

# Earth-Rite® II RTR™

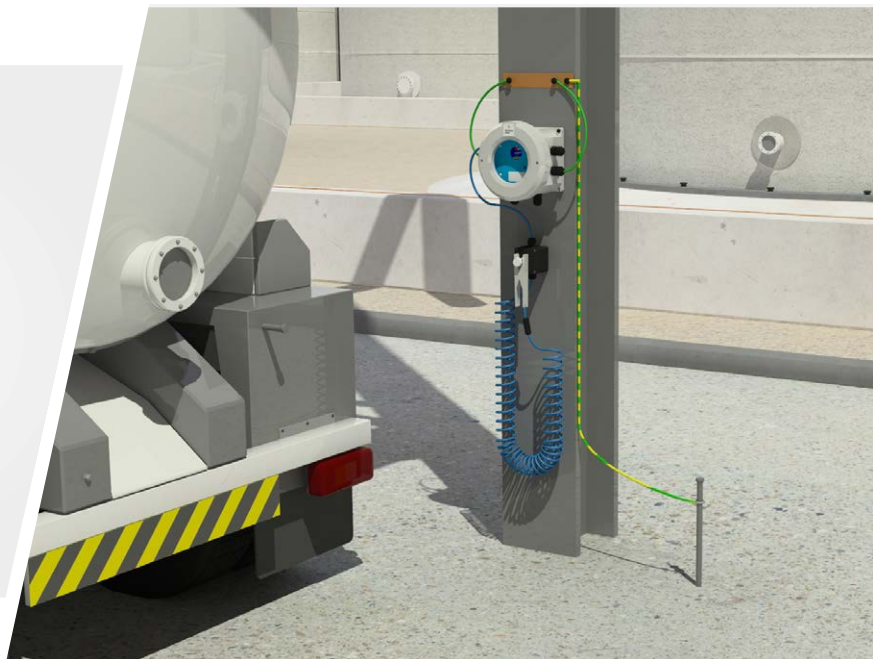
## Static Earthing for Road Tankers

UK  
CA  
SIL 2  
CCC  
K<sup>s</sup>  
ATEX  
IECEx  
C<sup>US</sup>

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Earth-Rite II RTR Road Tanker Earthing System



The Earth-Rite II RTR is designed to ground a road tanker during loading and unloading operations in order to dissipate any static electricity which could accumulate on a road tanker during these processes.

CLC/TR 60079-32-1 "Explosive Atmospheres: Electrostatic Hazards - Guidance" highlights road tankers as being capable of accumulating electrostatic charge during product transfer operations.

To mitigate against the accumulation of static on the body of the road tanker, it recommends that trucks be grounded during the transfer procedure.

The Earth-Rite II RTR static grounding system is designed to provide grounding of road tankers to mitigate against static discharges from the main body of the road tanker.

The system consists of a red/green LED ground status indicator and dry contacts that can be interlocked with the process or an additional strobe light.



### The Earth-Rite II RTR includes:

- **Flameproof and GRP Enclosures** incorporating Intrinsically Safe Static Ground Monitoring System
- **Ground Connection Junction Box** with Clamp Stowage Point and Quick Release Connector
- **Heavy Duty Stainless Steel Universal Grounding Clamp** with Hytrel® Extendable Cable and Quick Connectors

## Earth-Rite® II RTR™

### Patented Tri-Mode Technology Explained

#### MODE 1 AND 2

With the grounding clamp and cable attached to the designated earth point on the road tanker through its patented circuitry the Earth-Rite II RTR detects the presence of the road tanker by its capacitance and not by impedance, resistance or the presence of a diode on the road tanker.

At the same time the patented circuitry ensures that it has a connection to the general mass of the earth. This is a critical step as a connection to earth is the only means by which the static electricity can be transferred from the teeth of the clamp on the road tanker to earth thereby mitigating the accumulation of static electricity during the transfer.

#### MODE 3

Once Modes 1 and 2 have been completed successfully the patented circuitry monitors the loop resistance from between the teeth of the clamp on the road tanker to the designated general mass of the earth through the Earth-Rite II systems G1 and G2 connections. The circuitry will monitor the loop resistance and if it exceeds 10 Ohms it will stop the transfer.

