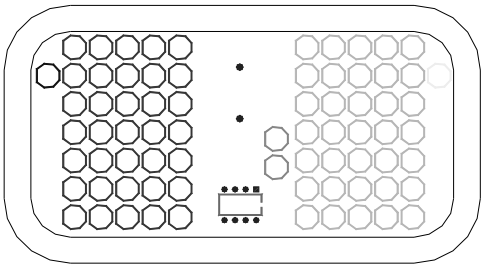

CIVACON™

1376TT
TRUCK
TESTER

CIVACON 1376TT TRUCK TESTER

OPERATION MANUAL

H52795PA

CIVACON

4304 MATTOX RD.

KANSAS CITY, MO 64150

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QUICK-START® is a registered trademark of CIVACON

API = American Petroleum Institute

IS = Intrinsically Safe

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1 PRODUCT DESCRIPTION

This manual describes the operation, and troubleshooting of the Civacon 1376TT Truck Tester. It is intended to help operators, maintenance persons, understand the operation and features of the 1376TT tester. It is recommended reading this manual before use of any equipment.

The 1376TT tester detects and communicates an overfill condition. The 1376TT Tester also communicates a non-permissive condition to the maintenance personal by way of the front panel display. The display also provides diagnostic information with defective sensors.

An overall Truck testing system contains a Truck Tester (1376TT Truck Tester), and a Cable sold separately. The cables are as follows: API Optic cordset and plug (C40142), API Thermistor cordset and plug (C40143 Green) or (C40144 Black). Please consult the factory for the current availability of all optional products. Thermistor and Optic signal inputs allow compatibility with the two API standard signaling conventions commonly used in the industry. Either of these signals comes from the truck/trailer mounted onboard control monitor or sensors.

2 SYSTEM OPERATION

The purpose of the Civacon 1376TT Truck Tester is to test the signals from a sensor mounted in compartments of a tank truck, or storage tanks. It can detect up to 8 Thermistor Sensor inputs or 12 Optic Sensor inputs.

The 1376TT Truck Tester uses self-checking principles to provide a continuous check on all system components. This is accomplished by the exchange of digital pulses between sensor and Truck Tester. These digital pulses must pass through all active components in the sensor, sensor wiring, and back to the Truck Tester to test all the components in the circuit. If at any time the circuit detects a failure in any of the components, the system reverts to a NON-PERMISSIVE condition. The unit must then be repaired before it can return to an operational condition. Sensors and probes cannot be "jumpered" out of the circuit and still work.

The 1376TT Truck Tester provides an "AUTO-SWITCH" capability between API Optic signal format and API Thermistor signal format. The monitor statically remains in the Optic mode, providing Optic signals to terminals 2, 3, 4 and 5 on the monitor, which correspond to pins 4, 5, 6 and 7 on an Optic plug. The monitor also monitors channel 6 (pin 8 of a Thermistor plug) for a Thermistor signal. If one is detected, it switches the Optic signal tracks going to terminals 2, 3, 4 and 5 off, and the input terminals over to Thermistor channels 2, 3, 4 and 5.

The Tester will work with any API 5 wire Optic sensor. The Tester only uses 4 of the 5 wires, because the fifth wire is used for onboard monitor diagnostics ONLY. Up to Twelve standard load Optic sensors may be connected to the Tester.

The monitor will work with any API 2 wire Thermistor probe. The Tester is optimally set up for use with GREEN Thermistor, 200 ohm, type probes. It will also work with SILVER Thermistor, 2,000 ohm, type probes, but the time to warm-up will take longer. The Tester will also work with any electronic type 2 wire probe that conforms to the API Thermistor signal format. Civacon's electronic 2 wire sensor is called a QUICK-START® sensor. Please refer to the factory for current model numbers and availability. Depending on the amount of channels the monitor is equipped with, the monitor can handle either up to six (6) or up to eight (8) probes.

The tester will work with any API Thermistor format terminator. Most terminators have multiple units within themselves. Civacon's model 1900E series terminator comes with five internal channels. It has 6 wires exiting, with a single white wire being the ground or common line.

