow & Liquidity
   The company maintains positive operational cash flow that is reinvested into the company to support further R&D efforts, investment in fixed assets and inventory as well as providing a return on investment to owners. We have the financial flexibility to manage large-scale deployments and ongoing system support. We have healthy relationships with our banking partners.
4. Minimal Debt and Conservative Leverage
   Next Meters Global operates with conservative long-term debt, ensuring low financial risk and operational independence. Our conservative fiscal approach positions us well to

absorb market fluctuations while maintaining a commitment to product quality and client satisfaction.

5. Experienced Financial Leadership
   The company is led by a seasoned executive team. Our internal controls, financial reporting systems, and strategic planning processes are aligned with best practices and audited regularly. We have a long-term focus which guides the operational decisions that are made on a day-to-day basis.
6. Vendor & Customer Confidence
   We maintain strong relationships with our contract manufacturers, suppliers, distributors, and customers, including property management groups, billing companies, and municipal entities. Our financial reliability is a key factor in our ongoing partnerships.

Next Meters Global is well-positioned to undertake and fulfill the requirements of this municipal metering project. Our financial strength, paired with our technical expertise and proven operational capacity, ensures we can deliver quality products with the highest level of service. We welcome the opportunity to provide additional financial documentation, including audited financial statements, credit references, or bank letters, upon request and under mutual NDA.

Regards,



Casey Jorgensen,
CFO Next Meters Global, LLC

6 PROJECT PRICING & REFERENCES

Proposal Introduction – AMI Endpoints on Existing Meters

This proposal allows the Town of Jerome to replace its existing meters while modernizing communications through deployment of the NC4 AMI endpoint with the NEXT Connect AMI stack. The NC4 endpoint is fully compatible with all encoded output meters, including pulse-output models.

This compatibility provides the Town with significant flexibility: existing meters can continue to be utilized and optimized, while replacement or upgrades can occur as needed over time.

The following section provides a line-item breakdown of materials, labor, software, integration, and service costs specific to this option.

Cellular Activation fee added in the event the Town wanted Cellular Backup on their meters. This function is already built in, but is not required.

Pricing Notes and Assumptions

Pricing Notes:

- Flexible Financing: Financing options available in 3-, 5-, 7-, and 10-year terms. First payment can typically be deferred for up to 18 months.
- Training Support: Onsite training is available and can be customized to align with the project timeline and the utility's operational needs.
- We have included an assumed 3% annual increase after 24 months

General Assumptions

- Ownership of removed meters will remain with the Utility unless otherwise agreed upon in writing. Removal of existing
- meters is included in the scope; however, disposal and/or storage of removed meters is the responsibility of the Utility. The
- Utility will provide a staging and storage location for all project materials unless this service is specifically included in the Contractor's scope.
- Storage conditions must be secure, weather-protected, and accessible. The
- Utility will provide a dumpster and handle all waste removal.
- The Utility will provide accurate and complete customer address and account data prior to deployment. Public
- communications are the responsibility of the Utility unless otherwise specified.
- The Utility will facilitate access to locked or gated properties.
- The project timeline assumes continuous and uninterrupted access to all installation locations during normal business hours.
- Delays due to weather, access restrictions, or Utility-requested pauses may result in schedule adjustments or change orders.
- Any delays in approval, or changes to project scope, may require repricing.
- All final terms and agreements are subject to negotiation and execution of a formal contract.

References

NOTE: Through a recent merger, the Fenix USA has become NEXT Meters. Legacy customers may still identify their system as a "Fenix" solution.

Utility Name: City of Maquoketa, IA Contact: Joey Trivette
Email: jtrivette@alliancewater.com
Phone: (563) 503-9742
Location: Maquoketa, IA
Number of Meter Accounts: 2,600 Meter Type: Kamstrup/Diehl System Type: Cellular AMI

Utility Name: Palacios, TX Contact: Cindy Raleigh
Email: craleigh@cityofpalacios.org
Phone: 361 972 3605
Location: Palacios, TX
Number of Meter Accounts: 2,350 System Type: Cellular AMI

Utility Name: Wilcox, AZ Contact: Robert Linton
Email: rlinton@willcox.az.gov
Phone: 520-766-4464
Location: Wilcox, AZ
Number of Meter Accounts: 1820 System Type: Cellular AMI

Utility Name: Silma, CO Contact: Myke McCune
Email: Myke@townofsimla.com
Phone: 7193689178
Location: Silma, CO
Number of Meter Accounts: 320 System Type: Cellular AMI

7 REQUIRED FORMS

Town of Jerome

Proposal Document A – Proposal

To: Honorable Mayor & Council
600 Clark St.
Jerome, AZ 86331

In compliance with the Town of Jerome's Request for Proposals for an Advanced Metering Infrastructure System and the Notice to Respondents by the Town Manager, the undersigned respondent:

Having carefully examined the proposal documents and being familiar with the conditions to be met, hereby submits the following proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed and agrees to execute contract documents and furnish the required Bonds and Certificates of Insurance for the completion of said work, at the locations and for the prices set forth on the Fee Proposal.

Understands that procurement of this project shall be in accordance with all applicable Standard Specifications and as otherwise required by the General Provisions and Special Provisions.

Understands that this proposal shall be submitted with a proposal guarantee of cash, certified check, cashier's check, or surety bond (in accordance with Title 34, A.R.S.) for an amount not less than ten percent of the total amount proposal.

Agrees that upon receipt of Notice of Award from the Town of Jerome, they will enter into contract negotiations and execute the contract documents.

Work shall commence no later than 30 days, after the Notice to Proceed and shall be completed within 180 calendar days, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completing the work includes lead time for obtaining the necessary materials and/or equipment. Respondent agrees to pay, as liquidated damages, two times the sum as stated in the latest revision of the MAG Specifications. Liquidated Damages shall be based upon the final contract amount.

The respondent hereby acknowledges receipt of and agrees that this proposal is based on the following Addenda (if there are no addenda, write NONE below).

None

REQUIRED FOR SUBMITTAL

The Town of Jerome retains the right to reject any or all proposals and to waive minor defects and technicalities or withhold the award, as may be deemed best for the interest of the Town.

This proposal shall be valid for a period of 30 days after the proposal deadline.

THIS PROPOSAL is submitted by Innovative Utility Solutions LLC,

a corporation organized under the laws of the State of Arizona, a partnership consisting of _____

_____, or an individual trading as _____ of the

City of _____, and holder of Arizona State Contractor's License(s):

Classification(s) _____

No.(s) _____

Respectfully Submitted,

Innovative Utility Solutions LLC
Respondent

4158 Nyala Drive Colorado Springs, CO 80922
Address

Stan Pachorek Sales Director
By (Officer & Title)

November 26th, 2025
Date

ATTEST:

_____
(Officer and Title)

_____
Witness (if respondent is an individual)

REQUIRED FOR SUBMITTAL

Town of Jerome

Proposal Document B – Fee Proposal

Respondent Innovative Utility Solutions LLC

Mailing Address 4158 Nyala Drive

City Colorado Springs State CO Zip 80922

Telephone (719)-627-1436

PURSUANT to, and in compliance with, the Town of Jerome's Request for Proposals for an Advanced Metering Infrastructure System, the Notice to Respondents, Instructions to Respondents, and the Proposal Documents relating to the:

TOWN OF JEROME
ADVANCED METERING INFRASTRUCTURE SYSTEM

This is to certify that the above documents, as well as the site upon which work is to be performed and any and all conditions affecting the work, have been carefully examined, that the amount and nature of work to be accomplished is thoroughly understood and that at no time will misunderstanding of the drawings, specifications or conditions to be overcome be alleged or pled as a basis for change orders, damages or non-performances.

I (We) acknowledge that the following Fee Proposal and table are for the convenience of the Town of Jerome to analyze the individual components of the proposal and to provide a means for partial payments during the project. The sum of the extended unit prices shall be the final price for the product procurement in accordance with the technical specifications. The total price listed on the Fee Proposal shall be the same as listed on the proposal to the Town of Jerome.

FEE PROPOSAL INSTRUCTIONS:

1. All items will be paid for as lump sums. The Fee Proposal's estimated quantity and unit price will be used as a means of computing progress payments and as a basis for any Change Orders incurred.

2. The owner reserves the right to recalculate the following Fee Proposal if they appear malapportioned.

3. The lump sum amounts indicated below are to include the respondent's cost of administration, mobilization, bonds, insurance, and any other miscellaneous items required for the project.

REQUIRED FOR SUBMITTAL

FEE PROPOSAL Town of Jerome Advanced Metering Infrastructure System					
		Est. Qty.	**Units**	**Unit Price**	**Total Price**
CIVIL BASE PROPOSAL					
1	¾ x 3/4" AMI Meter	299		$240.77	$71,990.23
2	1" threaded AMI Meter	17		$358.68	$6,097.56
3	1 ½" flanged AMI Meter	13		$1,352.38	$17,580.94
4	2" AMI Meter	2		$1,495.90	$2,991.80
5	4" AMI Meter	1		$7,526.35	$7,526.35
6	AMI System Software	1		$18,315.92	$18,315.92
7	AMI System Training	1		$15,000.00	$15,000.00
8	AMI Data Collection Hardware/Software	1		$15,163.10	$15,163.10
9	FCC Registration	1		$1,593.60	$1,593.60
SUBTOTAL COSTS – BASE PROPOSAL				$61,046.70	$156,259.50
GRAND TOTAL, BASE PROPOSAL				**$156,259.50**	

GRAND TOTAL – BASE PROPOSAL (in words): All Next Meters have built in RF Technology for drive by backup.

NOTE: All Quantities Shown are approximate and are furnished solely for the contractor's convenience. The quantities provided will be the lump sum that payment will be made on. The individual items are for use by the Town to analyze proposals, use as a basis for any supplemental agreements, and for partial progress payments.

REQUIRED FOR SUBMITTAL

Proposal Document C – Non-Collusion Certificate

ADVANCED METERING INFRASTRUCTURE SYSTEM

Respondent: Innovative Utility Solutions LLC

The undersigned respondent hereby certifies as follows:

To the best of his/her knowledge, the person, vendor, association, partnership, or corporation herein has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in the preparation and submission of a proposal to the Town of Jerome for consideration in the award of this solicitation.

Dated this 26th, day of November 2025.

Stan Pachorek	(480)-678-1668
Signature	Phone Number
Stan Pachorek	stan@iuswater.com
Written Name	Email Address

REQUIRED FOR SUBMITTAL

Proposal Document D – Certificate of Ownership

ADVANCED METERING INFRASTRUCTURE SYSTEM

Respondent: Innovative Utility Solutions LLC

The undersigned respondent hereby certifies as follows:

To the best of his/her knowledge, the person, vendor, association, partnership, or corporation herein, are the only person, vendors, corporations, partnerships, or other associations having any direct or indirect financial interest in the respondent's business as legal or equitable owner, creditor (except current bills for operating expenses), or holder of any security or other evidence of indebtedness.

Dated this 26th, day of November 2025.

Stan Pachorek	(480)-678-1668
Signature	Phone Number
Stan Pachorek	stan@iuswater.com
Written Name	Email Address

REQUIRED FOR SUBMITTAL

Proposal Document E – Respondent Qualifications, Representations, and Warranties

ADVANCED METERING INFRASTRUCTURE SYSTEM

Respondent: Innovative Utility Solutions LLC

The undersigned respondent hereby certifies as follows:

X1 Taxes and Leins – Respondent has no unsatisfied tax or judgment lien on record.

X2 Respondent's Examination – Respondent has made its own examination, investigation, and research regarding the requirements of the solicitation, including but not limited to the work to be done, services to be performed, any conditions affecting the work and services, the type and quantity of labor, equipment, and facilities necessary to perform. Respondent fully understands the character of the work and services, the manner in which payment is to be made, and the terms and conditions of the solicitation. Respondent acknowledges and agrees that it has satisfied itself by its own examination, investigation, and research, and that it will make no claim against the Town because of erroneous estimates, statements, or interpretations made by the Town. Respondent hereby proposes to furnish all materials, equipment, and facilities and to perform all labor which may be required to do the work within the time required and upon the terms and conditions provided in the solicitation, and at the prices as proposed.

Dated this 26th, day of November 2025.

Stan Pachorek	(480)-678-1668
Signature	Phone Number
Stan Pachorek	stan@iuswater.com
Written Name	Email Address

REQUIRED FOR SUBMITTAL

8 ADDENDUM 1 – PROPAGATION STUDY & CCA

Next City® AMI Solution

NEXT ® Collector Coverage Analysis (CCA)

Customer: Jerome AZ

Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

SUMMARY INFORMATION

Service Area (square miles)	**1 +/-**
Total Endpoints	**Water 332 +/-**

REQUEST INFORMATION

Solution Architect:	Jason Barretto
Account Manager:	Hunter Pittman

INFORMATION PROVIDED

	FILE NAME	DATE RECEIVED
Coverage Request For:	Meter Location_Numbers_Sizes.xls	10.27.25
Endpoint Locations:	**Jerome AZ**	10.27.25

ANALYSIS COVERAGE AREA

Analysis is based on service location addresses provided by Arek Ryzak with 323 water addresses geocoded.

Customer: Jerome AZ

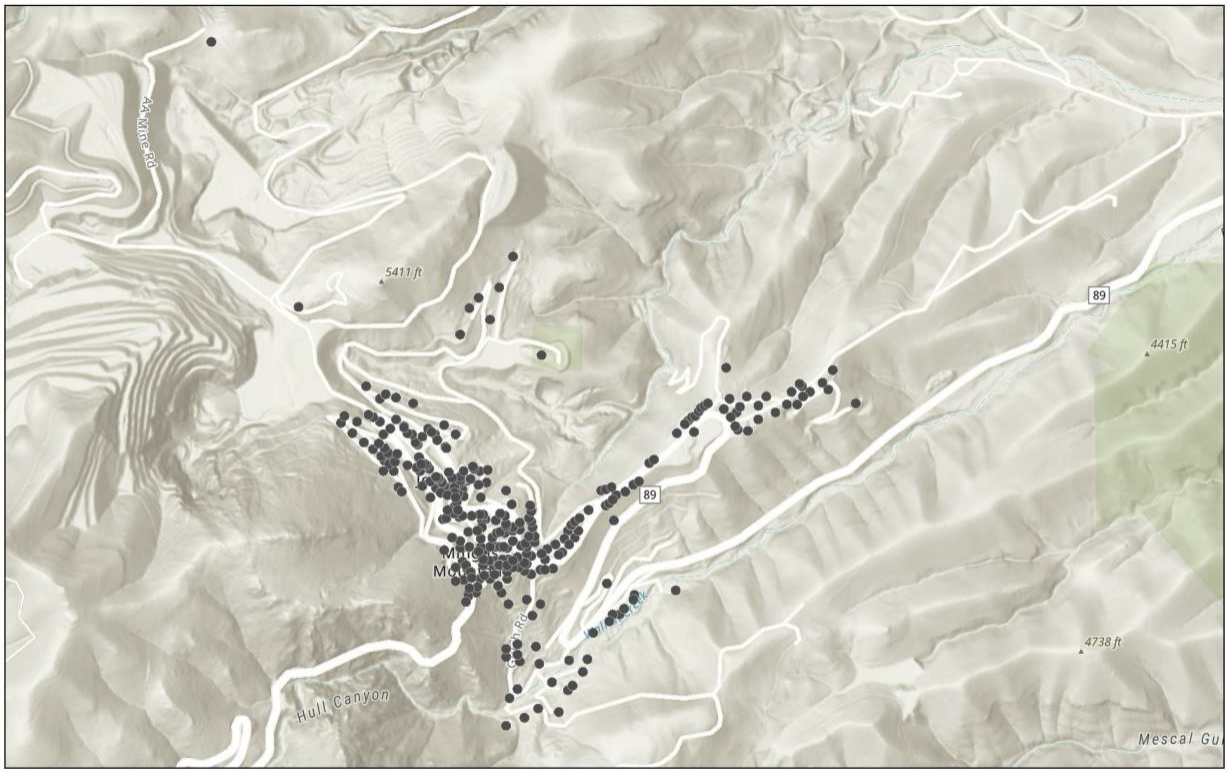
Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

ENDPOINT LOCATIONS MAP – WATER

Next CCA - Jerome AZ - Addresses



11/3/2025

Meter Location_Numbers_Size

World_Hillshade

World_Hillshade

1:20,000

0 0.13 0.25 0.5 mi

0 0.23 0.45 0.9 km

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Customer: Jerome AZ

Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

COLLECTOR COVERAGE ANALYSIS

Collector Coverage Analysis was conducted using the available information and assumptions stated in this document. Study Assumes water meters mounted under plastic lids. Some areas may have lower signal levels and field evaluation is recommended to confirm full coverage.

Collector Type	Location	Height	Latitude	Longitude
NextLink	Jerome Grand Hotel – Roof	~50 – 75 FT	34.747673	-112.11494
NextLink	Pole Install 1	8 FT	34.75628	-112.11688
NextLink	Pole Install 2	8 FT	34.75126	-112.10376

Customer: Jerome AZ

Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

Proposed Collector Locations

Next CCA - Jerome AZ - Collector Locations

Customer: Jerome AZ

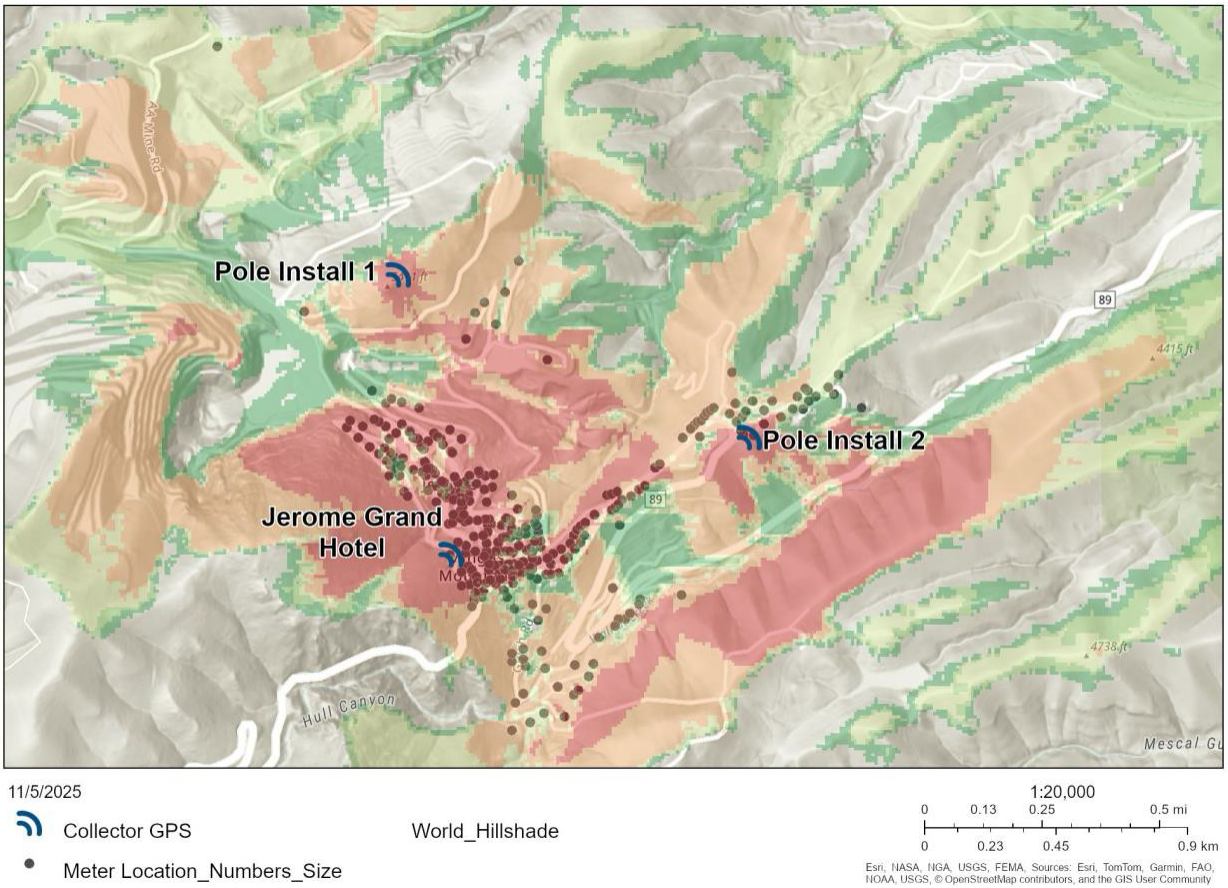
Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

Collector Propagation:

Next CCA - Jerome AZ - Collector Propagation



RF Legend

Good signal — Low Signal

dBm -60 -80 -105

Customer: Jerome AZ **Date Issued:** 10.30.25

Project: Jerome AZ **Revision:** 1.0

ASSUMPTIONS MADE

- Submitted information including but not limited to street addresses, service area, GPS coordinates, and meter locations are accurate.
- If GPS coordinates or a GIS shapefile are not provided for endpoint locations, street addresses are geocoded into decimal-degree Latitude and Longitude using ESRI's StreetMap Premium for ArcGIS North America HERE address locaters.
- Data from third party providers such as USGS National Elevation Dataset (NED), USGS National Land Cover Database (NLCD), Tele-Atlas municipal boundaries, cellular providers, and the RF propagation software used by NEXT is accurate.
- NEXT endpoints are installed and maintained according to "NEXT Water Endpoint Installation Manual" using a NEXT approved endpoint installation kit in a location that allows two-way communication between the endpoint and the collector network
    - Pit or vault installation are through a non-metal pit lid and the pit or vault lid is at or above grade
    - Indoor installations are mounted as high as possible in the floor joists above grade on an exterior wall

CLARIFICATIONS

- Cellular coverage within the utility service area is required to deploy NEXT cellular endpoints.
- Review the collector coverage analysis with your NEXT representative to understand how it may be used by the utility as a tool to deploy the system.
- All endpoints are to be installed in compliance with the published NEXT installation guidelines.
- The Next City collector coverage analysis is subject to change for reasons which may include but are not limited to; consultation with the customer, site visit by NEXT authorized personnel, and the availability of new or updated information.

Next City® AMI Solution

NEXT ® Cellular Coverage Analysis (CCA)

Customer: Jerome AZ

Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

SUMMARY INFORMATION

Service Area (square miles) **1 +/-**

Total Endpoints **Water 332 +/-**

REQUEST INFORMATION

Solution Architect: Jason Barretto

Account Manager: Hunter Pittman

INFORMATION PROVIDED

	FILE NAME	DATE RECEIVED
Coverage Request For:	Meter Location_Numbers_Sizes.xls	10.27.25
Endpoint Locations:	**Jerome AZ**	10.27.25

ANALYSIS COVERAGE AREA

Analysis is based on service location addresses provided by Arek Ryzak with 323 water addresses geocoded.

Customer: Jerome AZ

Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

ENDPOINT LOCATIONS MAP – WATER

Next CCA - Jerome AZ - Addresses

10/30/2025

Meter Location_Numbers_Size

World_Hillshade

1:20,000

0 0.13 0.25 0.5 mi

0 0.23 0.45 0.9 km

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Customer: Jerome AZ

Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

CELLULAR COVERAGE ANALYSIS

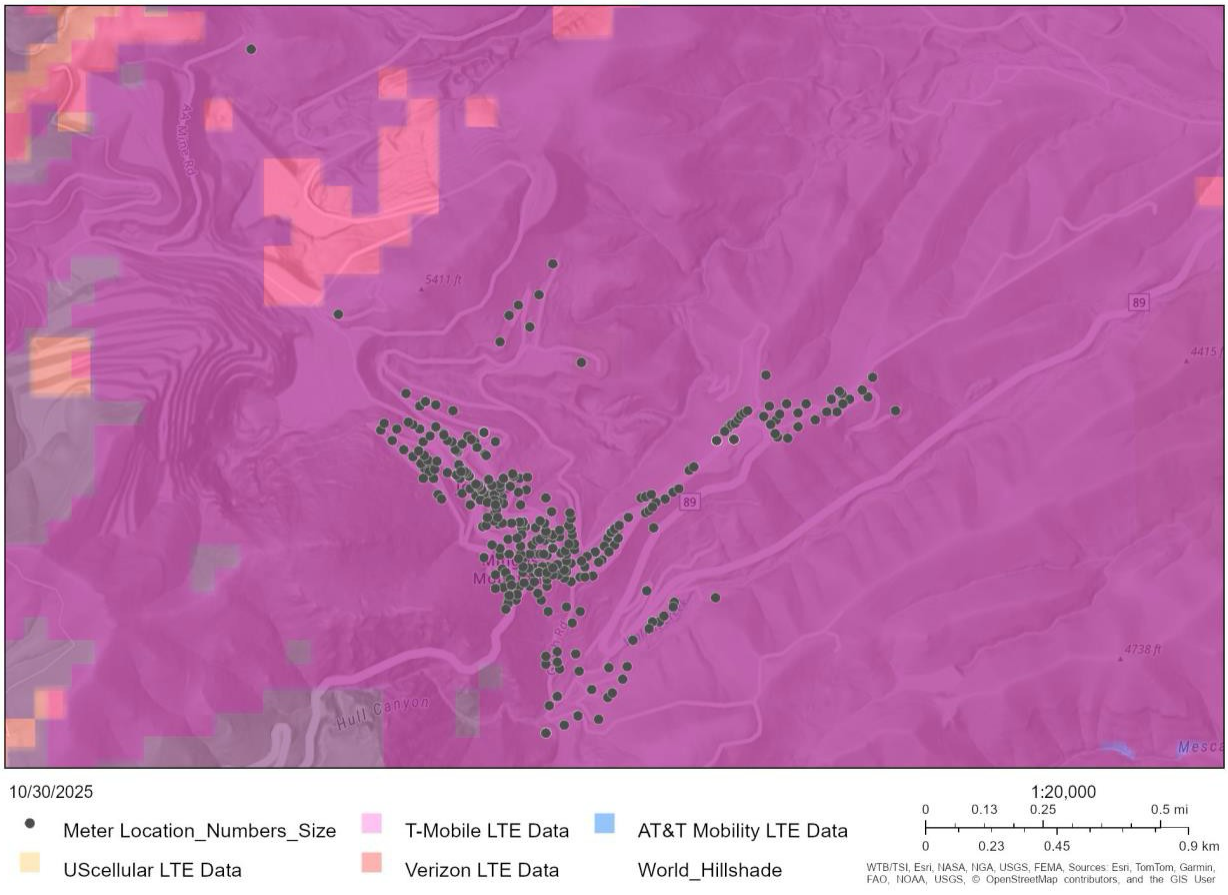
A check of our cellular network providers' Machine-to-Machine (M2M) cellular network coverage for the service locations provided has indicated that LTE-M cellular coverage is available. This service area has LTE-M coverage displayed below according to AT&T, T-Mobile, Verizon, US Cellular data and coverage maps. Some areas may have lower signal levels and field evaluation is recommended to confirm full coverage.

Quad - US Cellular / T-Mobile / Verizon / AT&T:

WATER:

100% Estimated coverage across T-Mobile/ Verizon/ AT&T/ US Cellular

Next CCA - Jerome AZ - Quad



Customer: Jerome AZ

Date Issued: 10.30.25

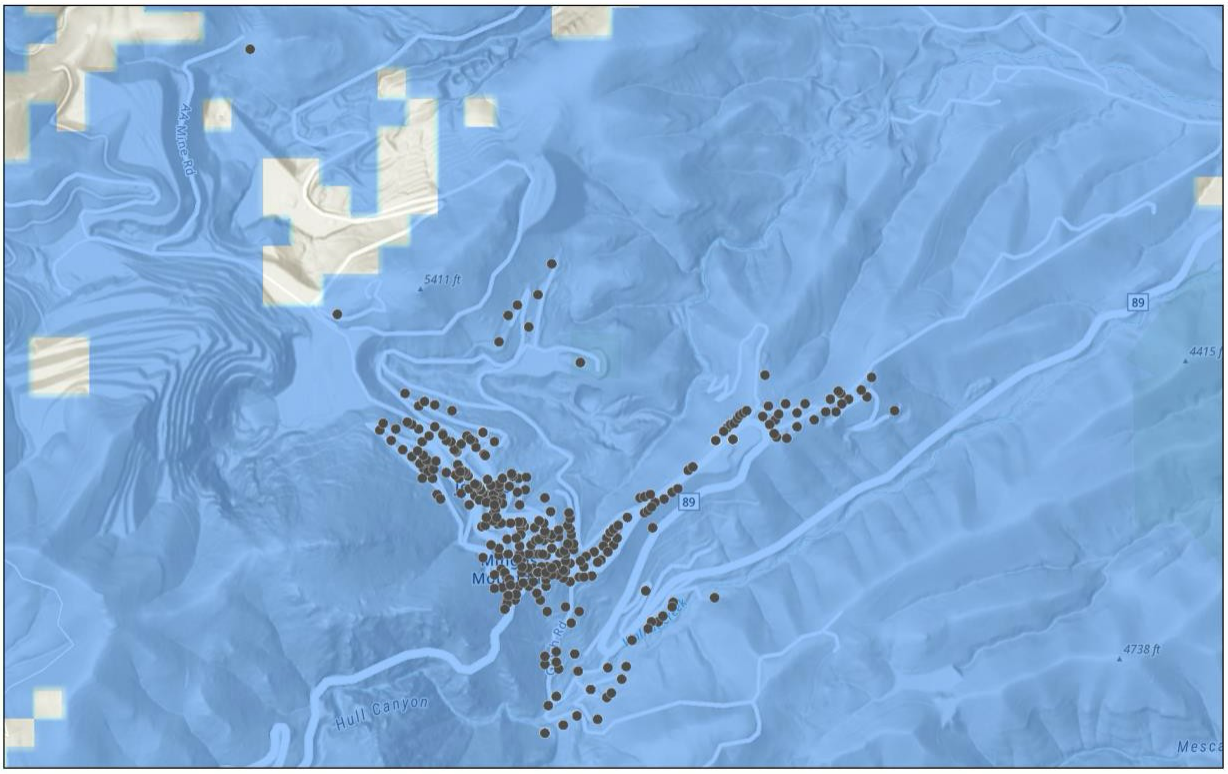
Project: Jerome AZ

Revision: 1.0

AT&T:

WATER:
100% Estimated coverage across AT&T

Next CCA - Jerome AZ - AT&T



10/30/2025

Meter Location_Numbers_Size

AT&T Mobility LTE Data

World_Hillshade

1:20,000

0 0.13 0.25 0.5 mi

0 0.23 0.45 0.9 km

Customer: Jerome AZ

Date Issued: 10.30.25

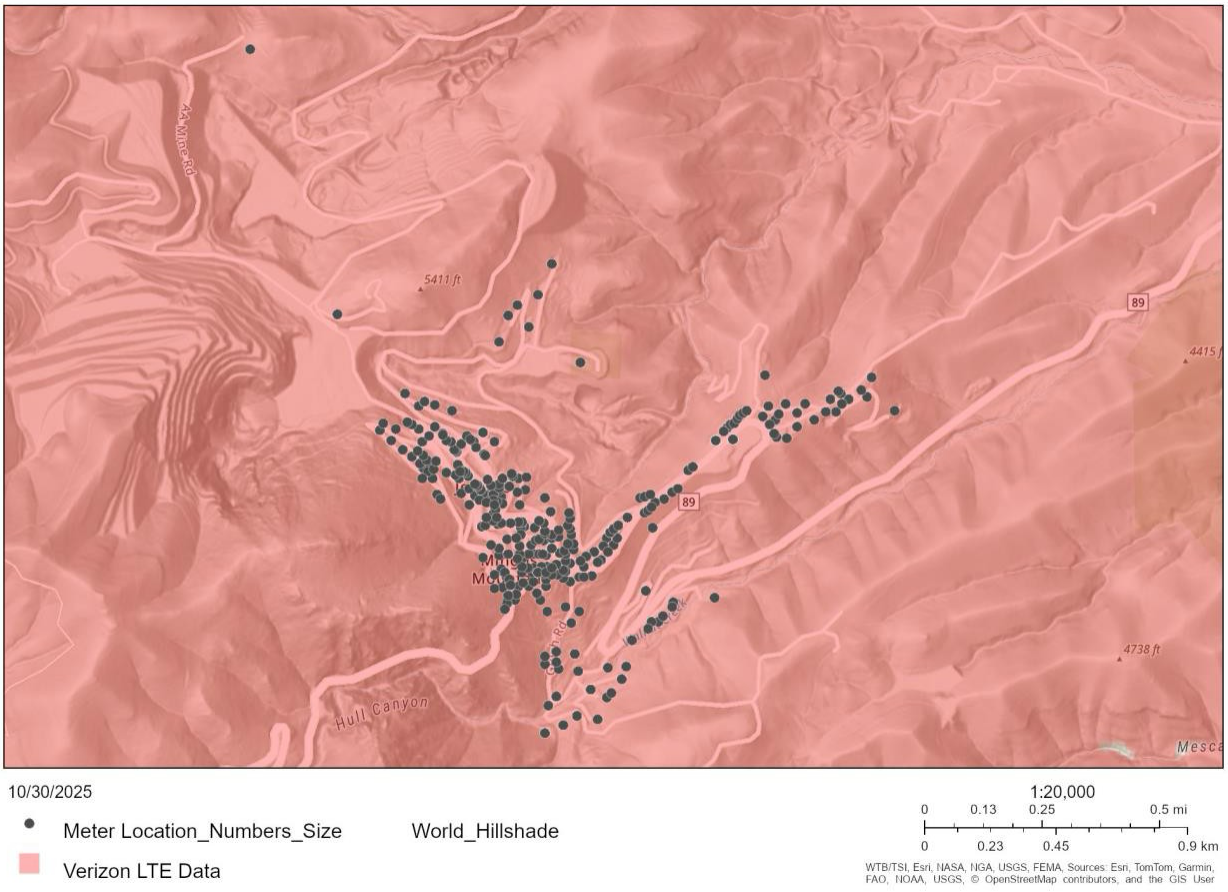
Project: Jerome AZ

Revision: 1.0

Verizon:

WATER:
100% Estimated coverage Verizon

Next CCA - Jerome AZ - Verizon



Customer: Jerome AZ

Date Issued: 10.30.25

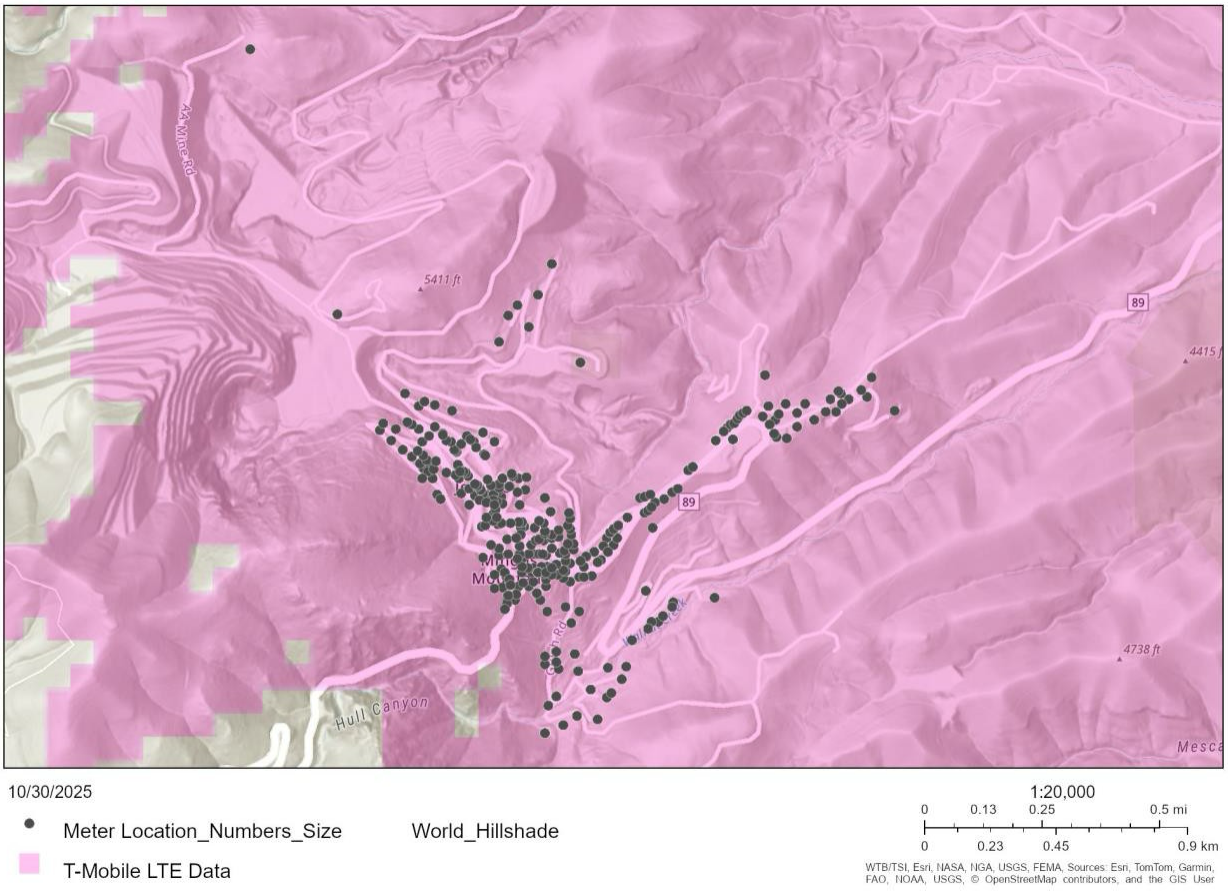
Project: Jerome AZ

Revision: 1.0

T-Mobile:

WATER:
100% Estimated coverage T-Mobile

Next CCA - Jerome AZ - T-Mobile



Customer: Jerome AZ

Date Issued: 10.30.25

Project: Jerome AZ

Revision: 1.0

US Cellular:

WATER:

NO US Cellular coverage found in area

Next CCA - Jerome AZ - US Cellular

Customer: Jerome AZ **Date Issued:** 10.30.25

Project: Jerome AZ **Revision:** 1.0

ASSUMPTIONS MADE

- Submitted information including but not limited to street addresses, service area, GPS coordinates, and meter locations are accurate.
- If GPS coordinates or a GIS shapefile are not provided for endpoint locations, street addresses are geocoded into decimal-degree Latitude and Longitude using ESRI's StreetMap Premium for ArcGIS North America HERE address locaters.
- Data from third party providers such as USGS National Elevation Dataset (NED), USGS National Land Cover Database (NLCD), Tele-Atlas municipal boundaries, cellular providers, and the RF propagation software used by NEXT is accurate.
- NEXT endpoints are installed and maintained according to "NEXT Water Endpoint Installation Manual" using a NEXT approved endpoint installation kit in a location that allows two-way communication between the endpoint and the cellular network
    - Pit or vault installation are through a non-metal pit lid and the pit or vault lid is at or above grade
    - Indoor installations are mounted as high as possible in the floor joists above grade on an exterior wall

CLARIFICATIONS

- Cellular coverage within the utility service area is required to deploy NEXT cellular endpoints.
- Review the cellular coverage analysis with your NEXT representative to understand how it may be used by the utility as a tool to deploy the system.
- All endpoints are to be installed in compliance with the published NEXT installation guidelines.
- The Next City cellular coverage analysis is subject to change for reasons which may include but are not limited to; consultation with the customer, site visit by NEXT authorized personnel, and the availability of new or updated information.

8 ADDENDUM 2- PRODUCT SPECIFICATION SHEETS

Specifications & Installation Guide

NextMeter Outdoor

Ultrasonic Meter with NextConnect™ Wireless

The ultrasonic NextMeter Outdoor (NM4-O) combines advanced solid-state measurement technology with the NextConnect wireless platform, giving users the flexibility to customize their solution as their needs change.

Next Ultrasonic Technology

The NextMeter combines advanced ultrasonic technology with the industry's leading AMR solution in a simple, user-friendly design, ensuring seamless deployment while delivering significant savings on installation costs.

NextMeter's ultrasonic technology precisely detects even the smallest flows and maintains exceptional accuracy across all flow rates. With no moving parts to degrade, this reliability and precision are sustained throughout the meter's entire lifespan.

