



AUGUST 2017 NEWSLETTER

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August 2017 marks an important milestone in the history of Campbell Scientific with the release of the CR1000X data logger – a product line that commenced 30 years ago, way back in 1987.

When CSA commenced operation in May of 1993, Campbell Scientific's fourth data logger, the CR10, was already six years old. At that point in time, it was our lowest priced logger and was used in most applications other than micrometeorology. With incredible functionality and capability for its time, the CR10 was a huge hit in the meteorological, hydrological and geotechnical sectors. I recall that for many years, CSA held the Australian price of the CR10 at \$1770 – a significant number in Australia's history. 28,170 units of the CR10 data logger were sold worldwide between 1987 and 1995.

In 1995, eight years after the launch of the CR10, the CR10X was released. The CR10X was Campbell Scientific's first logger to use surface mount technology which freed up board space to add more memory and more features. Following in the footsteps of the CR10, the CR10X set the benchmark for accuracy, reliability, and flexibility in battery powered data loggers. With a mean time between failures (MTBF) in excess of 3,500 years, in it's 9-year life 64,240 CR10X's were sold. As a result of its industry leading features of reliability, flexibility, and accuracy, the CR10X was instrumental in helping CSA break into the hydrology market in Australia.

The current evolution of the CR10 series logger, the CR1000, was released in 2004. This was the first CS data logger to contain an ASIC – a custom integrated circuit to replace multiple IC's in the older CR10X logger, thus reducing component count and board complexity. Lower cost variants which use the same circuit board as the CR1000,

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the CR800, and CR850 loggers, were introduced in 2006. The CR1000 has become the industry standard for geotechnical and meteorological applications. After an incredible 13 years in production, 97,899 CR1000 loggers have been sold to date. In addition, over 41,000 CR800 & CR850 loggers have also been sold during that time. With an MTBF in excess of 2,243 years, the CR1000 carries on the tradition of incredible reliability created by its predecessors.

In August 2017, some 13 years after the CR1000 was released, this month will see the release of the CR1000X. Largely due to Campbell Scientific's dedicated engineering team, we anticipate that the CR1000X will set a new standard for environmental measurement applications for many years to come. While the CR1000X has many enhancements over and above the CR1000, our engineers claim that the new logger makes the best analogue measurement of any Campbell Scientific data logger ever made, and that includes the legendary CR7 logger which was produced from 1983 until 2011 – an incredible production run of 28 years.

The CR10 product line has played a pivotal role in CSA's development and success during my 24-year association with the Campbell Scientific family. In an age when electronic products have built in obsolescence and when manufacturers are forced to release a new model every 12 months to stay ahead of the competition, we at Campbell Scientific are proud to buck the trend by continuing to provide products with long term reliability coupled with quality service.

Steve Bailey Managing Director

PRODUCT UPDATE: CR6 RADIO OPERATING SYSTEMS



Campbell Scientific recommends keeping your logger operating systems up to date in order to get the best performance out of your data logger.

New operating systems allow you to access to new CRBasic instructions or new features so it's important to upgrade on a regular basis. The latest operating system (OS) can be found on the Download section on our <u>website</u>.

Once the installer has been run, a PDF will automatically open with the latest changes. In this document will be listed which radio OS versions should be used.

• (WARNING) After upgrading the CR6-WiFi and CR6-RF451 to this version of the operating system, it is recommended that the user also update the operating system in the radio daughter card. This version of the CR6 operating system has been tested with version 3.1 of the WiFi daughter board and version 3.0 of the RF-451 daughter board. These operating systems have a *.iobj extension and are placed in the same directory as the CR6 operating system. Use the same procedure to load the WiFi or RF operating systems using Device Configuration Utility. Select Daughter Card Operating System Files (*iobj) from Files of type drop down.

Example from the CR6 OS 6.08

For the CR6 series with radio module (-RF12,-WIFI,-RF451), the procedure to update the OS is a two step process.

Note: As of July 2017, the RF412 is using OS version 1 and will not require update until a newer version is released.

