



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEX ITS 20.0054X** Page 1 of 3 [Certificate history:](#)
Status: **Current** Issue No: 0
Date of Issue: 2020-10-14
Applicant: **Advanced Sys-tek Pvt. Ltd.**
299-300, GIDC Makarpura Vadodara - 390010 Gujarat, India
India
Equipment: **Smart Ground Detector +**
Optional accessory:
Type of Protection: **Flameproof, Intrinsic Safety and Dust Enclosures**
Marking: Ex db [ia Ga] IIB T6 Gb
Ex tb [ia Da] IIIC T85°C Db IP65
-20°C ≤ Ta ≤ +60°C

Approved for issue on behalf of the IECEx
Certification Body:

P Moss

Position:

Certification Officer

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

Intertek Testing & Certification Limited
ITS House, Cleeve Road
Leatherhead
Surrey, KT22 7SA
United Kingdom

intertek



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Manufacturer: **Advanced Sys-tek Pvt. Ltd.**
299-300, GIDC Makarpura Vadodara - 390010 Gujarat, India
India

Additional
manufacturing
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[GB/ITS/ExTR18.0062/00](#)

Quality Assessment Report:

[GB/ITS/QAR13.0007/03](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Smart Ground Detector + is micro controller based grounding device of Flameproof protection housing the Intrinsic Safe circuits that effectively controls and dissipates static charge with continuous ground loop monitoring and road tanker recognition. Ensures that clamps are connected through loading vehicle only and not through a fix structure.

- Connections to vehicle with rugged plug and socket arrangement & spiral cab
- Detects resistance in the earth loop and continuous monitoring of earth poten
- Ensures that it has a secure connection to the general mass of the earth
- The earthing status can be transmitted over a remote computer via redundant serial port
- Used in terminal automation as well as used in Process, Chemical, Petrochemical, Pharmaceutical and Paint Industries

See Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

See Annex

Annex:

[SFT IECEx OP 19f Annex for IECEx Certificate of Conformity Advanced System_1.pdf](#)



Annex to IECEX Certificate of Conformity

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Technical Documents			
TITLE:	DRAWING NO.:	REV. LEVEL:	DATE:
Flameproof Housing of Smart Ground Detector+ Earthing Relay, Sheets 1 & 2	RAD Ex/1270801	0	24/12/2018
Unit Assembly Exp Smart Ground Detector+ without communication board	RAD Ex/1270805	0	28/01/2020
Unit Assembly Exp Smart Ground Detector+ with communication board	RAD Ex/1270806	0	28/01/2020
Name Plate of Ex Approved SGD+ Without Com Port	RAD Ex/1270901	0	28/01/2020
Name Plate of Ex Approved SGD+ With Com Port	RAD Ex/1270902	0	28/01/2020
Field Application Diagram of Smart Ground Detector+ With Single Color Lamps	RAD Ex/1270206	0	06/12/2018
Terminal Detail & Typical Connection Drawing of Smart Ground Detector+ (without communication port)	RAD Ex/1270204	0	06/12/2018
Typical field wiring diagram of Smart Ground Detector+ with Smart Load Batch Controller	RAD Ex/1270209	0	06/12/2018
Ex ia			
Circuit Diagram of Smart Ground Detector+	RAD Ex/1270101	0	15/05/2019
Bill of Material of Smart Ground Detector+ PCB, Sheets 1 to 10	RAD Ex/1270301	0	02/04/2019
Specification of Smart Ground Detector + Bare PCB 1271301(Rev. 0)	RAD Ex/1270502	0	02/04/2019
PCB Graphics of Smart Ground Detector+, Sheets 1 to 11	RAD Ex/1271303	0	29/04/2019
Minimum separation distance in Top and Bottom Copper of Smart Ground Detector+ PCB, Sheets 1 & 2	RAD Ex/1271304	0	28/01/2020
Circuit Diagram of Single Port Communication Board of SGD+	RAD Ex/1270102	0	16/08/2018
Bill of material of Single Port Communication Board PCB, Sheets 1 & 2	RAD Ex/1270302	0	16/08/2018
PCB Graphics of Single port Communication Board of SGD+, Sheets 1 to 9	RAD Ex/1271307	0	16/08/2018
PCB Graphics of Piggy PCB	RAD Ex/1271308	0	02/11/2018
Specification of Single Port Communication Board of SGD + Bare PCB 1191305	RAD Ex/1270504	0	02/11/2018
Specification of Smart Interlock Piggy Bare PCB 1011302	RAD Ex/1270505	0	02/11/2018
Transformer Details of Smart Ground Detector+	RAD Ex/1270501	0	20/03/2019
Construction of Relay OEN 48 Series	RAD Ex/1270802	0	28/01/2020
Potted Assembly of Smart Ground Detector + Piggy PCB	RAD Ex/1270811	0	28/01/2020
User Reference Manual	RAD Ex/1271201	0	01/2020