Flexible Communications

The NextConnect wireless solution equips all meter endpoints with 5G LTE cellular communication, enabling direct meter reading within coverage areas. Additional built-in wireless technologies offer redundancy and scalability, enabling fixed-network, walk-by, and drive-by reading options.

Durability

The NextMeter's solid-body design ensures exceptional strength and long-term, maintenance-free operation. Its seamless flow-body eliminates internal gaskets, a common failure point in traditional meters. Constructed with an advanced glass-reinforced polymer, it offers superior durability, resistance to deterioration, and safeguards against water contamination.

Key Benefits

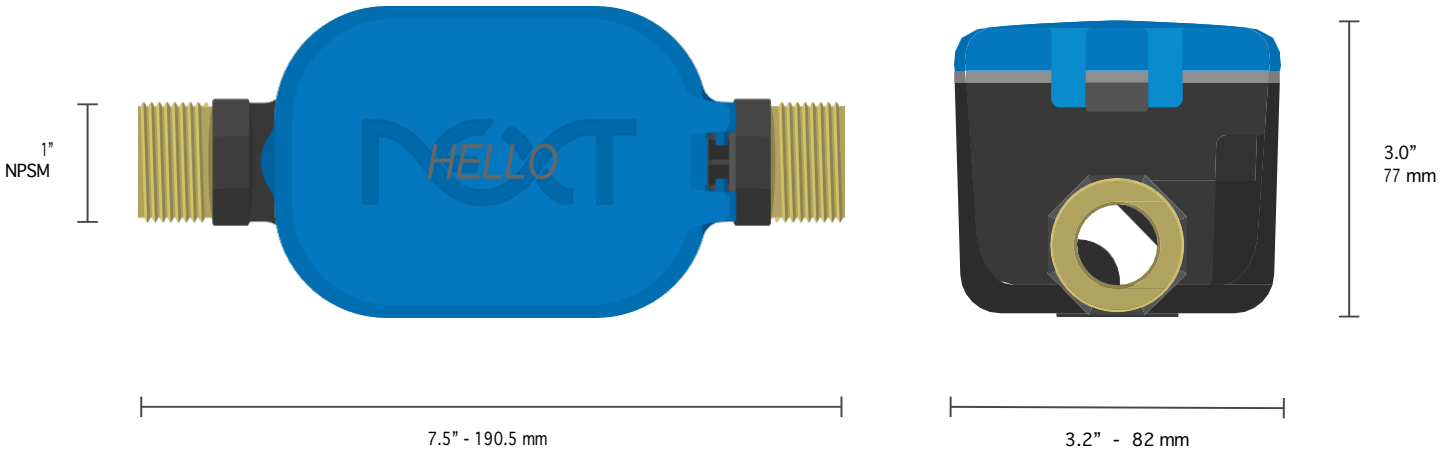
- Multi-carrier 5G LTE-M cellular
- Extra large 10-digit LCD display for easy reading
- Drives revenue gains with maximum recapture rates
- Minimal head loss due to open flow-tube design
- Easily switch between walk-by, drive-by, fixed-network, and cellular reading technologies
- Real-time data and alerting
- NTEP Approved
- IP 68 rated for outdoor use
- Output for use with pulse or encoded end-points

Warranty

- 20-year warranty

Specifications

Dimensions



Applications

Models	Meter Size	Connection (NPSM)	Lay Length	Max Flow (GPM)
NM4-O ¾"	⅝" x ¾"	1"	7 ½"	25
NM4-O ¾"	¾" x ¾"	1"	7 ½"	30
NM4-O ¾"	¾" Full*	1"	9"	30
NM4-O 1"	1" Full*	1.25"	10.75"	50

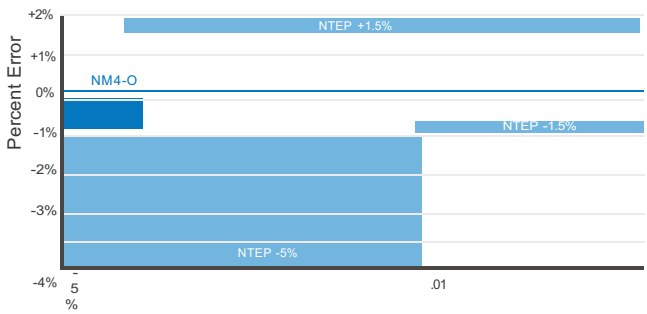
** Available with 1 ½" extension coupling*

Approvals

FCC ID: 2A8EC-NM4O (*Pending*) | IC: 28950-NM4O (*Pending*)
NSF/ANSI/CAN 61 & 372
NTEP/CTEP Approval 23-055
Conforms to AWWA C715-18

Performance

Measures flow as low as .01 gpm and up to 30 gpm
Exceeds AWWA accuracy standards



Temperature

Accuracy tested up to 150° F | 66°C

Environment

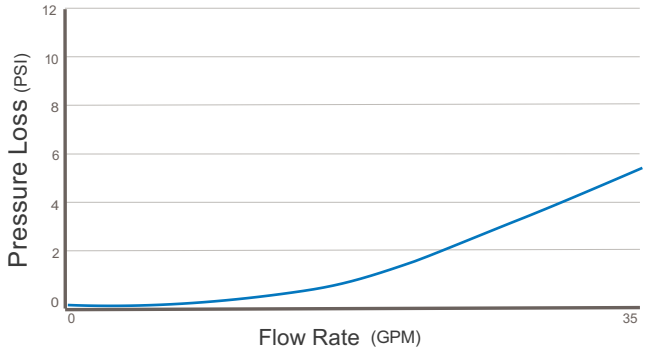
Indoor or outdoor installation
Ambient Temp: 33°F to 140°F | 1°C to 60°C
Optimal Storage Temp: 0°F to 100°F | -18°C to 38°C

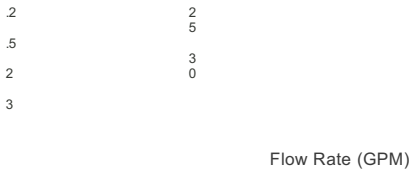
Outputs

Pulse and encoded output with accessory cable

Pressure

Up to 200 psi operating pressure
Minimal head loss: less than 2 psi at 15 gpm




.2
.5
2
3
2
5
3
0
Flow Rate (GPM)

Specifications (cont.)

Power

Typical 20+ year battery longevity

Communications

Multi-carrier 5G cellular with simple LTE-M

Built-in NextConnect radio 902-928 MHz wireless

Includes walk-by, drive-by, and fixed-network technologies

Data

Web and mobile app (Android & iOS)

API access to interval data

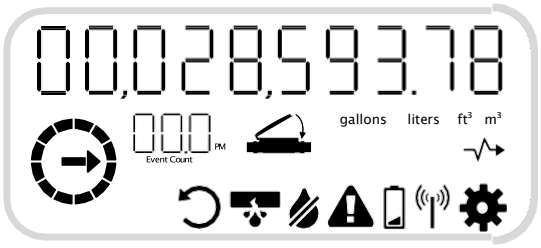
Hourly high-resolution meter read

Ambient and water temperature

Flow profiling with abnormal & reverse flow detection

Cloud-configurable alerts and notifications

LCD Display



The LCD displays a 10-digit meter read, as well as the current flow rate and unit of measure. The flow indicator wheel spins when any flow is detected. The following status icons will show when applicable:


LCD display is inactive; close lid, then open again to view active display


The flow tube is dry


A burst pipe has been detected


Battery has less than 10 months remaining


Transmitting meter read data


Wired output, pulse is being sent


The meter is accepting a new configuration

Shows in place of the flow rate, count increments when meter configuration updated

Warranty

Next Meters warrants the NM4-O to be free from defects under normal use for a period of 20 years from the date of manufacture.

For full warranty information, please refer to the Data Gathering System Warranty document.

docs.nextmeters.com/warranty

Due to continuous product improvement and the need to comply with evolving regulations, Next Meters reserves the right to modify product specifications without prior notice.

Contact

For additional information or assistance, please visit our Support Center or contact our Product Support Team:

support.nextcenturymeters.com

(844) 538 8203

support@nextcenturymeters.com

Installation

Qualifying Installations

The meter location must have su"cient finished clearance to facilitate reading, inspection, and eventual replacement of the meter or coupling gaskets.

Building plumbing engineering must comply with local building code and e!ectively prevent backflow through system design which may include backflow prevention check valves.

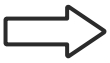
Design of plumbing system should include a shuto! valve upstream of the meter to facilitate future maintenance of the meter and other plumbing components.

Installation Instructions

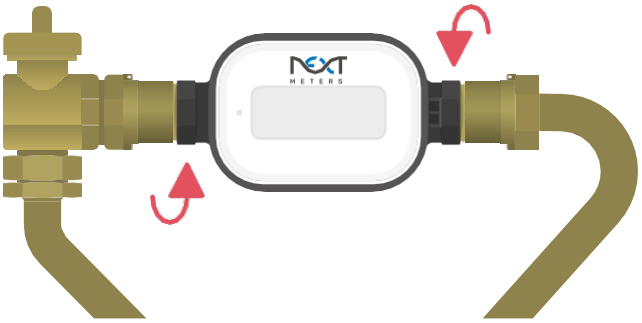
Ensure that supply lines are in alignment. Do not rely on tightening the connection to pull pipes together or into alignment.

Before installation, ensure that the water line has been turned o! and that the meter connection is the correct size. Use couplings when necessary.

The meter must be installed in the correct direction of flow. The flow direction arrows can be seen on both sides of the meter.



Place the meter in the meter setter. Tighten to no greater than 15 ft-lb of torque or as specified by the meter setter supplier.

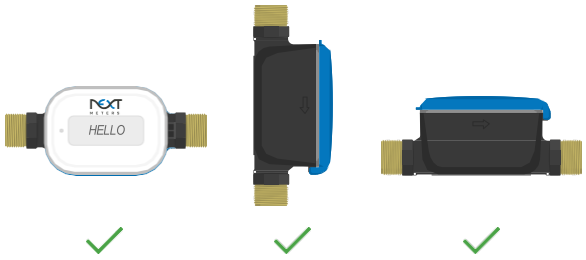


Inline Options

When electrical grounding of the water supply line is required, an approved bonding jumper should be installed.

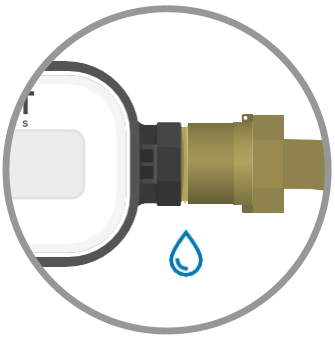
The NextMeter Outdoor can be installed horizontally or vertically.

Orient the register display facing the direction that will be most convenient for reading.



Pressurizing Line

The NextMeter will begin measuring flow once air has evacuated and water has completely filled the line.



After pressurizing, carefully inspect the connections for moisture to ensure a water-tight connection has been made.

Programming & Wireless Communication

Programming & Configuration

Programming is the process of associating the meter's serial number with the unit number and water utility type where it is installed.

To quickly program a large number of devices at once, you can use the CSV file uploader tool on the NextCity Web Portal. The web portal also o!ers a rapid programming interface to program additional devices later on.

The NextCity Mobile App is ideal for on-site programming, verification, and troubleshooting.

App Store
iOS App

Google Play
Android App

Location Setup

Using the web or mobile app, create the location of the installation by adding the street address. Then add the serial number of the equipment being installed.

Scan the Meter's Barcode

Using a the mobile app's built-in barcode scanner or an accessory barcode scanner, input the serial number of the meter.

Enter any location, pictures, or description information that will be useful for tracking and maintenance.

Wireless Communication

Open the cover of the NextMeter to initiate a two-way wireless check-in.

The meter's LED indicator will blink green two times verifying its connection to the Cloud.

If green blinks are not seen, connect a Meter Out Antenna or install a NextLink Cellular Repeater nearby.

The meter cover can be closed and opened again to retry. If green blinks are not seen after retrying, additional network equipment may be necessary.

Resident App

This service gives residents the ability to view meter data, analyze usage trends, and receive critical alerts on their mobile devices.

Enable the Leak Monitoring Service subscription for optional immediate alerting of sustained high-flow (burst pipe).

Once configured, alerts will automatically be sent via phone, text, and/or email to residents. Alert notifications are repeated until one of the contacts confirms the alert has been received.

Testing & Quality Assurance

Performance in Application

The NextMeter is engineered to perform far beyond these basic requirements. Its rated maximum pressure far exceeds standard water supply specifications. And should a water system become over-pressured, the engineered and tested burst pressure is several times this operating maximum, ensuring that the NextMeter is unlikely to be a point of failure, even in a plumbing system operating out of specification.

Pressure Endurance Testing

The NextMeter's advanced engineering and pressure endurance extends throughout its lifetime operation. This performance is verified using accelerated-life testing, in which the NextMeter is pressurized to 300 psi in cycles 100,000 times (see AWWA C715-18).

A typical single or multi-jet submeter will begin to leak or completely burst within an average of 15,000 pressure cycles. The NextMeter can endure over 100,000 pressure cycles, ensuring its operating integrity over its full service life.

Design & Material Specifications

The NextMeter boasts a unibody design that is incredibly strong and resilient for long term maintenance-free operation. This contiguous flow-body design eliminates internal gaskets which are often a point of early failure in conventional meter designs.

Advanced glass-reinforced polymer o!ers increased durability, resistance to deterioration, and protection against water contamination.

NSF Testing

The NSF testing is conducted to evaluate the quality and safety of the NM4-O NextMeter in compliance with NSF standards. The test ensures that the meter is free from harmful contaminants and can operate e"ciently without posing any health risks.

Contact Information

For additional information or assistance, please visit our Support Center or contact our Product Support Team:

support.nextmeters.com

(844) 538 8203

support@nextmeters.com

Television and Radio Interference Information

Television and Radio Interference

FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment o! and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit di!erent from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 40cm between the radiator and your body.

ISED Statement: This radio transmitter 28950-NM40 has been approved by ISED to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

This device complies with Innovation, Science and Economic Development Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

ISEDC Radiation Exposure Statement: This equipment complies with the ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 40cm between the radiator and your body.

Television and Radio Interference (French)

Déclaration d'ISDE: Cet émetteur radio 28950-NM4O a été approuvé par ISDE pour fonctionner avec les types d'antennes énumérés ci-dessous, avec le gain maximal autorisé indiqué. Les types d'antennes non inclus dans cette liste, dont le gain est supérieur au gain maximal indiqué pour ce type, sont strictement interdits avec cet appareil.

Cet appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada (Innovation, Sciences et Développement économique Canada) applicables aux appareils exemptés de licence. Son utilisation est soumise aux deux conditions suivantes:

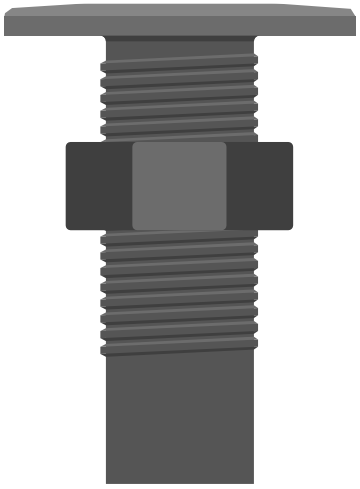
(1) Cet appareil ne doit pas causer d'interférences; et
(2) Cet appareil doit tolérer toute interférence, y compris celles qui pourraient nuire à son bon fonctionnement.

Déclaration d'ISDE relative à l'exposition aux rayonnements: Cet équipement est conforme aux limites d'exposition aux rayonnements du CNR-102 d'ISDE, établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé en maintenant une distance minimale de 40 cm entre le radiateur et votre corps.

Specifications & Installation Guide

NextConnect

Smart Metering Made Simple



The NextConnect (NC4) is a universal 5G LTE-M cellular meter endpoint. Capable of supporting fixed-network, walk-by, drive-by, and cellular applications, it's designed to scale your metering deployments with the simplicity of a single device.

Flexible Communications

With the NextConnect wireless solution, all of your meter endpoints are enabled with 5G LTE-M cellular communication, allowing them to directly sync meter data within coverage areas without additional infrastructure.

Additional built-in wireless technologies offer redundancy and scaleability, enabling the NextConnect to also communicate through fixed-network, walk-by, or drive-by reading methods. No matter what method is used to collect reads, all data is brought into the same platform, eliminating the need for manual entry or reporting from multiple systems.

Meter+ Simplified

Using Meter+ Technology, the NextConnect enhances your meter with auto protocol detection. One single model works for all meter types across pulse and encoded outputs, simplifying your installations.

Added smart alerts quickly surface potential issues of meter health and utility usage, empowering you with the insights that matter most.

Durability

Engineered for tough outdoor environments and sealed with a 20+ year battery, the NextConnect delivers consistent, maintenance-free performance that you can count on.

Key Benefits

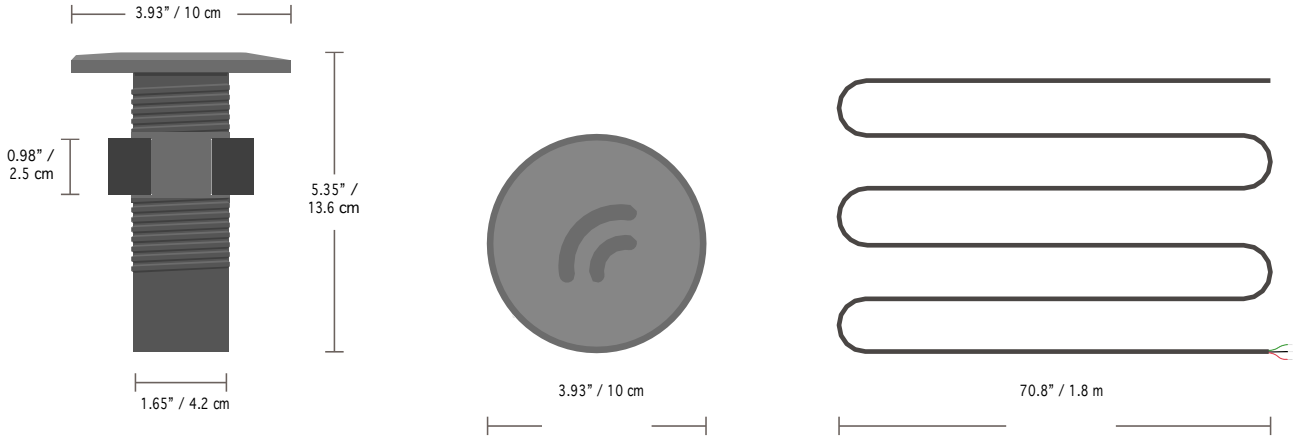
- Multi-carrier 5G LTE-M cellular
- Single model for cellular, drive-by, fixed-network, and walk-by reading
- Meter+ Technology with protocol auto-detection
- Single model reads all industry standard wire output meters
- 20+ year battery life for maintenance-free operation
- IP-68 rated for outdoor & meter pit installations
- Compact design, high-strength housing
- Secure and easy mounting
- Add new endpoints easily-without building new infrastructure.

Warranty

- 20-year warranty

Specifications

Dimensions



Approvals

FCC ID: 2A8EC-NC4 (*Pending)*

IC: 28950-NC4 (*Pending)*

Contains FCC ID: 2ANPO00NRF9151

Contains IC ID: 24529-NRF9151

Communications

Multi-carrier 5G cellular with simple LTE-M

Wireless fixed-network, drive-by, and walk-by reading modes

Seamless operation between wireless technologies

Data

Mobile and web access for configuration and monitoring

API access to interval data

Supports detailed hourly full-resolution meter read

Cloud-configurable alerts and notifications

Power

20+ year high capacity battery

Environment

Engineered for long-term outdoor durability

Operates in temperatures from -40ºC to 60ºC

Waterproof sealed construction, IP-68 rated

Meter+ Protocol Compatibility

Auto protocol detection & wide compatibility

Passive pulse sensing (reed switch, open drain, etc.)

Active voltage pulse (max 16v)

Encoded UI-1203 (Sensus), Neptune, GWF, & Elster protocols

Warranty

Next Meters warrants the NC4 to be free from defects in materials and workmanship for a period of 20 years when installed in accordance with these instructions and with limitations as detailed in complete warranty.

docs.nextmeters.com/warranty

Due to continuous product improvement and the need to comply with evolving regulations, Next Meters reserves the right to modify product specifications without prior notice.

Contact

For additional information or assistance, please visit our Support Center or contact our Product Support Team:

support.nextcenturymeters.com

(844) 538 8203

support@nextmeters.com

Installation

Qualifying Installations

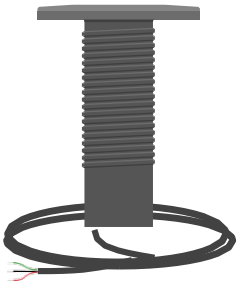
The NextConnect is primarily designed for use in outdoor meter pits. It is compatible with pit lid mounting holes from 1.7 to 2.1 inches (43 to 53 mm) in diameter.

The top of the NextConnect should be kept clear to avoid potential signal disruptions. Where possible, the area immediately surrounding the device should also be kept free of large objects that could interrupt device communications.

Doing this will also make it easier to locate and service the NextConnect and its connected meter when necessary. For best performance, poly/plastic lids are recommended.

Package Contents

A



A) NextConnect (NC4) with attached cable

B

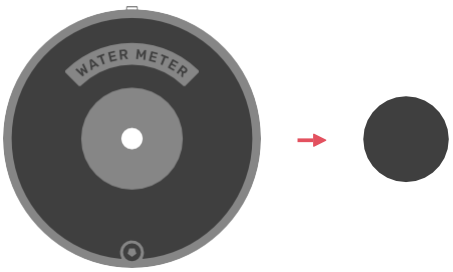
B) Mounting Nut

Instructions

Note: for installations in locations beyond meter pits, NextConnect wall mount accessories are available for purchase. Contact us for more information.

1. Remove Lid Cutout

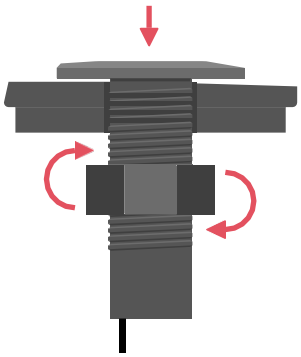
Drill a 1 ⅞" hole (standard pit lid mounting size) in the meter pit lid for mounting. If using metal lids, verify location and take proper safety precautions.



Use a 1 ⅞" hole saw for poly lids or a metal-cutting hole saw for cast iron lids

2. Secure the NextConnect to the Lid

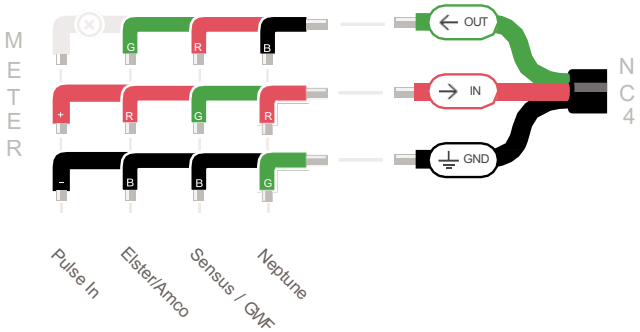
Insert the NextConnect through the mounting cutout and secure it to the lid using the provided mount nut.



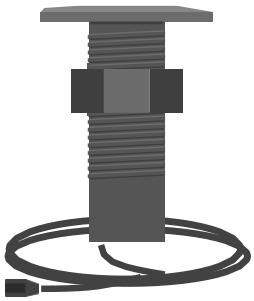
Tighten mounting nut until snug and flush with lid. Do not overtighten; hand-tight is su"cient.

3. Connect Cables

Splice the wiring of the NextConnect and the water meter. Follow the wiring guide below for your specific meter.



NextConnect is available with bare wire or pre-terminated options including NICOR and ITRN connectors. These simplify installs and ensure water-tight, tool-free connections in supported meter pits.



Programming & Wireless Communication

Configuration

The NextConnect is designed to be easily configured to switch between pulse or encoded meters using the NextCity Mobile App.

App Store
iOS App

Google Play
Android App

Once you've logged into the app, select the Direct Connect tool to connect to the NextConnect. This will allow you to verify or make changes to its configuration.

Wireless Made Easy

Use a magnet to verify device connectivity. A magnet swipe initiates a check-in. The LED will blink green when the NextConnect communicates with the Cloud.

If green blinks are not seen after 15 seconds, you may need to reposition the pit lid, ensure the antenna is unobstructed, or use a cellular Repeater.

An additional magnet swipe can initiate another check-in to retry.

Programming

Programming is the process of associating the NC4's serial number with the location and water utility type where it is installed.

To quickly program a large number of devices at once, you can use the CSV file uploader tool on the NextCity web portal. The web portal also o!ers a rapid programming interface to program additional devices later on.

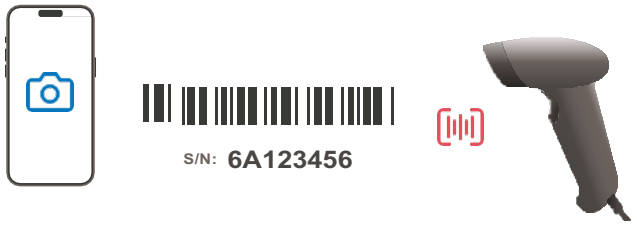
The NextCity mobile app is ideal for on-site programming and verification.

After you log into the app, select the correct property. Then select "Program NextConnect."

Program the NextConnect by entering its serial number.

You can use the app's built-in barcode scanner to scan the NextConnect's barcode, or you can enter the serial

number manually.



Resident App

This service gives residents the ability to view meter data, analyze usage trends, and receive critical alerts on their mobile devices.

Enable the Leak Monitoring Service subscription for optional immediate alerting of sustained high-flow (burst pipe).

Once configured, alerts will automatically be sent via phone, text, and/or email to residents. Alert notifications are repeated until one of the contacts confirms the alert has been received.

Television and Radio Interference Information

Television and Radio Interference

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ISED Statement: This radio transmitter 28950-NC4 has been approved by ISED to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

This device complies with Innovation, Science and Economic Development Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

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(2) This device must accept any interference, including interference that may cause undesired operation of the device.

ISEDC Radiation Exposure Statement: This equipment complies with the ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 40cm between the radiator and your body.

Television and Radio Interference (French)

Déclaration d'ISDE: Cet émetteur radio 28950-NC4 a été approuvé par ISDE pour fonctionner avec les types d'antennes énumérés ci-dessous, avec le gain maximal autorisé indiqué. Les types d'antennes non inclus dans cette liste, dont le gain est supérieur au gain maximal indiqué pour ce type, sont strictement interdits avec cet appareil.

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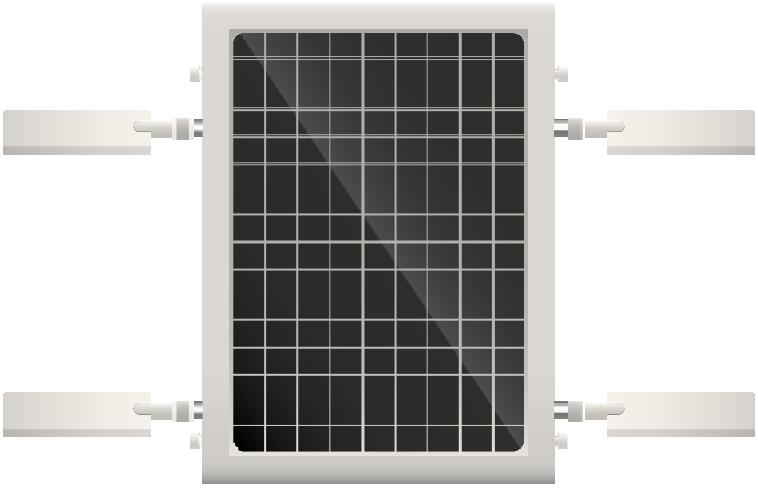
(1) Cet appareil ne doit pas causer d'interférences; et
(2) Cet appareil doit tolérer toute interférence, y compris celles qui pourraient nuire à son bon fonctionnement.

Déclaration d'ISDE relative à l'exposition aux rayonnements: Cet équipement est conforme aux limites d'exposition aux rayonnements du CNR-102 d'ISDE, établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé en maintenant une distance minimale de 40 cm entre le radiateur et votre corps.

Specifications & Installation Guide

NextLink

Solar-Powered Connectivity



The NextLink (NL4) is the ultimate all-in-one solar-powered Gateway and Repeater. Featuring the fastest charging and longest-lasting battery in its class, the NextLink ensures seamless connectivity with the simplest deployment.

Flexible Deployment

Recognizing the critical need for reliable connections, especially in areas with limited power and network access, we have designed the NextLink to integrate effortlessly into diverse environments.

The NextLink's all-in-one design combines an efficient solar panel, a high-capacity battery, and powerful radios, enabling installation in virtually any location—regardless of wired power or network infrastructure availability.

Extending Communication

NextLinks work seamlessly together to extend your wireless meter network even into areas outside of cellular coverage.

Powerful external antennas ensure reliable communication for meter points spread over long distances as well as in high-density submetering applications.

Sustainable Longevity

Built with a robust cast-aluminum housing and fully waterproof design, the NextLink is engineered to withstand even the harshest conditions. Through rain or shine, the NextLink delivers connectivity using renewable solar power, making it both a practical and eco-friendly fixed-wireless solution.

Key Benefits

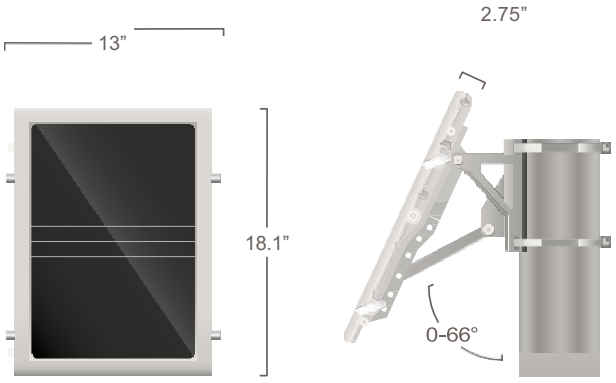
- Multi-carrier 5G LTE-M cellular
- Operates as a Gateway and Repeater to expand coverage
- Fully recharges with only 6 hours of full sunlight
- Efficient power management provides up to 7 days of operation without sunlight
- 2-way meter communication
- High-gain external antennas for extended range
- Battery will continue to charge in freezing temperatures
- IP-68 rated for outdoor use
- All-in-one unit eliminates the headache and problems associated with piecemeal kits

Warranty

- 5-year standard warranty

Specifications

Dimensions



Approvals

FCC ID: 2A8EC-NL4
IC ID: 28950-NL4
Contains FCC ID: 2ANPO00NRF9151
Contains IC ID: 24529-NRF9151

Communications

Multi-carrier 5G cellular with simple LTE-M
Easy mobile app configuration
Built-in NextConnect receiver for meter communication
Seamlessly operates as a relay to extend network

Data

AMI solution, continuous meter communication
Mobile and web access for configuration and monitoring
Supports detailed utility usage history

Power

Solar-powered, integrated 15W panel
Built-in ESD protection for lightning protection
High capacity rechargeable battery
Supports operation through extended low-light weather
Field-replaceable battery

Temperature

Operation from -40ºF to 140ºF | -40ºC to 60ºC

Environment

Engineered for long-term outdoor durability
Compact design, industrial quality cast aluminum
Weather-resistant construction, IP-68 rated
Designed to withstand strong winds and harsh conditions

Installations

Accessories included for pole, wall, or roof mounting
Mobile app guides optimal solar panel positioning
Simple LED status feedback

Warranty

Next Meters warrants the NL4 to be free from defects in materials and workmanship for a period of five years from date of manufacture when installed in accordance with these instructions and with limitations as detailed in the complete warranty.

docs.nextmeters.com/warranty

Due to continuous product improvement and the need to comply with evolving regulations, Next Meters reserves the right to modify product specifications without prior notice.

Contact

For additional information or assistance, please visit our Support Center or contact our Product Support Team:

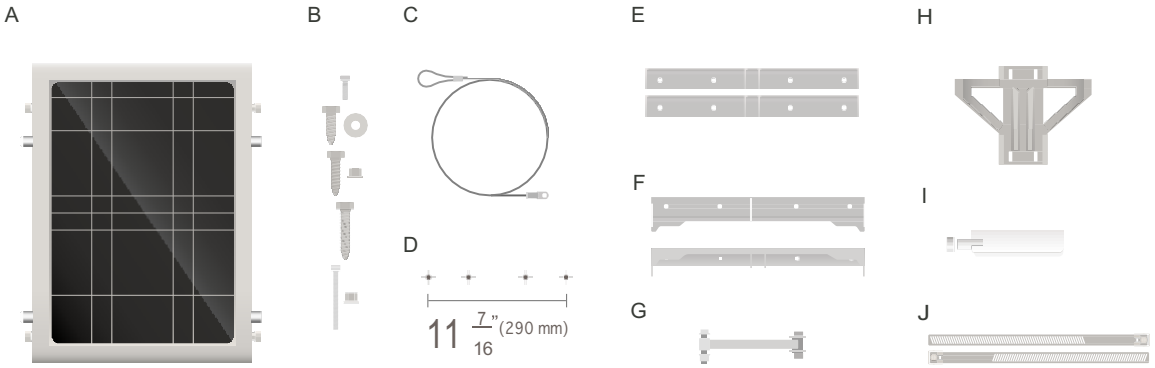
support.nextmeters.com

(844) 538-8203 | support@nextmeters.com

Specifications & Installation Guide

Installation

Full Package Contents



A) NextLink NL4 (Qty: 1)
B) Fasteners:

M8x18mm (Qty: 4) M8x30mm (Qty: 8)
M8x35mm (Qty: 1) M8x45mm (Qty: 1)
M8x50mm (Qty: 1) Washers (Qty: 8)
Locknuts (Qty: 2)

C) Safety Cable (Qty: 1)
D) Mounting Template (Qty: 1)
E) Flat Mount Brackets (Qty: 2)
F) Pivot Mount Brackets (Qty: 2)
G) Pivot Bar (Qty: 1)
H) Pole Mount (Qty: 1)
I) Antenna (Qty: 4)
J) Band Clamps (Qty: 2)

Qualifying Installations

The NextLink should be installed in an orientation and location that maximizes the solar panel's ability to charge the device.

Choose a location with clear lines of sight to the sky year-round. When using a mount that allows you to adjust the angle, choose an angle that will allow the panel to face the sun directly at midday.

Where possible, the NextLink should be installed no less than 10 feet (3 meters) from the ground. Higher installations are generally preferred. Use a stable ladder when necessary. Take appropriate safety precautions.

For latitudes that experience significant variations in the position of the sun between seasons, you should angle the panel to face where the sun would be in the winter.

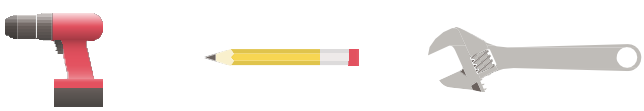
In locations where snow is expected, flat mounting is not recommended. The buildup of snow on the solar panel will disrupt device charging.

The NextLink mounting systems are designed to withstand significant environmental pressures. However, it is vital to complete the installation process, including the installation of the safety cable, to ensure protection of persons and property in the event of mounting system failure caused by extreme weather.

Failure to follow these instructions may cause you to forfeit the protections guaranteed in our warranty.

Required Tools

To install the NextLink, you will need the following:

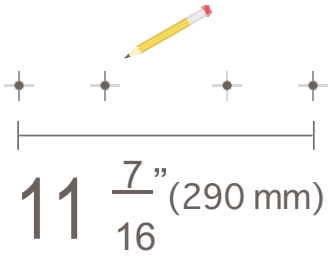


Mounting Options

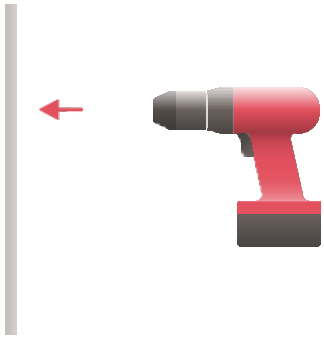
NextLink can be mounted three ways: Wall Pivot, Pole, or Flat Mount. All required hardware (besides tools) for each option is included in the box.

Installation: Wall Pivot Mount

Using the pivot mount side of the included drilling template, mark the holes for the mounting hardware on the surface where the device will be mounted.



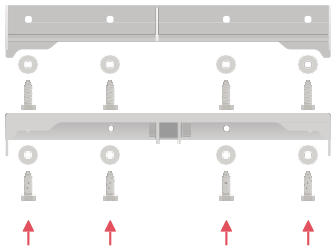
Drill the holes using a 1/4" drill bit.



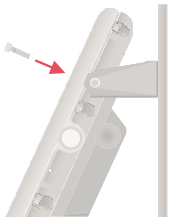
Drill with 1/4” Drill Bit	Pencil	Adjustable Wrench

Installation (cont.)

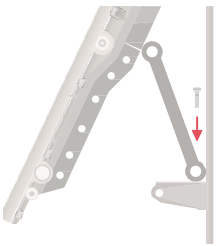
Using the holes drilled in the last step, attach the brackets to the surface using eight (8) M8x30mm lag bolts and washers. You will use four (4) bolts/washers per bracket.



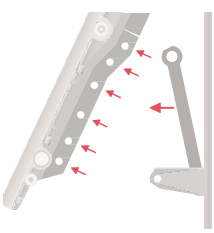
Attach the top of the NextLink to the top mount bracket using two (2) M8x18mm socket head cap screws. At this stage, these screws should be hand tightened.



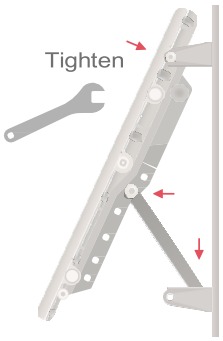
Attach one end of the pivot bar to the center mounting location of the lower mount bracket using the M8x35mm bolt and an M8 locknut. At this stage, these fasteners should only be hand tightened.



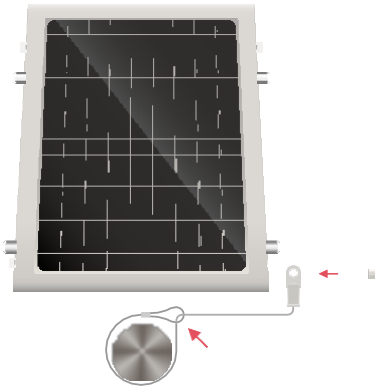
Attach the opposite end of the pivot bar to the NextLink. Choose the appropriate set of holes in the center of the NextLink to optimize the angle of the solar panel (relative to the sun). Use the M8x45mm bolt and M8 locknut.



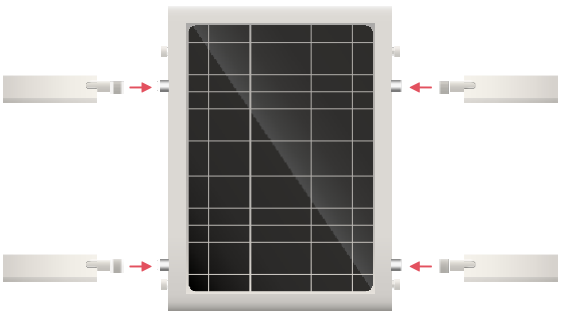
Once the appropriate angle is achieved, use a wrench to tighten all bolts connecting the NextLink and mounting hardware well beyond hand tight to ensure a secure connection. Do not use excessive force, which can result in over-tightening.



Attach the safety cable to a solid mounting point near the NextLink. Then remove one of the M8x18mm screws and use it to bolt the end of the safety cable to the mount bracket and the NextLink.



Attach the antennas by hand tightening them to the connection points on the sides of the NextLink. Any antenna can be connected to any connection point.



Proceed to programming instructions on page 8.

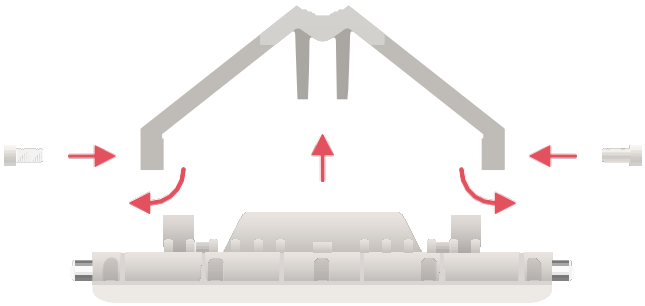
Installation (cont.)

