Installation Instructions, User Guide and Trouble-shooting information for your iSeries Tank Monitor System · Software Version i24-1 · 12 Volt System

*****PLEASE KEEP THIS WITH THE UNIT.*****

Thank you for your purchase!

Tech-Edge Manufacturing's iSeries Monitor is designed to enhance tank efficiency and quality of life, while providing an easy, hassle-free monitoring system.

*****PLEASE READ ALL INSTRUCTIONS AND WATCH SET-UP AND INSTALLATION VIDEOS AT WWW.TANKEDGE.COM BEFORE INSTALLING MONITOR***

*****Later instructions might have an impact on your starting procedures***. 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 that cannot be answered from this manual or online, you are also welcome to call our Tech Support line listed on the back. ***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 and void the manufacturer's warranty. NOTE: Any alteration to the Monitor kit will also void your warranty.

****SAVE THESE INSTRUCTIONS****

IF YOU PURCHASED A KIT, IT SHOULD INCLUDE:

iSERIES TANK MONITOR · 3 EXTERIOR MODA TANK SENSORS · INLINE FUESABLE LINK WITH ½ AMP FUSE · ROLL FOIL TAPE (4½' PER TANK- 13½' TOTAL) · 12 BUTT CONNECTORS · 4 SCREWS · CUT OUT TEMPLATE

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 · ISOPROPAL ALCOHOL

****IF YOU NEED MORE EXTERIOR MODA SENSORS OR CUSTOM INTERIOR TANK RODS FOR METALLIC TANKS (SEE PAGE 5), YOU CAN ORDER THOSE DIRECTLY FROM TECH-EDGE MANUFACTURING LISTED ON THE BACK.**

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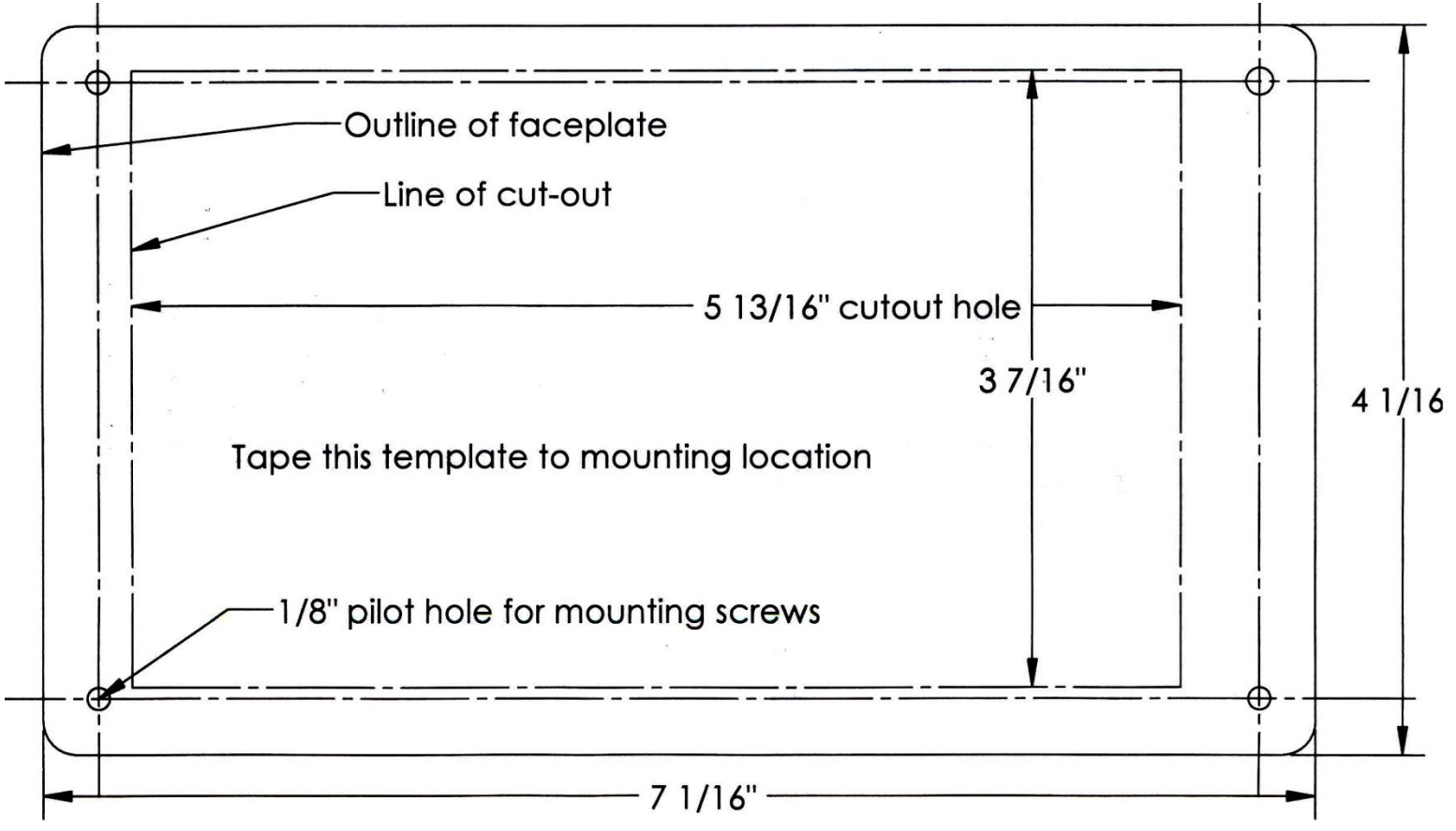

Outline of faceplate
Line of cut-out
5 13/16" cutout hole
3 7/16"
4 1/16
Tape this template to mounting location
1/8" pilot hole for mounting screws
7 1/16"

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.

REFER TO **Cut Out Template on Page 2** If you would like to keep your manual intact, make a ***100%*** **copy** of the cut-out template or print another one out from the manual online and use that. Using the cut-out guide, mark holes on the corners of the area to be cut out as well as the screw placements. Cut the panel opening as indicated. The panel will attach to the wall with 4 screws at the corners. **DO NOT** permanently attach the panel to the wall until all other installation, calibration and testing has been completed.

