ES Département BIO-TESTS & INDUSTRIES

MN metrinet

Contrôleur multi paramètres

Conçu spécialement pour l'application du réseau de distribution d'eau, le **MetriNet** n'autorise "aucune faille" dans le domaine de la mesure en continue de toutes les valeurs principales à contrôler dans les réseaux de distribution des eaux:

- **Taux résiduel de chlore (libre et combiné)**
- **Turbidité**
- **pH**
- **Conductivité**
- **O^2 dissous**
- **Temperature**

et bien plus!

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ATi ANALYTICAL TECHNOLOGY

Le système MetriNet regroupe toute l'expérience et l'expertise d'ATI dans le domaine du traitement des eaux dans le monde entier depuis plus de 40 ans. Les fonctions du capteur MetriNet ont la même précision et répétabilité que notre célèbre et approuvé capteur Q-Series, en le combinant avec un moniteur ultra compact et tout équipé.

La nouvelle série de capteurs digitaux intelligents ATI est au Cœur du système, le leader de l'industrie M-Nodes, qui vient compléter avec tous les protocoles de communication nécessaires et attendus dans l'ère numérique d'aujourd'hui, ainsi qu'une bonne sortie analogique ancienne

Les M-Nodes sont connectés à l'arrivée d'eau a l'aide d'un agencement de cellule d'écoulement «clic-connecter» conçu spécialement. Les capteurs sont connectés en série pour l'utilisation de l'eau et peuvent fonctionner à des pressions jusqu'à 6 bar. Cela signifie que les systèmes MetriNet peuvent être utilisés en circuit fermé pour éliminer complètement la perte d'eau.

Les M-NODES sont ultra-économiques et fonctionnent de façon autonome pendant des années grâce à leurs petites batteries. Néanmoins, ils peuvent être alimentés à partir d'une boucle PLC locale ou d'un système de télémétrie. La flexibilité est vraiment la ligne de conduite des capteurs M-Node : ils peuvent en effet être connectés à tout système de collecte de données.

Pour ceux d'entre vous qui cherchent une solution complète, les M-Nodes peuvent être connectés à l'interface utilisateur (MUI) de MetriNet : le MUI se connecte à 8 capteurs M-Node et se connectent au monde extérieur via n'importe quel système 'ftp'. L'interface MUI dispose également de données d'enregistrement avec des capacités de stockage de données massives.

Les M-Nodes sont disponibles pour une variété de mesures dans les systèmes d'eaux. Tous les nœuds se branchent directement dans les systèmes MetriNet et sont alimentés directement à partir du bus de communication.

Les nœuds peuvent être ajoutés ou supprimés au besoin et la suppression d'un nœud n'affectera pas les mesures du système.

Les M-Nodes sont des moniteurs complets de qualité de l'eau équivalents à la plupart des instruments à fonctions complètes. Les assemblages électroniques sont galvaniquement isolés à la fois pour l'alimentation et la liaison de communication.

Avantages MetriNet :

- Capacité à mesurer n'importe où signifie plus proche du client. Peut prévoir les problèmes potentiels en avertissant tôt, ce qui évite les dégâts techniques
- Et vous permet de prendre des mesures préventives
- Novateur en termes de communication, il pourra être utilisé de longues années
- L'économie d'achat et d'installation permet une installation massive. La valeur de données est plus précise lorsque le nombre de points de mesure est élevé car ils permettent une meilleure vue de l'ensemble du réseau
- Données zéro et span stockées en interne afin que l'étalonnage puisse être effectué n'importe où
- L'horloge interne enregistre le temps total d'exécution sur le capteur
- La minuterie d'étalonnage peut alerter les utilisateurs lorsque l'étalonnage est effectué
- 2 points d'alarme disponibles
- Diagnostic des capteurs signalant les problèmes sous forme de message clair
- 16 caractères définis par l'utilisateur

