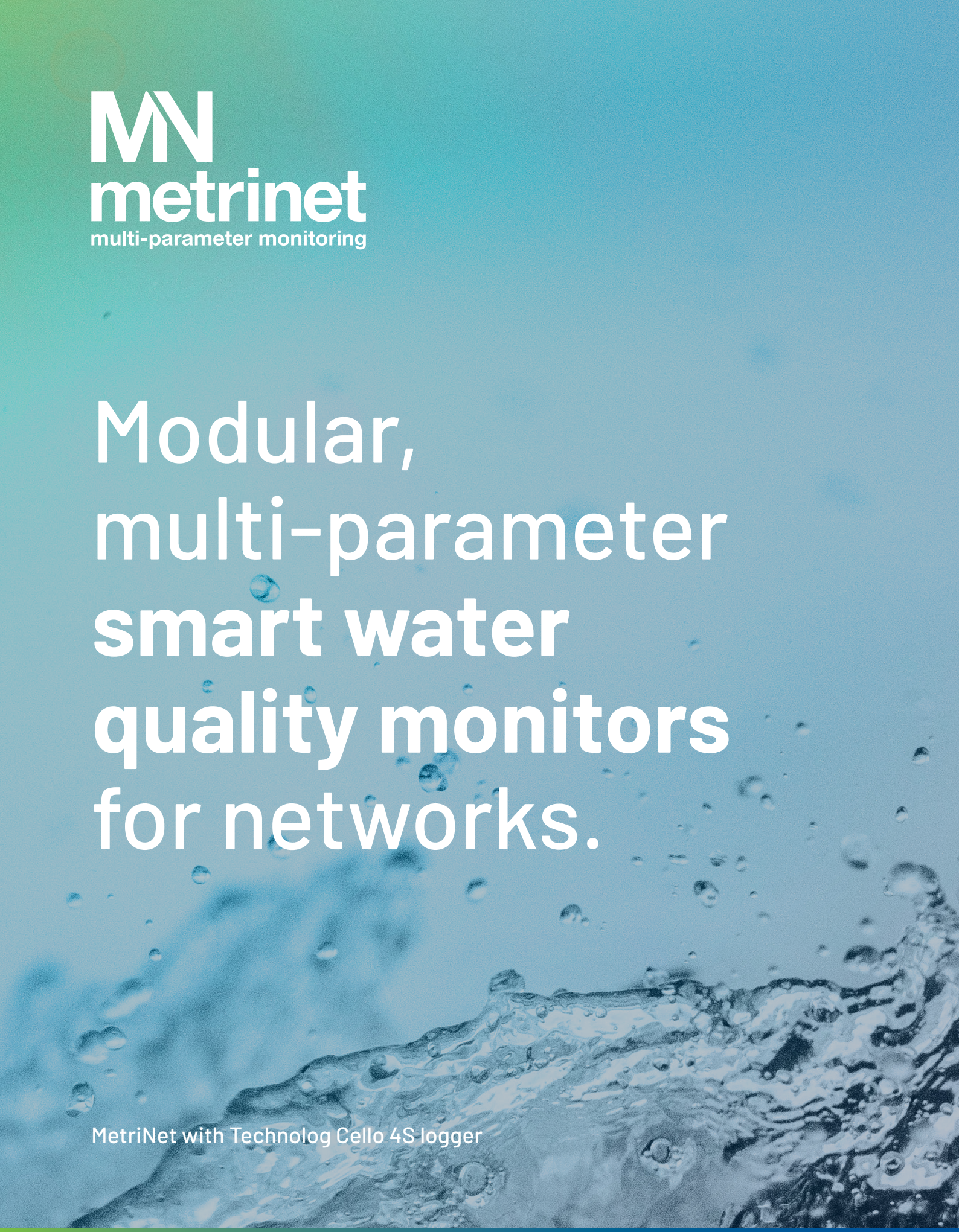
metrinet
multi-parameter monitoring

# Modular, multi-parameter **smart water quality monitors** for networks.



MetriNet with Technolog Cello 4S logger

ATi ANALYTICAL TECHNOLOGY

Solutions for a Smarter Future

metrinet
multi-parameter monitoring

ATi ANALYTICAL TECHNOLOGY

**MetriNet is a pioneering breakthrough in water quality monitoring from ATi UK.** Through its smart sensor technology, MetriNet offers a sustainable solution to meet the complex challenges currently facing the water sector. It will ultimately help to drive down complaints, increase water companies' SIM scores and result in pro-active network management to safeguard water quality for customer use.


Example shown is a battery powered system measuring free chlorine, pH and turbidity water quality parameters, using a Technolog Cello 4s logger.

**Note:** MetriNet can be mains or battery powered dependent on application and is compatible with any logger provider.

**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 four decades of working closely with water utilities around the world.**

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

**Over 20 parameters, including:**

Chlorine, Turbidity, pH, Conductivity, Dissolved Oxygen, Dissolved Ozone, ORP, Pressure, Temperature & Flouride

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

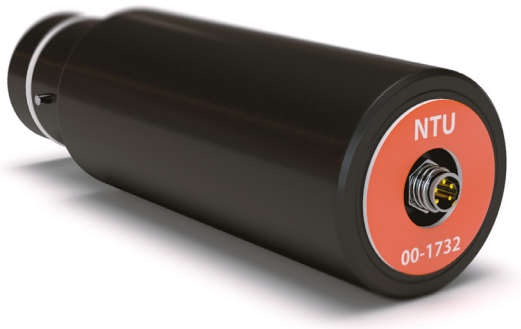
- Mains Conditioning
- Flow Reversal
- Network Resilience
- Chlorine Decay Modelling
- Leakage
- Flushing

# M-Nodes

## At the heart of the system are ATi's new industry-leading M-Nodes, a complete sensor and transmitter housed in a miniaturized body.