The tester is also designed to work with any OnBoard Monitor's API Optic or API Thermistor signal format outputs. Of course the tester can only be connected to one type of signal source at any one time. You cannot have both Optic and Thermistor plugs connected at the same time. This is an illegal condition, and the results are indeterminate.

Note: Please consult the factory for current model numbers and options to the above.

3 OPERATION and DESCRIPTION of INDICATORS

The 1376TT Truck Tester can automatically detect presence of either Optic or Thermistor signal from the tanker source. NOTE: THE 1376TT MUST FIRST HAVE A VALID GROUND VERIFICATION (GV) SIGNAL BEFORE THE OVERFILL DETECTION CIRCUITRY WILL PROVIDE A PERMIT CONDITION. The GV inputs are at pins 9 and 10 of J1 of the Overfill/Ground board. If GV is not used in the application, a jumper must be installed between pins 9 and 10 for the system so that the 1376TT will detect Thermistor or Optic overfill signals.

STARTUP:
When power is applied to the 1376TT, the unit goes into an initialization routine searching for a valid Ground Verification signal. Once GV is detected, the unit will begin looking for either Thermistor or Optic signal present at J1 of the Overfill/Ground board. If the proper signal is detected, the unit will then activate all LEDs on the GREEN light bank will be active.

PERMIT INDICATION:
All LEDs on GREEN are ON and FLASHING (see Figure 10)

GROUND VERIFICATION FAULT CONDITION:
RED "▼" is displayed.

OVERFILL FAULT INDICATION:
The 1376TT will indicate which tank compartment is experiencing a fault or wetted condition. The RED LED bank will indicate by number which compartment needs attention.

THERMISTOR Fault – will display all compartments that are wet or faulted if there are multiple

OPTIC Fault – will display only one channel determined by the impedance of the sensor probe's green diagnostic wire.

