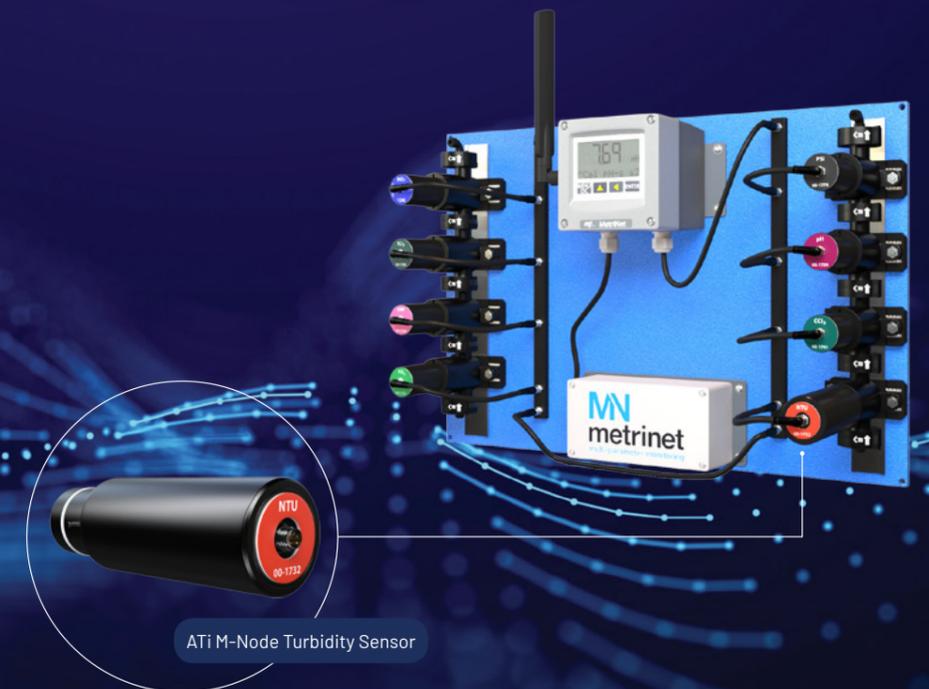


Ultra low powered, multi-parameter smart water quality monitoring solution.

Extracting real-time, deeper insights to support
evidence based investment in distribution networks.



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MetriNet

ATI's MetriNet delivers accurate, real-time, water quality data to support evidence-based investment in networks.

Analysing water quality data from our range of MetriNet smart M-Node sensors, we are able to extract deeper, real-time insights, allowing water utilities to enhance operational efficiencies.

By utilising these insights, water companies can manage networks more efficiently and resiliently to proactively safeguard water quality, creating intelligent, optimised, smart water networks.

Implementing MetriNet helps to enhance analytical platform performance, identify leaks, improve strategies and enables informed decisions, removing the guesswork from planning and investment.

MetriNet can be configured for use with any manufacturers RTU, with the data being transmitted to the customers preferred platform, offering a truly flexible water quality monitoring solution.

Become data rich and knowledge smart with ATI's trusted smart water quality solution.



Example shown is a battery powered system measuring free chlorine and turbidity water quality parameters. Using a Technolog Cello 4s RTU with solenoid valve to save water by controlling the intermittent flow and connected to the distribution network via a PRV.

MetriNet is a low-power, modular system for monitoring water quality and collecting data at remote locations. This pioneering system utilises all the experience and expertise that ATI has earned over three decades of working closely with water utilities around the world.

The MetriNet system features sensors that have the same accuracy and reproducibility as our trusted and proven Q-Series sensors, combined with ultra-compact, full featured monitors in one small housing unit.

16 parameters, including:

Free Chlorine, Combined Chlorine, Total Chlorine, Conductivity, 4E Conductivity, pH, ORP, Dissolved Oxygen, Dissolved Ozone, Turbidity, Flouride, Chlorine Dioxide, Peracetic Acid, Hydrogen Peroxide, Pressure, Nitrite.

As well as general monitoring applications, MetriNet can also be used for:

Mains Conditioning, Flow Reversal, Network Resilience, Chlorine Decay Modelling, Leakage, Flushing.

M-Nodes

At the heart of the MetriNet system are ATI's industry-leading M-Nodes, a complete sensor and transmitter housed in a miniaturised body.



