

SMART GATE ACTUATORS by Watch Technologies



We make the only all-in-one Actuator-RTU on the market

The WT Smart Gate Actuator does what no other actuator can do because it has a “brain.” WT’s Smart Gate Actuator has embedded programmable logic that enables it to accept data from multiple analog or digital sensors and provide control for multiple off-gate equipment operations, making it an RTU as well as an actuator.

Applications: WT’s Smart Gate Actuators convert a manually-operated gate into a 100% complete control station that can be instantly deployed for reservoir and canal control, check structures, canal turnouts, pipelines, pump stations, water treatment plants, flood control, and industrial applications. WT Gate Actuators fit any rising or non-rising stem gate or valve of any size.

Shipped complete in 4 weeks: WT Smart Gate Actuators are standard WT-100 (Light-Lift), WT-200 (Medium-Lift), and WT-300 (Heavy-Lift) Actuators with an embedded controller. WT Gate Actuators are shipped with on-board software that easily and accurately manages flow, level, gate position, and automates equipment operations while logging and displaying data. Customized software is available.



WT Actuator with embedded controller

Cost-effective control: WT Gate Actuators provide simple, accurate, durable, and efficient control for gates and valves. Embedding a “brain” (controller) in a WT Gate Actuator on a gate built to support it consolidates SCADA control components into a single, easily deployed enclosure, reducing the complexity of any control station, increasing reliability, and decreasing cost.

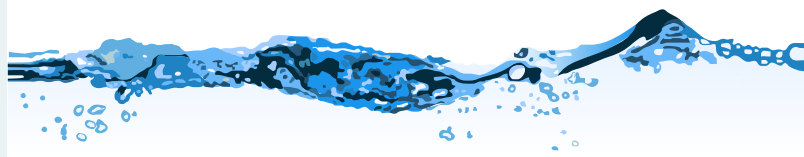
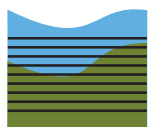
Works with ALL commercial controllers: Any controller will fit into a WT Gate Actuator enclosure or a small attached external enclosure permitting easy integration with the actuator panel. WT typically installs and programs a Rugid Computer RUG3 RTU/Controller for default control applications (flow, level, position, equipment control, etc.). Custom software or installing a controller of choice is always an option.

Telemetry and SCADA options: Install a communication link in the WT Gate Actuator (RF, cellular, Satellite) to convert a stand-alone control station into a SCADA node.

Why solar? WT Gate Actuators are the ONLY solar-ready actuators on the market available to retrofit existing gates and valves. Solar power eliminates the need for any AC power in remote environments; no additional cost for solar or AC actuator power applications.

Instant fit with all Watch Technologies’ integrated products: WT is the ONLY U.S. company that designs and manufactures innovative sluice gates of all sizes, actuators, and SCADA systems that **all link together seamlessly and cost efficiently** - no system integration required.

(See detailed specifications on page 2)



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WT-RUG3 Controller Specifications



- **LOGIC FAMILY:** All low power CMOS
- **MICROPROCESSOR:** 16-bit MSP430, 8 Mhz, 16 bit data bus, 16-bit address bus.
- **MEMORY:** RAM-2 Kbytes battery backed low power static RAM
- **PROGRESS FLASH:** 512 Kbytes
- **LOGGING FLASH:** 512 Kbytes
- **BATTERY BACKUP:** Lythium coin cell backs up RAM & real-time clock/calendar min 2 years.
- **DISPLAY:** 2 lines X 16 char backlight LCD, sunlight readable, backlight switchable by software.
- **KEYBOARD:** 16 key sealed tactile membrane with interrupt scanning
- **REAL-TIME CLOCK/CALENDAR:** Battery backed clock/calendar 0.005% crystal accuracy
- **OPERATION SECURITY:** Watchdog Timer-Hardware timer resets unit .5 seconds after interrupt fail. Cannot disable.
- **TELEMETRY WATCHDOG:** Reset rcv buffer of no character received within 1 sec.
- **BROWNOUT DETECTOR:** Halts process if logic voltage falls below 2.7 V, restarts when voltage rises to 3V.
- **AUTOBOOTING:** Auto startup on power application
- **I/O SURGE PROTECTION:** All I/O is optically isolated, meets IEEE surge protection requirements.
- **ANALOG INPUTS-12bit:** 6 channel per board, 12 bit res, successive approx, optically isolated, 4-20 mA or 0-5V. Factory calibrated.
- **ANALOG OUTPUTS:** 4 chan optional, 12 bit resolution, optically isolated, each module replaces one relay. Factory calibrated.
- **DIGITAL INPUTS:** Status-8 chan, dry contact compatible, self-powered Pulse Counting-All DI count 128 PPS
- **PULSE DURATION DETECTING:** All can convert pulses to analog with 4ms resolution
- **SHAFT ENCODER - DIs** in pairs used to code shaft encoders.
- **DIGITAL OUTPUTS:** 4 ch, 10 amp relays
- **PULSE DURATION OUTPUTS -** Relays can generate pulse width modulated or one shot signals with 4 ms res.
- **ANEMOMETER INPUT:** AI6 connected to clipping amp, counted to derive windspeed.
- **REFERENCE OUTPUT:** 2.5 Vdc reference available to power potentiometers, shares pin with DI8.
- **INSTRUMENT POWER:** Logo supply switchable to battery voltage and can be switched on/off by software. Diode isolated.
- **SERIAL PORTS:** One programming/gen purpose port plus one RS232/modem port
- **MODEM:** Bell 103 standard
- **RADIO INTERFACE:** 4-wire audio, adj gain, xformer isolated, optically isolated key line. Low tones mode for splinter chan.
- **PHONE LINE INTERFACE:** 4 wire audio adj. gain, transformer isolated.
- **TRANSMIT POWER:** 0-4Vp-p, software adj. in 32 steps
- **COMMUNICATIONS:** ASCII-Standard R9 protocol-background CRC gen/decode, variable length messages, user defined message length. Can combine status, integer, float, in any message.
- **EAVESDROP MODE:** R9 protocol, any RTU can accept data passing between any other station.
- **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 254
- **POWER INTERFACE:** 2 VDC +/- 20%, diode isolated. <3mA normal operations (relays, loop supply & backlight off) to 440mA max.
- **LOOP SUPPLY:** Built-in switchable regulated 24 VC +/- 5%, 120 MA.
- **I/O CONNECTIONS:** All I/O uses removable rising cage screw headers in banks of up to 10 each, 14 ga wire. Modem signals use RJ45 jack.
- **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. Programm loading CRD protected.
- **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 16 bit integer, 32 bit 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