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Karandikar Laboratories



1)

TYPE EXAMINATION REPORT

2)

Electrical Apparatus for Explosive Atmospheres

3) **TE Report Number: KLPL/Ex/16-014X**

Issued On:31.01.2016

4) Electrical Apparatus: **Continuous Earth Monitoring System**

Model: CEMS-0313

5) Name and Address of the Manufacturer **M/s ESD Control Systems,**

Plot No: 11, H.No. 47-15/1, Sri Sai Colony, Chintal,
HMT Road, Hyderabad - 500037. A.P, India.

6) This equipment and any acceptable variation thereto are specified in the schedule to this report and the documents therein referred to

7) Karandikar Laboratories Pvt. Ltd. reports that this equipment has been found to comply with requirements of the following standards relating to the design and construction of electrical apparatus for explosive gas atmospheres.

8) This TE Report was issued as verification that a sample, representative of production, was assessed and tested and found to comply with the IS/IEC standards listed below

IS/IEC 60079-0: 2007, IS/IEC 60079-11: 2006 & IS/IEC 60529: 2001

9) The Examination and Test results are recorded in KLPL's confidential

Report No. KLPL\Ex\ ESD-16\001 Dated. 31.01.2016

10) The sign X if placed after the report number; it indicates that the equipment is subject to special conditions of safe use specified in the schedule to this certificate

11) This Report does not indicate compliance with electrical safety and performance requirements other than those expressly included in the above listed standards

12) The marking of the Equipment shall include the following:

Ex d(ib) IIB T6 Gb (-10°C ≤ Ta ≤ +50°C)

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Atul Marathe

Atul Marathe (Technical Manager)

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Karandikar Laboratories Pvt. Ltd.

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SCHEDULE

13) Description of Equipment:

General Overview

The Continuous Earth Monitoring System - CEMS 0313 provides 20 channels of Intrinsically Safe Earth Loop check links. The instrument scans its Channels for 5 sec's and all other 19 Channels are inhibited and thus no interference due to aggregation of number of loop check currents.

The System consists of two parts i.e. Safe Area Unit & Hazardous Area Apparatus

The equipment consist of three parts, 1) The Power Supply 2) The Control and Display Circuit 3) The termination

1) The Power supply is housed in 1.2 mm Thick MS Box with Hinged open able Cover enclosure Wall Mounting with 4 Nos. of Screw fitting in eyelets fitted outside the Box and is to be placed in safe area. It carries the electrical function of Mains Control Network Detection for Over Voltage and Over Current due to faults in secondary currents, in addition to actuate Fuse Protection. It houses Low Voltage Regulators -

a) +9 Volts at 15mA, b) +7.5 Volts at 30mA, c) +5 Volts at 180mA

The Electrical Specifications for this power supply is Power Input: 230 Volts Single Phase, suitable for Voltage Range: 210 to 270 Volts, with a Power Burdon of Less than 11 Watts.

2) In the hazardous area, Two enclosure the Ex d enclosure housing the control circuit and the Terminal enclosure are placed on a base plate and are connected with each other by a pair of cables. The electrical arrangement is suitable for Zone 1 application for IIB gases.

The external fittings on the Ex d enclosure are operating push buttons 3 nos., Buzzer, Placed on the Top of FLP Unit, gives Aural Indication of Faulty Earth Loop of Channel under scanning and the certified Ex d cable glands. The above Ex d enclosure, the buzzer and the Push buttons are certified component, the certificates attached in the documents.

The cable entry into the Ex d enclosure is through certified Ex d cable glands,

Cable Entry-1 Top Left Side of FLP Unit with 3/4" FLP Gland, Cable of 1.5sq.mm. x 4 Core Armoured Flexible Cable.

Cable Entry-2 & 3: Bottom Side of FLP Unit with 3/4" FLP Glands (2 Nos.) Cable being 1sq mm x 12 Core Unarmoured Flexible Cable for Ex I signal going into hazardous area.

Cable Entry-4: This cable entry is used for connecting the External Buzzer to its power supply inside the Ex d enclosure. Here again 3/4" FLP Gland, Cable of 1.5 sq.mm. x 2 Core Armoured Flexible Cable is recommended.

The third enclosure is of S.S material and meets the requirements of IP 54 and houses the terminals blocks on which the hazardous area connections will be terminated.

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Intrinsically Safe Connection facility for 20 Channel outputs provided, the terminals used are Ex e certified suitable for handling more than maximum current envisaged.

