

Autooatic Weather Station

Darallogger (Campbell Scientific) CR800 Specifications

- Current Drain: ~0.6 mA (sleep mode), 1 to 16 mA (w/o RS-232 communications), 17 to 28 mA (w/RS-232 communications)
- A/D Bits: 13
- Scan Rate: 100 Hz
- Analog Inputs: 6 single-ended (3 differential), individually configured
- Analog Voltage Range: ± 5000 mV
- Analog Voltage Accuracy: $\pm(0.06\%$ of reading + offset), 0° to 40°C
- Measurement Resolution: $0.33 \mu\text{V}$
- Switched Excitations: 2 voltage
- Pulse Counters: 2
- Control/Digital Ports: 4
- Memory: 2 MB Flash (operating system), 4 MB (CPU usage, program storage, and data storage)
- Communication Ports: 1 RS-232, 1 CS I/O
- Protocols Supported: PakBus, Modbus, DNP3, FTP, HTTP, XML, POP3, SMTP, Telnet, NTCIP, NTP, SDI-12, SDM



CS215 Temperature and Relative Humidity Probe

Sensing Element: Sensirion SHT75

Temperature Measurement:

Operating Range: -40°C to $+70^\circ\text{C}$

Accuracy: $\pm 0.3^\circ\text{C}$ at 25°C , $\pm 0.4^\circ\text{C}$ over $+5^\circ\text{C}$ to $+40^\circ\text{C}$, $\pm 0.9^\circ\text{C}$ over -40°C to $+70^\circ\text{C}$

Response Time With

Filter:

120 s (63% response time in air moving at 1 m/s)

Default units: Degrees celsius

Relative Humidity:

Operating Range: 0 to 100% RH (-20 to $+60^\circ\text{C}$; see Appendix A)

Accuracy (at 25°C): $\pm 2\%$ over 10-90% , $\pm 4\%$ over 0-100%

Short Term Hysteresis: $< 1\%$ RH

Temperature

Dependence:

Compensated to better than $\pm 2\%$ over -20 to 60°C

Typical Long-Term

Stability:

Better than $\pm 1.0\%$ per year

Response Time with

Filter:

$< 15\text{s}$ (63% response time in air moving at 1 m/s at humidities $< 85\%$)

Environmental
 Performance:
 See Appendix A
 Calibration Traceability: See Appendix B
 Supply Voltage: 6-16V DC
 Current Consumption: Typically 120µA quiescent, 1.7mA during measurement (takes 0.7 sec)
 Diameter: 12mm at sensor tip, maximum 18mm at cable end
 Length: 180mm, including cable strain relief
 Housing Material: Anodised aluminium
 Filter Material: Sintered high density polyethylene, average pore size 10-13 µm
 Standard Cable Length: 3 metres
 EMC Compliance: Tested and conforms to IEC61326



