



VITAL ENGINEERING INSTRUMENTS

Plot 746/1 OFFICE 2&3 MAKARPURA GIDC, Vadodara, GUJARAT.

GST : 24DVPPP1558F1ZA PAN : DVPPP1558F E : vitalengginstruments.com M : 8347269644

OPERATION MANUAL

10 Channel Continuous Earth Monitoring System With Resistance Display & Individual Interlocks



FLP/WP FOR PLANT AREA APPLICATIONS



FLP/WP/GMP FOR CLEAN ROOM APPLICATIONS

MANUFACTURED BY

VITAL ENGINEERING INSTRUMENTS, VADODARA, GUJARAT



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Applications

The System can be used to Monitor the Healthy Earthing of following Equipments.....

- Multiple Reactors, Multiple Vessels
- Multiple drum/ tote loading points
- Liquid/ powder mixing and blending
- Multiple Points on Powder conveying equipment
- Container filling and emptying
- Hoppers and dust collectors
- Fluid bed drying Equipments
- Reactor Vessels
- Powder Micro Ionizing, Pulverizing and Many More.....

Overview

The Vast usage of Explosive Solvents, in hazardous areas & applications brings in a lot of risk to mankind working in that atmosphere, The multiple equipments in the plant are connected in grid connection through earth strips and earth strips are connected to mother earth through GI Strips or Copper Plates

While the regular supervision of Earth Pits, Continuity of Plant Equipments to Earth can negate any kind of accident from occurring, however it easier said than done, hence there was a need for a system which can 24*7 measure the equipment to ground resistacne and earth continuity to make environment safe for working for the people.

INSTALLATION

The 10 Channel Continuous Earth Monitoring System has to be wall mounted in hazardous areas near to the plant equipments, so that the operator can easily make out which equipment has lost the connection to the earth or which equipment resistance is shooting up due to problem main earth pit.



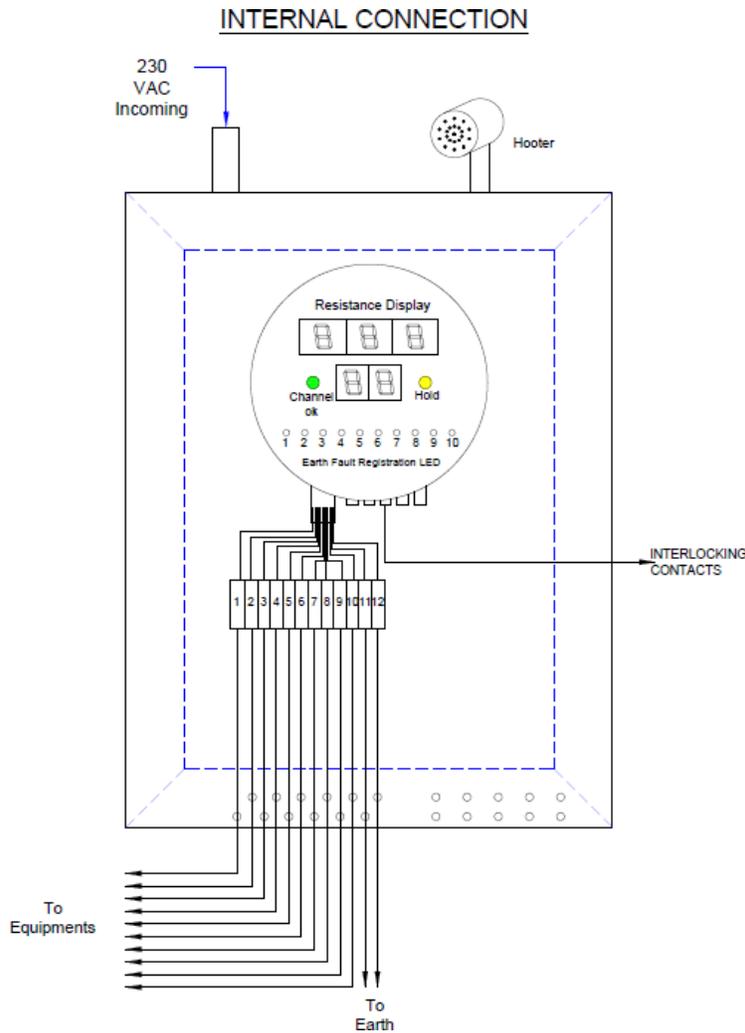
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Cabling Details

