

***Civacon ROM III
Overfill Detection & Retained Product
Monitor
Model Series: 3308
Installation & Operations Manual***

Manual 1.3

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1. Product Description

We've put together this manual to help you understand how to operate and install ROM III, a Retain Overfill Monitor system that is tank/trailer mounted. In compiling this manual, we sought the advice of people we consider to be authorities on safe operation: those with actual field experience. We hope that their knowledge, coupled with our technical information, will allow you to install your system both safely and effectively. If you do run in to any questions or concerns, our technical support team will be glad to assist you.

The ROM III is a tank truck / trailer mounted On Board Monitoring (OBM) system with sensor mounted in the top and bottom of each tank compartment. The ROM III monitor detects and communicates a pending overfill condition to a loading rack control monitor, and signals which tank compartment is overfilled. The ROM III monitor also detects and communicates a retain condition to a loading rack control monitor. This control system will enable a tank truck / trailer to load at API optic, thermistor or float petroleum loading rack monitors while using only two wire optic sensors. If all of the optic sensors do not detect any liquids, the monitor provides the necessary signal information to the appropriate API sockets to enable loading of the tank trailer truck. The ROM III Onboard Monitor has been designed for use with any CIVACON 2-Wire Overfill and Retain Sensors.

The ROM III on board monitor includes some additional new features and benefits when compared to its predecessor the ROM II. These include:

- A. Support for tanks with up to 8 compartments using 2-wire overfill and retain sensors.
- B. 2 relay contacts one I.S. and one NON I.S.
- C. Aux out is now tied to the top sensors only. For use with optional Indicator light.
- D. Diagnostic capabilities with optic rack monitors.
- E. Low power indication

MODELS of ROM III Include:

#3308-3308 – ROM III in standard “square” housing

#3308R-3308 – ROM III in standard “square” housing, with Retained Reset Switch

#3308-SPEC – ROM III in special “rectangular” housing

#3308R-SPEC – ROM III in special “rectangular” housing with Retained Reset Switch

2. General Specifications

Parameter	Minimum	Maximum	Units
Input Voltage	9	30	VDC
Input Current		1	A
Ambient Operating Range	-40°	+70°	Celsius
Storage Temperature	-40°	+70°	Celsius
Max. Surface Temperature		+135°	Celsius
NON I.S. Relay (TB1) Voltage		30	V
NON I.S. (TB1) Relay Current		5	A
I.S Aux Out (TB4) Voltage		20	V
I.S Aux Out (TB4) Current		50	mA
Altitude		2000	M
Humidity		100%	

The ROM III is rated for outdoor use having an overvoltage category code I and pollution degree 2 according to UL 61010-1 standard.

3. Intrinsic Safe Specifications

This section is agency controlled, hence shall not be changed without permission of agency.




The ROM III has been assessed by compliance with the following documents:





EN IEC 60079-0: 2018

EN 60079-11: 2012

EN 60079-15: 2010

Equipment Label Marking:

ROM III		CIVACON 	VMAX : 30VDC == IMAX : 1.0A	
MODEL: 3308-3308		9393 Princeton Glendale Rd. Hamilton, Ohio 45011 U.S.A.		
WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY. DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT. AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPROMETTRE LA SECURITE INTRINSEQUE. NE PAS OUVRIR UNE ATMOSPHERE EXPLOSIVE EST PRESENTE.		FM18CA0016X IECEX FMG 180004X FM18ATEX0015X		
THIS ENCLOSURE IS A POTENTIAL ELECTROSTATIC HAZARD. TO PREVENT THE RISK OF ELECTROSTATIC SPARKING, THE SURFACE SHOULD ONLY BE CLEANED WITH A DAMP CLOTH.		  II 3(1) G Ex nA [ia Ga] IIB T4 Gc		
FOR CL I, DIV 2, GPs C & D T4 PROVIDING INTRINSICALLY SAFE CONNECTIONS FOR CL I, DIV 1, GPs C & D CL I, ZONE 2 AEx / Ex nA [ia Ga] IIB T4 Gc		Ta = -40°C to +70°C INSTALL PER CONTROL DRAWING CD3308		

