IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.:	IECEx ETL 16.0016	Issue No: 1	Certificate history:
			Issue No. 1 (2017-02-24)
Status:	**Current**	Page 1 of 4	Issue No. 0 (2016-08-19)
Date of Issue:	**2017-02-24**		
Applicant:	**United Electric Controls** 180 Dexter Ave, Watertown, MA 02472 **United States of America**		
Equipment:	**UE Vanguard**		
Optional accessory:			
Type of Protection:	**Flameproof - db, Intrinsic safety - ia**		
Marking:	Ex db ia [ia] IIB T4 Gb IP64 (*Excludes Sensor) -20ºC ≤ Tamb ≤ +60ºC IECEx ETL 16.0016		

Approved for issue on behalf of the IECEx Certification Body: Kevin Wolf

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 the Official IECEx Website.

Certificate issued by:

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

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

Additional Manufacturing location(s):

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 electrical apparatus 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 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*This Certificate **does not** indicate compliance with electrical 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:

US/ETL/ExTR16.0049/00 US/ETL/ExTR16.0049/01

Quality Assessment Report:

US/UL/QAR07.0002/08

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The product (TCD50H1A) 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 pass-through 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: H2S or CH4). The CH4 Sensor is a certified component (U). The H2S Sensor is not a certified component.

Refer Annex for Manufacturer's Documents and IECEx certified components utilized.

CONDITIONS OF CERTIFICATION: NO

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Battery replacement is permitted in certified Zone and EPL.
Change of Battery Pack enclosure material.
Documentation change as result of permitting Battery Replacement.
Allowance of HART connection for field inspection.

Annex:

IECEx ETL 160016.pdf

IECEx ETL 160016 Issue 01.pdf

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Manufacturer's Documents

Title:	Drawing No.:	Rev. Level:	Date:
Vangaurd Gas Detector Agency Drawing	B-62174-65	C	08-12-2016
Molded Battery Pack	B-62149-181	G	7/6/16
Battery Pack	B-62149-184	B	7/6/16
UEC-100 Gas Detector Main PC Board	6247-700	B1	5/6/16
PCB ASS'y UEC 100 Gas Detector	B-63136-408	B1	5/6/16
UEC-100 Gas Detector Main PCB	A-62137-498	B1	5/6/16
UEC-100 H2S Sensor PCB	6247-701	B1	5/6/16
UEC-100 Mipex Methane Sensor Board	6247-702	B1	5/6/16
PCB ASS'y UEC-100 Gas Detector Methane	B-63136-410	B1	5/6/16
UEC-100 Gas Detector PCB, Methane	A-62137-500	B1	5/6/16

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Annex No. 1		

Incorporated Ex Equipment/Components:

No.:	Item:	Manufacturer:	Part No.:	Details:	
1.	Killark Enclosure (Flame-proof enclosure)	Killark	HKGL	Certificate No.	IECEx UL 14.0071U, ISSUE #: 0, 1/30/2015 CSA REPORT #: 1750685 (LR 11716-140), CLASS #: 4418 02, 9/6/2013 DEMKO 01 ATEX 015742U, REV 0, 2/3/2015
				Standards /Versions:	EN 60079-0:2012+A11:2013, EN 60079-1:2007, EN 60079-1: 2014, EN 60079-31:2009, IEC 60079-0:2011, IEC 60079-1:2007-04, IEC 60079-1:2014-06, IEC 60079-31:2013, CSA C22.2 No: 0-10, 25:1966, 30-M1986, 94-M91. ANSI/UL 1203:Ed.4, ANSI/UL 50E:Ed.11.
				X/U Conditions:	Where necessary for safety, the contents of the enclosure shall comply with the appropriate requirements of relevant standards for electrical apparatus for use in potentially explosive atmospheres. □ The assembled equipment shall comply with the appropriate requirements of relevant standards for electrical apparatus for use in potential explosive atmospheres. □ The enclosed apparatus may be placed in any arrangement provided that an area of at least 40% of each cross sectional area remains free to permit unimpeded gas flow and, therefore, unrestricted development of an explosion. Separate relief areas may be aggregated provided that each area has a minimum dimension in any direction of 12.5 mm. □ Rotating or other devices which create turbulence shall not be incorporated. □ Liquids shall not be used when there is risk of producing an explosive

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No.:	Item:	Manufacturer:	Part No.:	Details:	
					mixture by the decomposition of or release of oxygen by these liquids. □ The use of energy storage devices may present difficulties, due to the possibility of sparking, after isolation from the supply, when the enclosure cover is removed. In addition, secondary cells, and in some cases primary cells may emit flammable gas not considered under the normal certification conditions. The following requirements shall apply: - All such devices shall be provided with adequate means to prevent incendive sparking when flameproof covers are removed. - Enclosures which can be opened more quickly than the time necessary for the discharge of incorporated capacitors to a residual energy of: □ 0.2 mJ for electrical apparatus of Group I or Group IIA, or □ 0.06 mJ for electrical apparatus of Group IIB □ 0.02 mJ for electrical apparatus of Group IIC shall be provided with a label stating the delay required before attempting to open the enclosure. - If enclosed components have a temperature above that of the temperature classification of the electrical apparatus a label shall be provided stating the delay necessary before attempting to open the enclosure to allow the component to cool below the temperature classification.

