



INSTALLATION INSTRUCTIONS AND USER GUIDE FOR YOUR 703 SMART 3 TANK MONITOR



Thank you for your purchase!

Tech-Edge Manufacturing's full line of Tank Monitor systems are designed to enhance tank efficiency and quality of life, while granting an easy, hassle free user monitor system.

PLEASE READ ALL INSTRUCTION BEFORE USING MONITOR

These installation instructions are written to have as universal an application as possible. Most installations are performed easily using simple hand tools. If you encounter any questions or difficulties please see our web site or contact your place of purchase or your local RV/Marine service center for professional installation. You are also welcome to call our Tech Support line. Whenever the word CAUTION appears in these instructions, the following item needs to be performed EXACTLY as written. Failure to do so can result in injury to yourself or others, damage to your RV or Boat or failure of the Monitor to work properly. NOTE: Any alteration to the Monitor kit will void your warranty.

*****SAVE THESE INSTRUCTIONS*****

KIT INCLUDES:

703 SMART 3 TANK MONITOR · 3 EXTERIOR TANK MODA SENSORS (for non-metal holding tanks) ·
FUSEABLE LINK WITH ½ AMP FUSE ·
13½' ROLL FOIL TAPE · BUTT CONNECTORS · TANK LABEL STICKERS

POSSIBLE TOOLS NEEDED FOR INSTALL:

DRILL · 1/8" DRILL BIT · TAPE MEASURE · LEVEL · ELECTRICAL TAPE · BOX CUTTER/SCISSORS ·
VOLTAGE TESTER · HAND/JIG SAW ·
18 GAUGE HOOK UP WIRE · WIRE CUTTERS · ADDITIONAL BUTT CONNECTORS OR WIRE NUTS ·
ISOPROPYL ALCOHOL · 3M-SPRAY, OR ANY OTHER NON-CONDUCTIVE ADHESIVE
***IF YOU NEED CUSTOM INTERIOR TANK RODS FOR METAL TANKS, YOU CAN ORDER THOSE
DIRECTLY FROM THE MANUFACTURE AT THE NUMBER LISTED ON PAGE 6.***

STEP ONE:

Location and installation of Monitor Panel:

CAUTION: READ CAREFULLY

Choose a panel location that is convenient to see and reach, and that does not interfere with drawers, cabinets, existing wiring, etc. In choosing a location you must also give major consideration to the fact the WIRES must be routed from the panel to the holding tanks as well as to your power source. MAKE CERTAIN the proposed wiring routes are not blocked by wall stringers or other structural supports.

Cut out hole should be about 3.75" x 2.25". Mark holes on the corners of the area to be cut out. Cut the panel opening as indicated. The panel will attach to the wall with 4 screws at the corners. **DO NOT** attach the panel to the wall until all other installation, calibration and testing has been completed.

STEP TWO

INSTALL SENSORS ONTO THE TANK(S):

NOTE: This section covers the installation of our external sensor modules called MODA sensors. *If you have our custom made internal rod sensors (PVC or aluminum) for metal tanks or tanks that are not accessible to the side wall, installation will be different but wiring will be the same.*

An external sensor is comprised of two parts: THE FOIL TAPE and the MODA SENSOR MODULE. Refer to **Figure #2 on page 3** and repeat the following steps for each tank.