- From Mains to FLP 10 Channel CEMS - 02 Core Armored Cable 1.5 SQMM
- From CEMS SS/FLP Junction BOX to 10 Individual Equipments - 1.5 SQMM Single Core Wire
- From CEMS SS/FLP Junction BOX to Main Earth Pit/Grid - 02 Connections – 1.5 to 4 SQMM Single Core Wire





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INTERLOCKING CONNECTIONS

| | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|-------|
| 1 NO | 2 NO | 3 NO | 4 NO | 5 NO | 6 NO | 7 NO | 8 NO | 9 NO | 10 NO |
| 1 C | 2 C | 3 C | 4 C | 5 C | 6 C | 7 C | 8 C | 9 C | 10 C |

- Channel Number 1 Relay will be Active once the Channel Number 1 Gets healthy
- Like wise all Channels 1 to 10 Relays will be active once the individual Channel Earth Connectivity and Resistance is OK

Example

- 1 NO & 1 C is Relay 1 Normally Open and Common Contact
- Like wise 10 NO & 10 C is Relay 10 Normally Open and Common Contact

STANDARDS & CERTIFICATIONS

- ROHS, CIMFR, PESO (Optional)
- Standards Complied : IS/IEC 60079 - 11:2006 & IS/IEC 60079 - 0:2011

WORKING LOGIC / OPERATIONAL PRINCIPLE

- The System once powered & connected to 10 potentially hazardous equipments will check each and every equipment in interval of 05 Seconds
- Each Channel Number will be displayed with its Earthing Status and Resistance Display
- The Earthing Status May be Healthy / Unhealthy depending upon the result, if it found to be unhealthy the fault registration LED will GLOW indicating Fault
- During unhealthy Condition the hooter sounds up to bring an attention to the near by operators.



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**FOR MORE INFORMATION & DETAILED VIDEO LINK FOR
OPERATION PROCEDURE PLEASE CLICK BELOW LINK**

<https://www.youtube.com/watch?v=46lhAhiWQes>



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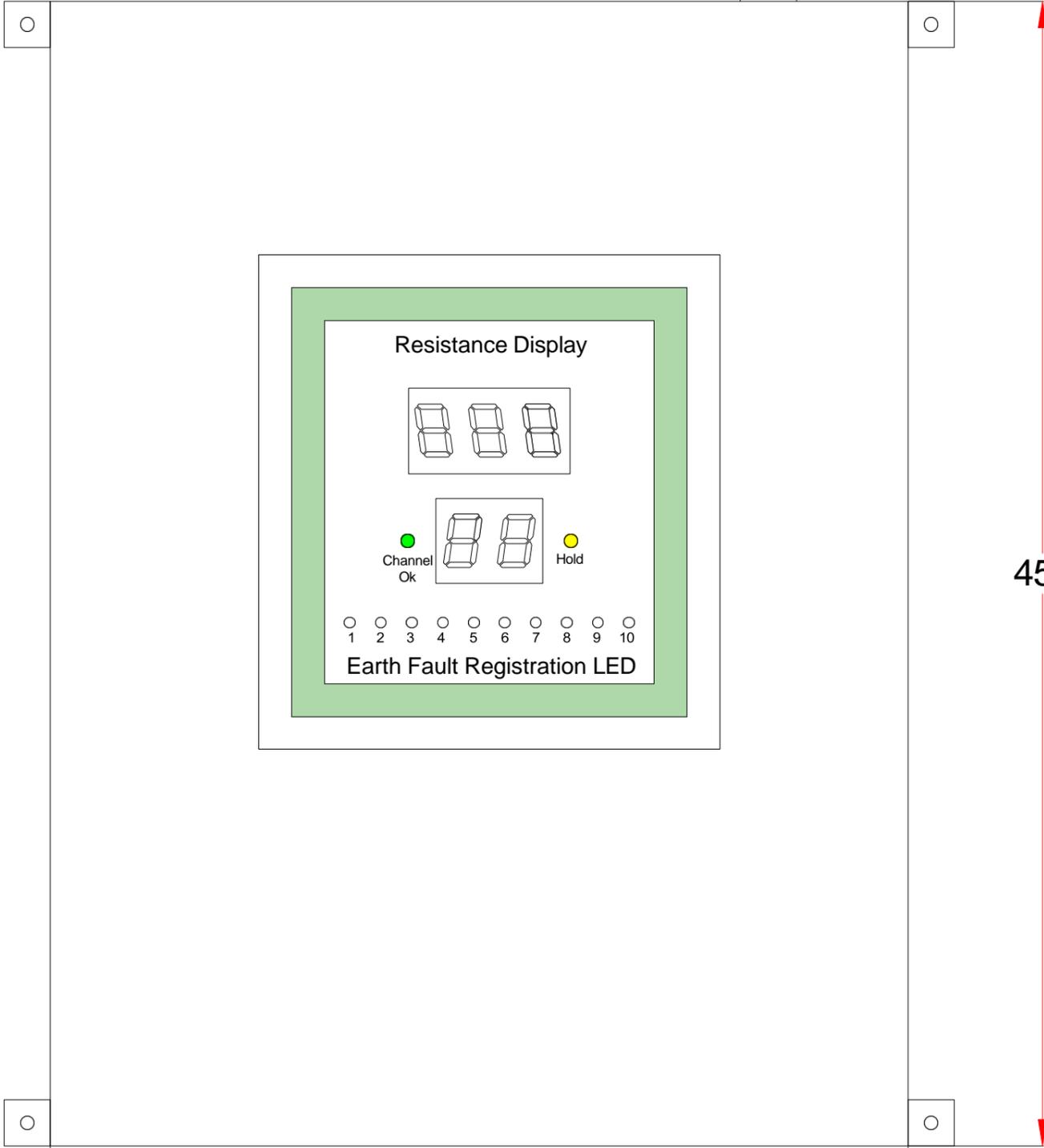
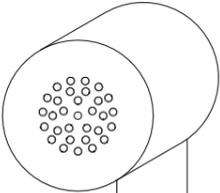
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TECHNICAL PARAMETRES

