Unidata Newsline

Unidata Newsline No. 11, June 2014

Environmentally Aware Buildings

- Butler Train Station

The Public Transport Authority of Western Australia is extending the metropolitan rail network further north and a new Train Station is being built at Butler.

The train station building is a new concept, which has been named "Butler Star Galactica" in the local press because of its modern space age architectural design. The building also incorporates many new and innovative smart building concepts.

Unidata was engaged to provide some smart building ideas and systems for the architects. A system was proposed to make the building more aware of the environment and act in a smart way to the changing environment.

An ultrasonic weather sensor was installed on the roof, to determine the weather conditions, especially the strong prevailing south westerly winds in the summer months, and to allow the building to adapt to those conditions. The ultrasonic weather instrument was chosen as this type of instrument has no moving parts, and is more mechanically stable in high wind conditions when compared with the traditional propeller based wind speed and direction instruments. The prevailing winds have for a long time been called the "Fremantle Doctor" because the cool wind from the south of Perth, namely the Fremantle region, assisted people who had been overcome by heat stress on some very hot summer days.

Unidata worked with the architects to set up a system to measure the wind speed and direction, and then apply complex algorithms to choose the best operation for the automated glass doors as the doors detected people entering and exiting the station. As the station is in an exposed area and as the glass doors are large, the wind loads needed to be considered, and the doors could then operate in a more optimum mode, and would contribute to energy saving as well.

The system was set up with a Neon Remote Terminal and a Starlogger system, and associated control outputs to drive the door mechanisms based on the chosen algorithms to minimise the impact of the prevailing winds, and to maximise energy savings.

The Neon Remote Terminal allows operators and architects to observe the operation of the system from a web browser at their offices. It is expected that the algorithms will be further optimised after observation of the local conditions over the first year or so of operation of the system.

Dust Monitoring – KASA Consulting, Western Australia

KASA Consulting is a West Australian owned company providing tailor made solutions in environmental, health and safety services both nationally and internationally that meet specific client needs. KASA is a valued partner of Unidata.

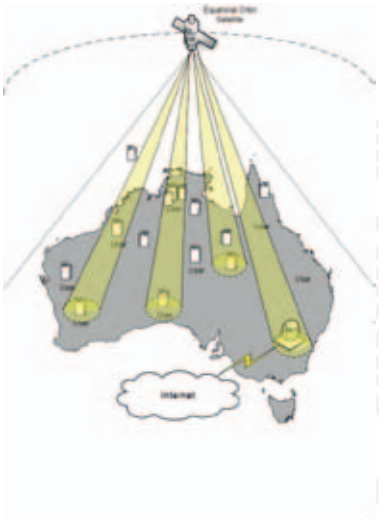
KASA specialises in the provision of strategic environmental advice, project management and preparation of environmental approvals, development and implementation of integrated management systems and the provision of monitoring and verification services; including, HSE auditing, health, safety and environmental monitoring and internal and public reporting.

Unidata has been providing KASA with Neon Remote Terminals and Modules and other monitoring equipment for weather, water and dust for some years. KASA uses the Neon Applications Software to monitor the operation of and the data collected by these automated instrumentation systems.

An example of one of those systems is the dust monitoring system incorporating the dust track PM10 monitoring instrument. These systems are built up in the Unidata factory and are installed by KASA in the field, to continuously monitor dust levels and report routinely on the results as well as alarm in the event of a high dust condition which could be outside the regulatory limits. Note the photo of one of these systems in use in the field. Note the red local alarm light, and the dust sensor and the solar panel/ independent power system.

These systems use the Neon Remote Terminal and a Telstra 3G Cellular data network to deliver data regularly to a web server for alarm checking and routine data storage. They also send out alarms when there is a high dust situation.

Inmarsat Regional Beam Satellite Telemetry



Unidata has released another satellite telemetry option; the 2023E-A00 Neon Lite which uses the Inmarsat Regional Beam Low Data rate service. This system utilises a very low data rate system offering from Inmarsat, with the regional beam system, which stays on regional beam all the time. This system is appropriate for very low data rate services, typically one short SMS like message every hour or two, which is an ideal service for cathodic protection monitoring and perhaps tank monitoring or other simple "alert" applications. The product is based on the Inmarsat IDP modem with special NRT firmware and is called the 2023E-A00 Neon Lite Telemetry Unit with in-built Satellite LDR Modem.

The Neon Applications Software provides the interface to these very low data rate services in the same way as the normal, higher data rate services and the enclosure is a simple polycarbonate enclosure. There is no need to point the antenna/ the antenna is omnidirectional, small and convenient.

This differs from the normal Inmarsat Spot Beam / High Data rate (Neon

Standard Model) which utilises the long established and very reliable mainstream Inmarsat BGAN product, which uses the regional beam when on standby, and then switches to a spot beam for higher data throughput when needed. This system is appropriate for medium and high rate data rate services, typically measuring a few SDI 12 sensors for a river monitoring station, or some industrial measurement instrument cluster, perhaps 10 to 100 channels of Modbus every 5 to 15 minutes for an instrument cluster on a pumping station or remote gas well.

Unidata has modelled satellite airtime pricing and we can send you a copy of that modelling on request. It is very important to select an appropriate service for your application. If you don't, satellite airtime costs will become prohibitive.

When considering these applications, antenna size and convenience is often a consideration.

Please see the two antenna types (above left) attached to our factory test antenna system.

NIWA IRRIMATE – Irrigation Information System

NIWA
Taihoro Nukurangi

Unidata recently received a contract from NIWA to manufacture some smaller irrigation information systems for the agriculture industry to provide more accurate local weather status and forecast information.

The NIWA IRRIMATE is a compact weather and soil moisture information collection system, focussed on the needs of farmers and includes sensors for wind and rain and soil moisture at various depths.

The soil moisture probe provides soil moisture at several depths with probes which are more convenient to install, with minimal soil disturbance, see diagram below.

There are several soil moisture sensors at different depth levels to enable an accurate profile of the soil moisture and soil temperature, and based on that profile decisions can be made on irrigation programs. Readings from all of the sensors, rain, and wind temperature and soil moisture are recorded and analysed and this allows for a science based analysis of local conditions.

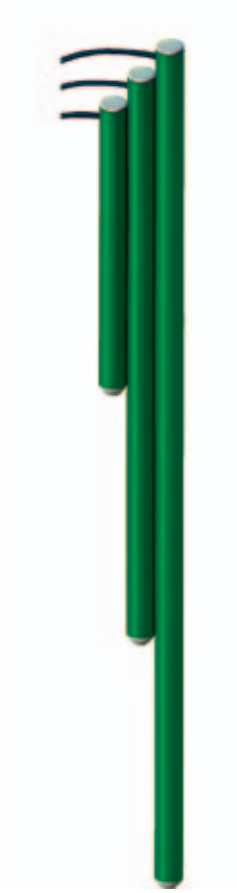
NIIWA has complex forecasting models and utilises the large NIWA supercomputer centre in Wellington to predict weather patterns in New Zealand. The new IRRIMATE systems will add collected data to those models allowing for a more accurate forecast information in the local area of the farmers, which they can use to optimise efficiency of the farming and irrigation processes.