This 10 Ohms loop monitoring requirement is detailed in the following standard/s and recommendations:

IEC TS 60079-32-1:2017

Clauses 7.3.2.3.3, 7.11.2, 8.8.4, 10.1.2, 10.1.4, 13.2.2, 13.3.1.1, 13.3.1.4, 13.4.1 & G.11.2

NFPA 77:2019 Clause 7.4.1.3.1

API RP 2003 8th Edition Clause 4.2.2

\* Always check for and read the latest version of the International Standards, Guidance and/or Recommended Practices.

The repeatability of the 10 Ohm loop monitoring has been Third Party validated by CSA/SIRA

#### ATTENTION:

Driver / operator training is essential for the correct use of the grounding system. The first action in the material transfer process is grounding of the road tanker. The Earth-Rite II RTR clamp should be connected directly to the designated earthing point of the road tanker. The grounding clamp should NOT be removed until all other procedures in the material transfer process are complete.

All metal components on the road tanker should have an electrical continuity not exceeding 10 Ohms. Isolated metal components should not be present on the road tanker. If isolated metal components are present on the road tanker they could possess a capacitance similar to that of the main road tanker body.



Pulsing LEDs confirm positive ground condition

#### Volt free interlock contacts

Earth-Rite II system output contacts can be interlocked with process equipment and/or strobes. Interlocking the grounding system with the process equipment can enhance the Standard Operating Procedures (SOP) before the movement of material can take place. Interlocking with strobes provides personnel with a wider field of view that the grounding SOP is underway.

On rare occasions grounding clamps can be removed by operators or lose contact with equipment due to unstable connections being made initially or overstretching of the cable connected to the grounding clamp. The grounding system, can, via the output contacts, halt the process. However, it should be borne in mind that the movement of the product may not stop even though the equipment (pump / impeller) has halted. This could lead to the continued generation of static charge. In such circumstances it is the responsibility of the site operator to ensure their SOPs cater for such scenarios. This assumes the grounding system has been installed in accordance with the Instruction Manual. If you do not have access to an Instruction Manual contact Newson Gale.

## Earth-Rite® II RTR™

### Ex d Technical Specification

Ex d (Zone 1 Gas / Vapour Atmosphere - Zone 21 & 22 Dust Atmospheres)

#### Monitoring Unit

<b>Power Supply</b>	115 V or 230 V AC, 50-60 Hz 12 V or 24 V DC
<b>Power Rating</b>	10 watt
<b>Ambient Temperature Range</b>	-40°C to +55°C
<b>Ingress Protection</b>	IP 66
<b>Weight</b>	4.5 kgs (9.9 lbs) nett
<b>Construction</b>	Copper-free cast aluminium
<b>Monitoring Circuit</b>	Intrinsically safe
<b>Monitoring Loop Resistance</b>	Nominally $\leq 10 \Omega$ ( $\pm 10\%$ )
<b>Output Relay Contact Rating</b>	2 off voltage free change-over switch contacts 250 V AC 5 A 500 VA max resistive 30 V DC 2 A 60 W max resistive
<b>Cable Entries</b>	7 x M20 (2 x plugged)

#### Junction Box/Stowage Point

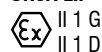
<b>Enclosure Material</b>	GRP with carbon loading
<b>Terminals</b>	2 x 2.5 mm <sup>2</sup> conductor capacity
<b>Stowage Device</b>	Insulated universal stowage pin
<b>Cable Entries</b>	1 x 20 mm
<b>Clamp Cable Connection</b>	Quick Connect

#### Grounding Clamp

<b>Clamp Design</b>	2 pole with tungsten carbide teeth
<b>Body</b>	Stainless steel (SS grade: 304)

#### ATEX / FM / IECEx / UKEX Certification:

##### UKCA Ex



Ex h IIC T6 Ga

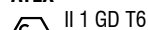
Ex h IIC T85°C Da

Ta = -40°C to +60°C

ExVeritas 21UKEX0842

UKCA Ex Approved Body: ExVeritas

##### ATEX



(Assessed to EN 13463-1 : 2009)