M-Nodes are complete water quality monitors equivalent to traditional online instruments, connected to the water supply using a purpose designed 'click-connect' flow cell arrangement. M-Nodes are connected in series to minimise water usage and can run at pressures up to 6 bar. Their ultra low powered nature means they have the ability to run autonomously for years at a time on small batteries. Alternatively they can be powered from a local plc or telemetry system.

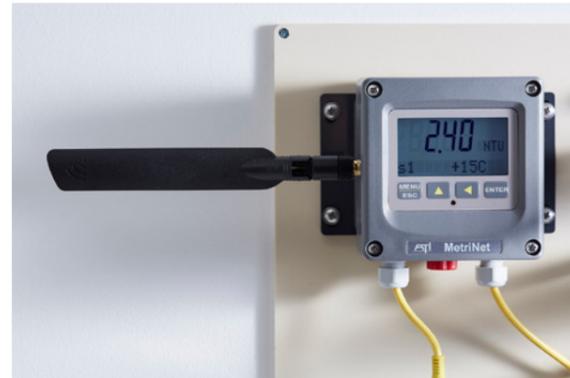
Flexibility is key with M-Nodes and they can be connected to any data gathering system. Their modular nature enables users to assemble a bespoke monitoring package that fits individual site requirements. All M-Nodes plug directly into the MetriNet system and are powered directly from the communications bus.



User Interface

For a complete solution, M-Nodes can also be connected to the MetriNet User Interface (MUI). The MUI connects to up to 8 M-Nodes and connects to the outside world via any 'ftp' based system, operating as independent modules that can be linked via a communication bus. The MUI also has on board data-logging with vast data storage capabilities. All M-Nodes plug directly into MetriNet systems and are powered directly from the communications bus. M-Nodes may be added or removed as needed and the removal of an M-Node will not affect system measurements. Sensor and bus connectors are IP-67 rated for maximum signal protection.

The MetriNet UI also allows setup and calibration of M-Nodes, as well as storing data and transmitting data to either local or remote locations. Electronic assemblies are galvanically isolated from both the power supply and communication link. Data sampling rates are user selectable to minimize power consumption. Data is stored locally in standard csv file format for easy manipulation with spreadsheet programs. Cellular data transmission may be directed to commercial storage sites or directly to customer site.



Our M-Nodes are also supported by the Q51 portable controller. A battery powered device that will calibrate and configure individual sensors, or as a complete stand-alone logger to run M-Node sensors directly.



Benefits

- Ability to measure anywhere means closer to customer
- Can foresee potential issues by advising early, which avoids complaints and allows you to take mitigating action
- Future-proof communications for optimum added value and complete peace of mind
- Data value increases as the number of measuring points increase, building a better picture of the whole network
- Zero and span data stored internally so calibration can be done anywhere
- Internal clock records total run time on the sensor
- Calibration timer can alert users when calibration is due
- Two alarm set points are available
- Sensor diagnostics report problems in clear message form
- 16 character user defined 'Tag' name

Features

Designed specifically for applications in water distribution networks, MetriNet allows 'no compromise' continuous measurement of all the main water quality parameters required.

| M-Nodes |
|---|
| Electronic assemblies are galvanically isolated from the power supply and communication link |
| Zero and span data stored internally so calibration can be done anywhere |
| Internal clock records total run time on the sensor |
| Calibration timer can alert users when calibration is due |
| Two alarm set points are available |
| Sensor diagnostics report problems in clear message form |
| Controller |
| Accepts up to 8 M-Node sensor inputs |
| Stores data at user defined intervals from 0.1-60 minutes |
| Stores over 300K values, or 30 days of data for 8 sensors at 1 minute data interval |
| Options for cellular modem, Wi-Fi, or wired Modbus RTU, Modbus TCP/IP, Ethernet/IP or Profibus DP |
| Internal Micro-SD RAM card provides data backup in the event of communication problems |
| Addition of a low power solenoid valve allows intermittent sample flow |
| Sensor diagnostics report problems in clear message form |



Water Conservation

MetriNet is ideally suited for situations where water conservation is of the utmost importance. Dependent upon the pressure within the network, MetriNet can return the uncontaminated sample water back to the feed resulting in zero water wastage.

Where the above is not met or is not critical, a typical MetriNet system that is connected to a continuous sample flow of 0.2 litres per minute will consume about 288 litres per day in continuous mode.

In many cases, this amount of water consumption will not be significant. However, in some cases, the user may wish to minimize the amount of water consumed by the MetriNet system. The MetriNet controller provides a cyclic operating mode that allows the user to minimise the daily water consumption. When the solenoid valve is closed, there is no flow to the system

and no measurements are taken. At user specified intervals, the solenoid valve is opened to allow fresh water into the system. The sample continues to flow for a selectable amount of time, a measurement is then taken and data is stored locally.