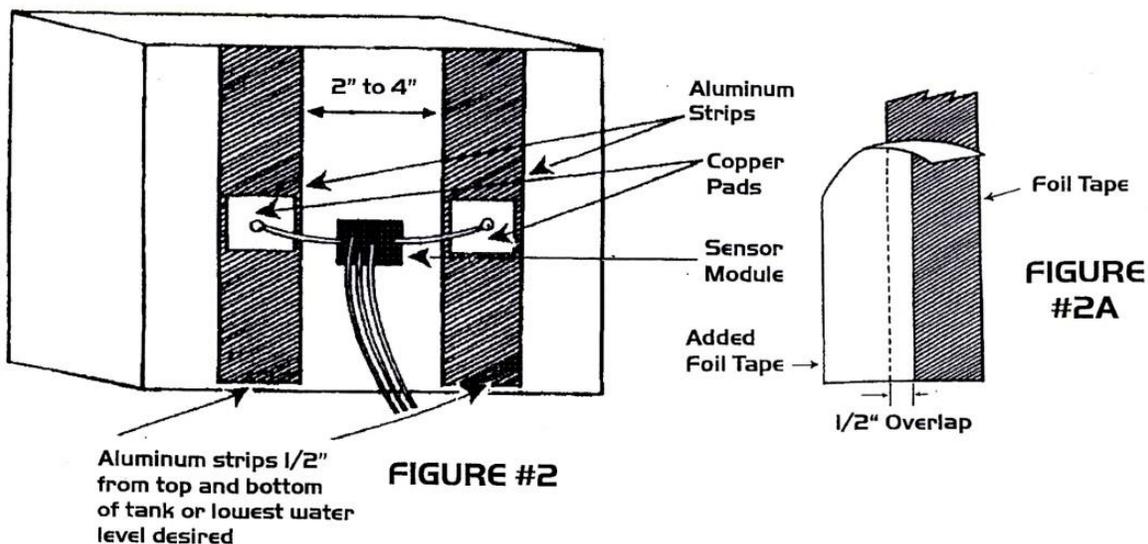
- A. Measure and cut to length two strips of foil tape. Each strip will run as close to the top and bottom of the tank as possible while still being able to maintain adhesion. If a tank has rough or rounded corners, you may need to bring it in 1/2". NOTE: Each strip of foil tape should be between 15 and 40 square inches (multiply the length times the width) it may be necessary to trim away or add to the tape width to stay within these parameters.
- B. Prepare the tank area where the foil tape is to be placed by rubbing down the area with common isopropyl alcohol. Remove the paper backing from the foil tape strips and place them on to the tank in the designated areas. Smooth out any trapped air bubbles. Follow the dimensions on **Figure #2**.
- C. If your tank is less than 8" tall or has very thick walls, then you will need to add additional tape and/or bring the tape closer together. If you are adding additional tape width, see **Figure #2 A** below. Foil can be added over the copper pad without a problem as long as it is pressed completely down.

IMPORTANT: The foil tape strips must be an inch or more away from large metal objects such as framework, metal siding, stored items, etc...

Remove the paper backing from the copper pads and from the module. Place a copper pad onto each of the two foil tape strips, then stick sensor to tank. The copper pads can be trimmed if they exceed the width of the foil tape, they can also be placed anywhere UP or DOWN the length of the tape.

- D. When you have installed the entire system, calibrated and tested it; then, you can apply a thin coating of 3M-spray (ie. Formula 77 or 90), or any non-conductive adhesive over the top surface area of the exposed tape to help ensure long term adhesion (optional).

IMPORTANT: PROVIDE ADEQUATE VENTILATION WHEN APPLYING THE ADHESIVE, PARTICULARLY IF WORKING IN A CONFINED AREA. Installation videos available on our web site.



STEP THREE

RUN WIRING : “CAUTION” If you use staples or nails to secure wiring, make sure you **do not** penetrate the wire at all. Also route wires so they do not interfere with storage areas and away from potential sources of heat (oven, exhaust pipes, etc.). Due to the vast range of application possibilities it is not practical for us to include hookup wire in the kit. It is however, commonly available and inexpensive. You must use at least 18 gauge stranded wire for the power runs and between 22 and 18 Awg for the data runs. Make certain you have enough to perform all connections.

You will be using your hookup wire to make connections to a 12 volt D.C. power source and for connecting the panel to the tank(s). After studying the wiring installation procedures you can cut your hookup wire to required lengths, then strip the insulation on all wire ends approximately ¼” and use the supplied butt connectors or wire nuts to join wires. Take time to study the **wiring diagram and Hookup Guide** below.

HOOKUP GUIDE (see image on page 4):

1. The first connections are made to the purple and blue wires for tank one which are routed to your first tank. Purple on the panel to Red on the sensor. Blue on the panel to Blue on the Sensor as noted in the hook-up guide below.
2. Repeat for the other tanks with the wire colors noted.

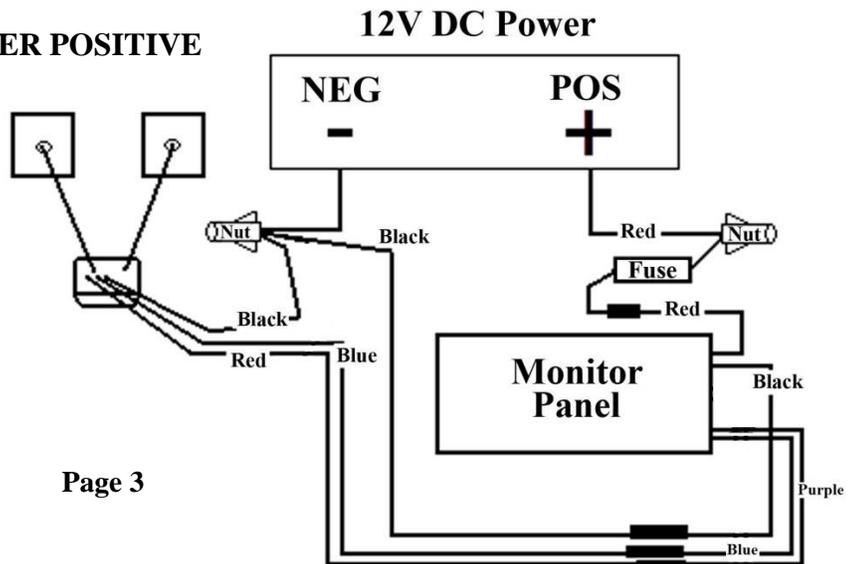
CAUTION - When have hooked up the tanks, you can then hook up the Red Wire on the panel to the fuse assembly which then runs to the 12 volt DC Positive (Make sure the fuse is in the assembly and looks good prior to hooking up. Black on the panel should then be run to the 12 volt DC Negative (ground). **Do not hook these up wrong or the panel and/or sensor will be severely damaged!**

