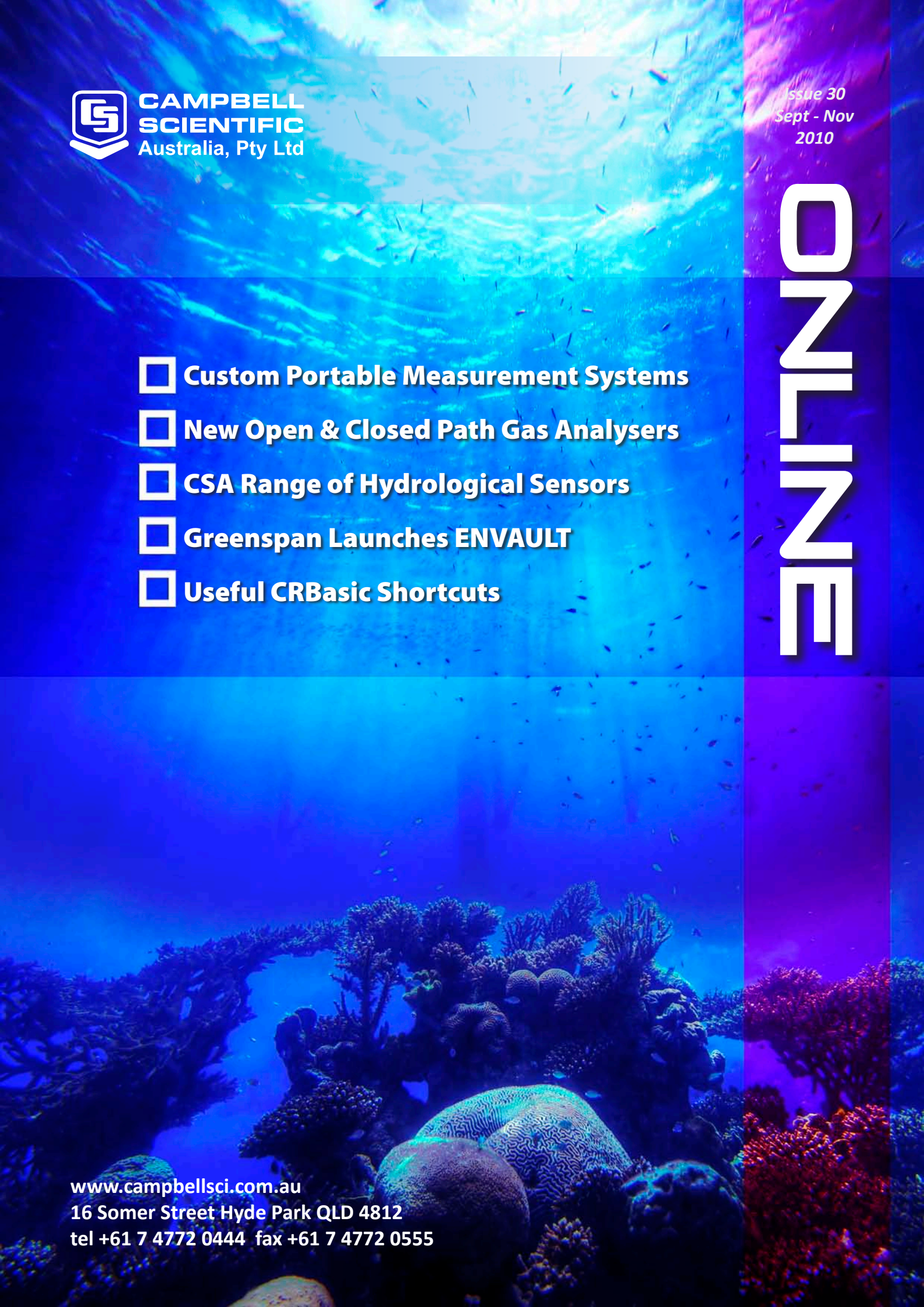

CAMPBELL SCIENTIFIC
Australia, Pty Ltd

Issue 30
Sept - Nov
2010

ONLINE

- Custom Portable Measurement Systems
- New Open & Closed Path Gas Analysers
- CSA Range of Hydrological Sensors
- Greenspan Launches ENVAULT
- Useful CRBasic Shortcuts

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Up-Coming Events

Drop in and see us if you're in town!