The IRRIMATE uses the Neon Telemetry Module to collect the sensor data and send this data every few minutes to the NIWA Neon Server in

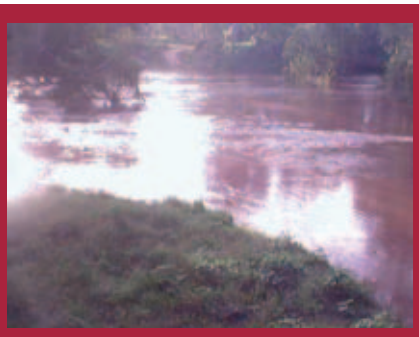
Wellington. The data is subsequently sent to the higher order supercomputer forecast modelling systems.

These IRRIMATE systems augment the existing large network of Tier 1 and Tier 2 weather stations that NIWA maintains. Data from these larger systems is already sent to and is used by the large scale NIWA forecasting systems.

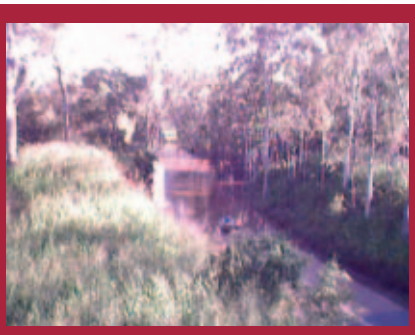
Please see photos of the IRRIMATE systems in our production area being manufactured.



The day before the flooding



The day after the flooding



On a boat down the road in Mackay

Flood Monitoring - Thiess Services - Queensland

Thiess Services is a valued long term partner of Unidata Pty Ltd.

Unidata recently teamed with Thiess Services in Brisbane to provide flood warning equipment for local council customers in the central coast of Queensland.

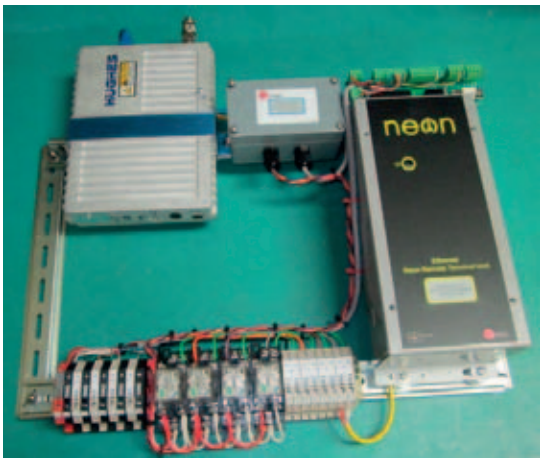
Unidata provided the equipment to Thiess Services and assisted with some of the installations, while Thiess Services assembled the equipment inside Thiess enclosures and completed most of the installations.

These systems were set up at several points along the river and measured river levels and based on water levels upstream, used telemetry to alert the relevant authorities and also used the Neon Remote Terminals and the Neon Applications Software to automatically operate flood warning signs / lights on downstream river crossings / bridges to alert people using the road of the impending flood danger.

These systems were a mix of 3G / Mobile network cellular data services and Satellite services where cellular network coverage was not available. Using Satellite services for such emergency systems is prudent, as ground based infrastructure such as cell towers may also be damaged by flood. If the cell towers are damaged, then any systems connected will also fail. Satellite services are more independent, they do not use cell phone infrastructure. Please see the photos of the equipment wired up before being installed into the equipment enclosures.

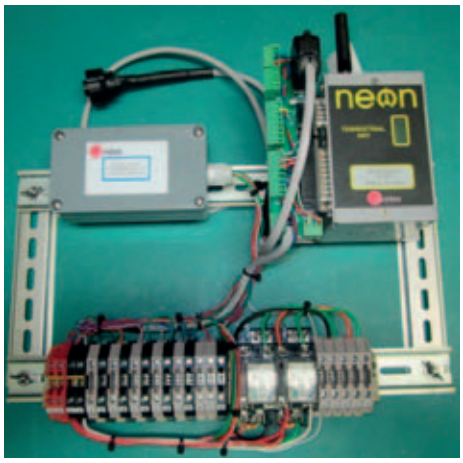
Unidata generally recommends a mix of cellular and satellite telemetry services in such systems, to provide diversity for the communications infrastructure.

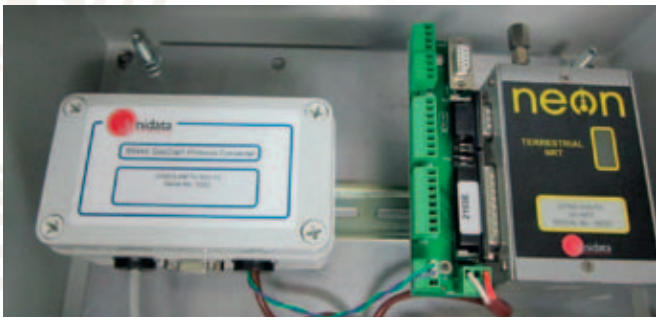
There are also Neon low resolution cameras on these Flood Warning systems, to provide visual confirmation for the water level readings and also the condition of the roads and bridges. Please see the photos of one location before and during a flood condition. Please also see the interesting photo of two men in a boat, appearing to be travelling down a stream. They are actually travelling down a flooded road.

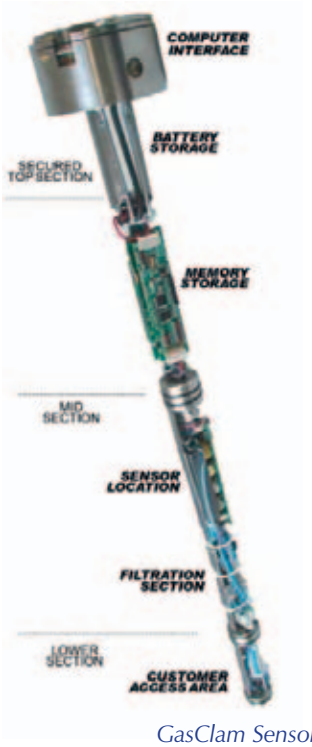


(Left) Unidata satellite Neon equipment

(Right) Unidata 3G Neon equipment







GasClam Sensors

Methane Sensors in Coal Seam Gas Industry

Unidata has worked with two new methane gas sensor companies recently, providing automated systems for the monitoring of background methane gas, especially in areas where there are new coal seam gas fields. Farmers and pastoralists have expressed concern about the level of background methane gas in the environment and how much of that background concentration may be attributed to new coal seam gas field activity.