MODEL: 1910A	
	CL I DIV. 2 GP. C & D T4 WHEN CONNECTED PER CONTROL DWG CD3308
FM18CA0016X IECEX FMG 180004X FM18ATEX0015X	-40°C ≤ T _{amb} ≤ +70°C
 	II 3(1) G Ex nA [ia Ga] IIB T4 Gc
INSTALL PER CONTROL DRAWING CD3308	
CIVACON 	
9393 PRINCETON GLENDALE RD • HAMILTON, OH 45011 USA	

Description of Equipment or Protective System:

General - The ROM III is a tank truck / trailer mounted On Board Monitoring (OBM) system providing intrinsically safe connections for sensors mounted in the top and bottom of each tank compartment. The ROM III monitor detects and communicates the sensor status and overall unit's "permissive to load" (the tanker) status to a loading rack monitor via its socket outputs. The ROM III is powered by connection to the truck battery. The Model #1910A ROM Terminator is used to terminate the unused sensor input circuits.

Construction - The monitor is housed in a rectangular aluminum box enclosure with six ½ NPT threaded entries and a windowed cover held in place by six bolts. There are two circuit boards (Base board and Top board), the boards are encapsulated with only the wiring terminals and signal LEDs protruding from the encapsulation. The input terminals are separated from the intrinsically safe terminals by a metal partition. There on certain installations, there may be also a small encapsulated Model #1910A 2-Wire Terminator. This “terminator”, is used to terminate the unused sensor input circuits. It is typically installed vertically inside the ROM III enclosure at the lower left corner. circuit board the 1910 Terminator. The 1910 is mounted inside the ROM III enclosure and is used terminate the end of a string of output circuits. The Model #1910A 2-Wire Terminator is typically installed vertically inside the ROM III enclosure at the lower left corner

Ratings - The ROM III operating voltage is 9 – 30 Vdc, 1A. The ROM III is rated for use in an ambient temperature range of -40 °C to +70 °C.

Entity Parameters: TB2

Uo (Voc) = 11.8V, Io (Isc) = 36.2mA, Po = 110mW, Co (Ca) = 400nF, Lo (La) = 3.8mH
Vt = 11.8 V, It = 185 mA, Po = 0.546W, Co (Ca) = 400nF, Lo (La) = 3.8mH

Entity Parameters: TB3 (only one type connection can be used at one time)

Float Connections: Ui (VMAX) = 20V, Ii (IMAX) = 750mA, Pi = 1.0W, Ci = 0uF, Li = 0mH
Therm Connections: Ui (VMAX) = 20V, Ii (IMAX) = 750mA, Pi = 1.0W, Ci = 0uF, Li = 0mH
Optic Connections: Ui (VMAX) = 20V, Ii (IMAX) = 750mA, Pi = 1.0W, Ci = 0uF, Li = 0mH

Entity Parameters: TB4

AUX 1, 2, 3: Uo (Voc) = 30 V, Io (Isc) = 2.5mA, Po = 19 mW, Co (Ca) = 400nF, Lo (La) = 1.9H
AUX 1, 2, 3: Vt = 30 V, It = 7.5 mA, Po = 0.546W, Ca = 400nF, La = 1.9H
AUX OUT: VMAX = 20 V, IMAX = 50mA, Ci = 0nF, Li = 0mH

Specific Conditions of Use:

The enclosure is a potential electrostatic hazard. To prevent the risk of electrostatic sparking, the surface should only be cleaned with a damp cloth.

4. Top Only ROM III Onboard Monitor

The ROM III monitor can be configured for top only (overflow) operation. A terminal block connection is provided to disable the retain (bottom) circuitry. Top only ROM III configuration will provide the advantages of 2 wire sensors and advanced diagnostics with the ability to install retain sensors at a later date. This terminal block is located at the top of the unit, and is labeled TB4A. A jumper wire is installed between the terminals to DISABLE the retain (bottom) circuitry. It is pre-wired at the factory if the proper system is ordered. DO NOT connect anything to the retain (bottom) sensor terminals.

