

FlexVu® Explosion-Proof Universal Display Unit Model UD10



DESCRIPTION

The FlexVu® Model UD10 is recommended for applications that require a gas detector with digital readout of detected gas levels as well as analog 4–20 mA output with HART, relay contacts, and Modbus RS485. The UD10 is designed for use with Det-Tronics gas detectors such as GT3000, PIR9400, PIRECL, PIRECL CO₂, OPECL, C706x*, Model 505/CGS, CGS**, NTMOS, ATX100/AV10, PIRDUCT, or LS2000, as well as generic linear 4–20 mA sensors. The display unit is designed and approved as a “stand alone” device and performs all the functions of a gas controller.

Gas concentration and unit of measurement are indicated on a digital display. The display unit provides a linear isolated/non-isolated 4–20 mA DC output signal (with HART) that corresponds to the detected gas concentration.

All electronics are enclosed in an explosion-proof aluminum or stainless steel housing. The display unit is used with a single detector that may be either coupled directly to the UD10, or remotely located using a sensor termination box. The UD10 features non-intrusive calibration. A magnet is used to perform calibration as well as to navigate the UD10's internal menu.

The UD10 can be used with various 4–20 mA gas detection devices, with or without HART. The unit provides display, output, and control capabilities for the gas detector.

The UD10 utilizes the following I/O:

- Signal Inputs: 4–20 mA loop from the sensing device
- User Inputs: Magnetic switches (4) on the display panel
HART communication
- Signal Outputs: 4–20 mA output loop with HART
Modbus RS485
Three alarm relays and one fault relay
- Visible Outputs: Backlit LCD display
HART slave interface via HART Communicator

FEATURES AND BENEFITS

- ▲ Universal design supports multiple Det-Tronics sensors or generic linear 4–20 mA sensors
- ▲ Local digital LCD display continuously indicates gas level, gas type, and units measured
- ▲ Backlit and heated display
- ▲ Non-intrusive calibration quickly performed by one person
- ▲ Rugged construction approved for use in classified hazardous areas
- ▲ Linear isolated/non-isolated 4–20 mA output with HART
- ▲ Non-intrusive menu allows device configuration without de-classifying the hazardous area
- ▲ Internal magnetic switches provide a non-intrusive user interface
- ▲ Smart capabilities with access to sensor information and measurement range
- ▲ Event logs: Calibration with date and time stamp
- ▲ Fault logs: Detector fault, Low power, and General fault
- ▲ Alarm logs: High gas alarm, Low gas alarm, and Aux alarm
- ▲ SIL2 models certified to IEC01508 by exida®

* C7065E O₂ detector is not supported.
 ** Requires the use of a CGS Interface Board. See Instruction Manual 95-8661 for details.

SPECIFICATIONS

Operating Voltage 24 Vdc nominal, operating range is 18 to 30 Vdc.

Operating Power Standard model, with heater and backlight off:
 No alarm: 1.5 watts @ 24 Vdc.
 Alarm: 3 watts @ 24 Vdc (20 mA current output and all 3 alarm relays energized).
 Backlight on: 0.5 watt additional.
 Heater on: 3.5 watts additional.
 CGS model: Add 4 watts with CGS interface board and CGS sensor installed.

Maximum power in alarm, with heater and backlight on:
 7 watts @ 30 Vdc (Standard model)
 11 watts @ 30 Vdc (CGS model)

NOTES:

- Heater turns on when the internal temperature drops below -10°C. Heater function can be disabled to save power.
- Appropriate relays will be activated when a fault or alarm occurs.

Current Output Linear isolated 4–20 mA output with HART.
 Maximum loop resistance 600 ohms at 18 to 30 Vdc.

Relay Contacts

Three Alarm Relays:
 Form C, 5 amperes at 30 Vdc.
 Selectable energized/de-energized.
 Selectable latching/non-latching.

One Fault Relay:
 Form C, 5 amperes at 30 Vdc.
 Normally energized for no fault condition with power applied.

Operating Temperature -55°C to +75°C.

Storage Temperature -55°C to +75°C.

Humidity Range 5 to 95% RH (Det-Tronics verified).

Wiring Terminals 14 to 18 AWG, 2.5-0.75 mm² wire can be used.

Conduit Entries 3/4" NPT or M25.

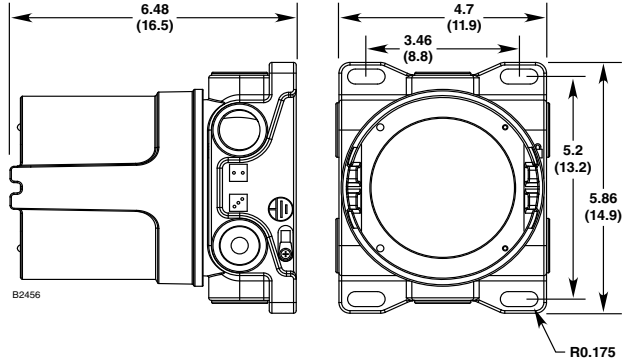
Enclosure Material Epoxy coated aluminum or 316 stainless steel.

