

SUBMITTAL REVIEW**CLIENT NAME:** Vails Gate Fire Department**PROJECT TITLE:** Vails Gate FD - New Firehouse**SUBMITTAL No.:** 284200-2**H2M PROJECT No.:** VGFD2001**SUBMITTAL NAME:** Gas Detection System PD (Phase 2)**SUBMITTAL REVIEW****REVIEW IS FOR GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS.****NO RESPONSIBILITY IS ASSUMED FOR CORRECTNESS
OF DIMENSIONS OR DETAILS**

- | | |
|---|---|
| ☒ NO EXCEPTIONS TAKEN | ☐ SUBMIT SPECIFIED ITEM |
| ☐ MAKE CORRECTIONS NOTED
<small>(RESUBMISSION NOT REQUIRED)</small> | ☐ NO ACTION TAKEN
<small>(REVIEW IS THE RESPONSIBILITY OF ANOTHER PARTY)</small> |
| ☐ REVISE & RESUBMIT | ☐ NO ACTION TAKEN
<small>(THIS SUBMITTAL IS NOT REQUIRED BY THE CONTRACT)</small> |
| ☐ REJECTED - SEE REMARKS | ☐ RECEIVED FOR RECORD |

Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating their work with that of all other trades; and performing the work in a safe and satisfactory manner.

H2M architects + engineers

Date: 06/28/2023

By: MJV

Rev.: 2020-05-20

Comments:

Contractor to confirm quantities of all equipment.

Provide submittal for GDS-1 for boiler room.

CONTRACTOR'S COMPANY NAME
ADDRESS

SUBMISSION TRANSMITTAL FORM
CLIENT NAME: Vails Gate Fire District
PROJECT TITLE: VGFD2001-New Firehouse

H2M PROJECT NO.: VGFD2001

Product, Item, or System Submitted:	Gas Detection System Product Data (Phase 2)		
Submission Date:	5/15/2023	Submission Log No.:	284200-2
Specification Section:	284200	Paragraph Reference:	---
Contract Drawing Reference(s):			
Manufacturer's Name:			
Manufacturer's Mailing Address:			
Manufacturer's Contact Information:	<i>Name</i>	() <i>Tel. no.</i>	<i>Email</i>
Supplier's Name:	Joseph Lombardo Plumbing & Heating		
Supplier's Mailing Address:			
Supplier's Contact Information:	<i>Name</i>	() <i>Tel. no.</i>	<i>Email</i>
This item is a substitution for the specified item:	☒ No	☐ Yes	
KEY CONSTRUCTION SERVICES, LLC Project No: VGFD2001 Reviewed for General Acceptance Only. This review does not relieve the Subcontractors or Suppliers of responsibility for making the work conform to the requirements of the contract. The Subcontractor and Suppliers are responsible for all dimensions, correct fabrication and accurate fit with the work of other trades. <u>SUBJECT TO ARCHITECT AND OR ENGINEER APPROVAL</u> Signed <i>Joseph Manfredi</i> (PM) Date: 4/27/2023 Contractor's Approval Stamp with Signature & Date		<u>Contractor's Brief Comments or Remarks</u> (attach separate letter as needed): By making this submission, we represent that we have determined and verified all field measurements and dimensions, field construction criteria, site and building constraints in terms of limitations in moving the item into the enclosed space, materials, catalog and model numbers and similar data and that we have checked and coordinated this submission with other work at or adjacent to the installed location in accordance with the requirements contained in the Contract Documents.	

END OF SECTION 013300

Joe Lombardo
Plumbing & Heating of Rockland, Inc.

321 Spook Rock Road
Suffern, NY 10901
Ph. 845-357-6537 Fx 845-357-8529
E: info@josephlombardo.com
Website: www.josephlombardo.com
Rockland Cty. Plumbing #1000 Rockland Cty. Cooling # 1468
Westchester Cty. Plumbing #460 New Jersey State Plumbing #12702

TO: Key Construction
4246 Albany Post Rd. Suite 1
Hyde Park, NY 12538

LETTER OF TRANSMITTAL

DATE: 5-15-23 JOB NO.
ATTENTION: Joe Manfredi
RE: Vails Gate Firehouse

WE ARE SENDING YOU [] Attached [] Under separate cover via the following items:
[] Shop Drawings [] Prints [] Plans [] Samples [] Specifications
[] Copy of letter [] Change order

Table with 4 columns: EMAIL, DATE, No., DESCRIPTION. Row 1: 1, 5-15-23, 284200, GAS DETECTION SYSTEM PHASE 2

THESE ARE TRANSMITTED as checked below:
[] For approval [] No Exceptions Taken [] Resubmit copies for review
[] For your use [] Make Corrections Noted [] Submit copies for distribution
[] As requested [] Rejected [] Return corrected prints
[] For review and comment
[] FOR BIDS DUE 20 PRINTS RETURNED AFTER LOAN TO US

COPY TO: Joe Manfredi SIGNED: Ronald J. Lombardo



Samuel Tepp Associates, LLC

**11 Leonard Street
Metuchen NJ, 08840**

P: (732)548-7398

F: (732)548-8435

www.SamTepp.net

Job Name: Vails Gate Fire District Fire House

Location: New Windsor, NY

Architect: H2M

Engineer: H2M

Contractor: Joe Lombardo Plumbing & Heating

Revision/Date: Rev 0 dated 5/11/23

Material: Intec DGC6 gas monitoring panel with DT6 CO/NO2 detectors,
RS485 cable and HS-24 remote horn strobe.

Low voltage wire for HS-24 and tie in to fan controls by others.

System commissioning, programming and bump test to be completed on site
by Samuel Tepp Associates after all systems are installed and operable.