One of these companies is Salamander Technologies, originally based near Manchester UK. Salamander, in partnership with academic staff at Manchester University, developed and commercialised innovative methane gas sensor technology. The gas sensor, known as Gas Clam, is now available in Australia through Salamander Technologies Australia.

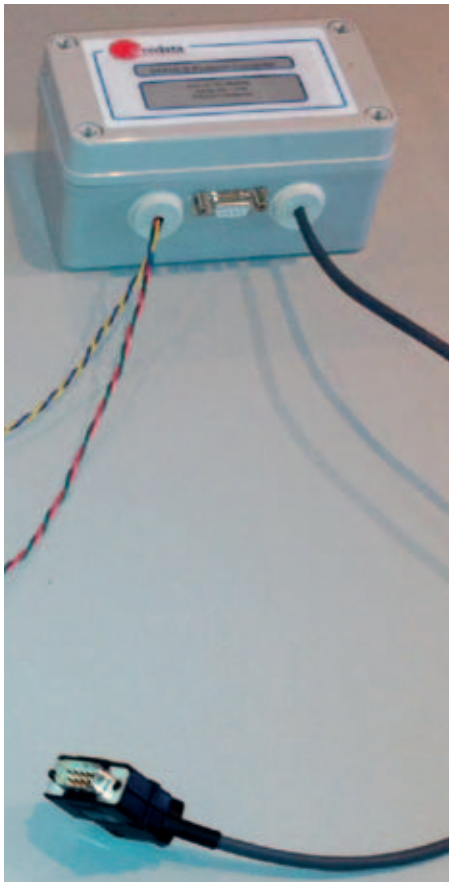
Unidata provided the complex protocol converter technology to allow the instrument to be easily interfaced to Unidata Neon Remote Terminal units via a special protocol converter.

Another company is Pro Oceanus, a company based in Nova Scotia, Canada. This methane sensor was interfaced using a special Unidata protocol converter.

Unidata provided the protocol converter technology to allow the instrument to be easily interfaced to Unidata Neon Remote Terminal units. The Product is called a Mini Pro CH4 Sensor.

Both brands of sensors, when used in the field, will take routine, hourly readings for background methane. Collected data will be transmitted via a cell phone or satellite network to a central Neon Server for subsequent data analysis of the recorded methane levels.

Alarms can also be set up if methane levels are higher than acceptable and relevant staff can be sent email or text message alarms. Alarm escalations can also be set up in case one staff member cannot attend to the out of limits alarm within a specified interval.



Unidata Protocol Converter

2011D NRM GPRS

Sewer Overflow Monitoring - Western Water, Victoria, Australia

Western Region Water Corporation (trading as Western Water) is one of Victoria's thirteen regional urban water corporations and provides water, recycled water and sewerage services to 58,200 properties over an area of 3,000 square kilometres.

Unidata has been providing Western Water with Neon Metering Modules for sewer level monitoring for several years and there is now a large number of systems deployed.

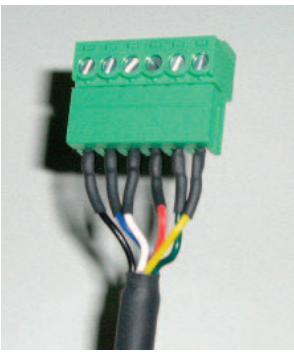
The application is relatively simple; there is a mechanical limit switch on sewer infrastructure, which trips when the levels go above pre-determined limits. When the limit level is exceeded, the change in the switch is detected, the Neon Metering Module alarm is activated and the alarm condition is sent via the Telstra Next G network to the Neon Server, which processes the alarm and sends emails and / or text messages to alert operators of that out of limit condition.

Western Water needed some more sophisticated alarm handling, with multiple levels of escalation, such that if the first alarm was not acknowledged and attended to by the first person within a pre-determined time, further alarms would be sent to different escalation contacts, to make sure the potential overflow condition was being attended to.

These systems use the Neon Metering Modules and a Telstra 3G Cellular data network to deliver data regularly to a web server for alarm checking and routine data storage.

The Neon Metering Modules are powered by a single lithium battery, and can operate for more than two years on that single battery, so they are simple to install, no need for any power infrastructure.

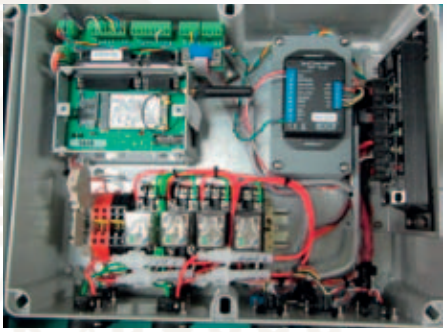
A typical limit switch is shown, along with the simple wiring, and the battery arrangement.

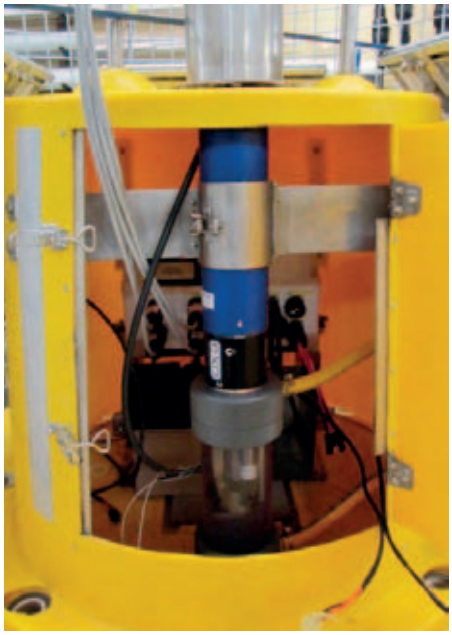


Simple wiring connection for limit switch

Typical limit switch

2013D NEON NRM 3G





Water Quality Monitoring - Opthalmia Dam

Recently, Unidata built a system for a water quality monitoring project for RPS/ BHP at Opthalmia Dam, near Newman in the north of Western Australia.