Cable Entry-1 & 2 : On Top Side of J. Box with 3/4" FLP Gland (2Nos.) with a Cable : 1sq.mm x 12 Core Unarmoured Flexible Cable

Cable Entry-3 & 4 : Bottom Side of J. Box with 3/4" FLP Gland (2Nos.) with a Cable : 1sq.mm x 12 Core Unarmoured Cable

Cable Entry-5 & 6 : Bottom Side of J. Box with 1/2" FLP Gland (2 Nos.) with a Cable: 4sq. mm Multistrand PVC Wires

- 14) **Model Designation:** Continuous Earth Monitoring System. Model: CEMS-0313
- 15) **Electrical parameters** *Entity Parameters*
Um= 253V a.c.
Uo=9.02V,
Io= 36mA,
Po= 0.324W,
Co=33µF,
Lo = 100mH
- 16) **Ingress Protection:** IP54 as per IS/IEC 60529: 2001 for the Power Supply Enclosure.
IP66 as per IS/IEC 60529: 2001 for Ex d Enclosure.
IP54 as per IS/IEC 60529: 2001 for the Terminal Enclosure.
- 17) **Ambient Temperature:** -10 °C to +50 °C
- 18) **Test Report No:** KLPL/Ex/ESD/16-001 Dated. 31.01.2016
- 19) **Conditions of Safe Use. : NIL**
- 20) **Temperature Class :** T6 for ambient temperature range of (-10 °C ≤ Ta ≤ +50 °C)

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21) Routine Tests

The manufacturer shall carry out the routine verifications and tests by IEC 60079-0:2011 necessary to ensure that the subject produced complies with the specification submitted to the testing station together with the prototype or sample. He shall also make any routine verifications and tests required by the respective IEC Standards.

The tests of the modules are prepared with the following ratings and connections, all tests have to be done with AC-voltage for 1 min or alternative potential 20 percent higher may be applied for 1 second.

When it is more convenient, the test can also be done with DC-voltage when the used potential is 1.414 times of the value specified above.

21) Documents & Certificates submitted along with the Test Report

Description	Document No.	Revision	Date	Pages
CEMS-Application and working	ESD_313_0110_DOC_01	01	20.06.2015	2
Application	ESD_313_0110_DOC_01	01		
Working	ESD_313_0110_DOC_01	01		
CEMS-System Block Diagram Illustration	ESD_313_0110_DOC_03	00	30.04.2015	3
System Block Diagram of CEMS-0313	ESD_313_0110_DOC_03	00		
Connection Between Assemblies in Safe Area	ESD_313_0110_DOC_03	00		
Connection Between Assemblies in Hazardous Area	ESD_313_0110_DOC_03	00		
CEMS - Equipment Labels Details	ESD_313_0110_DOC_05	01	20.06.2015	4
Safe Area Unit Labels	ESD_313_0110_DOC_05	01		
Hazardous Area FLP Apparatus Labels	ESD_313_0110_DOC_05	01		
Hazardous Area FLP Apparatus Operational Legend Labels	ESD_313_0110_DOC_05	01		
Hazardous Area Junction Box Labels	ESD_313_0110_DOC_05	01		
CEMS - Details of Conformal Coatings	ESD_313_0110_DOC_13	01	20.06.2015	3
Manufacturer & Brand Details of Spray Liquid Used	ESD_313_0110_DOC_13	01		
Specifications, Thermal & Physical Properties	ESD_313_0110_DOC_13	01		
Procedure of Application	ESD_313_0110_DOC_13	01		
Stage -1 : Conformal Coatings on PCB's	ESD_313_0110_DOC_13	01		
Stage -1 : Varnish Coatings on PCB's	ESD_313_0110_DOC_13	01		
List of Conformal Coated PCB's Used in CEMS-0313	ESD_313_0110_DOC_13	01		
CEMS - Details of Gasket	ESD_313_0110_DOC_14	01	20.06.2015	1
CEMS - PCB Layout Diagrams (GERBER FILE)	ESD_313_0110_DOC_15	01	--	7
Seven Segment Digital Display (PCB NO. ESD CONTROL 31)	ESD_313_0110_DOC_15	01		
Mains O. V. O. C. Protection (PCB NO. ESD-2)	ESD_313_0110_DOC_15	01		
L. T. Power Supplies (PCB NO. ESD-CEMS-03)	ESD_313_0110_DOC_15	01		
Processor (PCB NO. ESD-CEMS-04)	ESD_313_0110_DOC_15	01		





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Table with 5 columns: Description, Doc No, Qty, Date, and Count. Rows include items like 'Intrinsically Safe (IS) Connection Outputs', 'CEMS - Cable / Wiring Charts & Drawings', 'CEMS - Circuit Diagrams of PCB's', etc.

END OF DOCUMENT



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