When this cycle is complete, the solenoid is returned to a closed position and flow is once again restricted from the system. Cyclic sampling can reduce water consumption to less than 12 litres per day at most sites.



Modular Flow System

MetriNet flow cells are modular, allowing assembly of 1 to 8 flow chambers. Each chamber holds one M-Node sensor with a simple bayonet connection. A rotating lock-ring clamps flow chambers together for easy assembly. A flow control device is integrated into the outlet fitting of the MetriNet flowcell to control sample flow to 0.2 LPM over 10-100 PSIG (70-700 kPa) inlet pressure range.

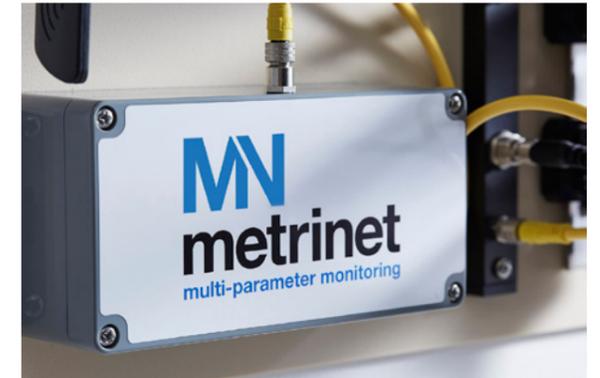
The first flow chamber is supplied with a push-to-connect fitting for rigid 1/4" o.d. tubing. An internal mesh screen protects the flow element from particles larger than 100 micron that might enter the system, and is easily removed for inspection and cleaning if necessary. DIN rail mounting clips attached to each MetriNet flow chamber allow assembled flow systems to be easily rail mounted.



Power Options

Power consumption requirements of traditional water quality monitors prevent their use in locations where AC power is not available. The low power design of the MetriNet system allows these monitors to operate on 12-24 VDC power, as well as battery power, without sacrificing reliability.

To further improve power consumption, the MetriNet system allows users to operate in either continuous or cycle modes. In full continuous mode, power is constantly applied to M-Nodes and measurements are continuously taken. When operating in cycle mode, the measurement nodes are placed in 'sleep mode' for much of the time. Every 15 minutes, the M-Nodes are switched to 'full power' for about 15 seconds in order to take a reading and store data. Operation in cycle mode extends battery life considerably.

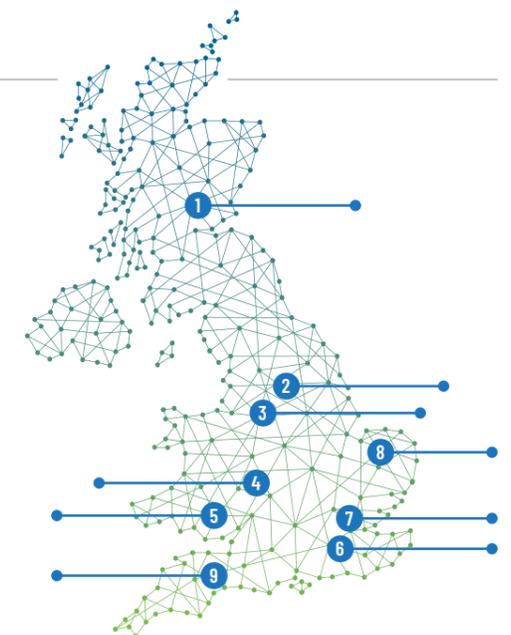


| System Type | Full Power Mode (at 12V) | Low Power Mode |
|----------------------------|--------------------------|-------------------|
| 12-24 VDC with modem | 43 mA + 3 mA/node | 15 mA + 3 mA/node |
| 12-24 VDC without modem | 30 mA + 3 mA/node | 15 mA + 3 mA/node |
| 12 V battery with modem | 26 mA + 3 mA/node | 4 mA + 3 mA/node |
| 12 V battery without modem | 12 mA + 3 mA/node | 4 mA + 3 mA/node |

Note: During modem operation, power draw can spike to about 150 mA for the duration of the data transfer. A typical daily data transfer takes about 3 minutes.

Site Location

MetriNet controllers contain a GPS module so that users may automatically identify the exact location of an installation. Using the GPS data, sites can be easily tied to map locations. If a controller is moved to another location, the position change is again updated.



