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CERTIFIED

Ex-d
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OVERVIEW

The new Intelligent Vehicle Static Grounding Relay Model SPS-600 is an advanced microcontroller based Static Charge earthing device used in Terminal Automation Systems. The instrument acts as safety interlock, allowing initiation of the loading/unloading process only after satisfactory grounding of static charge on the Tanker body. The SPS-600 provides a potential free control output for process interlocking along with bright LED based visual indication (Red: Fault and Green: Healthy) to show earthing status.

The SPS-600 has an advanced Capacitance based "Intelligent" vehicle recognition feature, which can distinguish proper connection of Probes to the Tanker body, whereby the instrument will not function if the Probes are connected to some metal trim in the gantry or even shorted to each other.

Further, the connection integrity of the Tanker body to the Earth Pit is continuously monitored by the SPS-600. Also the flexible Copper Cable or Manual Interlock Braid between the Tanker body and the Earth Pit Grid is constantly scanned for Resistance levels and for proper electrical contact. If there is any break or an accidental disconnection of any of these critical point, the operation is instantly arrested.

The Line Resistance between the Tanker Probe and the Earth Pit Grid and the Vehicle Capacitance are two critical parameters that are continuously measured and monitored. The safe values are configurable for the pre-specified values. This measurement also allows checking of wear and tear of the probe cables.

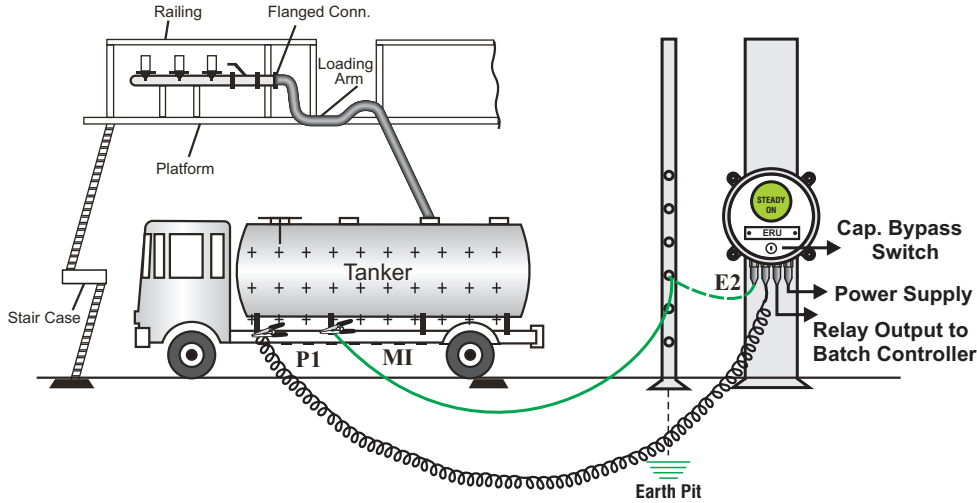
If the line impedance of the Cables exceed or fall below the permissible values, the instrument shall arrest all operations immediately by switching internal Relays, whose contacts may be used as interlocks to stop loading or unloading operations. Bright Green and Red LED Lamps clearly visible through the safety glass window of the flameproof enclosure indicate successful grounding or any internal faults.

SPECIFICATIONS

Model	ASHE SPS-600
Type	Microcontroller based Intrinsically Safe Intelligent Earthing Relay for Static Charge grounding of Tank Truck (with/without Manual Interlock).
Functions	<ol style="list-style-type: none"> 1. Detect and safely ground the Tanker vehicle. 2. Detect that Earth Clamp probe is secured to Vehicle only and not shorted to any metallic structure. 3. Detect Line Resistance between Probe and the Earth Pit Grid. 4. Detect proper contact of the copper-braided Grounding Strip (Manual Interlock). 5. Allow loading only when all following conditions are satisfied : <ul style="list-style-type: none"> • Presence of Tanker Vehicle detected. • Vehicle is satisfactorily grounded. • Connections of braided Copper Cable are proper and secure. • Line Resistance between Earth Pit and Vehicle is below 8 Ohm. • Capacitance of vehicle is within specified band.
Connection	Earthing connection through SAL clamp or SSAL Socket. Extended length of the spiral cable in 5 meters. (optionally 10 meters.)
Cable Probes	<ol style="list-style-type: none"> 1. Body of the Tanker Truck from ERU. 2. Earth Pit / Grid at loading area to ERU. 3. External Manual Interlock from Earth Pit / Grid to Tanker Truck.
Capacitance Bandwidth	2 to 100nF (configurable).
Resistance Bandwidth	1 to 8 Ohms (configurable).
Protection	Intrinsically Safe Ex-i electronic design. Weatherproof with IP65 ingress protection. Explosion-proof Ex-d enclosure Class 1 suitable for Gas groups IIA & IIB (optionally Gas group IIC). IEC, Zone 1, Group IIA/IIB, T3.
Area Classification	Two control Relay changeover potential free contacts.
Control Outputs	10 Ampere @ 230 V AC (Resistive Loads).
Contact Rating	Relay contacts to change-over when Vehicle body is satisfactorily grounded.
Control Logic	Green LED lamp indicating – Successful Grounding of Vehicle / Loading Arm Earthed.
Indications	Red LED lamp indicating – Vehicle / Loading Arm Not Earthed. Green & Red LED Toggling – Vehicle Detected.
Data Communication	RS485 on Modbus RTU Protocol.
Power Supply	90 to 270 V AC, 50/60 Hz Universal AC Power Supply / 90 to 270 VDC.
Dimensions	200 x 200 x 200 mm [W x H x D].
SC Protection	Fuses (internal).
Protection	Intrinsically Safe certified by CIMFR Dhanbad and PESO.
Execution	Explosion-proof execution, suitable for hazardous area installations.

DIMENSIONAL DIAGRAM

EARTHING OF TANKER DURING LOADING OPERATION



HOW TO ORDER

VEHICLE STATIC GROUNDING SYSTEM	SPS-600							
Configuration and add-on options								
1 PROBE SELECTION								
▶ Single Probe, without Manual Interlock								
▶ Single Probe, with Manual Interlock								
▶ Dual Probe with Manual Interlock								
2 CABLE LENGTH								
▶ 5 mt 4 sq. mm Spiral Cable Clamp Assembly pair								
▶ 10 mt 4 sq. mm Spiral Cable Clamp Assembly pair								
▶ Other (to be specified)								
3 CONTROL RELAY OUTPUTS								
▶ One Relay Output								
▶ Two Relay Output								
4 COMMUNICATION								
▶ Rs485 on Modbus RTU required								
▶ Rs485 on Modbus RTU not required								
5 EXECUTION								
▶ Field mounting in Flame/Explosion-proof execution (Cast Aluminum Alloy LM6 enclosure, for Gas group IIC)								
6 ACCESSORIES								
▶ Protective sun shade canopy in FRP material								
▶ Accessories kit not required								

OUR OTHER PRODUCTS



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SIGNAL ISOLATORS & TRANSDUCERS



TEMPERATURE SCANNER



FLAMEPROOF INSTRUMENTS



STATIC POWER SWITCHES



Designed and Manufactured by :

ASHE CONTROLS PRIVATE LIMITED

6/317, 318 & 319, Jogani Industrial Complex, Near ATI, Sion-Trombay Road, Chunabhatti (East), Mumbai - 400 022, India.

Phone : (022) 2405 1561, 2405 5791, 2405 5543 • E-mail : sales@ashecontrols.com • Website: http://www.ashecontrols.com