Tradeshow / Conference	Location	Dates	Venue
Ecogen 2010	Sydney	September 5 - 8	Sydney Convention and Exhibition Centre
Ecogen 2010 - The Power to Deliver ~ Uniting the Clean Energy Industry - STAND 5			
AHA 2010	Perth	October 19 - 21	Burswood Entertainment Complex Perth
Australian Hydrographers Association Conference 2010 - STAND 18			

CSA Getting Social

We are very proud of the fact that our support is rated as unrivalled in the industry and in the interest of extending our interaction with our customers even more, we've dipped our toe into the fairly new phenomenon of social media. Considering that YouTube has become the second biggest search engine in the world after Google, it's pretty clear that this new form of communication is not going away any time soon. So we would like to extend to you an invitation to join the dialogue on one or several of our pages. Currently we can be found on Facebook, Twitter, Blogger and YouTube. We intend to use these pages to let you know about new products, events and conferences, up-coming training courses and any information that might be of interest or helpful to you our customers. Ideally we'd love you to participate, letting us know what you're working on, how you might be using our gear, any problems you've encountered or maybe just share info you think might be of interest to like minded affiliates. The guys here at CSA want to serve you better so they'll be listening, getting to know your particular needs and responding where warranted.

Currently we have a series of tutorial videos on YouTube hosted by Gavin Shaw our intrepid trainer here at CSA. You'll find a data logger comparison video intended to help differentiate between the various capabilities of our best selling range. Gavin compares the functionalities, appropriate applications as well as the limitations of the CR200x, CR800 series, CR1000 and CR3000. If you're in the market for a datalogger, this video is a a must watch. You'll also find a couple of other videos on integrating both PC200W and Shortcut software with our data loggers. These HD videos have been presented in 3 parts and 2 parts respectively for ease of viewing. Over the coming months we'll be producing lots of YouTube tutorials. These will also be available to watch on our website.

FOLLOW US

We invite you to follow us by clicking the icons above. Get regular updates and videos from the team at CSA

Hoban Smith Industries is a Dysart based Company, specialising in Electro-technology and Environmental Systems in the Mining, and Commercial Industries throughout Queensland. Hoban Smith Industries is currently seeking applications from highly motivated, reliable individuals with proven commitment to safety for the following Permanent Position:

ENVIRONMENTAL SYSTEMS TECHNICIAN - FIELD 1 Position

KEY ACCOUNTABILITIES:
- Managing & carrying out maintenance schedules
- Ensuring compliance to EPA requirements
- Forward planning & preventative maintenance systems
- System compliance and record management
- Ability to Liaise with and maintain a high level of Client Service
- Fault finding, and analytical maintenance and repairs

ESSENTIAL SKILLS/EXPERIENCE:
- Campbell Scientific components and systems
- Greenspan/Tyco & Hydrolab components and systems
- TEOM, Osiris and Texcel components & systems
- Well organised and self motivated
- Ability to work autonomously with proven client liaison skills
- Demonstrated commitment to Health and Safety
- Current QLD Coal Surface Generic Induction and SGS Surface Induction
- Current Mining Industry experience will be highly regarded

An excellent remuneration package based on experience and level of qualifications will be provided for the successful candidate.

Please forward applications to:
General Manager
c/ Training Department
Hoban Smith Industries
PO Box 280
DYSART QLD 4745
E: training@hsi.net.au
Please direct all enquiries to:
07) 49500 397
E: training@hsi.net.au

HSI
HOBANSMITH INDUSTRIES

New Open-Path and Closed-Path Gas Analyzers - EC150 & EC155

We are pleased to introduce two new analyzers for measuring atmospheric levels of carbon dioxide and water vapor: the EC150 (an open-path sensor) and the EC155 (a closed-path sensor). We designed these sensors to produce high-quality measurements in the field and to work closely with our other flux system components to create fully integrated eddy-covariance flux systems.