- 1) Upload the Datalogger OS, a video is available on the <u>Campbell Scientific website</u>.
- 2) Upload the Radio OS.

Once connected to the CR6 via Device Configuration Utility, select the tab Send Os. For step 1, simply select the relevant OS file for the CR6.

For step 2, select Files of type Daughter Card Operating System Files (*iobj), then the appropriate radio OS.

Select the appropriate radio module to be uploaded

The reason for this is that each data logger operating system is tested with the latest radio module version OS's so updating each allows for the maximum possible reliability.



FIELD OPERATORS

Doing some field work, installation or commissioning of Campbell Scientific equipment? Email us at <u>info@campbellsci.com.au</u> with your contact details, the region you service and type of service offered (such as the example below) and we will keep your details on record.

Name	Company	Email	Expertise	Service Offered	Immediate Region	Expandable Region
John Smith	John Smith Services Pty Ltd	info@johnsmith.com	Weather Stations	Programming, installation, commissioning, maintenance	Victoria	Australia

Please be aware that by sharing these details with CSA, you agree that we share these details with other customers when asked for local field work services.



DEALS FOR THIS QUARTER!

After some great equipment at a reduced price? Check out our latest list below of SPECIALS for this quarter. The discounts below are the total discount percentage available on this item from your list price (conditions apply – see bottom of table for conditions). If interested, all you need to do is click on the corresponding link and we will get back to you quickly with a quote.

This quarters Newsletter Products are the following:

IMAGE	ITEM	Description	Condition	QTY	DISCOUNT	REQUEST A QUOTE
	<u>31153</u>	CVF4 MOUNTING STAND	New	2	55%	<u>Contact Us</u>
	<u>CVF4-L20m</u>	CVF4 KIPP AND ZONEN PYRANOMETER VENTILATION UNIT W/20m	New	2	40%	Contact Us
	<u>LI200X-PT-L10m</u>	LI-COR PYRANOMETER FIXED CAL W/10m	Brand new	1	50%	<u>Contact Us</u>
	<u>LI200X-PT-L20m</u>	LI-COR PYRANOMETER FIXED CAL W/20m	Brand new	1	50%	<u>Contact Us</u>
	<u>LI200X-PT-L30m</u>	LI-COR PYRANOMETER FIXED CAL W/30m	Brand new	1	50%	<u>Contact Us</u>
	<u>TM-I-4090</u>	SOLAR MODULE TEMP SENSOR SELF ADH PT1000 4-20mA	New	1	50%	<u>Contact Us</u>
	CGR3	KIPP & ZONEN PYRGEOMETER 10K THERMISTOR NO PLUG NO CABLE	New	2	40%	<u>Contact Us</u>
	<u>CMP10-L20m</u>	CMP10 KIPP & ZONEN PYRANOM- ETER 2ND STD W/20m	New	2	Fixed price: 2800 AUD / 2140 USD	Contact Us
<u> </u>	<u>HC2S3-PT-L10m</u>	ROTRONIC STD PROBE W/10m	New	7	40%	Contact Us
	HC2S3-PT-L5m	ROTRONIC STD PROBE W/5m	New	1	40%	<u>Contact Us</u>
	27728	HC2S3 RAW SENSOR (HEAD ONLY)	New	2	40%	Contact Us

For a full list of our discounted overstocked new or used items, please see the following link: Hardware Sale



PHILIPPINES 2017 PAGASA & NPC

In May 2016, I conducted a short trip to the Philippines to visit some major customers including the National Power Corporation (NPC) in Iligan City and the Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) in Metro Manila. It was both a very educational and eventful visit. It was my first trip to the NPC, on the island of Mindanao, and it happened to coincide the day after tensions started between Philippine government security forces and affiliated militants in the region. It was quite the adventure, however with the support of our local distributor PT Cerna, we made it through this eventful day.

