

RN17 Controller

Replacement for V-17 wind turbines

The new replacement controller for the Vestas V15, V17 and V17e performs all of the functions of the former controller including brake control, hydraulic system control, yaw system control, cable twist monitoring and control, generator contactor control, hub over speed monitoring, generator over speed monitoring, high wind speed control and AC line monitoring (under/over voltage, loss of phase and ground fault protection). In addition the RN17 has multiple features that the older controller does not:

- 1) It has a complete safety system -- meets IEC 61400, including an external Emergency Stop Button and two independent over speed detection devices -- missing on the older turbine controller
- 2) It has a Power Factor Capacitor Contactor control output not included on the original controller
- 3) It has user configurable high wind speed set points of 35, 45 and 55 mph
- 4) It has user configurable hub over speed set points of 56, 57 or 58 RPM to help match different turbine configurations include blade size and generator types.
- 5) The controller board contains exceptionally high transient over voltage protection on all of the Inputs and Outputs
- 6) All manual operator controls and indicators are contained on the single circuit board. No external HMI, OIT or lap top computer are required for operation.
- 7) A generator "bump" button is provided with an integrated time out function
- 8) A SCADA interface is provided.
- 9) Uses the original Vestas Wind speed meter or if desired, can be configured for a digital meter, sold separately.
- 10) Has outputs for driving conventional Line Hours and Available Hours meters.

OSG Relay for Wind Turbines

The ReNu Control Over Speed Guard or OSG, replaces the Vestas VOG and Zond ZOG relays with a pin-for-pin compatible module. It is designed to work with both V15 and V17 turbines providing a user selectable set point of 56, 57 or 58 RPM operating from the hub mounted 10 pulse-per-revolution hub tachometer plate. Additionally, a 40 RPM set point is provided for test purposes that enables a technician to test the module without putting the turbine into an over speed or on line.

These modules use modern microcontroller technology, improved transient over-voltage protection and improved connecting pins for longer life and higher reliability operations over the original relays. They provide the protection against over speed events needed on these older turbines while operating in the industrial control environment of the wind turbine itself including operation over a wide temperature range (-25 to +65C).

GCU Relay for Wind Turbines

The ReNu Control Generator Control Unit or GCU is designed to replace the older SF-160 and its companion relay the SG-195 used on many older wind turbine such as the Vestas V15 and V17. It is a microprocessor-based, precision tachometer designed to connect the generator contactor to the grid at the synchronous speed of the generator. It is pin-for-pin-compatible with the older Zond GCU modules, and like that old GCU, will not allow the contactor to chatter in variable winds or require excess motoring.

Additionally this relay provides an over speed output at 1245 RPM at the generator or 52.1 RPM at the hub. This is an independent over speed measurement apart

from the OSG and is based on the GCU tachometer input sensor located on the generator high speed shaft. Two independent relays are provided within the GCU, one for control of the generator contactor and the other for over speed response to the brake solenoid on the turbine itself.

By eliminating two older relays, now obsolete, and providing for an additional over speed measurement this relay enhances turbine reliability greatly. Like the OSG, it uses modern technology, improved transient over voltage protection and improved connection pins leading to a long life in the industrial environment. It is design for a wide temperature range (-25 to +65 C) allowing for fault free operation in these older turbines.