

Earth-Rite® MULTIPOINT

Static Grounding System



The problem of static electricity in hazardous atmospheres is ever present in many sectors of the processing industries. Effective grounding and bonding procedures are always the first step in controlling static, with special techniques being called for to suit individual applications.

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Powder processing operations generate high levels of electrostatic charge and if allowed to accumulate on conductive parts of plant equipment that are electrically isolated from earth, there is a high probability that incendive static spark discharges could ignite locally present potentially combustible or flammable atmospheres.

The **Earth-Rite® MULTIPOINT** is a unique static earthing system which monitors up to 8 potentially isolated conductive components on processing machinery engaged in powder processing operations within zoned or classified areas.

Powder processing operations that generate high levels of static charge and are known to cause combustible dust explosions are:

- dust collection
- powder grinding and

- pulverising
- powder conveying operations
- silo and container filling and emptying
- fluid bed drying
- powder mixing and blending

The **Earth-Rite® MULTIPOINT** is designed to form one complete earthing circuit through the isolated parts on the process machinery. The system monitors the circuit ensuring the resistance of connections is 10 ohms or less. If the system detects a rise above 10 ohms in the circuit, LED array situated in the indicator station will pinpoint the location of the potentially isolated part. The interlocking output contact can interface with PLCs to halt the process or alert personnel to the potential hazard.



Earth-Rite® MULTIPOINT Static Grounding System

The Earth-Rite MULTIPOINT includes:

- > **up to 8 monitored connections**
potentially isolated points as part of one complete circuit
- > **Attention grabbing LED**
array pinpoints locations that are potentially isolated and at risk of accumulating incendive electrostatic charges.
- > **Corrosion resistant**
and hygienic stainless steel.
- > **Marshalling Junction Box**
for ease of cable routing and installation

Earth-Rite® MULTIPOINT Static Grounding System

Technical Specification

Monitoring unit
Zone 0/20 Installations

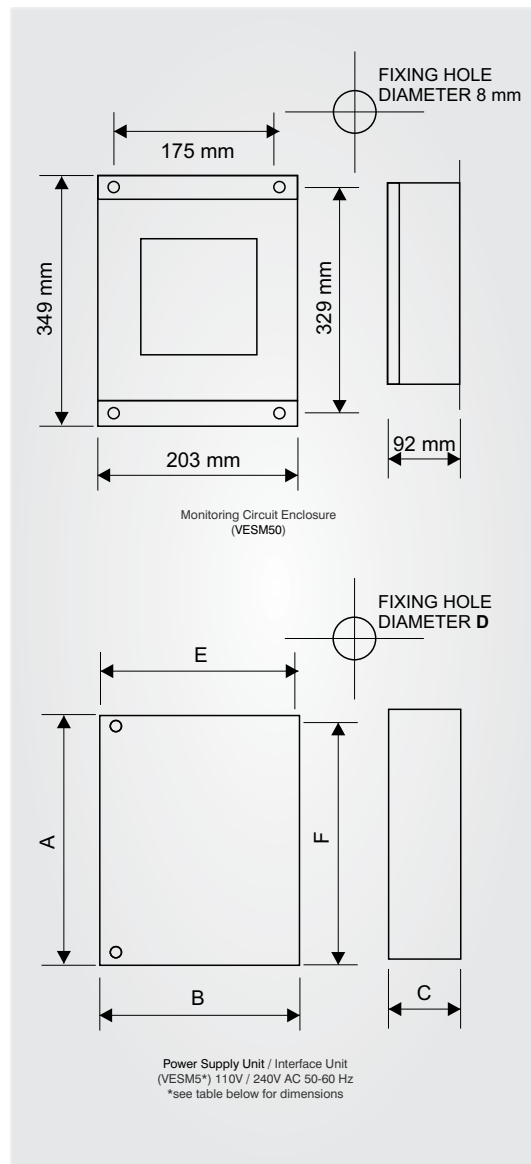
Certification	⊕ II 1 GD EEx ia IIC T4 Sira 02ATEX2166X
Ambient temperature range	-20°C to +40°C
Ingress protection	IP 65
Construction	Stainless Steel
Monitoring Circuit	Intrinsically Safe
Operational Series Ground Resistance	Nominally ≤ 10 Ohm
Cable Entries	3x 20 mm Ø 2x 25 mm Ø

