



Casella CEL offers a diverse range of highly sophisticated sensors to monitor a variety of environmental parameters from wind and temperature to radiation and cloud base. Other environmental parameters such as water characteristics and gas detectors may also be fitted. Many of these sensors have been designed and manufactured in-house based upon many years of experience in the transducer market.

Sensors can be supplied as part of an environmental monitoring system, such as the Automatic Weather Station or separately, as part of a customer's monitoring project. All transducers are supplied with individual calibration details and with a limited amount

of interconnecting cable. Longer cable lengths are available on request.

Due to the large number of sensors available, only a small selection of those most commonly used is shown here. Please contact the Casella CEL sales office for a full list and specifications.

#### WINDSPEED ANEMOMETER

##### Principles of Operation

Rotational speed is monitored using a non-contact optical chopper design. An infra-red light source and an optical sensor provides a 0-5 volt pulse output. Frequency of this output is directly proportional to the wind speed.

#### GMR WINDVANE

##### Principles of Operation

The new Casella CEL Wind Direction sensor incorporates the very latest technology using the principle of Giant Magneto Resistive effect (GMR).

This Magnetic sensing method offers accurate, and frictionless sensing together with high quality anodised aluminium construction. This guarantees functional reliability even under the harshest of environmental conditions and offers considerable cost savings to the end user.

Heater option also available for extension of operating environments.

Specification	WINDSPEED ANEMOMETER	GMR WINDVANE
Transducer type	Optical Encoder	GMR solid state system with microcontroller
Max windspeed	75m/s	75m/s
Starting velocity	typically 0.3m/s	
Distance constant	3.5m/s	typically 2.5 m
Output calibration	12.75 Hz/m/s	
Output signal	0-5v pulses	
Non linearity	<0.6%	
Resolution		1 degree
Aligning Threshold		0.8m/s for dgr offset
Damping ratio		0.25
Distance constant		typically 2.5 m
Undamped natural wavelength		2.2 m
Electrical angle		0-359 degrees – no deadband at north
Accuracy	± 0.3m/s below 3m/sec, ±1% over 3m/s	< ± 2 degrees
Supply voltage	7 to 28VDC	7 to 28VDC
Power consumption	3mA	3mA
Stabilisation time	< 1 sec from power up	< 1 sec from power up
Operating temp range	- 20' to 70°C	- 20' to 70°C
Heater option	24V DC / AC 47 ohms 12W	24V DC / AC 47 ohms 12W
<b>Ordering information</b>		
178031C	Standard OEM Anemometer (4.5m wire only)	
178032C	Standard OEM Anemometer with heater (4.5m wire only)	
178033C	Anemometer with conduit (2.55m conduit, 3.25m wire)	
178034C	Anemometer with conduit and heater (2.55m conduit, 3.25m wire)	
178035C	Standard OEM Direction (4.5m wire only)	
178036C	Standard OEM Direction with heater (4.5m wire only)	
178037C	Direction sensor with conduit (2.55m conduit, 3.25m wire)	
178038C	Direction sensor with conduit and heater (2.55m conduit, 3.25m wire)	
178050B	Signal Conditioning Interface	

#### Contact Details

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Precision barometer



Solarimeter



Soil temperature

Specification	PRECISION BAROMETER
Transducer	Silicon bridge
Range	900 to 1100mb
Accuracy (total error band)	±0.3mb over 35°C range
Hysteresis	±0.1mb
Linearity	±0.1mb
Operating temperature range	-20 to +50°C
Supply voltage	9 - 12V nominal (15V max.)
Power consumption	Approx. 60mA @ 12V
Output calibration	Nominally a 1.5V span (900 to 1050mb) within a -2 to +2V range >10mV per mb 100R output impedance. Units individually calibrated and provided with offset and multiplier values Supplied with 0.8m of cable

Specification	SOLAR RADIATION
Spectral range	0.4 to 1.1µm
Range	0 - 2000W/m <sup>2</sup>
Response time	<1 second
Cosine response	Typically <10% from normal to 80° of normal
Operating temperature range	-40 to +80°C
Supply voltage	Passive device - no supply required
Output calibration	Typically 55µV/W/m <sup>2</sup>
Supplied with individual calibration details	
Supplied with 5m of cable. Protective steel conduit optional	

Specification	SOIL TEMPERATURE
Sensor type	Semi conductor current generator
Measuring range	-40 to +60°C
Calibrated accuracy	±0.5°C (over -20 to +50°C)
Supply voltage	7 to 15V
Power consumption	Typically <1mA
Output calibration	Nominally 1.5V at 0°C and 1.8V at 50°C. Units are individually calibrated and provided with offset and multiplier values.

Supplied with 3m of cable and protective steel conduit

Other sensors include; grass minimum temperature, surface wetness, net global radiation, diffuse radiation, sunshine detector, air quality (for ppm measuring of SO<sub>2</sub>, NO<sub>2</sub>, CO<sub>2</sub> and CO), quantum radiation (PAR), soil moisture, UVA and UVB radiation and sea water temperature.

Ordering information

As the Casella CEL AWS is built to exact customer specifications, please contact the Sales Department for more information and a full quotation.

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Temperature and relative humidity



Rainfall



Standard barometer  
A small silicon transducer sensor is now available as a pcb addition to the sensus datalogger

Specification	TEMPERATURE AND RELATIVE HUMIDITY
<b>TEMPERATURE:</b>	
Sensor type	Platinum resistance Pt 1000 RTD
Measuring range	-10 to +60°C
Accuracy	±0.6°C (over -10 to +30°C) ±0.8°C (over full range)
<b>HUMIDITY:</b>	
Sensor type	Capacitive
Operating range	0 - 100%RH
Accuracy	±3%RH (over measuring range of 10 - 90%RH)
<b>GENERAL:</b>	
Supply voltage	7 to 28V
Power consumption	Typically 2mA @ 12V
Operating temperature range	-10 to +60°C
Output calibration	Temperature: 0 - 1V for -40 to +60°C Humidity: 0 - 1V for 0 - 100%RH 4 - 20mA output available on request, 2 wire loop, 12V lift off 28V maximum
Supplied with 2m of cable. Protective steel conduit optional	

33

Specification	RAINFALL
Transducer	Tipping Bucket
Aperture	400cm <sup>2</sup>
Resolution	Three models are available: 0.1mm per tip 0.2mm per tip 0.5mm per tip
Accuracy	±1% (@ 1 litre per hour)
Capacity	Unlimited
Maximum tip rate	Approx. 2 tips per second
Operating temperature range	1 to 60°C
Supply voltage	7 - 20V DC
Power consumption	Typically 2 - 3mA
Output calibration	Simple reed switch contact closure, Nil current consumption
Supplied with 9m of cable. Protective steel conduit optional	

Specification	STANDARD BAROMETER PRESSURE
Transducer	Temperature compensated silicon bridge
Range	800 to 1100mb
Operating temperature range	-10 to +60°C
Supply voltage	9 - 12V nominal (15V max.)
Power consumption	Approx. 10mA @ 12V
Output calibration	Nominally 0 to 1.6V range (800 to 1100mb). Units are individually calibrated and provided with offset and multiplier values.
Supplied with 0.8m of cable	

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