Accessories for all Environmental Control Units

Models GD & GDSB

Gas Detector Sensors, Monitors, Power Supplies & Mounting Brackets

ECU Division Technical Bulletin GDA-R1.0 **05/97**

General Description

Bebco offers three modular gas detector assemblies to monitor the presence of combustible hydrocarbon gases, hydrogen sulfide (H_2S) gases or to detect the deficiency of oxygen (O_2) by diffusion adsorption, a process requiring no moving parts. Individual components of the Model GD Gas Detectors include a monitor with a compatible sensor and a power supply. Together, these components are designed to detect gases while providing alarm contacts and an LCD display that indicates the percentage of concentration. These assemblies feature calibration adjustments for zero and span (course and fine), and low and high alarm trip points. The sensor detects an undesirable level of concentration and then signals the monitor of the changing condition which is shown at the LCD readout. The monitor then trips the alarm contacts, which can be used to activate local alarm systems or to provide a signal for the emergency shutdown or emergency control override inputs of a Bebco Pressurization or Ventilation System, depending on the customer's application. In the event of a monitor malfunction, the fault supervision contacts are tripped and can be used to send a signal to a PLC, annunciator panel or other devices at a constantly attended location depending on customer preference.

Model CGDS
Combustible Gas Detecting Sensor

Model CGDM
Combustible Gas Detecting Monitor

Model GDSB
Gas Detector Sensor Bracket

Gas Sensors

Model CGDS, HGDS, and OGDS Remote Sensors are the elements that detect undesirable levels of either combustible gas, hydrogen sulfide or oxygen. Model CGDS Combustible Gas Sensor assembly is a catalytic bead sensor with a detection range from 0-100% LEL (Lower Explosive Limit) of gas presence. Model HGDS Hydrogen Sulfide Sensor assembly is a proprietary solid state sensor element with a 0-100 parts per million range for hydrogen sulfide presence. Model OGDS Oxygen Sensor assembly is an electrochemical sensor having a 0-26% concentration range for detecting oxygen depletion. All sensor assemblies are offered in a stainless steel housing and can be mounted either inside the stack for intake air monitoring, directly to the monitor, or remotely inside the room.

Gas Monitors

Model CGDM, HGDM, and OGDM Gas Detecting Monitors are transmitters containing a sensor power supply control, sensor signal conditioner, calibration amplifiers, digital LCD display controls, and jumper programmable low and high alarm contacts (Form C dry contacts) and fault supervision contacts (Form C dry contacts). The alarm and fault supervision contacts are rated 5 amp @ 125 VAC; 5 amp @ 30 VDC. The monitors are housed in an explosion proof enclosure rated for Class I, Division 1, Groups B, C, and D areas.

Sensor Brackets

Model GDSB Gas Detector Sensor Brackets provide an easy method of mounting the Model GD Sensor to an intake stack. The brackets are constructed of 14 Ga. 316 stainless steel and replaceable open core tubular gasketing. The gasketing provides a means of sealing the gas detector bracket to the intake stack. The bracket features a 1/4" bulkhead fitting to provide a connection point for calibration gas tubing and a short section of tubing which directs calibration gas over the sensor element. The bracket also features a conduit hub connecting an explosion proof junction box outside of the stack to the sensor on the inside of the stack. The junction box contains four (4) terminals to provide an interface connection between the sensor and field wiring. The brackets are available in two models - GDSB-1216 for 12" and 16" stacks and GDSB-2024 for 20" and 24" stacks.

Power Supplies

Model GDPS Power Supplies convert 110 VAC to 24 VDC to supply power to a gas detector monitor. The GDPS is housed in an explosion proof enclosure rated for Class I, Division 1, Groups B, C, and D areas. Each power supply is capable of providing power for one monitor.