M-Node specifications

Paramètres	Gamme de mesure	Resolution
Chlore libre	0 - 4,00 ppm	0,01 ppm
Total chlore	0 - 4,00 ppm	0,01 ppm
Turbidité	0 - 40 NTU	0,01 NTU
pH	0 - 14 pH	0,01 pH
Conductivité	0 - 2000 µS	1 µs
ORP / Redox	0 - 1000 mV	1 mV
O_2 dissous	0 - 20,00 ppm	0,01 ppm
Fluor	0,1 - 10,00 ppm	0,01 ppm
Ozone dissous	0 - 4,00 ppm	0,01 ppm
Dioxide de chlore	0 - 4,00 ppm	0,01 ppm
Acide péracetiqueé	0 - 200 ppm	1 ppm
Proxyde d'hydrogène	0 - 20,00 ppm	0,01 ppm
Pression	0 - 150 PSI	1 PSI

L'élimination de ce produit est soumise aux réglementations nationales applicables à l'élimination des déchets d'équipements électriques et électroniques.
(directive 2002/96/CE du 27 janvier 2003)

NephNet (g)

Training handout

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Thank you for your interest in 'better network monitoring'

The NephNet was designed by the user and created by ATi in conjunction with the PODDS group (Sheffield University and the UK Water industry).

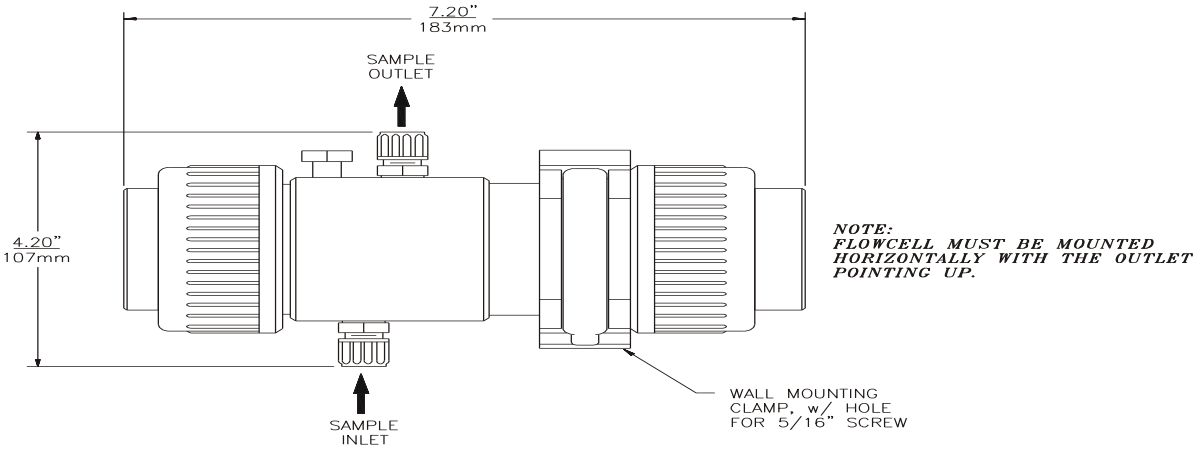
This portable, battery operated turbidity monitor offers months of continuous, accurate readings at low levels. It has already helped to save £millions to the UK Water Industry.

Applications so far include; conditioning of mains, boundary box installations, network monitoring, flushing effectiveness and final effluent monitoring.

What's in the box?

The NephNet comes in 2 parts;

Part 1 – Flow cell containing sensor via a hardwired cable and military spec connector:



The sensor range is configured:

0-4.000, 0-40.00 or 0-400.0 NTU

- Range will be ticked and shown on the side of the flow cell

There is a hose included with pressure reducing valve (reduces pressure down to 2 bar), non return valve (preventing drain returning to sample) and a drain pipe (black tubing that can be connected into push fit) next to white bleed screw. The black tubing is not imperative but can be used to direct any waste to a suitable area. The drain will not cause the equipment any problems if it is released directly from the flow cell.

Once the hose is attached to the flow cell and hydrant cap (via quick release connectors) the sample can be controlled by the white bleed valve. If the white valve is tightened, the flow will be stopped. As long as the flow is constant, the flow rate does not have to be at a specific rate.