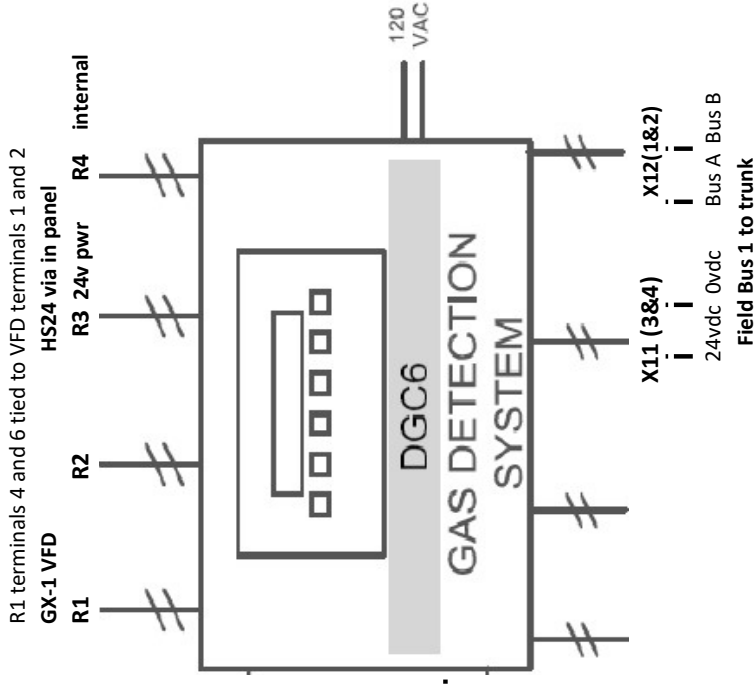
Qty and location of detectors is noted on pages 2 and 3 and is based on
50' operating radius of detectors and size of space monitored to provide
coverage for entire space.

NOTES:

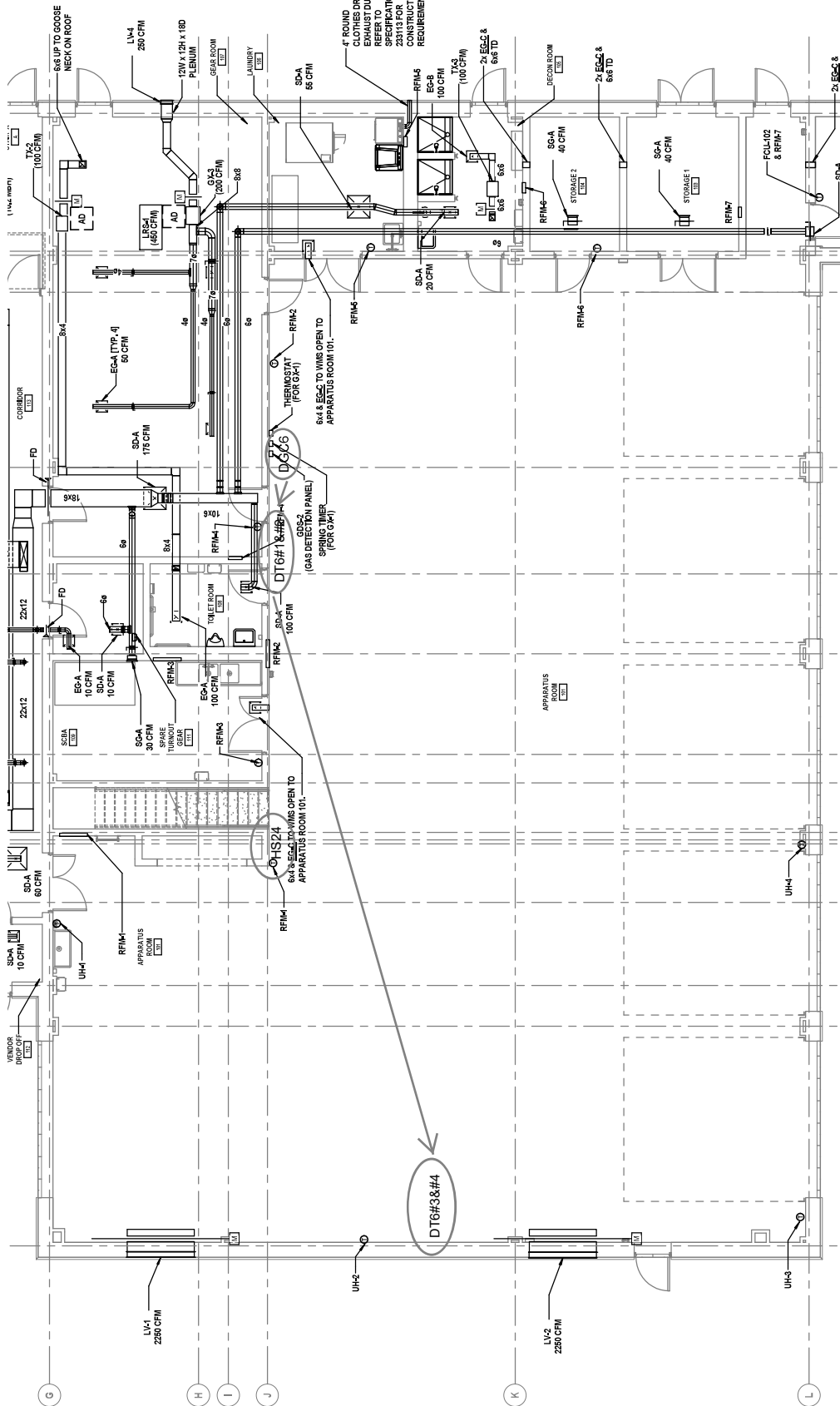
1. DGC6 to be installed per installation guide.
2. DT6 units to be daisy chained with 4 conductor, 4 color, 20 ga. twisted pair shielded cable.
3. T-Drop not allowed must be daisy chain from controller on each level.
4. Conduit is recommended for noise immunity. Do not run next to high voltage lines or fluorescent lighting.
5. Install DT6 CO&NO2 sensor/transmitters approx. 5 ft AFF.
6. 560 OHM end of line resistor must be installed at end of run.
7. CO low level = 25ppm, high alarm level = 100ppm
8. NO2 low level = 2ppm, high alarm level = 5ppm

SEQUENCE OF OPERATIONS:

GX-2 to run 24/7 for minimum ventilation.
 Any reading of 25 ppm CO or 2 ppm NO2 Relay R1 will energize GX-1 via VFD.
 Any reading of 100 ppm/5ppm Relay R3 will start remote horn/strobe.
 Any reading of 100 ppm/5ppm on any sensor Relay 4 will start DGC6 alarm.
 Fans to restore to normal operation after readings are clear for 30 seconds.