Installation: Pole Mount

Note: It is recommended that two people work together to complete pole mount installations.

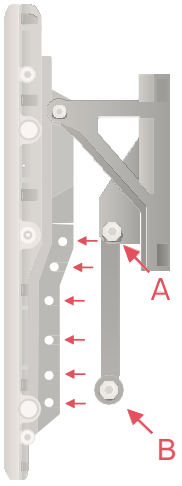
Hook the arms of the pole mount into the ears of the NextLink.

Loosely attach the arms to the ears with two (2) M8x18mm screws.

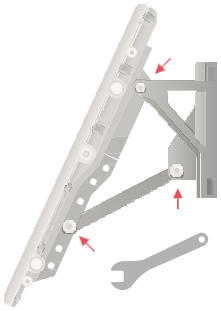


Attach one end of the pivot bar to the pole mount using the M8x50mm bolt and M8 locknut (see item A in the illustration below).

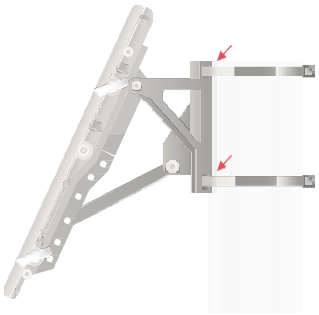
Attach the opposite end of the pivot bar to the NextLink (see item B in the illustration below). Choose the appropriate set of holes in the center of the NextLink to optimize the angle of the solar panel (relative to the sun). Use the M8x45mm bolt and M8 locknut.



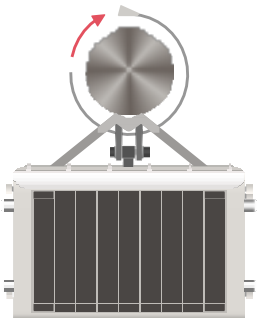
Once the appropriate angle is achieved, use a wrench to tighten all bolts connecting the NextLink and mounting hardware well beyond hand tight to ensure a secure connection. Do not use excessive force, which can result in over-tightening



To connect pole mount to the pole, slide the band clamps through the slots at the top and bottom of the pole mount, then around the pole.



Fasten the band clamps around the pole. One person should hold the NextLink in place as the other tightens the band clamps around the pole.

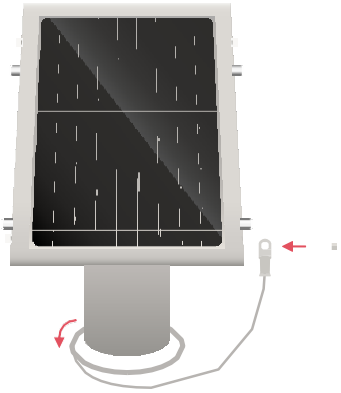


Important: Install the band clamps to no more than 18 in-lbs of torque. Do not overtighten. Do not use an impact driver to tighten. Overtightening can compromise installation integrity.

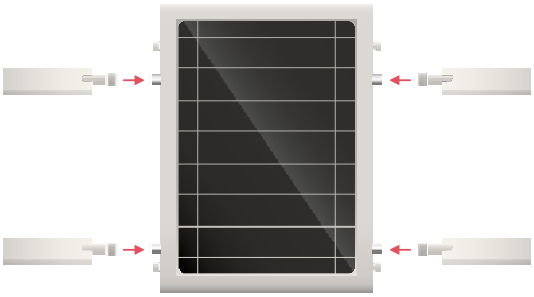
Installation (cont.)

Attach the safety cable to a solid mounting point near the NextLink. Then remove one of the M8x18mm screws and use it to bolt the end of the safety cable to the mount bracket and the NextLink.

If no solid mounting point is available, you can loop the safety cable around the pole before securing it to the NextLink.



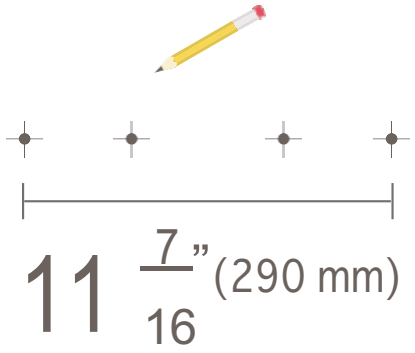
Attach the antennas by hand tightening them to the connection points on the sides of the NextLink. Any antenna can be connected to any connection point.



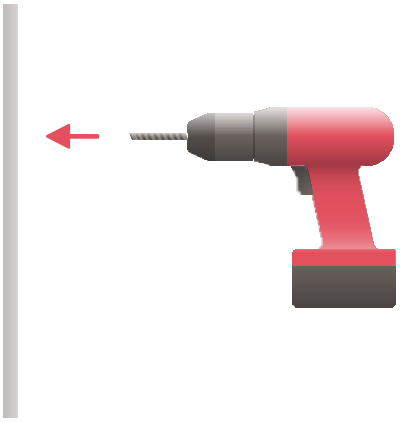
Proceed to programming instructions on page 8.

Installation: Flat Mount

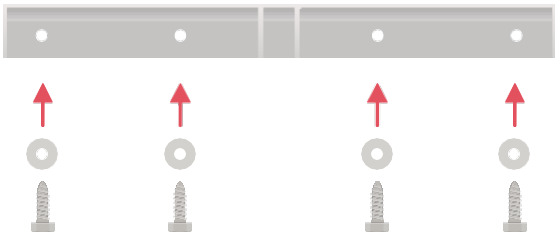
Using the flat mount side of the included drilling template, mark the holes for the mounting hardware on the surface where the device will be mounted.



Drill the holes using a 1/4" drill bit.

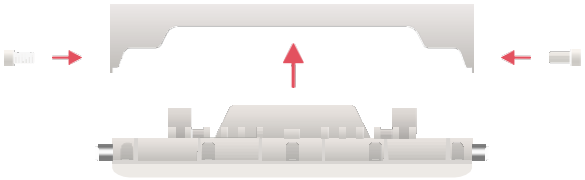


Using the holes drilled in the previous step, attach the brackets to the surface using eight (8) M8x30mm lag bolts and washers. You will use four (4) bolts/washers per bracket.

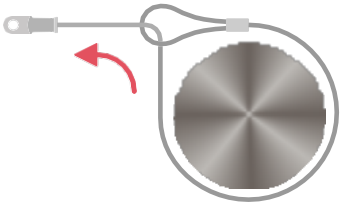


Installation (cont.)

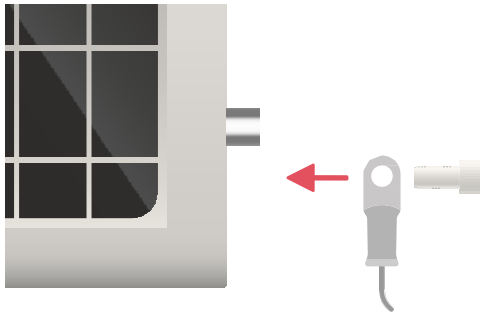
Attach the NextLink to the mounts using four (4) M8x18mm socket head cap screws.



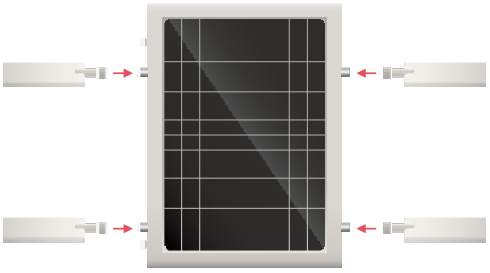
Attach the safety cable to a solid mounting point near the NextLink. Depending on your installation location, you may need to loop the cable through itself around a mounting point.



Remove one of the M8x18mm screws and use it to bolt the end of the safety cable to the mount bracket and the NextLink.



Attach the antennas by hand tightening them to the connection points on the sides of the NextLink. Any antenna can be connected to any connection point.



Proceed to programming instructions on page 8.

Programming and Additional Information

Programming & Verification

Programming is the process of associating the NextLink's serial number with the property where it is installed. This ensures it can communicate with the NextCity Cloud.

To quickly program a large number of devices at once, you can use the CSV file uploader tool on the NextCity web portal. The web portal also o!ers a rapid programming interface to program additional devices later on.

The NextCity mobile app is ideal for on-site programming and verification.

App Store
iOS App

Google Play
Android App

After logging in to the app or web platform, select or create the property that corresponds to the NextLink.

On the mobile app, tap "Program NextLink".

On the web platform, select "Equipment", then "Network" (located in the top right corner).

Program the NextLink by entering its serial number. You can also scan the device barcode (located on the back of the NextLink) using the barcode scanner in the mobile app.

Wave a magnet below the antenna on the upper right-hand side to verify communication with the network. Two green LED blinks indicate successful connectivity.

If no confirmation is received, relocate the NextLink or add additional NextLinks as needed.

LED Status Information

You can check the NextLink's current battery status by viewing the LED on the device. When a magnet is held by the device's battery indicator LED (located just below the antenna on the upper right-hand side of the device), it will light up to indicate the device's current battery.

- FULL BATTERY
- LOW BATTERY
- VERY LOW (Radios are turned off)

Current battery levels can also be checked in the NCSS mobile app or on the NextCentury web platform.

Long-Term Battery Information

The NextLink's field-replaceable battery has a lifespan of 7-10 years. You will receive alerts within the NCSS app starting several months before the battery needs to be replaced.

Television and Radio Interference

Television and Radio Interference

FCC Statement: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment o! and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit di!erent from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 40cm between the radiator and your body.

ISED Statement: This radio transmitter 28950-NL4 has been approved by ISED to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Included external antenna:

- Type: DiPole
- 698-824MHz: Gain of 2.19dBi
- 824-960MHz: Gain of 2.20dBi
- 1710-2200MHz: Gain of 3.8dBi

This device complies with Innovation, Science and Economic Development Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

ISEDC Radiation Exposure Statement: This equipment complies with the ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 40cm between the radiator and your body.

Television and Radio Interference (French)

Déclaration d'ISDE: Cet émetteur radio 28950-NL4 a été approuvé par ISDE pour fonctionner avec les types d'antennes énumérés ci-dessous, avec le gain maximal autorisé indiqué. Les types d'antennes non inclus dans cette liste, dont le gain est supérieur au gain maximal indiqué pour ce type, sont strictement interdits avec cet appareil.

Antenne externe incluse:

- Type : Dipôle
- 698-824 MHz : Gain de 2,19 dBi
- 824-960 MHz : Gain de 2,20 dBi
- 1 710-2 200 MHz : Gain de 3,8 dBi

Cet appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada (Innovation, Sciences et Développement économique Canada) applicables aux appareils exemptés de licence. Son utilisation est soumise aux deux conditions suivantes:

(1) Cet appareil ne doit pas causer d'interférences; et
(2) Cet appareil doit tolérer toute interférence, y compris celles qui pourraient nuire à son bon fonctionnement.

Déclaration d'ISDE relative à l'exposition aux rayonnements: Cet équipement est conforme aux limites d'exposition aux rayonnements du CNR-102 d'ISDE, établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé en maintenant une distance minimale de 40 cm entre le radiateur et votre corps.

MUELLER

SOLID STATE METER (SSM)

Sizes 1 ½" & 2"

Applications: The Mueller solid state meter (SSM) is available in 11/2" and 2" sizes. The SSM meter provides 8 digits of granular data for visual reads and 8 digits in encoded electronic format for use in Mueller Mi.Net AMR / AMI applications. The meter can be used in any residential or commercial application where a high degree of accuracy at low flow rates is important.

Construction: The SSM meter utilizes a stainless steel body with a polymer measuring tube and patented stainless steel reflectors. A heat treated glass lens and polymer lid and surround provide protection for the liquid crystal display. 3.6 volt lithium batteries provide power for the processor for 20 years of life. All internal electronics are potted to prevent water intrusion in the toughest environments.

Operation: The SSM meter utilizes ultrasonic measurement technology to provide outstanding accuracy across a broad flow range with extremely low pressure loss. The static meter design means there are no moving parts inside the meter so it will not degrade in accuracy over the life of the meter due to mechanical wear, providing exceptional revenue for years to come.

With ultra-low flow accuracy of 95% at 0.08 GPM on the 1 1/2" sizes, the SSM is capable of wringing every drop of revenue from your system and detecting the smallest leaks and backflow conditions. The stainless steel reflectors and measuring tube design channel water over the reflectors to keep them free of debris and increase the velocity of the water as it passes through the tube, contributing to the high degree of meter accuracy.

The display provides large numerals and icons that permit verification of the 8-digit meter volume as well as direction of flow, error and alarm status, and battery life. A unique, never duplicated 8-digit serial number on the SSM meter faceplate and lid identifies it as the basis for all systems communication. The register face plate and housing provide visual information specific to the registration units, model, size, date of manufacture, and billing units, to provide verifiable and retrievable data in the event it is required.

Conformance To Standards: Mueller SSM meter complies with AWWA C-715 requirements for accuracy and odometer wheel height as well as the American Standard Code for Information Interchange or ASCII.

Operation: When interrogated by a Mueller AMR / AMI device, the SSM meter communicates the unique 8-digit serial number and 8-digit electronic reading in ACSII format where it can be recorded and maintained within the reporting structure of the AMR / AMI system. In the event that field testing is required, an optical button located on the display faceplate can be utilized to place the meter in test mode which provides excellent resolution for testing purposes.

SOLID STATE METER
SIZES 1 ½" & 2"

Maintenance: The Mueller SSM meter is designed and manufactured to provide a 20 year service life with virtually no maintenance required. Meter lids are available as replacement components in the event of vandalism or the need for meter retrofits.

MATERIALS AND SPECIFICATIONS

Model	Solid State Meter (SSM)
Register Type	Solid State Encoder Register
Sizes	11/2" & 2" Ultrasonic Meters
Standards	Manufactured and tested to meet or exceed all applicable accuracy and pressure loss requirements of the AWWA C-715 standard and the American Standard Code for Information Interchange (ASCII)
Temperature Operating Range	34ºF to 158ºF
Storage Temperature Range	-4ºF to 158ºF
Water Temperature Range	34ºF to 140ºF
Connection Options	18" Nicor Connector, 5' flying lead wire, with factory potted connections
Materials	Processor / register housing and lid - thermoplastic; Register lens – heat treated, tempered glass; LCD, polymer measuring tube, SST reflectors
AMR / AMI Compatibility	Mi.Net AMR / AMI system, and other AMR / AMI systems that can utilize the standard 8-digit encoder protocol output.

SOLID STATE METER (SSM)

Sizes 1 ½" & 2"

GENERAL TECHNICAL DATA

	1.5" AND 2"
Potable Water Temperature Range	34 ... 122 °F
Ambient Operating Temperature	34 ... 158 °F
Ambient Storage Temperature	-4 ... +140 °F (>90° F max. for one hour)
Maximum Pressure	psi 300
Power Supply	3.6 VDC lithium battery
Battery Lifetime	20 years
Interfaces	Industry standard Encoder protocol, ASCII output for compatibility with all AMR / AMI systems
Data Storage	Alarms and consumption values
Protection class	IP 68
Operating performance	In the temperature range of 45 to 85 ºF, meter consumption measurement is accurate to ±1.5% over the normal flow range (reference: approved test bench, ISO9001 certified.

TECHNICAL DATA DISPLAY

	1.5" AND 2"
Display	LCD, 8-digit Visual resolution in US Gallons to 0.1 and Ft3 to 0.01
Units	Flow and volume (GPM, gal, Ft3)
Values Displayed	Volume - flow - reverse flow - water temperatures - display test - error and alarm status - battery lifetime

APPROVAL

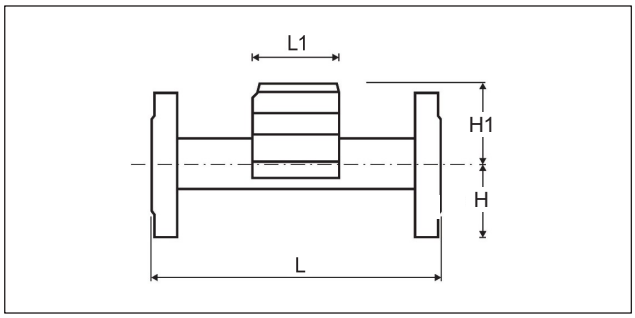
	1.5" AND 2"
NSF	Complies with NSF / ANSI Standard 61, Annex F/G
AWWA	Meets or exceeds applicable sections of the AWWA / ANSI C715 Standards
FCC	Complies with FCC part 15 B

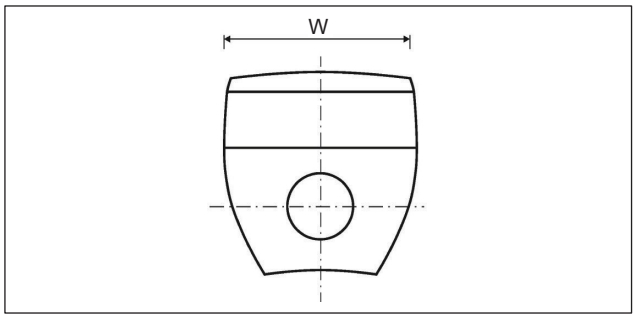
MATERIAL

	1.5" AND 2"
Measuring Pipe	Stainless Steel
Register Housing	Engineered Polymer
Transducers	Composite
Reflectors	Stainless steel

SOLID STATE METER (SSM)

DIMENSIONS

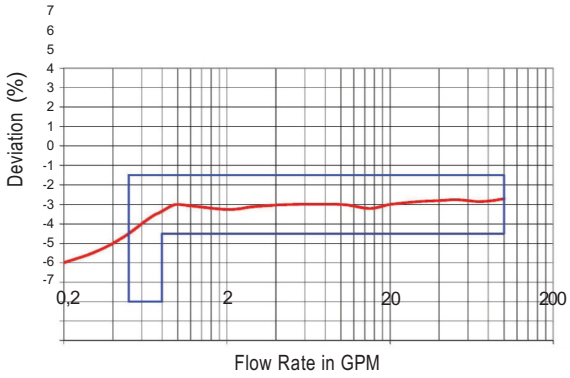




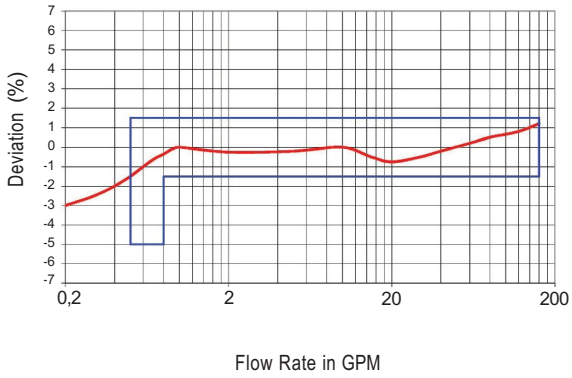
SIZE			1.5"	2" L
Lay Length	L	Inch	13"	17"
Register Length	L1	Inch	3.5"	3.5"
Register Width	W	Inch	3.75"	3.75"
Height to Center of Pipe	H1	Inch	2"	2.5"
Height to Center of Pipe	H1	Inch	3.3"	3.3"
Net Weight		Lb.	14.1	19.2

TYPICAL FLOW CHARTS

Typical Flow Chart 1 1/2" Mueller SSM



Typical Flow Chart 2" Mueller SSM



TECHNICAL DATA

SIZE			1.5"	2" L
Lay Length	L	Inch	13"	17"
Operating Flow Range		GPM	0.8 - 100	0.8 - 160
Low Flow Range		GPM	0.5 - 0.8	0.55 - 0.8
Operating Range accuracy		%	±1.5	±1.5
Low Flow Range accuracy		%	-5 / ±1.5	-5 / ±1.5
Pressure Loss			3.5 psi at 70 GPM	3.6 psi at 110 GPM

For more information about Mueller or to view our full line of water products, please visit muellersystems.com or call Mueller customer service at 1.800.423.1323.

F 14222 6/20

MUELLER

ABB MEASUREMENT & ANALYTICS | DATA SHEET | DS/FET400-EN REV. H

AquaMaster4 FEW4 and FET4

Electromagnetic flowmeter

Measurement made easy

The ideal flowmeter for potable water distribution networks, revenue metering and irrigation applications

Multiple measurement parameters

- flow rate, flow velocity, volume flow (forward, reverse and net) and pressure (option)

Integrated mobile communications

- NB-IoT (LTE Cat NB1 for China) & 4G LTE Cat1 with fall back to 3G

Multiple power options

- battery (with up to 10 years' life), renewable and AC mains

Wide range of sensor styles and size

- reduced bore DN40 to 600, virtual full bore DN40 to 200, full bore DN250 to 2400 and probe 300 to 1000 mm

Ideal for arduous applications

- IP68 for submersion up to 10 m that are prone to flooding and up to 5 m buriable

Verification

- in-situ diagnostics and self-checking capabilities to OIML type P

Flexible communications

- pulse, Modbus™ and Sensus™ with NFC interface to mobile smartphone/tablet

Diverse data options for mobile communications

- CSV/JSON files exchange through explicit FTPS/FTP (TLS1.2-based encryption) or MQTTS/MQTT Sparkplug B for 4G/3G and data exchange through LwM2m (over CoAP with DTLS 1.2 encryption) for NB-IoT (China Telecom IoT Platform)

Product is certified to NSF/ANSI/CAN 61-G, OIML R49:2013 & MID

Applications

- Water supply in district/zonal metering area
- Revenue metering
- Leak monitoring in district/zonal metering area
- Survey and flow investigation
- Irrigation and abstraction
- Fire suppression systems

Additional product features

- In-situ diagnostics and optional self-checking capabilities with OIML R49 type P
- High and low flowrate alarms
- Backward compatible with legacy AquaMaster sensors
- Drinking water certifications: WRAS, NSF-61, ACS, AS/NZS 4020
- Certificates: OIML R49:2013, MID MI-001, NMI 10, PAC and UL 327 B
- Wireless certification: CE-RED, FCC/IC, PTCRB, SRRC, ACMA/RCM

Values to you

- Solution from the masters of flow measurement – in 1988, ABB invented and designed the world's first battery-powered electromagnetic flowmeter for DMA (District Metered Area)
- Invest smartly through 'single box' DMA solution – combining measurement (flow & pressure), data logging and mobile communications
- Have greatest confidence in your billing based on highest accuracy with widest flow range revenue meter
- Get early warnings for leaks or bursts and reduce NRW (Non-Revenue Water) – highest confidence in night line performance
- Have highest confidence in the wet calibration – our flow rigs are certified by various national independent accredited bodies/laboratories all linked by the 'International Laboratory Accreditation Cooperation' (ILAC)
- Frequent granular data of process (flow rates and totalizer) and diagnostic parameters help to reduce operational cost or eliminate energy wastage and will enable you to control your supply and demand more accurately
- Get data at a higher resolution for precise and specific periods of interest anytime and every time
- Cyber Security assurance for data confidentiality and integrity including changes made in configuration settings or firmware upgrades with complete traceability which could be requested over air in near real time
- Fit-and-flow with factory default settings. Use the ABB Velox Interface mobile smartphone/tablet app to easily change configuration/settings to your preference
- Lowest total cost of ownership (TOTEX) over complete product lifecycle
- Maximum confidence in the health of the flowmeter through the use of ABB's SRV500 in-situ verification tool

Overview

FEX41X/FEX43X

Multiple power options

- 2 x internal batteries (up to 10 years life)
- Solar
- Wind
- AC mains

Interactive phone/tablet app – simple and easy

- Secured and easy
- Contactless
- Chart and retrieve data
- Offline configuration
- **Google Play™** Easy firmware update

Configurable features

- In-built logger
- Pressure measurement
- Self-checking

Communications options

- Pulse output
- Modbus
- Sensus protocol

Multiple sensor options

- Reduced bore DN40 to 600
- Virtual full bore DN40 to 200
- Full bore DN250 to 2400
- Probe 300 to 1000 mm

Measurement performance

- Accuracy up to ±0.2 % ±0.5 mm/s whichever is greater
- Range (R) up to R1000

Drinking water approvals

NSF-61 | WRAS | AS/NZS 4020 | DVGW | ACS | D.M. 174

Wide environmental conditions

- IP68 to 10 m and up to 5 m buriable
- –20 to 60 °C
- **Comparable to DIN ISO 12944** Corrosion resistance

Product type approvals

OIML R49:2013 for accuracy class 1 and 2 | MID MI-001 | NMI 10 | PAC

Calibration rig approvals

ISO 17025 | UKAS | NATA | SIMT | NIST traceable | NABL

FEX45X

Multiple power options

- 6 x internal batteries (up to 8 years life)
- Solar
- Wind
- AC mains

Interactive phone/tablet app – simple and easy

- Secured and easy
- Contactless
- Chart and retrieve data
- Offline configuration
- **Google Play** Easy firmware update

Configurable features

- In-built logger
- Pressure measurement
- Self-checking

Communications options

- Pulse output
- Modbus
- 4G/ nB - IoT

Data options

- FTPS/MQTTS with Sparkplug B
- CSV/JSON

Multiple sensor options

- Reduced bore DN40 to 600
- Virtual full bore DN40 to 200
- Full bore DN250 to 2400
- Probe 300 to 1000 mm

Measurement performance

- Accuracy up to ±0.2 % ±0.5 mm/s whichever is greater
- Range (R) up to R1000

Drinking water approvals

NSF-61 | WRAS | AS/NZS 4020 | DVGW | ACS | D.M. 174

Wide environmental conditions

- IP68 to 10 m and up to 5 m buriable
- –20 to 60 °C
- **Comparable to DIN ISO 12944** Corrosion resistance

Product type approvals

OIML R49:2013 for accuracy class 1

and 2 | MID MI-001 | NMI 10 | PAC

...Overview

Why is AquaMaster4 your first choice for distribution networks and revenue metering applications?

Your challenge	Our offering	Advantages for you
Do you have confidence in your revenue meter and therefore in your water balance table? 	AquaMaster4 offers highest accuracy with a wide flow range. Our 0D upstream and downstream reduced bore sensor is virtually insensitive to hydraulic disturbances as it conditions the upstream fluid flow profile within the sensor's central measuring zone giving superior performance; especially during the night when the flow rate is low. The AquaMaster4's in-built optional cellular engine and data logger runs at high speed, logging at a fast rate giving the user total flexibility to download (typically 15 minutes) logged data; then investigate, in precise detail, flow and pressure activity during a period of interest at even higher time resolution. Such high resolution data facilitates step testing, leakage detection, water network analysis, reduces operational expenses and eliminates energy wastage. The in-built logger delivers accuracies which are not possible when using an external data logger.	Increase in revenue for authorized water consumption and early warnings on leaks (non-revenue water) 
Do you want to reduce the cost for commissioning and interacting with the product? 	A free app (Velox Interface) is available for use with Android™ smartphones and tablets. This supports simple configuration changes to made on your touchscreen color phone/tablet. Just touch to upload, then configure offline, touch again to update the AquaMaster4 configuration. The logger contents can be downloaded as a file in industry-standard CSV format in the same manner. To ensure the product remains up-to-date with the latest features and enhancements, the firmware is updated using the Velox Interface app. 'Fit-and-Flow' data storage inside AquaMaster4 eliminates the need to match a remote sensor with a transmitter in the field. On initial installation, the self-configuration sequence replicates all calibration factors, meter size and serial numbers, together with customer site-specific settings, into the transmitter automatically, eliminating the opportunity for error.	Increase productivity of your staff/contractor and eliminate poor quality through human error 
Do you want to have the lowest operational expenditure throughout the lifecycle of the product? 	Using standard off-the-shelf 'D' lithium cells, the AquaMaster4 can be operated for up to 10 years. Using a simple DC (6 to 32 V) connection from sources as small as a 5 W solar panel/wind generator, AquaMaster4 can be operated with green energy sources. There is no longer any need for bespoke cables and laptops to connect to each transmitter.	Lower cost of ownership 
	In-situ self checking of flowmeter health enables the user to meet regulatory/technical requirements. In 1995, ABB invented and designed the world's first in-situ verification system for electromagnetic flowmeters. Building on ABB's fingerprint philosophy, each flowmeter is verification tested before shipping from the factory. SRV500 enables the operator to choose whether to either use the factory fingerprint or, after product commissioning, to create a new fingerprint based on real site conditions.	Simplifies compliance to ISO 9001 traceability without any additional effort 

FEX41X / FEX43X

Protective cover with wire to the contactless coupler

The removable cover protects the transmitter display from accidental impact damage

Wall mount contactless coupler

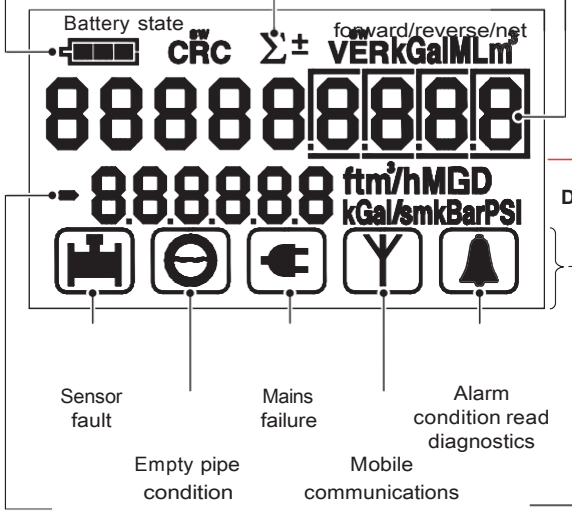
The wall mount coupler allows users to communicate easily using a mobile phone/tablet when the transmitter is located in inaccessible places (for example, a pit)

Upper display:
forward flow total/reverse flow total/net flow total

Totalizer:

Battery state

forward/reverse/net



Display

Sensor fault

Mains failure

Alarm condition read diagnostics

Empty pipe condition

Mobile communications

Lower display:
flow rate
flow velocity,
pressure

5 alarm icons

Contactless communication

Interacting with the transmitter is easily achieved with an Android smartphone/tablet over NFC

IP68 connectors

IP68 rated as standard, the transmitter can be fully submerged for up to 2 meters

Anti-tamper seal

Secured against any tampering, meeting MID MI-001 regulations

Power supply enclosure

Enclosure for battery, AC or renewable power options

...Overview

FEX45X

NFC Cover with wire to the contactless coupler/USB

The removable cover enables contactless communication with USB termination or extension to wall mount contactless coupler

Wall mount contactless coupler

The wall mount coupler allows users to communicate easily using a mobile phone/tablet when the transmitter is located in inaccessible places (for example, a pit)

In-built data logger (optional)

Optional multi-speed, flowrate and pressure internal logger runs at high speed, allowing user to request logged data at any interval (typically set to one minute, but can be as fast as 15 seconds)

Contactless communication

AquaMaster4 is the first instrument to feature a contactless interface using industry standard Near Field Communication (NFC). A free App (Velox) available for use with Android and Windows smartphones and tablets supports simple configuration changes to be made on your touchscreen color phone/tablet.

Wireless communication

In–built cellular engine (4G/nB- IoT) sends logged data of measurement along with changes in configuration settings either as summary report or in reply to ad hoc requests with alarm notification for diagnostics

Fit and flow

No need to match sensor and transmitter, as the sensor stores all calibration factors, site settings and serial numbers

Power options

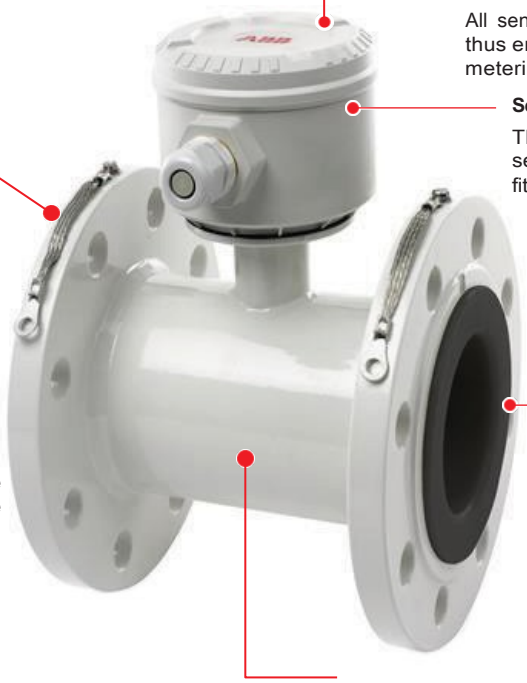
Plug-in external power supply unit (PSU) with option to select Battery/AC Main/Solar or Wind which is a 3.6 V DC interface only. Integral flowmeters are powered with internal batteries.

IP68 connectors

IP68 rated as standard, the transmitter can be fully submerged for up to 2 meters

Range of flange options

ISO 7005, DIN, EN 1092-1 PN10/PN16 / PN25/PN40
ANSI/ASME B16.5/16.47 series B Class 150/Class 300
AWWA C207 Class B/D/E
AS 4087 PN16
AS2129 Table E
JIS 7.5K/10K/5K



IP68, NEMA 6P

All sensor types are, as standard, inherently submersible thus ensuring suitability for installation in chambers and metering pits that are prone to flooding

Sensor memory

The sensor stores all calibration factors, site settings and serial numbers enabling users to fit-and-flow

Drinking water approvals

NSF-61 | WRAS | AS/NZS 4020 | DVGW | ACS | D.M. 174

EN ISO 12944 C4 grade comparable corrosion resistance

Zinc-based primed with =70 µm (optional 300 µm) thick paint coat will give long lasting corrosion resistance even in arduous applications

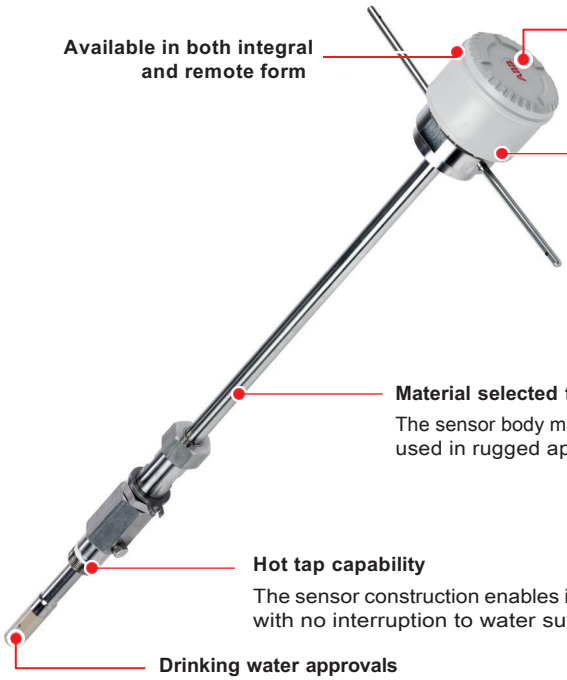
Upstream and downstream pipe length

Reduced bore DN40 to 600 requires 0D upstream and downstream

Virtual full bore DN40 to 200 requires 5D upstream and 0D downstream (0D upstream and 0D downstream to OIML R49:2013 only)

Full bore DN250 to 2400 requires 5D upstream and 2D downstream (3D upstream and 0D downstream to OIML R49:2013 only)

Available in both integral and remote form



IP68, NEMA 6P

All sensor types are, as standard, inherently submersible thus ensuring suitability for installation in chambers and metering pits that are prone to flooding

Sensor memory

The sensor stores all calibration factors, site settings and serial numbers enabling users to fit-and-flow

Material selected to last

The sensor body material enables it to be used in rugged applications

Hot tap capability

The sensor construction enables installation with no interruption to water supply

Drinking water approvals

NSF-61 | WRAS | ACS

Calibration in ABB flow laboratory

Figure 1 ABB calibration rig – certificated by ISO, UKAS, NATA, SIMT and NIST traceable

ABB's flow calibration facilities are certified by various national independent accredited bodies/laboratories and these are all are linked by the 'International Laboratory Accreditation Cooperation' (ILAC7).

Flowmeters in ABB's facilities can be calibrated by one of the following methods:

- gravimetric (using weigh scales)
- volumetric (using the meter prover)
- comparison (using reference meters)

Additionally, ABB's laboratories are checked against each other and against external accredited laboratories using transfer standard meters.

Gravimetric

In this method, the flowmeter is calibrated in a pipeline, with water being pumped through it from a sump. A diverter valve situated downstream directs the flow from the meter either back to the sump or to a tank of sufficient capacity attached to a highly accurate weighing system.

Volumetric

There are two main methods of volumetric calibration:

- Fixed volume volumetric tank method
  - This method works in a similar way to the gravimetric method, except that the flow from the meter is diverted into a tank of known volumetric capacity. This eliminates the need for a weighing system or to calculate the volume of water from its weight.
- Fixed volume ball meter prover
  - In this method, the diverter valve directs the flow from the meter into a meter prover. The prover is a precisely manufactured section of pipe containing a sphere that is three percent larger in diameter than the pipe. Two detector switches are situated in the pipe at a fixed distance apart. The volume of water that is contained in the pipe between the switches is known as the calibrated volume.
  -

Comparison

In this method, the flowmeter under calibration is installed in a pipeline in series with a reference, or master, flowmeter with a known calibration. Once the flow of water through both meters is stable, a timer is started and the outputs of both meters are simultaneously monitored. After a set period, the timer is stopped. Using the data from the calibration run enables the average flowrate of the meter under test to be compared with the master meter, with the difference being the error.

Advantages of ABB's calibration rig

ABB has one of the largest calibration facilities in the world, capable of pumping 2.5 m^3/s, enabling larger meters to be calibrated at high flowrates.

All of ABB calibration facilities are continuously pumped enabling a flowmeter to calibrated at a steady flowrate (for example, over 300 or 600 seconds; or longer if required), to reduce a meter's random uncertainty errors during calibration.

ABB's high turndown flowmeters (those with a high R number) can be calibrated over an extended flow range, guaranteeing accurate flowmeter performance over its full operating range.

Verification

What is verification?

Verification is the inspection and testing of a product to establish that it meets regulatory/technical requirements. Industrial instrumentation is robust, very reliable and designed to operate for many years with minimal maintenance. In today's competitive environment customers are looking for ways to maximize their profitability, regular product verifications is one way to ensure processes continuously operate at their peak.

The ABB verification story

Customers in the water and process industries have been able to save large sums of money thanks to ABB's innovations in product verification over the last two decades.

1995
CalMaster released

Worlds first flow verification system

Step change in regulatory compliance and flow maintenance

Tests to within 1 % of original calibration certificate

2006
CalMaster2 released

Worlds first battery powered flowmeter verification system

2008
VeriMaster and ScanMaster released

Flow verification testing without interrupting the measurement

Testing using revolutionary in-built diagnostics coming from the flowmeter itself

2017
SRV500 released

Multi-product verification platform

Digital solution with secure data storage in ABB cloud

Flexible licence options

Introducing SRV500

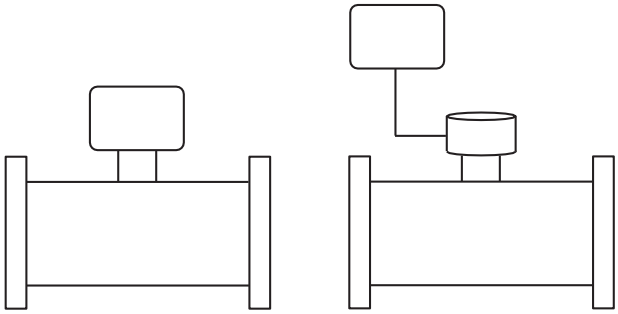
The next generation verification tool suite for use with ABB's complete range of active electronic flowmeters. Download the software for free and use the instrument-specific test routine to provide the best possible check of product health, without stopping your process.

SRV500 verifies the condition and performance of the flowmeter under test. With the licensed software version, test reports can be generated and stored locally for further analysis. SRV500 also analyzes the product internal diagnostics and compares the results with historical measurements.

SRV500 enables the operator to choose whether to use either the factory fingerprint or to create a new fingerprint based on real site conditions after product commissioning. All verifications performed in the field can then be compared with the fingerprint data and previous tests to ensure flowmeter performance has not degraded.