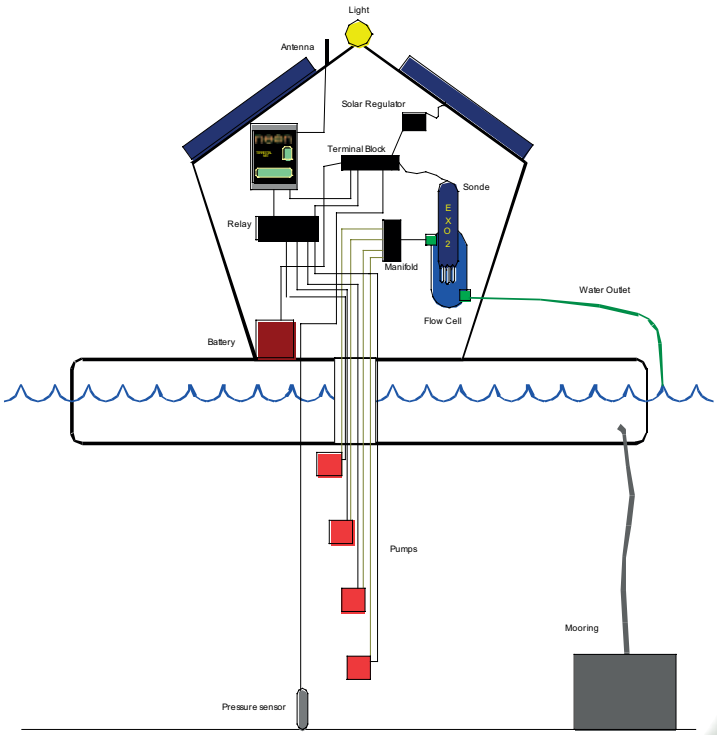
Three monitoring buoys were installed by RPS at nominated locations on the east side of the dam. These monitoring buoys are capable of measuring water quality in a vertical profile of water under the buoy. The data is measured on board via a flow cell and pumps and the information relayed via Neon telemetry system back to the online data base.

Alarms were set up with trigger alarms to monitor varying thresholds within the water column.

The buoys were set up at different locations in the dam and were required to measure water depth, temperature and quality at different water depths. To achieve this a unique pumping system, controlled by Unidata Neon Remote Terminal (3G) and the scheme, was installed. The water is pumped from four different depths then thoroughly analysed by a state of the art quality water sensor. The data is routinely sent off to the Neon Server via the Telstra Next G network.

The water quality instrument selected was the EXO-2 Multi parameter Sonde, one of the best in the world for water quality measurements. The Sonde was controlled by the NRT via the SDI 12 interface. The data set required a special scheme instrument to be set up to make sure the data points were normalised from different sensors at different levels in the dam.

The system is completely independent with an on board solar power system, which powered the instruments, and the NRT as well as the relays for the pumps at different levels within the lake.



High Availability Geotechnical Weather Monitoring - Indonesia

PT New Module is a valued Unidata partner in Indonesia. Recently we have prepared weather station equipment for their geotechnical customer requirements.

The need for reliable weather data is mission critical for geotechnical operations so the system was configured for weather monitoring with several different weather instruments at different levels to obtain a better profile of the wind speed and direction as well as other weather factors.

A mechanical wind speed and direction instrument and an ultrasonic wind speed and direction instrument were included for reliability of readings and to obtain a more accurate wind profile for different heights.

As it was also important to make sure the collected data was always available, both a cell phone based Neon Remote Terminal, and an Inmarsat Satellite based Neon Remote Terminal were included, for reliability and diversity.

Note the photo of the complete system prior to shipment, with high reliability cable entry connectors for the instrument wires. Note also the usual DIN rail mounting for the Neon Remote Terminals and the solar regulator.

Unidata Staff Profile - Dave Moyle

Dave Moyle is our most senior Electronics Engineer and has been working at Unidata for almost 20 years.

Dave completed Bachelor of Electrical Engineering at the University of Western Australia in 1993 and has worked in various areas within Unidata, including technical support and production management and now is our Senior R&D Electronic Design Engineer.

Dave has been the key design engineer in several of Unidata flagship products and is now working full time in our Research and Development team on our new product development program. Dave is a quiet, careful and very experienced engineer and mentors the rest of our staff on complex issues from time to time.

Dave also runs our product compliance and certification program which requires him to work closely with our testing laboratories to ensure Unidata products remain compliant to CE, C Tick, FCC standards.

Dave is a rock music lover, and of course his favourite AFL team is the West Coast Eagles. Dave also plays Beach Volleyball and Tennis and is married to Kim, whom he met when he took a gap year / sabbatical from Unidata in 2004. Kim is from Nova Scotia in Canada and her father is also an electronics and software enthusiast.

Lightening Damage - Protect against it or accept the risk

The Unidata Service Department, under the guidance of our Service Manager, Paul Dyer, routinely repairs and recalibrates Unidata equipment from the field.

Sometimes we receive requests to service equipment which was supplied more than 20 years ago, especially dial up telemetry equipment, which will soon be taken out of service as Telstra and Optus increase the charges for the per call dial up telemetry services.

One danger remote field equipment always has is potential damage from lightening strikes.

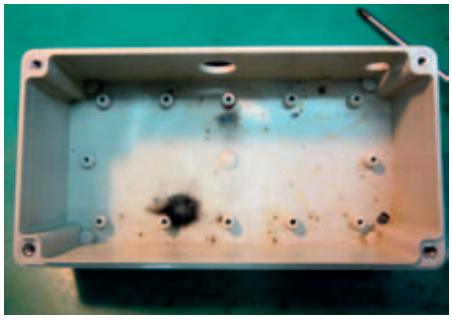
Lightening damage is severe; please note the effect of a close lightening strike to Unidata Neon Metering Module received in the service department recently. The damage to the printed circuit board and the component is obvious. The board and component were severely burnt by an induced lightening voltage which eventually flashed over at the point where there was the lowest resistance to ground. This could be any component and the damage is quite random at times. In this particular case the induced lightening voltage entered

the Neon Metering Module through the external power supply wiring. Any attached wire potentially becomes a lightening conductor at these times, the longer the wire, the better lightening conductor it becomes.

What should you do to protect from lightening strikes? There are two schools of thought on this.

One approach is not to bother about lightening protection, and accept that lightening strikes will occur randomly from time to time and expect some failures as a result.

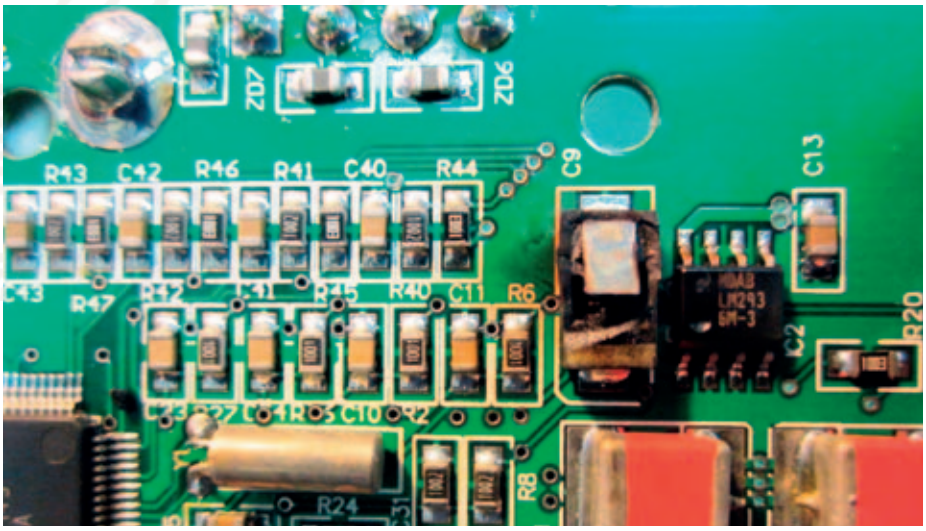
Another approach is to protect the field installation by installing additional wiring and components. The first method is to ensure there is a very well earthed lightening rod, with very strong wiring which is earthed deep in the ground, and all the field equipment is joined by very thick wire or braid or metal strips and all is terminated to the common ground point. This is the most common method, however it is very costly to implement. It is also possible to add individual lightening suppressors and spark arrestors and metal oxide varistors. In larger Neon Remote Terminal- Satellite systems customers sometimes install Huber and Shuer antenna lightening suppressors and Critec power supply line arrestors.