EXHAUST AIR TERMINATIONS ON ROOF.
PROVIDE SOUND PROOFED PENETRATIONS THROUGH ALL NON
FIRE RATED INTERIOR WALLS. USE TREMCO ACOUSTICAL
SEALANT OR APPROVED EQUAL.



DESCRIPTION

Highly configurable controller for up to 96 sensors distributed on a robust RS-485 bus. Programmed with user-friendly PC software or via front panel pushbuttons, the DGC6 can be used for single- or multi-zone applications with on-off or variable speed fan controls.

With advanced hardware and software diagnostics and certification to the rigorous EN 50545-1 international standard for parking garages and tunnels, the DGC6 redefines best-in-class performance for safety, reliability and energy efficiency.

The DGC6 controller operates in conjunction with DT6-, DR6- and DC6- sensors and sensor / controllers to provide cost effective solutions for any project. These EN 50545-1 certified field devices utilize advanced, self-diagnosing X-Change technology for maximum reliability and minimum life-cycle cost.

The addition of trunk repeater modules allow for flexible communication bus and power distribution routing.

APPLICATION

To control and alarm upon the presence of any toxic, combustible and refrigerant gases in parking garages, vehicle maintenance facilities, package distribution centers, tunnels, chiller/boiler rooms, laboratories, and more. The controller interfaces via binary outputs, 4-20 mA signals, and/or optional BACnet-IP and/or Modbus-RTU port with any compatible electronic control, DDC/PLC control or building automation system.

FEATURES

- Up to (96) PolyGard®2 digital sensors, or combination of PolyGard®2 digital sensors and 4-20 mA analog sensors
- Over (50) toxic, combustible and refrigerant gas sensors available in DT6-, DR6- and DC6-Series sensors and sensor/controllers
- User-friendly setup of ventilation zones and control / alarm thresholds
- Occupancy schedules and zone-based diagnostics (CA Title 24 Compliance)
- Four (4) programmable alarm thresholds per sensor
- Four (4) digital inputs
- Multiple alarm relays configurable per alarm
- Four-level password protection
- Latching mode alarms resettable via digital input
- Flexible sensor lockout function to prevent nuisance alarms during service

PolyGard®2 DGC6



Enclosure "Type B"



- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- EN 50545-1
- EN 50271
- EN 61010-1:2010
- ANSI/UL 61010-1
- CAN/CSA-C22.2 No. 61010-1
- City of Los Angeles Approved
- California Title 24 Compliant

- Alarm actions on rising or falling sensor readings
- Personal computer connection for easy programming and program archiving
- Max. (32) SPDT alarm relays (local plus remote), dry contact, max. 250 VAC, 5 A
- Max. (96) signal relays (availability is determined by digital sensors on connected DC6 Controllers)
- Fault relay with SPST normally open contact, max. 250 VAC, 5 A
- Max. 16 analog outputs (local plus remote), 4-20 mA, with scalable signal output, supervised, for service mode, system or sensor faults, etc.
- Integrated warning horn for alarms and faults
- Data logging function, optional
- Modbus-RTU and/or BACnet-IP gateways, optional
- High-impact NEMA 4X (IP65) enclosure
- Hardware & software conforms to SIL 2 standard

SPECIFICATIONS

Electrical

Power supply	110/230 VAC 50/60 Hz; 24 VDC $\pm$ 20%
Power consumption (incl. sensors)	Min. 30 W, 0.15 A, max. ca. 160 W, 0.7 A Depending on type and configuration
Device configuration	(96) PolyGard®2 digital sensors, or combination of PolyGard®2 digital sensors and 4-20 mA analog sensors
Stage level / setpoint	Four (4) alarm thresholds per sensor input, assignable to current or mean (average) value
Digital inputs	Four (4), each can be individually assigned to any relay
- application	Remote audio/visual alarm reset or override function
Analog outputs configurable for each input	(16) max., local plus remote, proportional, overload and short-circuit-protected, ext. load resistance $\leq$ 500 Ω 4-20 mA = measuring range; 3.0 < 4 mA = under range; > 20-21.2 mA = over range; 2.0 mA = fault
Alarm relays	(32) max., local plus remote, 250 VAC, 5 A, dry contact, SPDT
Fault relay	(1) 250 VAC, 5 A, normally open, dry contact, SPST

Operation Interface

LCD	Two lines, 16 characters each, illuminated
Status LED (4)	Green: Power-on Yellow: Fault (fail) Orange: 1 st Alarm Red: 2 nd Alarm
Operation	Six (6) push-buttons

Interface Field Bus

Transceiver	RS-485 / 19200 Baud
Gases	Digital PolyGard®2 and analog sensors for toxic, combustible & refrigerant gases

Environmental

Permissible ambient	
- working temperature	23°F to 104°F (-5°C to 40°C)
- storage temperature	-4°F to 104°F (-20°C to 40°C)
- humidity	15 to 95% RH, non-condensing
- working pressure	Atmospheric + 10%

Physical

Enclosure (panel)	
- material	Polycarbonate, impact resistance EN 50102/IK08, flammability rating UL 94-5V
- conforms to	UL Type 1, UL 508 / UL 50 standards

- color	Light gray, smoked gray for cover
- protection	NEMA 4X (IP65)
- installation	Wall (surface) mounted
Cable entry, knock outs	10 holes for 1/2 in. conduit on top
Wire connections	Terminal blocks, Push-on connect and screw type for lead wire
Wire size	
- power supply input	Min. 16 AWG (1.5 mm ²) Max. 14 AWG (2.5 mm ²)
- inputs/outputs	Min. 20 AWG (0.5 mm ²) Max. 16 AWG (1.5 mm ²)
Enclosure type "A"	
- dimensions (H x W x D)	11.0 x 12.0 x 5.7 in. (280 x 306 x 145 mm)
- weight	7.7 lb (3.5 kg)
Enclosure type "B"	
- dimensions (H x W x D)	16.9 x 12.0 x 5.7 in. (430 x 306 x 145 mm)
- weight	10.4 lb (4.7 kg)
Enclosure type "C"	
- dimensions (H x W x D)	22.8 x 12.0 x 5.7 in. (580 x 306 x 145 mm)
- weight	13.9 lb (6.2 kg)
Audible Alarm (Buzzer)	Built-in
Acoustic pressure	85 db (distance 10 ft)
Frequency	3.5 kHz
Conforms to	EMC Directive 2014/30/EU Low Voltage Directive 2014/35/EU EN 50545-1, EN 50271 EN 61010-1:2010 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1 City of Los Angeles California Title 24 One year material and workmanship