5. The Reset Switch

If using retain sensors you will need a reset switch. If this option is ordered the reset switch will come installed. The reset switch is to reset the 40-minute timer.

6. Mounting Instructions

6.1 Housing Mounting Instructions

The CIVACON Onboard Monitor has four (4) flanges with holes, at the base of its cast aluminum housing, used for mounting the enclosure. These are provided so that it may be securely bolted to a grounded metal portion of the trailer that will provide an excellent physical support to the monitor. Locate the monitor in an area that is visible to the operator near the sockets and bottom loading adapters. The holes on the enclosure are 5/16 inch diameter. Refer to Figure 1 & 2 for dimensional mounting information. Mounting dimensions are given in inches. To protect the electronics in the housing, keep the monitor lid on the enclosure until you are ready to wire the monitor. The housing provides seven (7) 1/2" NPT access holes (refer to Figure 1 & 2). These holes provide for easy wiring access to the desired locations of the monitor. The three (3) holes on the right side of the monitor are used for wiring to the sockets and reset switch. The two (2) located on the left side of the monitor are used for wiring the 12/24 volt power and auxiliaries. The holes along the bottom are used for the overfill (top) and retain (bottom) sensors. Any holes that are not used should be properly sealed with pipe plugs, provided with the enclosure. Once the housing is installed, you are ready to remove the cover frame, gasket, and window; and begin the wiring procedure.



THE MONITOR'S MOUNTING LOCATION IS CLASSIFIED FOR USE IN A CLASS I, DIV. 2, GROUP C & D / Zone 1 IIB HAZARDOUS LOCATION OR SAFE AREA.



There is only one NPT hole provided to bring the NON-intrinsically safe power wiring into the enclosure. The remaining six (6) NPT holes are used for intrinsically safe signals and wiring. This convention **MUST** be complied with!



DO NOT open when an explosive atmosphere is present
DO NOT connect a battery charger or other pulsed power supply to this monitor as this may permanently damage the monitor
DO NOT perform any welding on the tanker when power is applied to this monitor, as welding on the tanker with the monitor power on may permanently damage the monitor
DO Read through this manual before installing any equipment, both for your safety and that of your customer.

6.1.1 Housing External Ground Stud

The CIVACON Onboard Monitor Housing has an M6 External Ground Stud. This Ground Stud is used to connect an **APPROVALS REQUIRED** #14 AWG (1.5 mm) External Ground Wire between the Monitor Housing and Chassis Ground on the tanker. It is suggested that this wire have a Green (or Green with Yellow Stripe) for proper identification as a “chassis ground” connection. Tighten the Ground Stud Nut to 5.6 ft-lbs (7.6 N-m).