3. The black wire on the Sensor can be attached to the black wire from the panel or grounded.

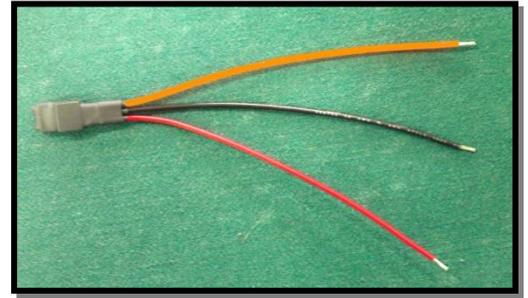
COLOR CODE AND HOOK-UP GUIDE

<u>TANK</u>	<u>PIGTAIL WIRE COLOR</u>	<u>SENSOR WIRE COLOR</u>
1	BLUE	BLUE
1	PURPLE	RED
2	YELLOW	BLUE
2	ORANGE	RED
3	GREEN	BLUE
3	GREY	RED

THE **RED** WIRE GOES TO THE 12V POWER POSITIVE
THE **BLACK** WIRE GOES TO GROUND



(Additional Insert) 10 Volt Inline Power Regulator Adapter



This adapter is for use with older designed tank monitor systems that were not built to regulate the incoming voltage. Some of these systems are the Smart Mini and the 703 Smart 3 Tank Monitor.

If you would like to use it on the 102-3 or 4 Tank Models or the Smart 102-3 or 4 Tank models, please call our tech support department to talk to them about your particular situation so they can tell you if this will work for you.

This adapter will regulate the input voltage to 10 volts from your 12 -15 volt system. **You must have a minimum of 11 volts going into the regulator for it to work properly.**

Please install it using the following configuration for the Smart Mini and the 703 Smart 3 Tank Panels:

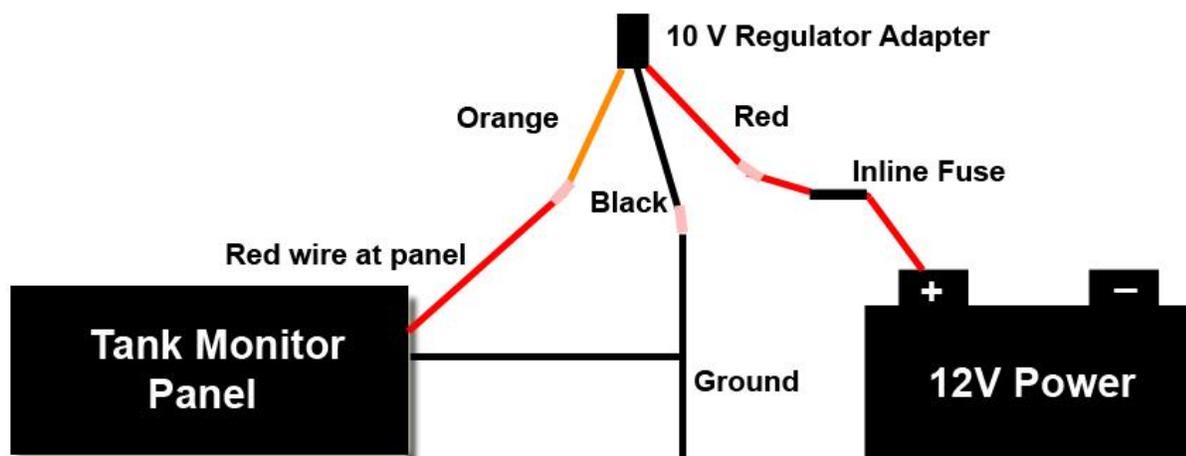
- **The Red wire** on the regulator adapter is attached to the incoming 12 to 15 volt power from your battery or other power source. (The raw power goes to the inline fuse assembly and then the other end of the fuse assembly gets attached to red wire on the regulator adapter)
- **The Black wire** needs to be tied to ground.
- **The Orange wire** is the 10 volts regulated power that needs to go to the power input on the panel (red wire on the Smart Mini and the 703 Smart 3 Tank).