Sira 02ATEX9381

ATEX Notified Body: SIRA

FM Certificate of Compliance number: 3046346

##### IECEx

Ex h IIC T6 Ga

Ex h IIC T85°C Da

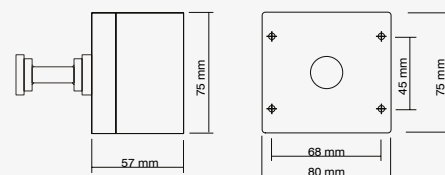
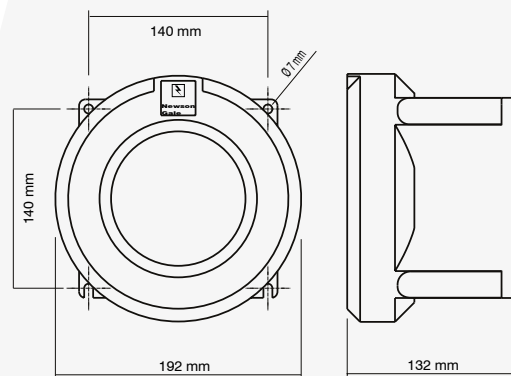
Ta = -40°C to +60°C

IECEx EXV 20.0033

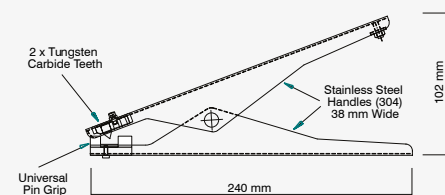
IECEx Certified Body: ExVeritas

#### Spiral Cable

<b>Cable</b>	Blue Cen-Stat Hytrel sheath (Static dissipative, chemical & abrasion resistant)
<b>Conductors</b>	2 x 1.00 mm <sup>2</sup> copper
<b>Length</b>	3 m (10 ft), 5 m (16 ft), 10 m (32 ft) or 15 m (50 ft) 2 pole Cen-Stat blue spiral cable with Hytrel coating which has colour, UV protective and static dissipative additives



Simple Apparatus  
GRP junction box with nylon grounding clamp stowage pin



Static Grounding Clamp

Dual core stainless steel grounding clamp fitted with one pair of tungsten carbide tips

## Earth-Rite® II RTR™



### Ex d Hazardous Area Certification

#### Europe / International:



##### IECEx

Ex db [ia Ga] IIC T6 Gb  
Ex tb [ia Da] IIIC T80°C Db  
Ta = -40°C to +55°C  
IECEx EXV 19.0052  
IECEx Certifying Body: ExVeritas

##### ATEX

 II 2(1)G  
 II 2(1)D  
Ex db [ia Ga] IIC T6 Gb  
Ex tb [ia Da] IIIC T80°C Db  
Ta = -40°C to +55°C  
ExVeritas 19ATEX0537  
ATEX Notified Body: ExVeritas

##### UKCA Ex

 II 2(1)G  
 II 2(1)D  
Ex db [ia Ga] IIC T6 Gb  
Ex tb [ia Da] IIIC T80°C Db  
Ta = -40°C to +55°C  
ExVeritas 21UKEX0832  
UKCA Ex Approved Body: ExVeritas

##### CCC

Ex db [ia Ga] IIC T6 Gb  
Ex tb [ia Da] IIIC T80°C Db  
2021312304001040  
Approved Body: CNEX

##### KCS (Gas)

Ex d [ia Ga] IIC T6 Gb(Ga)  
Ta = -40°C to +55°C  
22-AV4BO-0330X  
Approved Body: KOSHA

##### KCS (Dust)

Ex tb IIIC T80°C IP66 Db  
Ta = -40°C to +55°C  
22-AV4BO-0331X  
Approved Body: KOSHA

#### North America Version Available:

##### NEC 500 / CEC (Class & Division)

Associated Equipment [Ex ia] for use in  
Class I, Div. 1, Groups A, B, C, D  
Class II, Div. 1, Groups E, F, G  
Class III, Div. 1  
Providing intrinsically safe circuits for  
Class I, Div. 1, Groups A, B, C, D  
Class II, Div. 1, Groups E, F, G  
Class III, Div. 1  
Temperature Code T6  
Ta = -40°F to +122°F  
OSHA recognised NRTL: CSA.