Shipping Weight Aluminum: 4.15 pounds (1.88 kilograms).
 Stainless Steel: 10.5 pounds (4.76 kilograms).

Warranty 12 months from date of installation or 18 months from date of shipment, whichever occurs first.

Electro-Magnetic Compatibility EMC Directive 2004/108/EC
 EN55011 (Emissions)
 EN50270 (Immunity).

Dimensions Dimensions shown in inches (centimeters).



Certification



FM: Class I, Div. 1, Groups B, C & D (T5);
 Class I, Div. 2, Groups B, C & D (T4);
 Class I, Zone 1/2 AEx d IIC (T5);
 Class II/III, Div. 1/2, Groups E, F & G.
 Tamb -50°C* to +75°C
 NEMA/Type 4X, IP66
 Conduit seal not required.

Performance verified in accordance with:
 ANSI/ISA-92.00.01
 ANSI/ISA-12.13.01 (CGS excluded)
 FM 6310/6320
 ANSI/ISA-12.13.04/FM 6325



CSA: CSA 08 2029512.
 Class I, Div. 1, Groups B, C & D (T5);
 Class I, Div. 2, Groups B, C & D (T4);
 Class II/III, Div. 1/2, Groups E, F & G.
 (Tamb = -55°C to +75°C)
 Type 4X
 Conduit seal not required.
 Performance verified in accordance with:
 CSA C22.2 #152.



ATEX: 0539 II 2 G
 Ex d IIC T5 Gb
 Tamb -50°C* to +75°C
 FM08ATEX0042X
 IP66
 Performance verified in accordance with:
 EN 60079-29-1:2007 and EN 60079-29-4:2010

IECEX: Ex d IIC T5 Gb
 Tamb -50°C* to +75°C
 IECEX FMG 08.0010X
 IP66
 Performance verified in accordance with:
 IEC 60079-29-1:2007

SIL: All safety certified UD10 models are SIL2 certified per IEC61508

*UD10 hazardous location and performance testing was successfully completed down to -55°C, however, the FM approved rating is limited to -50°C because there are no conduit fittings, cables, or cable glands that are presently listed for use below -50°C in the U.S. FM approvals policy does not allow product temperature ratings to exceed required installation components (such as conduit seals). The user must ensure that conduit fittings, cables, cable glands, etc., are rated for the expected minimum ambient temperature of the installation.

Refer to Instruction Manual 95-8661 for in-depth information regarding the FlexVu UD10 Universal Display Unit.

Specifications subject to change without notice.

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Catalytic Combustible Gas Sensor Model CGS



DESCRIPTION

The Det-Tronics family of catalytic combustible gas sensors provide unmatched flammable gas detection performance in harsh environments and challenging conditions.

The heart of the catalytic sensor consists of a pair of computer matched pellistors (beads) that provide identical electrical resistance in clean air. When flammable gas is present, the active bead catalyzes the combustible gas molecules, while the inactive (reference) bead balances the reaction and compensates for normal changes in the ambient environment. The sophisticated design and construction of Det-Tronics catalytic sensors provides excellent sensitivity, response time, and resistance to physical shock and vibration.

All Det-Tronics catalytic gas sensors are poison-resistant, and are constructed with a one-piece 316 stainless steel housing. Other features include an integral thermal barrier to prevent bead interaction, and a sinter bonding technique to ensure superior protection against electromagnetic interference. All sensors are provided with a laser etched identification and approvals label that will withstand exposure to harsh outdoor industrial environments.

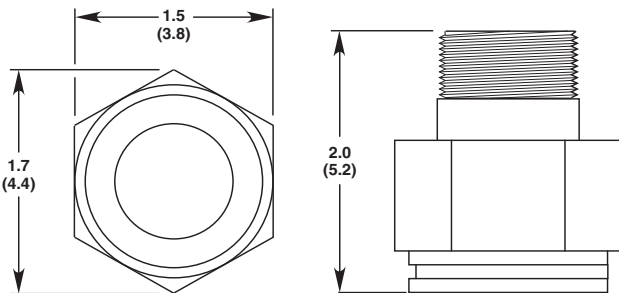
The CGS can be used for detection of virtually all combustible and flammable gases, including hydrogen, and is compatible with the FlexVu® UD10, Infiniti® U9500, Model 505 transmitter, EQ22xxDCUEX, and STB.