What does Unidata recommend?

It is up to the customer. There is considerable cost to add lightening suppression, and nothing can protect equipment from a direct lightening strike, there is just too much energy to dissipate. Sometimes the cost of the suppression equipment is much more than the cost to replace an occasional failure due to a lightening strike in the vicinity. In mission critical installations, adding lightening suppression, regardless of the cost, will be chosen because it can reduce downtime caused by lightening.

The Unidata support team, Paul Dyer in particular, can advise further on lightening protection.



Royal Irrigation Department - Thailand

The Royal Irrigation Department in Thailand continues to grow their Neon systems and they continue to add new Neon Metering Modules to their systems each year. The Royal irrigation Department has been successfully using Neon for more than 6 years for river level monitoring and flood monitoring. There are now more than five Neon servers installed for dedicated applications. Some of the applications require post processing of data so the Neon web services interface has been utilised to allow fast exchange of data between the Neon Server and post processing application. This also allows local software contractors to prepare specialised add on components easily.

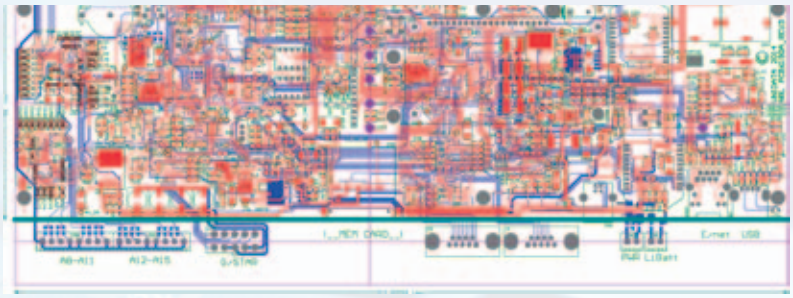
The Royal Irrigation Department also utilises the new Neon Derived channel feature to set up ratings tables for river measurements, and this new feature works well.

Here is a photograph of some systems being tested before shipment to Thailand. Note that we are now routinely pre wiring this type of system before shipment, usually with DIN rail mounting, which makes these systems easier to install in the field.

The Neon Applications Software supports multiple languages based on user login profiles. This allows The Royal irrigation Department staff to view the results on the Neon Web interface in the Thai language.

Research and Development

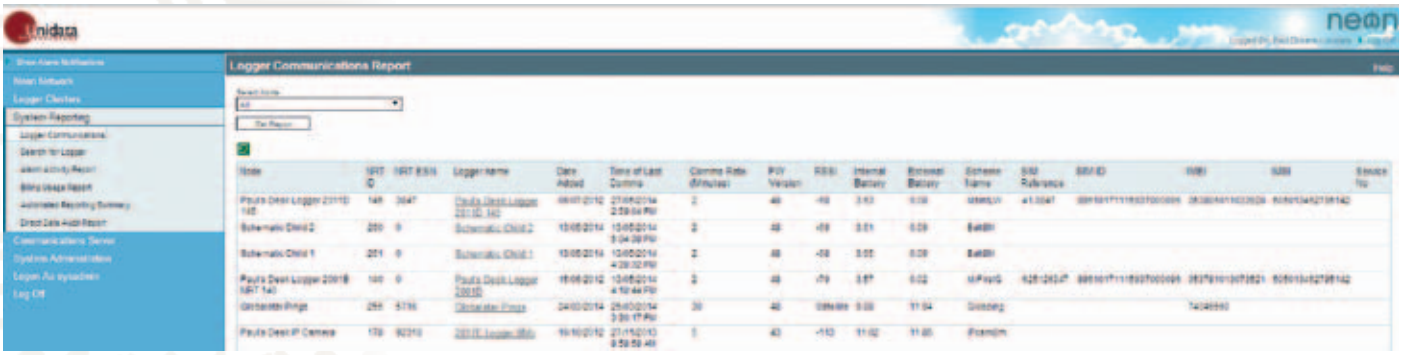
Unidata R&D staff have been quietly working on some new products, which are planned for release in the next year.



Our development team is working on improvements to the Neon Applications Software. As the number of connected NRT units per server grows, we are now seeing more than 1000 connected NRT units on some servers and we need to continue to plan for growth. We have been working to upscale the Neon Applications Software to scale for up to 5000 connected NRT units in the last few months and this work is almost complete. This work has involved improving the multi-threading capability of the software and improving the indexing for the main SQL interface, so we continue to build scale and make sure performance is maintained as the scale of the installed Neon systems grows. We are also improving the user management capabilities and the web services interface to improve performance and increase the reliability and resilience of the system.

Our development team is also working on a new Neon product, to replace the current high end and ageing Prologger, which we will call the Neon Remote Logger. This project has been under way for some time, and we expect it will be another year or so before product release. The Neon Remote Logger will have high accuracy differential analogue inputs and modern interfaces such as USB and Ethernet as well as new display facilities. This product will not replace current products, but rather it will be positioned as a much higher end product for applications requiring more connectivity and high accuracy analogue inputs.

Neon Application Software Update



Unidata regularly adds new features to the Neon Application Software when there is sufficient demand for a feature and/or it enhances the product for a large part of the customer base.

Over the past year there have been many performance improvements to the Neon user interface so that the Neon servers can handle an ever increasing number of customers and loggers.

As not every user uses all of the Neon features, we present below a summary of some of the more interesting enhancements made to Neon over roughly the past year.

Bulk Logger Firmware Update Process

This page makes it easier for customers with a large number of NRT deployed to manage firmware updates to multiple NRTs simultaneously. The firmware update process on this page is a not a fully automated update process but this page simplifies the process and brings all of the relevant information together on the one page. Help is available from the link at the top right of screen.

New "NRT Command" Alarm Action Type.

