



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 ETL 16.0016X	Page 1 of 5	<u>Certificate history:</u>
Status:	Current	Issue No: 7	Issue 6 (2021-03-01)
Date of Issue:	2022-05-12		Issue 5 (2019-02-21)
Applicant:	United Electric Controls 180 Dexter Ave Watertown, MA 02472 United States of America		Issue 4 (2018-09-11)
Equipment:	UE Vanguard		Issue 3 (2018-08-14)
Optional accessory:			Issue 2 (2018-01-11)
Type of Protection:	Flameproof - db, Intrinsic safety - ia		Issue 1 (2017-02-24)
Marking:	Ex db ia [ia] IIB T4 Gb IP66 (*Excludes Sensor) -40°C ≤ Tamb ≤ +65°C IECEX ETL 16.0016X		Issue 0 (2016-08-19)

Approved for issue on behalf of the IECEx
Certification Body:

Todd L. Relyea

Position:

Certification Officer

Signature:
(for printed version)

Date:
(for printed version)

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
3933 US Route 11 South
Cortland NY 13045-2995
United States of America

intertek



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Manufacturer: **United Electric Controls**
180 Dexter Ave, Watertown, MA 02472
United States of America

Manufacturing locations: **United Electric Controls**
180 Dexter Ave, Watertown, MA 02472
United States of America

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

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 Reports:

[US/ETL/ExTR16.0049/00](#)
[US/ETL/ExTR16.0049/03](#)
[US/ETL/ExTR16.0049/06](#)

[US/ETL/ExTR16.0049/01](#)
[US/ETL/ExTR16.0049/04](#)
[US/ETL/ExTR16.0049/07](#)

[US/ETL/ExTR16.0049/02](#)
[US/ETL/ExTR16.0049/05](#)

Quality Assessment Report:

[US/UL/QAR07.0002/12](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The product (TCD50H1*) is a Wireless Hart Communication based Gas detector for use in Zone 1 potentially explosive atmospheres. The product is comprised of a certified component (U) flameproof enclosure manufactured by Killark-Hubbell Inc. The component flameproof enclosure comes with two compartments (front and rear). The front compartment uses a glass window cover. The rear compartment uses a solid metallic cover. The covers are threaded onto the housing. The front and rear compartments are completely separated from each other. The

flameproof enclosure includes three threaded entries. Two of the threaded entries go to the front compartment and the third threaded entry goes to the rear compartment. The certified component enclosure is then modified by United Electric. The modification includes drilling between the front and rear compartments and making a passthrough potted/cemented bushing and populating with the electronics assemblies.

The front compartment entries are populated with a certified equipment (X) antenna and gas sensor (one of two: either one type of H2S sensor or several types of NDIR sensor). The NDIR sensors are certified equipment (U). The H2S Sensor is not a certified component. Evaluation performed for its compliance per requirement of this certification. The front compartment is intended to be Flameproof (Ex d) with included Intrinsic Safety Barrier Circuits (QTY = 3) for connections to the Gas Sensor (either H2S or NDIR sensors) and the rear compartment items (Battery and HART Field Connection). The barriers are used to make the passed-through circuits suitable for Zone 1 outside the Ex d enclosure (Ex ia). The NDIR Sensors is a certified component (U) as Ex ia. The NDIR sensors are modified by mounting into Flameproof Entry (glass-metal seal) and includes additional limitation in the joint to further limit energy to meet the entity parameters of the Sensor.

The rear compartment is intended to be Intrinsically Safe (Ex ia [ia]) only even though the rear compartment is a flameproof enclosure. It is intended to be able to change the battery pack housed in the rear compartment while the product is in the potentially explosive atmosphere. The Hart Field Connection [ia] is allowed for use in certified Hazardous Area. Instruction present in operation manual for service and repair.

The last digit of the model number can be any alphanumeric number. This represents the mounting means used by the end user and does not impact the explosion protection aspects of the equipment.

SPECIFIC CONDITIONS OF USE: YES as shown below:

No repair/modification to the flameproof joints is permitted.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Update Standards

1. From: IEC 60079-0:2011, Edition:6.0 To: IEC 60079-0:2017/COR1:2020
2. From: IEC 60079-1:2014-06, Edition:7.0 To: IEC 60079-1:2014/COR:2018/ISH1:2020
3. From: IEC 60079-11:2011, Edition:6.0 To: IEC 60079-11:2012/COR1:2012

- Update 62174-65 Rev K to Rev L:

1. Change Pass Thru: Now: 1/2-20 UNF-2B, 5 threads engaged min. Add Optional: pass thru to 1/2-28 UNEF-2B, 7 threads engaged min. (matches 62174-86 [62174-86: TCD60 Top Level])
2. Change NPT sealant balloon callouts to 25 or 26 (matches 62174-86 [62174-86: TCD60 Top Level])
3. Change sensor notes on Sheet 2 to reflect new sensor drawings (matches 62174-86 [62174-86: TCD60 Top Level])
4. Update base nameplate image (PESO #, version, etc.)
5. Update markings

- Update IM_TCD50-11 Rev 10 to Rev 11

1. Remove standards on Page 5 and replace with markup statement.
2. Change "locating pins" to "locating pin" on Page 8
3. Added Special Conditions: No repair/modification to the flame-proof joints is permitted.
4. Added X to IEC cert number: IECEx ETL 16.0016X
5. Changed Back Cover Warning: To prevent ignition, use only sensors and batteries supplied by United Electric Controls. Use UE Battery (Vmax = 7.8V, Imax = 0.17A) Assy.# 6361-807
6. Added front cover (display with glass) warning: "WARNING: DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE IS PRESENT. KEEP COVER TIGHT WHILE IN OPERATION."

