# Watch-DOG 2 Installation Guide

General Information

1. Where possible, the unit should be placed to minimize interference with well service activity.
2. **To avoid damage to the unit during installation: Use a wrench** on the metal fitting at the rear of the unit and use caution if you need to twist the enclosure.
3. Install so that the front face of the unit points in a southerly direction. Avoid a northerly direction if possible since transmission reliability may be impaired.
4. **Do not install the unit where its line of site to the sky will be impeded** (e.g. piping or overhead racking), or lost satellite transmissions may result. Metal overhangs or awnings are particularly disruptive. The satellite antenna is located behind the front face the enclosure and objects in front of the unit may disrupt transmissions
5. **At no time should stress/strain be applied to the cables. Ensure there is adequate strain relief at both ends.**
6. To ensure a positive connection when attaching cables to the controller, rotate the locking collar clockwise until it clicks.
7. The Watch-DOG 2 unit is powered by long life lithium batteries. It is expected that these batteries will last at least 2 years under normal operating conditions. The system has been designed to notify the user when it is time to replace the batteries. Please contact AFTI for instructions if batteries need to be replaced.

Controller Mounting Options

The Watch-DOG 2 controller is supplied with a pipe mount clamp that can be used for mounting on 2 – inch O.D. pipes. The top half of the clamp can also be mounted on any suitable surface with 2 screws or bolts as shown.

FACE SOUTH

RTD Temperature Sensor:
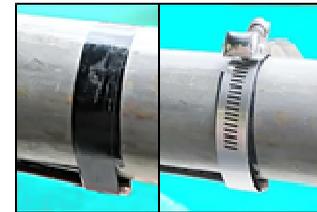**(RED BAND on cable - connect to input with maroon nut)**
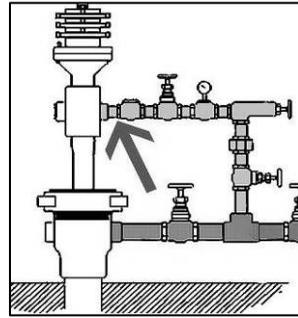
Surface mount RTD sensors are used to make non-intrusive surface temperature measurements on pipes or other wellhead components such as stuffing boxes. The recommended location of the oil temperature sensor is on the **underside** of the oil line as close to the wellhead as possible as shown by the arrow in the wellhead diagram.

For proper system operation, bullet style temperature sensors **must be secured to the BOTTOM of the pipe** using the supplied metal hose clamp. Tape the sensor to the pipe and then apply the clamp. To avoid damage to the sensor, **DO NOT OVERTIGHTEN** the clamp. The sensor should then be wrapped with a layer of 2-inch wide heavy duty pipeline tape to waterproof the sensor. Then a section of the supplied waterproof pipe **insulation must be installed around the sensor and pipe. DO NOT include any heat trace lines within the insulation.** Finally, wrap the insulation with heavy duty pipeline insulation so that the entire area is waterproof. **To prevent sensor damage, ensure that the cable is adequately strain relieved.**

Wrap sensor and pipe with tape

Apply insulation

Wrap with tape to completely seal

Vibration Sensor:
(YELLOW BAND on cable - connect to the input with yellow nut)

The Watch-DOG vibration sensor will detect the mechanical vibration generated by mechanical equipment and can be used to determine when that equipment has stopped operating. Securely attach the sensor to the equipment with a screw or bolt through the mounting hole on the sensor body. Vibration sensors should be mounted on a part that is free to vibrate when the equipment is operating, such as the pump jack ladder or gearbox housing. If possible avoid mounting the vibration sensor right next to solid anchor points that can reduce vibration. Be sure to **secure the cable** near the sensor to prevent wind induced vibration which may impair performance.

Vibration Sensor

Yellow Band

NOTE: Please take care when handling and installing the vibration sensors as they are sensitive devices. A drop of 1.5 metres onto a hard surface is sufficient to damage the sensor.

Unit Operation

The Watch-DOG 2 unit is controlled via magnetic switches, numbered 1 to 3. The location of each switch is marked along the right edge on the face of the unit. Unit status is indicated by 3 LEDs tri-color that are located behind a round window on the bottom of the unit.