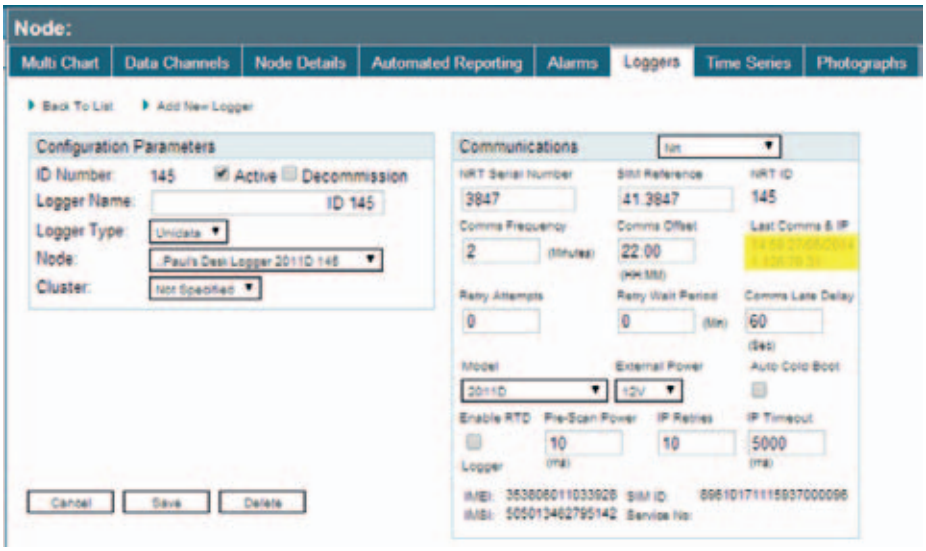
This alarm action type allows Neon to respond to logger alarms by sending custom commands to loggers. This provides for semi-automated responses to alarm conditions.

Google Maps Update

Neon has been upgraded to use Version 3 of Google Maps, which adds Street View.

Continued next page

Neon Application Software Update continued



Enhanced User Account Administration

Neon Administrators now see additional logon information on the User List screen to allow for easier user account administration. New features include, Account Expiry Date, Last Logon Time and Logon Count.

Logger Communications Report Enhancements

New fields have been added to the Logger Communications report, these include:

Firmware Version,

RSSI signal strength,

RTD Internal Battery voltage,

RTD External Supply voltage,

Scheme Name,

SIM Card reference information.

Enhanced Communications Settings

The Neon Applications Software now includes optimised IP Retries and Timeouts according to NRT type: Globalstar/Inmarsat/3G, to allow for the differences in behaviour of these different networks.

Improved Camera Support

The camera support has been enhanced to allow for a camera/ photo schedule to be set up, allowing users to determine if they wish to inhibit photos or videos being taken at night. Also the IP camera video capture component has been updated to run on both 32 and 64 bit computers

Enhanced IP Communications Information

Display Last IP address in communications section on Loggers tab to make it easier to diagnose communications issues.

Ratings Lookup Tables / Enhanced Derived Channels Processing

Derived Channels can now be configured to use Lookup Tables to apply arbitrary transformations to a raw data channel. The main application for this is in setting up ratings curves / tables for rivers

SMS Query Function

Add SMS Query feature for retrieving and setting channel values from mobile phone. A user in the field can now send a text to query a data channel value

Field Sensor Maintenance Flag

You can now have a user in the field (using Starlog 4 Software) or a Neon Administrator in the office set a sensor maintenance flag when sensors are being serviced. When the maintenance period is over the user in the field or the Neon Administrator can then turn that flag off indicating the period of sensor maintenance has been completed. This feature ensures no erroneous data to pass through to the Neon Database / be reported out during sensor maintenance periods.

Enhanced Scheme and Data Channel Cooperation

If possible, when new schemes are uploaded, within constraints, no new time series / no new data channel is established. This allows preservation of pre-existing Alarms and Automated Reports when new schemes are uploaded, and reduces the occurrence of archived channels in the database. Schemes may modify Log Interval and all Events without affecting existing alarms and reports. SDI-12 and Modbus channel parameters such as Read times also do not result in new time series provided that none of the underlying data channel settings such as name, multiplier and offset are changed.

Modbus Implementation in Neon

Modbus is a serial communications protocol originally published by Modicon (now Schneider Electric) in 1979 for use with its programmable logic controllers (PLCs). Modbus has grown to a widely adopted de facto standard in the Industrial Measurement sector and is now the most common protocol for industrial measurement applications. It is implemented in the NRT as a partial implementation of the full Modbus protocol.

The Unidata approach to this partial implementation is to provide only two NRT functions.

- Function 1 is to extract (get) data from specified registers within a Modbus RTU.
- Function 2 is to place data (put) into a specified register within a Modbus RTU.

The specific register information and its corresponding encoding and decoding information required for interpretation is defined when the NRT logging scheme is created.

There are three ways that this register information can be set up using the NRT logger support software StarlogV4.

1 Generic Modbus Instrument schemes. The register entries appear as logger registers on the Neon Server. New values typed into the Neon Server Logger Register fields are transmitted to the logger when it next communicates with the Neon Server. Modbus Read and Writes are both supported.

2 Large Modbus Builder schemes. Modbus writes are not supported at this time but an arbitrary number (hundreds) of Modbus data channels is supported.

3 Modbus TCP Server. The Neon Server provides a Modbus TCP Server (Slave) interface that may be written to directly. Written Register values are transmitted to the logger when it next communicates with the Neon Server. Modbus Read and Writes are both supported.

NRT Communications Systems and Latency

Cellular NRTs

Cellular networks are always available and communications outages are rare. This implies low written Modbus register latency, typically less than one second, limited only by the chosen communications frequency with the Neon Server.

Equatorial Satellite NRTs

The Inmarsat satellite system uses GEO (geostationary) satellites that are always available. This implies reasonably low written Modbus register latency, typically 1 to 5 seconds limited only by the chosen communications frequency with the Neon Server.

Low earth Orbit Satellite NRTs

The Globalstar satellite system uses LEO (Low Earth Orbit) satellites that traverse the sky multiple times per day. This implies that satellite availability is not always guaranteed, latency could be several minutes. Written Modbus register values may incur higher latencies than the chosen communications frequency while waiting for a satellite pass.