##### NEC 505 & 506 (Class & Zoning)

Class I, Zone 1 [0] AEx d[ia] IIC T6 Gb(Ga)  
Class II, Zone 21 [20] AEx tD [iaD] 21 T80°C

##### CEC Section 18 (Class & Zoning)

Class I, Zone 1 [0] Ex d[ia] IIC T6 Gb(Ga)  
DIP A21, IP66, T80°C

### Additional Certification

#### Safety Integrity Level:

SIL 2 (in accordance with IEC/EN 61508)

#### EMC Tested:

to EN 61000-6-3, EN 61000-6-2  
FCC - Part 15 (Class B)

## Earth-Rite® II RTR™

### GRP Technical Specification

GRP (Zone 2 Gas / Vapour Atmosphere - Zone 21 & 22 Dust Atmospheres)

#### Power Supply & Monitoring-Unit

<b>Power Supply</b>	115 V or 230 V AC, 50-60 Hz 12 V or 24 V DC
<b>Power Rating</b>	10 watt
<b>Ambient Temperature Range</b>	-40°C to +55°C
<b>Ingress Protection</b>	IP 66
<b>Weight</b>	2 kgs (4.4 lbs) nett
<b>Construction</b>	Carbon-loaded GRP
<b>Monitoring Circuit</b>	Intrinsically safe
<b>Monitoring Loop Resistance</b>	Nominally $\leq 10 \text{ Ohm}$ ( $\pm 10\%$ )
<b>Output Relay Contact Rating</b>	2 off voltage free change-over switch contacts 250 V AC 5 A 500 VA max resistive 30 V DC 2 A 60 W max resistive
<b>Cable Entries</b>	7 x M20 (2 x plugged)

#### Junction Box/Stowage Point

<b>Enclosure Material</b>	GRP with carbon loading
<b>Terminals</b>	2 x 2.5 mm <sup>2</sup> conductor capacity
<b>Stowage Device</b>	Insulated universal stowage pin
<b>Cable Entries</b>	1 x 20 mm
<b>Clamp Cable Connection</b>	Quick Connect

#### Grounding Clamp

<b>Clamp Design</b>	2 pole with tungsten carbide teeth
<b>Body</b>	Stainless steel (SS grade: 304)

#### ATEX / FM / IECEx / UKEX Certification:

##### UKCA Ex



II 1 G  
II 1 D

Ex h IIC T6 Ga

Ex h IIIC T85°C Da

Ta = -40°C to +60°C

ExVeritas 21UKEX0842

UKCA Ex Approved Body: ExVeritas

##### ATEX



II 1 GD T6

(Assessed to EN 13463-1 : 2009)

Sira 02ATEX9381

ATEX Notified Body: SIRA

FM Certificate of Compliance number: 3046346

##### IECEx

Ex h IIC T6 Ga

Ex h IIIC T85°C Da

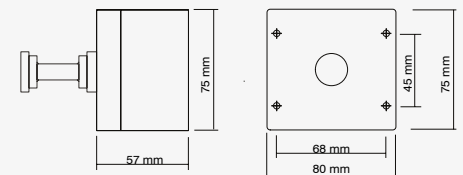
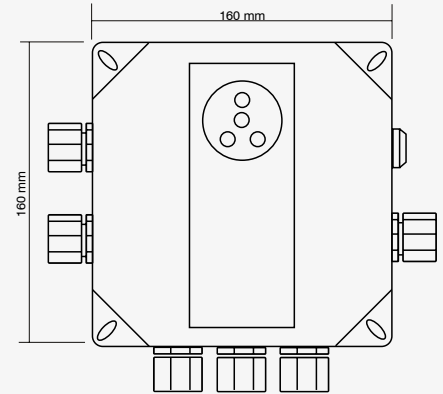
Ta = -40°C to +60°C