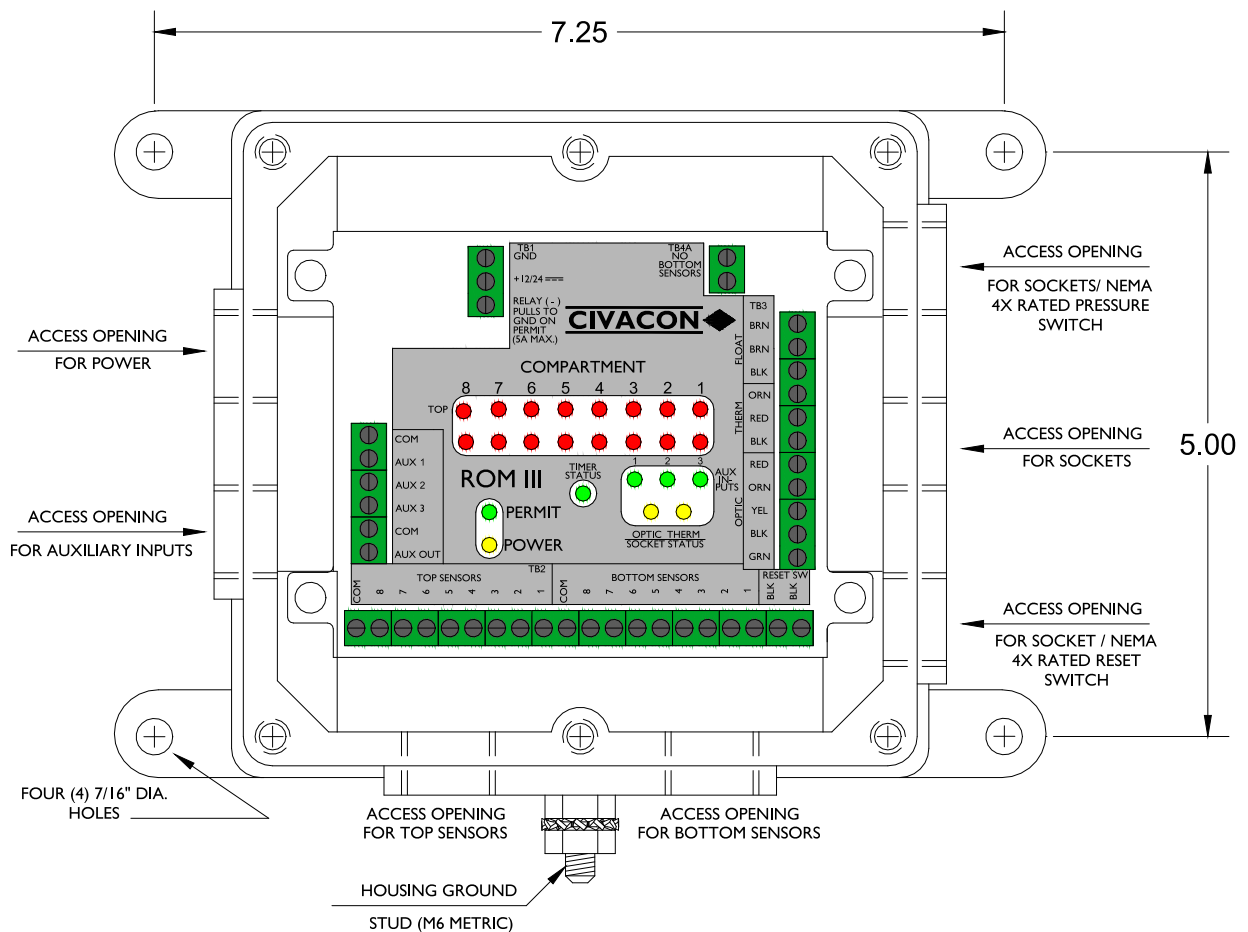


Figure 1: Mounting / Wire Entry – Models 3308-3308 & 3308R-3308

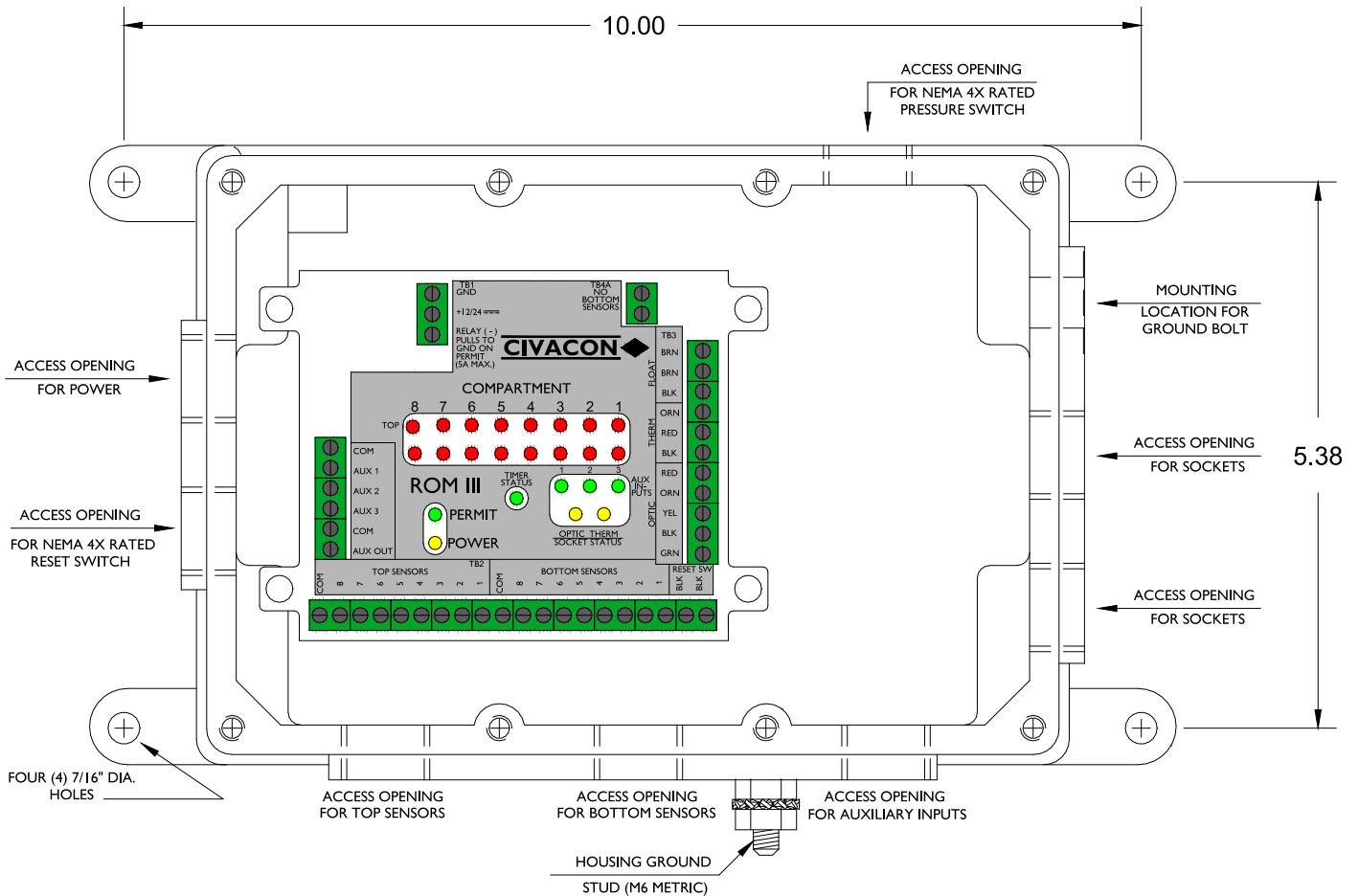


Figure 2: Mounting / Wire Entry – Models 3308-SPEC & 3308R-SPEC

6.2 Module Mounting Instructions

6.2.1 Replacing Module in Older ROM II Housing

Remove the old module place the 4 standoffs that came with the 3358-3358 module in the 4 holes that the screw of the 3252-3252 came out of. Place module in the box and screw the module down.

6.2.2 Replacing a (this) 3358-3358 Module

Unscrew the 4 screw and remove the module. Replace with new module and screw down the new module.