Warranty

OPTIONS

Data Logger

Function	Storage of measured values, of alarm status and faults with time and date stamp on an USB flash drive
Log rate	Log rate adjustable from 10 to 10,000 sec.
Data format	Output of the data in standard Excel format

Interface Modbus-RTU

Function	Transmission of current and average values, alarm and relay status, and analog output states in Modbus-RTU RS-485 protocol to external devices
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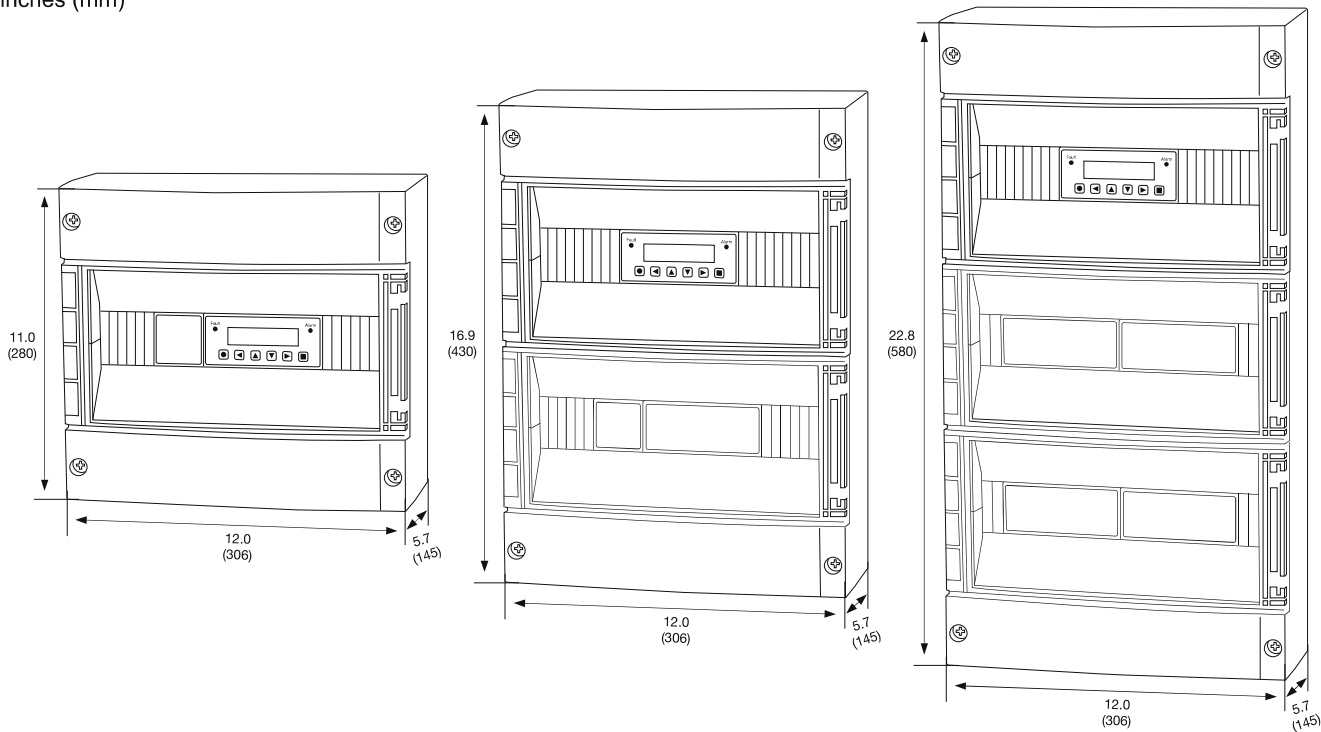
Interface BACnet-IP

Technical data, function and
protocol see datasheet DB-BAC



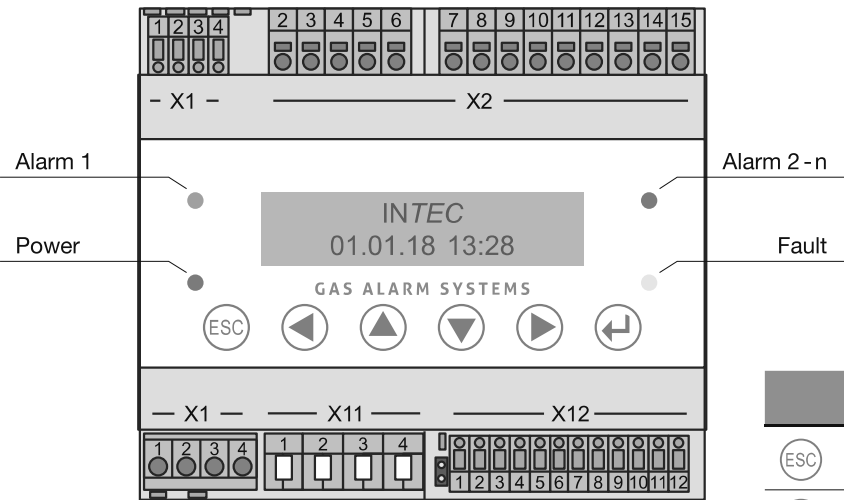
DIMENSIONS

inches (mm)



