GE Oil & Gas
Measurement & Control

Smart Ground Detector

Smart Ground Detector (SGD) is a grounding device that effectively controls and dissipates static charge.

- Intrinsic safe design
- Monitors earth potential and detects resistance in the earth loop
- Single/ Dual channel
- Ensures low resistance in the earth loop
- Area classification: Exd [ia], IIB, IP65, zone 1
- Used in wide range of applications like process, chemical, petrochemical, pharmaceutical, paint industries and terminal automation
- Used in standalone operations
- Varieties of Earthing clamps are available to suit the application

The problem of static electricity in hazardous atmospheres is ever present in many sectors of processing industries. Due to physical movement, some materials generate high degree of static charge; at times it is in kilovolts. Insulating materials like rubber tyres, paints, gaskets and seals do not offer sufficient low resistance path to safely dissipate any static charge generated to earth. When this happens, high level of charge may accumulate on the isolated part, posing the risk of energetic static discharges. If this occurs in hazardous atmosphere there is a chance of occurrence of explosion, fire, or ignition of hazardous material.

Smart Ground Detector solves the aforesaid problem by ensuring that a low resistance connection is made from the isolated part through paint or rust to the reference ground point. Essentially the instrument monitors potential level of the vessel and only when this potential is confirmed to be at the same potential level as that of the reference ground (Earth pit) level, the instrument permits further loading or unloading operations. Throughout the fueling operation, the instrument monitors the development of the static charge on the body of the vehicle and ensures that the condition remains safe till the loading is completed.

The Smart Ground Detector is line powered intrinsically safe, self-proving ground verification system. It can also be used in the process industries; where product is transferred into drums or containers, by ensuring that all the containers are at earth potential. The Smart Ground Detector may also be used to provide safe and secure ground to movable metal containers and mobile vessels within the plant in the process industries.

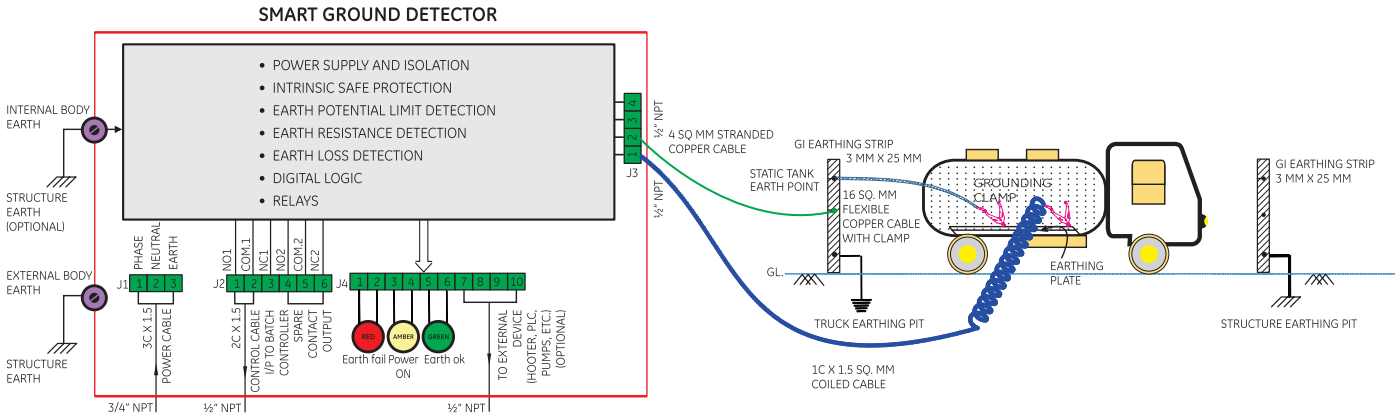
A dedicated terminal is provided in the instrument that connects the true earth potential with this instrument. And during the entire monitoring operation, the instrument considers this potential as a reference ground point. Varieties of grounding clamps are available with the system to suit the applications. The clamps are supplied with mechanically rugged chemical resistant flexible spiral cables.

Two sets of interlock outputs in the form of potential free relay contacts as standard are available to connect to the Batch controller, which immediately stops loading operation under the un-safe condition. The potential free contact may be interlocked with pumps, valves, PLC, alarms, etc. Using two LED indicator lamps available on the front cover, Earthing OK (Green Lamp On) or Defective Earth (Red Lamp On) status are displayed. Alternately, the instrument can be converted to accept inputs from two separate earthing clamps to generate two separate potential free relay contacts.

Specifications

Model	Smart Ground Detector
Detection Principle	(a) Detection of resistance in the earth loop (Jumper selectable set points 2 - 4 - 8 - 16 ohms) (b) Earth potential limit is monitored (c) Detection of loss of static tank earth
Function	To detect proper grounding of the tank truck, loading arm bonding and will stop loading upon loss of earth connection or if the rate of generation of static charge is more than rate of dissipation of static charge.
Indicating Lamps	Three Nos. LED Cluster lamps • Red (Earth Fail) • Amber (Power ON) • Green (Earth OK)
Area Classification	Intrinsic Safe : Ex ia, zone 1, Div 1 & 2, Group IIA, IIB Flame Proof : Ex d, zone 1, Div 1 & 2, Group IIA, IIB
Temperature Class	T6
Ingress Protection	IP 65
Operating Temperature	0 to 60°C
Storage Temperature	-10 to 85°C
Humidity	95% at 25°C (Non-Condensing)
Response Time	50 mSec (nominal)
Supply Voltage	230VAC ±10% / 115VAC ±10%, 10 W
Output Characteristics	Potential free 2-change over relay, Contact rating 230V, 5A, 100 VA (AC) / 230V, 5A, 100 Watt (DC)
Body	Flameproof cast aluminum LM6
Mechanical Dimensions	283mm(H) x 215mm(W) x 177mm(D) (Mounting holes provided at 130 x 240mm apart)
Approvals	CMRI & CCOE (Approved)/ ATEX & IEC Ex (Applied)
Clamp Type	- Crocodile type - Ball type, socket with stud connector

Block Schematic and Typical Connections



imagination at work

GE Oil & Gas
Measurement & Control
Advanced Sys-tek Pvt. Ltd.
299-300, G.I.D.C., Makarpura,
Vadodara - 390 010, India
Ph.: + 91 265 3041100
sales@advancedsystek.com • www.ge-mcs.com