3.1 DISPLAY INFORMATION

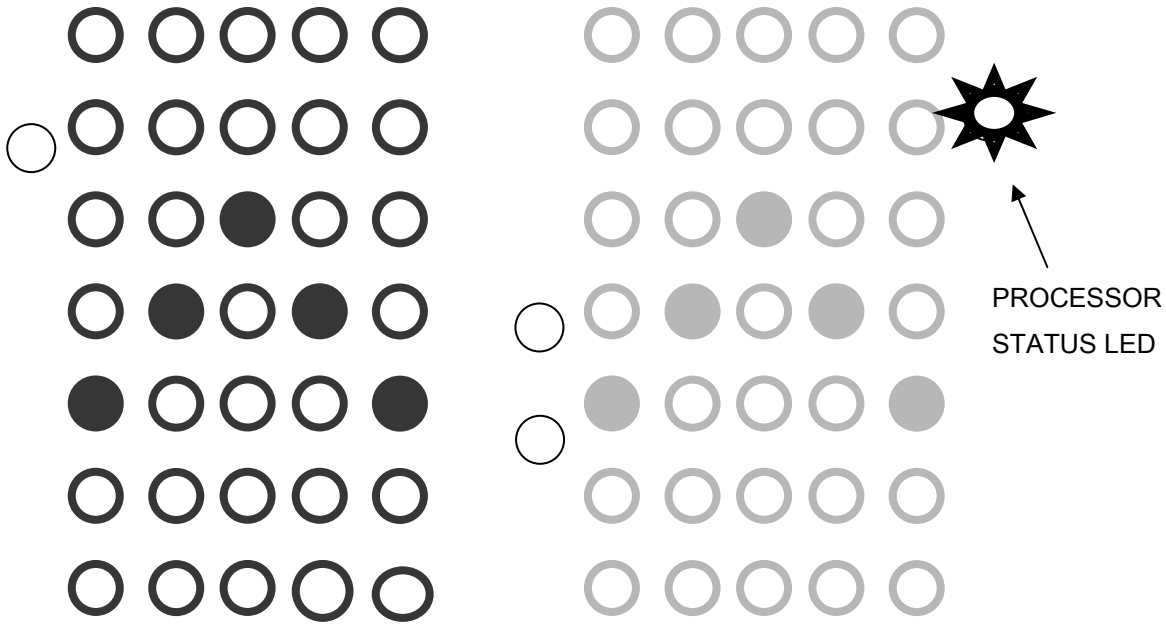


FIGURE 6 - SYSTEM INITIALIZING

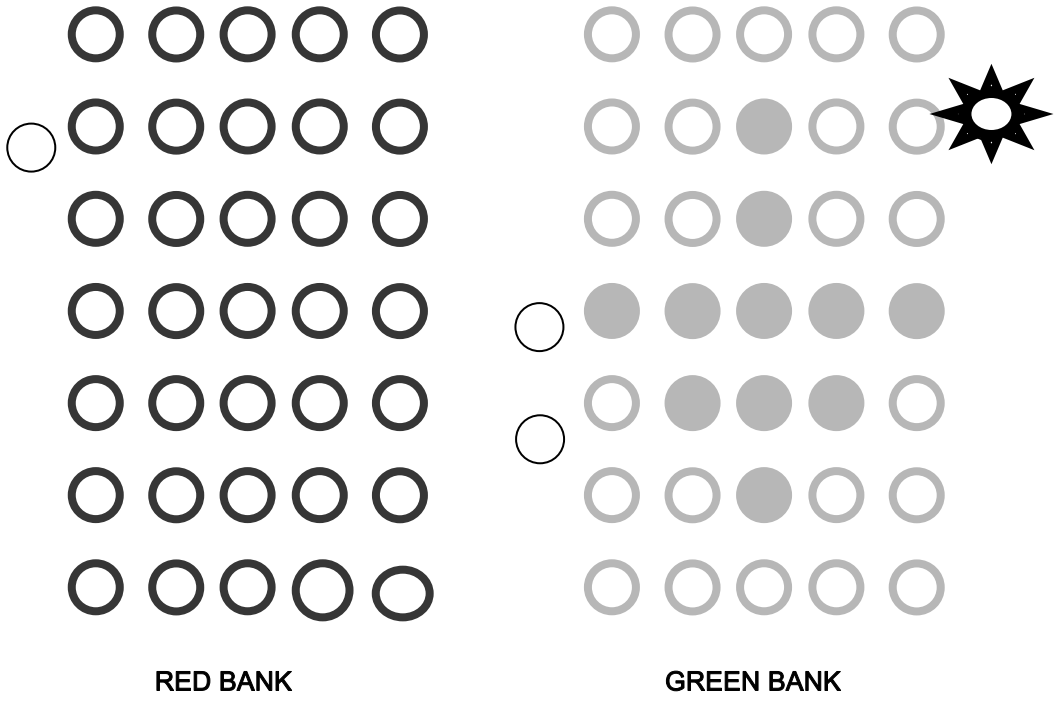


FIGURE 7 - GROUND IS VERIFIED (SEARCHING FOR OVERFILL)