USER INTERFACE & CONTROLLER

GC-06 Built-in Controller Programming Module



KEYPAD FUNCTIONS

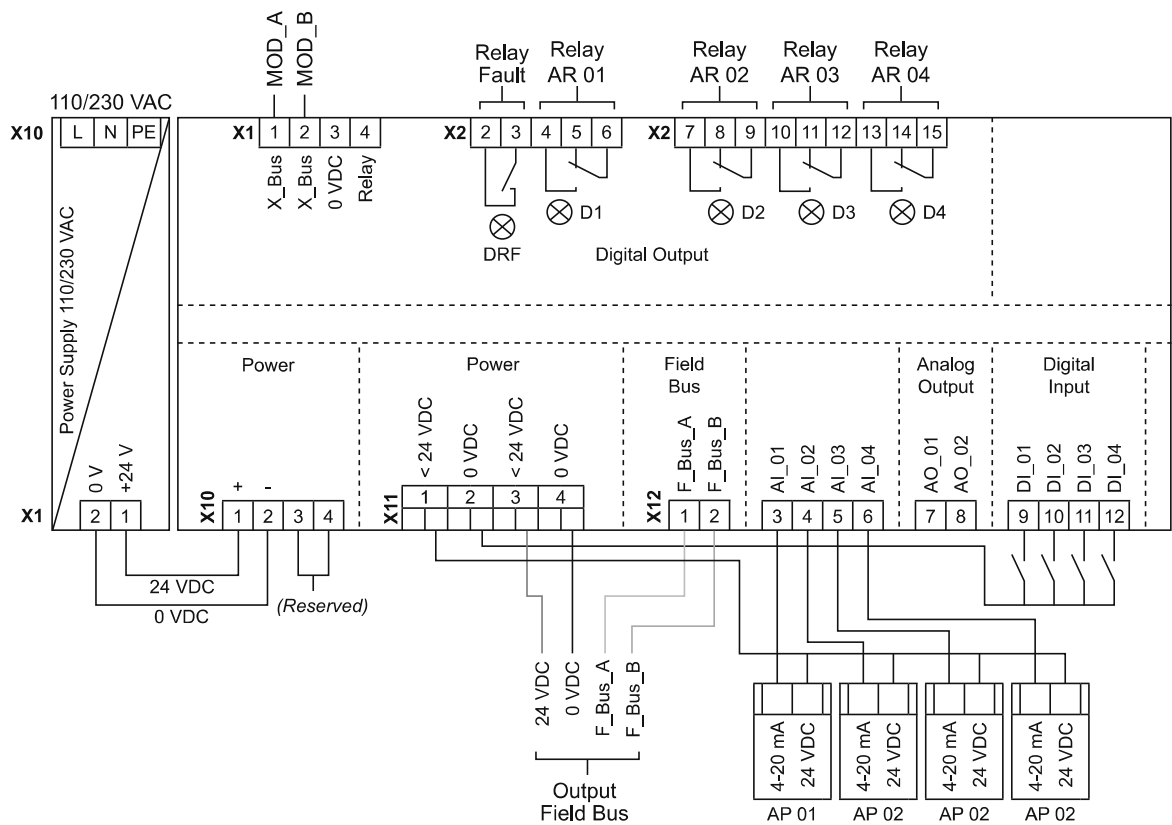
See DGC6 User Manual for Guidance

	- Exits programming - Returns to the previous menu level
	- Enters sub menus - Saves parameter settings
	- Scrolls up and down within a menu - Changes a value
	Moves the cursor position