The visit to the NPC was a great success where we set out to demonstrate the SMS capability between remote stations and the base station at the NPC office, using Maestro modems and the local Globe Telecommunications. At the Iligan hydropower plant, the NPC already has several CR800-based systems measuring water level, spillway gate positions and data from power monitors. They are looking at expanding their network of systems once assured that the data will be delivered to their office staff reliably. SMS is very affordable in the Philippines and is widely supported, making it the communication method of choice. Hydropower is the second most dominant renewable energy resource in the Philippines and the NPC is one of the largest providers and generators of electricity in the Philippines. In 2015, NPC had a total of 1,735 Megawatts of generating capacity nationally and provided 50% of the power in the Mindanao Island (for a growing population of over 20.2 million people).



Custom monitoring & control software on display at PAGASA.

Kyle Campbell initiated these two days of visits with PAGASA with the aim to obtain an understanding of how other global NMHS agencies outside the United States approached meteorological data collection. Hearing their challenges, successes, goals, and strategies and listening to how the Campbell Scientific hardware and solutions contributed to all of these.

It was certainly reassuring to hear that our reputation for our range of data loggers was second to none and the #1 long term trusted data logger supplier on the market. PAGASA has set out to significantly expand their network of weather stations and hydromet stations in the coming years. With this new knowledge at hand, PT Cerna and CSA will be working very closely with PAGASA to meet their short and long term requirements.

- Corinne Malot (SE Asia Sales Manager)



Leo D Bobis (PT Cerna), Sir Al Alpao (NPC) & Corinne Malot (CSA) at the Iligan NPC site.

The second part of my trip involved visiting PAGASA's Instrumentation group, Hydromet group and some existing PAGASA weather systems, alongside PT Cerna and Kyle Campbell, the Environmental Group Manager at Campbell Scientific, Inc. who made the long trip from rural Utah to the very crowded capital of Manila. PAGASA, which means "hope" in Filipino, is the National Meteorological and Hydrological Services (NMHS) agency of the Philippines. With over 100 million people in the Philippines, in a country prone to natural disasters (typhoons, flash flooding, earthquakes), the role of PAGASA in collecting accurate weather data and informing the local population of any incoming dangers is critical.



A typical PAGASA Automatic Weather Station operating on a CR1000 data logger.



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CR1000X Launch

Rugged and Reliable

We are happy to introduce our latest data logger – the <u>CR1000X</u>, forming a part of the <u>CR1000(X) Series</u> data loggers. For over 45 years, Campbell Scientific data loggers have been known worldwide as Flexible, Rugged, Reliable and Accurate – and the CR1000X is no exception. The data logger has been designed and manufactured for applications where critical data is an absolute necessity. We understand the needs of all our customers who depend on our instruments.

The CR1000X is our flagship datalogger, and provides measurement and control for a wide variety of applications. Its reliability and ruggedness make it an excellent choice for remote environmental applications, including weather stations, Mesonet systems, wind profiling, air-quality monitoring, hydrological systems, water-quality monitoring, and hydrometeorological stations.

The CR1000X grew from the popular CR1000 datalogger, which is at the heart of nearly one hundred thousand measurement and control systems across the globe. The CR1000X has a much faster processor, with more channels and better accuracy and resolution. It has more ways to move your data, via added port options plus more built-in communication and storage features.

When Measurements Matter

This new datalogger operates in extreme environments, with a standard operating range of -40° to +70°C and an available extended operating range of -55° to +85°C. It captures quickly changing data values with faster analog measurement capabilities. It differentiates even slight changes in data values by way of its higher-resolution measurements.

The CR1000X provides an embedded, browser-based user interface for quick and easy data and system interrogation from any IP device. This includes connections directly with USB or Ethernet, and wireless devices such as WiFi, cell, or satellite devices. Memory includes internal 4 MB SRAM for data storage and a microSD drive for extended data storage up to 8 GB. For communication, the CR1000X supports full PakBus, Modbus, DNP3, and other protocols, making it an important part of your network.

The CR1000X is programmed with Campbell Scientific's LoggerNet software, which includes a point-and-click program generator, and a network planner for graphical layout of devices. With a reputation as a worldwide leader in data loggers, data-acquisitions systems and measurements and control products, Campbell Scientific Australia are proud to release the new powerful CR1000X data logger.