Specification – transmitter (41X/43X)

Mounting on flow sensor



Integral with sensor

Remote with up to 150 m (492 ft) cable

Power supply

Battery AC mains Solar Wind

Battery power

Only use 3.6 V lithium thionyl chloride D batteries recommended by ABB

Note. The following batteries work with the product:

- SAFT LS33600
- Eve ER34615
- GB Cell ER34615
- cT-energy ER34615
- OmniCel ER34615
- GEBC ER34615
- LiYa ER34615
- Fanso ER34615H

The above batteries comply with the safety requirements of IEC60086-4, and have a maximum peak discharge current of less than 500mA.

Nominal battery life

Sensor style	Size	Integral mount transmitter	Remote mount transmitter
Reduced bore	DN40 to 80	10.5 years	8 years
	DN100 to 300	7 years	5.5 years
	DN350 to 600	6 years	5 years
Virtual full bore	DN40 to 200	10.5 years	8 years
Full bore	DN250 to 600	6 years	5 years
	DN700 to 2400	2.5 years	2 years
Probe	300 to 1000 mm	10.5 years	8 years

Test conditions:

- acquisition = 15 seconds
- pulse output = 2 Hz @ 5 ms
- alarm output on = 25 %
- logger rate = 1 minute
- with pressure
- integral verification self check = 15 minutes
- ambient temperature = 20 °C

Battery capacity and life are significantly shortened:

- when the operating environment temperature ranges between –20 and 0 °C or 50 and 70 °C (–4° and 32 °F or 122 and 158 °F)
- when data acquisition is less than 15 seconds
- when pulse output width > 5 ms and output frequency is set high
- with extended NFC interface use
- Class 2/Class 1 calibration to OIML R49 & MID options (CM2 & CM1 in ordering code)
- when Modbus or Sensus output is in use

Mains supply (option – remote only)

- 95 to 240 V AC, 50/60 Hz, 3 VA
- Mains connection cable: approx. 3 m (9.8 ft)

Internal backup power time for:

- DN40 to 200: 16 days
- DN250 to 600: 6 days
- DN700 to 2400: 3 days

Renewable power (option)

- Solar or wind
- Input voltage: 6 to 32 V DC @ 5 W
- Max. current: 200 mA

Internal backup time for:

- DN40 to 200: 48 days
- DN250 to 600: 18 days
- DN700 to 2400: 9 days

Note. Renewable energy generators do not operate at maximum capacity. For example, low wind speeds, dirty solar panels and shorter daylight periods all reduce capacity. Consequently, some installations may require generators with a capacity greater than the specified 5 W minimum.

Inputs

- IP68 connectors, mains cable (remote only)
- Sensor cable (remote only). ABB sensor cable supplied as standard. SWA cable available (via adapter box) on application
- Pressure transducer connection (option)

Configuration/User interface

ABB Velox Interface app on a compatible tablet or smartphone. Operating systems of smartphone or tablet are Android (Oreo or newer). Functions of Velox Interface include configuration, diagnostics, logger data retrieval and transmitter flash update.

Outputs

- Pulse/Alarm
- RS485 Modbus
- Sensus protocol

Pulse outputs (option)

- Passive Output 1: forward pulses
- Passive Output 2: reverse pulses
- +35 V @ 20 mA solid state, unipolar
- Isolated with one common, shared with alarm output max. ±50 V to earth
- 50 Hz max., programmable pulse width, default 2 ms *

* Increasing pulse width beyond 2 ms at frequencies greater than 10 Hz reduces battery life

Modbus interface (option)

- Modbus RTU over 2-wire EIA-485
- Supported baud rates: 9600 and 19200
- Max. devices on bus segment: 32
- Max. response time, 1 registered read: 60 ms
- Max. response time, 1 registered write: 600 ms

Alarm outputs (option)

- Indicates any problem with measurement, power supply or flowrate alarm
- Bi-directional, solid state
- +35 V @ 50 mA
- Isolated with one common, shared with pulse outputs

Automatic meter reading (AMR)

3-wire Sensus compatible

Logger

Logger function	Flow and pressure	Forward, reverse, and net flow totals
No. of records	45871	3120
Logging interval *	15 seconds 30 seconds 1 minute 5 minutes 15 minutes (selectable)	24 hours (fixed)
Logger capacity	31 days @ 1 minute 477 days @ 15 minutes	8 years

* Based on a default 15 second measurement rate when operating on battery or renewable power

Retrieval of logger data file via smartphone/tablet – see **Configuration/User interface** on page 12

Logger data file format

- .csv for easy import into databases/spreadsheets
- Time-stamped records with flow, pressure and totalizers in user-configured units of measurement

Response time (programmable)

>0.1 second (mains-powered)

15 seconds (battery-powered + external renewable energy)

Environmental and operating conditions

Ingress rating

IP68 (NEMA 6P), <2 m (6 ft)

Submerged

9 months accrued time

Humidity

0 to 100 %

Temperature ranges

Storage: –20 to 60 °C (–4 to 140 °F)

Ambient: –25 to 60 °C (–13 to 140 °F)

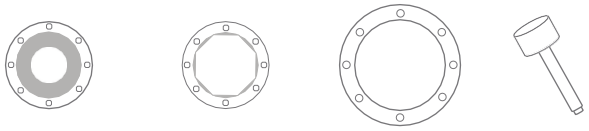
Transmitter vibration

IEC 60068-2-6 (2007)

Vibration level 2g

Options

Compatible sensor styles



Reduced bore	Virtual full bore	Full bore	Probe
DN40 to 600	DN40 to 200	DN250 to 2400	300 to 1000 mm

External pressure transducer (option)

Up to 20 and 40 bar absolute

Backward compatibility (option)

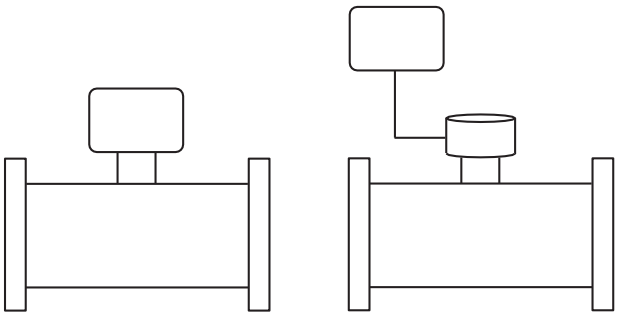
- Full compatibility with legacy AquaMaster remote sensors. Plugs directly into AquaMaster4 with no specific configuration required.

MID/Tamper detection (option)

- Switch selectable inside the tamper-evident, seal-protected enclosure
- Prevents changes to meter configuration that affect the meter/output accuracy

Specification– transmitter (FEX45X)

Mounting on flow sensor



Integral with sensor

Remote with up to 150 m (492 ft.) cable

Power supply

Battery AC mains Solar Wind

Battery power

6/4 lithium thionyl chloride 'D' batteries.

Note. The following batteries work with the product:

- SAFT LS33600 *
- Eve ER34615 *
- GB Battery ER34615
- cT-energy ER34615
- OmniCel ER34615
- GEBC ER34615
- LiYa ER34615
- Fanzo ER34615H

* Preferred

Nominal External Battery Power Supply Unit (PSU) only:

FTPS/FTP

Sensor style	Size	Integral	Remote
Reduced bore	DN40 to 80	8.5 years	7 years
	DN100 to 300	7 years	6.5 years
	DN350 to 600	7 years	6 years
Octagonal bore	DN40 to 200	8.5 years	7 years
Full bore	DN250 to 600	7 years	6 years
	DN700 to 2400	4 years	4 years

MQTTS/MQTT with Sparkplug B

Sensor style	Size	Integral	Remote
Reduced bore	DN40 to 80	11 years	9 years
	DN100 to 300	9 years	7.5 years
	DN350 to 600	8.5 years	7.5 years
Octagonal bore	DN40 to 200	11 years	9 years
Full bore	DN250 to 600	8.5 years	7.5 years
	DN700 to 2400	4.5 years	4 years

Test conditions:

- acquisition = 15 seconds
- pulse output = 2 Hz @ 5 ms
- alarm output on = 25 %
- logger rate = 1 minute
- with pressure
- integral verification self check = 15 minutes
- ambient temperature = 20 °C
- mobile communication transmission interval of:
  - 24 h for Detailed Report through 4G over FTPS/FTP/MQTTS/MQTT with Sparkplug B, or- 6 h for Summary Report through NB - IoT over LwM2M Battery capacity and life are significantly shortened:
- when the operating environment temperature ranges between –20 and 0 °C or 50 and 70 °C (–4° and 32 °F or 122 and 158 °F)
- when data acquisition is less than 15 seconds
- when pulse output width > 5 ms and output frequency is set high
- with extended NFC interface use
- Class 2/Class 1 calibration to OIML R49 & MID options (CM2 & CM1 in
- ordering code)
- when Modbus output is in use
- with extended use of mobile communications

Mains supply (option – remote only)

- 95 to 240 V AC, 50/60 Hz, 3 VA
- Mains connection cable: approx. 3 m (9.8 ft)

Renewable power (option)

- Solar or wind
- Input voltage: 6 to 32 V DC @ 5 W
- Max. current: 200 mA

Internal backup time for:

- DN40 to 200: 5 days
- DN250 to 600: 3 days
- DN700 to 2400: 1 day

Note. Renewable energy generators do not operate at maximum capacity. For example, low wind speeds, dirty solar panels and shorter daylight periods all reduce capacity. Consequently, some installations may require generators with a capacity greater than the specified 5 W minimum.

Nominal External Backup Power for Mains and Renewable Power Supply Unit (PSU) FTPS/FTP:

Sensor style	Size	Integral	Remote
Reduced bore	DN40 to 80	5.5 years	5 years
	DN100 to 300	5 years	4 years
	DN350 to 600	4.5 years	4 years
Octagonal bore	DN40 to 200	5.5 years	5 years
Full bore	DN250 to 600	4.5 years	4 years
	DN700 to 2400	2.5 years	2.5 years

Note. Test conditions are the same as for battery-operated transmitter with 4 batteries only.

MQTTS/MQTT with Sparkplug B

Sensor style	Size	Integral	Remote
Reduced bore	DN40 to 80	6.5 years	5 years
	DN100 to 300	5.5 years	4.5 years
	DN350 to 600	5 years	4.5 years
Octagonal bore	DN40 to 200	6.5 years	5.5 years
Full bore	DN250 to 600	5 years	4.5 years
	DN700 to 2400	3 years	3 years

Battery change-over backup time

- Approximately 2 minutes

Antenna

- Internal
- External (option)

Note. Mobile communications do not operate if the internal antenna is under water . The general advice is to mount the antenna as high as possible, always outside of any metal enclosures and not under the surface of the ground.

Inputs

- IP68 connectors, mains cable (remote only)
- Sensor cable (remote only). ABB sensor cable supplied as standard. SWA cable available (via adapter box) on application
- Pressure transducer connection (option)

Configuration/User interface

ABB Velox Interface app on a compatible tablet or smartphone. Operating systems of smartphone or tablet are Andoid (Oreo or newer). Functions of Velox Interface include configuration, diagnostics, logger data retrieval and transmitter flash update.

IMPORTANT (NOTE)
Please ensure all required regulatory approvals are in place before you put the FEX45X transmitter in use.

use.

Outputs

- Pulse/Alarm
- RS485 Modbus
- Mobile communications (4G fall back to 3G/NB-IoT)

Pulse outputs (option)

- Passive Output 1: forward pulses
- Passive Output 2: reverse pulses
- +35 V @ 20 mA solid state, unipolar
- Isolated with one common, shared with alarm output Max ±50 V to earth
- 50 Hz max., programmable pulse width, default 2 ms*

* Increasing pulse width beyond 2 ms at frequencies greater than 10 Hz reduces battery life

Modbus interface (option)

- Modbus RTU over 2-wire EIA-485
- Supported baud rates: 9600 and 19200
- Max. devices on bus segment: 32
- Max. response time, 1 registered read: 60 ms
- Max. response time, 1 registered write: 600 ms

Alarm outputs (option)

- Indicates any problem with measurement, power supply or flowrate alarm
- Bi-directional, solid state
- +35 V @ 50 mA
- Isolated with one common, shared with pulse outputs

Mobile communications – 4G/3G

- 4G LTE Cat1 with fall back to 3G (HSPA/HSPA+)
- Data exchange via FTPS/FTP or MQTTS/MQTT Sparkplug B (V 3.0.0) (TLS1.2 encryption with digital certificate based mutual authentication) protocol
- Data exchange format configurable to CSV/JSON
- Data exchange interval, 15 mins, 30 mins, 1 hour, 2 hours, 4 hours, 6 hours, 8 hours, 12 hours or 24 hours configurable

Mobile communications – NB – IoT

- NB – IoT over China Telecom
- Data exchange via LwM2M (DTLS 1.2 encryption)
- Data exchange format JSON (JavaScript Object Notation) for China Telecom
- Data exchange interval 1 hour, 6 hours, 12 hours or 24 hours configurable

Logger

Logger function	Flow, pressure, forward, reverse, and net flow totals
No. of records	45792
Logging interval *	15 seconds 30 seconds 1 minute 5 minutes 15 minutes (selectable)
Logger capacity	31 days @ 1 minute 477 days @ 15 minutes

* Based on a default 15 second measurement rate when operating on battery or renewable power

Logger data file format

- .csv for easy import into databases/spreadsheets
- Time-stamped records with flow, pressure and totalizers in user-configured units of measurement

Audit logger

- Time-stamped records for all events, such as configuration changes, diagnostics, regular alarms and critical alarms (firmware update, change of totalizer, roll over of totalizer, reset of totalizer).
- stored as standard (3000 records) and critical (1000 records) events in separate database.
- available as .csv for easy import into databases/ spreadsheets

Response time (programmable)

>0.1 second (mains-powered)

15 seconds (battery-powered + external renewable energy)

Report types in mobile communications

- Summary report with totalizer (fwd., reverse and net),- flow rate, alarm status (OK/Not OK), signal quality, and battery life along with Pressure
- Detail report with totalizer (fwd., reverse, and net), flow rate, pressure log, alarm, signal quality, battery life
- Diagnostic alarm report

Remote requests through mobile communications

- Summary report, detail report, and audit log report
- Firmware update
- Configuration changes
- Device Certificate update

...Specification – transmitter (FEX45X)

Environmental and operating conditions

Ingress rating

IP68 (NEMA 6P), <2m (6 ft.), for 360 hours (Tested according to IEC 60529)

Humidity

0 to 100 %

Temperature ranges

Storage: –20 to 60 °C (–4 to 140 °F)

Ambient: –25 to 60 °C (–13 to 140 °F)

Environmental classification

O, M1 and E2 for internal antenna devices & E1 for external antenna devices

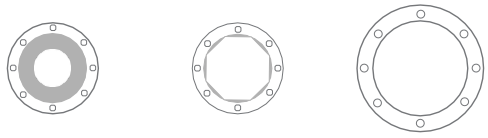
Transmitter vibration

IEC 60068-2-6 (2007)

Vibration level 2g

Options

Compatible sensor styles



Reduced bore DN40 to 600 | Octagonal bore DN40 to 200 | Full bore DN250 to 2400

External pressure transducer (option)

Up to 20 and 40 bar absolute

Backward compatibility (option)

- Full compatibility with legacy AquaMaster remote sensors. Plugs directly into AquaMaster 4 with no specific configuration required. Note the transmitter is not compatible with legacy telemetry applications and software applications

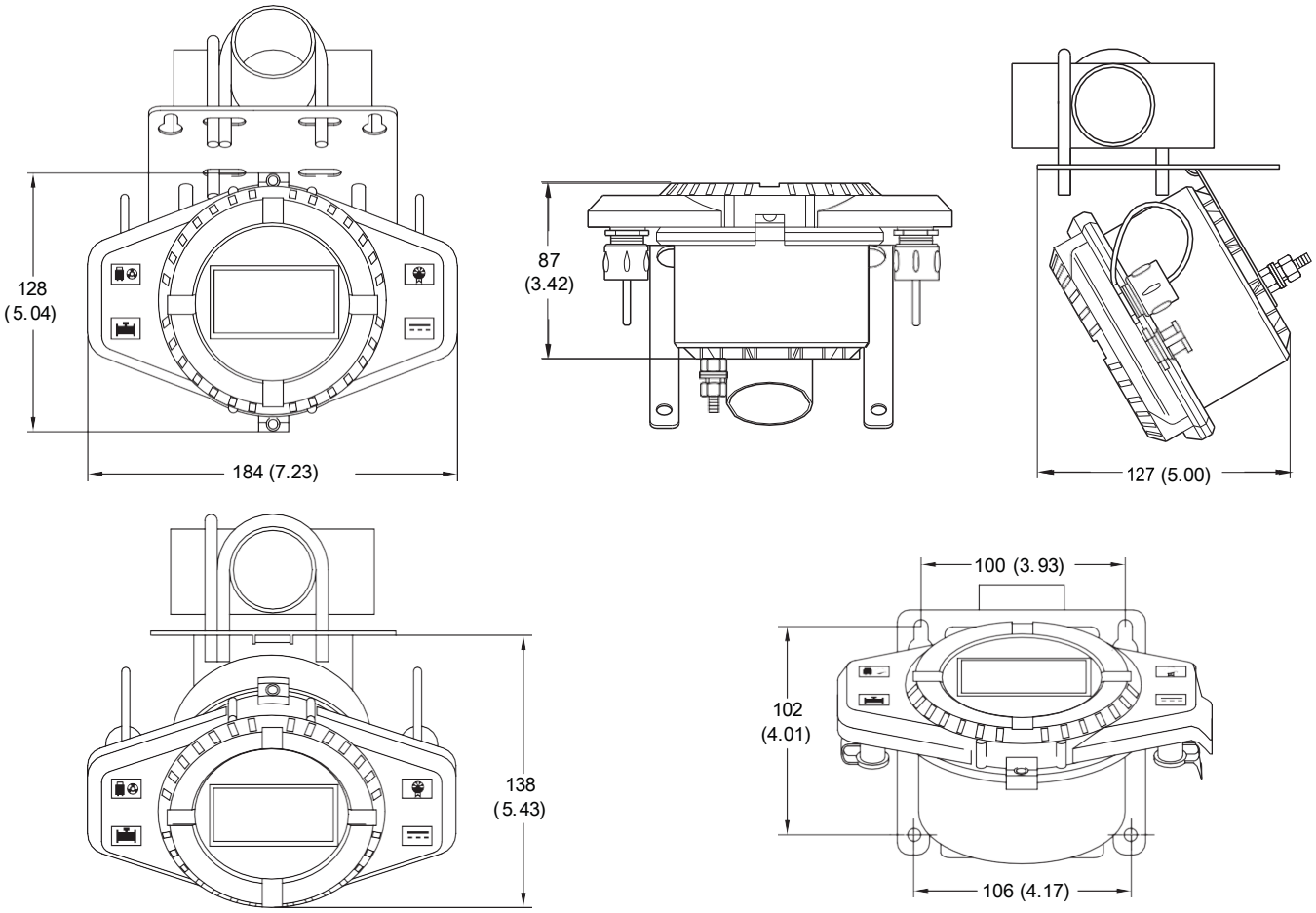
Read-only switch

- Switch selectable inside the SIM card chamber
- Prevents changes to meter configuration that affect the meter/output accuracy

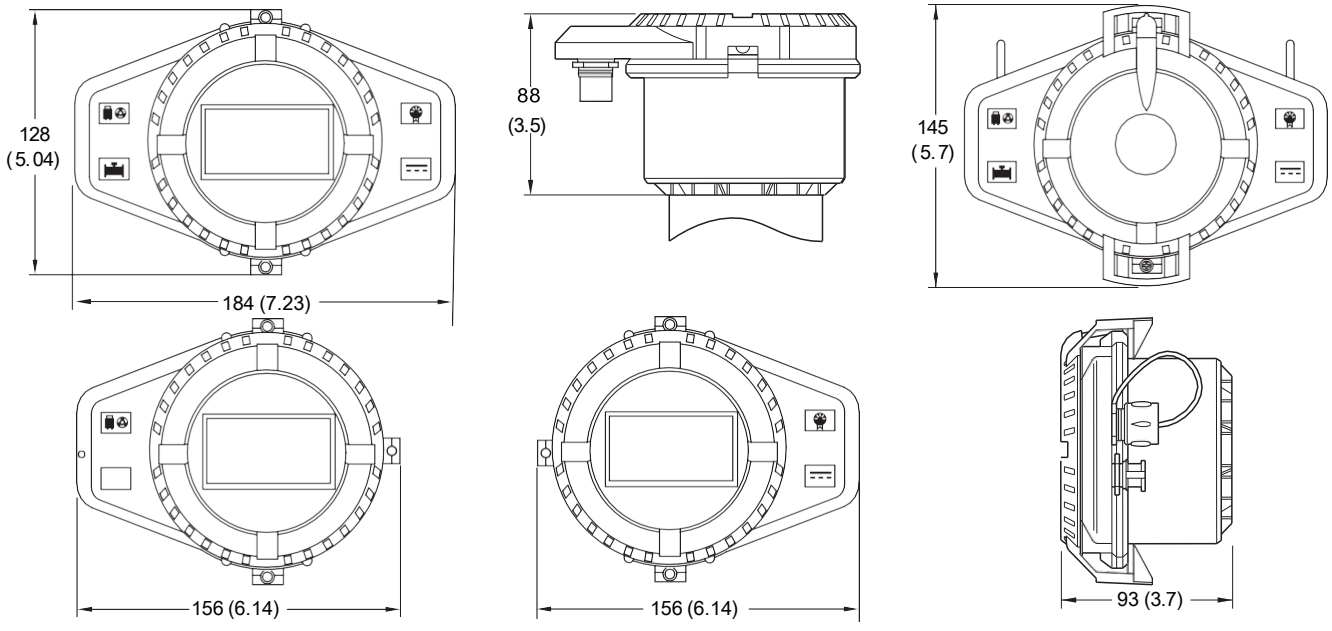
Specification

Dimensions – transmitter (41X/43X)

Dimensions in mm (in)



Wall-/Pipe-mount remote transmitter



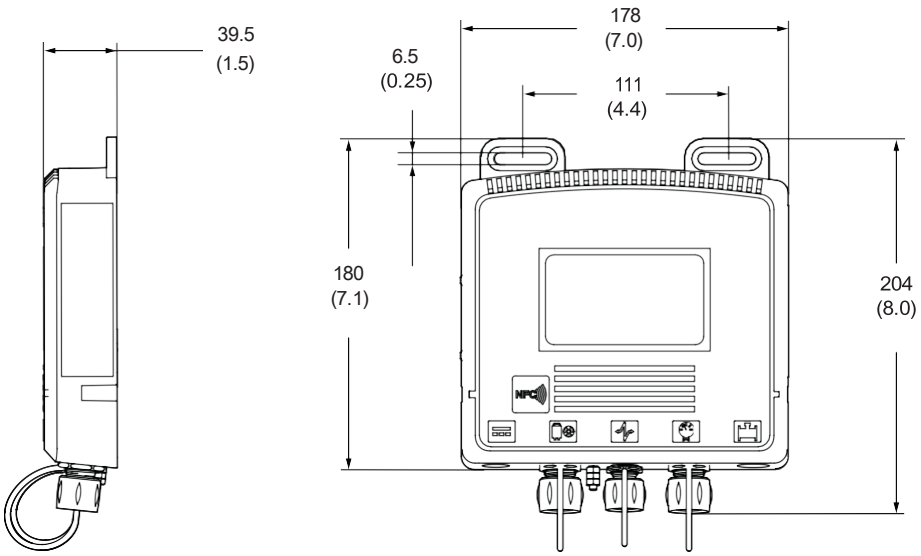
Integral transmitter

Transmitter with NFC aerial cover

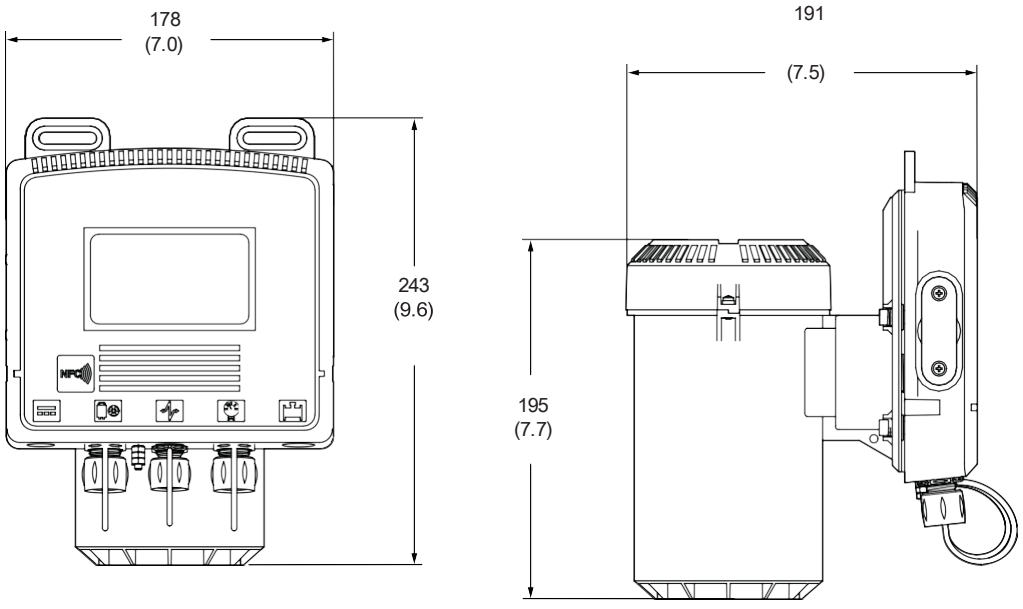
…Specification

Dimensions – FET450

Dimensions in mm (in)

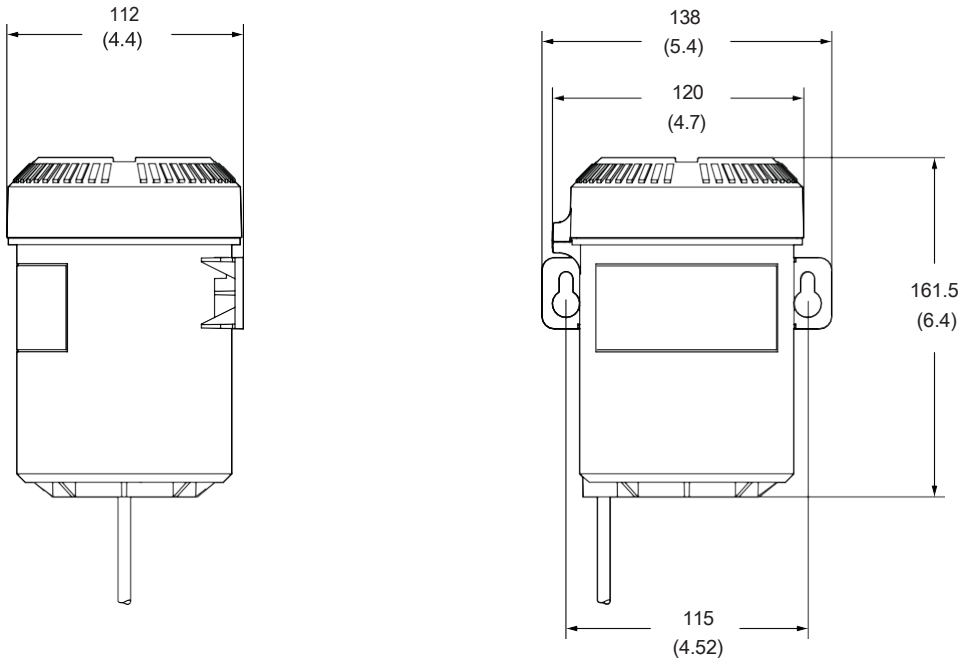


Wall-/Pipe-mount remote transmitter

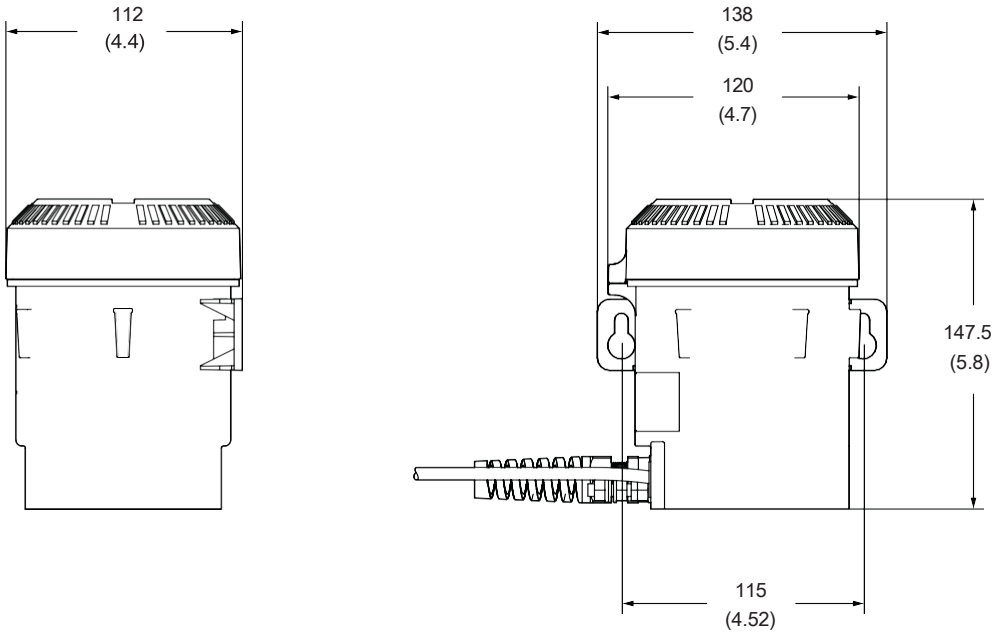


Integral transmitter

Dimensions – Power supply unit for FET452



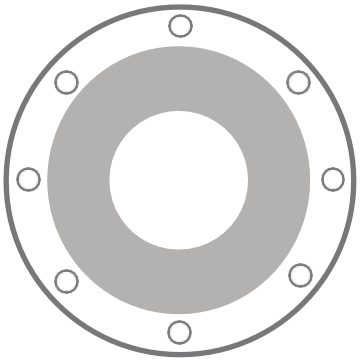
Battery power supply unit (PSU)



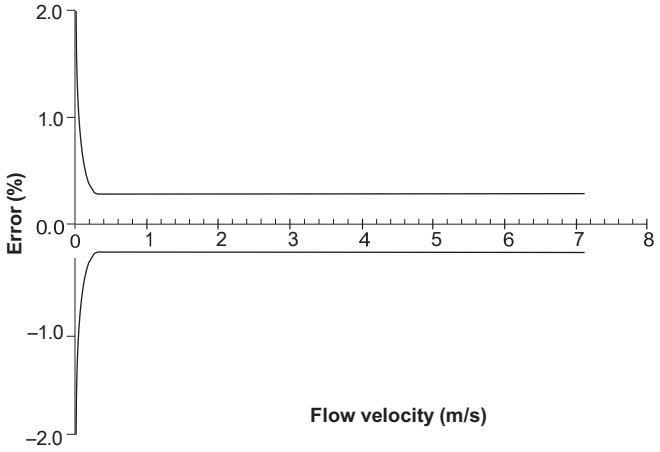
Mains/renewable power supply unit (PSU)

...Specification

Reduced bore sensor



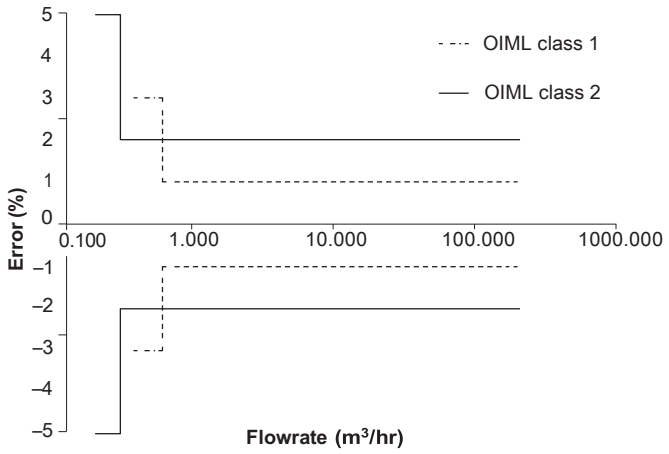
Measurement accuracy



	Mains powered		Battery/Renewable energy powered	
DN	Class 2 ±0.5 or ±0.4 %	Class 1 ±0.2 %	Class 2 ±0.5 or ±0.4 %	Class 1 ±0.2 %
40 to 600	±1 mm/s *	±0.5 mm/s *	±2 mm/s *	±1 mm/s *

* Whichever is the greater

Metrological performance to OIML R49:2013



			Mains powered		Battery/Renewable energy powered	
			Class 2 (R = 1000)	Class 1 (R = 500)	Class 2 (R = 400)	Class 1 (R = 160)
DN	in	Q3 (m³/h)	Q1 (m³/h)	Q1 (m³/h)	Q1 (m³/h)	Q1 (m³/h)
40	11/2	25	0.025	0.05	0.063	0.16
50	2	40	0.04	0.08	0.10	0.25
65	21/2	63	0.063	0.13	0.16	0.39
80	3	100	0.10	0.20	0.25	0.63
100	4	160	0.16	0.32	0.40	1
125	5	160	0.16	0.32	0.40	1
150	6	400	0.40	0.80	1	2.50
200	8	630	0.63	1.26	1.58	3.94
250	10	1000	1	2	2.50	6.25
300	12	1600	1.60	3.20	4	10
350	14	1600	1.60	3.20	4	10
400	16	2500	2.50	5	6.25	15.63
450	18	2500	2.50	5	6.25	15.63
500	20	4000	4	8	10	25
600	24	6300	6.30	12.60	15.75	39.38

Q2 = 1.6 * Q1
Q4 = 1.25 * Q3
Q3/Q1 = R

			Mains powered		Battery/Renewable energy powered	
			Class 2 (R = 1000)	Class 1 (R = 500)	Class 2 (R = 400)	Class 1 (R = 160)
DN	in	Q3 (US gal/ min)	Q1 (US gal/ min)	Q1 (US gal/ min)	Q1 (US gal/ min)	Q1 (US gal/ min)
40	11/2	110	0.11	0.22	0.28	0.69
50	2	176	0.18	0.35	0.44	1.10
65	21/2	277	0.28	0.55	0.69	1.73
80	3	440	0.44	0.88	1.10	2.75
100	4	704	0.70	1	1.76	4.40
125	5	704	0.70	1	1.76	4.40
150	6	1761	1.76	3.52	4.40	11
200	8	2774	2.77	5.55	6.93	17.34
250	10	4403	4.40	8.81	11	27.52
300	12	7045	7	14	17.61	44
350	14	7045	7	14	17.61	44
400	16	11007	11	22	27.52	68.79
450	18	11007	11	22	27.52	68.79
500	20	17611	17.61	35.22	44	110
600	24	27738	27.7	55.5	69	173

Q2 = 1.6 * Q1
Q4 = 1.25 * Q3
Q3/Q1 = R

Bore sizes and flange types

Bore size range

DN40 to 600

Flanges to standards

ASME
AWWA
ISO 7005 EN1092-1
DIN
AS4087
AS2129
JIS

Pressure limitations for flanges

As per flange rating
PN25 max. process temperature 50 °C (122 °F)
PN40 max. process temperature 40 °C (104 °F)

Pressure equipment directive 97/23/EC

This product is applicable in networks for the supply, distribution and discharge of water and associated equipment and is therefore exempt.

