

## Earth Rite Road Tanker Recognition (RTR) System



**Aayush Electricals & Instrumentation.**  
**Bangalore.**

## Product Objective

Earth Rite-II RTR™ ground monitoring system is the most advance Road Tanker Grounding (Earthing) system for protecting personnel and plant assets from static hazards during road tanker loading and unloading operations

**System operation:** This unique technology ensures product flow cannot take place unless the **RTR** has detected it is connected to a road tanker and connected to a ground capable of dissipating static charges at risk of accumulating on the road tanker. When these parameters are confirmed, the **RTR** permits the transfer of product and any static generated on the road tanker by the transfer process is immediately transferred to ground.

The **RTR** operates with a Universal Grounding Clamp and does not require any special equipment to be installed on the Road Tanker Trucks. It may be used with all common types of Bulk Tankers without special modifications

### Tri-Mode Function of System:



- 1) **Road Tanker Recognition:** As soon as the operator applies clamp of RTR System on the road tanker (immediately when tanker visit tank farm area) it will check that the clamp is applied on tanker by checking tanker's capacitance with respect to earth. If by mistake operator applies this clamp on any other earthed structure than first check will not get ok then system will not become permissible for second check.

**Thus, the system checks & verifies the presence of tanker**

- 2) **Detection of Positive Earth Connection:** When first check is O.K. than after system will proceed for second check i.e. detection of positive earth connection. In this check, system will initiate to send one signal from Road Tanker upto the Earth-Pit.

This ensures that, the earthing strip is not broken from earthing pit. System will perform this check for one time only and after that, it will check resistance from point of clamping to earth strip and if it is less than 10 ohm than you will get green signal.

As the system is comprise of two potential free contacts and the same can be utilized for the interlock of system with pump. Therefore, only after performing the above two checks system will permit to start the pump and will allow the loading-unloading process.

- 3) **Continuous loop monitoring:** During loading / unloading process, the system will continuously monitor the loop (from point of clamping to earthing connection) and if there is breakage of wire or if clamp gets detached from the tanker, then system will immediately sense this function and it will stop the pump and automatically loading / unloading process / operation will stop in fail safe mode.

### Unique features

1. Compact, lightweight, explosion proof enclosure with copper free cast aluminum is weighing just 4.5 kg. The aluminum is corrosion resistant, does not require protective coatings and has an **IP 66 rating** (*protection against powerful jets*).

| Enclosure is certified by **CMRI / CCOE/ IECEx / ATEX / UL with IIC** certification.

2. The enclosure **permits the use of non-barrierised cable glands** in IIA and IIB gas and vapor atmospheres which reduce the overall installation cost.
3. RTR System will be supplied with two PCBs. One PCB will contain the power supply components and the other PCB will contain the circuit monitoring components and has been rated completely intrinsically safe.

Positive or negative ground connection conditions are communicated by bright LEDs mounted on the system PCB. When a positive ground condition is established three **green LEDs pulse continuously** throughout the transfer process and the pulsing effect will communicate operator, about the continuous monitoring of ground condition.

AC Power supply board is fitted with 2 diagnostic LEDs. The first LED confirms IS current is being delivered to the monitoring circuit PCB

indicating that power is available and the transformer is operational. The Second LED Confirms a positive ground connection has been detected and the monitoring Circuit PCB is sending a signal to the voltage free contacts

4. Earth Rite RTR has a **system reboot facility** in case of power failure & it ensures amplified on-site safety during interlock transfer operation using hoses.
5. This advance system permits the selection of either a 110/120V OR 220/240V input on the same PCB.

## System Elements & technical specification

---

**Name of System:** Earth Rite II RTR™ (Road Tanker Recognition)  
Static earthing system for safe tanker loading / unloading operation with 10-meter blue cen-stat Hytrel 2 core cable.

**Code:** RTRMEA1A3C  
**Elements:** Earth Rite RTR Tri Mode Static Earthing Control unit and Junction box ATEX – IIC, 230V ± 10%  
Stainless Steel Heavy Duty Dual Circuit Clamp with Tungsten Carbide, tips universal pin grid and Inline quick connector - ATEX  
10-meter Blue Cen-Stat Hytrel 2 Core Spiral Cable.

**Make :** Newson Gale Ltd. - U.K.

**Model No.:** RTRMEA1A3C

### General

**Grounding Clamp:** Stainless Steel (SS-304)

**Cable:** 10-meter blue Cen-Stat Hytrel 2 Core Spiral Cable.  
It is also available with 5m and 15m Hytrel Coated Spiral Cable.  
Retractable Reels are also available if required.

