

# WirelessHART®

## TOXIC & COMBUSTIBLE GAS DETECTOR





VANGUARD

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## CAPABILITY OVERVIEW

### Wireless Capability

- *WirelessHART*® communication 7.2
- IEC 62591 compatible
- Integrated HART terminals
- Adjustable update rate

### Interoperability

- Seamless integration with existing *WirelessHART* networks and asset management systems

### FLEXmount™ Bracket

- Mounting bracket for pipe or wall mount
- Facilitates easy installation and replacement of unit

### Heavy Duty Design

- Class I, Div. 1 & 2 for hazardous areas
- Explosion-proof & intrinsically safe

### FLEXsense™ Sensor

- Automatically configures toxic or combustible gas sensor for readings in ppm or %LEL
- Sensor is field replaceable in hazardous location areas

### Long Lifespan

- 5 years battery life\*
- Battery pack is field replaceable in hazardous location areas

### Easy Calibration and Use

- Configure, calibrate, and test onsite with the touch of a button
- 128x64 pixel graphic display showing gas concentration, network connection, and battery status



\*Based on an 8 second update rate. 5 years battery warranty valid upon battery warranty registration.

*WirelessHART*® is a registered trademark of Field Comm Group. *FLEXsense*™ is a trademark of United Electric Controls Co.

# SPECIFICATIONS

## Sensor

	Methane (CH <sub>4</sub> )	Hydrogen Sulfide (H <sub>2</sub> S)	Carbon Monoxide (CO)
<b>Storage Temperature:</b>	72°F (22°C) recommended		
<b>Storage Life:</b>	3 years in sealed package	1 year in sealed package	6 months in sealed package
<b>Expected Operational Life<sup>1</sup>:</b>	5 Years	2 Years	2 Years
<b>Operating Temperature:</b>	-40°F (-40°C) to 149°F (65°C)	-40°F (-40°C) to 149°F (65°C)	-40°F (-40°C) to 131°F (55°C)
<b>Types:</b>	Nondispersive infrared	Electrochemical	Electrochemical
<b>Measurement Range:</b>	0 to 100 %LEL	0 to 100 ppm	0 to 500 ppm
<b>Resolution:</b>	1% LEL	1 ppm	1 ppm
<b>Accuracy<sup>2</sup>:</b>	±2% LEL or ±5% of indication, whichever is greater	±2 ppm or ±5% of indication, whichever is greater	±5 ppm or ±5% of indication, whichever is greater
<b>Response Time (T90)<sup>3</sup>:</b>	30 Seconds	<30 Seconds	<30 Seconds
<b>Stabilization Time:</b>	2 Minutes	<1 Minute	<1 Minute

Note: Sensors are interchangeable & self-configurable with the transmitter base. Sensor allows for one-handed sensor installation in hazardous area without declassifying the area

## Battery

<b>Batteries:</b>	Battery pack contains two Lithium battery cells
<b>Operating Voltage:</b>	7.2 V
<b>Life:</b>	5 years based on an 8 second update rate

<sup>1</sup>Expected operational life varies with environmental conditions and gas exposure

<sup>2</sup>At standard conditions: 68°F (20°C) and 1.0 atm. Accuracy may vary with frequency, accuracy of calibration, and environmental conditions (e.g., barometric pressure, temperature and humidity).

<sup>3</sup>Excludes latency due to radio burst rate.

## SPECIFICATIONS CONT.

### Base Transmitter

<b>Operating Temperature:</b>	-40°F (-40°C) to 149°F (65°C)
<b>Operating Humidity:</b>	0% to 98% RH recommended
<b>Material:</b>	Aluminum alloy (maximum copper content at 0.25%) with powder polyester paint; 316 stainless steel; nickel-plated brass; tempered glass
<b>Ingress Protection:</b>	Type 4X (enclosure only)
<b>Display:</b>	Viewable area is 2.25"W x1.25"H (57.2mm x 31.8mm) Graphical LCD display
<b>Display Language:</b>	English
<b>Memory:</b>	Programming and data are protected by a non-volatile EEPROM
<b>Antenna:</b>	2.4 GHz, Hazardous Area Antenna
<b>Mounting:</b>	FLEXmount™ Options
<b>Weight:</b>	7.84 lbs (Base) 9.61 lbs (Base with Sensor and Battery)