IECEx EXV 20.0033

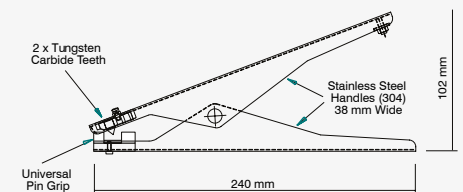
IECEx Certified Body: ExVeritas

#### Spiral Cable

<b>Cable</b>	Blue Cen-Stat Hytrel sheath (Static dissipative, chemical & abrasion resistant)
<b>Conductors</b>	2 x 1.00 mm <sup>2</sup> copper
<b>Length</b>	3 m (10 ft), 5 m (16 ft), 10 m (32 ft) or 15 m (50 ft) 2 pole Cen-Stat blue spiral cable with Hytrel coating which has colour, UV protective and static dissipative additives



Simple Apparatus  
GRP junction box with nylon grounding clamp stowage pin



Static Grounding Clamp

Dual core stainless steel grounding clamp fitted with one pair of tungsten carbide tips

## Earth-Rite® II RTR™



### GRP Hazardous Area Certification

#### Europe / International:



##### IECEX

Ex ec nC [ia Ga] IIC T4 Gc  
Ex tb [ia Da] IIIC T70°C Db  
Ta = -40°C to +55°C  
IECEX EXV 19.0059X  
IECEX Certifying Body: ExVeritas

##### ATEX

 II 3(1)G  
 II 2(1)D  
Ex ec nC [ia Ga] IIC T4 Gc  
Ex tb [ia Da] IIIC T70°C Db  
Ta = -40°C to +55°C  
ExVeritas 19ATEX0545X  
ATEX Notified Body: ExVeritas

##### UKCA Ex

 II 3(1)G  
 II 2(1)D  
Ex ec nC [ia Ga] IIC T4 Gc  
Ex tb [ia Da] IIIC T70°C Db  
Ta = -40°C to +55°C  
ExVeritas 21UKEX0833X  
UKCA Ex Approved Body: ExVeritas

##### CCC

Ex ec [ia Ga] nC IIC T4 Gc  
Ex tb [ia Da] IIIC T70°C Db  
2021312304001041  
Approved Body: CNEX

##### KCS (Gas)

Ex ec nC [ia Ga] IIC T4 Gc(Ga)  
Ta = -40°C to +55°C  
22-AV4BO-0317X  
Approved Body: KOSHA

##### KCS (Dust)

Ex tb IIIC T70°C Db  
Ta = -40°C to +55°C  
22-AV4BO-0318X  
Approved Body: KOSHA

#### North America Version Available:

##### NEC 500 / CEC (Class & Division)

Associated Equipment [Ex ia] for use in  
Class I, Div. 2, Groups A, B, C, D  
Class II, Div. 2, Groups E, F, G  
Class III, Div. 2  
Providing Intrinsically Safe circuits for  
Class I, Div. 1, Groups A, B, C, D  
Class II, Div. 1, Groups E, F, G  
Class III, Div. 1  
Temperature Code T4  
Ta = -13°F to +131°F  
OSHA recognised NRTL: CSA

##### NEC 505 & 506 (Class & Zoning)

Class I, Zone 2, (Zone 0), AEx nA[ia] IIC T4  
Class II, Zone 21, AEx tD[iaD] 21, T70°C

##### CEC Section 18 (Class & Zoning)

Class I, Zone 2 (Zone 0) Ex nA[ia] IIC T4  
DIP A21, IP66, T70°C

### Additional Certification

#### Safety Integrity Level:

SIL 2 (in accordance with IEC/EN 61508)

#### EMC Tested:

to EN 61000-6-3, EN 61000-6-2  
FCC - Part 15 (Class B)



## System Options

### Installer's Kit

The kits provide installation engineers with the necessary Ex (d) enclosure glands required to complete an **Earth-Rite® II RTR** installation as specified in the system installation manual.

#### Kit A

Ex (d) IP68 glands (x2) for armoured cable 9 mm to 13.5 mm Ø\*,  
Ex (d) IP68 glands (x3) for non-armoured cable 4 mm to 8.4 mm Ø\*,  
IP68 plastic gland for junction box cable, 3m of 2 core conductor cable (x1) to connect system enclosure to clamp stowage box, 1m of solid green earth loop cable (x2) with PCB connectors and 10 mm bolt eyelets attached.