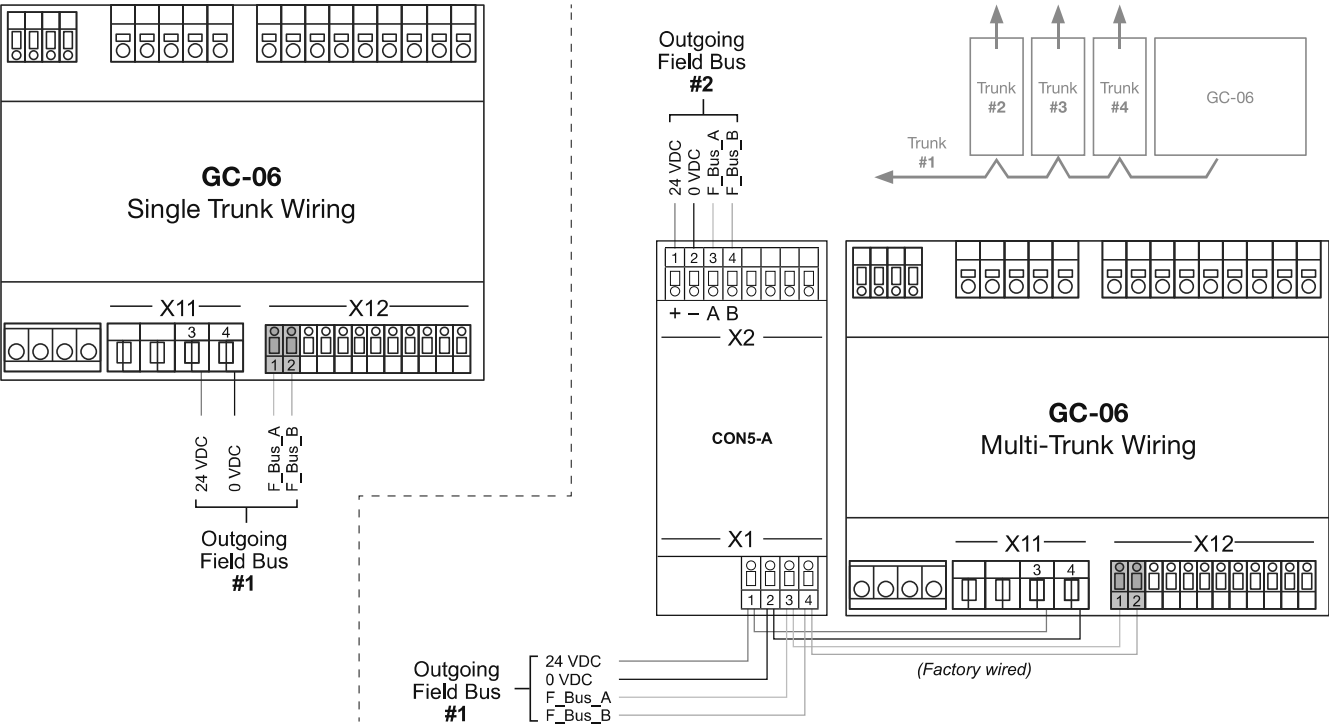


WIRING CONFIGURATION

GC-06



FIELD BUS CONNECTIONS



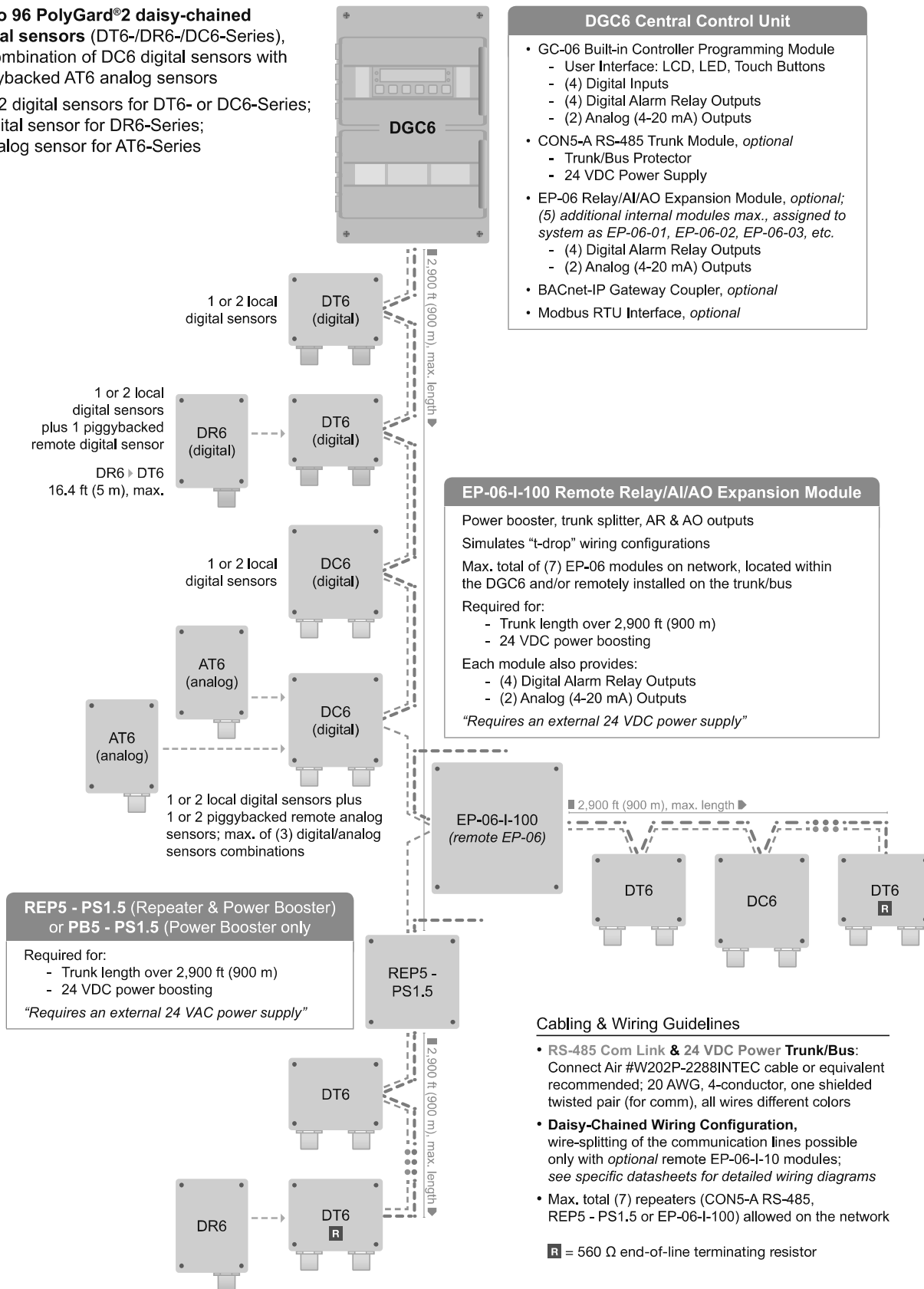
PolyGard®2 DGC6 Multi-Point RS-485 Digital Gas Detection and Control System Network Overview

Up to 96 PolyGard®2 daisy-chained digital sensors (DT6-/DR6-/DC6-Series), or combination of DC6 digital sensors with piggybacked AT6 analog sensors

1 or 2 digital sensors for DT6- or DC6-Series;

1 digital sensor for DR6-Series;