- Update 62149-181 from Rev L to Rev M

1. Changed Note Numbering
2. Added Note 10

- Replace B-63136-408 with B-63136-440 Rev A

1. Replace TCD50 (IIB) Main PCB Assembly with TCD60 (IIC) Main PCB Assembly

- Replace 6247-700 with 6247-719 Rev A

1. Replace TCD50 (IIB) Main PCB Schematic with TCD60 (IIC) Main PCB Schematic

- Replace B-62137-498 with A-62137-520 Rev A

1. Replace TCD50 (IIB) Main PCB with TCD60 (IIC) Main PCB

- Replace B-63136-410 with B-63136-442 Rev A

1. Replace TCD50 (IIB) Methane Sensor PCB Assembly with TCD60 (IIC) Methane Sensor PCB Assembly

- Replace 6247-702 with 6247-720 Rev A

1. Replace TCD50 (IIB) Methane Sensor PCB Schematic with TCD60 (IIC) Methane Sensor PCB Schematic

- Replace B-62137-500 with A-62137-522 Rev A



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1. Replace TCD50 (IIB) Methane Sensor PCB with TCD60 (IIC) Methane Sensor PCB
 - Replace B-63136-423 with 63136-441 Rev A
1. Replace TCD50 (IIB) Enhanced Sensor PCB Assembly with TCD60 (IIC) Enhanced Sensor PCB Assembly
 - Replace 6247-712 with 6247-721 Rev A
1. Replace TCD50 (IIB) Enhanced Sensor PCB Schematic with TCD60 (IIC) Enhanced Sensor PCB Schematic
 - Replace B-62137-510 with 62137-521 Rev A
1. Replace TCD50 (IIB) Enhanced Sensor PCB with TCD60 (IIC) Enhanced Sensor PCB
 - Delete 6247-701
1. No Longer Used
 - Update 62174-73 from Rev D to Rev E
1. Gas Sensors:
CORRECTED MANUFACTURER P/N's: 62149-209 WAS 1845-031-30049; 62149-210 WAS 1845-932-30069; 62149-211 WAS 75-1854031-30209; 62149-212 WAS 1854-932-30049; 62149-213 WAS 1850-932-30049; 62149-214 WAS 1858-932-30049; 62149-218 WAS 0361-034-30049; 62149-219; WAS 0364-034-30049; 62149-226 WAS 1945-034-30049; 62149-228 WAS 2241-032-30049; DISCONTINUED 62149-222, -223 & -224

Annex:

[SFT-IECEX-OP-19f - Annex for IECEX Certificate of Conformity.pdf](#)



Annex to IECEx Certificate of Conformity

Certificate No:	IECEX ETL 16.0016X	Issue No. 07
Annex No. 1		

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
Vanguard Gas Detector Agency Drawing	B-62174-65	J	2-11-19
Molded Battery Pack	B-62149-181	K	12/19/2017
Battery Pack	B-62149-184	C	12/19/2017
UEC-100 Gas Detector Main PC Board	6247-700	B1	05/06/2016
UEC-100 Methane Sensor Board	6247-702	C1	06/06/2018
Enhanced Gas Detector Sensor Schematic	6247-712	C	06/15/2018
UEC-100 H2S Sensor PCB	6247-701	B1	05/06/2016
PCB ASS'y UEC 100 Gas Detector	B-63136-408	C	12/15/2016
UEC-100 Gas Detector Main PCB	A-62137-498	B1	05/06/2016
ENHANCED GAS DETECTOR	63136-423	C	06/15/2018
ENHANCED GAS DETECTOR SENSOR PCB	62137-510	C	06/15/2018
PCB ASS'y UEC-100 Gas Detector Methane	B-63136-410	C	03/19/2018
UEC-100 Gas Detector PCB, Methane	A-62137-500	C	03/16/2018
Installation and Maintenance Instructions	IM_TCD50	09	2/1/2019
VANGUARD ELECTROCHEMICAL SENSORS (PART1)	62174-72	D	07/11/2018
VANGUARD ELECTROCHEMICAL SENSORS (PART2)	62174-73	D	07/11/2018
MOLDED BATTERY PACK	62149-181	L	2/19/21
*Vanguard Gas Detector Agency Drawing	62174-65	L	5/4/2022
*MOLDED BATTERY PACK	62149-181	M	21-Mar-21
*Battery Pack	B-62149-184	C	19-Dec-17
*Group A Gas Detector Main PC Board Schematic	6247-719	A	14-Oct-21
*Group A Methane Sensor Board Schematic	6247-720	A	14-Oct-21
*Enhanced Gas Detector Sensor Schematic	6247-721	A	14-Oct-21
*GROUP A PCB ASS'Y. GAS DETECTOR	B-63136-440	A	14-Oct-21
*GROUP A GAS DETECTOR MAIN PCB	A-62137-520	A	14-Oct-21
*GROUP A ENHANCED GAS DETECTOR SENSOR PCB ASSY	63136-441	A	14-Oct-21
*GROUP A ENHANCED GAS DETECTOR SENSOR PCB	62137-521	A	14-Oct-21
*GROUP A PCB ASS'Y VANGUARD GAS DETECTOR METHANE	B-63136-442	A	14-Oct-21
*GROUP A GAS DETECTOR PCB, METHANE	A-62137-522	A	14-Oct-21
*Installation and Maintenance Instructions	IM_TCD50-11	11	4/5/2022
*VANGUARD ELECTROCHEMICAL SENSORS (PART 1)	62174-72	D	11-Jul-18
*VANGUARD ELECTROCHEMICAL SENSORS (PART 2)	62174-73	E	21-Jun-19

Note: An * is included before the title of documents that are new or revised.

Certificate issued by:



Total Quality. Assured.

Intertek Testing Services NA, Inc.
 3933 US Route 11, Cortland, New York 13045 USA

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