

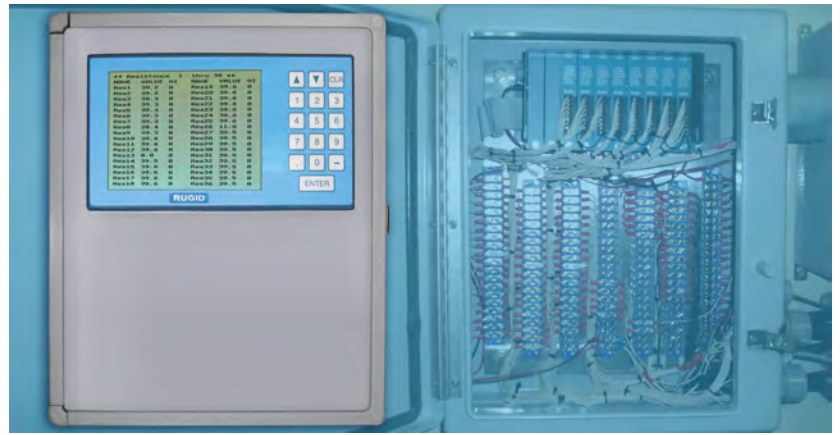
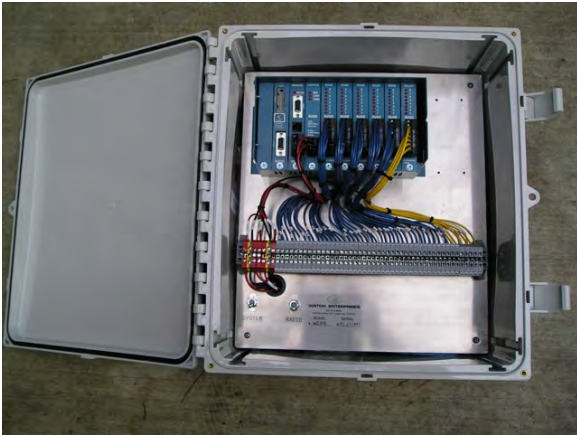
Making it easy for you to save water, time and money

WT-RUG9 RTU CONTROLLER and/or BASE STATION



Fully Integrated RTU/Controller /

Base Station: Monitor, Display, Communicate & Control



- ▶ 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 variety of radios, works as a Repeater Station in the background
- ▶ Anyone can operate and install - designed for ease of use by non-technical staff. Twist-on sensors, turn RTU on, install setpoints, i.e. tank levels to start/stop a pump, and go.
- ▶ Attach up to 512 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
- ▶ WT-RUG9 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, & regular applications



WT-RUG9
RTU CONTROLLER
 Details Specifications
 page 2



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sales@watchtechnologies.com

- ▶ **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:** RFirst card cage can have any I/O, up to 8 cards plus CPU, up to 7 card cages attached with ribbon cables, can hold up to 64 ch per cage.
- ▶ **DISPLAY:** 20 lines X 40 char (320x240 pixels) backlit graphic LCD, 6 in diagonal, detachable from card cage
Text - All standard ASCII characters plus special graphic characters.
Trends - up to 10 traces per page; pages incorporated into user 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 adj. gain, transformer isolated.
- ▶ **AUTODIALING:** On/off hook relay, touchtone generate
- ▶ **AUTOANSWERING:** On/off hook relay & ring detector
- ▶ **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 VAC/15VCD +/-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