1 analog sensor for AT6-Series



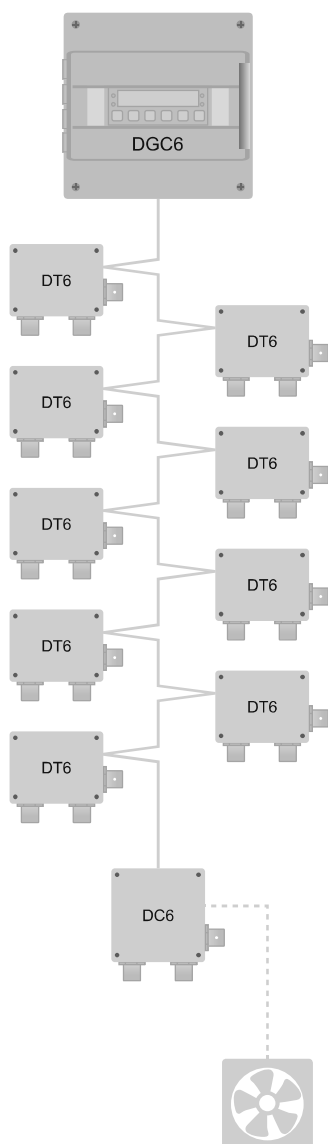
TYPICAL SYSTEM CONFIGURATIONS

**One Floor
Single Ventilation Zone**

- CO and NO₂
- ~50,000 sqft / 200 parking spaces

Part Numbers

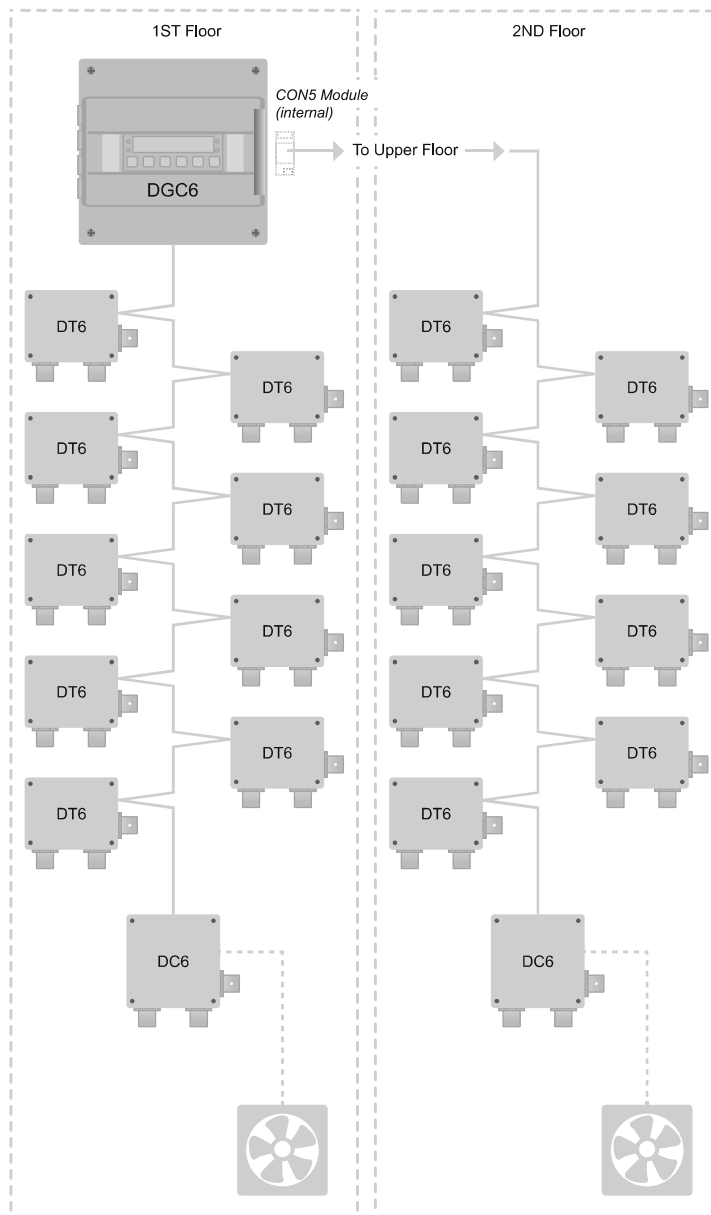
- (1) DGC6-A-00-0000US
– Digital Gas Controller
- (9) DT6-E1110-E-E1130-B-32
– CO/NO₂ Combo w/Horn+LED option
- (1) DC6-E1110-E-E1130-B-43
– CO/NO₂ Combo w/Horn+LED option


**Two Floors
Two Ventilation Zones**

- CO and NO₂
- ~100,000 sqft / 400 parking spaces

Part Numbers

- (1) DGC6-A-00-1000US
– Digital Gas Controller + (1) CON5 Module
- (18) DT6-E1110-E-E1130-B-32
– CO/NO₂ Combo w/Horn+LED option
- (2) DC6-E1110-E-E1130-B-43
– CO/NO₂ Combo w/Horn+LED option

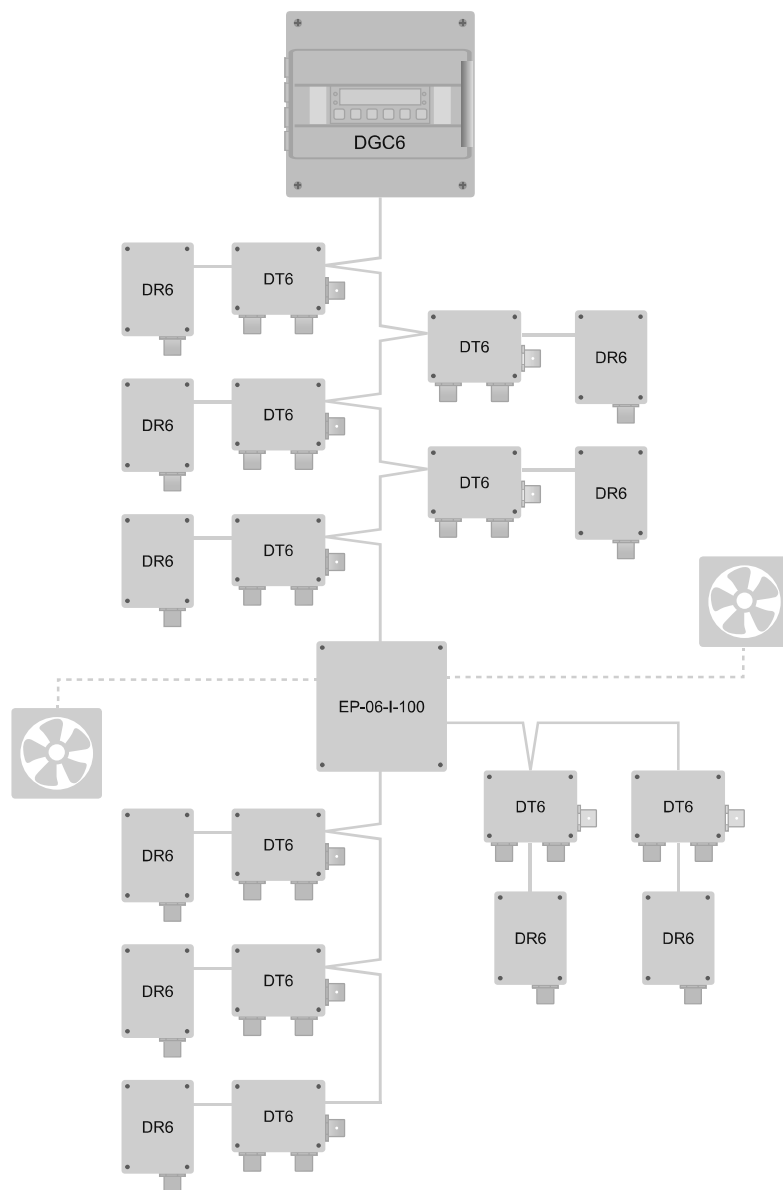


TYPICAL SYSTEM CONFIGURATIONS (CONT...)**Package Sorting Facility
One Ventilation Zone**

- CO and NO₂ and Methane
- ~XXXX sqft / XXXX parking spaces

Part Numbers

- | | | |
|------|------------------------|--|
| (1) | DGC6-A-00-0000US | - Digital Gas Controller |
| (10) | DT6-E1110-E-E1130-B-32 | - CO/NO ₂ Combo w/Horn+LED option |
| (10) | DR6-P3400-A | - Methane |
| (1) | EP-06-I-100 | - Remote Relay/AI/AO Expansion Module |