Bore and flange material

- DN40 to 200: SG iron
- DN250 to 600: carbon steel
- All sizes (DN 40 - 600) coated with light gray 2-pack epoxy (RAL9002)
- Primer: Interpon PZ660 zinc-based system, 70 microns thick
- Top coat: Interpon 610 light gray polyester powder coating (RAL 9002), up to 150 microns thick, comparable to EN ISO 12944 grade C4
- As a special requirements: 2-pack epoxy primer/finish @ 300 µm DFT

Terminal box for remote sensors

Polycarbonate

Environmental and process conditions

Ingress rating

- IP68 (NEMA 6P) to 10 m (33 ft) for continuous submersion (Tested for 1500 hours according to IEC 60529)
- For buriable applications: 1 m < sensor depth ≤ 5 m

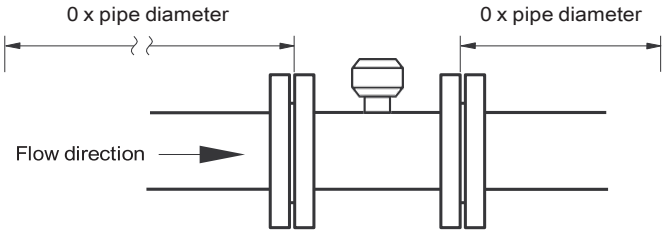
Temperature ranges

Ambient: –25 to 70 °C (–13 to 158°F)
Process: –6 to 70 °C (21 to 158 °F)
Ambient (OIML R49): –25 to 55 °C (–13 to 131 °F)

Conductivity

>20 µS/cm

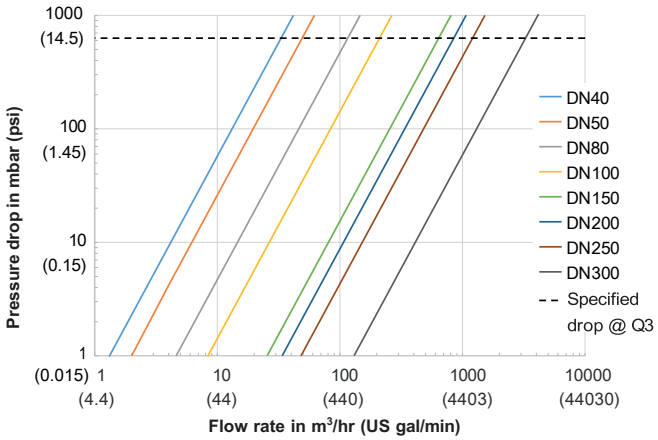
Upstream and downstream pipe conditions



Pressure loss

Flow rate	Pressure loss in bar (psi)
Q_3	DN40 - 50 < 0.4 (5.8)
Q_3	DN65 - 600 < 0.63 (9.1)
$Q_3/2$	<0.16 (2.3)

Reduced bore sensor pressure drop (typical)



Potable water approvals

WRAS*
ACS#
NSF – 61#
AZ/NZS 4020*

Approvals, certification and safety

NSF

Certified to NSF/ANSI/CAN 61-G

Certified to NSF/ANSI/CAN 61-G

* Material approval
#Meter Approval

...Specification

...Reduced bore sensor

Metrological certifications

- OIML R49:2013 for accuracy class 1 and 2 and water temperature class T50 0.1 to 50 °C (32.18 to 122 °F)
- Environmental class: O, M1 ,E1** and E2*
- MID MI-001
- NMI 10 for Australia
- PAC for China

			Mains powered			Battery/Renewable energy powered		
			Class 2.5 (R = 630	Class 2 (R = 1000)	Class 1 (R = 500)	Class 2.5 (R = 250	Class 2 (R = 400)	Class 1 (R = 160)
DN	in	Q3 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)
40	11/2	25	0.04	0.025	0.05	0.1	0.062	0.062(3)
50	2	40	0.063	0.04	0.08	0.16	0.1	0.1(3)
65	21/2	63	0.1	0.063	0.063(2)	0.252	0.157	0.39
80	3	100	0.159	0.1	0.1(2)	0.4	0.25	0.625
100	4	160	0.254	0.16	0.32	0.64	0.4	1
125	5	160	0.254	0.16	0.32	0.64	0.4	1
150	6	400	0.63	0.4	0.4(2)	1.6	1	1(3)
200	8	630	1	0.63	0.63(2)	2.52	1.575	1.575(3)
250	10	1000	1.59	1	2	4	2.5	6.25
300	12	1600	2.54	1.6	3.2	6.4	4	10
350	14	1600	2.54	1.6	3.2	6.4	4	10
400	16	2500	7.94(7)	5(1)	5	20(8)	12.5(4)	15.63
450	18	2500	7.94(7)	5(1)	5	20(8)	12.5(4)	15.63
500	20	4000	6.35	4	8	63.5(9)	40(5)	100(6)
600	24	6300	10	6.3	12.6	100(9)	63(5)	157.5(6)

(1) R = 500, (2) R = 1000, (3) R = 400, (4) R = 200, (5) R = 100 (6) R = 40 (7) R = 315 (8) R = 125 (9) R = 63

Q2 = 1.6 * Q1
Q4 = 1.25 * Q3
Q3/Q1 = R

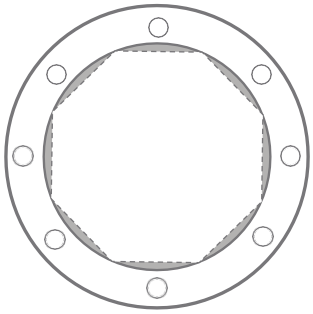
UL Fire Service approval (41X/43X)

Size	UL low flow GPM	UL high flow GPM	Pressure drop (psi)
2	6	235	≤ 10
21/2	6.5	280	≤ 9
3	6	465	≤ 7
4	10	630	≤ 6
6	20	1780	≤ 4
8	20	3345	≤ 8
10	45	4450	≤ 6
12	85	5245	≤ 2

* Applicable only for internal antenna devices of FEX45X & all options of FEX43X

** Applicable for external antenna devices of FEX45X

Full bore sensor



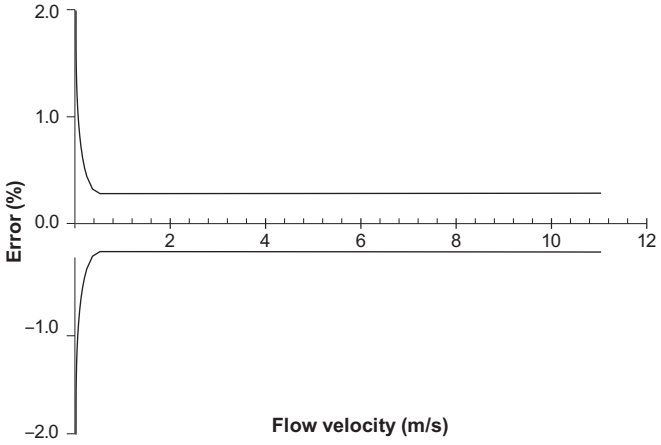
DN40 to 200

Virtual full bore, polypropylene liner

DN250 to 2400

Full bore, elastomer or hard rubber liner

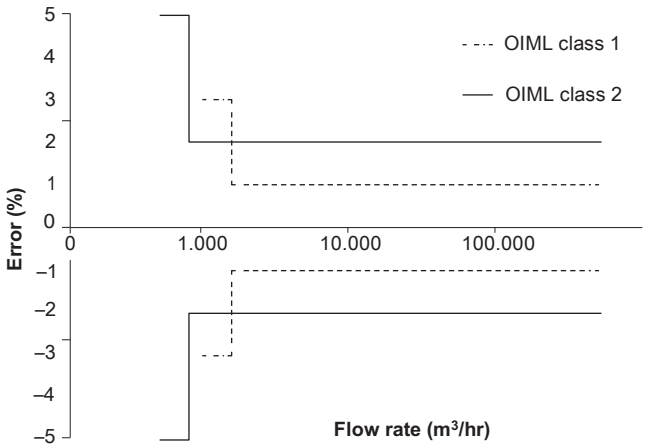
Measurement accuracy



	Mains powered		Battery/Renewable energy powered	
DN	**Class 2** ±0.5 or ±0.4 %	**Class 1** ±0.2 %	**Class 2** ±0.5 or ±0.4 %	**Class 1** ±0.2 %
40 to 600	±2 mm/s *	±1 mm/s *	±4 mm/s *	±2 mm/s *
700 to 2400	±4 mm/s *	±2 mm/s *	±6 mm/s *	±3 mm/s *

* whichever is the greater

Metrological performance to OIML R49:2013



			Mains powered		Battery/Renewable energy powered	
			Class 2 (R = 500)	**Class 1 (R = 250)**	**Class 2 (R = 250)**	**Class 1 (R = 125)**
DN	**in**	**Q3 (m³/h)**	**Q1 (m³/h)**	**Q1 (m³/h)**	**Q1 (m³/h)**	**Q1 (m³/h)**
40	11/2	40	0.08	0.16	0.16	0.32
50	2	63	0.13	0.25	0.25	0.50
65	21/2	100	0.20	0.40	0.40	0.80
80	3	160	0.32	0.64	0.64	1.28
100	4	250	0.50	1	1	2
125	5	250	0.50	1	1	2
150	6	630	1.26	2.52	2.52	5.04
200	8	1000	2	4	4	8
250	10	1600	3.20	6.40	6.40	12.80
300	12	2500	5	10	10	20
350	14	4000	8	16	16	32
400	16	4000	8	16	16	32
450	18	6300	12.60	25.20	25.20	50.40
500	20	6300	12.60	25.20	25.20	50.40
600	24	10000	20	40	40	80
			Class 2 (R = 315)	**Class 1 (R = 160)**	**Class 2 (R = 160)**	**Class 1 (R = 80)**
700	28	16000	50.79	100	100	200
750	30	16000	50.79	100	100	200
800	32	16000	50.79	100	100	200
900	36	25000	79.37	156.20	156.25	312
1000	40	25000	79.37	156.20	156.25	312
1050	42	25000	79.37	156.20	156.25	312
1100	44	40000	126.98	250	250	500
1200	48	40000	126.98	250	250	500
1350	54	63000	200.00	393.7	393.75	787
1400	56	63000	200.00	393.70	393.75	787
1500	60	63000	200.00	393.70	393.75	787
1600	64	63000	200.00	393.70	393.75	787
1650	66	63000	200.00	393.7	393.7	787
1800	72	100000	317.46	625	625	1250
1950	78	100000	317.46	625	625	1250
2000	80	100000	317.46	625	625	1250
2100	84	100000	317.46	625	625	1250
2200	88	160000	507.94	1000	1000	2000
2400	96	160000	507.94	1000	1000	2000

Q2 = 1.6 * Q1
Q4 = 1.25 * Q3
Q3/Q1 = R

...Specification

...Full bore sensor

			Mains powered		Battery/Renewable energy powered	
			Class 2 (R = 500)	Class 1 (R = 250)	Class 2 (R = 250)	Class 1 (R = 125)
DN	in	Q3 (US gal/ min)	Q1 (US gal/ min)	Q1 (US gal/ min)	Q1 (US gal/ min)	Q1 (US gal/ min)
40	11/2	176	0.35	0.70	0.7	1.41
50	2	277	0.55	1.11	1.11	2.22
65	21/2	440	0.88	1.76	1.76	3.52
80	3	704	1.41	2.82	2.82	5.64
100	4	1101	2.20	4	4.40	8.81
125	5	1101	2.20	4	4.40	8.81
150	6	2774	5.55	11.10	11.10	22.2
200	8	4403	8.8	17.6	17.6	35.2
250	10	7045	14.09	28.2	28.2	56.4
300	12	11007	22	44	44	88
350	14	17611	35	70	70.4	141
400	16	17611	35	70	70.4	141
450	18	27738	55.48	111	111	222
500	20	27738	55.48	111	111	222
600	24	44029	88	176	176	352

Q2 = 1.6 * Q1
Q4 = 1.25 * Q3
Q3/Q1 = R

			Class 2 (R = 315)	Class 1 (R = 160)	Class 2 (R = 160)	Class 1 (R = 80)
700	28	70446	224	440	440	881
750	30	70446	224	440	440	881
800	32	70446	224	440	440	881
900	36	110072	349	688	688	1374
1000	40	110072	349	688	688	1374
1050	42	110072	349	688	688	1374
1100	44	176115	559	1101	1101	2201
1200	48	176115	559	1101	1101	2201
1350	54	277381	881	1733	1734	3465
1400	56	277381	881	1733	1734	3465
1500	60	277381	881	1733	1734	3465
1600	64	277381	881	1733	1734	3465
1650	66	277381	881	1733	1734	3465
1800	72	440287	1398	2752	2752	5504
1950	78	440287	1398	2752	2752	5504
2000	80	440287	1398	2752	2752	5504
2100	84	440287	1398	2752	2752	5504
2200	88	704459	2236	4403	4403	8806
2400	96	704459	2236	4403	4403	8806

Q2 = 1.6 * Q1
Q4 = 1.25 * Q3
Q3/Q1 = R

Bore sizes and flange types

Bore size range

DN40 to 2400

Flanges to standards

ASME
AWWA
ISO 7005 EN1092-1
DIN
AS4087
AS2129
JIS

Pressure limitations for flanges

As per flange rating
PN25 max. process temperature 50 °C (122 °F)
PN40 max. process temperature 40 °C (104 °F)

Pressure equipment directive 97/23/EC

This product is applicable in networks for the supply, distribution and discharge of water and associated equipment and is therefore exempt.

Bore and flange material

- DN40 to 200: SG iron
- DN250 to 2400: carbon steel
- Sizes DN40 to 200 coated with light gray 2-pack epoxy (RAL9002)
  - Primer: Interpon PZ660 zinc-based system, 70 microns thick
  - Top coat: Interpon 610 light gray polyester powder coating (RAL 9002), up to 150 microns thick, comparable to EN ISO 12944 grade C4
  - As a special requirements: 2-pack epoxy primer/ finish @ 300 µm DFT
- Sizes DN250 to 400: In-organic Zinc based system for the flanges and painted Cast aluminum housing (Paint coat ≥ 80 µm, RAL 9002)
- Sizes DN450 to 2400: Welded steel Design (Paint coat ≥ 80 µm, RAL 9002)

Terminal box for remote sensors

Polycarbonate

Environmental and process conditions

Ingress rating

- DN40 -200 & DN450 - 2400 : IP68 (NEMA 6P) to 10 m (33 ft) for continuous submersion (Tested for 1500 hours according to IEC 60529)
- For buriable applications (DN40 to 200, virtual full bore, polypropylene liner and DN450 to 2400, full bore, rubber liner): 1 m < sensor depth ≤ 5 m
- DN250 - 400: IP68 (NEMA 6P) to 10 m (33 ft) for periodic submersion (Tested for 1500 hours according to IEC 60529)

Temperature ranges

Ambient: –25 to 70 °C (–13 to 158°F)

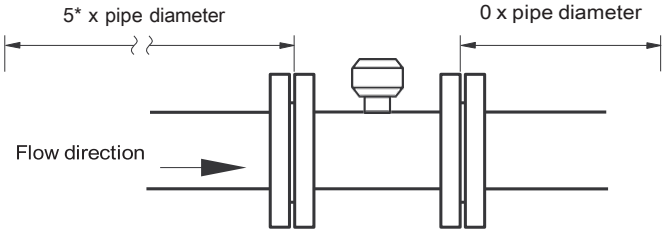
Ambient (OIML R49): –25 to 55 °C (–13 to 131 °F)

		Process temperature	
Liner material	**Bore size**	**Minimum**	**Maximum**
Polypropylene	DN40 to 200	–6 °C (21 °F)	70 °C (158 °F)
Rubber	DN250 to 2400	–10 °C (14 °F)	80 °C (176 °F)

Conductivity

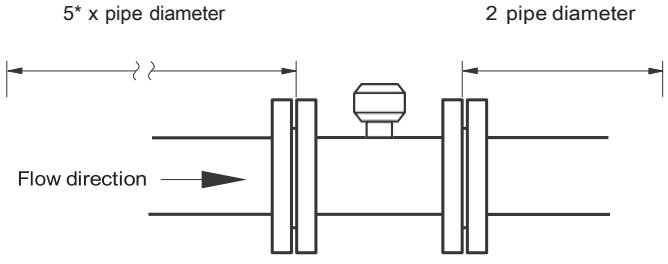
>20 µS/cm

Upstream and downstream pipe conditions (virtual full bore DN40 to 200)



* Upstream 0 x pipe diameter for OIML R49 Class 2 (± 2%) accuracy only

Upstream and downstream pipe conditions (full bore DN250 to 2400)

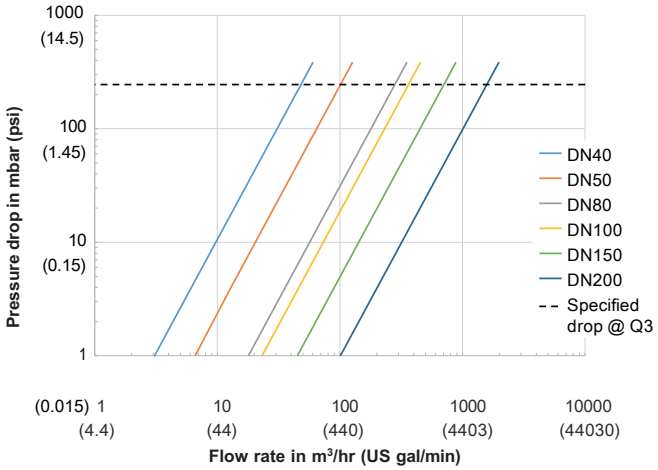


* Upstream 3 x pipe diameter for OIML R49 Class 2 (± 2%) accuracy only

Pressure loss

Flow rate	**Pressure loss in bar (psi)**
Q_3	<0.1 bar (1.5 psi) for DN40 and DN50 <0.16 bar (2.4 psi) for DN65 to DN250
Q_3	< 0.1 bar (1.5 psi) for sizes DN250 and larger

Virtual full bore sensor pressure drop (typical)



Potable water approvals

WRAS*

ACS#

NSF – 61#

AZ/NZ 4020*

Approvals, certification and safety

NSF

Certified to NSF/ANSI/CAN 61-G

Certified to NSF/ANSI/CAN 61-G

* Material approval

#Meter Approval

…Specification

...Full bore sensor

Metrological certifications

- OIML R49:2013 for accuracy class 1 and 2 and water temperature class T50 0.1 to 50 °C (32.18 to 122 °F)
- Environmental class: O, M1 ,E1** and E2*
- MID MI-001
- NMI 10 for Australia
- PAC for China

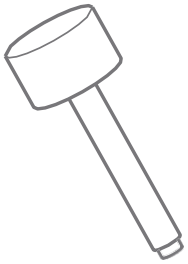
			Mains powered				Battery/Renewable energy powered	
			Class 2.5 (R = 315)	Class 2 (R = 500)	Class 1 (R = 250)	Class 2.5 (R = 160)	Class 2 (R = 250)	Class 1 (R = 125)
DN	in	Q3 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)	Q1 (m^3/h)
40	11/2	40	0.127	0.08	0.08(1)	0.25	0.16	0.32
50	2	63	0.2	0.126	0.126(1)	0.394	0.25	0.504
65	21/2	100	0.32	0.20	0.20(1)	0.625	0.40	0.4(2)
80	3	160	0.508	0.32	0.32(1)	1	0.64	0.64(2)
100	4	250	0.79	0.50	0.5(1)	1.56	1	1(2)
125	5	250	0.79	0.50	0.5(1)	1.56	1	1(2)
150	6	630	2	1.26	2.52	3.94	2.52	5.04
200	8	1000	3.17	2	4	6.25	4	8
250	10	1600	5.08	3.20	6.40	10	6.40	12.80
300	12	2500	7.94	5	10	15.625	10	20
350	14	4000	63.5(8)	40(3)	40(3)	25.0	16	16(2)
400	16	4000	63.5(8)	40(3)	40(3)	25.0	16	16(2)
450	18	6300	100(8)	63(3)	63(3)	39.375	25.20	25.2(2)
500	20	6300	100(8)	63(3)	63(3)	39.375	25.20	25.2(2)
600	24	6300	100(8)	63(3)	63(3)	63(3)	39.37(4)	78.75(5)
700	28	10000	80(7)	50(6)	100(3)	158.7(8)	100(3)	200(9)
750	30	10000	80(7)	50(6)	100(3)	158.7(8)	100(3)	200(9)
800	32	10000	80(7)	50(6)	100(3)	158.7(8)	100(3)	200(9)
900	36	10000	125(5)	80(7)	158.7(8)	250(10)	158.7(8)	-
1000	40	16000	128(7)	80(6)	160(3)	254(8)	160(3)	-
1050	42	16000	128(7)	80(6)	160(3)	254(8)	160(3)	-
1100	44	16000	200(5)	128(7)	253.9(8)	400(10)	254(8)	-
1200	48	16000	200(5)	128(7)	253.9(8)	400(10)	254(8)	-
1350	54	16000	254(8)	200(5)	400(10)	400(10)	400(10)	-
1400	56	16000	254(8)	200(5)	400(10)	400(10)	400(10)	-
1500	60	16000	254(8)	200(5)	400(10)	400(10)	400(10)	-
1600	64	16000	400(10)	200(5)	400(10)	400(10)	400(10)	-
1650	66	16000	400(10)	200(5)	400(10)	400(10)	400(10)	-
1800	72	16000	400(10)	317.5(9)	-	-	-	-

(1) R = 500, (2) R = 250, (3) R = 100, (4) R = 160, (5) R = 80, (6) R = 200,
(7) R = 125, (8) R= 63, (9) R = 50, (10) R = 40
Q2 = 1.6 * Q1
Q4 = 1.25 * Q3
Q3/Q1 = R

* Applicable only for internal antenna devices of FEX45X & all options of FEX43X

** Applicable for external antenna devices of FEX45X

Insertion flowmeter



Mounting

Integral transmitter

On probe sensor

Remote transmitter

Off probe sensor

Insertion details

Size range

300 to 1000 mm (12 to 40 in)

Pipe sizes

200 to 8000 mm (8 to 320 in) nominal bore

Pressure limitations

20 bar (295 psi) absolute

Pressure equipment directive 97/23/EC

This product is applicable in networks for the supply, distribution and discharge of water and associated equipment and is therefore exempt.

Sensor body material

316L stainless steel

Sensor tip material

PEEK

Terminal box material for remote sensors

Polycarbonate

Threaded connection

1 in BSP

1 in NPT

11/2 in BSP

Pressure tapping provision

1/8 in BSP

Note: Insertion flow meters are recommended to be used with Metallic pipes only.

Environmental and process conditions

Ingress rating

IP68 (NEMA 6P) to 10 m (33 ft)

Temperature ranges

Ambient: –20 to 60 °C (–4 to 140 °F)

Process: 0 to 60 °C (32 to 140 °F)

Conductivity

>50 µS/cm

Metrological performance and certifications

Velocity accuracy

±2 % of rate or ±2 mm/s (±0.08 in/s) whichever is the greater

Volume accuracy

Refer to ISO 7145-1982 (BS 1042 section 2.2) for details

Flow condition

Fully developed profile in accordance with ISO 7145-1982 (BS1042 section 2.2.)

Maximum flow

The maximum velocity depends upon the actual insertion length. Typical insertion lengths are 0.125 and 0.5 x pipe diameter. Figure 2 is a guide* to the maximum allowable velocity for different insertion lengths.

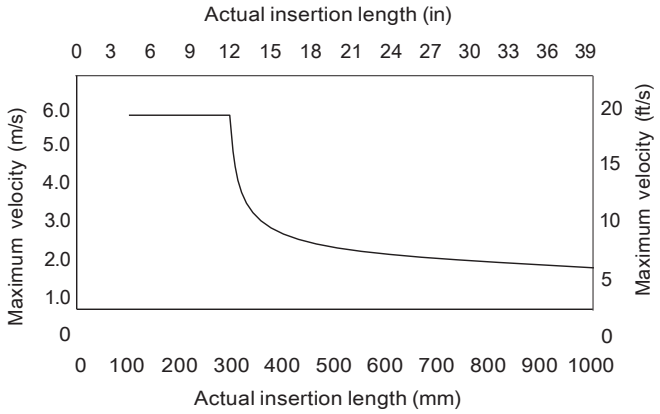


Figure 2 Maximum allowable velocity for different insertion lengths

Potable water approvals for wetted parts

WRAS

ACS

NSF-61

* Figure 2 is intended as a guide only. Factors that influence the maximum insertion length into the pipe include: flow sensor mounting components (for example, standoffs, bushes and valves) pipeline vibration, fluid vibration and pump noise.

…Specification

...Insertion flowmeter

Pressure transducer (option)

Ingress protection

IP68 to 10 m (33 ft)

Wetted parts

303L stainless steel, Viton® and 96 % alumina

Process temperature range

–10 to 50 °C (14 to 122 °F) (protect transducer from frost)

Ambient temperature range

–20 to 70 °C (–4 to 158 °F)

Pressure range (specify when ordering)

20 and 40 bar absolute

Accuracy (typical)

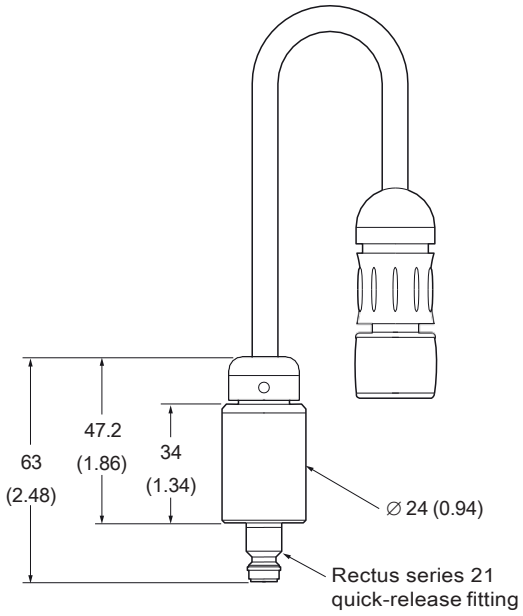
- < ±0.1 % of span + thermal errors
- Thermal zero shift < 0.01 % span/°C
- Thermal span shift < ±0.015 %/°C

Potable water approvals for wetted parts

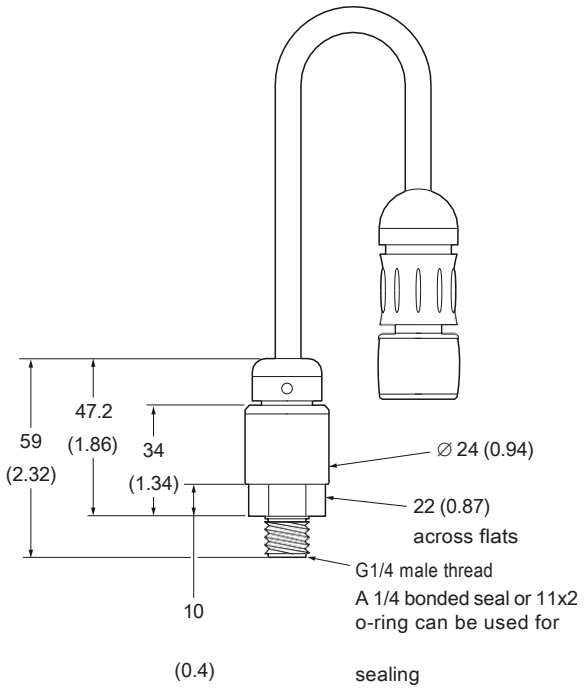
WRAS

Dimensions

Dimensions in mm (in)
All dimensions nominal



20 bar transsducer



40 bar transsducer

Dimensions – sensors

R-style sensor – DN 40 to DN 300 (11/2 to 12 in)

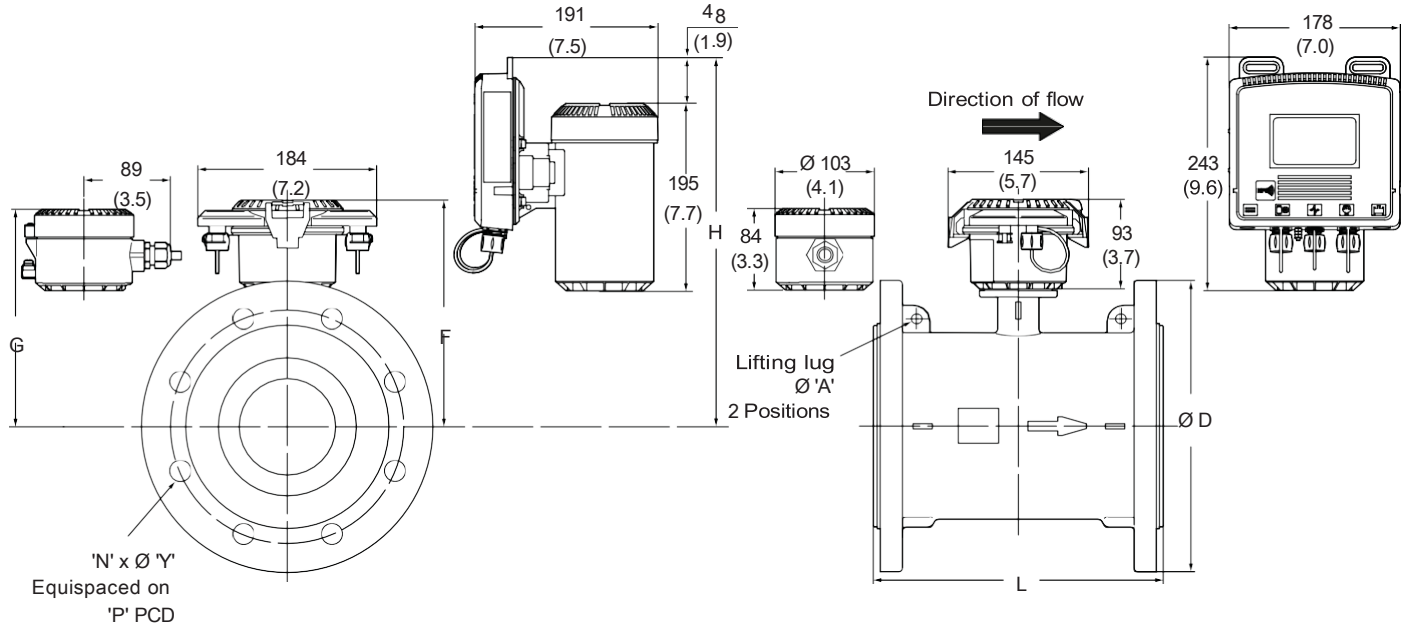


Figure 3 R-style sensor – DN 40 to DN 300 (11/2 to 12 in)

Table 1 R-style sensor – DN 40 to DN 80 (11/2 to 3 in)

Sensor size	Flange		Dimensions in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD D	No. holes N	Bolt hole dia. Y	Bolt hole PCD P	Sensor length L	Tx. height F	T. box height G	Tx. height H	Lifting lug A	Integral FEW411/ FEW431	Remote	Integral FEW451
DN 40 (11/2 in)	EN 1092	PN 10, 16, 25	150 (5.9)	4	19 (0.75)	110 (4.3)	200 (7.9)	158 (6.2)	149 (5.9)	308 (12.1)	N/A	13 (29)	12 (27)	15 (34)
	ASME B16.5	CL150			15.7 (0.62)	98 (3.9)								
	AS 2129	Table E	135 (5.3)		14 (0.55)									
	JIS B2220	5K	120 (4.7)		15 (0.59)	95 (3.7)		154 (6.1)	144 (5.7)	304 (12.0)		11 (24)	8 (18)	13 (29)
		10K	140 (5.5)		19 (0.75)	105 (4.2)								
DN 50 (2 in)	EN 1092	PN 10, 16, 25	165 (6.5)	4	19 (0.75)	125 (4.9)	200 (7.9)	162 (6.4)	153 (6.0) 152 (6.0)	312 (12.3)	N/A	15 (32) 12 (26)	14 (30) 9 (20)	17 (38) 14 (31)
	ASME B16.5	CL150				121 (4.8)								
	AS 2129	Table E	150 (5.9)		18 (0.71)	114 (4.5)								
	AS 4087	PN 16												
	JIS B2220	5K	130 (5.1)		15 (0.59)	105 (4.1)								
		10K	155 (6.1)		19 (0.75)	120 (4.7)								
DN 65 (2 1/2 in)	EN 1092	PN 10, 16	185 (7.3)	4	19 (0.75)	145 (5.7)	200 (7.9)	176 (6.9)	167 (6.6)	326 (12.8)	N/A	19 (42)	18 (40)	21 (47)
		PN 25		8										
	ASME B16.5	CL150	165 (6.5)	4	20 (0.79)	140 (5.5)		168 (6.6)	158 (6.2)	318 (12.5)		14 (31)	11 (24)	16 (36)
	AS 2129	Table E												
	AS 4087	PN 16			18 (0.71)	127 (5.0)								
	JIS B2220	5K			15 (0.59)	130 (5.1)								
		10K	175 (6.9)		19 (0.75)	140 (5.5)								
DN 80 (3 in)	EN 1092	PN 10, 16, 25	200 (7.9)	8	19 (0.75)	160 (6.3)	200 (7.9)	181 (7.1)	172 (6.8)	331 (13.0)	N/A	21 (47)	20 (44)	23 (51)
	ASME B16.5	CL150			20 (0.79)	152 (6.0)								
	AS 2129	Table E	185 (7.3)	4	18 (0.71)	146 (5.8)		174 (6.9)	165 (6.5)	324 (12.8)		17 (37)	14 (31)	19 (42)
	AS 4087	PN 16												
	JIS B2220	5K	180 (7.1)		19 (0.75)	145 (5.7)								
		10K	185 (7.3)	8		150 (5.9)								

…Dimensions – sensors

...R-style sensor – DN 40 to DN 300 (11/2 to 12 in)

Table 2 R-style sensor – DN 100 to DN 300 (4 to 12 in)

Sensor size	Flange		Dimensions in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD	No. holes	Bolt hole dia.	Bolt hole PCD	Sensor length	Tx. height	T. box height	Tx. height	Lifting lug	Integral FEW411/ FEW431	Remote	Integral FEW451
			D	N	Y	P	L	F	G	H	A			
DN 100 (4 in)	EN 1092	PN 10, 16			19 (0.75)	180 (7.1)								
		PN 25	235 (9.3)	8	23 (0.91)	190 (7.5)		202 (8.0)	193 (7.6)	352 (13.9)		27 (60)	26 (58)	29 (64)
	ASME B16.5	CL150			19 (0.75)	191 (7.5)								
	AS 2129	Table E	215 (8.5)								N/A			
	AS 4087	PN 16		4	18 (0.71)	178 (7.0)	250 (9.9)	212 (8.3)	203 (8.0)	362 (14.3)		23 (51)	20 (44)	25 (56)
	JIS B2220	5K	200 (7.9)	8		165 (6.5)								
		7.5K	238 (9.4)	4	19 (0.75)	195 (7.7)								
		10K	210 (8.3)	8		175 (6.9)								
DN 125 (5 in)	EN 1092	PN 10, 16			18 (0.71)	210 (8.3)								
		PN 25	270 (10.6)		28 (1.10)	220 (8.7)		221 (8.7)	212 (8.3)	371 (14.6)		30 (66)	29 (64)	32 (71)
	ASME B16.5	CL150			22 (0.87)	216 (8.5)								
	AS 2129	Table E	255 (10.0)	8	18 (0.71)	210 (8.3)	250 (9.9)				N/A			
	JIS B2220	5K	235 (9.3)		19 (0.75)	200 (7.9)		212 (8.3)	203 (8.0)	362(14.3)		26 (57)	23 (51)	28 (62)
		10K	250 (9.8)		23 (0.91)	210 (8.3)								
DN 150 (6 in)	EN 1092	PN 10, 16			23 (0.91)	240 (9.5)								
	ASME B16.5	CL150	300 (11.8)		22 (0.87)	242 (9.5)			224 (8.8)			35 (77)	34 (75)	37 (82)
	EN 1092	PN 25		8	26 (1.02)	250 (9.8)								
	AS 2129	Table E	280 (11.0)		22 (0.87)	235 (9.3)	300 (11.8)	233 (9.2)		383(15.1)	10.2 (0.40)			
	AS 4087	PN 16			18 (0.71)				223 (8.8)			33 (73)	31 (68)	35 (78)
	JIS B2220	5K	265 (10.4)		19 (0.75)	230 (9.1)								
		7.5K	290 (11.4)	6		247 (9.7)								
		10K	280 (11.0)	8	23 (0.91)	240 (9.5)								
DN 200 (8 in)	EN 1092	PN 10	370 (14.6)	8	23 (0.91)	295 (11.6)								
		PN 16		12				259 (10.2)		409 (16.1)		68 (150)	67 (147)	70 (155)
		PN 25	360 (14.2)		28 (1.10)	310 (12.2)								
	ASME B16.5	CL150	370 (14.6)		22 (0.87)	298 (11.7)								
	AS 2129	Table E				292 (11.5)	350 (13.8)		249 (9.8)		10.2 (0.40)			
	AS 4087	PN 16	335 (13.2)	8	18 (0.71)									
	JIS B2220	5K	320 (12.6)		23 (0.91)	280 (11.0)		258 (10.2)		408 (16.1)		51 (112)	48 (106)	53 (117)
		7.5K	342 (8.7)		19 (0.75)	299 (11.8)								
		10K	330 (13.0)	12	23 (0.91)	290 (11.4)								
DN 250 (10 in)	EN 1092	PN10	395 (15.6)		22 (0.87)	350 (0.87)								
		PN16	405 (15.9)	12	26 (1.02)	355 (14.0)								
		PN25	425 (16.7)		30 (1.18)	370 (14.6)								
	AS 2129	Table E	405 (15.9)		22 (0.87)	356 (14.0)								
	AS 4087	PN 16		8			450 (17.7)	285 (11.2)	276 (10.9)	435 (17.1)	10.2 (0.40)	78 (172)	75 (165)	80 (177)

		5K	385 (15.2)	12	23 (0.91)	345 (13.6)								
	JIS B2220	7.5K	410 (16.1)	8		360 (14.2)								
		10K	400 (15.8)	12	25 (0.98)	355 (14.0)								
	ASME B16.5	CL150	406 (16.0)	12	22 (0.87)	362 (14.3)								
DN 300 (12 in)		PN10	445 (17.5)	12	22 (0.87)	400 (15.8)								
	EN 1092	PN16	460 (18.1)		26 (1.02)	410 (16.1)								
		PN25	485 (19.1)	16	30 (1.18)	430 (16.9)								
	AS 2129	Table E	455 (17.9)	12	26 (1.02)	406 (16.0)								
	AS 4087	PN 16			22 (0.87)		500 (19.7)	310 (12.2)	301 (11.9)	460(18.1)	10.2 (0.40)	115 (253)	112 (247)	117 (258)
		5K	430 (16.9)	12		390 (15.4)								
	JIS B2220	7.5K	464 (18.3)	10	23 (0.91)	414 (16.3)								
		10K	445 (17.5)	16	25 (0.98)	400 (15.8)								
	ASME B16.5	CL150	483 (19.0)	12	22 (0.87)	432 (17.0)								

R-style sensor – DN 350 to DN 600 (14 to 24 in)

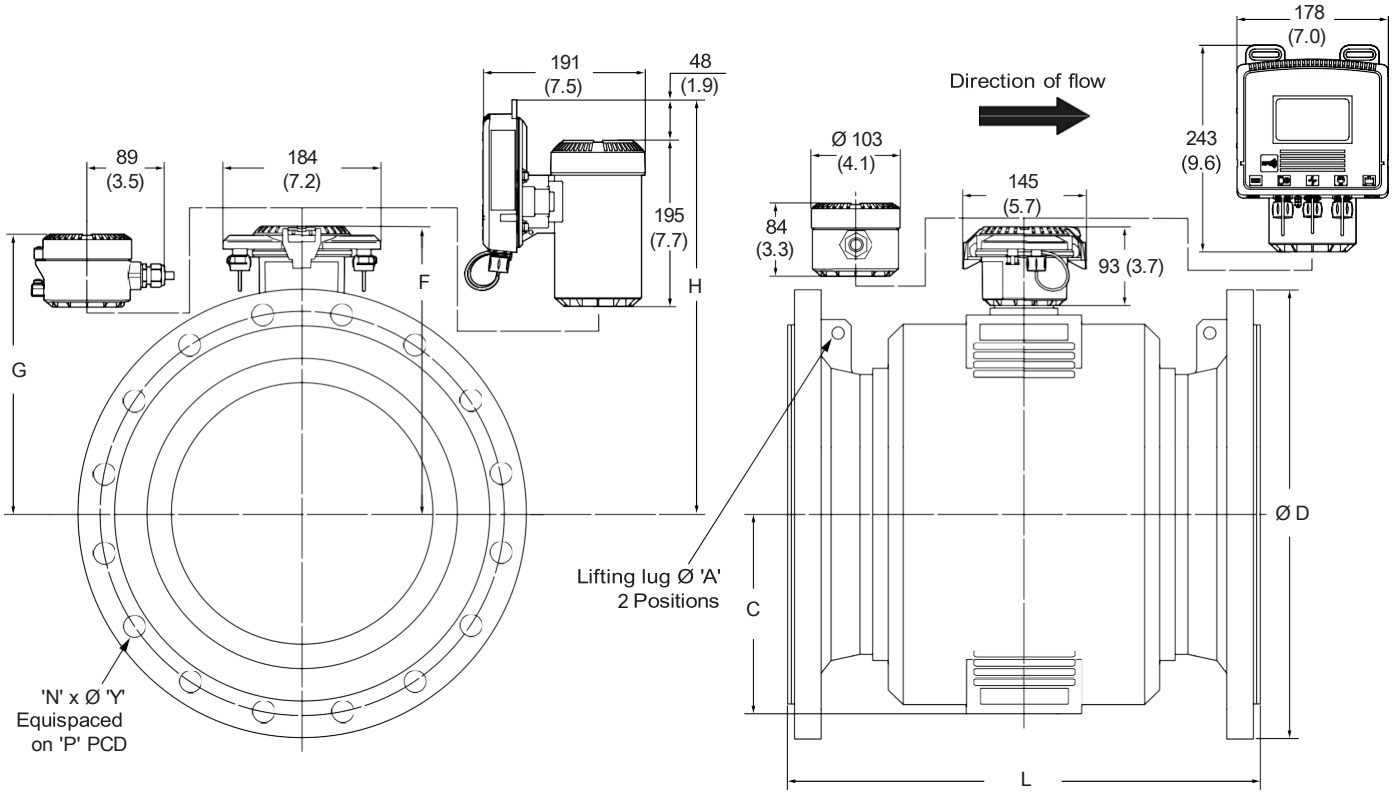


Figure 4 R-style sensor – DN 350 to DN 600 (14 to 24 in)

…Dimensions – sensors

...R-style sensor – DN 350 to DN 600 (14 to 24 in)

Table 3 R-style sensor – DN 350 to DN 600 (14 to 24 in)