WindSonic Ultrasonic Wind Sensor

Output	Metres/second (m/s), Knots, Miles per hour (mph), Kilometres per hour (kph), Feet per minute (fpm)		Environmental	
Units of measure			Moisture protection	IP65
Output frequency	0.25, 0.5, 1, 2, or 4 outputs per second		Temperature	Operating -35°C to +70°C Storage -40°C to +80°C
Parameters	Digital	Analogue	Humidity	Operating <5% to 100%
	Polar - Speed and Direction UV - 2 axis, signed Speed NMEA Speed and Direction Tunnel - U speed & U Polarity	Polar - Speed and Direction UV - U Speed and U Polarity NMEA - Speed and Direction Tunnel - U Speed & U Polarity	EMC	EN 61326
Standards	Manufactured within ISO9001: 2000 quality system			
Wind Speed			Power requirement	5 – 30 V DC Option 1 and 2 units. 7 – 30 V DC. Option 3 unit. Current drain depends on variant i.e. RS232 approximately 15mA rising to 44mA for Analogue variant. Lowest power consumption is obtained with the following configuration:- M2, P20, B3, S9 (approximately 9mA at 12v).
Range	0 – 60m/s,	0 – 5m/s, 0 – 10m/s, 0 – 20m/s, 0 – 30m/s, 0-40m/s, 0 – 50m/s, 0 – 60m/s, 0 – 120m/s	Mechanical	
Accuracy	± 2% (at 12m/s)	± 2% (at 12m/s)	Size / weight	142mm diameter x 160mm 0.5kg
Resolution	0.01 m/s	10 bits	Mounting	Pipe mounting 1.75 inches (44.45mm) diameter
Wind Direction			Material	External - Acrylate Styrene Acrylonitrile, Polycarbonate blend.
Range	0 - 359°	0 - 359° Or 0 - 539° (Wraparound mode)		
Accuracy	± 3° (at 12m/s)	±3° (at 12m/s)		
Resolution	1°	1°		
Analogue output formats	± 1% of full scale N.B. Analogue output impedance = 1KΩ (V out) Load resistance between the Analogue outputs (Pins 8 & 9) and Signal Ground (Pin 1) must be <= 300 ohms, including cable resistance.			
Digital output formats				
Gill	Continuous or Polled (output on request by host system) Polar (Speed and Direction) or UV (2 axis, signed Speed)			
Marine – NMEA	NMEA 0183 version 3			
Communication formats				
WindSonic Option 1	RS232			
WindSonic Option 2	RS232, RS422, RS485			
WindSonic Option 3	RS232, RS422, RS485, and Analogue			
Baud Rate	2400, 4800, 9600, 19200, 38400 Baud			
Anemometer status	Status OK and Error codes included in output message			

Barometric Pressure Sensor

Specifications

Performance for “Standard” Range Option

Measurement Range: 600 mb to 1100 mb (hPa)
Operating Temperature Range: -40°C to +60°C (-40°F to +140°F)
Storage Temperature Range: -60°C to +120°C (-76°F to +248°F)
Proof Pressure: 1500 mb
Burst Pressure: 2000 mb
Humidity Range: non-condensing (up to 95% RH)
Media Compatibility: non-corrosive, non-condensing air or gas
Resolution: 0.01 mb
Total Accuracy₁: ±0.5 mb @ 20°C
±1.0 mb @ 0°C to +40°C
±1.5 mb @ -20°C to +50°C
±2.0 mb @ -40°C to +60°C
Linearity: ±0.4 mb
Hysteresis: ±0.05 mb
Repeatability: ±0.03 mb
Long-term Stability: ±0.1 mb per year

Performance for “500 to 1100 mb” Range Option

Measurement Range: 500 to 1100 mb
Total Accuracy₂: ±0.6 mb @ 20°C
±1.2 mb @ 0°C to +40°C
±2.0 mb @ -20°C to +50°C
±2.5 mb @ -40°C to +60°C
Linearity: ±0.5 mb
Hysteresis: ±0.06 mb
Repeatability: ±0.04 mb

Performance for “800 to 1100 mb” Range Option

Measurement Range: 800 to 1100 mb
Total Accuracy₃: ±0.3 mb @ 20°C
±0.6 mb @ 0°C to +40°C
±1.0 mb @ -20°C to +50°C
±1.5 mb @ -40°C to +60°C
Linearity: ±0.25 mb
Hysteresis: ±0.03 mb
Repeatability: ±0.02 mb

Electrical

Supply Voltage: 9.5 V to 28 Vdc
Current Consumption: 3 mA nominal (operating mode)
1 µA quiescent (sleep mode)
Signal Output 0 to 2.5 Vdc
Warm-up Time: <1 second from shutdown mode
Response Time: <100 msec
Benefits: Calibration NIST traceable
Meets CE conformance standards

Physical

Dimensions (Main Box): 3.6” x 2.4” x 1.0” (9.1 x 6.1 x 2.5 cm)
Weight: 4.8 oz (135 g)
Mounting Hole Centers: 3 inches (7.62 cm)
Pressure Connector: 1/8” ID barbed fitting



Pyranometer Sensor – SKS 1110 (SKYE)