7. Wiring Instructions

7.1 The Wire

All wiring entering the monitor must enter through the appropriate access openings shown in Figure 1. Use weather tight strain reliefs or liquid-tight fittings to keep out external moisture. The use of weather tight strain reliefs with the sensor and socket housings is also imperative for a moisture resistant system. We require the use of a high quality stranded and tinned copper wire with a minimum thickness of 20 gage and min. temperature wire insulation greater than 70 °C for all electrical connections to the monitor. Trim about ¼" of the insulation off the end of each wire that will be connected to the terminal strips of the monitor. Insert the trimmed wire into its appropriate slot on the terminal strip and tighten the screw on top of that slot. Ensure that NO strands of wire have separated from the connection that could cause a potential short with an adjacent terminal. Due to the vibrations that can occur on a trailer, it is extremely important to double check all wiring connections for good mechanical integrity. The proper color code of the wires will save time and money on the installation and on any troubleshooting, which may be required in the future. CIVACON Model 2300 cable (Part # 97701) is a seven (7) conductor or Model 7215-7215 (Part # 97702) is a ten (10) conductor color coded cable which is highly recommended for use with the installation of CIVACON ROM III overfill prevention equipment. CIVACON also makes a Model 2100 cable (Part # 97750) that is a five (5) conductor color coded cable which may be used with the socket installations.

NOTE: The proper tightening torque value for each electrical connector screw (per the manufacturer's specifications) is 4.45 to 5.30 in- lbs. (0.05 to 0.06 N-m). Please observe these values when tightening of wires into each connection terminal on ROMIII

7.2 Power



SAFETY FIRST!! POWER MUST BE OFF WHEN INSTALLING OR REMOVING POWER LEADS TO THE MONITOR. THE WIRES FOR THE POWER FROM THE BATTERY MUST BE KEPT SEPARATE FROM THE SENSOR AND SOCKET WIRING! THEY CANNOT BE RUN TOGETHER IN THE SAME CABLE! This is important to maintain safe current levels in the intrinsically safe sensors, auxiliary switches, and socket wiring.

Do not apply power to the monitor without reading this manual and thoroughly checking all connections. Measure the truck / trailer system voltage. The monitor is designed to operate from 9 to 30 Volts DC, negative ground systems, supplied by a battery. If your voltage measurement is not within this range, contact CIVACON before installing the monitor. Power from battery chargers or other pulsed power supplies may permanently damage the monitor. If the power wires pass through a Class I, Division 2, Group D area, the wire type must be suitable for this use. The monitor's power supply circuit should contain a switch and an inline fuse with a maximum current rating of 1/2 Amp. It could be located in the nose box, and an inline switch located in the truck cab so that the overfill system can be turned off when the truck is out of service. This may also be accomplished with an appropriate

safety switch and fuse in an equipment cabinet on the trailer. It is recommended that the power be switched off when not in use (i.e.- When servicing the electrical system or when driving the vehicle). The wires from the power source should only enter the OBM enclosure via the proper access opening, which is the upper left hand opening (refer to Figure 1)

An external junction box, fuse holder, and fuse may be purchased from CIVACON as a kit product if one is not available locally. Please contact the factory for further information on this product. This product comes with its' own instruction sheet.

The Relay Output at TB-1 may be used to control a solenoid valve, heavy duty automotive relay or other similar device, *mounted in a safe (ordinary / non-hazardous) area* on the vehicle. This single output signal “pulls to ground” on Permit. This Non Intrinsically Safe Relay Output Terminal (Relay Output Ground) is limited to connected loads not to exceed a rating of **30VDC, 5A Max.**