### Output and Access

<b>Communication Protocol:</b>	WirelessHART® HART 7.2; EDDL file available at <a href="http://www.ueonline.com/vanguard">www.ueonline.com/vanguard</a>								
<b>Process Variables:</b>	<table> <tr> <td>Primary Variable (PV):</td><td>Methane (CH<sub>4</sub>) concentration in %LEL Hydrogen Sulfide (H<sub>2</sub>S) concentration in ppm Carbon Monoxide (CO) concentration in ppm</td></tr> <tr> <td>Secondary Variable (SV):</td><td>Temperature (°C); Not available for Methane sensor</td></tr> <tr> <td>Tertiary Variable (TV):</td><td>Days since calibration (days)</td></tr> <tr> <td>Quaternary Variable (QV):</td><td>Battery voltage (volts)</td></tr> </table>	Primary Variable (PV):	Methane (CH <sub>4</sub> ) concentration in %LEL Hydrogen Sulfide (H <sub>2</sub> S) concentration in ppm Carbon Monoxide (CO) concentration in ppm	Secondary Variable (SV):	Temperature (°C); Not available for Methane sensor	Tertiary Variable (TV):	Days since calibration (days)	Quaternary Variable (QV):	Battery voltage (volts)
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Tertiary Variable (TV):	Days since calibration (days)								
Quaternary Variable (QV):	Battery voltage (volts)								
<b>Programming Access:</b>	Vanguard Configurator, HART hand-held communicator, or via HART modem, connected to HART terminals located in rear battery compartment or via remote access (e.g., asset management software)								
<b>Calibration/Bump Test Access:</b>	Via external button on transmitter base								

## HOW TO ORDER

Product Part Number Example:

Vanguard with Standard Mount and Methane Sensor is TCD50H1A03

ORDERING CODE	DESCRIPTION	TCD50H1	FLEXmount™ Option <b>A</b>	FLEXsense™ Option <b>03</b>
<b>VANGUARD GAS DETECTOR DESIGNATION</b>				
TCD50H1	Base Transmitter; includes enclosure, operating system, radio module WirelessHART 7.2 communication protocol, and a 2.4 GHz antenna			
<b>STEP 1 - CHOOSE FLEXmount™ OPTION</b>				
A	Standard Mount			
B	Magnetic Mount			
C	Universal Mount			
<b>STEP 2 - CHOOSE FLEXsense™ OPTION</b>				
03	Methane Sensor			
04	Hydrogen Sulfide Sensor			
05	Carbon Monoxide Sensor			
N/A	No Sensor			
<b>STEP 3 - CHOOSE A BATTERY*</b>				
6361-807	Battery pack containing two lithium battery cells; 7.2V operating voltage**			
<b>STEP 4 - CHOOSE A CALIBRATION KIT*</b>				
62169-50	Gas Calibration Kit including Cap and Regulator			