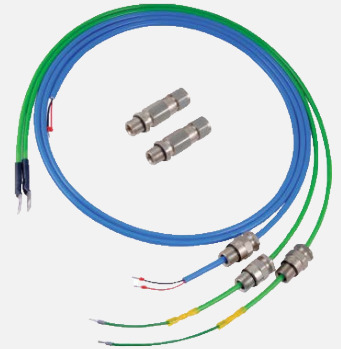
#### Kit B

Ex (d) IP68 glands (x5) for non-armoured cable 4 mm to 8.4 mm Ø\*,  
IP68 plastic gland for junction box cable, 3m of 2 core conductor cable (x1) to connect system enclosure to clamp stowage box, 1m of solid green earth loop cable (x2) with PCB connectors and 10 mm bolt eyelets attached.

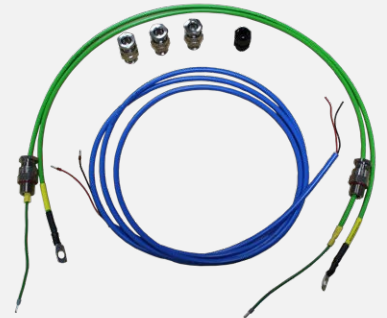
#### Kit C (GRP/P1)

Ex (e) IP68 glands (x5) for non-armoured cable 6 mm to 13 mm Ø,  
IP68 plastic gland for junction box cable, 3m of 2 core conductor cable (x1) to connect system enclosure to clamp stowage box, 1m of solid green earth loop cable (x2) with PCB connectors and 10 mm bolt eyelets attached.

\* For areas not requiring IIC apparatus.



Kit A - with Ex d glands, for use with armoured cable



Kit B - with Ex d glands, for use with non-armoured cable



Kit C - with Ex e glands, for use with non-armoured cable

### System Options

#### Earth-Rite® II RTR Tester

The **Earth-Rite® II RTR Tester** is a capacitance resistance tester (CRT) designed to have the same electrical characteristics as a road tanker and provides engineers with a means of checking that the **Earth-Rite® II RTR** undergoing installation is permissive when it detects these characteristics.

The Tester is connected to the **Earth-Rite® II RTR** system and its grounding point, and when activated, the **Earth-Rite® II RTR's** LED indicators change from red to green, confirming that the Road Tanker Recognition and Static Ground Verification checks are functioning as intended.


The CRT is highly recommended with a minimum of one per site.

- Required for system commissioning and routine service checks
- Easy to use with simple PASS / FAIL condition



#### Retractable Cable Reel

The Retractable Cable Reel is supplied for grounding system installations where customers want to ensure the grounding clamp and cable are returned to the static grounding system by operators and drivers on completion of the product transfer process. The reel can be used in conjunction with the **Earth-Rite® II RTR**.

- Certified for ATEX Zone 1 and 21 hazardous areas
- Self-retracting with up to 15 m of Hytrel® protected cable
- Silver plated ultra low resistance slip ring contacts
- ATEX -  II 2 GD T6



#### Sun Shield

Designed for operating environments subject to intense sunlight, the ERII Sun Shield protects against direct sunlight hitting the indicators on the **Earth-Rite® II RTR** static grounding system.

The Sun Shield casts a shadow over the indicators during peak sun light hours so that operators can easily view the ground status indicators. The shield is constructed from stainless steel and can be fitted to any installation in a matter of minutes.



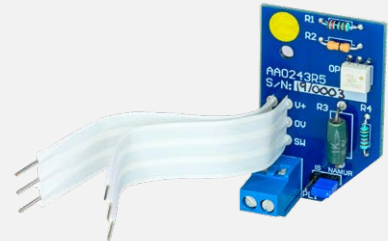


## System Options

### Intrinsically Safe (I.S) Switching PCB

The I.S Switching PCB is an additional circuit board added to Newson Gale system enclosures to enable users to directly interface with, and switch intrinsically safe circuits without the need for additional equipment. The I.S Switching PCB is designed not to affect the I.S signals electrical parameters and is compatible with the **Earth-Rite® II RTR**.

- 30 V DC, 500 mA
- $L_i = 0H$ ,  $C_i = 0F$
- Suitable for Ex ia, ib, ic rated intrinsically safe circuits only
- NAMUR Compatible



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**Leading the way in hazardous area static control**



[www.newson-gale.co.uk](http://www.newson-gale.co.uk)

9/9

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