Sensor size	Flange		Dimensions in mm (in)										Approx. weight kg (lbs)		
	Standard	Class	Flange OD D	No. Holes N	Bolt hole dia Y	Bolt hole PCD P	Sensor length L	Tx. height F	T. box height G	Tx. height H	Lifting lug A	Cover flat C	Integral FEW411/ FEW431	Remote	Integral FEW451
DN 350 (14 in)	EN 1092	PN 10	505 (19.9)	16	22 (0.87)	460 (18.1)	550 (21.7)	334 (13.2)	324 (12.8)	484 (19.1)	14.5 (0.57)	231 (9.1)	102 (225)	100 (220)	104 (230)
		PN 16	520 (20.5)		26 (1.02)	470 (18.5)									
		PN 25	555 (21.9)		33 (1.30)	490 (19.3)									
	ASME B16.5	CL150	535 (21.1)		29.5 (1.16)	476 (18.8)									
	AS 2129	Table E	525 (20.7)	12	26 (1.02)	470 (18.5)									
	AS 4087	PN 16													
		5K	480 (18.9)			435 (17.1)									
	JIS B2220	7.5K	530 (20.7)	10	25 (0.98)	472 (18.6)									
		10K	490 (19.3)	16		445 (17.5)									
DN 400 (16 in)	EN 1092	PN 10	565 (22.3)	16	26 (1.02)	515 (20.3)	600 (23.6)	360 (14.2)	354 (13.9)	510 (20.1)	14.5 (0.57)	257 (10.1)	117 (258)	115 (254)	119 (263)
		PN 16	580 (22.8)		30 (1.18)	525 (20.7)									
		PN 25	620 (24.4)		36 (1.42)	550 (21.7)									
	ASME B16.5	CL150	600 (23.6)		29.5 (1.16)	540 (21.3)									
	AS 2129	Table E	580 (22.8)	12	26 (1.02)	521 (20.5)									
	AS 4087	PN 16													
		5K	540 (21.3)	16	25 (0.98)	495 (19.5)									
	JIS B2220	7.5K	582 (22.9)	12		524 (20.6)									
		10K	560 (22.1)	16	27 (1.06)	510 (20.1)									
DN 450 (18 in)	EN 1092	PN 10	615 (24.2)	20	26 (1.02)	565 (22.3)	700 (27.6)	388 (15.3)	379 (14.9)	538 (21.2)	14.5 (0.57)	285 (11.2)	162 (357)	160 (353)	164 (362)
		PN 16	640 (25.2)		30 (1.18)	585 (23.0)									
		PN 25	670 (26.4)		36 (1.42)	600 (23.6)									
	ASME B16.5	CL150	635 (25.0)	16	32.5 (1.28)	578 (22.8)									
	AS 2129	Table E	640 (25.2)	16	26 (1.02)	584 (23.0)									
	AS 4087	PN 16		12											
		5K	605 (23.8)	16	25 (0.98)	555 (21.9)									
	JIS B2220	7.5K	652 (25.7)	12	27 (1.06)	585 (23.0)									
		10K	620 (24.4)	20		565 (22.3)									
DN 500 (20 in)	EN 1092	PN 10	670 (26.4)	20	26 (1.02)	620 (24.4)	770 (30.3)	419 (16.5)	410 (16.2)	569 (22.4)	14.5 (0.57)	316 (12.5)	219 (483)	217 (477)	221 (488)
		PN 16	715 (28.2)		33 (1.30)	650 (25.6)									
		PN 25	730 (28.7)		36 (1.42)	660 (26.0)									
	ASME B16.5	CL150	700 (27.6)		32.5 (1.28)	635 (25.0)									
	AS 2129	Table E	705 (27.8)	16	26 (1.02)	641 (25.2)									
	AS 4087	PN 16													
		5K	655 (25.8)	20	25 (0.98)	605 (23.8)									
	JIS B2220	7.5K	706 (27.8)	12	27 (1.06)	639 (25.2)									

		10K	675 (26.6)	20		620 (24.4)										
DN 600 (24 in)	EN 1092	PN 10	780 (30.7)		30 (1.18)	725 (28.6)	920 (36.2)	446 (17.6)	437 (17.2)	596 (23.5)	14.5 (0.57)	343 (13.5)	317 (699)	315 (695)	319 (704)	
		PN 16	840 (33.1)		36 (1.42)	770 (30.3)										
		PN 25	845 (33.3)	20	39 (1.54)											
	ASME B16.5	CL150	815 (32.1)		35.5 (1.40)	749.5 (29.5)										
	AS 2129	Table E	825 (32.5)	16	33 (1.30)	756 (29.7)										
	AS 4087	PN 16			30 (1.18)											
		5K	770 (30.3)	20	27 (1.06)	715 (28.2)										
	JIS B2220	7.5K	810 (31.9)	16		743 (29.3)										
		10K	795 (31.3)	24	33 (1.30)	730 (28.7)										

V-style sensor – DN 40 to DN 200 (11/2 to 8 in)

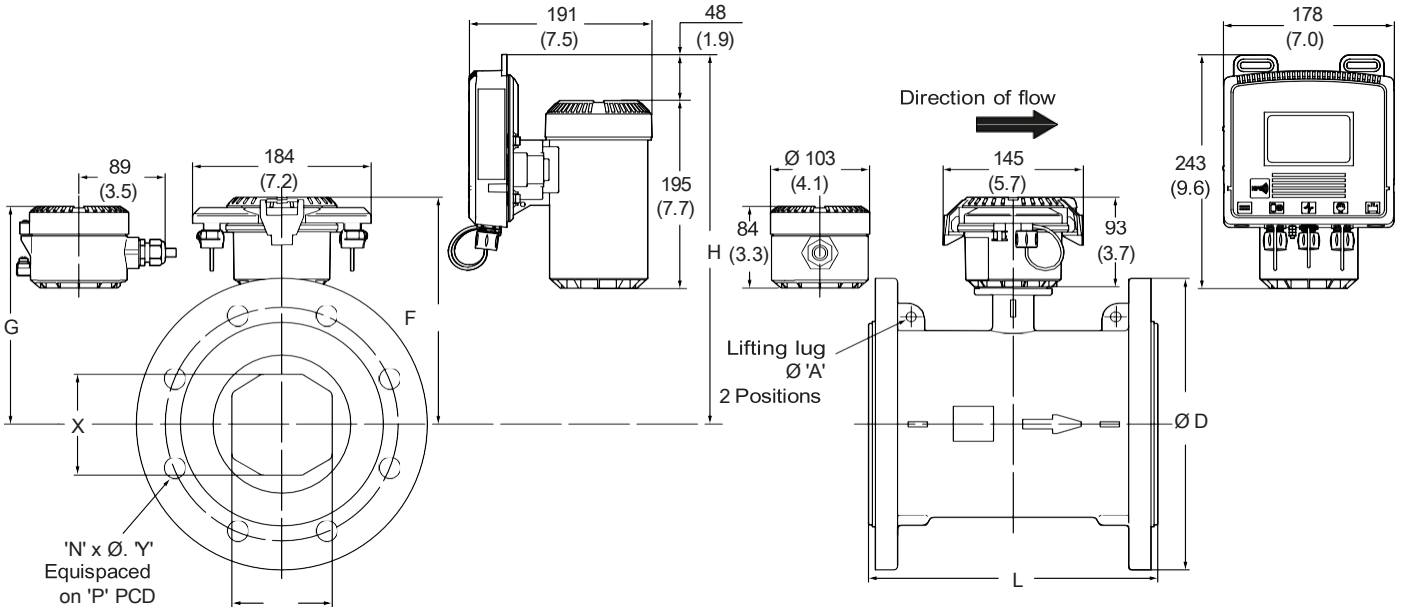


Figure 5 V-style sensor – DN 40 to DN 200 (11/2 to 8 in)

…Dimensions – sensors

...V-style sensor – DN 40 to DN 200 (11/2 to 8 in)

Table 4 V-style sensor – DN 40 to DN 200 (11/2 to 8 in)

Sensor size	Flange		Dimensions in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD	No. holes	Bolt hole dia.	Bolt hole PCD	Sensor length	Tx. height	T. box height	Tx. height	Lifting lug	Integral FEW411 FEW431	Remote	Integral FEW451
			D	N	Y	P	L	F	G	H	A			
DN 40 (11/2 in)	EN 1092	PN 10, 16, 25	150 (5.9)	4	19 (0.75)	110 (4.3)	200 (7.9)	158 (6.2)	149 (5.9)	308 (12.1)	N/A	13 (29)	12 (27)	15 (33)
	ASME B16.5	CL150	135 (5.3)		15.7 (0.62) 14 (0.55)	98 (3.9)								
	AS 2129	Table E												
	JIS B2220	10K	140 (5.5)		19 (0.75)	105 (4.2)								
	EN 1092	PN 10, 16, 25	165 (6.5)		19 (0.75)	125 (4.9)		154 (6.1)	144 (5.7)	304 (12)		10 (22)	7 (15)	12 (27)
DN 50 (2 in)	ASME B16.5	CL150	150 (5.9)	4	18 (0.71) 19 (0.75)	121 (4.8) 114 (4.5) 120 (4.7)	200 (7.9)	162 (6.4)	153 (6.0)	312 (12.3)	N/A	14 (31) 11 (24)	13 (29) 8 (18)	16 (36) 13 (29)
	AS 2129	Table E												
	AS 4087	PN 16												
	JIS B2220	10K	155 (6.1)											
DN 65 (21/2 in)	EN 1092	PN 10, 16	185 (7.3)	4	19 (0.75)	145 (5.7)	200 (7.9)	176 (6.9)	167 (6.6)	326 (12.9)	N/A	16 (35)	15 (33)	18 (40)
		PN 25		8										
	ASME B16.5	CL150	165 (6.5)	4	20 (0.79)	140 (5.5)		168 (6.6)	158 (6.2)	318 (12.5)		13 (29)	10 (22)	15 (33)
	AS 2129	Table E												
	AS 4087	PN 16			18 (0.71)	127 (5.0)								
	JIS B2220	10K	175 (6.9)		19 (0.75)	140 (5.5)								
DN 80 (3 in)	EN 1092	PN 10, 16, 25	200 (7.9)	8	19 (0.75)	160 (6.3)	200 (7.9)	181 (7.1)	172 (6.8)	331 (13.1)	N/A	17 (38)	16 (36)	19 (42)
	ASME B16.5	CL150		4	20 (0.79)	152 (6.0)								
	AS 2129	Table E			18 (0.71)	146 (5.8)		174 (6.9)	165 (6.5)	324 (12.8)		16 (36)	13 (28)	18 (40)
	AS 4087	PN 16	185 (7.3)											
	JIS B2220	10K		8	19 (0.75)	150 (5.9)								
DN 100 (4 in)	EN 1092	PN 10, 16	235 (9.3)	8	19 (0.75)	180 (0.71)	250 (9.9)	202 (8.0)	193 (7.6)	352 (13.9)	N/A	19 (42)	18 (40)	21 (47)
		PN 25			23 (0.91)	190 (7.5)								
	ASME B16.5	CL150			19 (0.75)	191 (7.5)								
	AS 2129	Table E	215 (8.5)		18 (0.71)	178 (7.0)		212 (8.3)	203 (8.0)	362 (14.2)				
	AS 4087	PN 16												
	JIS B2220	7.5K 10K	230 (9.1) 235 (9.3)	4 8	19 (0.75)	175 (6.9) 185 (7.7)								
DN 125 (5 in)	EN 1092	PN 10, 16	270 (10.6)	8	18 (0.71)	210 (8.3)	250 (9.9)	221 (8.7)	212 (8.3)	371 (14.6)	N/A	30 (66)	29 (64)	32 (71)
		PN 25			28 (1.10)	220 (8.7)								
	ASME B16.5	CL150			22 (0.87)	216 (8.5)								
	AS 2129	Table E	255 (10.0)		18 (0.71)	210 (8.3)		212 (8.3)	203 (8.0)	362 (14.3)		24 (53)	21 (46)	26 (58)
	JIS B2220	10K	250 (9.8)		23 (0.91)	201 (8.3)								
DN 150 (6 in)	EN 1092	PN10, 16	300 (11.8)	8	23 (0.91)	240 (9.5)	300 (11.8)	233 (9.2)	224 (8.8)	383 (15.1)	10.2 (0.40)	35 (77)	34 (75)	37 (82)
	ASME B16.5	CL150			22 (0.87)	242 (9.5)								
	EN 1092	PN 25			26 (1.02)	250 (9.8)								
	AS 2129	Table E	280 (11.0)		22 (0.87)	235 (9.3)		235 (9.3)	225 (8.9)	385 (15.2)		34 (75)	31 (68)	36 (80)
	AS 4087	PN 16			18 (0.71)									
		7.5K	290 (11.4)	6	19 (0.75)	247 (9.7)								
	JIS B2220	10K	280 (11.0)	8	23 (0.91)	240 (9.5)								

DN 200 (8 in)	EN 1092	PN10	370 (14.6)	8	23 (0.91)	295 (11.6)	350 (13.8)	259 (10.2)	249 (9.8)	409 (16.1)	10.2 (0.40)	67 (147) 66 (145) 69 (153)
		PN16		12								
		PN 25	360 (14.2)		28 (1.10)	310 (12.2)						
	ASME B16.5	CL150	370 (14.5)		22 (0.87)	298 (11.7)						
	AS 2129	Table E	335 (13.2)	8		292 (11.5)						
	AS 4087	PN 16			18 (0.71)			258 (10.2)	249 (9.8)	408 (16.1)		53 (116) 50 (110) 55 (122)
	JIS B2220	7.5K	342 (8.7)		19 (0.75)	299 (11.8)						
		10K	330 (13.0)	12	23 (0.91)	290 (11.4)						

F-style sensor – DN 250 to DN 400 (10 to 16 in)

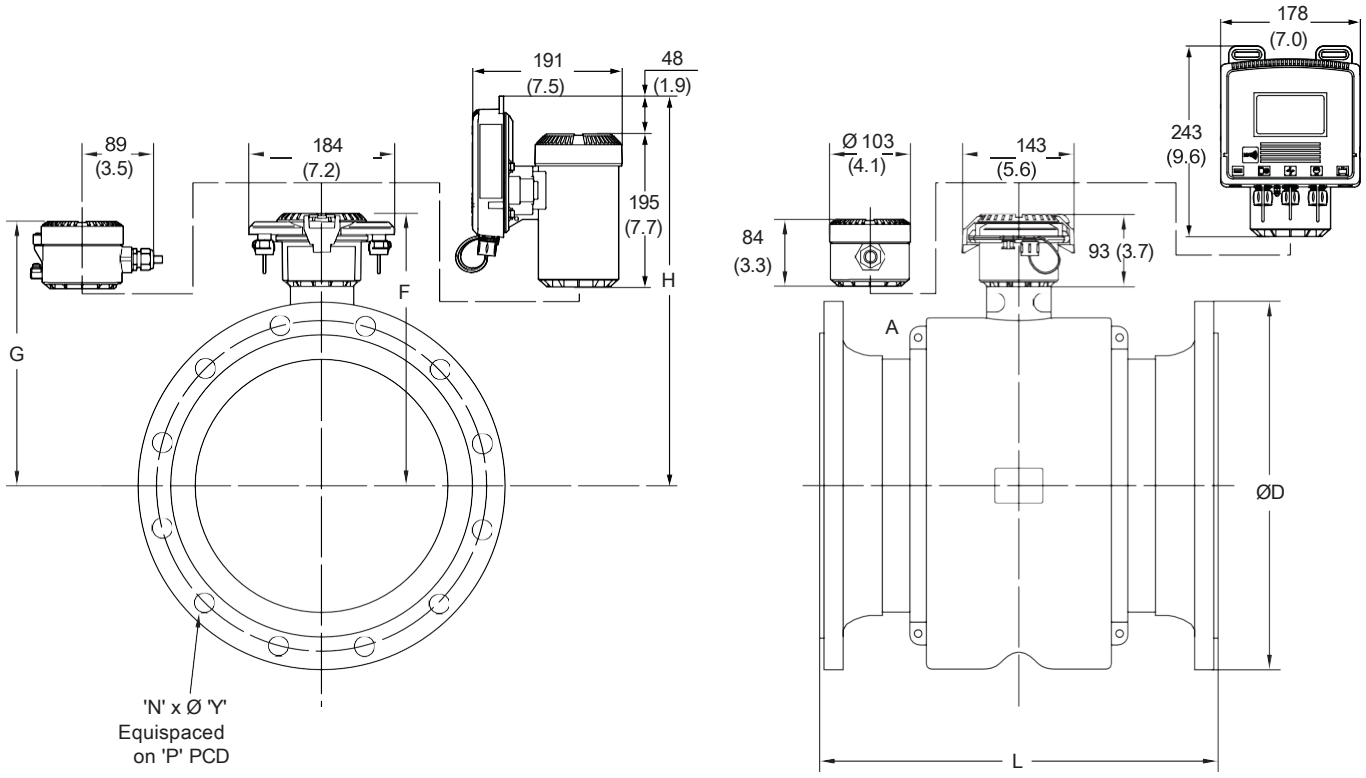


Figure 6 F-style sensor – DN 250 to DN 400 (10 to 16 in)

…Dimensions – sensors

...F-style sensor – DN 250 to DN 400 (10 to 16 in)

Table 5 F-style sensor – DN 250 to DN 400 (10 to 16 in)

Sensor size	Flange		Dimensions in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD	No. holes	Bolt hole dia.	Bolt hole PCD	Sensor length	Tx. height	T. box height	Tx. height	Lifting lug	Integral FEW411/ FEW431	Remote	Integral FEW451
			D	N	Y	P	L	F	G	H	A			
DN250 (10 in)	EN 1092 or DIN	PN10	395 (15.55)	12	22 (0.87)	350 (13.78)	450 (17.72)	319 (12.56)	310 (12.20)	469 (18.46)	N/A	61 (134)	59 (130)	63 (139)
		PN16	405 (15.94)		26 (1.02)	355 (13.98)						65 (143)	63 (139)	67 (148)
		PN25	425 (16.73)		30 (1.18)	370 (14.57)						84 (185)	82 (181)	86 (190)
		PN40	450 (17.72)		33 (1.30)	385 (15.16)						95 (209)	93 (205)	97 (214)
	AS4087	PN16	405 (15.94)	8	22 (0.87)	356 (14.02)						65 (143)	63 (139)	67 (148)
		PN35	430 (16.93)	12	26 (1.02)	381 (15.00)						95 (209)	93 (205)	97 (214)
	JIS B2220	5K	385 (15.16)		23 (0.91)	345 (13.58)						65 (143)	63 (139)	67 (148)
		10K	400 (15.75)		25 (0.98)	355 (13.98)								
	ASME B16.5	CL300	445 (17.52)	16	29 (1.13)	387 (15.25)						105 (231)	103 (227)	107 (236)
		CL150	405 (15.94)	12	26 (1.02)	362 (14.25)						70 (154)	68 (150)	72 (159)
DN300 (12 in)	EN 1092 or DIN	PN10	445 (17.52)	12	22 (0.87)	400 (15.75)	500 (19.69)	342 (13.46)	333 (13.11)	492 (19.37)	N/A	74 (163)	72 (159)	76 (168)
		PN16	460 (18.11)		26 (1.02)	410 (16.14)						80 (176)	78 (172)	82 (181)
		PN25	485 (19.09)	16	30 (1.18)	430 (16.93)						100 (220)	98 (216)	102 (225)
		PN40	515 (20.28)		33 (1.30)	450 (17.72)	600 (23.62)					130 (287)	128 (282)	132 (291)
	JIS B2220	5K	430 (16.93)	12	23 (0.91)	390 (15.35)						80 (176)	78 (172)	82 (181)
		10K	445 (17.52)	16	25 (0.98)	400 (15.75)								
	AS4087	PN16	455 (17.91)	12	22 (0.87)	406 (15.98)	500 (19.69)							
		PN35	490 (19.29)	26	26 (1.02)	438 (17.24)						130 (287)	128 (282)	132 (291)
	ASME B16.5	CL300	520 (20.47)	16	32 (1.25)	451 (17.75)						150 (331)	148 (326)	152 (336)
		CL150	485 (19.09)	12	26 (1.02)	432 (17.00)						105 (231)	103 (227)	107 (236)
DN 350 (14 in)	EN 1092 or DIN	PN10	505 (19.88)	16	22 (0.87)	460 (18.11)	550 (21.65)	357 (14.06)	348 (13.70)	507 (19.96)	N/A	95 (209)	93 (205)	97 (214)
		PN16	520 (20.47)		26 (1.02)	470 (18.50)						110 (243)	108 (238)	112 (247)
		PN25	555 (21.85)		33 (1.30)	490 (19.29)						145 (320)	143 (315)	147 (324)
		PN40	580 (22.83)		36 (1.42)	510 (20.08)	650 (25.59)					195 (430)	193 (425)	197 (435)
	JIS B2220	5K	480 (18.90)	12	22 (0.87)	435 (17.13)						95 (209)	93 (205)	97 (214)
		10K	490 (19.29)	16	25 (0.98)	445 (17.52)								
	AS4087	PN16	525 (20.67)	12	26 (1.02)	470 (18.50)	550 (21.65)					130 (287)	128 (282)	132 (291)
		PN35	550 (21.65)	16	30 (1.18)	495 (19.49)						185 (408)	183 (403)	187 (412)
	ASME B16.5	CL300	585 (23.03)	20	32 (1.25)	514(20.25)						140 (309)	138 (304)	142 (314)
		CL150	535 (21.06)	12	29 (1.14)	476 (18.75)						105 (231)	103 (227)	107 (236)
DN 400 (16 in)	EN 1092 or DIN	PN10	565 (22.24)	16	26 (1.02)	515 (20.28)	600 (23.62)	399 (15.71)	390 (15.35)	549 (21.61)	N/A	103 (227)	101 (223)	105 (232)
		PN16	580 (22.83)		30 (1.18)	525 (20.67)						126 (278)	124 (273)	128 (283)
		PN25	620 (24.41)		36 (1.42)	550 (21.65)						170 (375)	168 (370)	172 (380)
		PN40	660 (25.98)		39 (1.54)	585 (23.03)	650 (25.59)					258 (569)	256 (564)	260 (574)
	JIS B2220	5K	540 (21.26)	12	25 (0.98)	495 (19.49)						103 (227)	101 (223)	105 (232)
		10K	560 (22.05)	16	27 (1.06)	510 (20.08)						116 (256)	114 (251)	118 (261)
	AS4087	PN16	580 (22.83)	12	26 (1.02)	521 (20.51)	600 (23.62)					154 (340)	152 (335)	156 (344)
		PN35	610 (24.02)	20	30 (1.18)	552 (21.73)						302 (666)	300 (661)	304 (670)
	ASME B16.5	CL300	650 (25.59)	24	35 (1.38)	572 (22.50)						265 (584)	263 (580)	267 (589)
		CL150	600 (23.62)	12	29 (1.14)	540 (21.25)						175 (386)	173 (381)	177 (391)

F-style sensor – DN 450 to DN 600 (18 to 24 in)

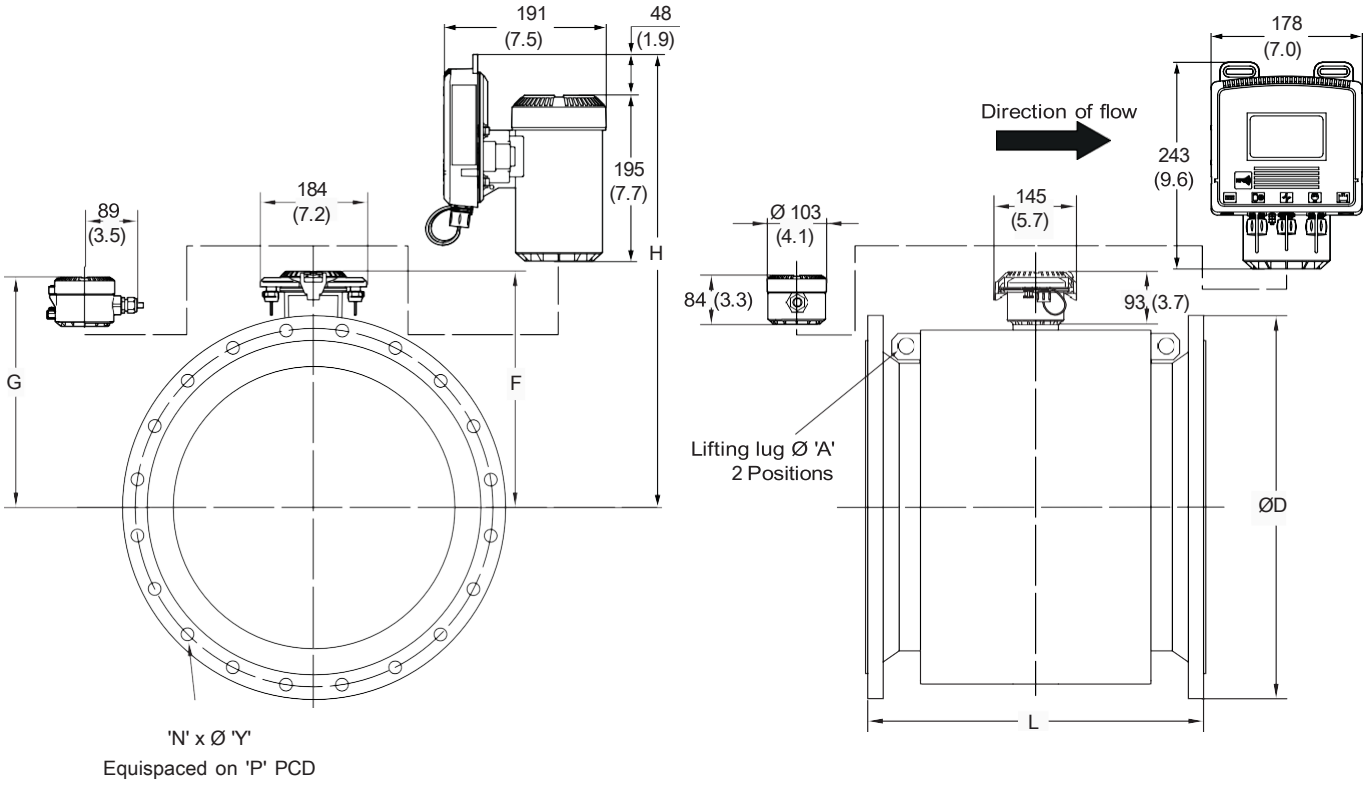


Figure 7 F-style sensor – DN 450 to DN 600 (18 to 24 in)

…Dimensions – sensors

...F-style sensor – DN 450 to DN 600 (18 to 24 in)

Table 6 F-style sensor – DN 450 to DN 600 (18 to 24 in)

Sensor size	Flange		Dimensions in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD D	No. holes N	Bolt hole dia. Y	Bolt hole PCD P	Sensor length L	Tx. height F	T. box height G	Tx. height H	Lifting lug A	Integral FEW411/ FEW431	Remote	Integral FEW451
DN450 (18 in)	EN 1092 or DIN	PN10	615 (24.21)	20	26 (1.02)	565 (22.24)	600 (23.62)	407 (16.02)	398 (15.67)	557 (21.93)	30 (1.18)	173 (381)	171 (377)	175 (386)
		PN16	640 (25.20)		30 (1.18)	585 (23.03)						188 (414)	186 (410)	190 (419)
		PN25	670 (26.38)		36 (1.42)	600 (23.62)	686 (27.01)					245 (540)	243 (536)	247 (545)
		PN40	685 (26.97)		39 (1.54)	610 (24.02)						315 (694)	313 (690)	317 (699)
	JIS B2220	5K	605 (23.82)	16	25 (0.98)	555 (21.85)						165 (364)	163 (359)	167 (369)
		10K	620 (24.41)	20	27 (1.06)	565 (22.24)						177 (390)	175 (386)	179 (395)
	AS4087	PN16	640 (25.20)	12	26 (1.02)	584 (22.99)	600 (23.62)					232 (511)	230 (507)	234 (516)
		PN35	675 (26.57)	20	33 (1.30)	610 (24.02)						328 (723)	326 (719)	330 (728)
	ASME B16.5	CL300	710 (27.95)	24	35 (1.38)	629 (24.75)						368 (811)	366 (807)	370 (816)
		CL150	635 (25.00)	16	32 (1.26)	578 (22.75)						250 (551)	248 (547)	252 (556)
DN500 (20 in)	EN 1092 or DIN	PN10	670 (26.38)	20	26 (1.02)	620 (24.41)	600 (23.62)	407 (16.02)	398 (15.67)	557 (21.93)	30 (1.18)	190 (419)	188 (414)	192 (424)
		PN16	715 (28.15)		33 (1.30)	650 (25.59)						240 (529)	238 (525)	242 (534)
		PN25	730 (28.74)		36 (1.42)	660 (25.98)	700 (27.56)					300 (661)	298 (657)	302 (666)
		PN40	755 (29.72)		42 (1.65)	670 (26.38)	762 (30.00)					392 (864)	390 (860)	394 (869)
	JIS B2220	5K	655 (25.79)		25 (0.98)	605 (23.82)	600 (23.62)					190 (419)	188 (414)	192 (424)
		10K	675 (26.57)		27 (1.06)	620 (24.41)								
	AS4087	PN16	705 (27.76)	16	26 (1.02)	641 (25.24)						290 (639)	288 (635)	292 (644)
		PN35	735 (28.94)	24	33 (1.30)	673 (26.50)						435 (959)	433 (955)	437 (964)
	ASME B16.5	CL150	700 (27.56)	20	32 (1.26)	635 (25.00)						300 (661)	298 (657)	302 (666)
		CL300	775 (30.51)	24	35 (1.38)	659 (25.94)	762 (30.00)					490 (1080)	488 (1076)	492 (1085)
DN600 (24 in)	EN 1092 or DIN	PN10	780 (30.71)	20	30 (1.18)	725 (28.54)	800 (31.50)	458 (18.03)	449 (17.68)	608 (23.94)	30 (1.18)	284 (626)	282 (622)	286 (631)
		PN16	840 (33.07)		36 (1.42)	770 (30.31)						318 (701)	316 (697)	320 (706)
		PN25	845 (33.27)		39 (1.54)	770 (30.31)						460 (1014)	458 (1010)	462 (1019)
		PN40	890 (35.04)		26 (1.02)	705 (27.76)	890 (35.04)					600 (1323)	598 (1318)	602 (1328)
	JIS B2220	5K	770 (30.31)		27 (1.06)	715 (28.15)						275 (606)	273 (602)	277 (611)
		10K	795 (31.30)	24	33 (1.30)	730 (28.74)						306 (675)	304 (670)	308 (679)
	AS4087	PN16	825 (32.48)	16	30 (1.18)	756 (29.76)	800 (31.50)					382 (842)	380 (838)	384 (847)
		PN35	850 (33.46)	24	36 (1.42)	781 (30.75)						452 (996)	450 (992)	454 (1001)
	ASME B16.5	CL300	915 (36.02)	24	41 (1.61)	813 (32.00)						550 (1213)	548 (1208)	552 (1217)
		CL150	815 (32.09)	20	35 (1.38)	750 (29.50)						425 (937)	423 (933)	427 (942)

F-style sensor – DN 700 to DN 2400 (28 to 96 in)

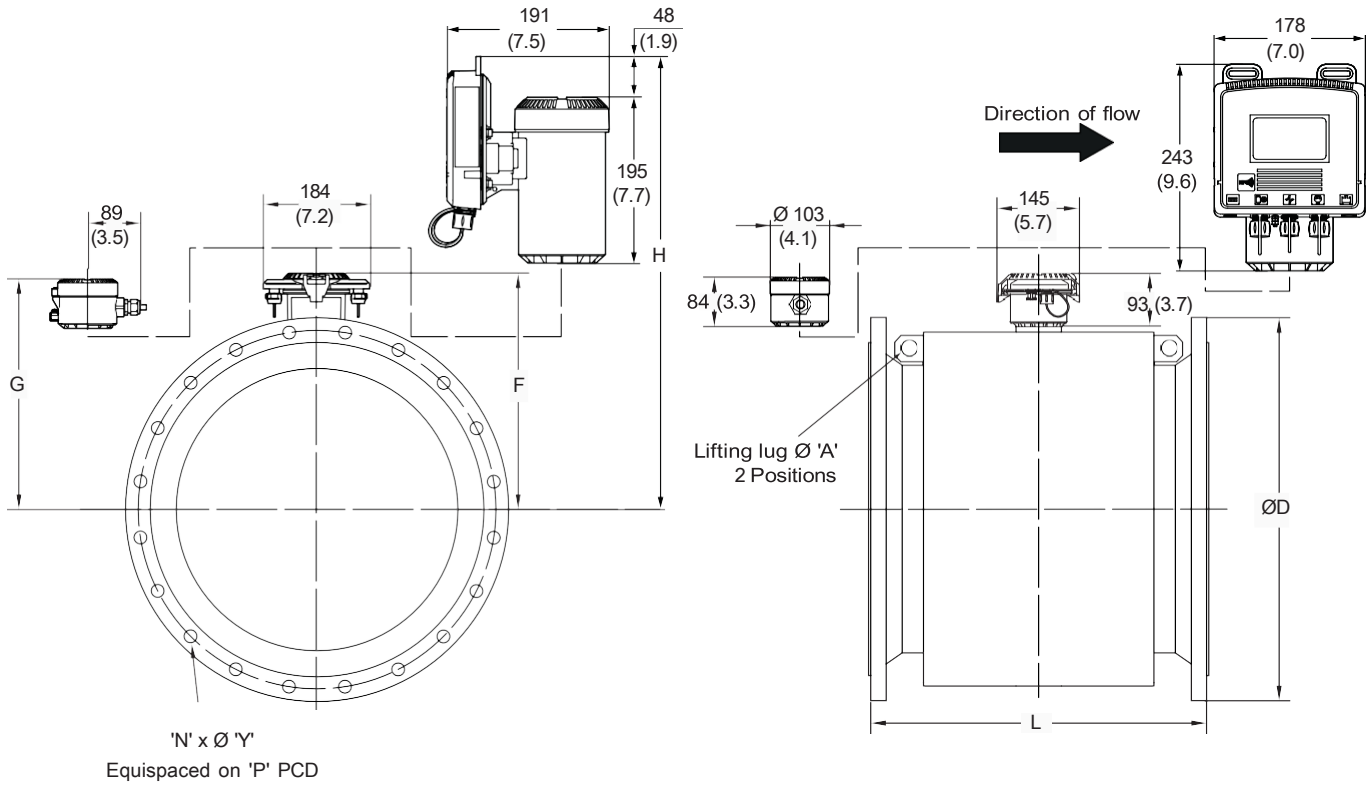


Figure 8 F-style sensor – DN 700 to DN 2400 (28 to 96 in)

Table 7 F-style sensor – DN 700 (28 in)

Sensor size	Flange		Dimensions in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD	No. holes	Bolt hole dia.	Bolt hole PCD	Sensor length	Tx. height	T. box height	Tx. height	Lifting lug	Integral FEW411/ FEW431	Remote	Integral FEW451
			D	N	Y	P	L	F	G	H	A			
DN700 (28 in)		5K	875 (34.45)		27 (1.06)	820 (32.28)						213 (470)	211 (466)	215 (474)
		10K	905 (35.63)		33 (1.30)	840 (33.07)						251 (554)	249 (549)	253 (558)
	EN 1092 or DIN	PN6	860 (33.86)		26 (1.02)	810 (31.89)	700 (27.56)					187 (413)	185 (408)	189 (417)
		PN10	895 (35.24)	24	30 (1.18)	840 (33.07)						235 (519)	233 (514)	237 (523)
		PN16	910 (35.83)		36 (1.42)	840 (33.07)						270 (596)	268 (591)	272 (600)
		PN25	960 (37.80)		42 (1.65)	875 (34.45)	800 (31.50)					419 (924)	417 (920)	421 (929)
		PN40	995 (39.17)		48 (1.89)	900 (35.43)	910 (35.83)					632 (1394)	630 (1389)	634 (1398)
	AWWA C207	CLASS B	927 (36.50)	28	32 (1.26)	864 (34.02)	700 (27.56)	497 (19.57)	492 (19.37)	647 (25.47)	30 (1.18)	247 (545)	245 (541)	249 (549)
		CLASS D	927 (36.50)									270 (596)	268 (591)	272 (600)
		CLASS E	927 (36.50)		32 (1.26)	864 (34.02)						434 (957)	432 (953)	436 (962)
		CLASS F	1035 (40.75)		44 (1.73)	940 (37.01)						674 (1486)	672 (1482)	676 (1491)
	AS 4087	PN16	910 (35.83)	20	30 (1.18)	845 (33.27)	700 (27.56)					356 (785)	354 (781)	358 (790)
		PN35	935 (36.81)	24	36 (1.42)	857 (33.74)	910 (35.83)					584 (1288)	582 (1284)	586 (1292)
	AS 2129	TABLE D			30 (1.18)		910 (35.83)					308 (680)	306 (675)	310 (684)
		TABLE E	910 (35.83)	20	33 (1.30)	845 (33.27)	700 (27.56)					274 (605)	272 (600)	276 (609)
	ASME B16.47	CL150 SERIES A	925 (36.42)	28	35 (1.38)	864 (34.00)	790 (31.10)					454 (1001)	452 (997)	456 (1006)
		CL150 SERIES B	835 (32.87)	40	22 (0.87)	795 (31.31)	910 (35.83)					368 (812)	366 (807)	370 (816)
	ASME B16.47	CL300 SERIES A	1035 (40.75)	28	45 (1.75)	940 (37.00)	940 (37.01)					1002 (2210)	1000 (2205)	1004 (2214)
		CL300 SERIES B	920 (36.22)	36	35 (1.38)	857 (33.75)	910 (35.83)					680 (1500)	678 (1495)	682 (1504)

…Dimensions – sensors

...F-style sensor – DN 700 to DN 2400 (28 to 96 in)

Table 8 F-style sensor – DN 750 to DN 900 (30 to 36 in)

Sensor size	Flange		Dimensions in mm (in)								Approx. weight kg (lbs)		
	Standard	Class	Flange OD	No. holes	Bolt hole dia.	Bolt hole PCD	Sensor length	Tx. height	T. box height	T. box height	Lifting lug	Integral FEW411/ FEW431	Remote	Integral FEW451
			D	N	Y	P	L	F	G	H	A			
DN750 (30 in)	JIS	JIS5K	945 (37.20)			880 (34.65)						245 (541)	243 (536)	247 (545)
		JIS10K	970 (38.19)			900 (35.43)						317 (699)	315 (695)	319 (704)
	AWWA C207	CLASS B	984 (38.74)									268 (591)	266 (587)	270 (596)
		CLASS D	984 (38.74)			914 (35.98)	762 (30.00)					322 (710)	320 (706)	324 (715)
		CLASS E	984 (38.74)	28	32 (1.26)							472 (1041)	470 (1037)	474 (1045)
		CLASS F	1092 (42.99)		44 (1.73)	997 (39.25)						755 (1665)	753 (1661)	757 (1669)
	AS 4087	PN16	995 (39.17)	20	33 (1.30)	927 (36.50)		523 (20.59)	518 (20.39)	673 (26.5)	30 (1.18)	410 (904)	408 (900)	412 (909)
		PN35	1015 (39.96)	28	36 (1.42)	940 (37.01)	990 (38.98)					713 (1572)	711 (1568)	715 (1577)
	AS 2129	TABLE D	995 (39.17)	20	33 (1.30)	927 (36.50)	990 (38.98)					390 (860)	388 (856)	392 (865)
		TABLE E	995 (39.17)		36 (1.42)		762 (30.00)					350 (772)	348 (768)	352 (777)
	ASME B16.47	CL150 SERIES A	985 (38.78)	28	35 (1.38)	914 (36.00)	830 (32.67)					505 (1114)	503 (1109)	507 (1118)
		CL150 SERIES B	885 (34.84)	44	22 (0.87)	846 (33.31)	990 (38.98)					368 (812)	366 (807)	370 (816)
	ASME B16.47	CL300 SERIES A	1090 (42.91)	28	48 (1.87)	997 (39.25)	975 (38.39)					1002 (2210)	1000 (2205)	1004 (2214)
		CL300 SERIES B	990 (38.98)	36	38 (1.50)	921 (36.25)	990 (38.98)					797 (1758)	795 (1753)	799 (1762)
DN800 (32 in)	JIS	JIS5K	995 (39.17)	24	33 (1.30)	930 (36.61)						280 (618)	278 (613)	282 (622)
		JIS10K	1020 (40.16)	28	33 (1.30)	950 (37.40)						328 (724)	326 (719)	330 (728)
	EN 1092 or DIN	PN6	975 (38.39)	24	30 (1.18)	920 (36.22)	800 (31.50)					239 (527)	237 (523)	241 (532)
		PN10	1015 (39.96)	34	33 (1.30)	950 (37.40)						312 (688)	310 (684)	314 (693)
		PN16	1025 (40.35)		39 (1.54)	950 (37.40)	800 (31.50)					366 (807)	364 (803)	368 (812)
		PN25	1085 (42.72)	24	48 (1.89)	990 (38.98)	950 (37.40)					599 (1321)	597 (1317)	601 (1325)
		PN40	1140 (44.88)		56 (2.20)	1030 (40.55)	1040 (40.94)					919 (2027)	917 (2022)	921 (2031)
	AWWA C207	CLASS B	1060 (41.73)		38 (1.50)	978 (38.50)	800 (31.50)					334 (737)	332 (732)	336 (741)
		CLASS D	1060 (41.73)	28				547 (21.54)	542 (21.34	697 (27.44)	30 (1.18)	394 (869)	392 (865)	396 (874)
		CLASS E	1060 (41.73)		38 (1.50)	978 (38.50)	880 (34.65)					591 (1303)	589 (1299)	593 (1308)
		CLASS F	1150 (45.28)		44 (1.73)	1054 (41.50)						886 (1954)	884 (1949)	888 (1958)
	AS 4087	PN16	1060 (41.73)	20	36 (1.42)	984 (38.74)	800 (31.50)					482 (1063)	480 (1059)	484 (1068)
		PN35	1060 (41.73)	28			1040 (40.94)					802 (1769)	800 (1764)	804 (1773)
	AS2129	TABLE D	1060 (41.73)		36 (1.42)	984 (38.74)	1040 (40.94)					440 (971)	438 (966)	442 (975)
		TABLE E	1060 (41.73)	20			800 (31.50)					410 (904)	408 (900)	412 (909)
	ASME B16.47	CL150 SERIES A	1060 (41.73)	28	41 (1.63)	978 (38.50)	950 (37.40)					674 (1486)	672 (1482)	676 (1491)
		CL150 SERIES B	940 (37.01)	48	22 (0.87)	900 (35.44)	1040 (40.94)					456 (1006)	454 (1001)	458 (1010)
	ASME B16.47	CL300 SERIES A	1150 (45.28)	28	51 (2.01)	1054 (41.50)	1120 (44.09)					1219 (2688)	1217 (2684)	1221 (2692)
		CL300 SERIES B	1055 (41.54)	32	41 (1.63)	978 (38.50)	1040 (40.94)					985 (2172)	983 (2168)	987 (2176)
DN900 (36 in)	JIS	JIS5K	1095 (43.11)	24	33 (1.30)	1030 (40.55)						347 (766)	345 (761)	349 (770)
		JIS10K	1120 (44.09)	28	33 (1.30)	1050 (41.34)						419 (924)	417 (920)	421 (929)
	EN 1092 or DIN	PN6	1075 (42.32)	24	30 (1.18)	1020 (40.16)	900 (35.43)					300 (662)	298 (657)	302 (666)
		PN10	1115 (43.90)		33 (1.30)	1050 (41.34)						396 (874)	394 (869)	398 (878)
		PN16	1125 (44.29)		39 (1.54)	1050 (41.34)						485 (1070)	483 (1065)	487 (1074)
		PN25	1185 (46.65)	28	48 (1.89)	1090 (42.91)	1040 (40.94)					757 (1669)	755 (1665)	759 (1674)
		PN40	1250 (49.21)		56 (2.20)	1140 (44.88)	1170 (46.06)					1219 (2688)	1217 (2684)	1221 (2692)
	AWWA C207	CLASS B	1168 (45.98)		38 (1.50)	1086 (42.76)						397 (876)	395 (871)	399 (880)
		CLASS D		32				598 (23.54)	593 (23.35)	748 (29.45)	30 (1.18)	436 (962)	434 (957)	438 (966)
		CLASS E					900 (35.43)					744 (1641)	742 (1636)	746 (1645)
		CLASS F	1270 (50.00)		51 (2.01)	1168 (45.98)						1064 (2346)	1062 (2342)	1066 (2351)
	AS 4087	PN16	1175 (46.26)	24	36 (1.42)	1092 (42.99)						686 (1513)	684 (1508)	688 (1517)
		PN35	1185 (46.65)	32	39 (1.54)	1105 (43.50)	1170 (46.06)					1103 (2432)	1101 (2428)	1105 (2437)
	AS 2129	TABLE D					1170 (46.06)					574 (1266)	572 (1262)	576 (1270)
		TABLE E					900 (35.43)					580 (1279)	578 (1275)	582 (1284)

