



Package contents: WatchdogCP II base station inside NEMA 4 enclosure (including GSM radio or Skywave IDP satellite terminal), 3-channel analog measurement module, relay system incorporating a mercury relay or a dual solid-state/mercury relay system, and mounting brackets. \*Please inspect package contents and immediately notify Elecsys Technical Support at (913)825-6366 or email <u>support@watchdogcp.com</u> if there are any discrepancies.

<u>Recommended:</u> Watchdog Installation Supplies Kit -- WD-48-0002-00 (includes 1" flexible conduit, cable to run from rectifier to Scout unit, connectors, mounting hardware, and conduit fittings). <u>Recommended materials:</u> 3/8" x 4" Lag bolts & washers (for mounting units to poles); 1" flexible conduit (approx. 8' per site); 2 - 1" straight or 90 degree conduit connectors; #4 welding cable (approx.. 12' per site – depending on max amps of rectifier could use 16ga to #4 wire for connecting the relay); 18" of 16ga. 2 wire cable (preferably with White and Black insulated wires) to connect the incoming commercial power to the High Voltage input of the WD2 unit (If powering with High Voltage instead of Low Voltage); a split bolt splice and electrical tape can be used for larger gauge wires -- the yellow connectors will usually work for smaller gauge wires on the relay circuit; 8 x ½" hex head self-tapping screws to relocate the Smart Node Charge Module to inside the rectifier if desired; assortment of red, blue, and yellow butt splice conns, ring conns, disconnects conns, and fork conns; assorted plastic zip-ties.

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Important Installation Notes: Prior to beginning installation of this product, locate the serial number of the device on the label on the inside door of the enclosure and record it for use in setting up the website with customer service.

Step 1: Turn off the power to the rectifier.



Step 2: Place the enclosure on the pole, post, or wall and secure with the appropriate size lag bolts or bolts washers and nuts. If mounting the unit to a round pole, attach the brackets with the flat side toward the door of the enclosure and use 3/8" x 4" lag bolts; if mounting to a flat post or a wall, attach the brackets with the flat side away from the door of the enclosure and use 3/8" x 2" or longer bolts. NOTE: Unit must be mounted so that the Mercury relay inside is within 5 degrees of plumb.

Step 3: Measure and cut 2 lengths of flexible conduit that will reach from the bottom of the WD2 enclosure to the bottom of the rectifier, then drill 2 holes in the bottom of the rectifier for the flexible conduit connectors. NOTE: a 1-3/8" stepped bit will drill the right size hole for the 1" conduit connector. Install the conduit connectors at the two rectifier holes.



Step 4: Connect cable wires to the terminal block. Route the signal cable and the low voltage power cable through the connector on the bottom left of the WD2 enclosure.

Remove the nut, bushing and conduit insert from the left connector, place the nut and bushing over one end of one of the 2 conduits and install the conduit insert into the end of the conduit, then feed the wires through the conduit and secure the conduit to the bottom of the WD2 enclosure.



Step 5: Install the appropriate size wire for the rectifier output Amps to the Mercury relay.

NOTE: Wire size will range from #4 down to 16 ga. depending on the amount of current being used. For larger gauge wires welding cable is recommended for better flexibility.



Step 6: Install the small grey current sensor on the wire that is attached to the bottom of the relay and insert the plug from the interrupter board into the jack on the current sensor.

Step 7: Route the relay wires and the Smart Node Charge Module cable through the connector on the bottom right of the WD2 enclosure. Prepare and route the wires through the second conduit like the procedure on the first conduit in Step 4 and attach the conduit to the bottom of the WD2 enclosure.



Step 8: Connect conduit connectors at the two drilled rectifier holes then feed the wires of each conduit through the holes. Connect conduit to the rectifier.



Step 9: If the rectifier has a convenience terminal block with volts, amps, and 120V connection, route the signal cable and the Smart Node Charge Module cable to that side of the rectifier. Otherwise see step 11. You can attach the volts wires (red and black) and the amps wires (white and green) to the terminal strip and the Smart Node Charge cable wires to the 120V position on the terminal.

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Step 10: If the rectifier does not have a convenience terminal block, route the signal cable toward the front of the rectifier and the Smart Node charge cable to proximity of the incoming commercial power. Remove the outer sheath of the charge cable and attach the white and black wires to 110V from the incoming commercial power. Remove the outer sheath of the signal cable and cut the Red, Black, White, and Green wires to an appropriate length for connection to the front of the rectifier. Red and Black wires will be attached to the + and – voltage outputs of the rectifier, and the White and Green wires will be attached to the + and – current outputs at the shunt.



Step 11: Route the wires from the relay to the front of the rectifier. These wires can be used to insert the Mercury relay between 1) the pipe and the negative output of the rectifier, 2) the Anode bed and the positive side of the rectifier, or 3) to replace one of the shorting bars on the secondary output of the rectifier transformer. NOTE: Ring Terminals and split bolt or butt splice connectors can be used for making the various connections to the rectifier.



Step 12: Locate the Orange and blue wires from the signal cable and route them to the side of the rectifier in close proximity to the incoming commercial power. Find the AC Detect probe provided with the WD2 unit and using small cable ties secure the probe to the line wire (usually the black wire) coming in from commercial power. Butt splice the Orange and Red wires together and the Blue and Black wires together. NOTE: Isolate all of the unused wires and insulate them with electrical tape. Step 13: Route the low voltage power cable to the front of the rectifier. Turn the rectifier back on and measure the AC voltage between the taps on the secondary of the rectifier transformer. Find 15VAC to 20VAC between any two of the taps (i.e. Coarse A & Fine 1 or Coarse A & Coarse C or Fine 2 & Fine 5). Once you have found the 15VAC turn the rectifier back off and using Ring or Fork Terminals attach the Red and Black wires of the low voltage cable to the selected taps.

Step 14: Turn the rectifier voltage back on.



Step 15: On WD2 unit, connect the GPS antenna and plug in gel cell battery...

Step 16: Check the WD2 for light activity on the base station and interrupter boards. If the power light on the base station is off, check the black power select switch at the top of the board. Be sure that it is in the up position for low voltage. If there are no lights on the interrupter board, check the position of the black power select switch on the lower left of the board. Be sure that the switch is to the right.

Step 17: Call customer support to configure the site.

Powering The WD2 With High Voltage Instead of Low Voltage

The WD2 system can be powered using High Voltage AC instead of Low Voltage AC. For powering with High Voltage, connect a 16ga cable (with white and black wires) to the high voltage input screws in Step 5 instead of the low voltage input screws.

For powering with 110V, make sure that the black slide switch at the top of the base station is in the down position and the red switch is in the 115V position. Also make sure that the black slide switch on the bottom left of the interrupter board is in the left position and the red switch is in the 115 position.

For powering with 220V, place the two black slide switches as noted above and the two red switches in the 230V position. IMPORTANT: The switches must be properly positioned before turning voltage on.

Route the high voltage power cable to proximity of incoming commercial power and connect to the 115V or 230V that was selected on the WD2 unit.

Call customer support to configure the site.