| | | |
|-------------------------------|---|--|
| Supply Input Voltage | : | 230 V AC (To Main Unit) |
| Output Voltage | : | 5VDC |
| Current Rating | : | 20 Milli Amp (Intrinsically Safe) |
| Power Rating | : | 10 Watts SMPS (Input/Output Isolated) |
| Ingress protection | : | IP65 |
| Temperature range | : | -10 degree to 55 Degree |
| Control Relay | : | 10 NOS Potential Free |
| Output in/out Monitoring Unit | : | Intrinsically Safe |
| Enclosure Material | : | Cast Aluminum Alloy (LM6) |
| Cable Entries | : | M 19 FLP Glands (03 nos) |
| Monitoring Resistance | : | >10 ohms (Shows Red Indication if resistance goes above 10 ohms) |
| Resistance Display | : | It will show the Individual Equipment Resistance to Ground in Ohms |
| Operation | : | (Healthy Earth) Less than 10 Ohms & (Unhealthy Earth) More than 10 ohms |
| Hooter Interface | : | (Optional – Integrated with System on Request) |
| Certifications | : | The entire assembly is ROHS, CIMFR & Complying IS/IEC Standards |
| Application | : | Tanker Earthing, Drum filling, Reactor Charging, Pharma Equipments, Multiple Equipments, Pipeline Earthing. |