### Material of Construction

**Enclosure:** Copper free cast-alloy

**Clamp:** Stainless Steel

**Contacts:** Tungsten Carbide Tips

**Connection Resistance:** Less than 10 Ohm

### Protection

**Type:** Intrinsically Safe

**Approvals:** System has following approvals  
1) ATEX                      2) FM  
3) SIL 2                      4) IECEx  
5) CIMFR (India)          6) PESO (India)

**Certification of Monitoring Unit:** Ex d [ia] IIC T6 Gb (Ga)

Ambient Temp.: -40 to +55 Deg.C

Ingress Protection: IP-66

Power Supply: 230/240V 50Hz System (Supply voltage range: 216V to 250V)  
110/120V 50Hz System (Supply voltage range: 108V to 125V)

**Output:** **Two Potential free contacts.**

#### **Indication**

Type: LED

Indication for: Open & Close Contact.

## **Recommended commissioning spare**

---

### **Installation Kit:**

This kit provides installation engineers with the necessary Ex (d) enclosure glands (x5) and system cable (x3) required to complete an installation as specified in the system installation manuals.

Two of the glands cater for both armoured and non-armoured cable diameters ranging from 9 mm to 13.5 mm. Three glands cater for IS current carrying non-armoured cable with cable diameters ranging from 4 mm to 8.4 mm.

**Ex (d) IP68 glands (x2) for armoured or non-armoured cable.**

**Ex (d) IP68 glands (x3) for non-armoured cable (IS outputs).**

**3 m length of 2 conductor cable (x1) to connect system enclosure to clamp stowage box.**

**1m length of system ground loop cable (x2), with Ex (d) glands, PCB connectors and bolt eyelets attached.**

**1 pair of handles to aid opening and closing of the enclosure lid.**

**It consists of:**

**3 Non Armoured & 2 Armoured Metal Ex d M20 Glands, 3 Cables and 1 plastic M20 Gland.**

**Product Code: ER2/KIT A**

### **RTR Tester**

The is designed to have the same electrical characteristics as a road tanker and provides engineers with a means of checking that the RTR undergoing installation is permissive when it detects these characteristics. The Tester is connected to the RTR system and it's grounding point, and when activated, the RTR's LED indicators change from red to green, confirming that the Road Tanker Recognition and Static Ground Verification checks are functioning as intended.

### **RTR Tester**

**Ideal for system commissioning and routine service checks.**

**Easy to use with simple PASS / FAIL condition.**

**Product Code: ER2/CRT**

## **Recommended spare**

---

Below are the recommended 2 years spares

1. Earth-Rite II AC Power Supply PCB IECEx/ATEX – Power PCB  
Product code: ER2/AC/PCBU
2. Earth-Rite II RTR™ Tri-Mode PCB IECEx/ATEX-Monitoring PCB  
Product code: ER2/RTR/PCBU

## **SOPs & Safety Recommendation**

---

Below is the SOP and strong recommendation for the installation and operations of Earth Rite RTR- tanker earthing system.

### **Standard Operating Procedure (SOP):**

1. The earthing clamp should be fitted prior to any other operation as per the recommendation of CLC/TR: 50404, NFPA 77 and API RP 2003. It is important that the clamp is fitted before hoses are connected to the road tanker and before articulated trailer are deployed.