Best practice:

- Tighten the white bleed valve and then loosen it a couple of turns, allow any air to be released and then tighten if needed to allow for less waste.
- Keep the flow cell positioned horizontally if possible. This will help the flow cell 'de bubble' the sample as designed.

The drain will either soak away or trickle from the hydrant chamber. The NephNet only needs a small flow of about 0.2 litres per minute but can be increased to best suit the application.

Using a standpipe:

The NephNet flow cell can be connected directly onto a standpipe or a sample can be connected to the flow cell via tubing from a standpipe (if this best suits the application).

Maintenance/calibration 'check' using a known standard or check 'block':

The good news is that there is not much maintenance needed for the NephNet. The sensor is concealed within the flow cell and can be visible when unscrewing the wheel off the end of the flow cell.

The sensor lens is shown as two circles. Best practice to clean the lens:

- Unscrew wheel from end of sensor (not wheel where gland and cable are) but the other end.
- Use a non abrasive cloth to wipe the whole of the inside of the flow cell (including lens).
- Wash out the flow cell with clean water (normal mains water will suffice).
- Put back together and continue using.

For calibration check do the same as above but include:

- Insert the calibration check block, screw back the wheel and leave to settle for 5 minutes. Check the telemetry/logger/display (depending on what you have) to check if this is +/- 10% (max) to what the block is certified to.

  OR

- Using a non formazine standard; disconnect the hose from the hydrant cap, clean the flow cell as above, tighten the bleed screw and pour in the non formazine standard. See photo of 5 NTU standard below.

- Make sure the NTU standard is greater than the range of the sensor or it will max out.
- Use the general rule that if it is +/- 10%, this is fine. Please understand that field checking is different to lab checking with greater potential error acceptable as the standard used is many times greater than the actual readings.
- Stand the flow cell vertically and leave for about 5 minutes. Check the telemetry/logger/display (depending on what you have) to check the number. Once happy, tip out standard and reconnect. If the reading is out of spec, please tip out, re wipe and re check. If the number is still greater than +/- 10%, check for scratches on sensor. Contact ATi for assistance.
- Actual calibration is covered in the annual service of the NephNet by ATi. ATi will contact you when the sensor requires its calibration and other servicing needs. Contact ATi for more information on this if and when required.

Using the LED (display): ***For visible, instant readings of the continuous measurement:***

ATi make an LED display that can be easily connected by using the lead (that contains the correct amount of pins) **PLEASE BE CAREFUL WHEN USING THE MILITARY STYLE CONNECTORS AS THESE CAN BE DAMAGED IF NOT LINED UP CORRECTLY**. Simply line up the plug to socket and then gently press in position.

The display has a built in battery to preserve the charge from the NephNet battery. Simply plug this in and watch for the instant readings. The displays come pre-set with ranges selected and cannot be used on differently ranged sensors. The range can be checked by checking the display once connected.

0-4.000 NTU ranges will show 1.000 NTU (25% of full scale)

0-40.00 NTU ranges will show 20.00 NTU (50% of full scale)

0-400.0 NTU ranges will show 300.0 NTU (75% of full scale)

Once the sample is running or standard is added, the above displays will settle to the correct readings.

Part 2 – Orange case containing power, data logger and GSM telemetry with aerial:

MAKE SURE THE UNUSED MILITARY SPEC'D CONNECTORS ARE SCREWED IN AND NOT LEFT LOOSE AS ABOVE. PLEASE ALSO MAKE SURE THAT WHEN CONNECTING, SIMPLY LINE THE PINS AND GENTLY PRESS AND SCREW IN AS TOO MUCH FORCE WILL BEND THE PINS

USB Data logger (if used)

The NephNet comes with a data logging backup facility (USB data logger) in case the telemetry fails to log important data streams (or if the user does not have the GSM option) The USB data logger used is a Lascar logger. ATi have chosen this company as there are no licence issues and it can be used on companies MAM/laptop or other preferred devices.