M-Nodes are complete water quality monitors equivalent to traditional online instruments. The M-Nodes are 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. M-Nodes are ultra low-powered and run autonomously for years at a time on small batteries. Alternatively they can be powered from a local plc or telemetry system.

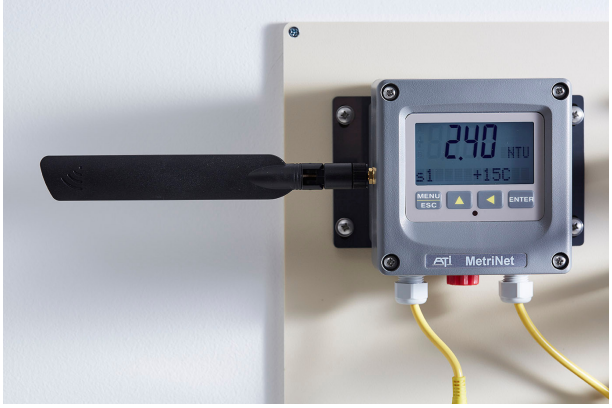
Flexibility is key with M-Nodes – they can be connected to any data gathering system. The modular nature enables users to assemble a monitoring package that fit individual site requirements. All nodes plug directly into the MetriNet system and are powered directly from the communications bus.




# MetriNet 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 in 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 removal of a 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.




# MetriNet 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 in terms of communication so it will be useful for a long time |
| 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 |

# MetriNet 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, 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

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.

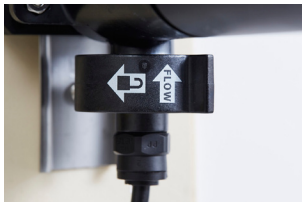
In many cases, this amount of water consumption will not be significant. However, in some cases, the user may wish to minimize the amount of water consumed by the MetriNet system. The MetriNet controller provides a cyclic operating mode that allows the user to minimize the daily water consumption. When 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. Sample continues to flow for a selectable amount of time, then a measurement is 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 from 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 ¼" 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.

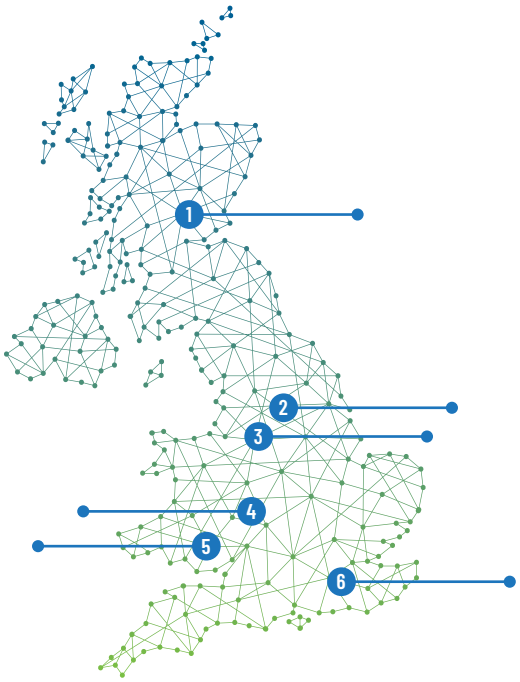
To further improve power consumption, the MetriNet system allows users to operate in either continuous or cycle modes. In full continuous mode, power is constantly applied to M-Nodes and measurements are continuously taken. When operating in cycle mode, the measurement nodes are placed in 'sleep mode' for much of the time. Every 15 minutes, the 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.



# Available M-Nodes

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 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 nodes using their own PLC system.


# M-Nodes

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

# 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 |

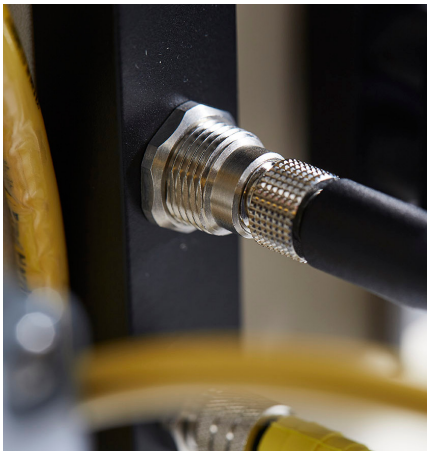
# MetriNet Controller

| Part Number | Description |
|---|---|
| 00-1795 | MetriNet Controller, 12-24 VDC with SD Card |
| 00-1811 | MetriNet Controller, 12 V Battery with SD Card |
| 00-1796 | MetriNet Controller, 12-24 VDC with SD Card and 3G Modem |
| 00-1812 | MetriNet Controller, 12 V Battery with SD Card and 3G Modem |
| 00-1885 | MetriNet Controller, 12V Battery with SD Card Modbus Enabled |
| 00-1798 | Portable M-Node Calibrator |


Please email **sales@atiuk.com** for further information about other compatible logger 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<br>(Includes Panel, Bus Bar and DIN Rail) |
| 03-0519 | MetriNet 14"x20" Assembled Panel for up to 8 Nodes<br>(Includes Panel, 2x Bus Bars, 2x DIN Rails and bus bar jumper cable) |

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