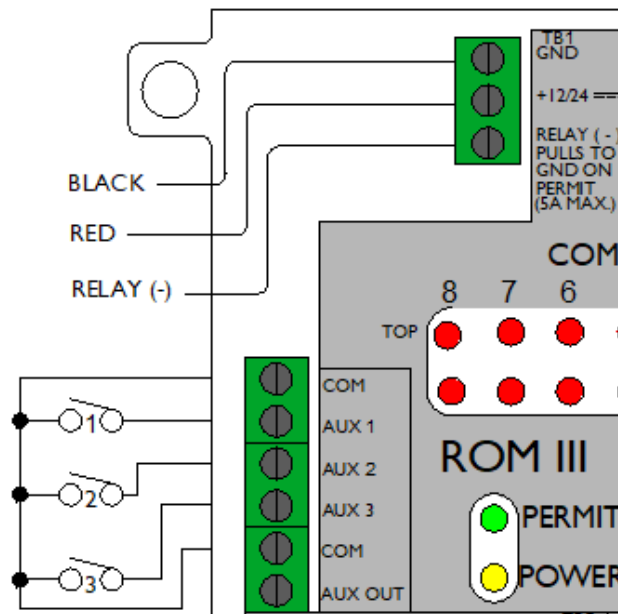


Figure 3: Power and Auxiliary Wiring

7.3 Sensors & OBM

The sensors must be wired according to Figure 3 or 4. The wires from the sensors should enter the OBM enclosure via the proper access opening (refer to Figure 1). See the Figure 3 or 4 diagrams for a complete sensor system wiring diagram. CIVACON has a full color wall chart that is available for the standard ROM III system. Please contact the factory for a copy. If you are replacing or installing on a truck or trailer with 6 compartments or less use the 6 compartment wiring in Figure 3. If you are installing or replacing on a truck or trailer with more than 6 compartments use 8 compartments wiring in Figure 4.

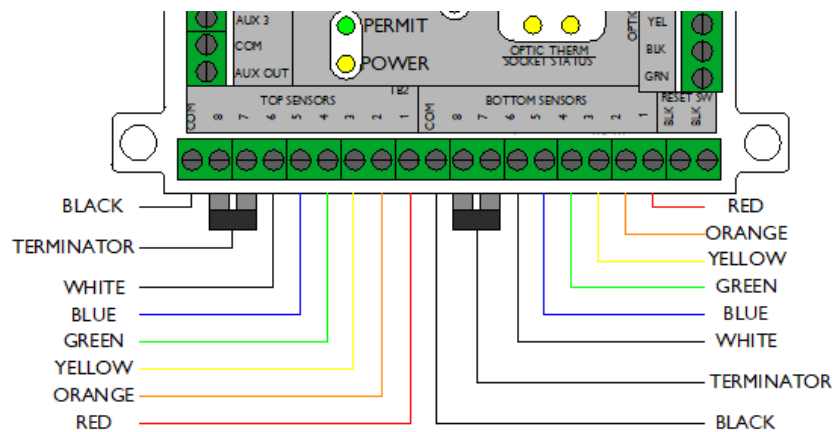


Figure 4: 6 Compartment Wiring

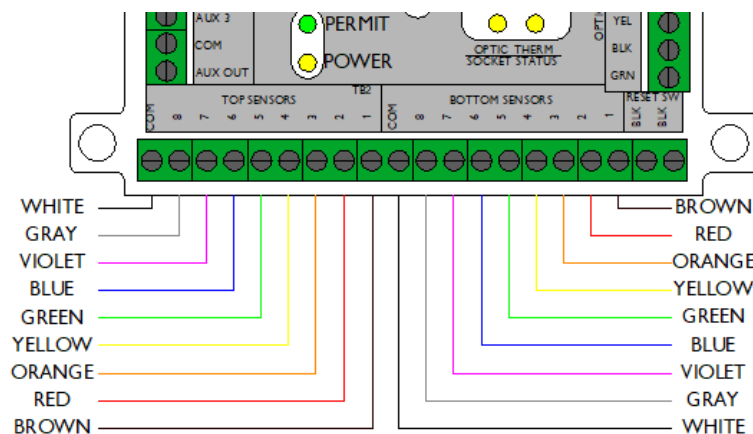


Figure 5: 8 Compartment Wiring

7.4 Auxiliary Inputs

The AUXILIARY INPUTS are three independent intrinsically safe signal sources connected to monitoring circuits. These inputs provide a voltage source that when connected to the COM common terminals, will enable the auxiliary permissive circuit. This, in addition to the normal overfill permissive circuit, controls the "PERMISSIVE" state of the module. You must have BOTH circuits permissive before any external permissive signals are given. Figure 2 shows the connections to Aux terminals, which is to the left of TB2, the sensor connections. This figure also shows the auxiliary devices as simple switches. Unused inputs MUST be connected to a COM common terminal next to itself.