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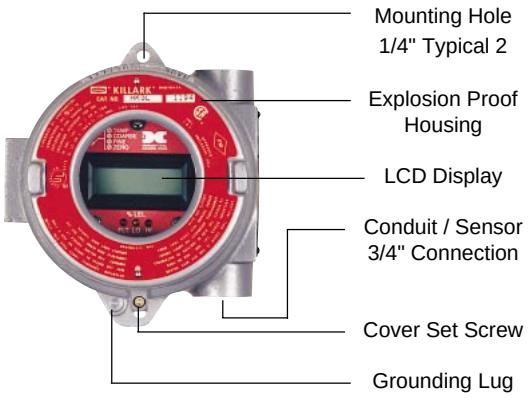
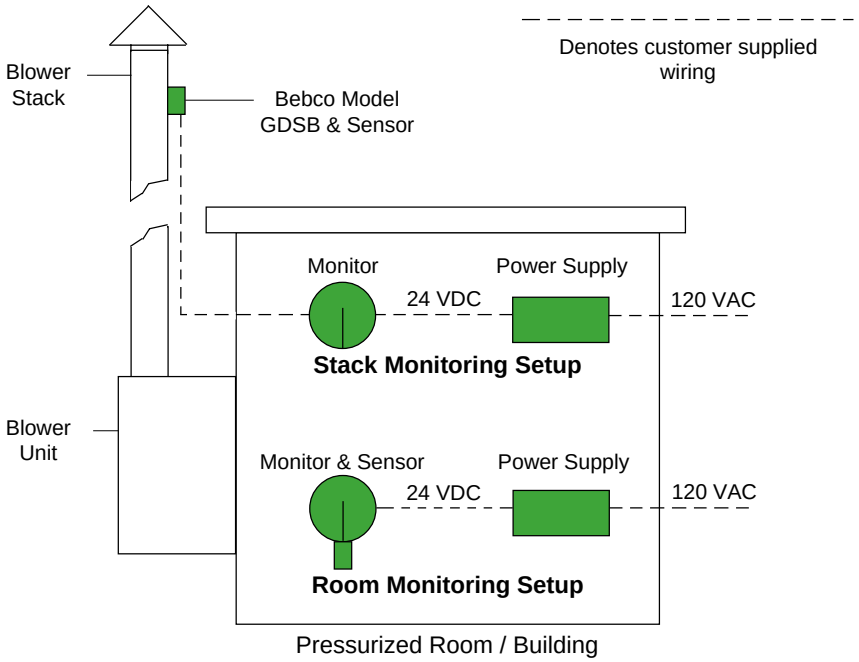
Sensor & Monitor Specifications

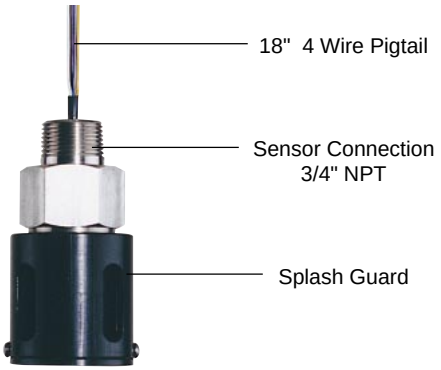
Type	CGDM / CGDS	HGDM / HGDS	OGDM / OGDS
Accuracy	+/- 5% full scale	+/- 5% full scale	+/- 2%
Repeatability	+/- 5% full scale	+/- 5% full scale	+/- 2%
Zero Drift	< 5% per year	< 2% per year	< 2% per month
Response Time	90% < 30 sec	90% < 60 sec	90% < 60 sec
Clearing Time	90% < 30 sec	90% < 60 sec	90% < 60 sec
Operating Temp.	-40° to 175°F	-40° to 175°F	-40° to 175°F
Power Usage	< 5 watts @ 24 VDC	< 4 watts @ 24 VDC	< 2.5 watts @ 24 VDC
Signal Output	4-20 madc linear	4-20 madc linear	4-20 madc linear
Field Wiring	3 conductor; 12 ohms max		
Class.; Div.; Gr.	I; 1; B, C, D	I; 1; B, C, D	I; 1; B, C, D
Input Power	22 - 28 VDC	22 - 28 VDC	22 - 28 VDC
Detection Range	0 -100% LEL	0 -100 PPM	0-26%
Linearity	< 2%	< 2%	+/- 2%
Detection Method	dual poison resistant catalytic bead diffusion adsorption no moving parts	solid state MOS (Metal Oxide Sensor) diffusion adsorption no moving parts	electrochemical fuel cell diffusion adsorption no moving parts



Model CGDM, HGDM & OGDM
Monitor Housings

Typical Sensor / Monitor Installations





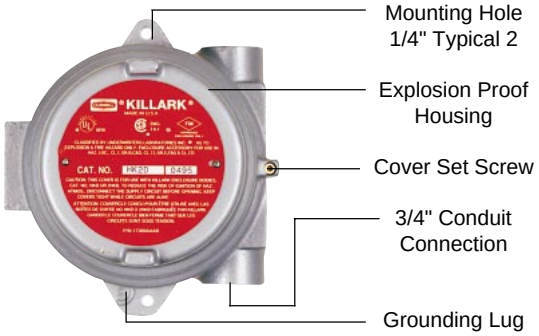
Model CGDS, HGDS & OGDS
Sensors with Splash Guard Housings

STACK MONITORING APPLICATION

In a stack monitoring application, the sensor of the detection system is mounted directly inside the air intake stack by utilizing a Bebco Model GDSB. This set up provides a means for the end user to monitor the incoming air supply for combustible, corrosive or toxic gases which could be detrimental to equipment or personnel inside the building. When utilized with a Bebco Pressurization or Ventilation unit's optional ESD (Emergency Shut Down) feature, this installation can be used to automatically shut down the building's blower system, preventing these gases from being drawn into the building by the blower unit.

