WT-RUG5 RTU CONTROLLER and/or BASE STATION
Fully Integrated RTU/Controller / Base Station
Monitor, Display, Communicate & Control

MADE IN USA
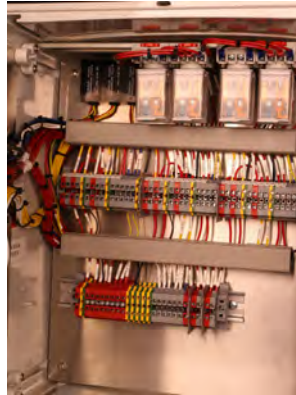
FEATURES

▶ Controller w/LCD display & keyboard

▶ Speech autodialer

▶ RF Assembly

▶ AC-DC Power supply and 12 VDC battery

▶ External twist-on waterproof connectors installed on NEMA 4X enclosure

▶ Easy to use canned RTU software for monitoring, control and base station applications

▶ Serial Modbus communication

▶ Low cost SCADA control software

▶ On-board modem - two com ports

▶ Supports wide veriety of radios, works as a Repeater Station in the background

▶ Anyone can operate and install - designed for easy use by non-technical staff.
   twist on the sensors, turn RTU on, install setpoints, i.e. tank levels to start/stop a pump and go.

▶ Attach up to 32 analog and digital sensors and control up to (12) 10A relays -
   monitor anything: control systems, equipment, and processes.

▶ Strong performance record

▶ Proven cost competitive

▶ 3 Year warranty: parts and assembly

▶ Custom RTU and SCADA software available

▶ Customizable I/O package VWC backlit 20 line x 40 character LCD

▶ WER5 fully integrates with larger RTUs in Watch Technologies' product line

▶ Includes "overactive" support: any job, anywhere, all the time

▶ Applications in industry, agriculture, military, security, & regulatory applications

Watch Technologies

**WT-RUG5
RTU CONTROLLER
Details Specifications
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- **LOGIC FAMILY:** All low power CMOS
- **MICROPROCESSOR:** 32-bit 68331, 16 Mhz, 16 bit data bus, 24-bit address bus.
- **MEMORY:** RAM-256 Kbytes battery backed low power static RAM
- **FLASH MEMORY:** 512 Kbytes
- **MEMORY CARTRIDGE:** 4Mbyte to 10 Mbyte removable Sandisk flash cartridge
- **BATTERY BACKUP:** Lythium coin cell backs up RAM & real-time clock/calendar min 2 years.
- **I/O CONNECTIONS:** All I/O uses removable rising cage screw headers in banks of up to 16 ea, 14 ga wire.
- **I/O EXPANSION:** Rear - 8DI,4DO,4AI,1AO,modem, loop charger front - any 2 RUG9 boards.
- **DISPLAY:** 2 lines X 16 char backlit LCD, sunlight readable, backlight switchable by software**.**
- **OPERATIONAL DISPLAY:** 20 line X 40 char (320x240 pixel) backlit graphic LCD, 6 in diagonal. Detachable from card cage. Text-all standard ASCII characters plus special graphic characters. Trends: up to10 traces per page; pages incorporated into unser defined text pages, as many as will fit in flash. User defined scale grid bargraphs; up to 20 bars in each display page to show analog values.
- **KEYBOARD:** 16 key sealed tactile membrane with interrupt scanning
- **REAL-TIME CLOCK/CALENDAR:** Battery backed clock/calendar 0.005% crystal accuracy.
- **SPEECH SYNTHESIZER:** 8Khz sampling record & playback. Up to 256 messages in 12 minutes total storage.
- **OPERATION SECURITY:** Watchdog Timer-Hardware timer resets unit .5 seconds after interrupt fail. Cannot be disabled**.**
- **AUTOBOOTING:** Auto startup on power application
- **I/O SURGE PROTECTION:** All I/O is optically isolated, meets IEEE surge protection requirements.
- **ANALOG INPUTS-12bit:** 8 channel per board, 12 bit res, successive approx., optically isolated 4-20 mA or 0-5V. Factory calibrated.
- **ANALOG INPUTS-16bit:** 4 channel per board, 16 bit res, optically isolated 4-20 ma. Factory calibrated.
- **ANALOG OUTPUTS:** 1 channel per board, 12 bit resolution, optically isolated.
- **DIGITAL INPUTS:** Status-8 chan/board, optically isolated, 120 VAC or 24 VCD compatible.
- **PULSE COUNTING:** All DI channels in 1st card cage count 128 pps
- **PULSE DURATION DETECTING:** All can convert pulses to analog with 4ms resolution.
- **DIGITAL OUTPUTS:** 4/8 Channels per board 10/3/ amp relays, pulse duration outputs-base relays can generate PW/M or one shot signals with 4ms resolution.
- **SERIAL PORTS:** Up to 8 RS232/modem ports or 8 dual RS232/printer ports in base card cage.
- **MODBUS PROTOCOL:** Standard RTU master or slave protocol on any port except programming port.
- **MODEM:** Bell 103/212 standard
- **RADIO INTERFACE:** 4-wire audio, adj gain, xformer isolated, optically isolated key line. Low tones mode for splinter chan.