Please remember that these signals are intrinsically safe and cannot be run with any other wires in a cable. Only the auxiliary wires and their commons can be run together in a cable.

Any type of simple switch may be used as the switching device. These can be pressure switches which connect to the airlines to indicate a pressurized line, or an un-pressurized condition. The switch could also be a micro-switch to indicate the position of something that moves. In all cases, this switching mechanism cannot be accidentally connected to a NON-intrinsically safe voltage source. Because of this low switching current requirement for intrinsically safe circuits, the contact material on the switching mechanism should be GOLD plated. If corrosive contact materials are used, then the integrity of the switched signal could be compromised, and not work reliably all the time. If this contact plating is not available, then the best possible material should be used, with every effort made to keep the corrosive atmospheres out of the switching chamber of the device.

Which leads us to the next problem of corrosion, keeping the connections to the wires free from corrosion. Boots, sealant, junction boxes, or any means must be used to maintain the integrity of the connection to the switching device. The cables' integrity to moisture must also be maintained with any exposed internal wires. Sealing the ends of the cable jacket are suggested, unless the cable enters a junction box that has strain relief fittings on it to keep the moisture outside of itself.

7.5 Sockets

Access openings are provided at the OBM so that each type of socket used may have its own access connection only if the auxiliary inputs are not used. If the auxiliary inputs are used, use the convention shown in Figure 1. It combines the Thermistor and Float outputs into one cable exit. This convention is not required but will help in troubleshooting and tracing the system output if a problem should occur. Cross reference the CIVACON part number of the socket to its proper wiring diagram and connect accordingly. Please use the CIVACON Instruction Sheet H50200PA, which is packaged with each socket, for additional reference information on the sockets.

Strain reliefs are recommended for all cable entry locations. Note that pipe plugs are required to be installed in all of the openings which are not used for cable entry. A thread sealant is also recommended to be used with each strain relief or pipe plug.

8. Product Care

Clean product only with a damp cloth.

9. Warranty

All CIVACON parts and products are thoroughly inspected and tested from the time the raw material is received at its plant until the product is assembled. CIVACON guarantees 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 CIVACON's discretion, be promptly repaired or replaced, or credit will be given for future orders. This warranty shall not apply to any product that has been altered in any way or has been repaired by any party other than an authorized service representative. The warranty shall further not apply to a product failure caused by misuse or when the product is used under conditions for which it was not expressly designed. CIVACON shall have no liability for labor costs, freight costs, or any other costs 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 USE.



WARNING!

CIVACON products should be used in compliance with all 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.

If the product is used in a manner not specified by CIVACON, the protection provided by the product may be impaired.

**CIVACON MAKES NO WARRANTY OF FITNESS
FOR A PARTICULAR USE.**

10. Technical Assistance

Thank you for choosing CIVACON for your product transportation needs. We appreciate your business and strive to provide quality customer service and support. If you need any assistance in installing your product or have further questions, please contact us at the following numbers:

Technical Assistance in the U.S.A.

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

OPW/CIVACON – ELECTRONICS TECHNICAL ASSISTANCE LINE:

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

OPW/CIVACON – CUSTOMER SERVICE DEPARTMENT:

In the U.S.A., Call 1-888-526-5657

IN ALL OTHER COUNTRIES: Contact your local **OPW/CIVACON** agent.

OPW/CIVACON

9393 Princeton Glendale Road

Hamilton, Ohio 45011

PHONE: (816) 741-6600 / TOLL FREE (888) 526-5657

FAX: (816) 741-1061 / TOLL FREE (888) 634-1433

Dear Customer:

We've developed this manual to help you with your everyday ROM III needs. We hope you'll find this manual both helpful and easy to use.

We appreciate any feedback you can provide to make this manual better for the user. Whether we didn't make something as clear as we thought, or even if something is misspelled, please let us know so we can continuously improve the quality of this manual. Naturally, we would also like to hear from you on the things you like! Please address your comments to our technical support team.

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