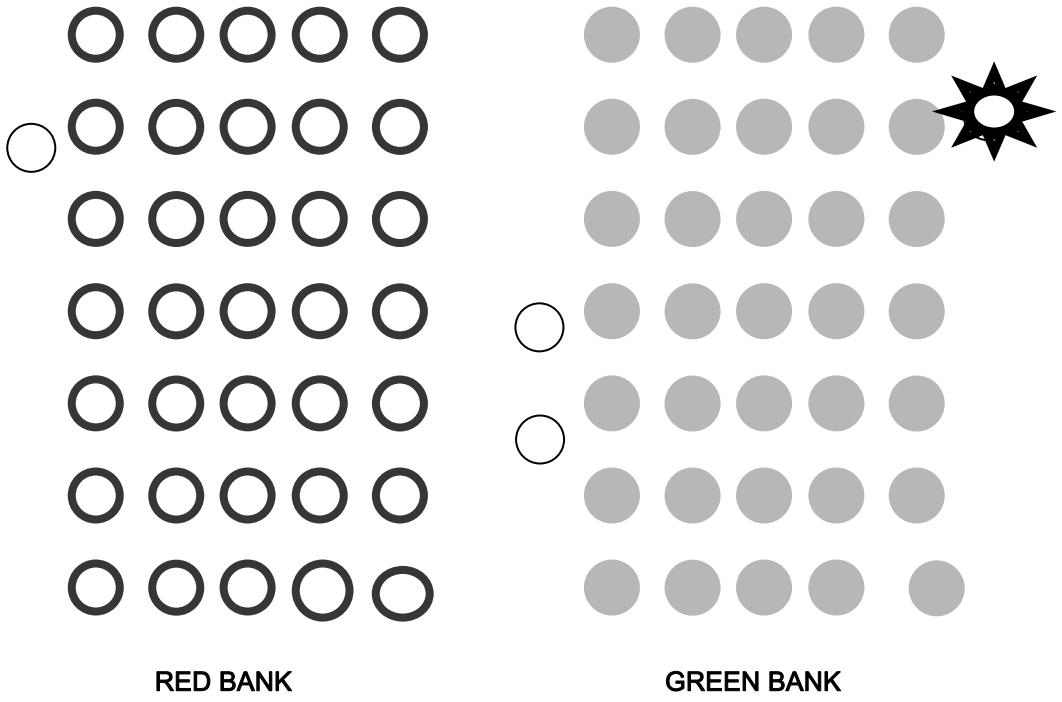


FIGURE 8 - PERMIT AND DETECTED (OVERFILL AND GROUND)

ALL GREEN SOLID ON

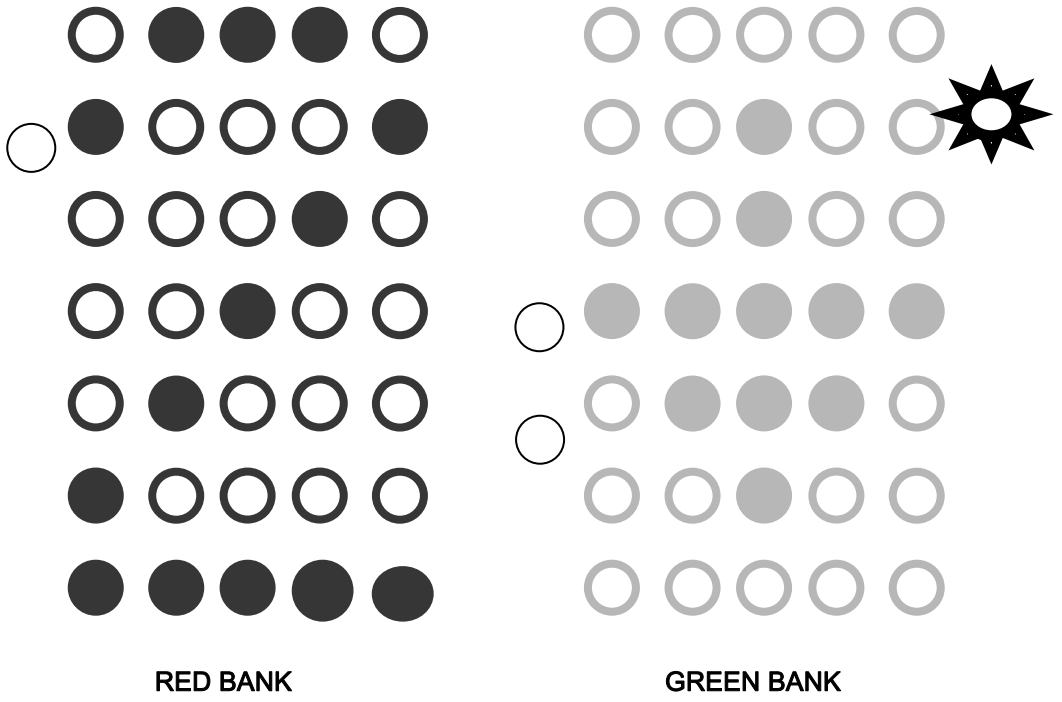
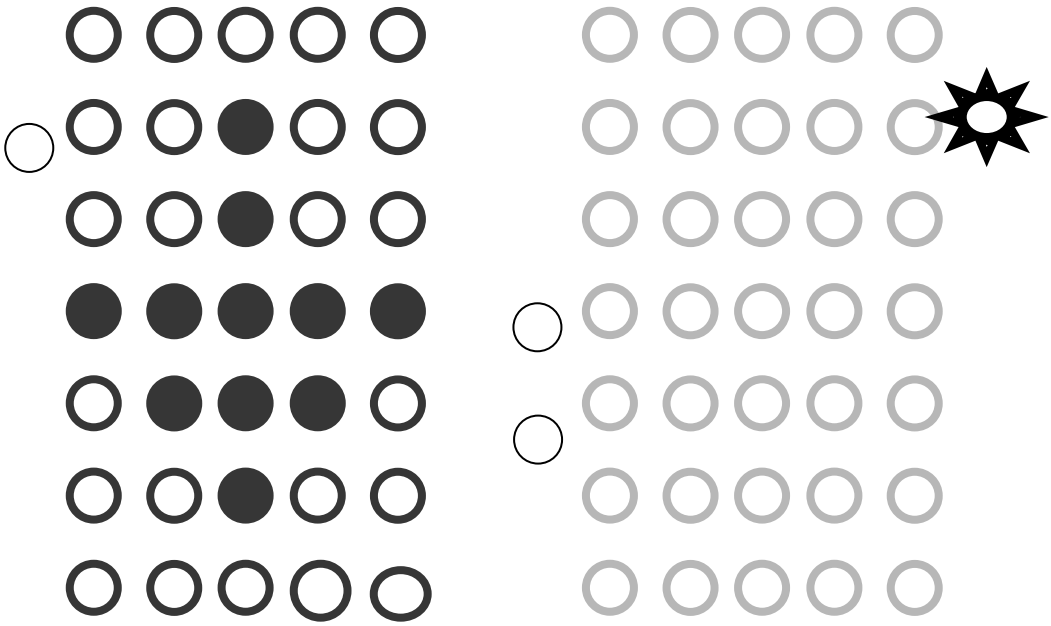