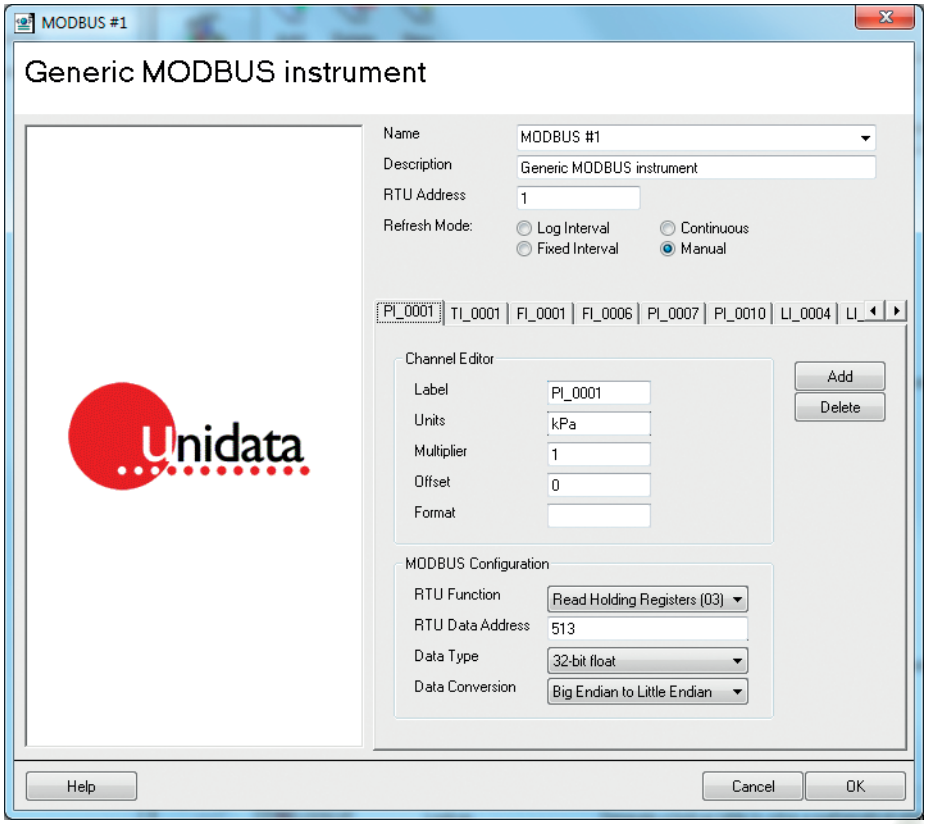
NRT Modbus Connections

The NRT can be connected to a Modbus RTU using the Standard NRT FTS, which has RS485 signal levels available.

Using the Generic Modbus Instrument in StarlogV4

Various sampling interval methods are available.

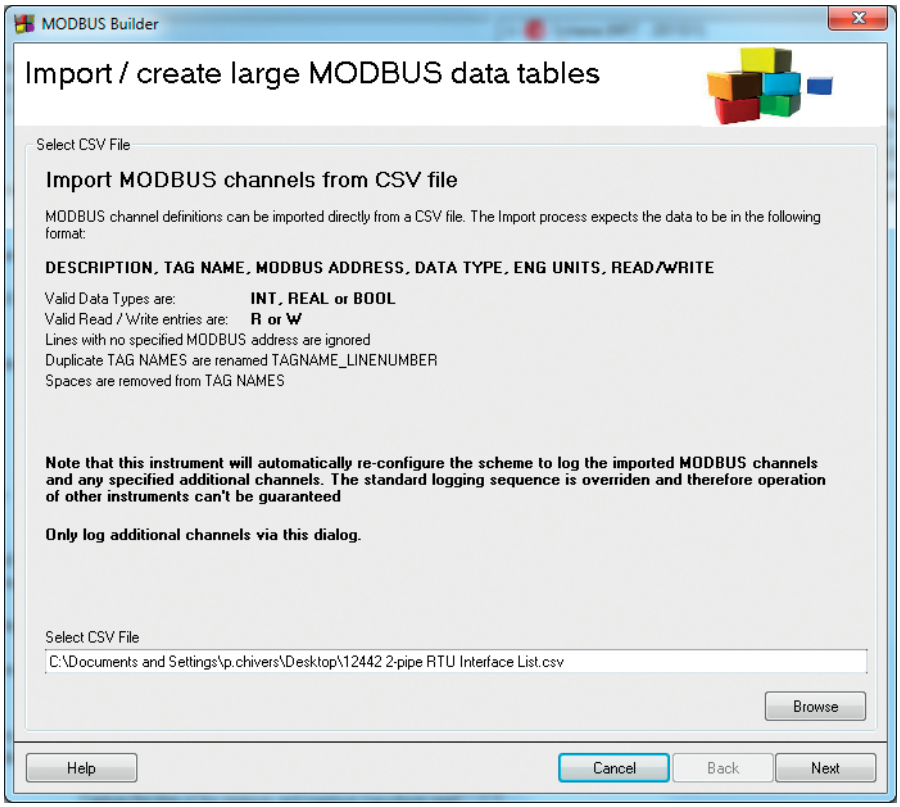
Continued next page



Modbus Implementation in Neon continued

1. Log Interval – Modbus registers are read at the scheme log interval.
2. Fixed Interval – Modbus registers are read every "n" seconds.
3. Continuous – Modbus registers are read at the scheme Scan interval.
4. Manual – Modbus register reads are triggered by scheme Events.

Refresh Rate (Fixed Interval only). Number of seconds before the next Scheme Log Interval. This defines the number of seconds between each Modbus interrogation, so that the RTU readings can be collected and placed into the Logger Channels.



Using the Modbus Builder Instrument in StarlogV4

This option does not allow for Writes, however it allows for interrogation of an arbitrary number of (hundreds of) Modbus registers by a Starlogv4 scheme.

The Modbus Builder Instrument uses a wizard to configure the instrument.

A CSV (Comma Separated Variable) text file lists and configures each Modbus register in the scheme. Each line of the CSV file configures an individual Modbus register using the following fields.

DESCRIPTION,TAG NAME,MODBUS ADDRESS,TYPE,ENG UNITS,READ / WRITE

The meaning of each parameter is as follows.

Description
A textual description of the Modbus register's function

TAG
The exported Modbus register TAG as it appears on the Neon Server

Modbus Address
Address number of the RTU on the BUS (1..247)

Type
Modbus register type. One of {REAL, INT or BOOL}

Eng Units
The register's Engineering Units. E.g. kPa, degC, Volts, etc

Read/Write
Modbus writes are currently not supported by this instrument.

Using the Modbus TCP Server Interface

The Neon Server provides a Modbus TCP Server (Slave) interface that may be written to directly by a Modbus Master. e.g. DeltaV.

A standard Generic Modbus Instrument scheme must be operating on the NRT. The logger's Node Type must be set as "Modbus Server" on the Neon Server.

The Neon Server uses the list of data channels in the logger's scheme to pass Modbus register information to the Modbus TCP Server interface.

When polled by a Modbus Master, the Modbus TCP Server interface immediately returns the last value received from the NRT in the data channel. Data channel values are updated as and when the NRT communicates with the Neon Server according to the NRT's Communications Frequency.

Modbus Register values written to the Modbus TCP Server interface are transmitted as custom commands to the logger when it next communicates with the Neon Server according to the NRT's Communications Frequency.

Scheme memory limits the number of registers to a total of 70 bytes, providing 35 registers if integers are used or around 15 registers if they are floats, or a mixture of the two.

Contact us

Unidata Pty Ltd
40 Ladner Street
O'Connor, 6163, Western Australia
Tel: +61 8 9331 8600
Fax: +61 8 6210 1854
Email: sales@unidata.com.au
Web: www.unidata.com.au

Measurement Engineering Australia
41 Vine Street, Magill, 5072
South Australia
Tel: +61 8 8332 9044
Fax: +61 8 8332 9577
Email: sales@mea.com.au

Environmental Systems & Services
8 River Street, Richmond, 3121
Victoria, Australia
Tel: +61 3 8420 8999
Fax: +61 3 8420 8900
Email: george.dutka@esands.com

Hydro Terra
6/339 Williamstown Road
Port Melbourne, 3207
Victoria, Australia
Tel: +61 3 8683 0091
Fax: +61 3 9681 9421
Email: ben@hydroterra.com.au

Thiess
7 Symes Road, Woori Yallock, 3139
Victoria, Australia
Tel: +61 3 5949 9424
Fax: +61 3 5961 5741
Email: mwheaton@thiess.com.au

National Institute of Water & Atmospheric Research Ltd
NIWA Instrument Systems
10 Kyle Street, Riccarton,
Christchurch, 8011, New Zealand
Tel: +64 3 343 7890
Fax: +64 3 343 7891
Email: g.elley@niwa.co.nz

Geo Scientific Ltd
4938 Queensland Road,
Vancouver, BC V6T 1G4
Tel: +1 604 731 4944
Fax: +1 604 731 9445
From USA call: 1 877 731 4944
Email: info@geoscientific.com

Streamline Measurement Ltd
11 Hawthorn Bank,
Hadfield, Glossop,
Derbyshire, England SK13 2EY
Tel: +44 01457 864334
Fax: +44 01457 854129
Email: sales@streamlinemeasurement.co.uk

Encosys Co. Ltd
#1514, Sungjee Starwith, 38, Road 427
Heungan-daero, Gwanyang-dong, Dongan-gu
Anyang-si, Geyeonggi-do, Korea
Tel: +82 31 345 0700
Fax: +82 31 345 0707
Email: encosys@unitel.co.kr

Senecom Inc.
1-1-25 Kawaguchi Nakaaoki
Saitama, Japan 332-0032
Tel: +81 48 242 0770
Fax: +81 48 242 0771
Email: saito@senecom.co.jp

Union TSL Limited
30 / 34 Soi Yakthanoon Na Ranong,
KlongToey, Bangkok 10110
Tel: +66 26710688 / 89,
Fax: +66 2671 0690
Email: vichakorn@utsl.co.th

Intelligent Control Engineering Co. Ltd.
67 / 165 Phaholyothin 69 Phaholyothin Rd.
Anusaowari Bangkok BKK 10220
Tel: +66 892 062 060
Fax: +66 2 972 4942
Email: icintel@truemail.co.th

SysEng (S) Pte Ltd
2 Kaki Bukit Place
#05-00 TriTech Building,
Singapore 416180
Tel: +65 6287 5710
Email: Keong@syseng.com.sg

Pipeline Services Pte Ltd
No. 7 Neythal Road
Singapore 628574
Tel: +65 6262 6253
Email: stewart@pipelineservices.com.sg

GAC Teknikal Sdn Bhd
42E & F Mendu Commercial Centre
Jln Mendu, Kuching, Sarawak Malaysia 93200
Tel: +60 82 489 393
Email: gac9393@streamyx.com

Surechem Sdn Bhd
No. 35 Jalan Radin Anum 2
Bandar Baru Seri Petaling, KL 57000, Malaysia
Tel: +60 3 9058 6626
Email: Surechem@surechem.com.my

PT New Module Int.
Jalan Abdul Muis No. 36Q
Jakarta – 10160, Indonesia
Tel: +62 21 385771
Email: nmi@nemoint.com

Digi Technologies
18 / A20 Quach Van Tuan, Tan Binh District,
Ho Chi Minh City, Vietnam
Tel: +84 8 811 2736
Email: lqchi@digivn.com

Dai Quang Company Limited
No. 18, Lane 172, Thai Thinh Str.,
Lang Ha Pre., Dong Da Dist.,
Hanoi, Vietnam
Tel: +84 4 3558 1722
Email: Lam@daiquang.com

Shanghai Dianjiang Precision Instruments Co. Ltd
Building 42, Caifuxingyuan,
No. 188 Maoting Rd, Chedun, Songjiang,
Shanghai, 201611, China
Tel: +86 21 3762 0451
Email: john@eco17.com.cn

Beijing Channel Scientific Instruments Co. Ltd
Suite 7B15, Huajie Plaza 13 Dazhongsi
Haidian District, Beijing 100098, China
Tel: +86 10 6211 1044
Email: jack@qudao.com.cn

Aozuo Ecology Instrumentation Ltd
19B HengXing Building, 89 ZhongGuanCun
Eastern Road,
Haidian District, Beijing 100080, China
Tel: +86 10 8267 5321 / 2 / 3 *810
Email: Jane-li@aozuo.com.cn

LICA United Technology Limited
1-102, the 40th Building
No. 380, Changping Road
Changping District, Beijing 102208, China
Tel: +86 10 5129 2601
Email: lixiaobo@li-ca.com

Cinotech Consultants Ltd
Rm 1710, Technology Park,
18 On Lai Street, Shatin, Hong Kong.
Tel: +852 2151 2088
Email: hf.chan@cinotech.com.hk

Keihsing Measurement System Corp
9F-1C No. 97, Sec 4, ChongSin Road
SanChong City, Taipei County, Taiwan 241
Tel: +886 2 2972 5528
Email: flow.sensor@msa.hinet.net

Shailron Technology Pvt. Ltd
E-21 Surya Kunj near C.R.P.F.
New Delhi 110 072, India
Tel: +91 11 2801 0280
Email: info@shailrontechnology.com

Focus Middle East FZCO
No. 322, Bldg. 5EA, Dubai Airport Free Zone
P.O. Box 293541 Dubai, UAE
Tel: +9714-6091600
Email: miran@focus-me.com

Denar Ocean Engineering Services Ltd
Gazeteciler Sitesi
Hikaye Sokak 1/4 Sisli
Istanbul 34394 Turkey
Tel: +90 532 579 5353
Email: cagan@den-ar.com

Elite Elektrik Uretim Ve Makine Sanayi Ticaret A.S
8 Cadde 14 / 4 06460 Ovecler
Ankara, Turkey
Tel: +90 312 472 8393
Email: elite@elite.com.tr

TE.SA.M Peru
Calle Coronel Odriozola 126 - 128
San Isidro Lima 27 - Perú
Tel: + 511 705-4141
Fax: + 511 705-4142
E-mail: acliente@tesam.com.pe