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Product Description

Smart Ground Detector + is micro controller based grounding device of Flameproof protection housing the Intrinsic Safe circuits that effectively controls and dissipates static charge with continuous ground loop monitoring and road tanker recognition. Ensures that clamps are connected through loading vehicle only and not through a fix structure.

- Connections to vehicle with rugged plug and socket arrangement & spiral cable.
- Detects resistance in the earth loop and continuous monitoring of earth potential.
- Ensures that it has a secure connection to the general mass of the earth.
- The earthing status can be transmitted over a remote computer via redundant serial ports.
- Used in terminal automation as well as used in Process, Chemical, Petrochemical, Pharmaceutical and Paint Industries.

Supply voltage 230 VAC $\pm 10\%$ / 115 VAC $\pm 10\%$, 10 VA, 50 & 60 Hz ± 3 Hz

$$U_m = 240 \text{ V}$$


The Intrinsically Safe output parameters are:

J2 Terminals 1 & 2 Input 1:

$$U_o = 11.2 \text{ V dc}$$
$$I_o = 636 \text{ mA dc}$$
$$P_o = 2 \text{ W}$$
$$C_i = 0, L_i = 0$$
$$C_o = 12.6 \mu\text{F}$$
$$L_o = 0.35 \text{ mH}$$

J2 Terminals 3 & 4 Input 2:

$$U_o = 5.0 \text{ V dc}$$
$$I_o = 37 \text{ mA dc}$$
$$P_o = 0.233 \text{ W}$$
$$C_i = 0, L_i = 0$$
$$C_o = 1000 \mu\text{F}$$
$$L_o = 90 \text{ mH}$$

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Model Coding:

MODEL # : SMART GROUND DETECTOR+

ORDERING CODE: X X X X

COMMUNICATION OPTIONS

W WITHOUT COMMUNICATION PORT

C WITH COMMUNICATION PORT

POWER SUPPLY OPTIONS

0 115 V AC

1 230 V AC

GROUND CLAMP OPTIONS

0 SS CROCODILE CLAMP

1 AL CROCODILE CLAMP

2 BALL TYPE SOCKET WITH STUD CONNECTOR

AGENCY APPROVALS/ENCLOSURE OPTIONS

0 CCOE

1 ATEX

2 IECEX

Special Conditions of Certification

Specific Conditions of Safe Use

1. Equipment to be installed in vertical position only.
2. No modifications must be made to the flame paths without consultation of the drawings listed on the ExTR.
3. Yield strength of cover fixing fasteners shall be ≥ 450 MPa with the tolerance limit 6g/6H.


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Required Manufacturer Routine Testing		
Test	Title/Description of Test	Standard and Clause
1	A routine overpressure test shall be carried out by the flameproof housing manufacturer on each Smart Ground Detector+ at a pressure of 10 bar / 145 PSI for a period of at least 10 seconds and test results must be recorded. The overpressure test shall be considered satisfactory if no permanent deformation or damage invalidating the type of protection observed, the joints shall in no place have been permanently enlarged and no leakage through the walls of the enclosure observed.	IEC 60079-1:2014 Clause 16.0
	Routine test for the mains transformer to be carried out as follows: a) Between input and output windings at 2500V ac. b) Between all the windings and the core of the transformer at 1500V ac (as specified in the drawing number RAD Ex/1270501) c) Between each secondary windings at 1500V ac. The test voltage shall be applied for a period of at least 60 seconds.	IEC 60079-11:2011 Clause 11.2

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