- **PHONE LINE INTERFACE:** 2 wire audio adjustable gain, transformer isolated.
- **AUTODIALING:** On/off hook relay, touchtone generate
- **AUTOANSWERING:** On/off hook relay & ring detector
- **TOUCHTONE DETECTION:** Standard tones on speech board.
- **COMMUNICATIONS:** Background CRC gen/decode, variable length messages, user defined message. Can combine status, integer, float, double precision int in any message.
- **EAVESDROP MODE:** Any RTU can accept data passing between any other station.
- **INSTRUMENT POWER:** Loop supply switchable to battery voltage and can be switched on/off by software. Diode isolated.
- **TRANSMIT POWER:** 0-4Vp-p, software adj. in 32 steps.
- **PEER TO PEER:** Full RTU to RTU or RTU to Master or Master to RTU messaging.
- **STORE & FORWARD:** Initiating station sets path through up to 3 intermediary stations.
- **ADDRESS RANGE:** 1 to 255
- **PRINTER/RS232 PORT BOARD:** Standard Centronics compatible parallel port, dual RS232 ports, selectable RS485 port 1; SDI-12 port 2.
- **FLASH CARTRIDGE INTERFACE:** Board accepts 4M to 500Mbyte removable compact flash cartridge. Dumps logged data in ASCII.
- **POWER INTERFACE:** 12 VAC15VCD +/-20%, 130 ma. to 2.5 amps max, resettable fuse.
- **LOOP SUPPLY:** Isolated, regulated 24 VCD +/-5%, fused, 160 ma.
- **BATTERY CHARGER:** 160ma., reverse protected, fused
- **SOFTWARE**
  Storage: operating system and all user configuration & programming stored in nonvolatile flash memory. Flash loader stored in flash protected boot block.
  Security: Parameter voting & memory integrity test on boot up, CRC gen/direct on serial ports.
  Scanning: Built-in software scans all I/O, ports, timers real-time clock.
- **PROGRAMMING MODULES:** Applications use precompiled modules resident in flash memory where programmer interconnects modules and sets properties using supplied Win95/98/NT/XP program. No programming required for most applications.
- **LADDER LOGIC:** Built into the WIN95/98/NT/XP configuration program to handle misc controls.
- **DATA LOGGING:** Logs floating point, integer and status samples with time tags to onboard flash eeprom. 128K samples & time tags. Can dump logs to serial port as comma delimited ASCII.
- **VARIABLES:** Supports 32 bit integer, floating point, boolean strings and arrays.
- **ERROR MESSAGES:** Configuration program handles all setup errors. Runtime software is self-protecting, no runtime errors.
- **ENCLOSURE:** 16 ga steel, blue powder coat card cage w/ display/keyboard module.
- **TEMPERATURE RANGE:** -40 to +85 degrees C logic
  -20 to +60 degrees C LCD display