STEP TWO

INSTALL SENSOR(S) 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** 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 ends 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 ½". 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. ***Always start with your tape approximately 2" apart especially on smaller tanks***.

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. It is usually best to start with the tapes around 2" apart. Smooth out any trapped air bubbles. Follow the dimensions on **Figure #2**. If you would like to do some testing of tape location prior to sticking the tape fully on the tank wall, you can stick the tape to the wall with blue painter's tape. You can then just tack a corner of the copper pad from the sensor onto each tape while you do your testing and getting your raw reading numbers which will be discussed later in the process.

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 #2A**. Foil can be added over the copper pad without a problem as long as it is pressed completely down.

****CAUTION: The foil tape should be an inch or more away from large metal objects such as framework, metal siding, metal brace straps, 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 height of the aluminum tape. Wherever is convenient to place it. If you would like to test the system prior to fully placing the copper pad, you can just peel the corner and tack it down with that as noted above.

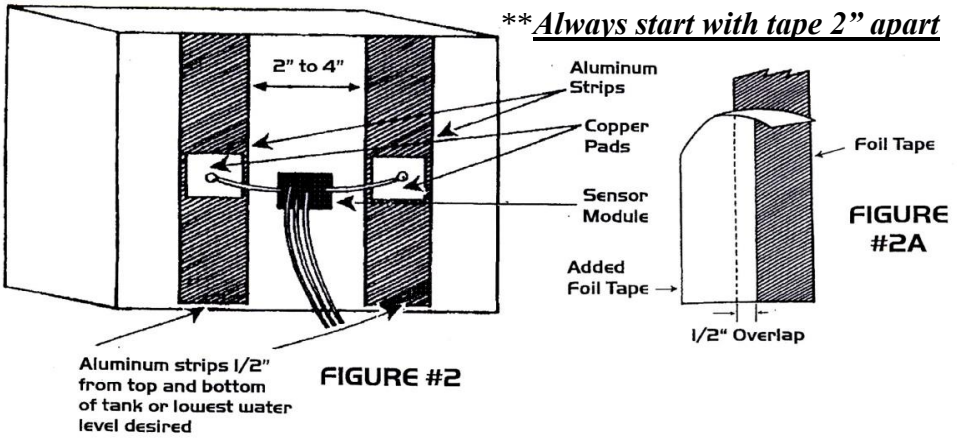


FIGURE #2

FIGURE #2A

STEP THREE

RUN WIRING: **CAUTION - You can reuse wiring that is already run if you are doing an aftermarket install, but if you are running new wires follow these instructions. If you use staples or nails to secure wiring, make sure you **do not** penetrate the wire. 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. We recommend at least 18 Awg stranded wire for the power runs and between 22 and 18 Awg for the sensor connections. Using a variety of colors for different connections will simplify troubleshooting any problems. After you have cut your wires to the desired length, you will need to strip each end approximately ¼" to use the supplied butt connectors to connect your wires.

A. Take time to study the wiring diagram and the "Hookup Guide" on page 5. There are colored pairs of wires for each tank that have red and blue stripes that correspond with the red and blue solid wires on the sensors. Initial programming of the panel has Tank 1 as Fresh, Tank 2 as Grey and Tank 3 as Black although you can change this if needed.

B. All the black wires from the sensors need to be grounded very well (together or separate) or run back to the black wire on the panel. ***Black wires from Sensors can also be linked together and grounded locally if you have a ground to attach them to (i.e. the chassis)***

C. **CAUTION - When you have wired and checked all the tanks, you can **then** connect the red wire (#1) on the pigtail connector to either terminal on the back of the power switch, the fuse assembly will attach to the other terminal and then run to 12-volt DC Positive (Make sure the ½ Amp fuse is in the assembly and looks good prior to connecting). The black wire (#2) should then be run to 12-volt DC Negative. **Do not hook these up wrong or the panel and/or sensors will be severely damaged!**

D. If possible, avoid wiring to a converter power source or to wires that power fluorescent lights. This could result in electrical "noise" which may affect accuracy of panel readings.

E. If you are hooking up tank 7 or 8 on the panel to an ***LPG tank*** that already has the 90-ohm sending unit inside, or another resistive sensor, there should be 2 wires coming from the tank itself. One of these wires gets connected to ***both*** the red and blue stripped wires at the tank 7 or tank 8 location on the panel (3 wires together) and the other wire from the tank gets grounded. If there is only one wire coming from the tank, connect it to both wires at the panel. ***Initial calibration should not be needed for 90 ohm LPG Tanks unless you notice that the readings are off. Calibration will be needed for other resistive sensors.***

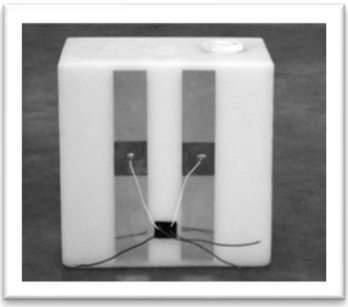
****CAUTION: After the wiring is complete, if you have exposed wires coming from the extra wires not used on the pigtail, cut the small exposed portion off and individually wrap them in electrical tape. You do not want these wires touching even though they are not in use. You will want to leave the main portion of the wires intact in case you will need to add more tanks, or switch tank set-up locations, at a later time.**

Note: On the standard iSeries Tank Monitor, **Tanks 1-6** are designed to drive and receive signal from **MODA SENSORS OR OUR OTHER CUSTOM BUILT SENSOR RODS (See below). **Tanks 7-8** are designed for other resistive sensors usually on the larger **LPG tanks** or standard float sensors. These positions on the iSeries panel can measure from 0 to 90 ohms or another custom set-up with the Low Ohm setting as empty and the high ohm setting as full**.

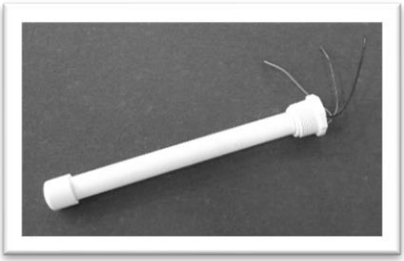
****If you have a resistive sensor with inverted settings (Low ohm setting for Full and High ohm setting for Empty) then see our tech-support page on our website for an data sheet with modified calibration instructions.** Tanks 7 & 8 are factory calibrated for the 90 ohm sending units on most large propane tanks. Other resistive sensors will need calibration set-up.

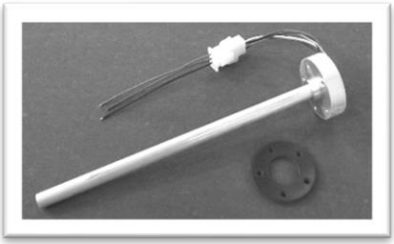
Tech-Edge Sensors

Exterior Moda Sensor



PVC Rod Sensor (for metal tanks)



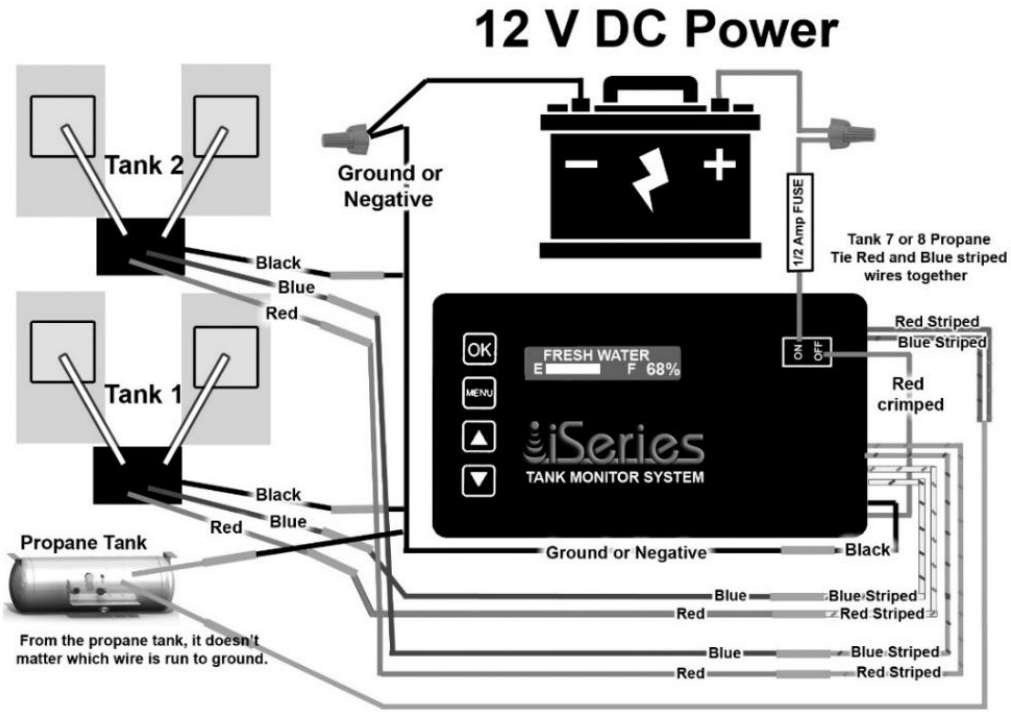


Aluminum Diesel Rod Sensor

PIGTAIL COLOR CODE AND HOOK-UP GUIDE / INITIAL CALIB. #'S

DESCRIPTION	WIRE	COLOR/STRIPE	SENSOR COLOR	CALIB. EMPTY	FULL
POWER 12VDC+	**1**	RED	**NONE**	**Record your initial settings**	
GROUND 12 V-	**2**	BLACK	**NONE**		
TANK ONE	**3**	YELLOW/BLUE	BLUE	_____	_____
	4	YELLOW/RED	RED		
TANK TWO	**5**	ORANGE/BLUE	BLUE	_____	_____
	6	ORANGE/RED	RED		
TANK THREE	**7**	PURPLE/BLUE	BLUE	_____	_____
	8	PURPLE/RED	RED		
TANK FOUR	**9**	WHITE/BLUE	BLUE	_____	_____
	10	WHITE/RED	RED		
TANK FIVE	**11**	GREEN/BLUE	BLUE	_____	_____
	12	GREEN/RED	RED		
TANK SIX	**13**	GREY/BLUE	BLUE	_____	_____
	14	GREY/RED	RED		
TANK SEVEN	**15**	BROWN/BLUE	1 resistive wire	_____	_____
	16	BROWN/RED	(3 Wires tied together)-(pre-calibrated at 0 & 90)		
TANK EIGHT	**17**	PINK/BLUE	1 resistive wire	_____	_____
	18	PINK/RED	(3 Wires tied together)-(pre-calibrated at 0 & 90)		

*If you purchased the **Integrity 8 iSeries** that drives 8 Tech-Edge sensors and no LPG or resistive sensors, then hook up the last 2 tanks the same as the first 6.



Note: When installing the wiring harness onto the board, the red wire goes toward the bottom of the panel.

Water Pump Switch
Data Sheet

20A-23

ILLUMINATED WIRING DIAGRAM

NOTE: CUTOUT SIZE IS FOR REFERENCE ONLY AND MAY VARY DEPENDING ON THE THICKNESS OF THE MATERIAL USED.

BOTTOM VIEW

SPECIFICATIONS:
10A 125VAC UL, CUL
6A 250VAC UL, CUL
16A 12VDC
10A 28VDC
6A 14V(T)

CONTACT RESISTANCE:
< 50M Ω

INSULATION RESISTANCE:
>100M Ω

DIELECTRIC STRENGTH:
1250VAC 50Hz 1 min 0.5mA

MECHANIACL LIFE:
50,000 Cycles

OPERATING TEMPERATURE:
0°C~85°C

MATERIAL:
Housing: nylon (UL flame: 94V-0) - Black
Actuator: Polycarbonate - Transparent Red
Terminal: Silver plated brass

APPROVALS:
UL, CUL, RoHS Compliant

SIGMA Switches Plus

PART NO.	20A-23
DESCRIPTION	SPST RED/BLACK 14V LED ILLUMINATION

A6-63

CIRCUIT STRUCTURE

NOTE: CUTOUT SIZE IS FOR REFERENCE ONLY AND MAY VARY DEPENDING ON THE THICKNESS OF THE MATERIAL USED.

Mat'l Thickness	X	Y
0.75 - 1.25	19.2-0.1	13.0+0.1
1.25 - 2.00	19.4-0.1	13.0+0.1
2.00 - 3.00	19.8-0.1	13.0+0.1

BOTTOM VIEW

Water Heater Switch Data Sheet

SPECIFICATIONS:
20A 14V D.C.
LED 30 MCD minimum
LED 100,000 hour life

CONTACT RESISTANCE:
50M Ω Max.

DIELECTRIC STRENGTH:
AC 1500V 1 minute

INSULATION RESISTANCE:
DC 500V 100M Ω Min.

ELECTRICAL LIFE:
>6,000 operations
Volt drop: <100mV
OPERATING LIFE:
>100,000 operations

AMBIENT TEMPERATURE:
-20°C to +85°C

HUMIDITY:
Max. 85%

SALT SPRAY TEST:
No remarkable rust in metal parts. (5% salt / 35°C 24 Hrs)

MATERIAL:
Housing: nylon (UL flame: 94V-2)
Terminal: Gold plated .002MM
Contact: Gold plated .002MM
APPROVALS:
UL, CUL, RoHS Compliant

SIGMA Switches Plus

PART NO. A6-63

DESCRIPTION SPST RED/BLACK INDEPENDENT 12V LED

Generator Switch Data Sheet

S2-67-NB

SPECIFICATIONS:
13 A. 125 V.A.C.
10 A. 250 V.A.C.
1/2 H.P. 125-250 V.A.C.
5 A. 14V (T)

CONTACT:
Self Cleaning

CONTACT RESISTANCE:
LESS THAN .01 Ω AT 10 mA (INITIAL)

DIELECTRIC STRENGTH:
2,500 V, 60 Hz FOR 1 MIN. BETWEEN MOUNTING SURFACE AND CIRCUIT CONNECTIONS.

MATERIAL:
Housing: Nylon 94V-2
Knob: Nylon 94V-2
Terminal & Moving Contact: Copper Alloy, and/or Copper Alloy Silver Plated

APPROVALS:
UL, CSA, RoHS Compliant

SIGMA Switches Plus

PART NO. S2-67-NB

DESCRIPTION
DPDT MOMENTARY-ON/OFF/
MOMENTARY-ON BLACK

STEP FOUR

***SET-UP AND CALIBRATE TANKS (Make sure your vehicle is level):**

To get into the menu set-up, ***press and hold the "Menu" button while turning the power on***.

** After you are in the set-up menu you can navigate the Menu below by using the "▲" and "▼" arrows to scroll to the option you want. Pressing the **"OK"** button will select the option you are on and pressing the **"Menu"** button will ***usually*** back you out of the option you are on. You may have to press the "Menu" button several times to fully back you out to the main menu.

Enable Tanks

Y – Enabled (On) ▲
N – Disabled (Off) ▼

1 2 3 4 5 6 7 8
Y Y Y N N N N N

To enable or disable each tank, press "OK" at the "ENABLE TANKS" screen. The numbers on the top row are for each tank corresponding to how you wired them, the **"Y"** and **"N"** under each tank denotes whether that tank is enabled or not. **If you have something other than a "Y" or "N" under a certain tank, see below for possible calibration errors. Initially, the blinking cursor will be on the Y under tank number 1. If you would like to enable tank one, press the "▲" arrow; press the "▼" arrow to disable it. The cursor will then move to tank number two. You can move forward to the next tank by pressing "OK" and backwards by pressing "Menu". Continue with each tank until each has been enabled or disabled. When you reach the end, it will ask you if you want to save the changes. Press the "OK" button to save.

*****If you have something other than a "Y" or "N" on Enable Tanks screen, this is what it means: "I" = Inverted Tank (used for resistive sensors), "O" = Error - Inverted Tank with Low calibration number for Empty and High Calibration number for Full (should be opposite on inverted tanks only), "R" = Error - Empty Number is Greater than Full, "%" = Error - 25% calibration numbers are not sequential.***

Name Tanks

Name Tank 1 Fresh Tank	Name Tank 2 Grey Tank	Name Tank 3 Black Tank	Name Tank 7 Propane Tank

Press "OK" at the "NAME TANKS" screen to name your tanks. "NAME TANK 1" will appear on the top line and tank one's current name will appear on the second line. Tanks 1 through 3 are preset with the names 1= Fresh Tank, 2 = Grey Tank, 3 = Black Tank and tank 7 is preset with the name "Propane Tank". You can change any tank name including preset names. Pressing the "▲" or "▼" buttons will scroll through the tanks. Press the "OK" button when the tank you want to name is displayed. There are two words to select for each tank. The current tank name will appear on the second line. Pressing the "▲" or "▼" will run you through the available words for naming the first word and pressing the "OK" button will toggle to the 2nd word. You can then scroll by pushing the up and down arrows.

To give your tank a **custom name**, while you are on the first word, press the "▲" or "▼" button until "Custom Name" appears on the second line. Press the "OK" button to begin spelling the name for your tank. Press the "▲" to scroll to the Letters and "▼" to go to numbers and symbols. Press "▲" and "▼" together to change between Upper and Lower case. Press the "OK" button to select the option. The cursor will move to the next space. You can continue to spell out the name. There is a maximum of 15 characters. Press the "MENU" key when you are finished spelling the name. You will be prompted to save the name. Press the "OK" button to save it or any other button to disregard the changes.

You can then repeat the process for the other tanks by scrolling through the other tanks with the "▲" and "▼" arrow buttons and pressing "OK" to select the tank. When you are finished naming all the tanks, press the "MENU" button to return to the Configuration menu.

***CALIBRATE YOUR TANKS** – Press "OK" at the "CALIBRATE TANKS" screen to calibrate your tanks.

There are three types of calibration. The first calibration type is "**EMPTY/FULL**". This is the setting that most tanks will use. The second option is **25% Increments**. This type is used when your tank has very irregular sides or shape. The last type is "**Manual Input**". This is not for setting your initial calibration so do not select this option. It is available to manually adjust individual calibrations to correct issues you may come across, normally, only when you talk to our tech support department.

****If you have resistive sensors for tanks 7 or 8 that have inverted settings (0 ohm reading for Full and High ohm reading for empty), then see our tech- support page on our web site for a special insert with different calibration options.** You can also manually input the settings for most resistive sensors.

You can use different calibration types for each tank. Use the "▲" and "▼" buttons to scroll through the calibration types. Press the "OK" button to select the calibration type.

*****CAUTION - Prior to selecting the calibration method, please read the Calibration notes below so you will know what raw reading you are shooting for and what you can do to get a better calibration setting.***

*****Important Calibration notes:***

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 calibration programming on page 11.

You want a minimum difference of at least 50 count between the Empty calibration and the Full calibration settings (It will work at less than that but it is not optimal). Ideally you would like to shoot for closer to 100 count difference. This is not absolutely necessary but the higher the difference, the better the accuracy. You also want to try and keep your full number under 250.

If the difference between your empty and full calibration settings is quite a bit less than 50, you can add foil to the inside of your original foil strips. This will bring the strips closer together and should increase your count. Do only one side at a time and check your number. Make sure you overlap the foil and it stays pretty consistent the whole height of the tank. It is OK to cover some of the copper tape.

If you have a very short tank (i.e., 6" or so) or a very thick tank you might have to add a second strip of foil overlapping the first one on the outside of each strip.
*****Important - Space is provided on page 4 to note your initial calibration settings for future tech support needs. If you end up getting very non-linear readings when you are checking your tanks, you may have to change from Empty/Full calibration to the 25% calibration settings; especially for irregular shaped tanks. If you can stay with Empty/Full, though, that is easiest.***

To calibrate using the "EMPTY/FULL**" option, you need to calibrate your tank at ***both*** Empty level and Full level. You can start at either empty or full. You need to have the tank at the level you want calibrated (i.e., empty for empty or full for full).

The first screen that comes up is the first enabled tank. You will also see the current calibration settings. Select "OK" to calibrate this tank. You will then select "OK" at "Empty/Full". If you do not see "Empty/ Full" press the "▲" or "▼" arrows until you do.

You will then be brought to the screen to record your calibration settings. On the Left is the position you are setting (i.e. Empty or Full); in the middle is the current saved value and on the right is the live/raw reading (or what the sensor sees in the tank right now).

As you empty or fill your tank, the live reading will change. If it does not change, do not continue as there is a problem that must be addressed. See the troubleshooting guide if you have this problem.

Use the "▼" and "▲" arrows to select which level you want to record right now. Press "OK" to update the saved setting with the current reading. It will ask you if you are sure. Press the "OK" for Yes and "MENU" for No. The raw number should then match the level you just calibrated.

*****Empty and Full settings must be different with Empty being lower than Full with a difference of hopefully at least 50 counts. If they are too close together you might see an error. You can then confirm if you want to continue with these settings. It will not let you save a full value under 10.***

After saving both the empty and full calibration values, push the "MENU" button to back out until you get to the screen where the raw reading in the middle is blinking. Then scroll to the next tank using the "▲" arrow.

To calibrate using the **"25% Increments" it is easiest to start with the tank empty.

For this option to work properly, you should have a difference of at least 75-100 from the Empty to the Full level.

After you have selected the tank you want to calibrate, use the "▲" or "▼" at the calibration option then press the "OK" button to select the "25% Increments". The second line will display "EMPTY" and then the current recorded value for the empty setting will be in the middle. At the end of the line the raw (live) value will be displayed.

Press the "OK" button to accept the "Empty" calibration. You will be prompted to save the value. Press the "OK" button to save it or the "MENU" button to disregard the value. The middle "recorded" number should now match the "live" number on the right.

You can then press "▲" for 25% or "▲" or "▼" to go to a different level. To calibrate

the 25% level, fill the tank to the 25% level. (i.e., if you have a 100-gallon tank, put 25 gallons in it). Then press the "OK" button to accept the 25% value. Continue this pattern for the 50%, 75% and Full values.

You **must** set calibration at each level and the settings must be progressive or it will error. When you finish the "Full" level, you can press the menu button to back out of the calibration for that tank until you get to the screen where the raw reading in the middle is blinking. Then scroll to the next tank.

To adjust an individual calibration value after you have initially calibrated your tanks, or if you have a resistive sensor for tanks 7 or 8 and know the settings (ie. 0-240), or if you have one of our Diesel Sensor Rods (0-153), select the tank to calibrate then press the "▲" or "▼" buttons until you see **"MANUAL INPUT" then press the "OK" button.

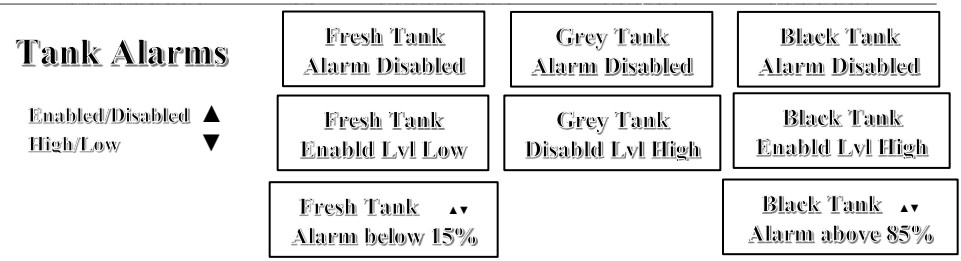
This is not to be used for initial installations unless noted above. This should only be done after your initial calibration is input. At this point you can scroll to the calibration value you wish to adjust by pressing the "▲" and "▼" buttons. When the calibration value you wish to change appears press the "OK" button.

This will enable you to make adjustment to the value by using the "▲" and "▼" buttons. You can tell when you are in the adjustment mode by the up and down arrows in the bottom right corner of the LCD screen. After adjustment is complete press the "OK" button. You will be prompted to save the value or disregard the value. After saving the calibration value you will return to the screen where you can select another calibration value to adjust.

****CALIBRATION ERRORS –** If you are calibrating and get "CALIBRATION ERR" then something was set wrong.

- Check to make sure that your Empty setting is less than your Full setting.
- Check to make sure your empty and full settings are **not** the same or very close (i.e., within a 25 count).
- Is your Full value a very low number (it will not save if less than 10) or too close to the Empty?
- If you are calibrating in 25% increments, check if each setting is progressive. (i.e., 50% number is not lower than the 25% number).

See troubleshooting guide if any of these apply to you.



*** CONFIGURE YOUR ALARMS** – The default setting on Alarms is that all Alarms are disabled. If you want to enable an alarm, press "OK" at the "**TANK ALARMS"** screen to configure your alarms. The Alarm is a higher frequency buzzing.

The first screen will be your first enabled tank. You can now toggle the alarm on or off ("Disabled" or "Enabled") by pushing the "▲" arrow. You can toggle between being alarmed at Empty (Low) or Full (High) levels by pushing the "▼" arrow (i.e. "Low" for Fresh or Fuel tanks and "High" for Grey or Black tanks). Press "OK" when done setting the alarm options to switch to the next screen.

When you press “OK” at a tank that you have enabled the alarms on, it will bring up the screen to set what level your alarm will go off at. This screen will not appear if the tank alarm is not enabled. Press the “▲” or “▼” arrows to select the percentage you would like to be alarmed at (i.e. If you want the Fresh Tank to alarm you when it reaches 15% empty, push the “DOWN” arrow until you reach 15). Press the “OK” button when you have selected your percentage.

You will now see the saved settings for this alarm. Press the the “▲” or the “▼” button to go to the next tank you want to configure. Repeat the previous instructions for the other tanks. After all tank alarms are configured, press “Menu” to leave this option.

Alarm Volume

. Press “OK” if you want to change the Alarm Volume. Use the “▲” or the “▼” button to set the alarm level. The level can be set from 0 (off) to 255 (max volume level). Press the “OK” button to save and go to the next option.

Tank Scan Frequency

The default set-up is to scan the tanks every 5 minutes. If you would like to change this setting, press “OK” here. Press the “▲” or “▼” arrows to change the amount of time between automatic scans of the tank levels.

The options range from “DON’T AUTO SCAN” (which turns auto scanning off completely) to “2 hours”. If you turn auto scans off, you can manually check the tanks by pressing the “▲” or “▼” arrows. Press “OK” when desired time is selected.

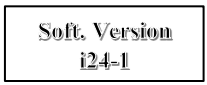
Screen Brightness

Press “OK” at “**SCREEN BRIGHTNESS**” to change the brightness of your LCD screen. Press the “▲” or “▼” arrows and then press “OK” when done.

Battery Alarm

The default Battery Alarm is set at disabled (OFF). Press “OK” at the “**BATTERY ALARM**” screen to change this setting. Press the “▲” or “▼” to turn the Alarm “OFF” or “ON”. If the alarm is ON pressing the “OK” button will take you to the battery alarm voltage level screen where you can set the voltage level your battery alarm will sound at. Press the “▲” or “▼” arrows until desired voltage is reached then press “OK” to save the alarm level.

Software Version



This screen will tell you what version of software you are using. In our continuous efforts to be the best product on the market, free software upgrades are available for the life of your tank monitor panel as long as there are no hardware changes. Any charges for hardware changes to accommodate any updates will be minimal.

Press the “▲” or “▼” arrows to change more configurations or the “MENU” button to exit configuration mode.

AFTER SET-UP: USING THE SYSTEM

After the system is all wired and configured, you can screw in your panel and enjoy the most accurate tank monitoring system on the market.

When you first turn your panel on; as it "boots up" it will automatically scan through all the tanks. The screen for your display will go into "sleep mode" after this scan.

The automatic scans will be happening in the background (while the screen is off) unless a tank is out of the set bounds and an alarm goes off. The backlight will also come on if you are manually scanning the levels of your tanks.

To manually check the level of your tanks, press the "▲" or "▼" arrows to scroll through each tank* not *the "OK" button. You can also do a full scan if you press both the "▲" and "▼" arrows at the same time.

Pressing the "OK" button will not do anything when the screen is off. Pressing the "Menu" button will only cancel a scan. Otherwise, those buttons are only used in set-up and calibration mode. Only use the"▲" or "▼" arrows to scroll through tanks.

**If during an automatic scan or a manual scan, a tank reads out of bounds (empty or full), the alarm will sound. You will need to press "OK" to acknowledge the alarm before it will continue. The alarm will time out after 2 minutes of beeping until the next scan if nothing is pressed.

TO SILENCE THE ALARMS – To temporarily silence an alarm until the next scan, press the "OK" button acknowledging the alarm. If you want to fully disable an alarm for one tank, you will do that through the configuration menu (see "Tank Alarms" above).

To silence ***all*** the alarms completely, you will need to press the "MENU" and the "OK" buttons at the same time. This will bring you to "AUDIBLE ALARMS" screen. Pressing the "▼" arrow will silence ***all*** alarms, pressing the "▲" button will enable ***all*** alarms. When you are scrolling through your tanks, it will state "AUDIBLE ALARMS ALL OFF". To turn the alarms back on press the "OK" and "MENU" buttons at the same time. Then press the "▲" button to re-enable all the audible alarms.

TROUBLESHOOTING GUIDE

With factors that can affect the accuracy of readings and calibration.

****If you are not able to diagnose and fix your problem using the guide on the next page, 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.**

Tech-Edge Manufacturing LLC

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www.TankEdge.com

PROBLEMS & REMEDIES – To check the live levels easily for each tank, put your panel into calibration mode for the tank you are checking. This will send a more constant pulsing voltage signal to the tank instead of a single pulse.