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No.:	Item:	Manufacturer:	Part No.:	Details:	
					□ Oil-filled contactors shall not be used. □ No holes, whether for mechanical or electrical purpose and whether blind or clear, shall be drilled in the enclosure other than those shown on the Component Certificate Drawings D-20675 & D-20676. □ All entry devices shall be of a type specified in the certification documents having an appropriate component Certificate and suitable for the conditions of use, or be specifically certified with the apparatus. □ Any unused entry shall be closed by a device specified in the certification documents having an appropriate Component Certificate or be specifically certified with the apparatus. □ The holder of the final Certificate will be required to provide information to enable the test authority to verify compliance with the above and the relevant parts of the certification standard not explicitly covered by the Component Certificate (e.g. temperature classification). □ The window temperature must not exceed 120°C. □ Flameproof joints are not to be repaired in the field. If the flame path is damaged, the enclosure is to be removed from service and replaced with a new properly working enclosure.

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No.:	Item:	Manufacturer:	Part No.:	Details:	
2.	EXPLOSION PROOF ANTENNA	ANALYNK	PART #: CTX-2400-TR	Certificate No.	IECEx UL 12.0061X, ISSUE #: 4, 5/8/2015 DEMKO 08 ATEX 0727941X, REV 2, 11/27/2014 UL CERT #: 20121018-E243420, 10/18/2012 REPORT REFERENCE: E243420-20041022
				Standards /Versions:	IEC 60079-0:Ed.6, IEC 60079-1:Ed.6, EN 60079-0:2012, EN 60079-1:2007, UL 508:Ed.17, UL 1203:Ed.5, UL 60079-0, UL 60079-1, C22.2 No.:142-M87, 30-M1986, E60079-0:07, E60079-1:07.
				X/U Conditions:	CTM and CTX Antennas: Ambient Temperature Range: -40 °C ≤ Ta ≤ +85 °C. CTM and CTX Antennas: To reduce the risk of ignition due to electrostatic discharge, avoid contact with the unit while an explosive atmosphere is present. Clean only with a damp cloth. Do not use chemical cleaners. Antenna is to be mounted via the 3/4" NPT or M20 supply connection in an enclosure or other suitable device (e.g. conduit). Flameproof Joint Parameters: CTM and CTX Antennas - Base to Radome Joint: 1-3/8 in. - 18 UNEF - 2A/2B, 7 threads engaged. CTM and CTX Antennas - Connector to Base Joint: 3/8 in. - 32 UNEF - 2A/2B, 12 threads engaged. CTM and CTX Antennas - Set Screw to Base Join: #10 - 32 UNC - 2A/2B, 6 threads engaged.

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Technical Documents

Title:	Drawing No.:	Rev. Level:	Date:
Vangaurd Gas Detector Agency Drawing*	B-62174-65	D	01/09/17
Molded Battery Pack*	B-62149-181	J	01/09/17
Battery Pack	B-62149-184	B	07/06/16
UEC-100 Gas Detector Main PC Board	6247-700	B1	05/06/16
PCB ASS'y UEC 100 Gas Detector	B-63136-408	C	12/15/16
UEC-100 Gas Detector Main PCB	A-62137-498	B1	05/06/16
UEC-100 H2S Sensor PCB	6247-701	B1	05/06/16
UEC-100 Mipex Methane Sensor Board	6247-702	B1	05/06/16
PCB ASS'y UEC-100 Gas Detector Methane	B-63136-410	B2	08/16/16
UEC-100 Gas Detector PCB, Methane	A-62137-500	B1	05/06/16
Installation and Maintenance Instructions*	IM_TCD50-03	3	01/23/2017

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

General product information:

The product (TCD50H1A) 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 pass-through 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: H2S or CH4). The CH4 Sensor is a certified component (U). The H2S Sensor is not a certified component. 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 CH4) 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 CH4 Sensor is a certified component (U) as Ex ia. The CH4 sensor is 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 CH4 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.

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Details of change (applicable only when revising an existing ExTR package):

- Battery replacement is permitted in certified Zone and EPL.
- Change of Battery Pack enclosure material.
- Documentation change as result of permitting Battery Replacement.
- Allowance of HART connection for field inspection.