SKS 1110 SPECIFICATIONS									
Dimensions	Weight	Construction	Cable	Sensor	Detector	Filters	Sensitivity -current (1)	Sensitivity -voltage	Working range (2)
	130g. (with 3m cable)	Material Dupont 'Delrin' fully sealed to IP68	2 core screened DEF std 61-12/4.5	Cosine corrected head	Silicon photocell	N/A	5 μ A/100 W m ⁻²	1mV/ 100 W m ⁻²	0-5000 W m ⁻²
Linearity error	Absolute calibration error (3)	Cosine error (4)	Azimuth error (5)	Temperature coefficient	Longterm stability (6)	Response time (7) - voltage output	Internal resistance - voltage output	Temperature range	Humidity range
<0.2%	typ. <3% 5% max.	3%	<1%	$\pm 0.2\%/^{\circ}\text{C}$	$\pm 2\%$	10ns	c.200 ohms	-30 to + 75 $^{\circ}\text{C}$	0-100% RH



Tipping Bucket Rain Gauge



Specifications

Size:

18 cm dia. x 30 cm high, (39 cm high with mounting base)

Catchment Area:

200 cm²

Resolution:

0.1 mm per tip

Accuracy:

2% up to 25 mm/hr

3% up to 50 mm/hr

Output:

Magnetic reed switch (N.O.), rating 24VAC/DC 500mA

Operating Temperature:

-20°C to +50°C (heated)

Power:

18 Watts for heater only

Mounting:

Clamp for 1" (1.34" dia.) iron pipe
or 3 bolts on 160mm dia. circle

GSM COMMUNICATION MODULE – Rpipe

<u>Description</u>	<u>Specification</u>
<i>HW interfaces</i>	
RS-232	One DB9 male (standard EIA)
Display	2 Leds (red, yellow)
<i>Physical Characteristic</i>	
Dimension	104 X 67 X 33 cm
Weight	200 gram
Assembly	2 screw handles
<i>Power supply Specification</i>	
Power supply	9-24VDC 1A
Active current	100mA
Stand by current	30mA
Protection	According to MIL-STD-704E
<i>Environment</i>	
Operating Temperature	-20°C to 70°C
Storage Temperature	-40°C to 85°C
Operating Humidity	5% to 95%
<i>Transferring Data</i>	
Socket definition	Compatible for DNS definition
Packet Time-out	Minimum 100ms
TCP Time-out	Minimum 1 minute before disconnecting
Reconnect interval	Minimum 30 sec



Solar Charge Controller Specifications

Charge controller type	8 A	12 A	20 A	30 A
Max. module short-circuit current at 50 °C	8 A	12 A	20 A	30 A
Max. load current at 50 °C	8 A	12 A	20 A	30 A
Terminal clamps (fine-wire/single wire)	16/25 mm ² = 4/6 AWB			
Weight	420 g			
Measurements	188 x 106 x 49			
Protection class	IP 22			
System voltage	12 V / 24 V			
Permitted ambient temperature	-25 °C...+50 °C			
Algorithm data:	AtonIC			
	SOC oriented:		Voltage oriented:	
Deep discharge warning	SOC < 40 %		11,7 V	
Load shedding	SOC < 30 %		11,1 V	
Shift-in	SOC > 50 %		12,6 V	
Equalization loading (14.7 V)	SOC < 40 %		11,7 V	
Cyclical loading (14.4 V)	SOC < 70 %		12,4 V	
End-of-charge voltage	13,7 V		13,7 V	
Temperature compensation	-4 mV/K/cell		-4 mV/K/cell	
The voltage must be doubled when used in 24 V systems!				



Photovoltaic module – ET-M53626

SPECIFICATIONS

Model type	ET-M53620
Peak power(Pmax)	20W
Weight	2.7kg (6.0lbs)
Dimensions	662×299×34mm (26.1×11.8×1.3inch)
Maximum power voltage (Vmp)	17.82V
Maximum power current (Imp)	1.14A
Open circuit voltage (Voc)	21.96V
Short circuit current (Isc)	1.27A
Maximum system voltage	DC 1000V
Temp. Coeff. of Isc (TK Isc)	0.06 %/°C
Temp. Coeff. of Voc (TK Voc)	-0.397 %/°C
Temp. Coeff. of Pmax (TK Pmax)	-0.47 %/°C
Normal Operating Cell Temperature	44.4±2°C