① **Switch 1 (at bottom right)** is used to turn the unit on and off and to trigger a status transmission.

TO TURN UNIT ON: hold magnet at position 1 while watching LEDs. When all flash **green**, the unit is ON.
TO TURN UNIT OFF: hold magnet at position 1 while watching LEDs. When all flash **red**, the unit is OFF.
TO CHECK STATUS: swipe magnet across or beside the position 1 mark. LEDs will flash **green** (unit is ON) or **red** (units is OFF). If the middle LED is **orange**, power has been interrupted and the clock needs to be set.

② **Switch 2 (at middle right)** is used to check and set the vibration alarm threshold.

TO CHECK VIBRATION ALARM THRESHOLD: swipe the magnet across or beside the position 2 mark. LEDs will flash **orange** if threshold is set to the default threshold (50 mG), red if low (25 mG) or **green** if high (75 mg).
TO SET VIBRATION ALARM THRESHOLD: hold the magnet at position 2 while watching LEDs cycle through available settings (LOW = **red**, MEDIUM (default) = **orange**, HIGH = **green**). Remove the magnet when the LEDs are indicating the desired threshold.

③ **Switch 3 (at top right)** is used to check the vibration signal currently being measured by the unit and to set the internal clock.

TO CHECK VIBRATION SIGNAL: swipe the magnet across or beside the position 3 mark. If a sensor is connected LEDs will flash once. The color determines the level of vibration currently being measured by the unit:
Red = signal is less than 1.5x the alarm threshold (relocate vibration sensor to improve signal)
Orange = signal is between 1.5x and 2.0x the alarm threshold (some danger of false alarms)
Green = signal is greater than 2.0x the alarm threshold (this is best)
If no sensor is detected, LEDs will flash red 4 times.

TO CHECK CURRENT CLOCK TIME: hold the magnet at position 3 for 3 seconds. LEDs will flash hours – count the flashes (**Red** = AM, **Green** = PM), followed by minutes – count the flashes and multiply by 5 (provides minutes to nearest 5 minute interval)

TO SET CLOCK: Please contact AFTI at (403) 212-2382 or Toll Free at (866) 412-2383 for detailed instructions.

Magnet (#3) location label

LED Window

Technical Specifications

Controller Model No: 5001-001 (Integrated RTD Probe)
5002-001 (External RTD)

Environment: -40°C to 65°C (-40F to 150F) NEMA4
All exposures except for immersion
Requires view of the open sky.
Will not work indoors.

Certifications: Class I Div. 1, Exia Groups C & D T3A Type 4,
suitable for use in Class 1 Zone 0 Group IIB T3A Type 4
as per conrol drawing AFT500X-00X
FCC IC/ICES-003
RTD: 3 wire 100 Pt, Type B (Error ±0.5% at 0°C)
Thermowell: CRN provided (Model 5001)

Operation: Sample rate: Every 3 minutes (default)
Hourly averaged data (typ) transmitted 2x per day or by exception.

Coverage: Global land area with some exceptions.
See simplex data coverage map at **ca.globalstar.com**

Installation must not be within 160 Km of an RAS exclusion zone without special configuration.

Safety:

Unit contains an RF transmitter and must be turned off during perforation work.

WARNING – EXPLOSION HAZARD

1. Batteries must only be changed in an area known to be non-hazardous.
2. Do no mix old with used or batteries from different manufacturers
3. Replace only with approved models: Energizer L91 AA
4. **Only 6 batteries should be installed in the battery holder.** One section of the holder has either a shorting wire or dummy battery. Do not remove the dummy battery or install batteries in this section. Installing additional batteries will impair intrinsic safety.

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Fax: (403) 212-2391
Toll Free: **(866) 412-2382**

AFT500X-MAN-1 Watch-DOG 2 Installation Guide (rev. 13-May-2014)

WATCHDOG® A WELL'S BEST FRIEND

← RTD   VIB. →   AUX. →

Swipe	3 sec	6 sec	9 sec
Vib. Test	Clk Test	Clk Set	
Vib. Th.	Low	Med.	High
Status	On	Off	

1.866.412.2382
afti.ca
2.0
LEDs ↓

Model No: 5002-001 shown