M-Node Parameters

M-Node sensors are available for a variety of water quality parameters. Users simply select the parameters required for a specific location and assemble them into an integrated system.

All M-Nodes communicate on a common RS-485 sensor bus using Modbus protocol. Each M-Node has an IP-67 M8 water-tight connector for external communication. Power for the M-Node system is also supplied via the RS-485 bus. Nodes may even be used independently by system integrators who wish to communicate directly with the M-Nodes using their own PLC system.



| Part Number | Parameter and Range | Resolution |
|-------------|--------------------------------|------------|
| 00-1847 | Free Chlorine 0-5.00ppm | 0.01 ppm |
| 00-1848 | Conductivity 0-2000uS | 1 uS |
| 00-1849 | pH 2-12 pH | 0.01 pH |
| 00-1850 | ORP 0-1000mv | 1 mv |
| 00-1851 | Dissolved Oxygen 0-20.00ppm | 0.01 ppm |
| 00-1852 | Dissolved Ozone 0-5.00ppm | 0.01 ppm |
| 00-1853 | Turbidity 0-40.00 NTU | 0.01 NTU |
| 00-1854 | Combined Chlorine 0-5.00ppm | 0.01 ppm |
| 00-1855 | Total Chlorine 0-5.00ppm | 0.01 ppm |
| 00-1856 | Fluoride 0.1-10.00ppm | 0.01 ppm |
| 00-1857 | Chlorine Dioxide 0-2.00ppm | 0.01 ppm |
| 00-1858 | Peracetic Acid 0-200ppm | 1 ppm |
| 00-1859 | Hydrogen Peroxide 0-20.00ppm | 0.01 ppm |
| 00-1863 | 4E Conductivity 0-2000mS | 1 uS |
| 00-1864 | Pressure 0-300 PSIG (0-20 Bar) | 1 PSI |
| 00-1861 | Nitrite 0-2.000ppm | 0.01 ppm |

Flow System Components

| Part Number | Description |
|-------------|--|
| 03-0488 | Flow Chamber with Inlet and Fitting |
| 03-0489 | Additional Flow Chamber |
| 03-0491 | Flow Assembly Outlet with Flow Regulator. 90° Fitting |
| 03-0490 | Flow Assembly Outlet w/out Flow Regulator. 90° Fitting |
| 36-0067 | Latching Solenoid Valve, 12 VDC |
| 48-0217 | DIN Rail for Flowcell Mounting |
| 00-1890 | Flowcell Plug |
| 03-0495 | 4-Node Bus Bar |

MetriNet Controller

| Part Number | Description |
|-------------|---|
| 00-1795 | MetriNet Controller, 12-24 VDC with SD Card |
| 00-1811 | MetriNet Controller, 12V Battery with SD Card |
| 00-1796 | MetriNet Controller, 12-24 VDC with SD Card and 3G Modem |
| 00-1812 | MetriNet Controller, 12V Battery with SD Card and 3G Modem |
| 00-1907 | MetriNet Controller, 12-24 VDC with SD Card and LTE Modem |
| 00-1908 | MetriNet Controller, 12V Battery with SD Card and LTE Modem |
| 00-1885 | MetriNet Controller, 12-24 VDC with Modbus RTU |
| 00-1898 | MetriNet Controller, 12-24 VDC with Modbus TCP/IP |
| 00-1891 | MetriNet Controller, 12-24 VDC with Ethernet/IP |
| 00-1798 | Portable M-Node Calibrator |

Please email sales@atiuk.com for further information about other compatible RTU options.

Cabling and Panels

| Part Number | Cabling |
|-------------|--|
| 31-0202 | Node to Bus Bar Cable 12" (30cm) Sensor to Bus Bar |
| 31-0212 | Q52 to Bus Bar Cable 18" (46cm) Controller to Bus Bar |
| 31-0204 | Q52 to Bus Bar Cable 155" (4m) Controller to Bus Bar |
| 31-0211 | Bus Bar Jumper Cable for 2 bus bar assemblies Bus Bar to Bus Bar |
| 31-0208 | Power Supply Interface Cable 12" |
| Part Number | Panels |
| 03-0515 | MetriNet 14"x14" Assembled Panel for up to 4 Nodes (Includes Panel, Bus Bar and DIN Rail) |
| 03-0519 | MetriNet 14"x20" Assembled Panel for up to 8 Nodes (Includes Panel, 2x Bus Bars, 2x DIN Rails and bus bar jumper cable) |