ROOM MONITORING APPLICATION

In a room monitoring application, the sensor of the detection system is mounted directly inside the protected building. This provides a means for the end user to monitor the air inside the protected building for combustible gases or oxygen deficiency, either of which could be detrimental to personnel inside the building. When utilized with a Bebco Pressurization or Ventilation unit's optional ECO (Emergency Control Override) feature, this installation can be used to automatically engage the building's blower system, increasing the fresh air flow through the building and there by diluting any concentrations of combustible gases or increasing the oxygen level.



Model GDPS
Power Supply Housing

General Specifications

Models CGDM, HGDM & OGDM

Overall Dimensions:	12" H x 7" W x 10" D
Shipping Weight (lbs.):	8
Mounting Hole Centers:	5.5" vertical
EXP Housing Rating:	Cl. I & II, Div. 1, Gr. B-G
Housing Material:	Cast Zinc
Conduit Connection:	3/4" FPT
H/L Alarm Contacts:	Form C Dry
Contact Ratings:	5 amps @ 125 VAC, 30 VDC
Fault Supervision Contacts:	Form C Dry
Contact Ratings:	5 amps @ 125 VAC, 30 VDC
Wiring Method:	3 Conductor Terminal Block

Models CGDS, HGDS & OGDS

Overall Dimensions:	2.75" H x 2" Diameter
Shipping Weight (lbs.):	2.75
Sensor Rating:	Cl. I & II, Div. 1, Gr. B-G
Sensor Material:	Sintered Stainless Steel
Splash Guard:	Dupont Delrin
Connection Size:	3/4" NPT
Wiring Method:	18" 4 Wire Pigtail

Model GDPS

Overall Dimensions:	7" H x 5.3" W x 4" D
Shipping Weight (lbs.):	8
Mounting Hole Centers:	5.5" vertical
EXP Housing Rating:	Cl. I & II, Div. 1, Gr. B-G
Housing Material:	Cast Zinc
Conduit Connection:	3/4" FPT
Input Power:	120 VAC 5 amps max.
Output Power:	24 VDC 5 amps max.
Wiring Method:	3 Conductor Terminal Block

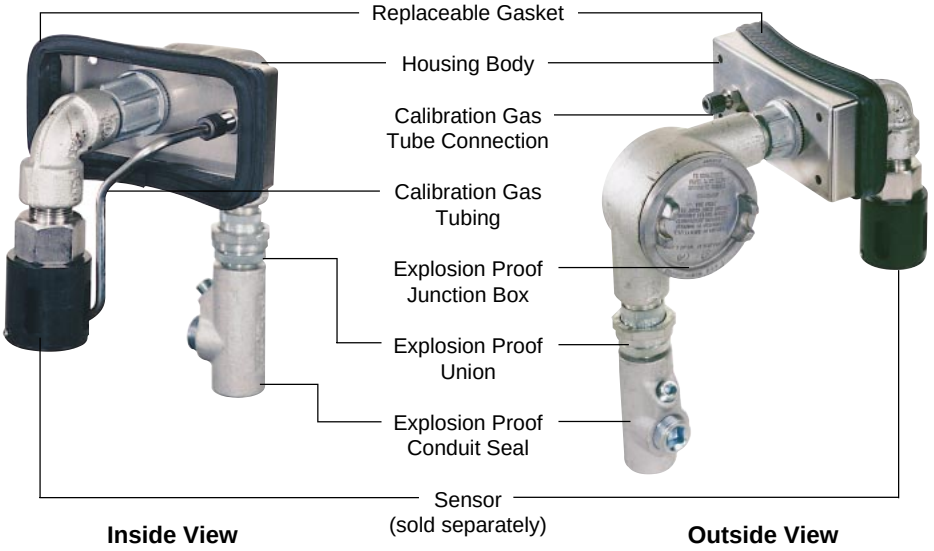
Model GDSB

Overall Dimensions:	14.5" H x 6.2" W x 7.75" D
Shipping Weight (lbs.):	10
Gasketing:	Polypropylene w/ steel retainer clips
Housing Body:	14 Ga 316 SS
Calibration Gas Tube & Fitting:	316 SS
Calibration Tube Size:	1/4"
Connection Size:	3/4" Trade Conduit
Union Fitting:	Iron Alloy
Nipples:	3/4" NPT 150# Galvanized Pipe
EXP Conduit Seal:	Cast Malleable Iron
EXP L Fitting:	Cast Malleable Iron
Feed-Through Hub:	Zinc
Mounting Screws (4):	Self Tapping 410 Stainless Steel

