

# R3-100

## Ultrasonic Research Anemometer

R3-100



### ALL WEATHER SENSING TECHNOLOGY

- WIND TURBULENCE MEASUREMENT
- COMPONENT WIND VELOCITY UVW
- WIND PROFILING
- MAINTENANCE FREE
- ROBUST CONSTRUCTION
- 100 Hz DATA RATE
- CUSTOM CALIBRATED
- ANALOGUE OUTPUTS
- SPEED OF SOUND AND SONIC TEMPERATURE OUTPUTS
- OPTIONAL ANALOGUE AND PRT INPUTS

## R3-100 ULTRASONIC WIND SENSOR

The R3-100 combines the latest electronic components with Gill Instrument Ltd's considerable experience in producing solid state ultrasonic anemometers for micrometeorological research.

It takes as its pedigree the world leading Solent Research R2 which have been proven time and time again to be consistent and reliable instruments for the study of wind and its turbulence parameters.

The R3-100 has a faster response time, up to 100Hz, and operating system, RCOM, designed to be robust and simpler to use.

The resolution of the analogue outputs has been greatly improved to 14bits whilst the high accuracy and measurement resolution of the solent research has been maintained.

Optional extras such as the inclinometer are available as well as a sensor input unit to allow up to 6 analogue sensors plus a PRT100 input.

\*Supplied Accessories - RCOM operating system with a graphical interface (data presentation and storage; flux calculations); power supply (PCIA); Transit Case.

Optional Accessories - Analogue and PRT Inputs via Signal Interface Unit (SIU); Inclinometer.

### ULTRASONIC MEASUREMENT

Ultrasonic sampling rate 100Hz  
Parameters UVW, Speed of Sound

### WIND SPEED

Range and Resolution 0 - 45m/s, 0.01m/s  
Accuracy < ±1%RMS

### DIRECTION

Range and Resolution 0 - 360°, 1°  
Accuracy\* < ±1°

### SPEED OF SOUND

Range and Resolution 300 - 370m/s, 0.01/s  
Accuracy < ±0.5% @ 20°C

### DIGITAL OUTPUT

Communication RS422 full duplex, 8 data bits, 1 stop bit, no parity  
Baud Rates 2400 - 115200  
Output Rate selectable 0.4 - 100Hz

### ANALOGUE INPUTS (VIA OPTIONAL SIU)

Quantity 6 differential inputs  
Sampling Rate 100Hz  
Input range / resolution ±5V, 14 bits  
Accuracy < 0.1% of FSR

### ANALOGUE OUTPUTS (VIA SUPPLIED PCIA)

Quantity 7(U, V, W, SoS, PRT + 2 analogue inputs)  
Sampling ±10, ±20, ±30, ±60m/s  
Update rate 0.4 to 100Hz  
Output range / res ±2.5V, 14 bits  
Accuracy < 0.25% of FSR

### PRT INPUT (REQUIRES OPTIONAL SIU, PRT100 NOT INCLUDED)

Input resolution 0.01°C  
Input accuracy < 0.01°C (from 0°C to 50°C),  
< 0.15°C (from -40°C to +60°C)

### INCLINOMETER (OPTIONAL)

Range / Resolution ±20°, 0.01°  
Null Repeatability ±0.15°  
Accuracy ±0.3° (from -10° to 10° of inclination)

### POWER REQUIREMENT

Anemometer 9-30VDC < 4w (eg. < 150mA @ 24VDC or 300mA @ 12VDC)

### ENVIRONMENTAL

Operating Temp -40°C to +60°C  
Moisture Ingress IP65  
Precipitation 300mm / hr  
EMC BS EN 50081-1: 1992 (Emissions)  
BS EN 50082-1: 1992 (Immunity)

### GENERAL

Suitable for exposure to a marine environment.

### NOTE

\*Accuracy specification applies for wind speeds < 32m/s and for wind incidence < ±150° in the horizontal plane and up to ±50° from the horizontal.



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The R3-100 is part of the Solent range of ultrasonic anemometers. The range is in continuous development and therefore specifications may be subject to change without prior notice.