To learn more about the newest datalogger to one of our highly trained application engineers, please visit <u>www.campbellsci.</u> <u>com.au/contact</u>.



CASE STUDY **Tropical Cyclone Debbie**

Campbell Scientific instrumentation goes into the storm.

Severe Tropical Cyclone Debbie was a category 4 system that made landfall near Airlie Beach on the north Queensland coast at midday on the 28th of March, 2017. As part of a continuing effort to better characterise wind fields that impact communities during severe wind events, the Cyclone Testing Station (CTS), with collaborators from the Wind Research Laboratory at The University of Queensland, deployed SWIRLnet (Surface Weather Relay and Logging Network) weather stations to the region prior to Debbie's landfall. Six SWIRLnet towers (3.2 m high anemometers placed in the communities likely to be affected) collected data continuously prior to, during and after landfall. Three towers were deployed in the Ayr/Home Hill region, two in Bowen and one in Proserpine. In addition, the CTS deployed two Campbell Scientific CCFC Outdoor Field Cameras to capture images throughout the cyclone event.

Throughout the cyclone event, six SWIRLnet stations, supplied by Campbell Scientific Australia, recorded 10Hz wind speed data using Campbell Scientific CR1000 dataloggers coupled with RM Young 05106 marine grade anemometers. Campbell Scientific CS215 temperature and relative humidity probes and Vaisala PTB110 barometric pressure sensors provided additional meteorological information, with 10 minute summaries of wind speed, temperature, relative humidity and pressure readings uploaded remotely via cellular connection during the cyclone.

A preliminary Severe Wind Hazard Assessment report released by the CTS was compiled within 48 hours of the cyclone event, from onsite and media sourced content by the engineering faculty and students at the Cyclone Testing Station

(James Cook University), the University of Queensland and the University of Florida. The study compliments experimental research at these institutions seeking to characterise extreme wind events and their impact on buildings. The purpose of these rapid assessment reports is to provide a preliminary engineering assessment of severe weather events, within the first 24 to 48 hours.

A subsequent Technical Report (CTS Technical Report No 63) released by the CTS used data collected from the SWIRLnet stations and CCFC cameras to assist with the overall damage assessment study. Data from the SWIRLnet stations revealed the presence of local upwind site effects at some locations where towers were deployed. Detailed analysis of the SWIRLnet data for turbulence, gust intensity and duration, and changes with different upwind terrain that occurred during the cyclone is continuing in order to better understand cyclonic wind characteristics in the built environment. CTS Technical Report No. 63 is available from the publications section of the CTS website.

To see more images and information head to our website.





Case Study Summary

Application:

Location:

Contributors:

Products Used:

CR1000 CS215-L CCFC

Measured Parameters:



TOP: The calm before the storm - the CTS team deploying a SWIRLnet station prior to Tropical Cyclone Debbie making landfall. LEFT: A Campbell Scientific CCFC camera mounted on a SWIRLnet tripod

TECH TIP

Having trouble connecting to your Data Logger?

Try using the Device Configuration Utility (Dev. Config) tool. There are less settings to select in order to establish a connection which makes pinpointing the problem easier!

1. Make sure your logger is powered on, and physically connected to your computer.

2. Open Device Configuration Utility and choose the type of logger.



3. Select the COM Port you are going to connect with.

If you're using a USB to RS232 convertor and are unsure which COM Port to use, try unplugging the USB end. One of the COM Ports should disappear from the list. This is the port to use once the cable has been reconnected.



4. Choose the Baud Rate the logger is set to.

Default Baud Rates for all loggers is 115200 except CR200-Series and older loggers which is 9600.

5. Try clicking connect.

If the connection times out, try using different baud rates first and then try different communication ports. Dev. Config is simpler as there are only two settings to configure and it's a quick trial and error method for connection.