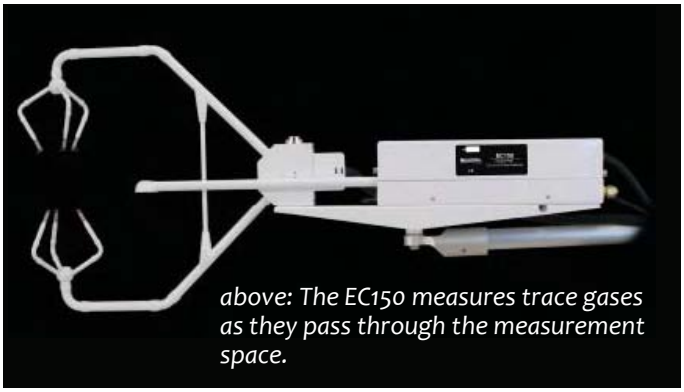
Eddy covariance (EC) is a technique frequently used to measure the transfer of water vapor and carbon dioxide—the two most prevalent greenhouse gases—between the atmosphere and the earth's surface. Interest in EC systems has increased over the years in parallel with concerns about climate change. While we've sold and supported EC systems for years, the EC150 and EC155 represent significant advancements in this area. Of particular note are the design features relevant to measurement quality and tight integration with other key EC system components.

Special consideration was given to the analyzers' shapes, resulting in aerodynamic structures that minimize wind distortion. Their slim design, along with the reduction of internal active heat sources, minimizes error caused by the effects of analyzer body heating. Factory calibration over a wide range of pressures, temperatures, CO_2 and H_2O densities, and levels of window contamination further reduces measurement error. The analyzers provide low-noise measurements and offer a broad list of diagnostic parameters to warn of questionable data. Sample rates up to 50 Hz are supported, with user-selectable bandwidths ranging from 5 to 25 Hz.

One of the most significant benefits of the sensors is their ability to fully integrate with our other measurement products to form complete eddy covariance systems. The sensors are designed to fit well with the body of the CSAT3A, providing co-location of the gas and wind measurement volumes, critical for good eddy-covariance measurements. The two sensors also share common electronics—reducing cost, simplifying installation, and providing time synchronization between the sonic and gas measurements before the data are output to the datalogger. This level of integration has been unavailable in previous eddy covariance systems.

Adding one of our flux-compatible dataloggers to the EC150 and CSAT3A creates a complete open-path system. A complete closed-path system requires the integration of pump, valves, datalogger, and sonic anemometer, along with the EC155. We've packaged all of these components into the CPEC200, a field-ready system with all the engineering done for you.

Both of the new sensors were designed to perform well in the field. They operate in harsh environments and require very little power—even the CPEC200 closed-path system with its pump and valves can operate on solar and battery power. The analyzers are field serviceable, with easy access to the chemical bottles (and sample cell in the case of the EC155) without having to dismount the sensors from the installation. The windows on both sensors are tolerant of contamination. The EC150 windows are slanted to help shed water for better performance in the rain.



above: The EC150 measures trace gases as they pass through the measurement space.

We look forward to the improvements these sensors will bring to eddy-covariance measurements. For more information, please speak to Dave Boadle who heads up our Flux group.

Extensive Range of Hydrological Sensors from Campbell Scientific

For a number of years now, Campbell Scientific has been the dominant data logger supplier in Australia's hydrological industry. In recent years, our US parent company (CSI), has made a significant effort to source, design and manufacture high quality sensors for the same market. While brochures for all of these sensors can be obtained from our website, this article highlights our expanding range and introduces some new offerings.

Submersible Pressure Sensors

Campbell Scientific now designs and manufactures its own submersible pressure transducers. The **CS450** (Stainless steel body) and **CS455** (Titanium body) pressure transducers can be ordered to measure between depths of 2m to 100m. Accuracy of these units is 0.1% FSR. The CS450 can also be ordered with a high-accuracy option of 0.05% FSR.

Both SDI-12 and RS232 are standard for these sensors. The **CS460** submersible pressure sensor uses a strain gauge bonded to a pressure sensitive diaphragm to measure ranges from 0-1.3psi to 0-390psi and finally the **CS430** uses a piezoresistive strain gauge to measure pressure ranges up to 5,15,30,50 or 100 psi.

Radar Water Level Sensors

Campbell Scientific supplies a range of radar water-level sensors including the **CS475** (0-20m), the **CS476** (0-30m) and the **CS477** (0-70m). Mounted above the water to be measured, these sensors use radar to detect the distance from the sensor to the surface of the water. The fact that the sensors do not come into contact with the liquid avoids problems of corrosion, contamination or debris damage.

Turbidity Sensors

In 2006, Campbell Scientific purchased and took over manufacturing of the OBS range of back-scatter turbidity sensors. By utilizing the same strict manufacturing principles and quality control they have used for many years, the OBS range has gone from strength to strength since that time. The OBS range of sensors includes the **OBS-3+** which uses a side-looking sensor and the **OBS300** with downward looking sensor for turbidity up to 4000NTU. With a stainless steel body these sensors can be submerged up to 500m and with the titanium body option, up to 1500m. With its own inbuilt data logger, the **OBS-5+** uses an infrared laser and a proprietary dual photo-detection system to measure turbidity to better facilitate measurement in applications where there are suspended solids. Finally the **OBS3-3A** is a multi-parameter probe with an inbuilt data logger capable of measuring turbidity, pressure, temperature and conductivity.

pH and Redox Potential Sensors

Campbell Scientific's new **CS525** pH probe provides reliable, accurate pH measurements and can be submersed or inserted into tanks, pipelines and open channels or streams. The **CS525** uses a high-tech, ion-specific FET semiconductor at its core which allows the **CS525** to monitor pH in liquids containing high solids, aggressive chemicals or biological materials that would clog or contaminate the junction of traditional glass-bulb pH probes. The **CSIM11** pH probe is still available for those customers who require a traditional glass –bulb sensor. The **CSIM11-ORP** is a versatile sensor that measures oxidation reduction potential (ORP).

Conductivity Sensors

The **CS547** conductivity sensor is a product that Campbell Scientific has manufactured and sold for several years. It is easy to clean, resistant to corrosion, and has earned a reputation for reliability and robustness that is second to none.

Dissolved Oxygen Sensor

The **CS511** is a rugged, low maintenance oxygen sensor designed to be submerged in a medium (typically water) and measure dissolved oxygen from 0% to 100% saturation with an accuracy of +/- 2%.

Rainfall Sensor

Besides the traditional range of tipping bucket rain gauges from Hydrological Services, Campbell Scientific Australia now carries and supports the Rimco range of tipping bucket rain gauges. The **RIM7499** is designed to Australian Bureau of Meteorology standards and accurate to +/- 1% at rainfall intensities up to 250mm/hr and +/- 3% up to 500mm/hr. The **RIM8000** uses the same tipping bucket and siphon as the **RIM 7499** but with a spun aluminium base and a spun copper collector funnel and rim. The **RIM8000** is accurate to +/-3% at intensities up to 380mm/hr and +/- 5% at rates up to 500mm/hr.

custom portable systems

For over 15 years, Campbell Scientific Australia has been renowned for providing custom measurement solutions for a variety of customers / industries. Earlier this year, CSA was approached by The RPS/SKM Marine Monitoring Alliance to provide a portable monitoring system to assist in plume tracking and QA/QC procedures related to in-situ turbidity monitoring systems.

CSA Produce Custom Portable OBS3 Measurement/Logging System for Gorgon Marine Monitoring

The Gorgon Marine Monitoring Program involves monitoring of turbidity at a number of locations near the dredging and construction operations. A network of nine remote monitoring sites utilise the Campbell Scientific Australia (CSA) OBS3 turbidity sensors mated to a custom-built satellite telemetry system (not provided by CSA). The RPS/SKM Marine Monitoring Alliance required a portable turbidity measurement and logging system that could be used in the field for geo-referenced spot measurements of the turbidity plumes as well as laboratory use for cross-calibrating other turbidity measuring devices. Given that the design and measuring geometry of turbidity sensors are not consistent across different manufacturers, we required a system that used the OBS3 sensor so that measurements were consistent with the remote monitoring network.

