

# R3A-100

## Ultrasonic Research Anemometer with Asymmetric Head

R3A-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*

## R3A-100 - ULTRASONIC RESEARCH ANEMOMETER

The R3A-100 combines the latest electronic components with Gill Instrument Ltd's considerable experience in producing solid state ultrasonic anemometers for micrometeorological research.

The asymmetric head allows for more accurate measurement of horizontal flows with minimum interruption in the prevailing wind of flow direction

It take 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 R3A-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 upto 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 output rate 100 Hz  
Parameters UVW, Speed of Sound

### WIND SPEED

Range & resolution 0 - 45 m/s, 0.01 m/s  
Accuracy < ± 1% RMS

### DIRECTION

Range & resolution 0 - 359, 1°  
Accuracy \* < ± 1°

### SPEED OF SOUND

Range & resolution 300 - 370 m/s, 0.01 m/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 to 100Hz

### ANALOGUE INPUTS (REQUIRES OPTIONAL SIU)

Quantity 6 differential inputs  
Sampling rate 100Hz  
Range and resolution ± 5V, 14 bits  
Accuracy <0.1% of FSR

### ANALOGUE OUTPUTS (VIA SUPPLIED PCIA UNIT)

Quantity 7 (U, V, W, SoS, PRT plus 2 analogue inputs)  
Scale ± 10, ± 20, ± 30, ± 60 m/s  
Update rate 0.4 to 100Hz  
Range and resolution ± 2.5V, 14 bits  
Accuracy <0.1% of FSR

### PRT INPUT (REQUIRES OPTIONAL SIU, PRT 100 NOT SUPPLIED)

Input resolution 0.01°C  
Input accuracy <0.01°C (0 to 50°C)  
<0.15°C (-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 - 30V dc  
(<150mA @ 24VDC or 300mA @ 12VDC)

### ENVIRONMENTAL

Operating temperature -40°C to +60°C  
Ingress protection IP65  
Precipitation Operation maintained to 300mm/hr  
EMC BS EN 50081-1: 1992 (Emissions)  
BS EN 50082-1: 1997 (Immunity)

### GENERAL

Suitable for exposure to a marine environment

### MATERIALS

External construction Aluminium / Carbon Fibre

### DIMENSIONS

Size 750mm x 240mm  
Weight 1 kg

### NOTE

\* Accuracy specification applies for wind speeds <32 m/s and for wind incidence up to ± 20° from the horizontal



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The R3A-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.