[1]

UNITED KINGDOM CONFORMITY ASSESSMENT

UK-TYPE EXAMINATION CERTIFICATE

[2]

Product or Protective System Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended by UKSI 2019:696) – Schedule 3A, Part 1

[3] UK-Type Examination Certificate No.: **UL22UKEX2266X Rev. 0**

[4] Product: **UE Vanguard- TCD60H1X Gas Detector**

[5] Manufacturer: **United Electric Controls**

[6] Address: **180 Dexter Ave, Watertown, MA 02472, USA**

[7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

[8] UL International (UK) Ltd, Approved Body number 0843, in accordance with Regulation 44 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended by UKSI 2019:696), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.
The examination and test results are recorded in the confidential report **UKRCC-4789985906.10**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN 60079-1:2014** **EN 60079-11: 2012**

Except in respect of those requirements listed at section 19 of the schedule to this certificate.

[10] If the sign “X” is placed after the certificate number, it indicates that the product is subject to specific conditions of use specified in the schedule to this certificate.

[11] This UK-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

[12] The marking of the product shall include the following:

Ex II 2 (2) G Ex db ia [ia Gb] IIC T4 Gb IP66 (Excludes sensor)
-40°C ≤ Tamb ≤ +65°C

Certification Manager
Andrew Moffat

This is to certify that the sample(s) of the Product described herein (“Certified Product”) has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the UKEx Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Regulations. The test results may not be used, in whole or in part, in any other document without UL’s prior written approval.

Date of issue: 2022-08-04

Approved Body UL International (UK) Ltd Unit 1-3 Horizon Kingsland Business Park Wade Road, Basingstoke RG24 8AH, UK
Phone : +44 (0)1256 312100

[13] [14]

Schedule
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UL22UKEX2266X Rev. 0

[15] Description of Product

The product (TCD60H1X) 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: 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.

Temperature range
The ambient temperature range is -40°C ≤ Tamb ≤ +65°C.

Electrical data

Intrinsically safe specifications:

Output:			Input:		
U_o	:	4.935 V	U_i	:	3.8 V
I_o	:	179 mA	I_i	:	64 uA
P_o	:	0.22 W			
L_o	:	0.25 mH	L_i	:	negligible
C_o	:	25 uF	C_i	:	negligible

Routine tests
None

[16] Test Report No. (associated with this certificate issue)
US/ETL/ExTR21.0063/00

[17] Specific conditions of use:
- Solexy RX and SX series antenna couplers must be connected to an RF source with a minimum internal impedance of 50 Ω.
- It is considered inappropriate to provide conventional IS parameters for this equipment. For connection to external antenna, refer to the Instruction and Operating Manual for clarification of the antenna requirements and calculation of the RF power.
- Solexy RX and SX series antenna coupler does not provide any RF power limitation. The threshold power must be limited by the user in order to achieve the levels defined in IEC/EN 60079-0 Table 5.
- Equipment marked with an ambient temperature of -40°C to +65°C is limited to a max RF input of 2 W.
- No repair/modification to the flameproof joints is permitted.

[18] Conditions of certification:
Where ATEX certified Ex Components or Ex Equipment are used, it is the responsibility of the manufacturer to ensure that only Ex Components or Ex Equipment having equivalent UKEx certification are used after the permission to accept such ATEX certified Ex Component or Ex Equipment is withdrawn.

[19] Essential Health and Safety Requirements (Regulations Schedule 1)
In addition to the Essential Health and Safety Requirements covered by the standards listed at item 9, all other requirements are demonstrated in the relevant reports.

Additional information
The Product has in addition passed the tests for Ingress Protection to IP66 in accordance with EN60529:1991+A1:2000+A2:2013.

The trademark UE® will be used as the company identifier on the marking label.

[13] [14]

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The manufacturer shall inform the approved body concerning all modifications to the technical documentation as described in Annex III to UKSI 2016:1107 (as amended by UKSI 2019:696) – Schedule 3A, Part 1.

[20] Drawings and Documents

Title:	Drawing No.:	Rev. Level:	Date:
Vanguard Agency Drawing, GRP A-D	62174-86	A	2021-11-02
Molded Battery Pack	B-62149-181	M	2021-03-10
Battery Pack	B-62149-184	C	2017-12-19
Group A Gas Detector Main PC Board Schematic	6247-719	A	2021-10-14
Group A Methane Sensor Board Schematic	6247-720	A	2021-10-14
Enhanced Gas Detector Sensor Schematic	6247-721	A	2021-10-14
GROUP A PCB ASS'Y. GAS DETECTOR	63136-440	A	2021-10-14
GROUP A GAS DETECTOR MAIN PCB	62137-520	A	2021-10-14
GROUP A ENHANCED GAS DETECTOR SENSOR PCB ASSY.	63136-441	A	2021-10-14
GROUP A ENHANCED GAS DETECTOR SENSOR PCB	62137-521	A	2021-10-14
GROUP A PCB ASS'Y VANGUARD GAS DETECTOR METHANE	63136-442	A	2021-10-14
GROUP A GAS DETECTOR PCB, METHANE	62137-522	A	2021-10-14
WirelessHART® Toxic & Combustible Gas Detector P/N: TCD60H1X Installation and Maintenance Instructions	IM_TCD60-01	1	2021-11-06
VANGUARD TCD60 GROUPS A,B,C,D ELECTROCHEMICAL SENSORS (PART 1)	62174-87	A	2021-10-29
VANGUARD TCD60 GROUPS A,B,C,D ELECTROCHEMICAL SENSORS (PART 2)	62174-88	A	2021-10-29
VANGUARD APPROVED ANTENNAS	62174-77	A	2021-10-29
NAMEPLATE, CASTING, GRAPHICS, UKCA M462 OPTION FOR TCD60 (GROUPS A,B,C,D OR IIC)	6311-15	A	2022-07-14
NAMEPLATE, BACK COVER, GRAPHICS, TCD60, OPTION M462	6311-26	A	2022-07-21
ADDENDUM for Vanguard Gas Detector OPTION UKCA (United Kingdom Conformity Assessed)	UKCA_TCD-01	-	2022-07-25
NAMEPLATE, FRONT COVER, GRAPHICS, TCD60	6311-2	A	2021-11-02