ASME B16.47	1175 (46.26)	24	36 (1.42)	1092 (42.99)					
	CL150 SERIES A 1170 (46.06)	32	41.3 (1.63)	1086 (42.75)	1120 (44.09)	933 (2057)	931 (2053)	935 (2062)	
	CL150 SERIES B 1055 (41.54)	44	25.4 (1.00)	1010 (39.75)	1170 (46.06)	655 (1445)	653 (1440)	657 (1449)	
	CL300 SERIES A 1270 (50.00)	32	54 (2.13)	1168 (46.00)	1180 (46.46)	1533 (3380)	1531 (3376)	1535 (3385)	
	CL300 SERIES B 1170 (46.06)		44.5 (1.75)	1089 (42.87)	1170 (46.06)	1206 (2659)	1204 (2655)	1208 (2664)	

…F-style sensor – DN 700 to DN 2400 (28 to 96 in)

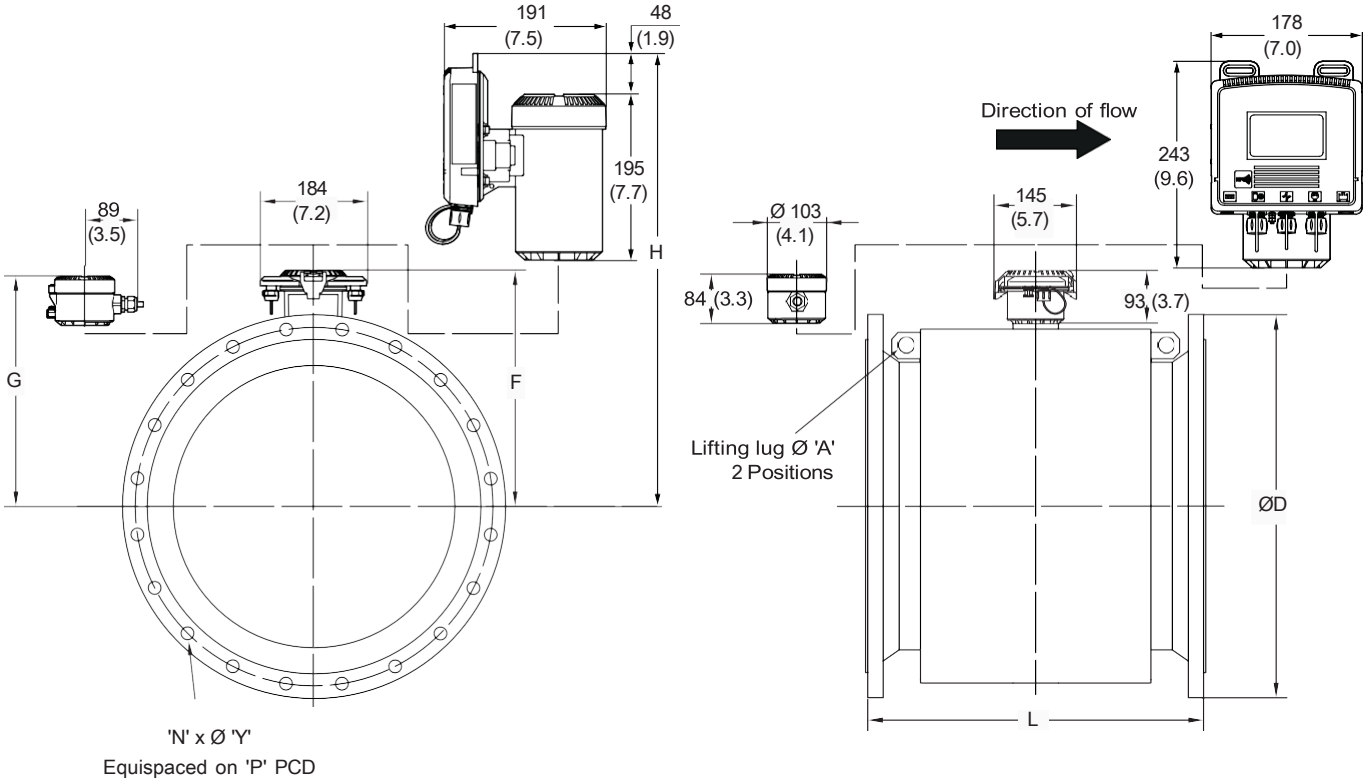


Figure 9 F-style sensor – DN 700 to DN 2400 (28 to 96 in)

Table 9 F-style sensor – DN 1000 (40 in)

Sensor size	Flange		Dimensional in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD	No. holes	Bolt hole dia.	Bolt hole PCD	Sensor length	Trans height	Tx. box height	Tx. box height	Lifting lug	Integral FEW411/ FEW431	Remote	Integral FEW451
			D	N	Y	P	L	F	G	H	A			
DN1000 (40 in)	JIS	JIS5K	1195 (47.05)	28	33 (1.30)	1130 (44.49)	1000 (39.37)	648 (25.51)	643 (25.31)	798 (31.42)	30 (1.18)	407 (898)	405 (893)	409 (902)
		JIS10K	1235 (48.62)		39 (1.54)	1160 (45.67)						505 (1114)	503 (1109)	507 (1118)
	EN 1092 or DIN	PN6	1175 (46.26)		30 (1.18)	1120 (44.09)						348 (768)	346 (763)	350 (772)
		PN10	1230 (48.43)		36 (1.42)	1160 (45.67)						469 (1034)	467 (1030)	471 (1039)
		PN16	1255 (49.41)		42 (1.65)	1170 (46.06)						613 (1352)	611 (1348)	615 (1356)
		PN25	1320 (51.97)		56 (2.20)	1210 (47.64)	1170 (46.06)					1004 (2214)	1002 (2210)	1006 (2218)
		PN40	1360 (53.54)			1250 (49.21)	1300 (51.18)					1486 (3277)	1484 (3272)	1488 (3281)
	AWWA C207	CLASS B	1289 (50.75)	36	38 (1.50)	1200 (47.24)						474 (1045)	472 (1041)	476 (1050)
		CLASS D	1289 (50.75)									618 (1363)	616 (1359)	620 (1367)
		CLASS E	1289 (50.75)									922 (2033)	920 (2029)	924 (2038)
		CLASS F	1378 (54.25)		51 (2.01)	1276 (50.24)						1300 (2867)	1298 (2862)	1302 (2871)
	AS 4087	PN16	1255 (49.41)	24	36 (1.42)	1175 (46.26)						740 (1632)	738 (1628)	742 (1636)
		PN35	1275 (50.20)	36	39 (1.54)	1194 (47.01)	1300 (51.18)					1316 (2902)	1314 (2897)	1318 (2906)
	AS 2129	TABLE D	1255 (49.41)		36 (1.42)		1300 (51.18)					682 (1504)	680 (1500)	684 (1508)
		TABLE E	1255 (49.41)	24	39 (1.54)	1175 (46.26)	1000 (39.37)					652 (1438)	650 (1434)	654 (1442)
	ASME B16.47	CL150 SERIES A	1290 (50.79)	36	41 (1.63)	1200 (47.25)	1090 (42.91)					1034 (2280)	1032 (2276)	1036 (2284)
		CL150 SERIES B	1175 (46.26)	44	29 (1.13)	1121 (44.13)	1300 (51.18)					809 (1784)	807 (1780)	811 (1788)
	ASME B16.47	CL300 SERIES A	1240 (48.82)	32	45 (1.75)	1156 (45.50)	1150 (45.28)					1287 (2838)	1285 (2833)	1289 (2842)
		CL300 SERIES B	1275 (50.20)	40		1191 (46.87)	1300 (51.18)					1560 (3440)	1558 (3435)	1562 (3444)

…Dimensions – sensors

...F-style sensor – DN 700 to DN 2400 (28 to 96 in)

Table 10 F-style sensor – DN 1050 to DN 1400 (42 to 56 in)

Sensor size	Flange Standard	Flange Class	Flange OD	No. holes	Bolt hole dia.	Bolt hole PCD	Sensor length	Trans height	Tx. height	Tx. height	Lifting lug	Approx. weight kg (lbs)		
			D	N	Y	P	L	F	G	H	A	Integral FEW411/ FEW431	Remote	Integral FEW451
DN1050 (42 in)	AWWA C207	CLASS B	1346 (52.99)	36	38 (1.50)	1257 (49.49)	1067 (42.01)	701 (27.6)	697 (27.44)	851 (33.5)	30 (1.18)	559 (1233)	557 (1228)	561 (1237)
		CLASS D										614 (1354)	612 (1350)	616 (1359)
		CLASS E										1102 (2430)	1100 (2426)	1104 (2434)
		CLASS F	1448 (57.01)		51 (2.01)	1340 (52.76)						1522 (3356)	1520 (3352)	1524 (3360)
	ASME B16.47	CL150 SERIES A	1345 (52.95)		41.3 (1.63)	1257 (49.50)						1200 (2646)	1198 (2642)	1202 (2650)
		CL150 SERIES B	1225 (48.23)	48	28.6 (1.13)	1172 (46.13)	1365 (53.74)					910 (2007)	908 (2002)	912 (2011)
		CL300 SERIES A	1290 (50.79)	32	44.5 (1.75)	1207 (47.50)	1170 (46.06)					1432 (3158)	1430 (3153)	1434 (3162)
		CL300 SERIES B	1335 (52.56)	36	47.6 (1.87)	1245 (49.00)	1365 (53.74)					1804 (3978)	1802 (3973)	1806 (3982)
DN1100 (44 in)	JIS	JIS5K	1305 (51.38)	28	33 (1.30)	1240 (48.82)	1118 (44.02)	701 (27.60)	697 (27.44)	851 (33.5)	30 (1.18)	478 (1054)	476 (1050)	480 (1059)
		JIS10K	1345 (52.95)									679 (1497)	677 (1493)	681 (1502)
	AWWA C207	CLASS B	1403 (55.24)		39 (1.54)	1270 (50.00)						605 (1334)	603 (1330)	607 (1339)
		CLASS D	1403 (55.24)	40	38 (1.50)	1315 (51.77)						695 (1533)	693 (1528)	697 (1537)
		CLASS E	1404 (55.28)	40	38 (1.50)							1132 (2496)	1130 (2492)	1134 (2501)
		CLASS F	1505 (59.25)	36	51 (2.01)	1397 (55.00)						1640 (3616)	1638 (3612)	1642 (3620)
DN1200 (48 in)	JIS	5K	1420 (55.91)	32	33 (1.30)	1350 (53.15)	1200 (47.24)	753 (29.65)	748 (29.49)	903 (35.55)	30 (1.18)	653 (1440)	651 (1436)	655 (1445)
		10K	1465 (57.68)		39 (1.54)	1380 (54.33)						819 (1806)	817 (1802)	821 (1810)
	EN 1092 or DIN	PN6	1405 (55.31)		33 (1.30)	1340 (52.76)						538 (1187)	536 (1182)	540 (1191)
		PN10	1455 (57.28)		39 (1.54)	1380 (54.33)						753 (1661)	751 (1656)	755 (1665)
		PN16	1485 (58.46)		48 (1.89)	1390 (54.72)						981 (2163)	979 (2159)	983 (2168)
		PN25	1530 (60.24)		56 (2.20)	1420 (55.91)	1560 (61.42)					1654 (3647)	1652 (3643)	1656 (3651)
		PN40	1575 (62.01)		62 (2.44)	1460 (57.48)						2229 (4915)	2227 (4910)	2231 (4919)
	AWWA C207	CLASS B	1511 (59.49)	44	38 (1.50)	1422 (55.98)	1200 (47.24)					746 (1645)	744 (1641)	748 (1650)
		CLASS D	1511 (59.49)									886 (1954)	884 (1949)	888 (1958)
		CLASS E	1511 (59.49)		38 (1.50)	1422 (55.98)						1389 (3063)	1387 (3058)	1391 (3067)
		CLASS F	1651 (65.00)	40	51 (2.01)	1543 (60.75)						2300 (5071)	2298 (5067)	2302 (5076)
	AS 4087	PN16	1490 (58.66)	32	36 (1.42)	1410 (55.51)	1200 (47.24)					1207 (2661)	1205 (2657)	1209 (2666)
	AS 2129	TABLE-D	1490 (58.66)	32	36 (1.42)		1560 (61.42)					1118 (2465)	1116 (2461)	1120 (2470)
		TABLE-E	1490 (58.66)	32	39 (1.54)		1200 (47.24)					1085 (2393)	1083 (2388)	1087 (2397)
	AS 4087	PN35	1530 (60.24)	40	42 (1.65)	1441 (56.73)	1560 (61.42)					2211 (4875)	2209 (4871)	2213 (4879)
	ASME CL150 B 16.47	SERIES A	1510 (59.45)	44	41 (1.63)	1422 (56.00)	1320 (51.97)					1612 (3554)	1610 (3550)	1614 (3559)
		SERIES B	1390 (54.72)		32 (1.25)	1335 (52.56)	1560 (61.42)					1178 (2598)	1176 (2593)	1180 (2602)
	ASME CL300 B 16.47	SERIES A	1465 (57.68)	32	51 (2.01)	1372 (54.00)	1400 (55.12)					2051 (4522)	2049 (4518)	2053 (4527)
		SERIES B	1510 (59.45)	40	51 (2.01)	1416 (55.75)	1560 (61.42)					2446 (5393)	2444 (5389)	2448 (5397)
DN1350 (54 in)	AWWA C207	CLASS B	1683 (66.26)	44	44 (1.73)	1594 (62.76)	1350 (53.15)	848 (33.39)	843 (33.19)	998 (39.29)	45 (1.77)	942 (2077)	940 (2073)	944 (2082)
		CLASS D										1026 (2262)	1024 (2258)	1028 (2267)
		CLASS E										1834 (4044)	1832 (4039)	1836 (4048)

DN1400 (56 in)	EN 1092 or DIN	PN6	1630 (64.17)	36	36 (1.42)	1560 (61.42)	1400 (55.12)	848 (33.39)	843 (33.19)	998 (39.29)	45 (1.77)	774 (1707)	772 (1702)	776 (1711)
		PN10	1675 (65.94)		42 (1.65)	1590 (62.60)						1080 (2381)	1078 (2377)	1082 (2386)
		PN16	1685 (66.34)		48 (1.89)							1293 (2851)	1291 (2847)	1295 (2855)
		PN25	1755 (69.09)		62 (2.44)	1640 (64.57)	1820 (71.65)					2483 (5475)	2481 (5470)	2485 (5479)
		PN40	1795 (70.67)		62 (2.44)	1680 (66.14)						3202 (7060)	3200 (7055)	3204 (7064)
	ASME CL150 B 16.47	SERIES A	1745 (68.70)	48	48 (1.87)	1651 (65.00)	1500 (59.06)							
		SERIES B	1600 (62.99)	60	32 (1.25)	1543 (60.75)	1820 (71.65)					2365 (5214)	2363 (5210)	2367 (5219)
	ASME CL300 B 16.47	SERIES A	1710 (67.32)	28	60 (2.37)	1600 (63.00)	1600 (62.99)					1706 (3762)	1704 (3757)	1708 (3766)
		SERIES B	1765 (69.49)	36	60 (2.37)	1651 (65.00)	1820 (71.65)					3166 (6980)	3164 (6976)	3168 (6985)
												3873 (8539)	3871 (8535)	3875 (8543)

…F-style sensor – DN 700 to DN 2400 (28 to 96 in)

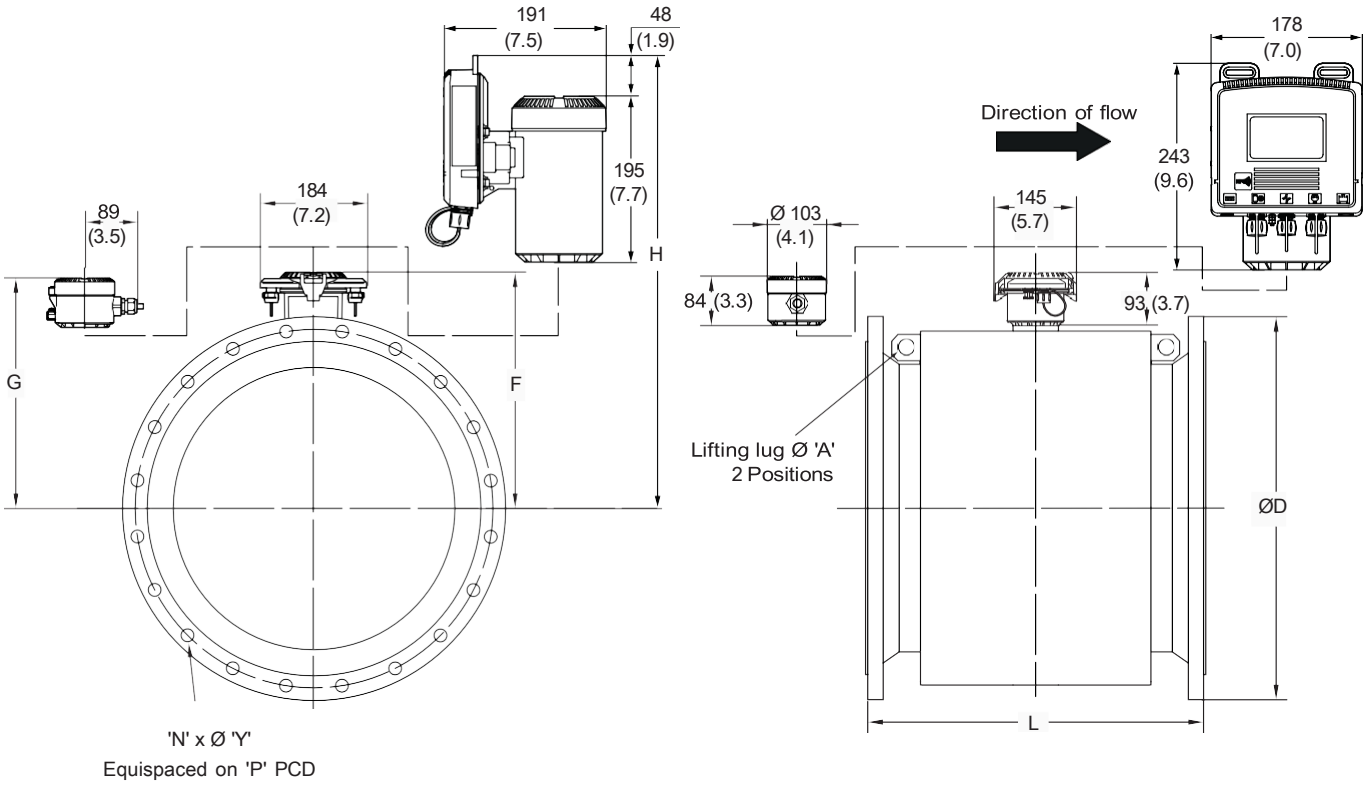


Figure 10 F-style sensor – DN 700 to DN 2400 (28 to 96 in)

…Dimensions – sensors

...F-style sensor – DN 700 to DN 2400 (28 to 96 in)

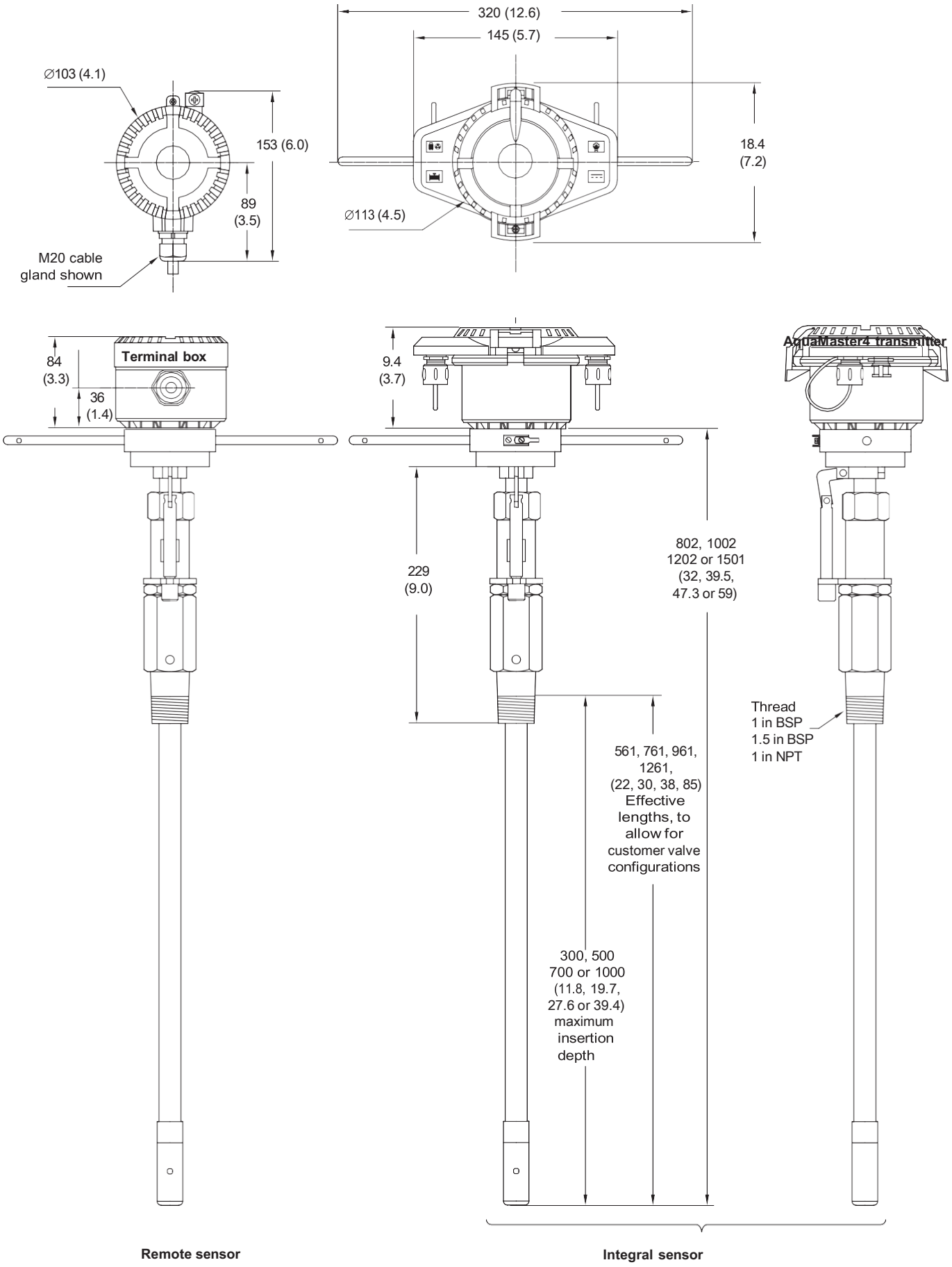
Table 11 F-style sensor – DN 1050 to DN 2400 (60 to 96 in)

Sensor size	Flange		Dimensional in mm (in)									Approx. weight kg (lbs)		
	Standard	Class	Flange OD	No. Holes	Bolt Hole Dia	Bolt Hole PCD	Sensor length	Trans Height	Tx. Height	Tx. Height	Lifting Lug	Integral FEW411/ FEW431	Remote	Integral FEW451
			D	N	Y	P	L	F	G	H	A			
DN1500 (60 in)	JIS	5K	1730 (68.11)	36	33 (1.30)	1660 (65.35)	1524 (60.00)	958 (37.72)	953 (37.52)	1108 (43.62)	45 (1.77)	1137 (2507)	1135 (2503)	1139 (2512)
		10K	1795 (70.67)	40	45 (1.77)	1700 (66.93)						1568 (3457)	1566 (3453)	1570 (3462)
	AWWA C207	CLASS B	1854 (72.99)	52	44 (1.73)	1759 (69.25)						1290 (2844)	1288 (2840)	1292 (2849)
		CLASS D	1854 (72.99)									1569 (3460)	1567 (3455)	1571 (3464)
		CLASS E	1854 (72.99)									2497 (5505)	2495 (5501)	2499 (5510)
	ASME CL150 B 16.47	SERIES A	1855 (73.03)		47.6 (1.87)							2847 (6277)	2845 (6273)	2849 (6281)
		SERIES B	1725 (67.91)		35 (1.38)	1662 (65.44)	1950 (76.77)					2031 (4478)	2029 (4474)	2033 (4482)
	ASME CL300 B 16.47	SERIES A	1810 (71.26)	32	60 (2.37)	1702 (67.00)	1640 (64.57)					3717 (8195)	3715 (8191)	3719 (8199)
		SERIES B	1880 (74.02)	40	60 (2.37)	1764 (69.44)	1950 (76.77)					4181 (9218)	4179 (9214)	4183 (9222)
DN1600 (64 in)	EN 1092 or DIN	PN6	1830 (72.05)	40	36 (1.42)	1760 (69.29)	1600 (62.99)	959 (37.76)	954 (37.56)	1109 (43.66)	45 (1.77)	1033 (2278)	1031 (2273)	1035 (2282)
		PN10	1915 (75.39)		48 (1.89)	1820 (71.65)						1509 (3327)	1507 (3323)	1511 (3332)
		PN16	1975 (77.76)		56 (2.20)	1820 (71.65)						1955 (4311)	1953 (4306)	1957 (4315)
		PN25	1930 (75.98)		62 (2.44)	1860 (73.23)	2080 (81.89)					3201 (7057)	3199 (7053)	3203 (7062)
		PN40	2025 (79.72)		70 (2.76)	1900 (74.80)						4375 (9646)	4373 (9641)	4377 (9650)
DN1650 (66 in)	AWWA C207	CLASS B	2032 (80.00)	52	44(1.75)	1930(75.98)	1650 (64.96)	1009 (39.72)	1004 (39.53)	1159 (45.63)	45 (1.77)	1497 (3301)	1495 (3296)	1499 (3305)
		CLASS D	2032 (80.00)									1763 (3887)	1761 (3883)	1765 (3892)
[N1800 (72 in)	EN 1092 or DIN	PN6	2045 (80.51)	44	39 (1.54)	1970 (77.56)	1800 (70.87)	1074 (42.28)	1069 (42.09)	1224 (48.19)	45 (1.77)	1356 (2990)	1354 (2986)	1358 (2994)
		PN10	2115 (83.27)		48 (1.89)	2020 (79.53)						1949 (4297)	1947 (4293)	1951 (4302)
		PN16	2130 (83.86)		56 (2.20)							2524 (5565)	2522 (5561)	2526 (5569)
		PN25	2195 (86.42)		70 (2.76)	2070 (81.50)	2340 (92.12)					4422 (9749)	4420 (9745)	4424 (9754)
	AWWA C207	CLASS B	2197 (86.50)	60	44 (1.73)	2096 (82.52)	1800 (70.87)					1833 (4042)	1831 (4037)	1835 (4046)
		CLASS D										2147 (4734)	2145 (4729)	2149 (4738)
DN1950 (78 in)	AWWA C207	CLASS B	2362 (92.99)	64	51(2.01)	2261(89.02)	1950 (76.77)	1184 (46.61)	1179 (46.42)	1334 (52.52)	45 (1.77)	2312 (5098)	2310 (5093)	2314 (5102)
		CLASS D										2684 (5918)	2682 (5913)	2686 (5922)
DN2000 (80 in)	EN 1092 or DIN	PN6	2265 (89.17)	48	42 (1.65)	2180 (85.83)	2000 (78.74)	1184 (46.61)	1179 (46.42)	1334 (52.52)	45 (1.77)	1781 (3927)	1779 (3923)	1783 (3931)
		PN10	2325 (91.54)		48 (1.89)							2580 (5688)	2578 (5684)	2582 (5693)
		PN16	2345 (92.32)		62 (2.44)	2230 (87.80)						3230 (7121)	3228 (7117)	3232 (7126)
		PN25	2425 (95.47)		70 (2.76)	2300 (90.55)	2600 (102.36)					5896 (12999)	5894 (12995)	5898 (13003)
DN2100 (84 in)	AWWA C207	CLASS B	2534 (99.76)	64	51(2.01)	2426 (95.51)	2100 (82.68)	1288 (50.71)	1283 (50.51)	1438 (56.61)	45 (1.77)	2570 (5666)	2568 (5662)	2572 (5671)
		CLASS D										2942 (6486)	2940 (6482)	2944 (6491)
DN2200 (88 in)	EN 1092 or DIN	PN6	2475 (97.44)	52	42 (1.65)	2390 (94.09)	2200 (86.61)	1288 (50.71)	1283 (50.51)	1438 (56.61)	45 (1.77)	2446 (5393)	2444 (5389)	2448 (5397)
		PN10	2550 (100.39)		56 (2.20)	2440 (96.06)						3202 (7060)	3200 (7055)	3204 (7064)

DN2400 (96 in)	EN 1092 or	PN6	2685 (105.71)	56	42 (1.65)	2600 (102.36)	2400 (94.49)	1388	1283	1538	45	2846 (6275)	2844 (6270)	2848 (6279)
	DIN	PN10	2760 (108.66)		56 (2.20)	2650 (104.33)		(54.65)	(50.51)	(60.55)	(1.77)	4111 (9064)	4109 (9059)	4113 (9068)

Table 12 F-style sensor – DN 1500 to DN 2400 (42 to 96 in)

Dimensions – insertion flowmeter

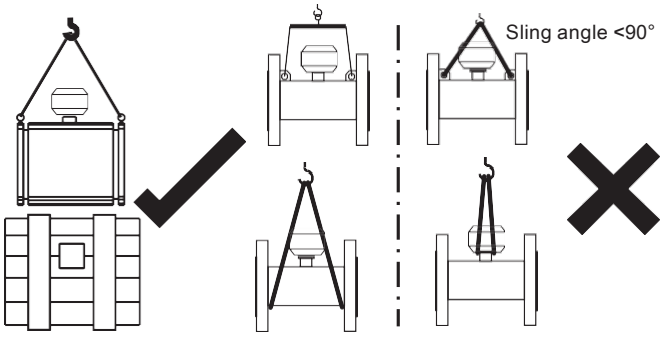


Installation requirements – sensor

This section is intended to give an overview of installation of a flowmeter. For Installation requirements, technical information and Health and Safety precautions refer to User Guide OI/FER100/FER200-EN.

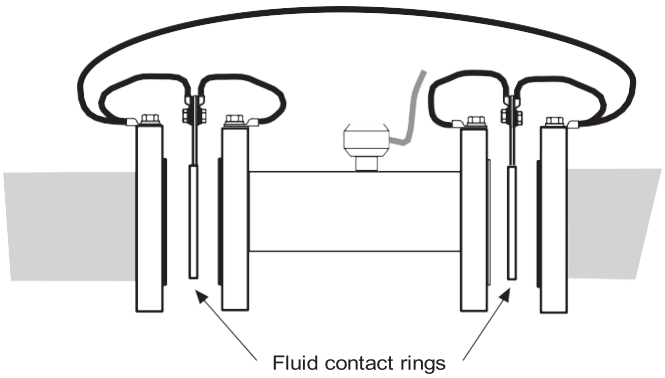
Unpacking the flowmeter

Care must be taken when lifting the flowmeter to use the lifting hooks provided or sling under the body of the meter. Never lift the flowmeter using the terminal connection box of the sensor cable as this causes damage and invalidates the warranty.

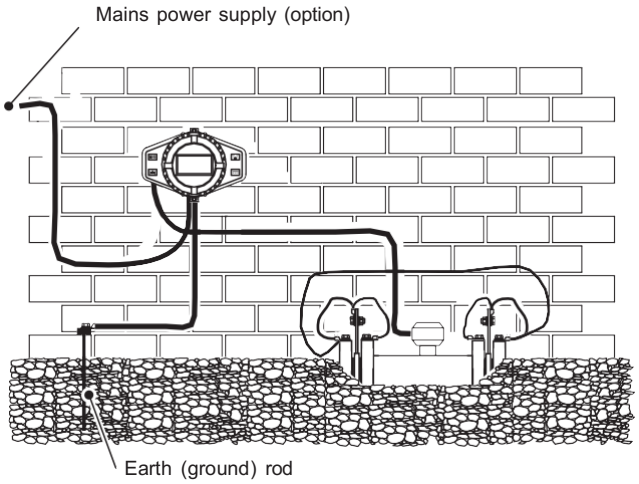


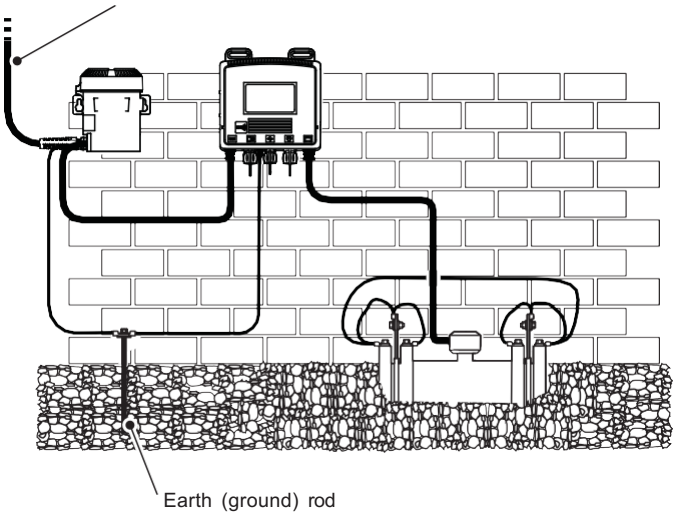
Grounding

The flowmeter sensor must be cross-bonded to the upstream and downstream pipes. For technical reasons, this potential must be identical to the potential of the metering fluid. The fluid connection is made by installing 2 fluid contact rings (for grounding).



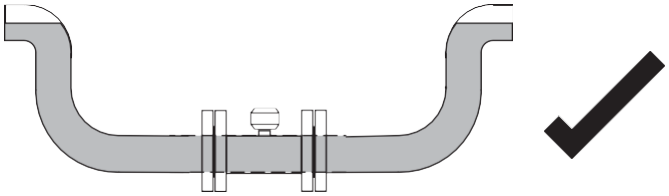
Note. The grounding arrangements shown below are applicable to both cathodic and non-cathodic protected installations.





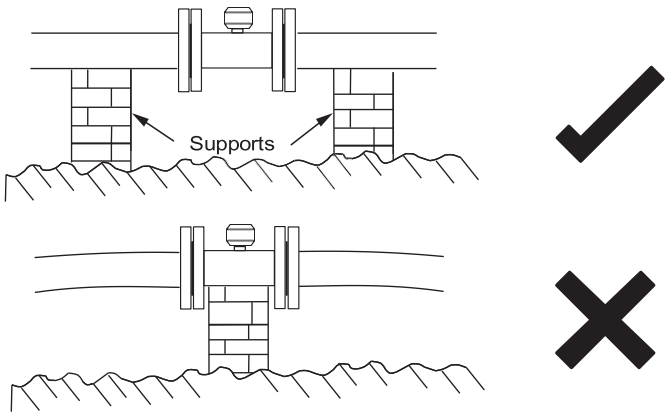
Mounting

The installation conditions shown below must be observed to achieve the best operational results. The sensor tube must always be completely full.

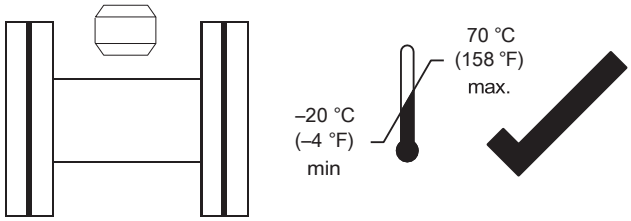


The flow direction must correspond to the identification plate. The flowmeter measures the flowrate in both directions. Forward flow is the factory setting.

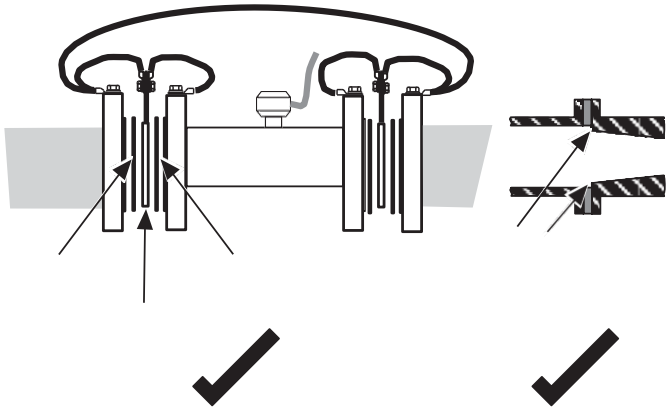
The flowmeter must be installed without mechanical tension (torsion, bending). If necessary, support the pipeline.



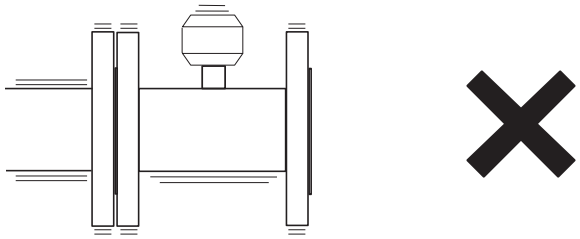
The flange seal material must be compatible with the fluid and fluid temperatures.



