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**

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Certificate history:

Issue 7 (2022-05-12)
Issue 6 (2021-03-01)
Issue 5 (2019-02-21)
Issue 4 (2018-09-11)
Issue 3 (2018-08-14)
Issue 2 (2018-01-11)
Issue 1 (2017-02-24)
Issue 0 (2016-08-19)

Status: **Current**

Issue No: 8

Date of Issue: 2024-02-26

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

Equipment: **UE Vanguard Wireless Hart Communication based Gas detector**

Optional accessory:

Type of Protection: **Flameproof - db, Intrinsic Safety - ia, Inherently Safe Optical Radiation - op is**

Marking: Ex db ia op is [ia] IIB T4 Gb IP66 (*Excludes Sensor)

Tamb: X

Intrinsically Safe HART Entity Parameters:

Uo=4.935V; Io=0.179A; Po=0.220W; Co=1000uF, Lo=10mH

Ui=3.80V; Ii=64uA; Ci and Li = negligible

IECEx ETL 16.0016X

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

IECEx Certificate of Conformity

Certificate No.: **IECEx ETL 16.0016X**

Date of issue: 2024-02-26

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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 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 60079-28:2015 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
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 Reports:

US/ETL/ExTR16.0049/00
US/ETL/ExTR16.0049/01
US/ETL/ExTR16.0049/02
US/ETL/ExTR16.0049/03
US/ETL/ExTR16.0049/04
US/ETL/ExTR16.0049/05
US/ETL/ExTR16.0049/06
US/ETL/ExTR16.0049/07
US/ETL/ExTR16.0049/08

Quality Assessment Report:

US/UL/QAR07.0002/13

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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 (TCD50H1*) is comprised of a certified component (U) flameproof enclosure manufactured by Killark-Hubbell Inc., certified for IIC. 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 of the component (U) enclosure 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 pass-through potted/cemented bushing and populating with the electronics assemblies.

The front compartment entries/exits are populated with a certified equipment antenna coupler connecting to either direct antenna or remote cable and antenna and a gas sensor seal/bushing/pass-through.

The front compartment is intended to be Flameproof (Ex d) with included Intrinsic Safety Barrier Circuits (QTY = 3) for connections to the Gas Sensor 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 db enclosure (Ex ia). *"Ex ia" employed for North American Division 1 Use/Certification.*

The Gas Sensors have two mounting options: on to the Flameproof Housing or with Remote Cable. The gas sensor circuitry exits the flameproof hosing using a custom glass-metal seal and includes additional circuitry for limitation and interface to meet the needs 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.

***The product's Ambient Temperature Ratings Vary Based on Configuration (Gas Sensor): The Configuration which is based on the fitted Gas Sensor is indicated by the marked code on the Gas Sensor Module Body (Label): Code A or Code B (See Table Below).**

Housing Without Remote Gas Sensor (No Cable):

Gas Sensor	Max Ambient Code	Assembly (Housing And Gas Sensor) Ambient:
MIPEX (IECEx ITS 11.0047U)	B	-40ºC to +65ºC
NET (NO CERT)	B	-40ºC to +65ºC
CITY TECHNOLOGY (NO CERT)	B	-40ºC to +65ºC
eLICHENS (IECEx INE 19 0031U)	A	-40ºC to +60ºC

Housing With Remote Gas Sensor (With Cable):

Gas Sensor:	Max Ambient Code	Housing Ambient:	Gas Sensor Ambient:
MIPEX (IECEx ITS 11.0047U)	B	-40ºC to +65ºC	-40ºC to +65ºC
NET (NO CERT)	B	-40ºC to +65ºC	-40ºC to +65ºC
CITY TECHNOLOGY (NO CERT)	B	-40ºC to +65ºC	-40ºC to +65ºC
eLICHENS (IECEx INE 19 0031U)	A	-40ºC to +65ºC	-40ºC to +60ºC

SPECIFIC CONDITIONS OF USE: YES as shown below:
1. No repair/modification to the flameproof joints is permitted.

2. The ambient temperature range rating is based on the configuration (Fitted Gas Sensor); Reference Product Description in Certificate. The Configuration which is based on the fitted Gas Sensor is indicated by the marked code on the Gas Sensor Module Body (Label): Code A or Code B (See Table In Product Description).

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Addition of E-Lichens Gas Sensors (IECEx INE 19.0031U: Ex ia op is IIC Ga)

2. Addition of new Gas Sensor Board (for E-Lichen)

3. Addition of 3 Microprocessors for new Gas Sensor Board

4. Addition of Remote Gas Sensor: New Fittings And Extension Cables

Annex:

Annex for IECEx Certificate of Conformity IECEx ETL 16.0016X – Issue 8_1.pdf

Annex to IECEx Certificate of Conformity

Certificate No:	IECEx ETL 16.0016X	Issue No. 08
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

Annex to IECEx Certificate of Conformity

Certificate No:	IECEx ETL 16.0016X	Issue No. 08
Annex No. 1		

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
*VANGUARD GAS DETECTOR, TCD50 AGENCY DRAWING	62174-65	M	1/18/2024
*VANGUARD AGENCY DRAWING, REMOTE SENSOR OPTION	62174-113	A	1/18/2024
*VANGUARD MIPEX SENSORS	62174-78	B	01/18/2024
*VANGUARD eLICHENS SENSORS	62174-92	A	01/18/2024
*Enhanced Gas Detector Sensor Schematic	6247-721	B	1/9/24
*GROUP A ENHANCED GAS DETECTOR SENSOR PCB ASSY BOM	63136-441	2	No Date
*Group A Methane Sensor Board Schematic	6247-720	B	1/9/24
*GROUP A PCB ASS'Y VANGUARD GAS DETECTOR METHANE BOM	63136-442	2	No Date
*E-Lichens Cranberry board	6247-723	A	1/9/24
*GROUP A ELICHEN SENSOR BOARD PCB ASSEMBLY BOM	63136-448	1	No Date
*Gas Detector Remote Socket Board	6247-724	A	1/9/24
*Group A Remote PCB Assembly	63136-451	1	No Date
*Group A PCB ASSY GAS Detector BOM	63136-440	1	No Date
*VANGUARD TCD60 GROUPS A,B,C,D ELECTROCHEMICAL SENSORS (PART 1)	62174-87	A	10/29/2021
*VANGUARD TCD60 GROUPS A,B,C,D ELECTROCHEMICAL SENSORS (PART 2)	62174-88	A	10/29/2021
*GROUP A ENHANCED GAS DETECTOR SENSOR PCB ASSY	63136-441	B	2/1/2024
*GROUP A PCB ASS'Y VANGUARD GAS DETECTOR METHANE	63136-442	B	2/1/2024
*Installation and Operation Instructions	IM_TCD50	12	2/2/2024

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