Power Supply unit
Safe Area Installation

Power supply	110 V or 240 V AC, 50-60 Hz
Power rating	40 Watts
Ambient temperature range	-20°C to +40°C
Ingress protection	IP 65
Construction	Plastic
Output to Monitoring Unit	Intrinsically Safe
Output Relay Contact Rating	Up to 8 off Voltage free contacts, 240 V AC, 2 A, resistive 110 V AC, 4 A, resistive
Certification	⊕ II (1) GD [EEx ia] IIC Sira 01ATEX2235

Marshalling Junction Box

Enclosure Material	GRP Carbon Loaded
Cable Entries	12x M20 Threaded



Power Supply / Interface Unit							
Product Code	No. Relays	Main Dimensions			Fixing Dimensions		
		A mm	B mm	C mm	D mm	E mm	F mm
VESM521	1	308	255	160	8	222	410
VESM52 to M55	2 - 5	430	330	200	8	224	525
VESM56 to M58	6 - 8	530	430	200	8	324	627

The Earth-Rite® MULTIPOINT forms part of the Earth-Rite® range of Static Grounding and Bonding Equipment available from Newson Gale Ltd.

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Application Spotlight: Grounding multiple components in powder processing operations

Powder processing operations can generate vast quantities of electrostatic charge via the movement of powder. The standard method of charging on powder processing operations is due to tribo-electrification, which is basically the contact and separation of the powder with processing equipment, the powder itself or other factors that can cause charging, like surface contaminants. There are numerous types of equipment that can cause the charging of powders. Such equipment includes, but is not limited to:

Powder Processing and Handling Equipment	
Pneumatic Conveying (pipes & hoses)	Sieves & Filters
Micronizers	Blenders
Sieve stacks	FIBC / Big Bags
Fluid Bed Dryers	Tumbling Bins
Hoppers	Granulators
Dust Collectors	Totes & Drums

Equipment used in powder processing operations.

Static Grounding protection in powder processing operations.

In pharmaceutical operations, equipment like powder conveying systems, micronizers, blenders and sieve stacks all make up multiple component assemblies that can accumulate high levels of electrostatic charge should any of the components be isolated from a true earth ground. Connections made with items like bonding straps can provide an intentional bond between metal components or assembly mating surfaces may provide an inherent bonded connection.

Regular disassembly for cleaning and maintenance can result in bonding connections being missed or not made correctly when the equipment is reassembled. Vibration and corrosion may also degrade assembly connections so it is imperative to ensure that no parts in the assembly become isolated from a true earth ground reference.

The most effective way of ensuring that equipment used in powder processing operations cannot accumulate static electricity is to provide a dedicated static grounding solution that will monitor the ground connection of components at risk of static charge accumulation and alert personnel to a potential hazard should a component lose its ground connection. This is especially important if the ground connection point to the equipment is not readily visible or easily accessible.



Fig. 1. A blender getting charged with a powder. Note that the bucket discharging the powder should be bonded to the receiving vessel or grounded independently.

Earth-Rite® MULTIPOINT Static Grounding System

Application Spotlight: Grounding multiple components in powder processing operations

Static grounding solutions: convention versus flexibility.

Most grounding solutions provide grounding protection for discrete pieces of equipment at risk of electrostatic charging like road tanker trucks, railcars, IBCs and drums. Powder processing equipment presents more of a challenge as there are many metal parts that can make up larger assemblies that are electrically isolated from each other. It is therefore important to ensure that multiple components that come into contact with charged powders do have a means of being monitored for static grounding protection purposes.

A more specialised static grounding system, like the Earth-Rite® MULTIPOINT, provides the benefits of eight discrete static grounding systems rolled up into a single package. This gives installer's the flexibility of providing monitored static grounding protection for multiple components of powder processing assemblies through a discrete wall mounted monitoring unit with eight ground status indicators for each component being monitored.

In addition, the Earth-Rite® MULTIPOINT will continuously check that all components are connected to a reference earth grounding point, thus ensuring that the ground path resistance between the process equipment and the reference ground never exceeds 10 ohms. A monitored ground path resistance of 10 ohms or less is what is recommended in NFPA 77, "Recommended Practice on Static Electricity" and IEC 60079-32, "Explosive atmospheres: electrostatic hazards, guidance".

If the Earth-Rite® MULTIPOINT's monitoring unit detects that an assembly component is not grounded, it will send a signal to the controller which, if interlocked with the circuit powering the operation, can halt the process, thereby eliminating the electrostatic charging mechanism and potential charging of un-grounded equipment.

If such an event does occur, the plant's technicians can rapidly identify which connection needs to be investigated. They can do this by referencing the monitoring unit's ground status indicator panel which will indicate which channel needs to be checked. Once the connection to the equipment is re-established the Earth-Rite® MULTIPOINT controller will provide a permissive condition for the process to start again.