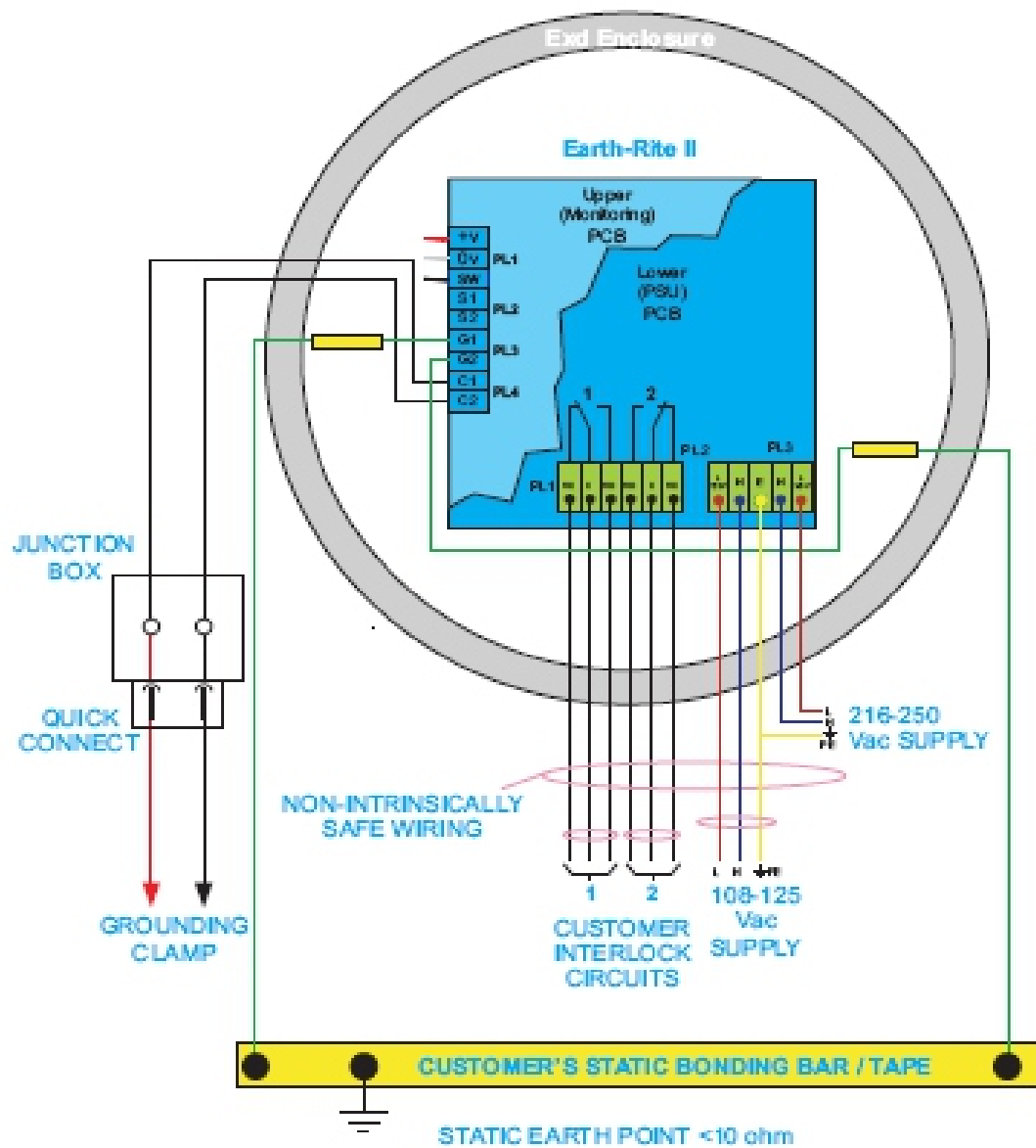
### **Strong recommendation for safe operation and maintenance of the ER RTR system.**

1. ER RTR system is works on two PCBs i.e. power PCB and monitoring PCB. PCBs sensitive in nature. Therefore, to protect the system, we strongly recommend installing 2A fast blow fuse in distribution board.
2. The equipment is certified for us in ambient temperatures in the range of -40° C to +55° and should not be used outside this range.
3. Cables must be secured close to the enclosure to prevent them being accidentally pulled off.
4. On completion of transfer process, clamp should be removed from the tanker and stowed on the insulated pin on the front of junction box. This practice will reduce the normal wear and tear of the clamps and cable.
5. The equipment is not intended to repair by user. Repair of the equipment is to be carried out by the manufacturer or their approved agents, in accordance with applicable code of practice, else system will loses the warranty for the same.

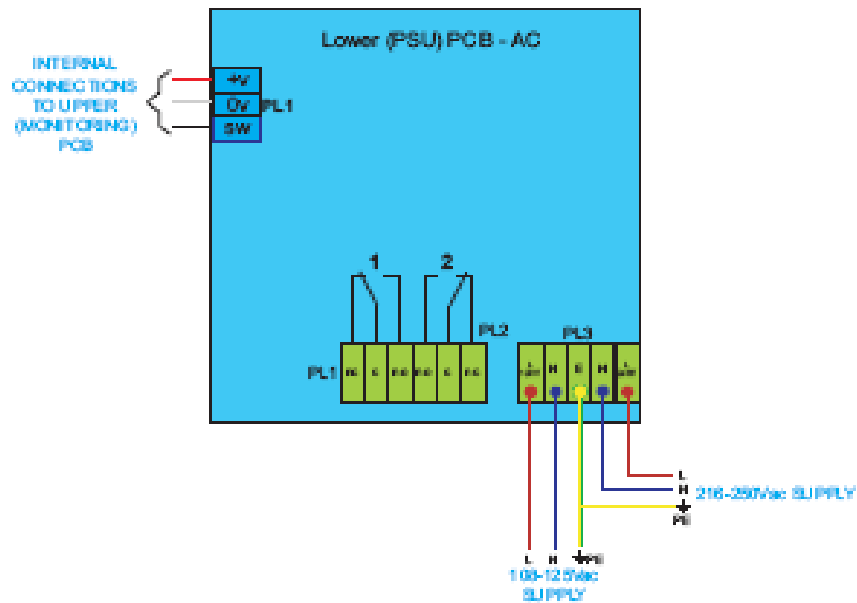
## ER RTR Drawings for cable connection

### Earth-Rite II Cable Connections AC

DESIGNATED  
ZONE 1 / 21 or  
2 / 22 AREA



## PCB Connections Power Supply PCB



## PCB Connections Monitoring PCB