Problem	Possible Causes	Test/Remedy
One or more tanks always read full and the raw reading never changes, usually over 250.	Ground wire has probably become disconnected.	Check the ground wire at each sensor that is not working. Sometimes they are all tied together. Reconnect or fix and check raw reading. You can check voltage across the blue wire and ground wires; if the pulsing signal is close to 10 volts while the panel is checking that tank, the ground is probably loose or disconnected somewhere.
Raw reading is always between 27 and 45 no matter what is in the tank. It does not change	*If it does not change at all, your red and blue wires are probably reversed *if it changes some but not very much, you might need to adjust the foil on the tank. (See notes on page 10-11).	The red stripped wire at the panel should always go to the red wire on the sensor and the blue stripped wire should always go to the blue wire on the sensor. This can also be checked by measuring with a volt meter across the blue and the black wire, at the sensor, while the panel is at that tank. If the pulsing signal reads around 10 volts than your wires are crossed.
Reading is always around 200 and never changes	This is a symptom of the Blue and Black wire possibly being reversed.	Make sure the Black wire at the sensor goes to ground or black at the panel and the blue wire goes to the blue stripped wire at the panel for that tank.
Calibration Errors: See the initial errors and solutions listed on page 13 first. Then check for these problems: Tank always reads full, empty or never changes regardless of level of fluid in the tank. If it is always full, see the top box above first as this is usually the problem.	**Improperly Calibrated Tank (see calibration section on pages 11-12)**	Check to see if the raw (live) reading is ***in between*** the empty and full settings. Make sure the empty and full calibration settings are not the same or very similar. If so, check for wiring errors listed above. Then recalibrate tank for empty and full and recheck. Make sure the raw reading is changing as you are emptying and filling the tank.
	Damaged or improperly installed aluminum foil tape	Visually check the foil installation on the outside of your tank. Make sure it is completely attached from the top to the bottom and there are no tears or bubbles. Reinstall tape or add new tape to correct problems
	If you are sending 10 volts out to the red wire on the sensor and the tank still always reads empty then you may have a damaged sensor module	Make sure white wires are securely attached to the copper pads on the tanks. If they have come loose, you can order a repair kit from the web site or using the order form. **See moda sensor testing instructions on the next page.**
	Electrical shock to the system via outside source or incorrect wiring, frying sensors and/or panel	Use the moda sensor testing instructions on the next page to determine if the sensor is bad. If the sensor is good, call tech support to troubleshoot the panel.

	Damaged wiring between display, sensor module and/or power source.	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.
Display does not come on at all	*12 Volts is not getting to panel or *Electrical shock may have fried panel *LCD screen may have gone out *Wiring harness may have bad crimp connection to board.	Check the inline fuse to see if it has blown. If you are measuring 12 volts going into the circuit board at the board itself (measure on the silver fingers on the board at the red wire) and the display does not come on at all, call our technicians to diagnose and/or send it in for diagnosis and repair. If you are getting 12v to the red wire but not at the board, check to make sure the crimp inside the wiring harness is not pressed up causing a bad connection.
Tanks have inaccurate readings but the raw reading changes during filling and emptying. *If you have a resistive sensor with inverted settings, see our tech-support page for optional calibration directions.	You may have too little aluminum tape on your tank. (See the ***Calibration notes*** in the installation guide).	If the raw readings for empty and full are very close (less than 50 difference), you can add tape to raise the voltage signals for the sensor. You will want to try to make the raw reading difference between empty and full at least a 50 count (100 is best). Add tape, recalibrate and check again.
	You may have too much aluminum tape on your tank	If you are getting a voltage reading (using a DC volt meter across the blue and black wires while tank selected is in calibration mode on panel) of over 5 volts, and your ground is good, then you may have too much tape on your tank. To remove tape, use a razor blade and run it from top to bottom. Use a ruler to keep a straight line.
	Your tank may be improperly calibrated.	See above for Improperly Calibrated Tank – you may need to change from "Empty/Full" calibration to 25% calibration settings if it is giving you very non-linear readings.

How to do voltage testing to see if there is a problem with your sensor, wiring or panel.

You can test your sensor using a standard volt meter set to DC Voltage. If you do not have a meter or the ability to get one locally, we sell simple ones on our web site.

Please note that the wiring that was used to hook up the panel to the sensor was determined by the installer and will therefore not be consistent between systems.

Section 1: First check the voltage going down to the sensor:

1) First you will want to check to make sure that the voltage is leaving the panel and getting down to the sensor. To do this, you will need to measure between the red and black wires at the sensor while the voltage signal is being sent down to it.
    a. You can put your panel in the calibration mode and select the tank you are testing. This will send a continuous pulsing signal.
    b. If you have a **panel that does not power up and you want to test the sensor**, you can apply battery voltage to the sensor by putting the black wire on the negative and the red wire on the positive 12V. You can use between 10 to 15 volts. Sending too much voltage could possibly damage your sensor.

2) If you cannot get to your tank, you will not be able to check if the wiring is OK but you can still check if the signal is leaving the panel OK. You will need to see which red striped wire

goes down to the red wire on the sensor at the tank you are trying to check (see the wiring diagram on page 6. You will have to remove your panel from the wall while leaving it connected in the wiring harness. You can check the reading between the wire going down to the red wire at the sensor and the ground wire.

3) You should get a voltage reading between the red and black wires somewhere around 10 volts. If you are checking at the sensor on the tank and do not get this reading, verify that you have voltage going down to the sensor. If you are correctly sending voltage out of the panel (correct tank selected, etc) then you have a wiring issue between the panel and the sensor. Check all wiring connections to make sure they are good. **Check the crimp in the wiring harness to make sure it has not been pressed up and not making good connection to the silver tab on the circuit board.** If it looks like it is not level with the other crimps, you can get a dental pick or some other instrument to pull the crimp down just a bit to make a better connection.

4) If you don't have the appropriate voltage coming out of your panel, then there is something wrong with your panel or the power getting to the panel. You can send your panel in for testing. We do not charge for testing on any panel or sensors that we currently service. You will only need to pay for return shipping. If your panel is bad, we can discuss the cost for repairing the panel or any warranty coverage you may have.

Section 2: Then Check the voltage going through the sensor

1) Once you have verified that you are getting voltage to the sensor, you will need to check the voltage coming out of the sensor across the blue to black wires at the sensor. This also needs to be done while the voltage is being sent down to the sensor just as above. This reading will vary depending on the liquid level in the tank. It should not be over 5 volts but could be very small, even a fraction of a volt with low levels. If your tank is completely empty, you may get no reading at all. Because of this, it's best if you have some fluid in your tank. The more the better/easier it is to read. You can put your hand across the two aluminum strips and you should see that voltage reading jump up. For the PVC Rod, grab the rod around the middle. If you are getting no signal out of the blue wire even after you have put your hand across the 2 aluminum strips, then your sensor is probably bad. Make sure that the solder connections between the white wires and the copper pads are good and double check that signal is getting down to the sensor. If these are good, then the sensor is probably bad.