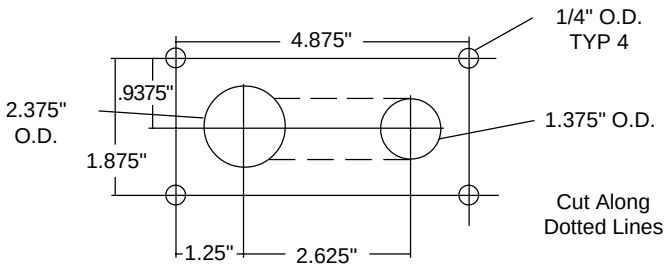
SPECIAL GDSB INSTALLATION NOTES

IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE ALL CUSTOMER SUPPLIED ELECTRICAL CONDUIT AND CALIBRATION GAS TUBING BETWEEN THE MODEL GDSB AND THE GAS DETECTOR MONITOR IS PROPERLY SECURED. IN ADDITION, ALL ELECTRICAL CONDUIT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE AS REQUIRED AND ALL RELEVANT PLANT AND LOCAL CODES.

Model GDSB Gas Detector Sensor Bracket



Model GDSB
Shown installed on 12" Spiral Pipe Stack



Model GDSB-1216 & GDSB-2024 Mounting Template

Model Number Designations

MODELS CGDM, HGDM & OGDM

CGDM - 100

Series Model Number

CGDM - Combustible Gas Detector Monitor
HGDM - Hydrogen Sulfide Gas Detector Monitor
OGDM - Oxygen Gas Deficiency Monitor

Component Manufacturer

100 - Detcon

MODELS CGDS, HGDS & OGDS

CGDS - 100

Series Model Number

CGDS - Combustible Gas Detector Sensor
HGDS - Hydrogen Sulfide Gas Detector Sensor
OGDS - Oxygen Gas Deficiency Sensor

Component Manufacturer

100 - Detcon

Model Number Designations

MODEL GDPS

GDPS - 100

Series Model Number

GDPS - Gas Detector Power Supply

Component Manufacturer

100 - Detcon

MODEL GDSB

GDSB - 1216

Series Model Number

GDSB - Gas Detector Sensor Bracket

Stack Size

1216 - 12" and 16" Stack Diameters
2024 - 20" and 24" Stack Diameters

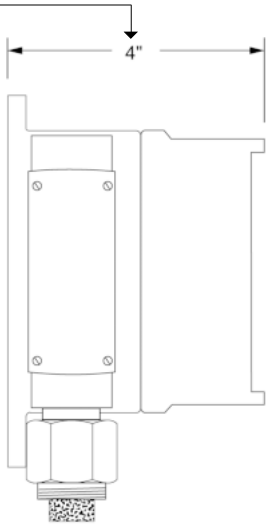
Monitor, Sensor & Power Supply Housing Dimensions

IMPORTANT DIMENSIONAL NOTES:

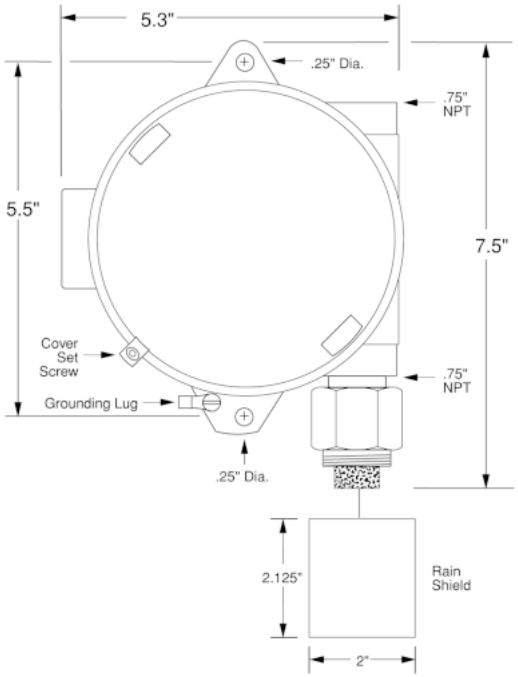
Model CGDM, HGDM and OGDM gas monitors and Model GDPS power supply utilize identical explosion proof housings except as noted below (•)

• Add 2 inches for Model GDPS Gas Detector Power Supply

Both dimensional drawings are shown with sensors installed



Explosion Proof Housing Detail Side View



Explosion Proof Housing Detail Front View

IMPORTANT NOTES

All specifications subject to change without notice.
Warranty & Liability policies available upon request.
It is the responsibility of the installer to ensure all customer supplied electrical conduit and calibration gas tubing between the Model GDSB and the gas detector monitor are properly secured. In addition, all electrical conduit must be installed in accordance with the National Electric Code and all relevant plant and local codes as required.

Local Sales Representative