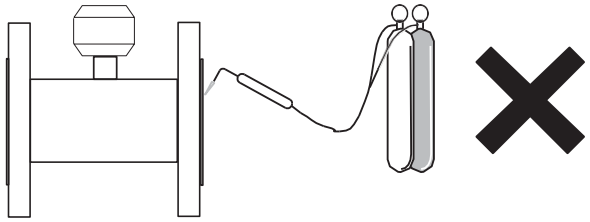
Seals must not extend into the flow area as this causes turbulence that adversely influences flowmeter accuracy.



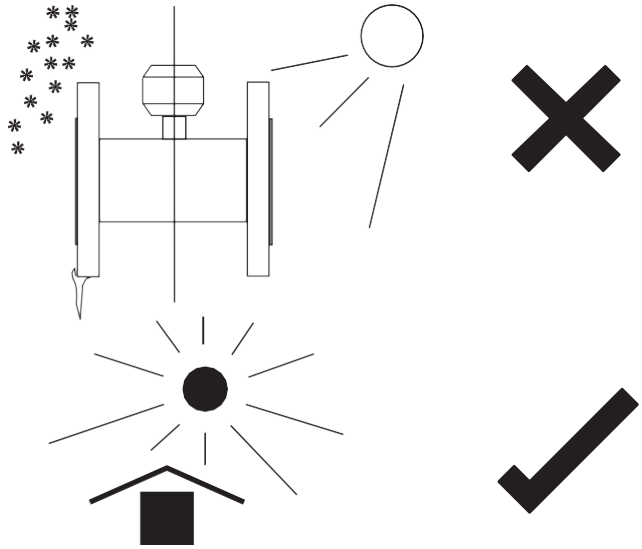
The pipeline must not exert any forces and torques on the flowmeter (for example, vibration).



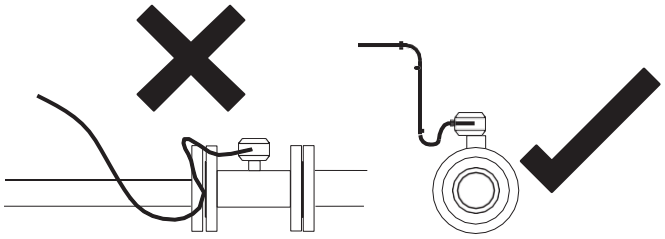
The flowmeter must not be submitted to localized heating during installation; take care to remember this is a measuring instrument.



The flowmeter must not be exposed to direct sunlight. Provide appropriate sun protection where necessary.

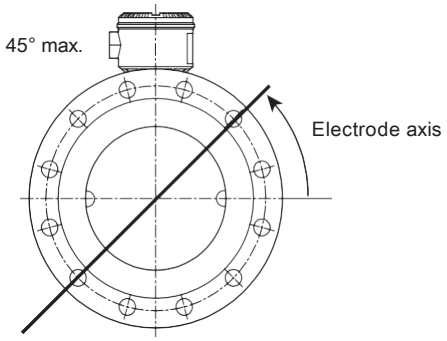


The cable to the flowmeter must be installed neatly or within a conduit. Both loose or conduit installations must have a u-bend below terminal connection box height to enable any water to run off thus avoiding any capillary action into the flowmeter sensor.



Electrode axis

The electrode axis must be horizontal wherever possible or no more than 45° from horizontal.



Installation requirements – transmitter (41X/43X)

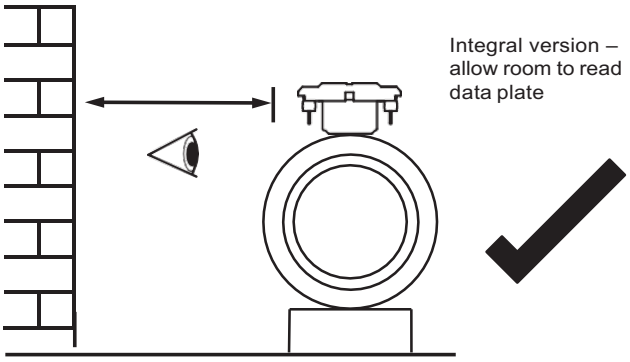


Figure 11 Siting

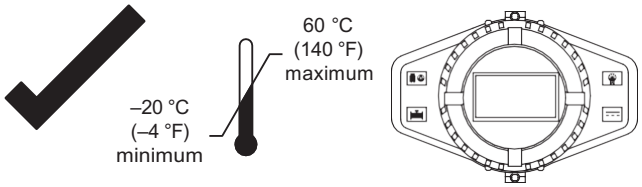


Figure 12 Within temperature limits

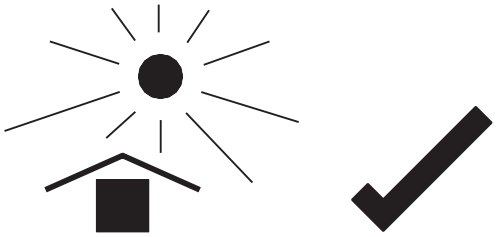


Figure 13 Shade

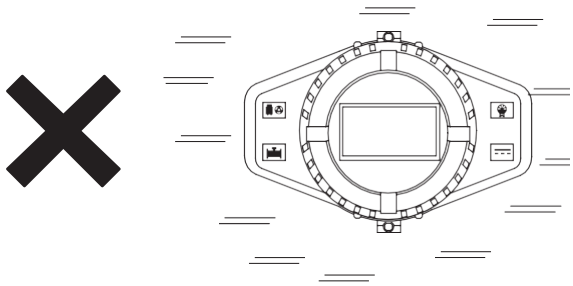


Figure 14 Vibration

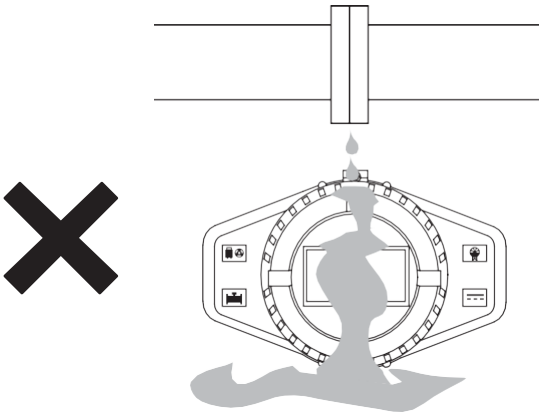


Figure 15 Spillage

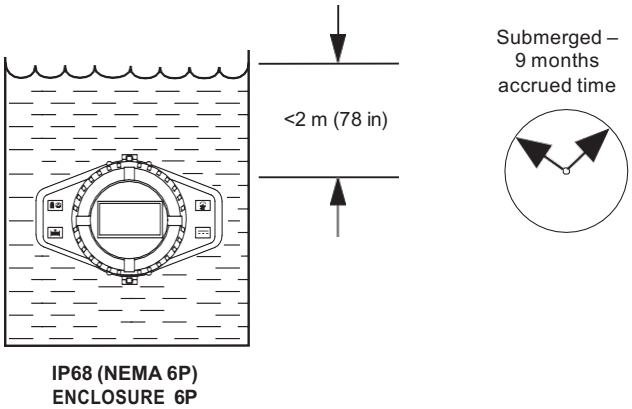


Figure 16 Within environmental rating

Installation conditions – FET 450

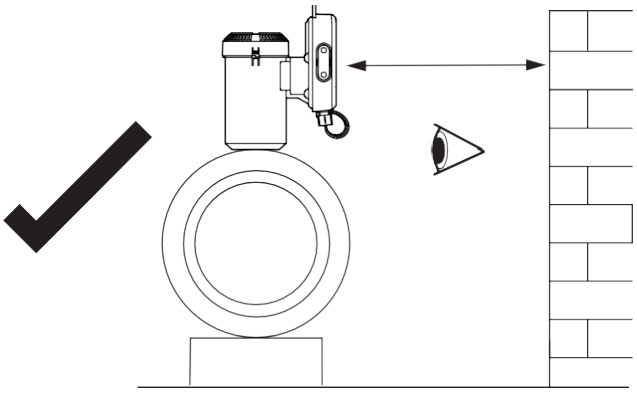


Figure 17 Siting

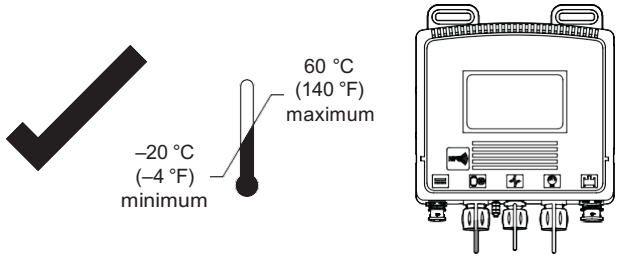


Figure 18 Within temperature limits

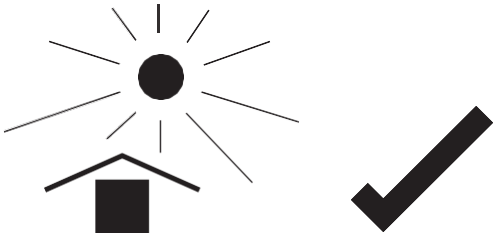


Figure 19 Shade

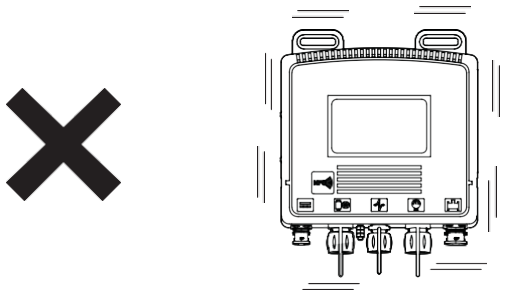


Figure 20 Vibration

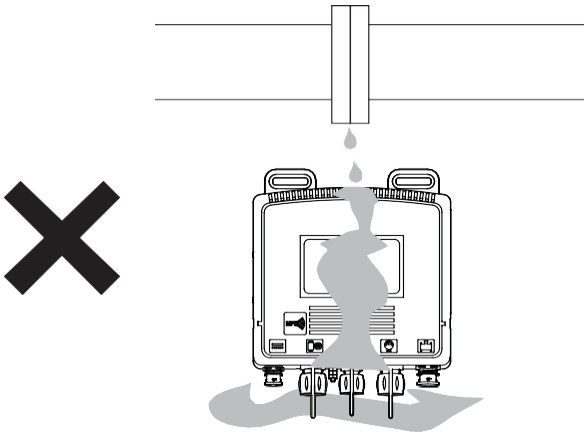


Figure 21 Spillage

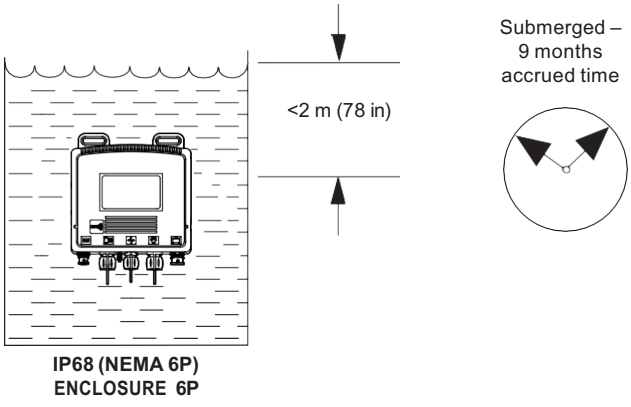


Figure 22 Within environmental rating

...Installation requirements – FET 450

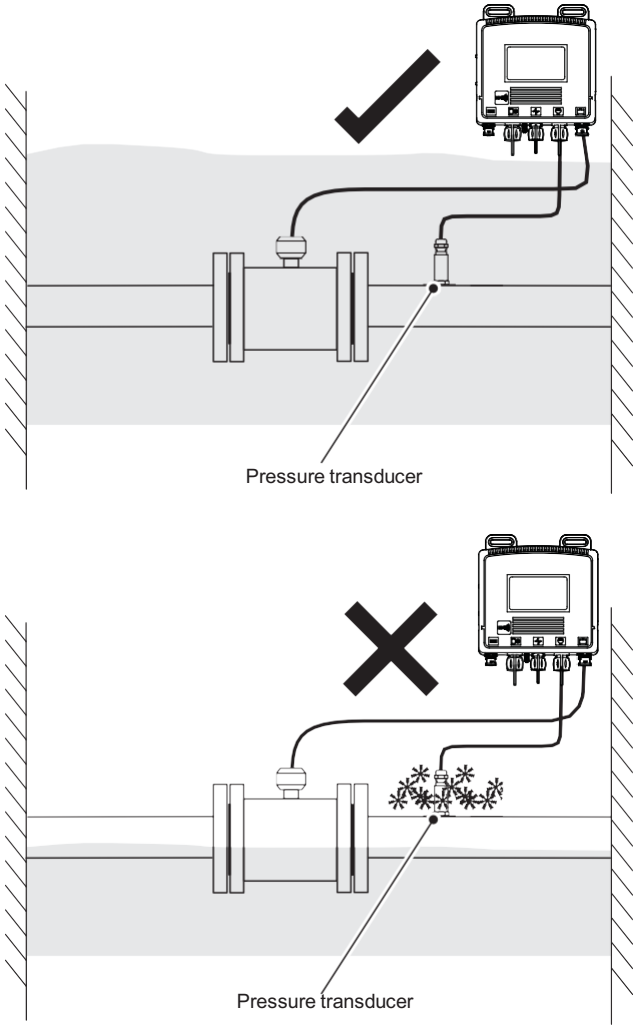


Figure 23 Pressure transducer – protect from frost

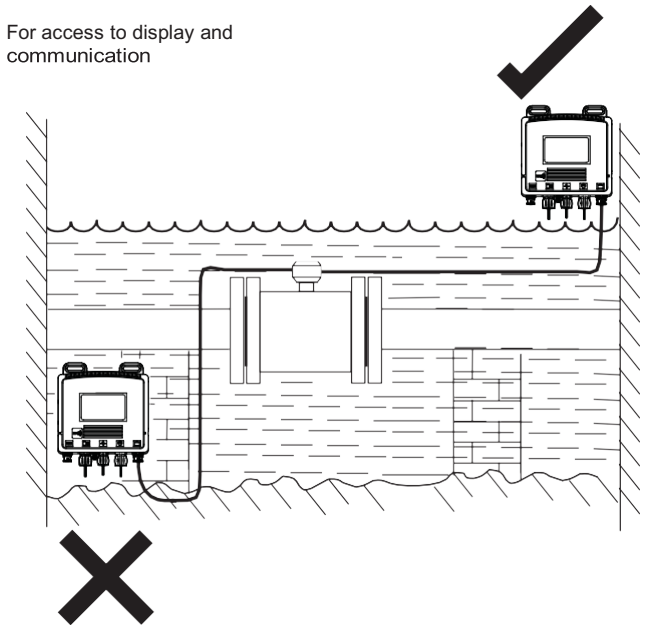


Figure 24 Access to transmitter

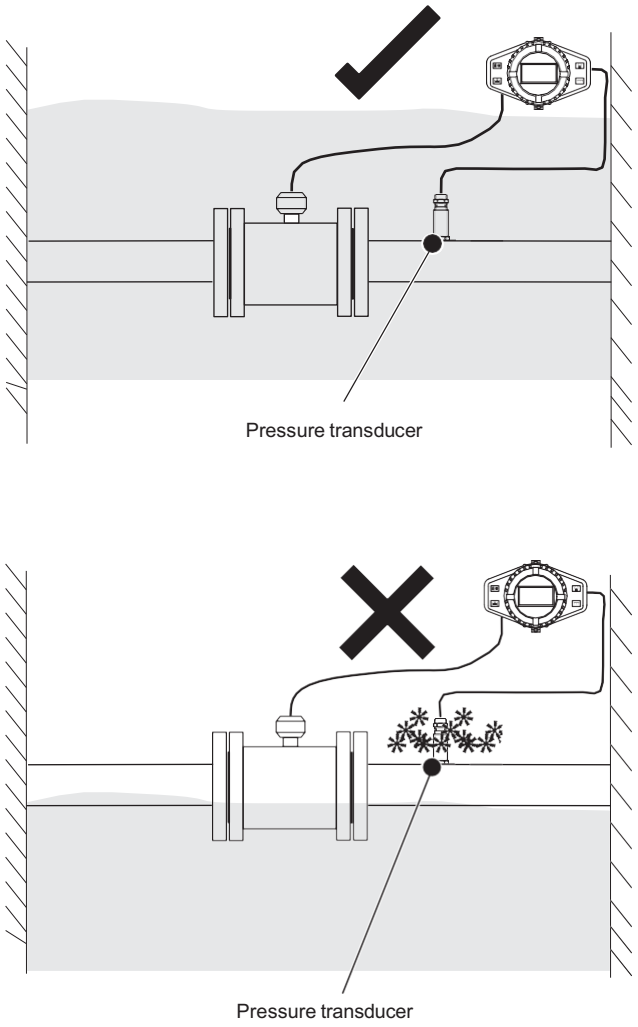


Figure 25 Pressure transducer – protect from frost

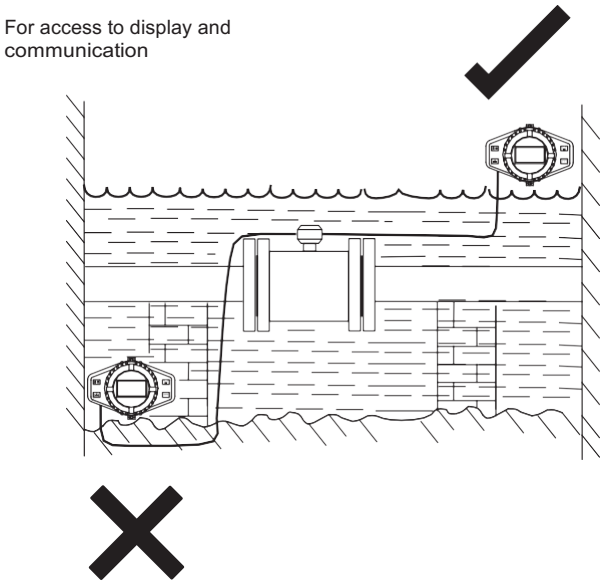


Figure 26 Access to transmitter

AquaMaster4 series differences

		AquaMaster4		
	Features	**41X (standard)**	**43X (advanced)**	**45X (premium)**
Mounting	Integral	✓	✓	✓
	Remote	✓	✓	✓
Sensors	Full bore flanged rubber DN250 to DN2400	✓	✓	✓
	Virtual full bore flanged polypropylene DN40 to DN200	✓	✓	✓
	Reduced bore flanged rubber DN40 to DN600	✓	✓	✓
	Probe 300 to 1000 mm	✓	✓	
Measurement	Class 2/0.5 % calibration	✓		
	Class 2/0.4 % calibration		✓	✓
	Class 1 calibration		✓	✓
	Class 2/0.2 % calibration		✓	✓
	Extended range class 1 and 2 calibration		✓	✓
	Totalizer	✓	✓	✓
	Pressure		✓	✓
	Internal logger		✓	✓
Power	AC (100 to 230 V, 50 or 60 Hz)		✓	✓
	Battery	✓	✓	✓
	Renewable (solar/wind)		✓	✓
Outputs	Digital outputs	✓	✓	✓
	Modbus		✓	✓
	Sensus compatible	✓	✓	
	Mobile communications			✓
Special application needs	Sensor submerged (up to 10 m) or buried (up to 5 m) *	✓	✓	✓
	Retrofit with legacy AquaMaster sensors		✓	✓

*DN40 to 600 reduced bore, DN40 to 200 virtual full bore sensors and DN450 to 2400 full bore sensors

Ordering information

Electromagnetic flowmeter

	1,2,3,4,5,6	7	8,9,10,11	12,13	14	15	16	17,18	19	20,21
Sensor and transmitter										
Standard integral flowmeter	FEW411									
Standard remote flowmeter	FEW412									
Advanced integral flowmeter	FEW431									
Advanced remote flowmeter	FEW432									
Premium integral flowmeter	FEW451									
Premium remote flowmeter	FEW452									
Sensor only										
Standard remote sensor	FEW418									
Advanced remote sensor	FEW438									
Premium remote sensor	FEW458									
Sensor style/liner material										
Full bore/rubber liner		F								
Virtual full bore/polypropylene liner		V								
Reduced bore/rubber liner		R								
Probe/PEEK		A								
Meter size										
DN40 (11/2 in)			0040							
DN50 (2 in)			0050							
DN65 (21/2 in)			0065							
DN80 (3 in)			0080							
DN100 (4 in)			0100							
DN125 (5 in)			0125							
DN150 (6 in)			0150							
DN200 (8 in)			0200							
DN250 (10 in)			0250							
DN300 (12 in)			0300							
300 mm (12 in) insertion probe length			P030							
DN350 (14 in)			0350							
DN400 (16 in)			0400							
DN450 (18 in)			0450							
DN500 (20 in)			0500							
500 mm (20 in) insertion probe length			P050							
DN600 (24 in)			0600							
DN700 (28 in)			0700							
700 mm (28 in) insertion probe length			P070							
DN750 (30 in)			0750							
DN800 (32 in)			0800							
DN900 (36 in)			0900							
DN1000 (40 in)			1000							
1000 mm (40 in) insertion probe length			P100							
DN1050 (42 in)			1050							
DN1100(44 in)			1100							
DN1200 (48 in)			1200							
DN1350 (54 in)			1350							
DN1400 (56 in)			1400							
DN1500 (60 in)			1500							
DN1600 (64 in)			1600							
DN1650 (66 in)			1650							
DN1800 (72 in)			1800							
DN1950 (78 in)			1950							
DN2000 (80 in)			2000							
DN2100 (84 in)			2100							
DN2200 (88 in)			2200							
DN2400 (96 in)			2400							
Others			9999							

Continued on next page …

…Ordering information

…Electromagnetic flowmeter

	1,2,3,4,5,6	7	8,9,10,11	12,13	14	15	16	17,18	19	20,21
	See page 53									
Process connection type										
ANSI/ASME B16.5/16.47 series B Class 150				A1						
ANSI/ASME B16.5/16.47 series B Class 300				A3						
AWWA C207 Class B – DN700 to 2400 (28 to 96 in)				C1						
AWWA C207 Class D – DN700 to 2400 (28 to 96 in)				C2						
AWWA C207 Class E – DN700 to 2400 (28 to 96 in)				C3						
AS 4087 PN 16 – DN40 to 2400 (11/2 to 96 in)				E1						
AS 2129 Table E – DN40 to 2400 (11/2 to 96 in)				E4						
JIS 7.5K – DN40 to 2400 (11/2 to 96 in)				J0						
JIS 10K – DN40 to 2400 (11/2 to 96 in)				J1						
JIS 5K – DN40 to 2400 (11/2 to 96 in)				J2						
1 in BSP coupling (1/8 in pressure tap) – probe only				N1						
11/2 in BSP coupling (1/8 in pressure tap) – probe only				N2						
1 in NPT coupling (1/8 in pressure tap) – probe only				N3						
ISO 7005, DIN, EN 1092 – 1 PN 10 – DN40 to 2400 (11/2 to 96 in)				S1						
ISO 7005, DIN, EN 1092 – 1 PN 16 – DN40 to 2400 (11/2 to 96 in)				S2						
ISO 7005, DIN, EN 1092 – 1 PN 25 – DN40 to 2400 (11/2 to 96 in)				S3						
ISO 7005, DIN, EN 1092 – 1 PN 40 – DN40 to 2400 (11/2 to 96 in)				S4						
Others				Z9						
Process connection material										
Carbon steel					B					
Stainless steel carrier (probe only)					J					
Brass seal carrier (probe only)					K					
Without (probe only)					U					
Measuring electrodes material										
Stainless steel 316L (1.4404)						R				
Super austenitic steel (1.4529)						U				
Other						Z				
Grounding accessories										
Without							A			
2 grounding rings (standard)							E			
Protection class – transmitter/sensor										
IP68, NEMA 6P/IP68, NEMA 6P – integral, remote cable not fitted and not potted (IP68 only after potting by others)								80		
IP68, NEMA 6P/IP68, NEMA 6P – remote mount cable fitted and potted								81		
Power supply										
Battery powered – battery not fitted									B	
Battery powered – battery fitted									L	
AC + internal back-up									K	
AC + external back-up – battery not fitted									H	
AC + external back-up – battery fitted									J	
External renewable energy + internal back-up									R	
External renewable energy + internal + external back-up – battery not fitted									M	
External renewable energy + internal + external back-up – battery fitted									N	
Outputs										
Modbus + pulse output *										M4
Pulse output										B1
Sensus communication protocol compatible + pulse output *										S1
4G										C1
4G + pulse output										C2
4G + Modbus + pulse output										C4
nB-IoT										J1
nB-IoT + pulse output										J2
nB-IoT Modbus + pulse output										J4
Without (FEW411, FEW412 and sensor only)										Y0

* With 3KXF221400L0XXX FEW4 sensor cable – see **Accessories** on page 60.

Options – add to order code as required	
Logger and protocol	
Internal logger option	LPN**
Internal Logger with MQTT + Sparkplug B	LPQ
Calibration type (3 test points as standard)	
Class 2.5 calibration – FEW411 and FEW412 only	RCS
Class 2/0.5 % factory calibration – FEW411 and FEW412 only	RCC
Class 2/0.4 % factory calibration – standard with FEW43X and FEW45X only	RCD[1]
Class 2/0.2 % factory calibration – option with FEW43X and FEW45X only	RCB[2]
Class 1 factory calibration – option with FEW43X and FEW45X only	RCF[2]
Extended range Class 2 calibration – option with FEW43X and FEW45X only	RCM[3]
Extended range Class 1 calibration – option with FEW43X and FEW45X only	RCN[3]
2 % factory calibration (probe only)	RCW
Number of test points	
1	TV1
5	TV5
Signal cable length and type	
5 m (approx. 15 ft)	SC1
10 m (approx. 30 ft)	SC2
20 m (approx. 66 ft)	SC4
30 m (approx. 98 ft)	SC6
50 m (approx. 164 ft)	SCA
100 m (approx. 328 ft)	SCE
150 m (approx. 492 ft)	SCG
Additional cables	
Sensus cable, 5 m	SR1
Sensus cable, 20 m	SR4
Renewable energy cable, 10 m	SP2
Accessories	
11/2 in ball valve	AB
RS485 lead with MIL connector for Modbus	AT
NFC to Wall mount Coupler 5 m cable	AJ
NFC to Wall mount Coupler, 10 m cable	AK
NFC to USB, 10 m cable	AL
NFC to USB, 20 m cable	AM
Display protective cover	
Display protective cover without NFC	AD1
Display protective cover with NFC, 5 m cable	AD2
Display protective cover with NFC, 20 m cable	AD3
Mobile Communication Accessories	
Remote antenna 5 m	G7
Remote antenna 10 m	G8
Mobile Communication Territory	
USA, Canada & Mexico	GTA
China	GTC
Australia, Argentina, Columbia, Chile, Brazil, Bolivia Peru & Panama*	GTD
Rest of the world	GTZ
Pressure span	
2000 kPa/20 bar/300 psi	PS3
4000 kPa/40 bar/580 psi	PS4
Pressure transducer	
Remote, cable length 10 m (33 ft)	PT5
Remote, cable length 20 m (65 ft)	PT6
Other usage certifications[5]	
Measuring Instruments Directive (MID)	CM1
OIML R49	CM2
NMI M10/R49	CM3[4]
UL Fire Service approval	CMF
PAC	CMP

[1] Calibration option RCD will have a reduced R (Q3/Q1) value without verification and are dependent on optional selection " Other Usage certification - CM2/CM3", refer to table 12 & 13

[2] Calibration option RCB/RCF will have a reduced R (Q3/Q1) value with verification and are dependent on optional selection " Other Usage certification - CM1/CM2/CM3", refer to table 12 & 13

[3] Calibration options RCM/RCN will have a extended R (Q3/Q1) value with verification and are dependent on optional selection "Other Usage certification - CM1/CM2/CM3", refer to page 22 & 26

[4] Calibration option RCS will have R (Q3/Q1) value without verification and are dependent on optional selection " Other Usage Certification - CM3" refer to page 22 & 26.

[5] If no selection made, standard factory calibration/verification.

*Contact ABB Sales/Support for any Latin American countries not specified above

**For FEW45X, the default protocol would be FTPS/FTP

…Ordering information

…Electromagnetic flowmeter

Potable water approvals	
WRAS - cold water approval*	CWA
NSF-61#	CWC
AZ/NZS 4020*	CWE
ACS#	CWF
WRAS - 60 °C water approval*	CWK
WRAS - 50 °C water approval*	CWN
Without	CWY
Other options	
With customer property label	KL
Documentation language	
German	M1
Spanish	M3
French	M4
English	M5
Chinese	M6
Polish	M9
Italian	M2
Portuguese	MA
Turkish	MT
Transmitter Software Function Package	
Backward-compatible to legacy AquaMaster Sensors (for FEW452 only)	NFL

* Material approval

#Meter Approval

Transmitter

Product coding field number	1,2,3,4,5,6	7	8,9
Transmitter only			
Standard remote transmitter	FET412		
Advanced remote transmitter	FET432		
Premium remote transmitter	FET452		
Power supply			
Battery powered – battery not fitted		B	
Battery powered – battery fitted		L	
AC + internal back-up		K	
AC + external back-up – battery not fitted		H	
AC + external back-up – battery fitted		J	
External renewable energy + internal back-up		R	
External renewable energy + internal + external back-up – battery not fitted		M	
External renewable energy + internal + external back-up – battery fitted		N	
Outputs			
Modbus			M4
Pulse output			B1
Sensus communication protocol compatible			S1
4G			C1
4G + pulse output			C2
4G + Modbus + pulse output			C4
nB-IoT			J1
nB-IoT + pulse output			J2
nB-IoT + Modbus output + pulse output			J4
Without (FEW411 and FEW412 only)			Y0

Options – add to order code as required	
Logger and protocol	
Internal logger option	LPN
Internal Logger with MQTT + Sparkplug B	LPQ
Additional cables	
Sensus cable, 5 m	SR1
Sensus cable, 20 m	SR4
Renewable energy cable, 10 m	SP2
Accessories	
RS485 lead with MIL connector for Modbus	AT
NFC to Wall mount Coupler, 5 m cable	AJ
NFC to Wall mount Coupler, 10 m cable	AK
NFC to USB, 10 m cable	AL
NFC to USB, 20 m cable	AM
Display protective cover	
Display protective cover without NFC	AD1
Display protective cover with NFC, 5 m cable	AD2
Display protective cover with NFC, 20 m cable	AD3
Mobile Communication Accessories	
Remote antenna 5 m	G7
Remote antenna 10 m	G8
Mobile Communication Territory	
USA, Canada & Mexico	GTA
China	GTC
Australia, Argentina, Columbia,Chile, Brazil ,Bolivia, Peru & Panama*	GTD
Rest of the world	GTZ
Pressure span	
2000 kPa/20 bar/300 psi	PS3
4000 kPa/40 bar/580 psi	PS4
Pressure transducer	
Remote, cable length 10 m (33 ft)	PT5
Remote, cable length 20 m (65 ft)	PT6
Other usage certifications	
OIML R49	CM2
NMI M10	CM3
Documentation language	
German	M1
Spanish	M3
French	M4
English	M5
Chinese	M6
Polish	M9
Italian	M2
Portuguese	MA
Turkish	MT
Transmitter Software Function Package	
Backward-compatible to legacy AquaMaster Sensors (for FET452 only)	NFL

…Ordering information

...Transmitter

Probe bore gauge tool

	1,2,3,4	5	6,7,8,9
Probe bore gauge tool	APBGT		
Housing			
R1 housing		2	
Bore size			
700 mm			700
760 mm			760
800 mm			800
900 mm			900
1000 mm			1000
1100 mm			1100
1200 mm			1200
1400 mm			1400
1500 mm			1500
1600 mm			1600
1800 mm			1800
2000 mm			2000
2200 mm			2200

Transmitter electronics only

	1,2,3,4, 5, 6	7	8,9
Standard integral transmitter generic	F E T 4 1 9		
Standard remote transmitter generic	F E T 4 1 0		
Advanced integral transmitter generic	F E T 4 3 9		
Advanced remote transmitter generic	F E T 4 3 0		
Power supply			
Battery powered – battery not fitted		B	
AC + internal back-up		K	
External renewable energy + internal back-up		R	
Outputs			
Modbus			M4
Pulse output			B1
Sensus communication protocol compatible			S1
Without			Y0

Additional codes to be added as required	MT
Logger and protocol	
Internal logger option	LPN
Pressure span	
2000 kPa/20 bar/300 psi	PS3
4000 kPa/40 bar/580 psi	PS4
Others	PSZ
Pressure transducer	
Remote, cable length 10 m (33 ft)	PT5
Remote, cable length 20 m (65 ft)	PT6
Documentation language	
German	M1
Spanish	M3
French	M4
English	M5
Chinese	M6
Polish	M9
Italian	M2
Portuguese	MA
Turkish	MT

Calibration/flow accuracy specification table

Calibration of the flowmeter to different calibration types and other usage certifications is done to meet the following values of R (Q3/Q1) for sizes DN40 to DN600.

Table 13 Calibration/verification of calibration values for "Other Usage Certification" MID (CM1)/OIML (CM2), Reduced Bore Sensor sizes DN40 - 600

	Reduced bore sensor			
	Mains powered		Battery/renewable energy powered	
DN	Class 2	Class 1	Class 2	Class 1
40	250	200	160	100
50	250	200	160	100
65	250	200	160	100
80	250	200	160	100
100	250	200	160	100
125	250	200	160	100
150	250	200	160	100
200	250	200	160	100
250	250	200	160	100
300	250	200	160	100
350	250	200	63	63
400	160	200	63	63
450	160	200	63	63
500	160	200	63	40
600	160	200	63	40

Table 14 Calibration/verification of calibration values for "Other Usage Certification" MID (CM1)/OIML (CM2), Full Bore Sensor sizes DN40 - 600

	Full bore sensor			
	Mains powered		Battery/renewable energy powered	
DN	Class 2	Class 1	Class 2	Class 1
40	200	125	80	63
50	200	125	80	63
65	200	125	80	63
80	200	125	80	63
100	200	125	80	63
125	200	125	80	63
150	200	125	80	63
200	200	125	80	63
250	200	125	80	63
300	200	125	80	63
350	80	80	80	63
400	80	80	80	63
450	80	80	80	63
500	80	80	80	63
600	80	80	80	63
700	80	80	40	40
750	80	80	40	40
800	80	80	40	40
900	63	40	40	-
1000	63	40	40	-
1050	63	40	40	-
1100	63	-	40	-
1200	63	-	40	-

Accessories

Ordering code	Description
3KXF208400L0100	AM4 battery pack 10 lithium D cells
3KXF208400L0200	AM4 battery pack 50 lithium D cells
3KXF208400L0300	AM4 display protective cover
3KXF208400L0400	AM4 display protective cover NFC 5 m cable
3KXF208400L0500	AM4 display cover NFC 20 m Cable
3KXF208400L0600	AM4 RS485 lead Mil connectors Modbus
3KXF221400L0100	FEW4 sensor/pulse/Modbus cable 5 m (15 ft approx.)
3KXF221400L0200	FEW4 sensor/pulse/Modbus cable 10 m (30 ft approx.)
3KXF221400L0300	FEW4 sensor/pulse/Modbus cable 20 m (66 ft approx.)
3KXF221400L0400	FEW4 sensor/pulse/Modbus cable 30 m (98 ft approx.)
3KXF221400L0500	FEW4 sensor/pulse/Modbus cable 50 m (164 ft approx.)
3KXF221400L0600	FEW4 sensor cable 100 m junction box/Mil
3KXF221400L0700	FEW4 sensor cable 150 m junction box/Mil
3KXF221400L0800	FEW4 sensor cable 500 m
3KXF221400L0900	FEW4 junction box and cable – M20 to Mil
3KXF208400L0700	AM4 Sensus cable 5 m (15 ft approx.)
3KXF208400L0800	AM4 Sensus cable 20 m (66 ft approx.)
3KXF208400L0900	AM4 renewable energy cable 10 m
3KXF208400L1000	AM4 pulse output cable 1 m
3KXF208400L2100	AM4 pressure transducer 20 bar 10 m
3KXF208400L2200	AM4 pressure transducer 20 bar 20 m
3KXF208400L2500	AM4 pressure transducer 40 bar 10 m
3KXF208400L2600	AM4 pressure transducer 40 bar 20 m
3KXF221400L1100	FEW4 terminal box potting compound 200 g
3KXF221400L1200	FEW4 ball valve stainless steel 11/2 in BSP
3KXF221400L1300	FEW4 bush stainless steel 11/2 in M x 1 in BSP
3KXF221400L1400	FEW4 ball valve stainless steel 11/2 in NPT
3KXF221400L1500	FEW4 bush stainless steel 11/2 in M x 1 in NPT
3KXF221400L1600	FEW4 AquaProbe seal replacement kit
3KXF208400L2700	AM4 transmitter seal kit
3KXF208400L2800	AM4 battery connector kit
3KXF221400L1700	FEW4 preamp board and potting kit
3KXF208400L2900	AquaMaster 4 – demonstration kit (FEX41X/FEX43X)
3KXF221400L1800	FEW4 terminal box maintenance kit
3KXF208400L3000	AM4 antitamper security kit
3KXF208400L3100	AM4 remote transmitter mounting bracket kit
3KXF221400L1900	FEW4 earth strap kit
3KXF208400L3700	External battery PSU with batteries not fitted for Tx (FET450)
3KXF208400L3800	External battery PSU with batteries fitted for Tx (FET450)
3KXF208400L3900	AC PSU with D-cell batteries not fitted for Tx (FET450)
3KXF208400L4000	AC PSU with D-cell batteries fitted for Tx (FET450)
3KXF208400L4100	Renewable PSU with D-cell batteries not fitted for Tx (FET450)
3KXF208400L4200	Renewable PSU with D-cell batteries fitted for Tx (FET450)
3KXF208400L5200	NFC to USB, 10 m cable for FEX450
3KXF208400L5300	NFC to USB, 20 m cable for FEX450

Ordering code	Description
3KXF208400L4400	NFC to wall mount coupler, 5 m (FEX450)
3KXF208400L4500	NFC to wall mount coupler, 20 m (FEX450)
3KXF208400L4600	Battery holder sub-assembly for AC/Ren operated Tx (FET450)
3KXF208400L4700	Battery holder subassembly for battery operated Tx (FET450)
3KXF208400L4800	Demo kit for AM4 Mobile Comms with NB-IOT for China
3KXF208400L4900	Demo kit for AM4 Mobile Comms with 4G for Europe and Asia
3KXF208400L5000	Demo kit for AM4 Mobile Comms with 4G for North America
3KXF208400L5100	Demo kit for AM4 Mobile Comms with 4G for Australia
3KXF208400L5600	FET450 PSU Mounting Bracket
3KXF208400L5800	External Remote Antenna with 5 m cable
3KXF208400L5900	External Remote Antenna with 10 m cable
3KXF208400L6000	Battery Holder for External Battery PSU
3KXF208400L6100	Battery Holder for AC Mains and Renewable PSU

Acknowledgements

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- Google Play is a trademark of Google LLC.
- Modbus is a registered trademark of Schneider Electric USA, Inc.
- Sensus is a registered trademark of Sensus USA, Inc.
- Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.

Notes

Notes

ABB Measurement & Analytics

For your local ABB contact, visit:
www.abb.com/contacts

For more product information, visit:
www.abb.com/measurement

DS/FET400-EN Rev. H 07.2025

4.1.4. Has within a three-year period preceding this certification had one or more public transactions or contracts (federal, state, or local) terminated for cause or default.

The Grantee is "Actively" registered with SAMS (Service for Award Management) and has been assigned the following UEI Number: 86-6000270. found at www.sam.gov. Include date SAM.GOV registration begins and ends YT2CGQQEMVJ9.

The Grantee further certifies that it shall not knowingly enter into any transaction with any subcontractor, material supplier, or vendor who is debarred, suspended, declared ineligible, or voluntarily excluded from covered transactions by any federal or state department/agency.