Incorporated Ex Equipment/Components:

No.:	Item:	Manufacturer:	Part No.:	Details:	
1.	Killark Enclosure (Flame-proof enclosure)	Killark	HKGL	Certificate No.	IECEx UL 14.0071U, ISSUE #: 0, 1/30/2015 CSA REPORT #: 1750685 (LR 11716-140), CLASS #: 4418 02, 9/6/2013 DEMKO 01 ATEX 015742U, REV 0, 2/3/2015
				Standards /Versions:	EN 60079-0:2012+A11:2013, EN 60079-1:2007, EN 60079-1: 2014, EN 60079-31:2009, IEC 60079-0:2011, IEC 60079-1:2007-04, IEC 60079-1:2014-06, IEC 60079-31:2013, CSA C22.2 No: 0-10, 25:1966, 30- M1986, 94-M91. ANSI/UL 1203:Ed.4, ANSI/UL 50E:Ed.11.
				X/U Conditions:	Where necessary for safety, the contents of the enclosure shall comply with the appropriate requirements of relevant standards for electrical apparatus for use in potentially explosive atmospheres. □ The assembled equipment shall comply with the appropriate requirements of relevant standards for electrical apparatus for use in potential explosive atmospheres. □ The enclosed apparatus may be placed in any arrangement provided that an area of at least 40% of each cross sectional area remains free to permit unimpeded gas flow and, therefore, unrestricted development of an explosion. Separate relief areas may be aggregated provided that each area has a minimum dimension in any direction of 12.5

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No.:	Item:	Manufacturer:	Part No.:	Details:	
					mm. □ Rotating or other devices which create turbulence shall not be incorporated. □ Liquids shall not be used when there is risk of producing an explosive mixture by the decomposition of or release of oxygen by these liquids. □ The use of energy storage devices may present difficulties, due to the possibility of sparking, after isolation from the supply, when the enclosure cover is removed. In addition, secondary cells, and in some cases primary cells may emit flammable gas not considered under the normal certification conditions. The following requirements shall apply: - All such devices shall be provided with adequate means to prevent incendive sparking when flameproof covers are removed. - Enclosures which can be opened more quickly than the time necessary for the discharge of incorporated capacitors to a residual energy of: □ 0.2 mJ for electrical apparatus of Group I or Group IIA, or □ 0.06 mJ for electrical apparatus of Group IIB □ 0.02 mJ for electrical apparatus of Group IIC shall be provided with a label stating the delay required before attempting to open the enclosure. - If enclosed components have a temperature above that of the temperature classification of the electrical apparatus a label shall be provided stating the delay necessary before attempting to open the enclosure to allow the component to cool below the temperature classification. □ Oil-filled contactors shall not be used. □ No holes, whether for mechanical or electrical purpose and whether blind or clear, shall be drilled in the enclosure other than those shown on the Component Certificate Drawings D-20675 & D-20676.

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					☐ All entry devices shall be of a type specified in the certification documents having an appropriate component Certificate and suitable for the conditions of use, or be specifically certified with the apparatus. ☐ Any unused entry shall be closed by a device specified in the certification documents having an appropriate Component Certificate or be specifically certified with the apparatus. ☐ The holder of the final Certificate will be required to provide information to enable the test authority to verify compliance with the above and the relevant parts of the certification standard not explicitly covered by the Component Certificate (e.g. temperature classification). ☐ The window temperature must not exceed 120°C. ☐ Flameproof joints are not to be repaired in the field. If the flame path is damaged, the enclosure is to be removed from service and replaced with a new properly working enclosure.
2.	EXPLOSION PROOF ANTENNA	ANALYNK	PART #: CTX-2400-TR	Certificate No.	IECEx UL 12.0061X, ISSUE #: 4, 5/8/2015 DEMKO 08 ATEX 0727941X, REV 2, 11/27/2014 UL CERT #: 20121018-E243420, 10/18/2012 REPORT REFERENCE: E243420-20041022
				Standards /Versions:	IEC 60079-0:Ed.6, IEC 60079-1:Ed.6, EN 60079- 0:2012, EN 60079-1:2007, UL 508:Ed.17, UL 1203:Ed.5, UL 60079-0, UL 60079-1, C22.2 No.:142- M87, 30-M1986, E60079-0:07, E60079-1:07.
				X/U Conditions:	CTM and CTX Antennas: Ambient Temperature Range: -40 °C ≤ Ta ≤ +85 °C. CTM and CTX Antennas: To reduce the risk of ignition due to electrostatic discharge, avoid contact with the unit while an explosive atmosphere is present. Clean only with a damp cloth. Do not use chemical cleaners. Antenna is to be mounted via the 3/4" NPT or

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No.:	Item:	Manufacturer:	Part No.:	Details:	
					M20 supply connection in an enclosure or other suitable device (e.g. conduit). Flameproof Joint Parameters: CTM and CTX Antennas - Base to Radome Joint: 1-3/8 in. - 18 UNEF -2A/2B, 7 threads engaged. CTM and CTX Antennas - Connector to Base Joint: 3/8 in. - 32 UNEF -2A/2B, 12 threads engaged. CTM and CTX Antennas - Set Screw to Base Join: #10 - 32 UNC - 2A/2B, 6 threads engaged.

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