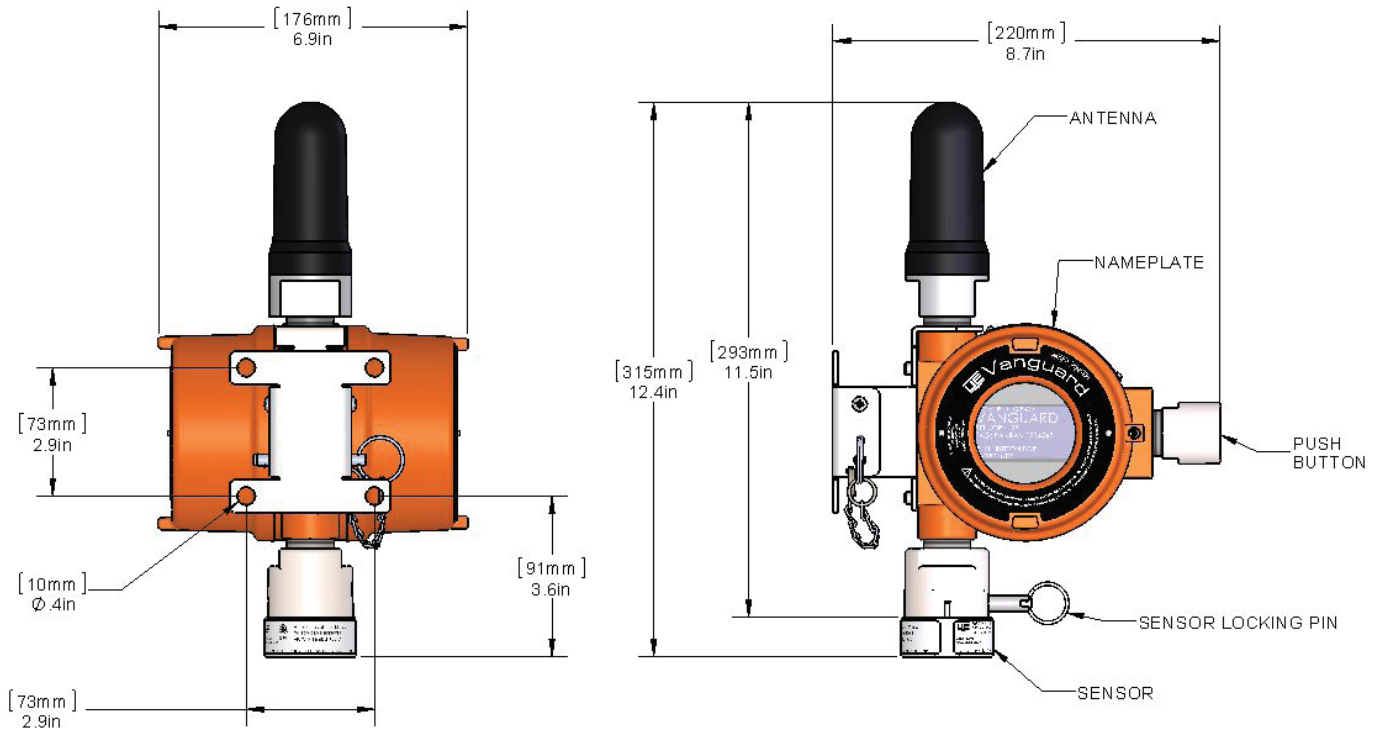
### ACCESSORIES AND REPLACEMENTS

6361-807	Battery pack containing two lithium battery cells; 7.2V operating voltage**
62169-50	Gas calibration kit including calibration cup and regulator
62169-54	FLEXsense™ Methane (CH <sub>4</sub> ) sensor; sensor pack only, excludes base transmitter
62169-53	FLEXsense™ Hydrogen Sulfide (H <sub>2</sub> S) sensor; sensor pack only, excludes base transmitter
62169-55	FLEXsense™ Carbon Monoxide (CO) sensor; sensor pack only, excludes base transmitter
6361-811	FLEXmount™ Standard Mounting bracket kit
6361-817	FLEXmount™ Magnetic Mounting bracket kit
6361-818	FLEXmount™ Universal Mounting bracket kit

\*Ordered as a separate line item

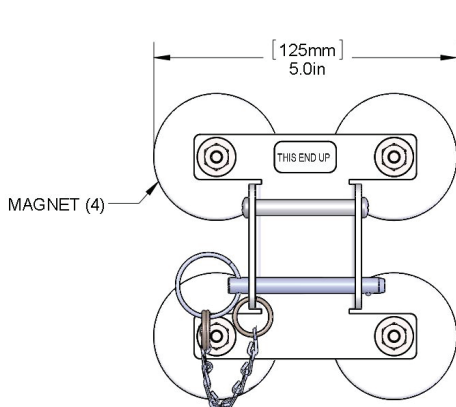
\*\*Battery ships separately per US and International Transport Authorities (e.g., IATA). Follow proper disposal regulations for lithium batteries as they apply to your jurisdiction.