2) If you are getting any signal out of the blue wire and it varies when you put your hand across the aluminum strips, then the sensor is probably good.

Section 3: Then Check the voltage going from the sensor back to the panel

1) To verify if the wiring is good coming back from the sensor, after you have tested it at the sensor, you can do this check using the method described in #2 in the first section but for the blue striped wire instead of the red striped one. You should get approximately the same voltage you detected in Section 2 of the testing. If not, then the wiring going back to the panel probably has problems. Check all the connections including the crimp connection in the wiring harness as noted above.

If you noticed that there is a bad solder connection between the white wires and the copper pads, you can purchase a **Moda sensor repair kit** on our web site which comes with 2 copper pads with white wires soldered to them and 2 butt connectors. You can then just cut your current sensor off at the white wires and splice them into the new copper pad connections. You then can clean a spot on the aluminum strips to put the new pads in a different location than the old ones, leaving the old ones there while making sure that no wire is still coming out of them. We also sell **repair kits with 4½ ft. of aluminum tape** as well, if your tape seems to be in bad shape. Check for tears or cracks the full height of your tanks on both strips.

This should cover most options of checking the sensors. If you have a question when you are testing or these procedures did not answer your questions, you are welcome to call our tech support department at the below number.

Partial Accessories & Parts Order Form Price List

Any price changes will be available on the web site.

Item	Description	Price Each	Quantity
Moda Sensor*	Exterior Moda sensor	$32.00	
Moda Sensor Kit*	Moda sensor with 4½' aluminum tape	$40.00	
Moda Sensor Repair Kit*	2 – 5½" wires soldered to copper pads & 2 Butt Connectors	$8.00	
Moda Sensor Repair Kit with aluminum tape*	2 – 5½" wires soldered to copper pads and 4½' of aluminum tape & 2 Butt Conn.	$18.00	
PVC Sensor Rod (interior) measure from top outside of tank to bottom inside - minus ½"	Up to 12"	$64.00	_____"
	12¼"-24"	$72.00	_____"
	24¼"-36"	$83.00	_____"
	36¼"-50"	$99.00	_____"
Aluminum Diesel Rod (interior) measure from top outside of tank to bottom inside - minus ½"	Up to 12"	$180.00	_____"
	12¼"-24"	$192.00	_____"
	24¼"-36"	$204.00	_____"
	36¼"-50"	$216.00	_____"
Water Pump Switch **(iSeries only)**	3 Prong red lighted on/off	$9.00	
Water Heater Switch **(iSeries only)**	2 large 2 small prong lighted on/off	$9.00	
Generator Switch **(iSeries only)**	3 Prong green lighted on/off	$9.00	
Fuses*	2 - ½ Amp 3AG Fuses	$7.00	
Fuse Assembly*	Full Fuse link assembly w/ ½ Amp Fuse & wires	$18.00	
Copper/Wire Jumper Set*	2 wires soldered to copper pads at each end for "step out" tanks. These are custom ordered to length.	$10.00 See tech support page on web site for more info.	

***To save on shipping cost, these items can easily be put in the mail. If you would like that shipping method, please specify that option when ordering.**

You can place your order online at **www.TankEdge.com** or call us at: **(541) 610-0401**.

You can also mail this in to us at: Tech-Edge Manufacturing LLC
4296 Osage St.
Sweet Home, OR 97386

*Other Accessories Available on the website.

Name:_____ Phone Number_____

Shipping Address:_____

_____

CC Address (if different):_____

Credit Card #_____ Exp._____ CCV_____

DO NOT RETURN DEFECTIVE PARTS TO YOUR PLACE OF PURCHASE!

1 YEAR LIMITED WARRANTY

Your monitor is warranted by Tech-Edge Manufacturing LLC for the period of 1 year from the date it was purchased by you, the original owner, to be free from defects in materials or workmanship under normal use. This warranty does NOT include labor charges or damage resulting from accident, misuse, improper installation, abuse, lack of reasonable care or electrical shock. If your product was damaged in transit, please file a claim with the carrier.

Tech-Edge Manufacturing LLC is not responsible for incidental or consequential damages resulting from installation or use of our products.

Except as provided above, no warranty or affirmation of fact, express or implied is made or authorized by Tech-Edge Manufacturing LLC. This warranty gives purchasers specific legal rights. Purchaser may also have other rights which vary from state to state. Certain aspects of disclaimers are not applicable to consumer products; e.g. (A) Some states do not allow the exclusion or limitation of accidental or consequential damages, so the above limitation may not apply to you; (B) Also, some states do not allow limitations on how long an implied warranty lasts, consequently the above limitation may not apply to you; and, by law, during the period of this warranty, any implied warranties or merchantability of fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

This warranty is valid and transferrable from the original purchase date from an authorized reseller. Tech-Edge Manufacturing LLC will make a good faith effort to process any claim which proves to be defective within the warranty limitations.

WARRANTY PROCEDURES: Should you discover a defect in the tank monitor system during the warranty period, please check your manual and/or our web site for troubleshooting information. If you cannot solve your problem with those tips, PLEASE THEN CONTACT TECH-EDGE MANUFACTURING LLC. at **(541) 610-0401**. At our discretion we will request the part be sent to us or we may direct you to the nearest AUTHORIZED Service Center for repair. If you are directed to send in your product to us, please do the following:

1) Send ONLY the part which is defective, COMPLETE KITS WILL NOT BE SENT AS REPLACEMENT. You do not need to cut the wires on the harness.

2) Include your proof of purchase from an authorized reseller or the 1-year warranty period will be from the manufacture date.

After return has been authorized, send to:

Tech-Edge Manufacturing LLC
Attn: Repairs
4296 Osage St.
Sweet Home, OR 97386

Web site: **www.TankEdge.com**

Peak season repairs can take up to 3 to 4 weeks to process. Call for a better estimate on your repair time.