FIGURE 9 - SENSOR FAULT INDICATION – GROUNDING PRESENT

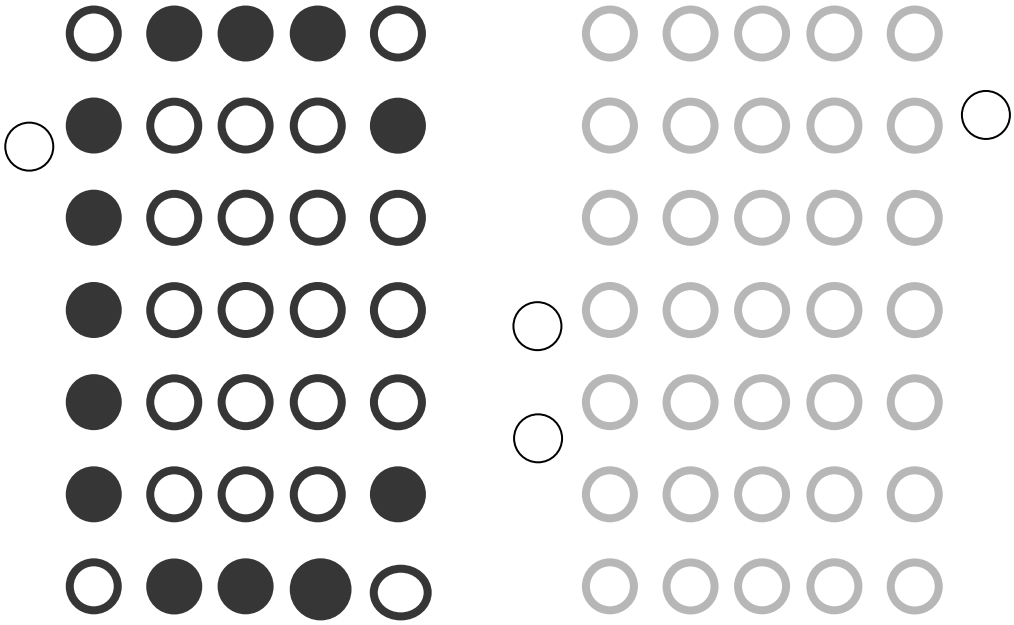
("2" = Problem with Compartment #2 - Good Ground)