MEET OUR STAFF: SHAUN

Shaun has been our trusted shipping coordinator for over 8 years here at Campbell Scientific Australia. With over 10 years' experience prior to Campbell Scientific, Shaun provides fundamental skills by coordinating stock levels and packing and shipping customers' orders.

In his spare time Shaun is an avid Mountain Bike rider and regularly races Enduro and hopefully Downhill soon. And like a true North Queenslander, Shaun enjoys watching the best NRL team in the world, the NQ Cowboys, play at every opportunity.

Looking to challenge himself, Shaun will be moving to manage our production department in the near future. We look forward to seeing Shaun take up this new position.





Smart Refrigeration Monitoring

Field trials of our Altoview smart refrigeration monitoring solution are now underway in Townsville and Brisbane. Altoview temperature monitoring nodes are deployed in a range of businesses including cafes, restaurants, service stations and hospitals. Trials will continue and be expanded over the next few months, with the aim of refining our hardware and software solution through pragmatic industry feedback, ready for a quarter two 2018 product launch.

Altoview's smart refrigeration monitoring solution is primarily aimed at the food service and healthcare industry, and is designed to help protect the integrity of stored products and reduce product wastage. The end-to-end monitoring solution ensures optimal monitoring of critical control points, with email alarming to inform when an appliance has reached a critical control limit and requires attention.





Smart Flood Warning Solutions

As part of our 12-month Advance Queensland Knowledge Transfer Partnership (KTP) flood warning project with James Cook University, Campbell Scientific Australia has recently rolled out a network of smart, all-in-one rain gauges that communicate with our Altoview IoT platform via wireless LPWAN technology.

This network will be expanded around Townsville over the coming weeks. As part of this same KTP project, Campbell Scientific Australia is also developing a smart, low cost and reliable IoT flood warning sensor to detect water over road, field trials of which are due to start in Q4 of this year, with the assistance of the Department of Transport and Main Roads (Northern Region).

> Want to learn more? Tel: +61 7 4401 7700 Email: info@altoview.com www.altoview.com





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NEW RADIO OPTIONS WHAT YOU NEED TO KNOW

With the release of the CR300 Series data logger, we have a product that far exceeds the capability of its predecessor, the CR200 Series. The CR300 Series has more measurement and control capability coupled, much improved measurement accuracy and powerful communications support and programmability of our higher level solutions. Although the CR200 series loggers with radio communications capability has been retired, we intend to support them for several years to come.

To further enhance logger applications requiring radio support, the CR300 series data loggers with new radio options including the RF411A, RF412 and RF451, offer significant improvements over the older series. To help explain the changes and how it may affect your networks, here is what you need to know.

Radio Product Changes

Maintaining Existing Networks

The RF411A was introduced as a replacement with improvements, for the RF411 and RF431 922MHz Spread Spectrum Radios. These ageing product lines were forced into retirement as a result of the end-of-life of the core radio module within these products.

The firmware package used on the newer radio modules used within the RF411A makes them over-the-air compatible with their predecessors, the RF411 and RF4X31. These were used in CR211X and AVW211 product lines to keep them in production.

Newer Radio Products

The newer radio modules are also used in the RF412, but it's loaded with a different firmware. This different firmware allow us to use newer serial protocols and as such require different software drivers. Consequently the newer RF412 radio has been built into a number of our newer product lines such as the CR300 and CR6 Series Dataloggers.



The Generational Break

Unfortunately the newer firmware and protocols used on the RF412 means that it's not over-the-air compatible with the radio protocols used by the RF411, RF431, and RF411A. Additionally because different OS drivers are required to talk to the different radio versions, there are currently no plans to update the CR211X or AVW211 to be over-the-air compatible with the RF412 series.

Thus a generational break in radios has been established. However due to the shared core radio modules used in both the RF411A and RF412, a RF411A can be upgraded to a RF412 by Campbell Scientific. As part of the process the radio module firmware version is changed and the carrier board OS is updated. Contact us at <u>info@campbellsci.com.au</u> for details.

In short, RF411A and RF412 represents a "bridge" between the two generations as they can be attached serially to most products and because we offer the upgrade path service from old to new.