Simply go to the Lascar website and download the Easylog software. Click on Easylog and then:

EL-WIN-USB Windows control software (V7.2). This is a free download.

http://www.lascarelectronics.com/data-logger/easylogger-software.php

When setting up the logger:

- Rename (using DMA or site address, etc)
- Select timing interval
- Change range if different to 0-4.000 NTU
- Set high and low alarms if needed
- Either immediately start OR delay (if deploying at a later date)
- Check to see if the green light is flashing, unplug and deploy

When downloading the USB data stick to download the data:

- Insert the data stick (the data will be stored and saved if full) be careful however as if the data stick is full, **make sure you stop and download before resetting or you will lose the data.**

- Save data
- Export to preferred preference (Excel is often used the most)

GSM telemetry (RDL) if using:

When using the NephNet (g), a bigger battery is required to allow for continuous use and reporting to the website. The end user will be given a username and password to allow for security. The user will own that particular website information, this is secure.

Once ATi or Caption Data have been informed, selected email addresses and mobile phone numbers (with names of users to be contacted) will be programmed onto the website for future alarming.

Contact details are:

ATi (Chris Mctear)	01457873318 / 07792517306
Caption Data (Tom Pain)	01905 754078

QR coding:

Each NephNet that comes with telemetry has a QR code. Simply scan this to get direct link to the website. Use your username and password to gain entrance to this. Once in, you can:

- Change name of location
- Change Company name
- Tick the 'active' button to allow the information to be shown on the website
- Increase/reduce sample interval. This is set to 1 minute.
- Reporting interval. ATi recommends this should be around 1 hour (during operation) and then increased to 6 hours for overnight/general network data collection. This means that the battery will last much longer. Even though the data will not be sent to the website until a longer time, if the readings hit the alarm set point, it will wake up and send the alarms as required.
- 'Manual override get' means that you can programme the longitude and latitude of the location of the NephNet so that you can pinpoint the location easily (as these DMA's are often in rural areas)
- Commissioning text and/or email addresses of selected participants can be selected to add or take users off the list of alarms

- Alarm set points and alarm enabled should be set to allow for correct alarming
- Once an alarm has been triggered, make sure you press the RESET button to allow for future alarms
- Phone coverage can be an issue as the SIM is of a 'roaming' nature. If the unit loses signal, it will download any missed data on its next upload so nothing will be missed.
- Aerial used is proven to work in low signal areas. Make sure that these are installed with the end of the aerial being as close to any gap in the hydrant cover. This will maximise the signal offered. There is a magnet at the base of the aerial. This can be easily connected (if of course the lid is metal).

Batteries and chargers:

The NephNet (g) comes with a SMART battery. This battery comes with power strip to check for charge before deployment. The battery comes 'potted' for protection against water ingress. It also comes with a shut off safety PCB that shuts the battery down in case water gets inside. The battery will allow for months of use without the need to re charge at regular intervals. The battery will last longer when selecting to log and upload the data at longer intervals. ATi recommends an upload interval of 6 hours for when leaving for long periods of time.

Once the battery is connected to the GSM, the unit will start to communicate to the website. It may be best practice to plug in when deploying on site. Spare batteries can be purchased for quick connection if the project is vital and delays not preferred.

Chargers for SMART battery:

The chargers need to be ordered when/if selecting this type of NephNet. At least one of these should be considered when purchasing the NephNet (g). These are vital for the batteries to gain their first charge.

Charging should only take 4 hours. If the battery has been run extremely low, charging overnight (or even 48 hours) should be considered as the battery trickle charges only 200 mA on a continuous drip.

NephNet standard (C cell batteries):

The NephNet without GSM comes with standard C cell batteries. This system does not have the option of GSM/telemetry. Therefore, the current drawn is substantially less. There is no charging strip to check for battery life. We therefore recommend that the user date stamps the unit when using so that you know you have sufficient power to cover the project you are undertaking. The life of the batteries in this application are still months (3 months is a good recommended starting point) with experience, this could be extended as temperature and other factors will contribute to decay of battery life.

C cell batteries and rechargeable 'smart' battery: