



CSA Clowns Give Blood

And return to work feeling "funny"...

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There was plenty of clowning around when the staff from Campbell Scientific Australia gave blood last month. Our resident clowns Sarah & Michelle decided to poke their heads into the blood bank during CSA's Circus theme day and bring a smile to the nurse's faces while donating to the worthy cause. And it got more than just a smile - the ladies ended up in the local paper!



Blood banks across the country are in need of stocks due to low donation rates. Only 1 in 30 people donate blood in Australia, while 1 in 3 Australians will need blood products at some point during their lives. Contact your local blood bank for more details on how to donate in your area.

DOWNLOAD THE LATEST CR1000 / CR800 & CR3000 O/S FROM OUR WEBSITE

<http://www.campbellsci.com.au/downloads>

Manuals : Hard Copies Only Available By Request

Over the coming months CSA will be phasing out the sending of paper manuals.

Instead each order will have an accompanying Resource CD containing all the required information. Customers can still obtain a hard copy of the manual at no charge but must list this on the purchase order.

All manual requests after the order has been sent will incur additional charges (depending on the manual & freight costs).

If you have any questions please contact our sales team on info@campbellsci.com.au

CSA Price Decrease Data logger prices drop by 10%...

It's not often that you see a company lowering its prices, but that's what's happened at CSA! We're pleased to announce that many of our imported products (including our complete range of data loggers) have decreased in price by 6 - 10% due to the strength of the Australian dollar.

Our range of data loggers have now dropped in price by 10% , making them even better value. We don't know how long this will last so if you wish to take advantage of these incredible prices, we recommend you contact us today .

Contact our sales team on info@campbellsci.com.au for our new 2008 price list, or to enquire on bulk purchase discounts.

Upcoming Events

Catch up with our team at EcoForum, Enviro or Irrigation this year!

Want to catch up with our team this year? CSA will be attending a number of trade shows in 08, so if you'd like to call in and see us here's a rundown of when and where we'll be over the next few months -



WHAT	WHERE	WHEN	BOOTH NO#
EcoForum Exhibition	Conrad Jupiters, Gold Coast	27-29th Feb	37
IICA	Townsville	17th Apr	n/a
Enviro 2008 Exhibition	Melbourne Exhibition Centre	5-7th May	214
Irrigation 08 Exhibition	Melbourne Exhibition Centre	20-22nd May	710
National Manufacturing Week	Sydney Convention & Exhibition Centre	27-30th May	TBA



Training 2008

Get the most out of your Campbell data logger!

Do you or your team require training? Learn how to get the most out of your Campbell data logger by attending our 3 Day CRBasic Programming course. The course will teach you all you need to know about Campbell loggers and software. For our more advanced users we also now have our 1 Day Advanced CRBasic course - suited for those who require complex programming skills. Below is our training schedule for 2008, for all pricing and info please contact

bree@campbellsci.com.au

NOTE - WE STILL HAVE 5 SEATS LEFT FOR OUR GOLD COAST COURSE - BOOK TODAY BEFORE IT'S SOLD OUT

WHAT	WHERE	WHEN	SEATS
CRBASIC PROGRAMMING 3 DAY	GOLD COAST	10-12th MARCH	ONLY 5 LEFT
CRBASIC PROGRAMMING 3 DAY	MELBOURNE	28-30th APRIL	15
CRBASIC ADVANCED 1 DAY	MELBOURNE	1st MAY	7
CRBASIC PROGRAMMING 3 DAY	TOWNSVILLE	14-16th JULY	16
CRBASIC ADVANCED 1 DAY	TOWNSVILLE	17th JULY	7
CRBASIC PROGRAMMING 3 DAY	SYDNEY	8-10th SEPT	16
CRBASIC ADVANCED 1 DAY	SYDNEY	11th SEPT	7

CSA New Faces

Corinne Malot is currently on maternity leave after having a bouncing baby boy in late December. For those of Corinne's devoted customers who are eagerly awaiting her return, we expect her back part time in April.

Sandra Lundie joins CSA as an administration assistant. Sandra's exuberant personality has quickly made her a hit with both customers and her fellow workmates.

Polo Imo is our new repair technician. Polo has a Science Degree from Victoria University of Wellington, NZ and naturally is an ardent rugby supporter.

And finally to add to our ever-increasing multicultural team, we have recently appointed Liu Liu as an R&D junior engineer. Liu obtained an electronics engineering degree at the Ningxia University of China followed by a masters degree in engineering at the University of Adelaide.



Using File I/O

With Campbell Scientific Data Loggers

Historically, retrieving data from a data logger via telemetry involved having software which was capable of communicating with the appropriate data logger model. This software would command the PC-based phone modem to connect to the remote phone modem. Once this process was done, the software would send the appropriate commands to the logger to get the data.

Depending on the data logger and the software package being used there was one or possibly a couple of different options that could be used to control the format in which the data would be stored on the PC. If the data was then to be processed by some other graphing, analytical, statistical or archiving package, it may then need to be fed through some filter or pre-processor in order to get the data into the appropriate format.

With the movement to more web-based delivery of data, some of these steps are being removed or improved. Most cell phones used on data logger sites these days are capable of establishing an internet connection, which allows the logger to communicate directly with the computer that will be processing its data.

The Campbell Scientific data loggers, with the flexibility of the CRBasic programming language, offers the ability to create data files in custom formats. By using different data types within the data logger program, the data file can be created in any format the user desires. Custom timestamps or formatting, comments or particular codes that are relevant to a certain data element can all be added directly by the logger at the time the data is measured. In some cases, programming for data storage in custom formats could make pre-processing of a data file unnecessary.

The battery-backed memory of the data logger operates much like a PC's hard disk; with a File Allocation Table (FAT). When writing a data logger program and storing data, data tables are created. These data tables exist in a standard Campbell Scientific format in terms of time stamps and record numbers, etc. When collected from the logger using Loggernet, PC400 or PC200W software, these files can be stored in a couple of different formats, much like what was described in the first paragraph of this article.

A section of this memory can be partitioned (much like partitioning a hard disk) into a "USER" drive. This "USER" drive is a space that can be used for storage of pretty much any file or file type.

The CRBasic programming language includes a suite of File I/O instructions that allow the user to create files, read from, write to, copy, rename, delete files or check the status of files that may exist in the memory.

Some of these commands are listed below:

Command	Function
<code>FileOpen()</code> , <code>FileClose()</code>	<code>FileOpen()</code> - used to open an ASCII text file or a binary file for writing or reading. <code>FileClose()</code> - used to close a file opened by <code>FileOpen()</code> .
<code>FileRead()</code> , <code>FileReadLine()</code>	<code>FileRead()</code> - reads the data from a specified file and stores the results in a variable or variable array. <code>FileReadLine()</code> - reads the data from the current line in a specified file and stores the results in a variable or variable array.
<code>FileWrite()</code>	Used to write ASCII or binary data to a specified file.
<code>NewFile()</code>	Used to determine if a file stored on the data logger has been updated since the instruction was last run.
<code>FileCopy()</code>	Used to copy a file from one drive on the data logger to another.
<code>FileRename()</code>	Used to change the name of a file stored on the data logger or a card.
<code>FileManage()</code>	Used to change the run options of a file (normally a data logger program). Also used to delete a file. Use with caution.
<code>FileTime()</code>	Returns the time the specified file was created.
<code>FileSize()</code>	Used to return the size of a file that was created using the <code>FileOpen()</code> function.

These files need not be purely for historical data transfer. The "real-time" nature of internet based communications allows files to be transferred either to or from a logger using FTP. The logger can detect the existence of a file (using the `FileList()` instruction) and its contents can be read into a variable that the logger can then act on. Similarly, the logger can send or receive emails to inform someone of an error condition that may have occurred or to instruct the logger to begin some process or activate some control.

Viewing the files that exist in the logger memory can be done using File Control (on the Connect screen of Loggernet). File Control can also be used to stop or restart data logger programs that have been sent to the logger previously. It is important to note that all files that are sent to, or created by the logger, remain in the logger memory until they are deleted or an operating system upgrade is done.

Customising Your Weather Station

An easy guide to selecting your weather station components....



Tower Weather Station
- fixed into ground for
longterm use

The flexibility of Campbell Scientific data loggers coupled with our range wide range of supporting sensors, peripherals and services allows you to completely customise a weather station to suit your individual requirements. Everything from the type of data logger to the method of communications can be suited to your needs – and can be further expanded in future years.

But what's involved in choosing your weather station components?

We recommend contacting our team to ensure you get the best fit – but here's a short guide to help you along the way.

Data Loggers

At the centre of the weather station is a programmable data logger that will measure the sensors and store data. This data can be stored in your choice of units (e.g. wind speed in m/sec, mph etc), as specific outputs required (ie Max, min, averages etc) and at intervals you require (ie Hourly, daily etc). Choosing a data logger starts with deciding on the number and type of sensors to be measured, how much data you need to store and how fast the measurements need to be taken. Modifications to the data logger program can be done at any time to accommodate different sensor configurations or data processing requirements.

Our flexible data loggers have numerous channel types and programmable inputs, enabling them to measure most commercially

available sensors. Sensors that output voltage, pulse, SDI-12, RS-232, or 4-20 mA signals can be read using the data logger's analog (single-ended and differential), pulse counter, SDI-12, RS-232, continuous analog output, digital I/O, anti-aliasing filter, and switched excitation channels.

Enclosures & Mounting

We utilise UV-stabilized, fiberglass reinforced enclosures to house the datalogger, power supply and data retrieval peripherals - thus providing protection from dust, humidity, precipitation, sunlight and environmental pollution. For easy viewing in the field data displays can be mounted into the enclosure.

Tripods & towers are available to mount your weather station, once again depending on your needs. Tripods are sturdy, mobile and easy to deploy – particularly for uneven or rocky terrains but have a lower measurement level. Towers are best suited to permanent applications as they are cemented into the ground and allow elevated measurement heights.

Sensors

We have a wide range of quality sensors designed to interface directly to our data loggers. Our sensor types include but are not limited to the following:

Wind Speed and Direction – Cup & Vane, Propeller and Vane or Ultrasonic Anemometers.

Temperature – Thermocouples, Thermistors and RTDs to measure Air, Soil or Water Temperatures.

Relative Humidity - Capacitive sensors using integral signal conditioning. RH and air temp sensors are typically housed in a single body.

Solar Radiation - silicon cell or thermopile Pyranometers, quantum sensors, or net radiometers

Water Level, Stage and Flow - Pressure transducers, bubblers, shaft encoders, ultrasonic

Water Quality – Turbidity, pH, Dissolved Oxygen, Electrical Conductivity.

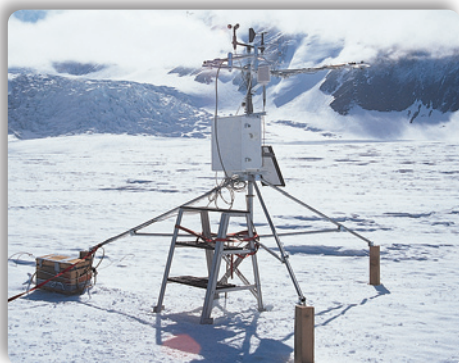
Soil Moisture - gypsum blocks, analog output tensiometers, time domain reflectometers, Aquaflex, Watermark sensors, Echo, Delta-T, etc.

Barometric Pressure - Resonant silicon technology, silicon capacitance

Precipitation – Tipping Bucket Raingauge



Tripod Weather Station
- sturdy, mobile & easy to
deploy



Designed for the harshest of environments

Telemetry

Retrieving your data can be accomplished by many methods depending on how often downloading is required and the location of your station. Building a custom station allows you to select the way you want to communicate with it, either through cellular technology, satellite technology, some form of radio communication, direct connection or a combination of these.

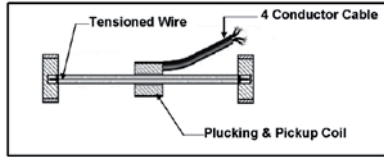
Installation is made easy by Campbell Scientific Australia's ability to provide a range of services including data logger programming and system pre-wiring with sensors ready to go. Allow our expert Sales and Technical team to design a perfect solution for your current requirements while ensuring that you also have adequate expansion capacity for future needs.

Contact info@campbellsci.com.au for more on CSA's custom weather stations.

NEW AVW200 Vibrating Wire Module

A Major Step Forward in Vibrating-Wire Technology

We are excited to announce our most recent measurement advance—a new interface module that promises to significantly improve vibrating-wire measurements. Vibrating-wire technology is used in many sensors, including strain gauges, pressure transducers, piezometers, tiltmeters, crack meters, and load cells. These sensors benefit a wide variety of structural, hydrological, and geotechnical applications because of their stability, accuracy, and durability.