Campbell Scientific Australia (CSA) were able to custom make a portable system that met our field-based requirements (waterproof, GPS enabled, display and logging). The system was professionally finished, came pre-configured and also had detailed instructions on how to further setup the logger. The response from CSA was prompt and professional and we'd be happy to approach CSA with our custom requirements in future.

Portable GPS Enabled OBS-3+ Measurement System

The Portable OBS-3+ Measurement System from Campbell Scientific Australia allows a user to collect quality Turbidity data from up to 2 OBS sensors. This data is stamped with both Date and Time along with GPS coordinates of where the measurement was taken. The system can measure up to two OBS-3+ sensors (connected via the SEACON connectors on the enclosure) and store data at a rate of up to 1 Hz.

A Keypad display is provided with the OBS-3+ measurement system to allow a user to view data while it is being sampled. The keypad is connected via an IP67 rated connector to the enclosure.

Hardware

The Portable OBS-3+ Measurement System utilises the following components:

CR800 Measurement and Control Data Logger

- o For Measurement of the OBS-3+, and GPS sensors and the flow control / storage of Data

Internal Garmin GPS

- o For real-time system location and clock updates
- o Can 'receive' location information through the enclosure if mounted flat.

Internal 7Ahr SLA Battery

- o Providing up to 24 hours of continuous operation before charging is required
- o It is important to turn the system off when not in use:
  - This is done by removing the green power plug from the CR800 data logger inside the enclosure.

Sealed Lead Acid Battery Charger

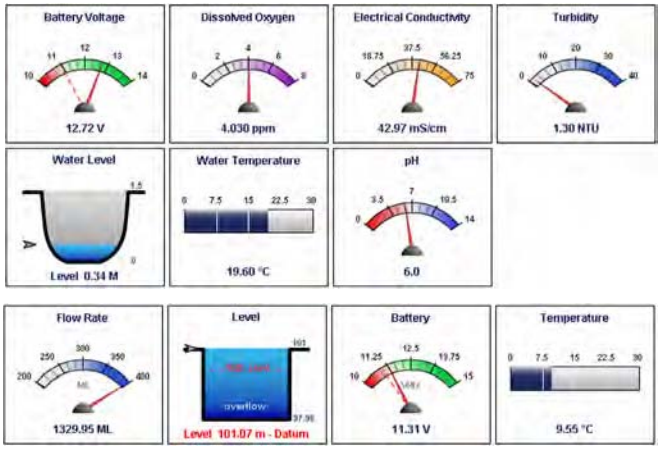
- o 240V Sealed Lead Acid Charger provided for ' recharging' system.

OBS-3+ Sensors

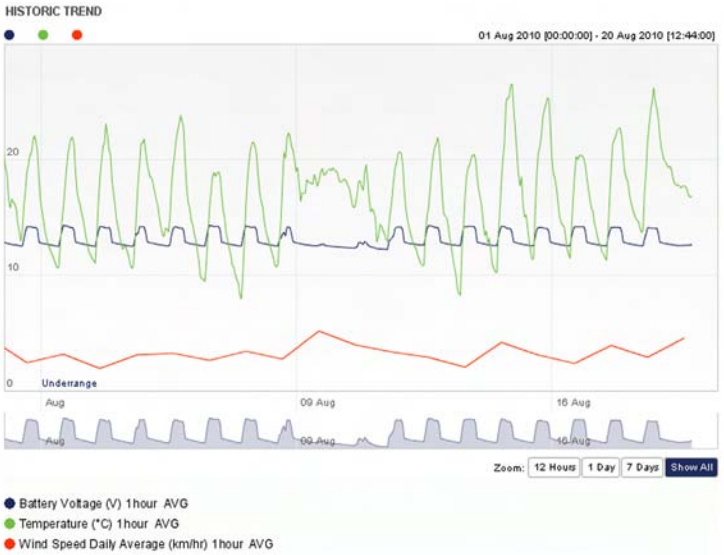
- o This system provides capacity to handle 2 x OBS-3+ sensors.
- o Each OBS sensor has a high and low Turbidity channel.
  - 0-250 NTU and 0 – 1000 NTU (a range of options are available)

Greenspan Launches Envault

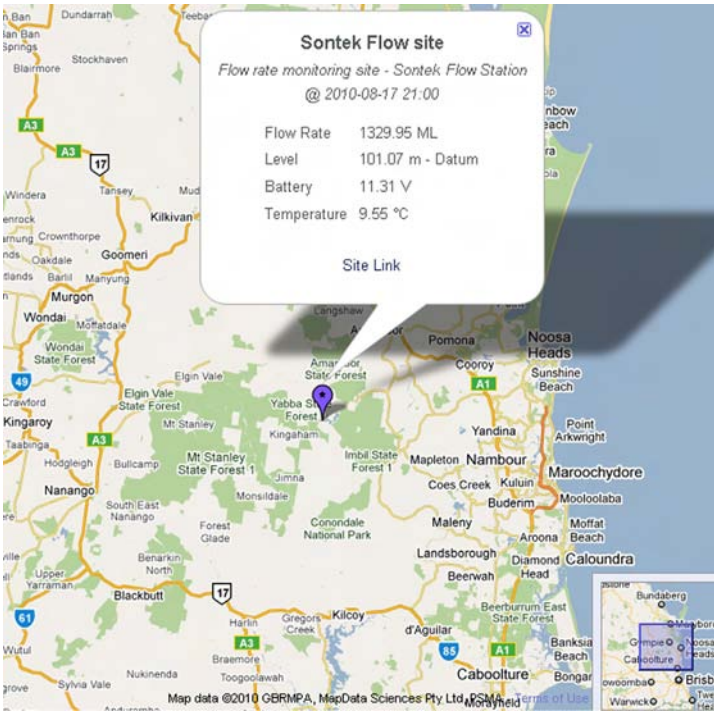
Campbell Scientific have been supplying monitoring systems since 1973 and in that time there have been several revolutions in the tools to manage and display measured information. From standalone systems with manual data collection, to providing text data files downloaded over dialup, through to desktop computer visualisation and database packages collecting via packet based networks. The modern monitoring systems typically includes a communications network, automated polling and desktop software for graphical representation of data, alarming and reporting functions, time series databases, and dissemination of data to other locations. Regardless of the size, these networks have inherent problems of significant start-up effort and costs, in-house technical support, reliability and maintenance issues, and eventually technological obsolescence (not to mention site specific risks such as loss of power, theft, viruses, or hard drive failure). With the maturity of the internet, the next revolution is taking place. An example of this is the Greenspan ENVAULT system that manages the data collection, presentation and data management process. ENVAULT is a data centre hardware and communications infrastructure, SCADA software and time series database accessible through a web portal with an intuitive interface for understanding and managing field data. A demo station is accessible through www.envault.com.au with the username of demo and the password of demo. A selection of demonstration screenshots are shown below



above: Screenshot of various measurement symbols



above: Screenshot of dynamic trending



above: Screenshot - Google Map Overview

above: image of site 1

Useful CRBasic Shortcuts

With the release of Loggernet 4.0, many of the client applications have had some new features added. CRBasic is one of applications to receive a face-lift and this article will list some of the new features as well as some of the most useful features from the old version of CRBasic.

Bookmarks

CRBasic programs can get pretty big for more complex applications, sometimes running to thousands of lines of code. For these programs, bookmarks are a useful tool to help when navigating between distant sections in code. To add a bookmark to a line, select Toggle Bookmark from the Goto -> Bookmarks menu.

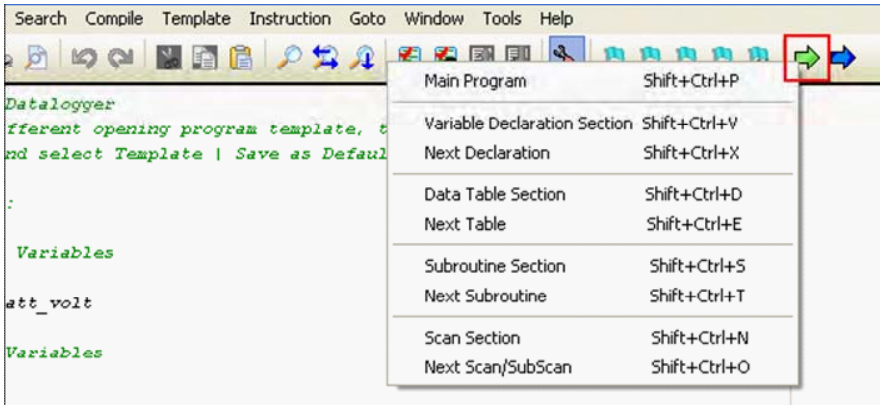
```
' Main Scan
Scan (1,Sec,0,0)
  ' Get the time into public variables.
  RealTime(Time())
```

Then to move between bookmarks use the buttons in the bookmarks toolbar:

Use the Previous  and Next  buttons to jump between bookmarks, or use the Browse  button to view all bookmarks in the current program.

Program Section Bookmarks

Bookmarks are automatically added for important program sections. These bookmarks are accessible through the Goto button on the toolbar:



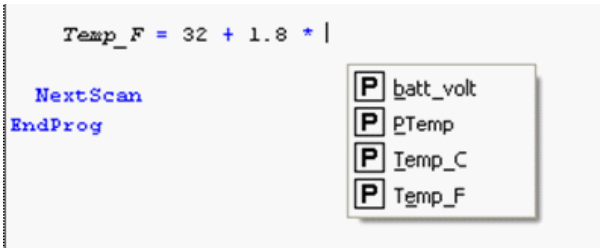
Compile, Save and Send

When starting a new program, it is always advisable to keep testing the program by running it in a datalogger (if one is available) while you code. This avoids having to identify a problem in an entire program which has been written in one go from start to end. As long as Loggernet is open in the background, CRBasic can send the program to a datalogger without the need to switch to the Connect screen and press the Send Program button.

The compile save and send button on the toolbar will save the current program to disk, perform a compile to make sure there are no errors, then display a list of all the dataloggers from the Loggernet connect screen which this program can be sent to.

Insert Variable

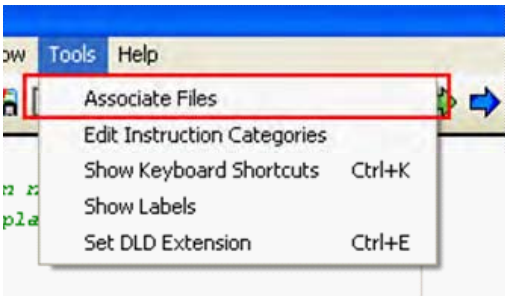
When typing code into the CRBasic editor, sometimes a public variable name is needed in a formula or If statement as shown below:

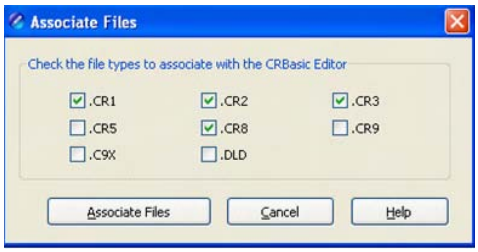


If there are a large number of public variables it may be difficult to remember the exact spelling of the variable names. To bring up a list of all public variables at the current cursor position, press F9. Then select the appropriate variable from the list to insert it.

Associate Files

Loggernet does not associate .CRX files with the CRBasic editor by default. This means that double clicking on .CRX files in Windows Explorer will not open them in the CRBasic Editor. To associate certain datalogger program files with CRBasic, select Associate Files from the Tools menu:





Select the types of program to associate with the CRBasic editor, and then press Associate Files. These files should now have a CRBasic icon in windows explorer:

Keyboard Shortcuts

Select the types of program to associate with the CRBasic editor, and then press Associate Files. These files should now have a CRBasic icon in windows explorer:

Compiling	
Ctrl + Q	Save and compile the current program
Ctrl + Alt + S	Compile, Save and Send the current program
Bookmarks	
Ctrl + T	Toggle a bookmark on the current line
Ctrl + D	Go to the next bookmark
Ctrl + U	Go to the previous bookmark
Ctrl + G	Open the Goto Menu
Editing	
F2	Edit instruction at cursor
F9	Insert Variable at cursor
Ctrl + I	Rebuild program indentation