RED BANK GREEN BANK

FIGURE 10 - GROUND FAULT

1376TT DOES NOT SEE CORRECT GROUNDING CONNECTION



RED BANK GREEN BANK

FIGURE 11 - COMMUNICATION FAULT – INTERNAL TO 1376TT

NO COMMUNICATION COMING FROM PROCESSOR BOARD

4 CHECKOUT PROCEDURE

1 - Apply the proper AC line power to the 1376TT Truck Tester. Turn on power switch **Figure 6,** "System Initializing" followed by Software Version Number. Example: Green LED showing **"1"** followed by **"."** followed by **"6"**, stands for Software Version **1.6**

Check to see the Tester displays a **NO** "PERMISSIVE" signal (Figure 10).

2 - Connect the Truck Tester plug to an appropriate test sensor source.

Use a known working tank truck with appropriate sensors installed that can connect through the plug and socket to the Truck Tester for a permit signal source. A Civacon Model 1386 Rack Tester Unit may be used if it is available.

Apply proper Ground Verify signal. GREEN "▼" should display. (Figure 7)
Apply proper Overfill signal. The GREEN Permit LED's should all be ON. (Figure 8)

3 - Disconnect the test source. Display should have RED "▼". (Figure 10)

4- If the 1386TT does not meet the above tests, refer to the troubleshooting section.

CAUTION!: Hazardous conditions exist on the printed circuit board. Only a qualified technician should be probing around on the circuitry contained within. Please consult the factory with any questions.