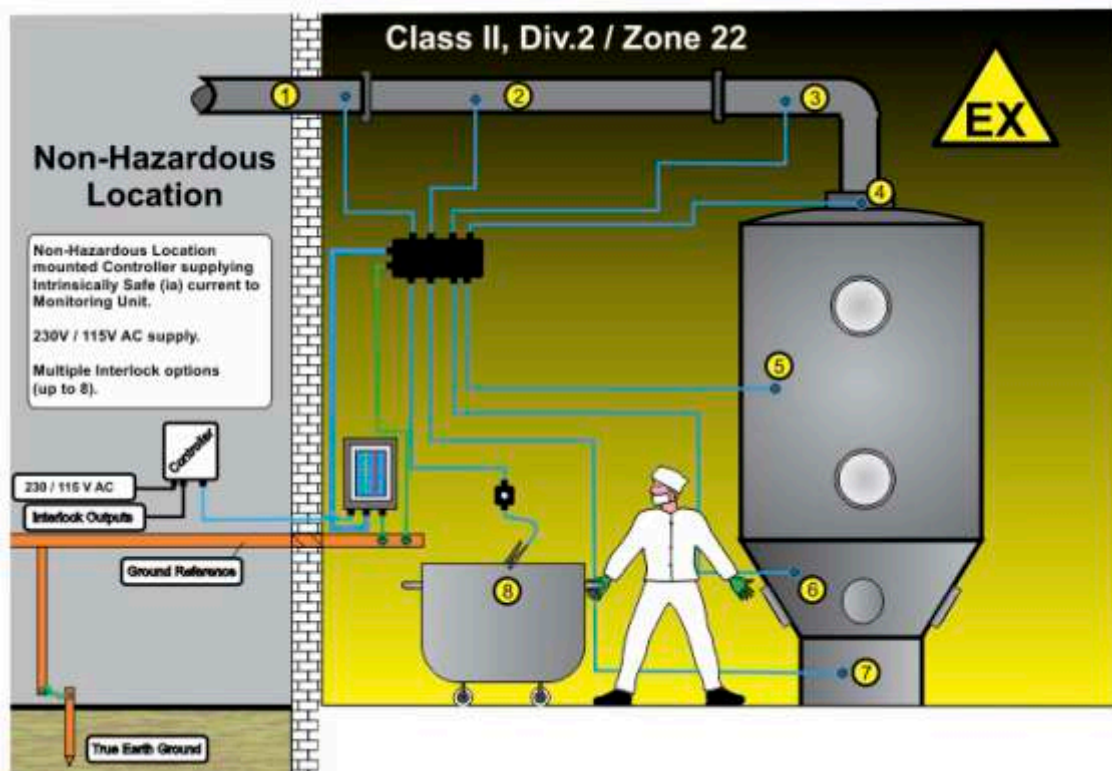
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The most common set up, from an interlock option perspective, is to halt the entire process via a single relay output from the Earth-Rite® MULTIPOINT's controller so that the isolated equipment can be identified and repaired. Halting the movement of the powder ensures that electrostatic charges are not being generated while a piece of plant equipment does not have grounding protection in place.

Although 8 monitoring channels are provided, not all may be required. For example, if only 5 process items require monitoring, only 5 channels need to be utilised. However, the available 3 channels may be used at some point in the future should any modifications to the process require the addition of more plant equipment.

Additionally, the Earth-Rite® MULTIPOINT may be installed to utilise individual channels to monitor multiple items of interconnected equipment, provided the equipment has a dedicated connection back to an earth ground reference and no fortuitous connections to earth are inherent in the design of the structure being monitored. A useful connection option for this method is a single pole plug and socket connector that enables plant technicians to rapidly make and break monitoring cable connections to the plant equipment being monitored. Specialist advice is available to determine the most appropriate method of installation.



Leading the way in hazardous area static control



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Product Ordering Codes

Ordering Code	Product Description
EMUM50	An Earth-Rite Multipoint Static Grounding System (EEx ia IIC T4) 230 V AC
EMUM50/110	An Earth-Rite Multipoint Static Grounding System (EEx ia IIC T4) 120 V AC

Contact Us > Your enquiry will be processed rapidly via our webform enquiry service. If you would prefer to call us, or e-mail us, please use the contact details provided below.

Due to the unique nature of each application, each inquiry must be reviewed by our team of specialist engineers to provide the best solution to suit our customers needs.

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