If you have a panel that has already been set-up and calibrated, you will need to recalibrate it as the input voltage will be different than when it was calibrated.

This adapter will now regulate the voltage to be at a constant 10 volts and will keep the reading constant even if the power goes up or down. The regulators will need to have at least 11 volts for proper operation.

If you have any questions when you receive this, please feel free to contact our tech support department.

Thank you,
Tech-Edge Manufacturing LLC
541-610-0401



The red wire at the panel may be a different color if you are hooking it up to something other than a Smart Mini or 703 Tank Monitor System.

STEP FOUR

CALIBRATE PANEL (Make sure your vehicle is level):

This panel features our SMART CHIP calibration algorithm. This should eliminate sensor installation issues and greatly simplify tank calibration. Review the instructions below completely before attempting calibration.

Note: You can calibrate either empty or full first but you need to have the tank at the level you want calibrated (i.e. empty for empty or full for full). You *will* need to calibrate both empty and full. Please make sure your vehicle is as level as possible.

When you are calibrating the empty level, start with an empty tank. Press and hold the tank reading button first. While you are holding the tank reading button, press and hold the empty calibration button for 5 seconds (this button is marked with an “E” and is the bottom of the 2 calibration buttons.) The lights should then note you have an empty tank.

When you are calibrating the full level, fill the tank with water. Repeat the same procedures above but press the “F” button (the top of the 2 calibration buttons). The lights should then note you have a Full tank.

Your display panel should now be calibrated.

STEP FIVE

LED CONFIGURATION:

This panel uses multi-color LEDs. Multicolor LED’s can be configured for either red-to-green for fresh tanks or green-to-red for waste tanks (viewed from left to right).

To configure a tank for red-to-green (fresh and fuel tanks), press and hold the “E” button first then press the button for the tank that you want to set up. All the lights will light up showing current configuration.

For green-to-red (black and grey tanks), follow the same procedure but press the “F” button instead.

Default configuration is:

- Tank 1 red-to-green (fresh)
 - Tank 2 green-to-red (waste)
 - Tank 3 green-to-red (waste).
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TROUBLE SHOOTING GUIDE

The unit should be calibrated with the vehicle as close to level as possible. If you are installing it on a boat, it should be at the level it will be at in the water. Depending on where the sensor strips are located on the tank, the readings may be somewhat sensitive to the pitch of the vehicle (due to the fluid sloshing either against or away from the sensor elements mounted to the tank wall). Keep this in mind when interpreting what otherwise might be a malfunctioning sensor or display.

Some tanks, particularly those mounted below the decks in boats, may be impossible to completely drain or may refill with a small amount of fluid after pumping out (due to fluid left in the drain plumbing, which may drain back into the tank). If you calibrated empty on such a tank when it was completely dry (as in a factory installation) it may read that there is some fluid in the tank even when pumped empty. If this is the case simply recalibrate the empty point after pumping out and allowing to “SETTLE” to an actual “EMPTY” level. See Step 4.

PROBLEMS & REMEDIES

Problem	Possible Causes	Test/Remedy
Tank always reads full, empty or never changes regardless of level of fluid in the tank.	-Improperly Calibrated Tank -Damaged wiring between display, sensor module and/or power source. -Damaged or improperly installed sensor foil -Damaged sensor module -Electrical shock to the system via outside source or incorrect wiring, frying sensors and/or panel	-Recalibrate tank for empty and full and recheck -Visually check all of the wire between the sensor, display panel and power source. Check that all wires are attached properly and that there is no damage. Repair any problem and recheck
Tank always reads full	See above or: Sensor ground has been lost	See above or check all ground wiring to make sure securely attached.
Tanks have inaccurate readings	-See above or: -You may have too much or too little aluminum tape on your tank.	See above or add or remove tape, recalibrate and check again. To remove tape, use a razor blade and run it from top to bottom. Use a ruler to keep a straight line.
Tank level lights not operating	-See above or: - You panel is not receiving 12 volts of power	See above or using a voltmeter, make certain panel is receiving 12 volts of power.

If you are not able to diagnose and fix your problem, please check our web site for more troubleshooting information and videos. If that does not help you, please feel free to contact our tech-support.



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