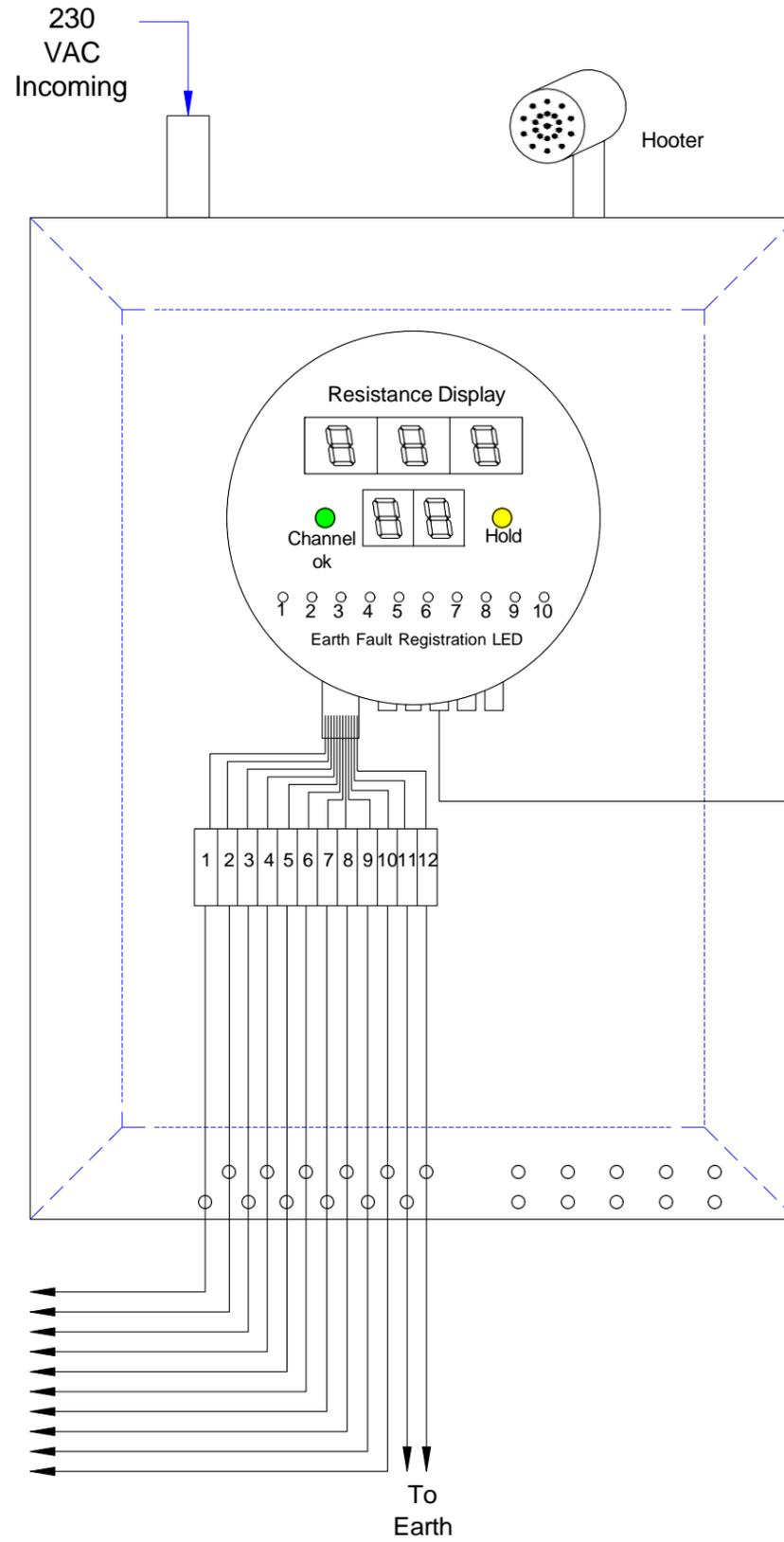
| REVISION HISTORY | | | |
|------------------|-------------|------|----------|
| REV | DESCRIPTION | DATE | APPROVED |
| | | | |



| | | | |
|--|---------|--------------|---------|
| VITAL ENGINEERING INSTRUMENTS, GUJRAT | | | |
| TITLE: GMP / FLP / WP 10 Channel Earth monitoring & Interlocking System | | | |
| MATERIAL: | DWG NO: | SIZE: A4 | |
| SCALE: N/A | WEIGHT: | SHEET 1 OF 1 | REV. 00 |

INTERNAL CONNECTION

| REVISION HISTORY | | | |
|------------------|-------------|------|----------|
| REV | DESCRIPTION | DATE | APPROVED |
| | | | |



| | | | | | | | | | |
|---------|--------|---------|--------|---------|--------|---------|--------|----------|---------|
| 1 NO | 1 C | 2 NO | 2 C | 3 NO | 3 C | 4 NO | 4 C | 5 NO | 5 C |
| 6 NO | 6 C | 7 NO | 7 C | 8 NO | 8 C | 9 NO | 9 C | 10 NO | 10 C |

RELAY INTERLOCKING POTENTIAL FREE CONTACTS

Relay Termination

| | | | |
|--|-----------------------------|--------------|---------|
| VITAL ENGINEERING INSTRUMENTS, GUJRAT | | | |
| TITLE: GMP / FLP / WP 10 CHANNEL EARTH MONITORING & INTERLOCKING SYSTEM | | | |
| MATERIAL: | MODEL NO: CEMS1021-DECALOCK | SIZE: A4 | |
| SCALE: N/A | WEIGHT: | SHEET 1 OF 1 | REV. 00 |