FEATURES AND BENEFITS

- One piece design with integral thermal barrier
- Sinter bonded flame arrestor provides superior EMI protection
- 316 stainless steel housing
- Excellent impact and vibration resistance
- Standard poison-resistant performance rating
- FM/CSA/ATEX/IECEX/Brazilian Approvals
- Compatible with all Det-Tronics combustible gas transmitters and controllers
- Sensor Separation Termination Box (STB) options available
- Extended operating temperature range
- Comprehensive list of conversion K factors for proper calibration available
- 3/4 inch NPT, 20 mm, or 25 mm thread types
- Six inch or optional 30 inch wire lead lengths
- Constant voltage or constant current sensor types available
- SIL2 certified to IEC61508 by exida® when used with UD10 SIL2 models.

SPECIFICATIONS

Temperature Range	Operating: -67°F to +257°F (-55°C to +125°C). Performance: -40°F to +167°F (-40°C to +75°C).
Humidity Range	0 to 99% RH, non-condensing.
Response Time	50% full scale in < 10 seconds with 100% LFL applied. 90% full scale in < 30 seconds with 100% LFL applied. 60% full scale in < 10 seconds with 100% methane by volume in air (CSA flooding test).
Recovery Time	< 30 seconds after exposure to pure methane.
Accuracy / Linearity	±3% LFL from 0 to 50% LFL, ±5% LFL from 51% to 100% LFL.
Repeatability	±1% LFL.
Long Term Stability	<u>Zero</u> : < 1% LFL per month. <u>Span</u> : < 1% LFL per month in clean air.
Temperature Stability	< ±5% LFL: -13°F to +167°F (-25°C to +75°C). < ±10% LFL: -40°F to -13°F (-40°C to -25°C).
Sensor Life	3 to 5 years, when environment is free of substances and conditions known to be detrimental to catalytic sensing elements.
Storage Life	Indefinite, when stored in unopened original packaging.
Calibration Cycle	30 days after initial calibration and every 90 days thereafter, or as required by the application and environment.
RFI/EMI Immunity	Refer to selected transmitter specification.
Dimensions	See Figure 1.
Thread options	<ul style="list-style-type: none"> • 3/4" NPT • M20 • M25.



E1213

Figure 1—Dimensions of Sensor in Inches (Centimeters)

Certification:



FM / CSA: Class I, Div. 1, Groups B, C, & D
Tamb = -40°C to +75°C
Explosion-proof verified:
-40°F to +257°F (-40°C to +125°C)
Performance verified:
-40°F to +167°F (-40°C to +75°C)
Complies with ANSI/ISA-12.13.01-2000.



ATEX: **CE** 0539 **Ex** II 2 G
Ex db IIC T3/T5
DEMKO 02 ATEX 131323X
T5 (Tamb = -40°C to +75°C)
T3 (Tamb = -55°C to +125°C)



IECEx: Ex db IIC T3/T5
IECEx ULD 10.0001X
T5 (Tamb = -40°C to +75°C)
T3 (Tamb = -55°C to +125°C)

EN/IEC Standards: EN/IEC 60079-0: 2012/2011
EN/IEC 60079-1: 2014
EN 60079-29-1: 2007

Special Conditions for Safe Use (ATEX / IECEx):

The CGS Combustible Gas Sensor is certified for use in the following ambient temperatures:

-40°C to +75°C
Coding: **Ex db IIC T5**
-55°C to +125°C
Coding: **Ex db IIC T3**

The actual temperature range is marked on the sensor. The performance ambient temperature rating is limited to -40°C to +75°C.

The CGS can withstand repeated exposures to 125°C for periods up to 12 hours. It is recommended that the sensor be replaced after maximum 500 hours of exposure to the 125°C temperature condition.

The CGS must only be mounted into the enclosures of the FlexVu UD10 Display, Infiniti Gas Transmitter Model U9500A, the Combustible Gas Transmitter Model 505 Series, the Digital Communication Unit EQ22xxDCUEx Series or the Sensor Termination Box Model STB Series.

The actual enclosure must provide maximum measured reference pressure of 15 bar measured according to EN 60079-1: 2007, §15 (ATEX) & §16 (IECEx).

The CGS is to be installed in places where there is a low risk of mechanical damage.



Brazil: Ex d IIC T3, T5 Gb
11/UL-BRHZ-0078X
T5 (Tamb = -40°C to +75°C)
T3 (Tamb = -55°C to +125°C)

SIL: Gas sensors are certified as SIL2 per IEC61508 when used with UD10XXX25T2C.

NOTE: Before installing the sensor, ensure that hazardous (classified) location rating is applicable in the area of intended use.

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