A vibrating-wire sensor (see left) operates on the principle that a tensioned wire, when plucked, will vibrate at its resonant frequency. Physical changes to the sensor cause a

change in the tension of the wire. An electromagnetic “plucking and pickup” coil strums the wire. Ideally all frequencies, except for the resonant frequency, will die out in a very short time (20 milliseconds). The wire will then continue to vibrate at the resonant frequency for some additional time. As it does so, it will cut the lines of flux in the plucking and pickup coil, inducing a voltage signal with the wire’s resonant frequency. This is then picked up by the measurement instrument.

This method suffers from one major problem - external noise.

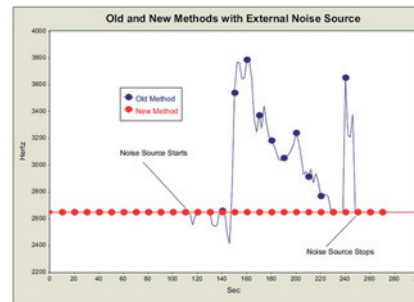
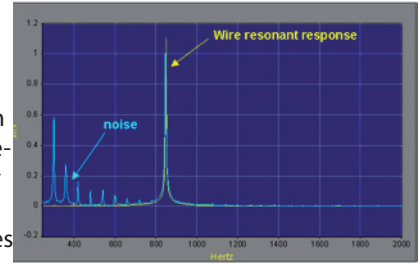
Because measuring these sensors involves low amplitude voltage levels, external electromagnetic noise can interfere and make it difficult to determine the resonant frequency of the sensor. If the external noise is bad enough, it can render the data useless.

The traditional method uses a time-domain approach. The natural or resonant frequency of the wire is determined by exciting the wire with an AC excitation, stopping the excitation, and then measuring time between response pulses. Where this method falls down is when the noise voltage level is the same or greater than the signal level. This results in the logger then counting the time between signal and noise pulses rather than between consecutive signal pulses. The new AVW200 interface module applies an innovative patented technique

for measuring a sensor’s frequency.

The AVW200 uses a built-in spectrum analyzer to transform from the time-domain (time between pulses) to the frequency domain (pulses per second).

There are two major advantages in using the frequency domain over the time domain; signals can be separated into their relative frequencies, then limits can be set on which frequency range is acceptable as a true signal frequency. In the figure to the left, the noise signal is clearly separated from the sensor signal. All noise signals at frequencies below 800Mhz, for example, can now be filtered out. This ensures that the frequency that is measured has originated solely from our sensor.



The AVW200 can be used via SDI-12, RS-232, or PakBus network protocol. It has low power consumption (300 μ A quiescent and 40mA active) and a rugged design to match the durability and long-term stability of vibrating-wire sensors. Wireless versions are also available, allowing for remote

deployment of sensors from the data logger. Programming is as easy as the previous vibrating wire interfaces with data retrieval being achieved by a single instruction.

When coupled with the AM16/32B, the AVW200 can be used by any of the Campbell range of data loggers to measure up to 32 single channel sensors, 16 single channel sensors with temperature compensation, or 16 dual channel sensors.

As well as providing noise immunity for vibrating wire sensor measurements, the new Campbell Scientific AVW200 Vibrating Wire Interface provides additional advantages including –

- 1) Increased measurement accuracy and resolution
- 2) The ability to characterize individual vibrating wire sensors
- 3) The ability to monitor and account for long-term sensor drift

Contact info@campbellsci.com.au for more information



CSA Repairs Process

Following these simple steps will minimise your downtime

If you need a repair or calibration completed by our repair department, here’s an explanation of the process. Following these guidelines will ensure that our technicians can log and work on your equipment with minimum downtime to your measurement system.

1. When a repair is required, please obtain the CRMA (Customer Return Materials Authorisation) paperwork from our tech team or download details from our website in the coming weeks (repairs section to be up and running shortly)
2. Ensure that you understand the RMA process fully and return goods with the CRMA forms provided (see above). Without the CRMA forms we will not be able to detect who the repair is from or what work is required.
3. You will receive a repairs notification once the materials reach our depot
4. Our repair technician will contact you within 1 week to discuss the repairs & any work that may need to be carried out.

If you have any questions regarding our repairs process please contact repairs@campbellsci.com.au