5 Power/Relay Board Status LEDs

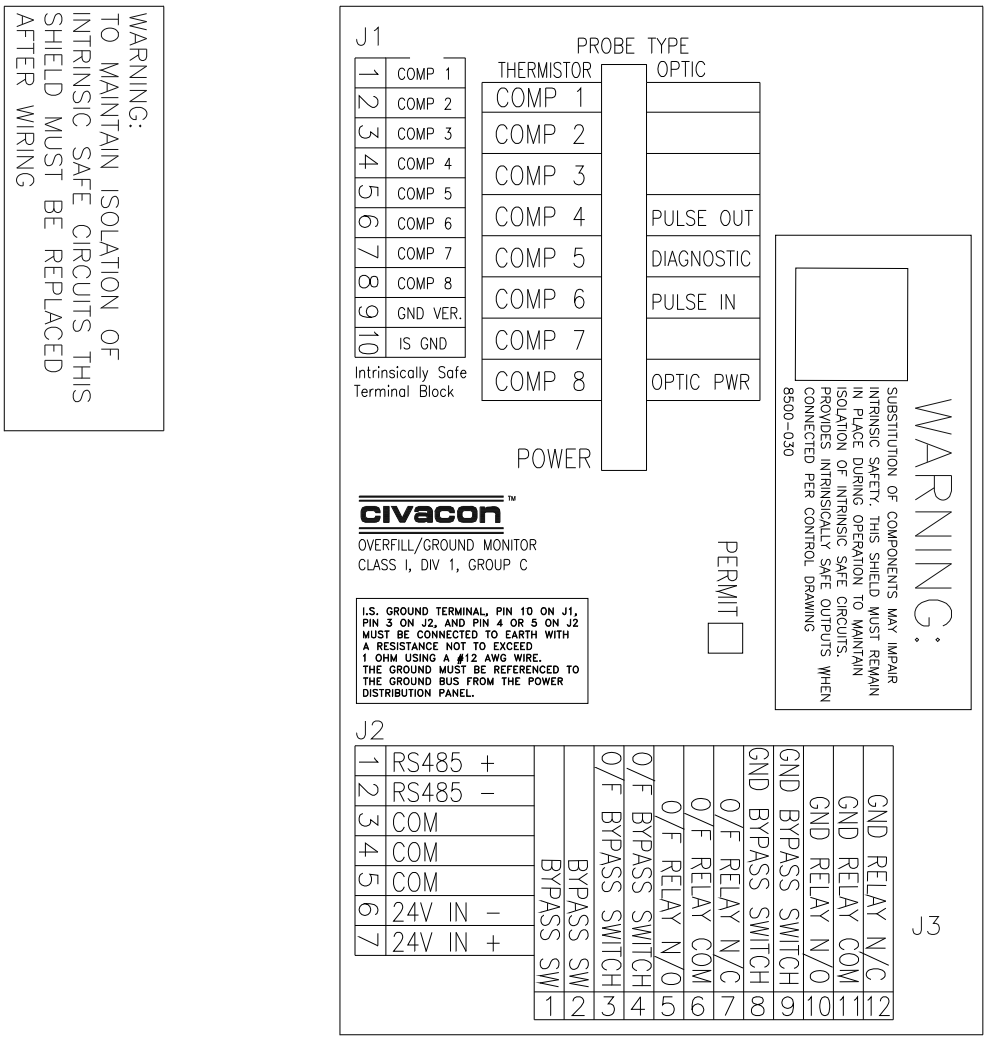


FIGURE 14 – OVERFILL/GROUND BOARD

An LED is visible for each of the input channels on the top of the Overfill/Ground board. This LED indicates the state of the corresponding Thermistor channel. Each LED will be flashing to indicate a signal from the respective compartment, or in the case of the Optic sensors, the entire loop. A steady on for the Thermistor indicates a constant non-pulsing signal.

Note: *Flashing does not indicate that the sensor is indicating permissive, as the signal may be out of specification. The indications for these LEDs are shown in the table below.*

Thermistor Mode (Channels 1 – 8)	
Green	Constant power or open circuit
Red	Constant low signal or ground
Flashing Red/ Green	Thermistor is present (signal may be valid to permit loading)

If in the Thermistor mode all the LEDS are flashing, and they are a valid Thermistor signal, then the monitor should give a permissive indication. Providing that the truck ground is connected and functioning as well, the indications in the table below will apply.

Optic Mode	
Channel 8 LED	Green
Channel 4 LED	Green
Channel 6 LED	Red
Channel 5 LED	Green

5 REPLACEMENT PARTS

FIELD REPLACEABLE COMPONENTS:

E52378	ASSY, OVERFILL/GROUND MONITOR BOARD
E52378-8	ASSY, OVERFILL/GROUND MONITOR BOARD(8 CH. THERM)
D52305-000	ASSY, PCB, 1376TT TRUCK TESTER DISPLAY BOARD

CAUTION

The Power/Relay board chassis contains **NO** components that are field replaceable except the six (6) AC fuses. Any substitution of components may impair the intrinsic safety and approvals of the system.

SAFETY FIRST!! POWER MUST BE OFF WHEN REMOVING AND REPLACING THE AC FUSES IN THE MONITOR.

This is important to maintain safe repair practices

6 WARRANTY

All parts and products are thoroughly inspected and tested from the time raw material is received at our plant, until the product is completed. We guarantee that all products are free from defects in materials and workmanship for a period of one year from the date of shipment. Any product that may prove defective within said one year period will, at our option, be promptly repaired, or replaced, or credit given for future orders. This warranty shall not apply to any product, which has been altered in any way, which has been repaired by any party other than an authorized service representative, or when such a failure is due to misuse or conditions of use. We shall have no liability for labor costs, freight costs, or any other cost or charges in excess of the amount of invoice for the products.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

WARNING:

CIVACON products should be used in compliance with applicable federal, state, and local laws and regulations. Product selection should be based on physical specifications and limitations, compatibility with the environment, and the material to be handled.

CIVACON MAKES NO WARRANTY OF FITNESS

FOR A PARTICULAR USE.

6.1 TECHNICAL ASSISTANCE

If at any time during the installation a question arises that is not covered in this Installation Instruction, or with any other applicable documents referenced, feel free to call the **CIVACON ELECTRONICS TECHNICAL ASSISTANCE LINE:**

In the U.S.A., Call 1-800-5 CIVACON. (800-524-8226)

For the **CUSTOMER SERVICE DEPARTMENT:**
In the U.S.A., Call 1-888-526-5657; In other countries, call your local agent.

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