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WAC155 Serial Wind Transmitter

WAC155 converts the wind speed and direction data for use in the RS-485 bus.

Features/Benefits

- Measures the wind data at configurable interval and computes wind average values over adjustable period
- Communicates over 2-wire RS-485 line with NMEA 0183 protocol (MWV, MWV query)
- Input voltage range 9 - 31.5 V enables use in both 12 V and 24 V systems
- Average power need 0.2 W, including the sensors
- Superior protection against lightning surges allows for installation to high towers
- Marine use can be enabled, with over 500 VAC isolation from system to frame
- Sensor heating control with adjustable temperature limits
- Auto-detection of sensor failure and system error

Vaisala Serial Wind Transmitter WAC155 converts the digital data supplied by the Vaisala WA15 and WA25 series wind sensors into standard data messages for use in the RS-485 bus. The WAC155 transmitter consists of a component board in a junction box and a crossarm for mounting the wind sensors.

WAC155 communicates with the host system over 2-wire RS-485 line. The standard sensor connections are for WA15 or WA25 series anemometers and wind vanes.

Long Distance Operation

Only a 4-wire cable is required for the line between WAC155 and the host. One wire pair provides the operating power. The other pair is for the serial line. For long distances, the RS-485 line terminator can be activated with the onboard jumper plug.

WAC155 accepts 9 to 31.5 VDC as input power, from which it also generates operating power for the sensors. The total average current consumed in Power-save mode is less than 10 mA. This, along with the good line transient protection, allows for remote supply of the operating power.

A 20 to 30 V supply is recommended for remote power. This is to minimize the current and the voltage drop in the cable. The allowable transmitter distance depends on the wire gauge of the cable, and is typically several hundreds of meters. It should be noted that the peak operating current can reach to 30 mA, even in Power-save mode.

Flexible Communications

Wind data is provided in standard NMEA messages. In addition, a service connection is available for configuration and status information.

In the same RS-485 bus, there may be one or more transmitters. When WAC155 is alone in the bus, it can work in Auto-transmit mode, sending data in pre-configured intervals. When more devices are involved, the host must control the data transit by polling one device at a time with an NMEA query. Each transmitter has a configurable ID for device addressing.

Self-Diagnostics

When the service connection is open or the system has been started recently, the onboard indicator LED flashes red when any error condition is active.

During an error condition also NMEA messages carry an Invalid Data flag. The error flag can result from an incorrect system voltage level, absence or failure of a wind sensor, or system memory error. The cause of error is shown in a special Error message.

Optional Heating Power

WAC155 also provides the sensors for throughput and control of heating power. The heating power connection, if required, calls for an extra pair of wires. Since a sensor typically requires 0.5 A current for heating, the power is most conveniently supplied from a local power source. By default WAC155 switches heating on in temperatures below +4 °C (user adjustable).

Technical Data

Performance

Measurement range:	
Speed	0 … 75 m/s
Direction	0 … 360°
Measurement frequency:	
Speed	4 Hz
Direction	32 Hz
Averaging interval	0.25 … 5 s (default 3 s)
Updating interval	0.25 s
Resolution:	
Speed	0.1 m/s
Direction	2.0° (by averaging the 8 samples in each 0.25 s period)

Power Inputs and Outputs

Input operating voltage	9 … 31.5 VDC
Input operating current at 24V:	
Power-save enabled	7 mA (incl. both sensors)
Power-save disabled	37 mA (incl. both sensors)
Heating control, WA15	On at 3 °C / Off at 5 °C (adjustable)
Heating voltage, WA15:	
Parallel connection	16 ... 24 VDC or VACrms
Series connection	32 .... 48 VDC or 32 .... 43 VACrms
Heating current, WA15:	
Parallel connection	1.0 A at 20 V (incl. both sensors)
Series connection	0.5 A at 40 V (incl. both sensors)
Heating for WA25	Passed by w. expansion connector

Signal Inputs and Outputs

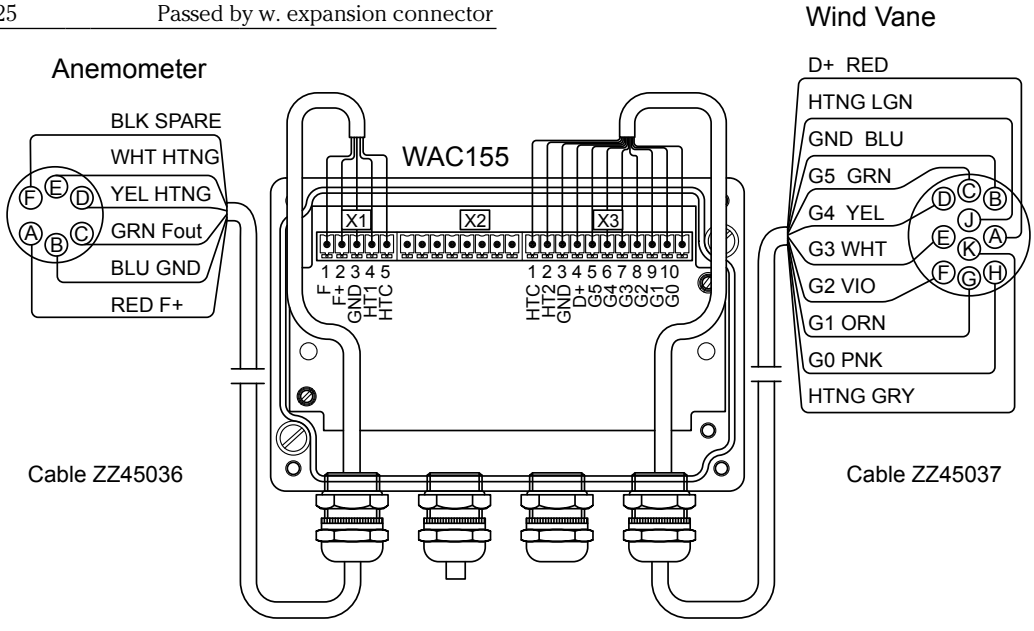
Signal input:	
From wind vane	6-bit GRAY code (0.5/10.5 V)
From anemometer	0 … 750 Hz sq. wave (0.5/10.5 V)
Data transmission i/o:	
Type	2-wire, half-duplex RS-485
Rate & frame, default	9600, 8N1
Rate & frame, adj. range	300 … 19200, 7/8, O/E/N, 1/2
Message protocol	NMEA 0183 / MWV, MWV query

Operating Conditions

Operating temperature	-55 … +60 °C
Storage temperature	-60 … +70 °C
Humidity	0 … 100 %RH

Dimensions and Materials

Dimensions:	
Junction box (w × h × d)	127 × 110 × 58 mm
Crossarm + Junction box (w x h x d)	887 x 165 x 157 mm
Weight	1.5 kg
Ingress protection	IP65
Mounting	To Ø 60 mm pole mast
Materials	Aluminum



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