## DIMENSIONAL DRAWINGS

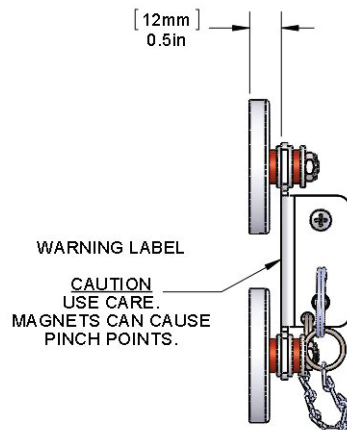


## FLEXMOUNT™ BRACKET OPTIONS

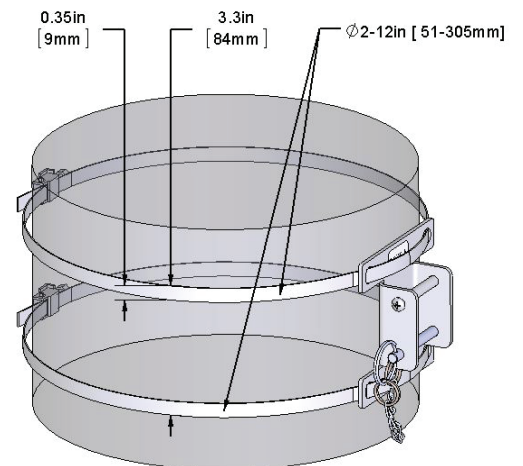
MAGENETIC MOUNT  
FRONT VIEW



MAGENETIC MOUNT  
SIDE VIEW

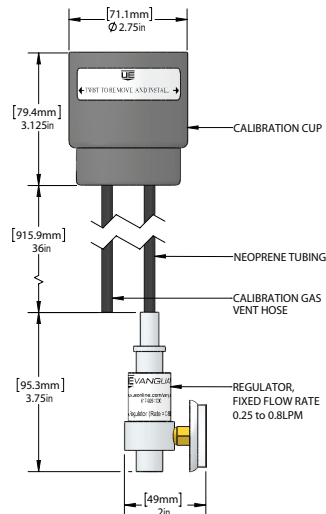


UNIVERSAL MOUNT  
ISOMETRIC VIEW



## DIMENSIONAL DRAWINGS CONT.

### CALIBRATION KIT



## PRODUCT APPROVALS & RATINGS

Model	N. America	Europe	International
TCD50H1XXX	Class I, Division 1, Groups C and D, T4 Class I, Zone 1 AEx db ia [ia] IIB T4 Gb Ex db ia [ia] IIB T4 Gb Type NEMA 4X Enclosure. IP 66 (*Excludes Gas sensor) $-40^{\circ}\text{C} \leq \text{Tamb} \leq +65^{\circ}\text{C}$	ITS 16 ATEX 18474 II 2 (2) G Ex db ia [ia] IIB T4 Gb IP66** $-40^{\circ}\text{C} \leq \text{Tamb} \leq +65^{\circ}\text{C}^*$	IECEx ETL 16.0016 Ex db ia [ia] IIB T4 Gb IP66** $-40^{\circ}\text{C} \leq \text{Tamb} \leq +65^{\circ}\text{C}^*$

\*Ambient operating temperature range may vary with sensor type.

\*\*Enclosure Type 4X and/or IP66 rating excludes sensor.

UE declarations and third-party issued agency certifications are available for download at: [www.ueonline.com/prod\\_approval](http://www.ueonline.com/prod_approval).

## COMPLIANCE TO STANDARDS

The device has been certified in accordance with the applicable requirements of the standards listed on page 5 of the installation and maintenance manual.



**RECOMMENDED PRACTICES AND WARNINGS**

United Electric Controls Company recommends careful consideration of the following factors when installing and operating the UE Vanguard unit. Before installing a unit, the Installation and Maintenance instructions provided with the unit must be read and understood.

- This device is for monitoring and communicating gas concentration levels for data collection or record keeping and does not provide alarm signals.
- Misuse of this device may cause explosion and/or personal injury. These instructions must be thoroughly read and understood prior to installation of the device.
- The end-user is responsible for maintaining the device in full, operational condition.
- Install the device where shock, vibration and temperature fluctuations are minimal. Do not mount in ambient temperatures that exceed the limits on the device labelling.
- The device must be mounted vertically with the sensor pointing downward.
- Avoid dropping the device, as loosening of the threaded flame-proof joints or permanent damage may occur.
- When not in use, the device should be stored in a clean, dry area and within the temperature range listed within the device's environmental specifications.
- The only field replaceable parts are the battery pack and *FLEXsense™* sensor. Substitution of other components will invalidate third party issued approvals and certifications, may impair suitability for Class 1, Div 1 location and void any warranties.
- Only battery packs and *FLEXsense™* sensors provided by United Electric Controls are compatible with this device.
- New sensors must be calibrated after installation.
- Hydrogen Sulfide ( $H_2S$ ) is an extremely toxic gas, and exposure may result in loss of consciousness or death.
- Methane ( $CH_4$ ) is a greenhouse gas and is extremely flammable. Exposure in closed areas may cause explosion, and result in loss of consciousness or death.

**LIMITED WARRANTY**

Seller warrants that the product hereby purchased is, upon delivery, free from defects in material and workmanship and that any such product which is found to be defective in such workmanship or material will be repaired or replaced by Seller (Ex-works, Factory, Watertown, Massachusetts. INCOTERMS); provided, however, that this warranty applies only to equipment found to be so defective within a period (as defined in the chart below) from the date of manufacture by the Seller.

PRODUCT SERIES/COMPONENTS/REPLACEMENT PARTS	WARRANTY
Electrochemical Sensors	12 months
Infrared Sensors	24 months
Vanguard Base Transmitter	36 months
Battery	60 months*

\* 5 year battery warranty valid only with registration at [www.ueonline.com/vanguard](http://www.ueonline.com/vanguard)

Seller shall not be obligated under this warranty for alleged defects which examination discloses are due to tampering, misuse, neglect, improper storage, and in any case where products are disassembled by anyone other than authorized Seller's representatives. EXCEPT FOR THE LIMITED WARRANTY OF REPAIR AND REPLACEMENT STATED ABOVE, SELLER DISCLAIMS ALL WARRANTIES WHATSOEVER WITH RESPECT TO THE PRODUCT, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

**LIMITATION OF SELLER'S LIABILITY**

Seller's liability to Buyer for any loss or claim, including liability incurred in connection with (i) breach of any warranty whatsoever, expressed or implied, (ii) a breach of contract, (iii) a negligent act or acts (or negligent failure to act) committed by Seller, or (iv) an act for which strict liability will be inputted to seller, is limited to the "limited warranty" of repair and/or replacement as so stated in our warranty of product. In no event shall the Seller be liable for any special, indirect, consequential or other damages of a like general nature, including, without limitation, loss of profits or production, or loss or expenses of any nature incurred by the buyer or any third party.

UE specifications subject to change without notice.

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