ORDERING INFORMATION

DGC6 - X - XX - XXXX US

Communication Gateway Options		
		SU Req.
00*	No Option	0
B1	BACnet-IP	1
B2	(See Table for Max I/O)	1
M0	Modbus-RTU (Internal)	0

* Standard

Data Logging Option		
		SU Req.
0*	No Option	0
L	Data Logging	0

* Standard

RS-485 Serial Port/Trunk Connections		
		SU Req.
0*	Built-in (1) Trunk Module	0
1-7	CON5 Modules (More Trunks)	1 per

* Standard, no additional module

EP-06 Relay/AO Expansion Modules			
	Alarm Relays	Analog Outputs	SU Req.**
0*	04	02	0
1	08	04	3
2	12	06	6
3	16	08	9
4	20	10	12
5	24	12	15

Each EP-06 Expansion Module provides (4) Alarm Relays and (2) Analog Outputs; (5) local modules within DGC6 possible

* Standard, no additional module

** Expansion module requires "3" Space Units per addition; observe max. space in Enclosure Type

Enclosure Options	
0*	No Option
1	Keylock with 2 Keys (Encl-A)
2	Keylock with 2 Keys (Encl-B)
3	Keylock with 2 Keys (Encl-C)

* Standard

Enclosure Type			
			Space Unit (SU) Available, Max.
A*	1 DIN Rail / 1 Window	(Encl-A) "Small"	3
B	2 DIN Rails / 2 Windows	(Encl-B) "Medium"	9
C	3 DIN Rails / 3 Windows	(Encl-C) "Large"	15

* Standard

BACnet-IP Options		
	B1	B2
Digital Gas Sensors	96	75
Analog Inputs	32	0
Signal Relays	0	75
Alarm Relays	32	32
Analog Outputs	16	16
Failure Relay	1	1

Ordering Guide Steps

1) **EP-06 Relay/AO Expansion Modules and Trunks.** Determine the number of Alarm Relays and Analog Outputs and choose the appropriate (additional) EP-06 Expansion Modules and Trunks. Note the Space Units (SU) required.

2) **Communication Gateway and other options.** Include a Communication Gateway if needed; a BACnet gateway occupies "1" Space Unit, while a Modbus gateway will be integrated with the main controller module and requires "0" Space Unit. Data Logger requires "0" Space Unit.

3) **Enclosure Type.** Sum the Space Units from Step 1 and Step 2, and choose an adequate enclosure.

Example 1 ordering part number:**DGC6-A-00-0000 US**

Configuration includes:

Housing: • Encl-A "Small",
11.0 x 12.0 x 5.7 in.# of EP-06: • (0) Standard,
(4) Alarm Relays, max.,
(2) Analog Outputs, max.Example 2 ordering part number:**DGC6-A-10-2LB1 US**

Configuration includes:

Housing: • Encl-A "Small",
11.0 x 12.0 x 5.7 in.

Security: • Lockable housing

of EP-06: • (0) Standard,
(4) Alarm Relays, max.,
(2) Analog Outputs, max.

Trunks: • (2) CON5 Modules; 3 Total Trunks

D/L: • Data Logging

Gateway: • BACnet-IP, B1



DESCRIPTION

Expansion module provides additional relays and analog inputs/outputs in a DGC6 digital gas detection and control system. Also provides one-input, two-output splitting of the RS-485 communications bus.

May be mounted in the DGC6 chassis or remotely anywhere on the RS-485 bus.

Up to a combination of seven EP-06 modules may be connected to one DGC6, locally within the controller (five max.) or along the network.

APPLICATION

For on/off and variable speed fan control, each EP-06 module provides four SPDT dry contacts rated at 250 VAC / 5 A and two 4-20 mA analog outputs. The relays and analog outputs are controlled according to the system configuration parameters that have been programmed in the DGC6 Digital Gas Controller.

The EP-06 Expansion Module is also used to create additional RS-485 communication bus segments.

FEATURES

- *Four (4) SPDT, dry contact, alarm relays; max. 250 VAC, 5 A*
- *Two (2) 4-20 mA analog outputs*
- *Four (4) 4-20 mA analog inputs, for analog sensors*
- *Second RS-485 field bus output for trunk splitting applications*
- *Reverse polarity and overload protection*
- *High-impact NEMA 4X (IP65) enclosure, optional*

SPECIFICATIONS

Electrical

Power supply	24 VDC $\pm$ 20%
Power consumption	3 W, 120 mA
Analog output	(2) Proportional, overload and short-circuit- protected, ext. load resistance $\leq$ 500 Ω
- configurable for each input	4-20 mA = measuring range; 3.0 < 4 mA = under range; > 20-21.2 mA = over range; 2.0 mA = fault
Analog input	(4) inputs; 4 to 20 mA, overload and short-circuit protected, input resistance 200 Ω
- supplied voltage	24 VDC, max. 100 mA / per sensor
Alarm relay	(4) SPDT, dry contact; max. 250 VAC, 5 A



**PolyGuard®2
EP-06**

ISO9001
CERTIFIED



- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- EN 50545-1
- EN 50271
- EN 61010-1:2010
- ANSI/UL 61010-1
- CAN/CSA-C22.2 No. 61010-1

Interface Field Bus

Transceiver RS-485 / 19200 Baud

Environmental

Permissible ambient	
- working temperature	14°F to 104°F (-10°C to 40°C)
- storage temperature	32°F to 104°F (0°C to 40°C)
- humidity	15 to 95% RH, non-condensing

Physical

EP-06-X-100 (Module)

- material	Plastic housing ABS
- color	Light gray, RAL 7035
- protection	NEMA 1 (IP40)
- installation	Top hat DIN rail mounting, installation in distribution box

EP-06-I-100 (w/Enclosure)

- material	Polycarbonate, UL 94-HB, fire-retardant
- conforms to	UL 50 standards
- color	Light gray

SPECIFICATIONS

Physical (cont...)

- protection NEMA 4X (IP65)
- installation Wall (surface) mounted
- cable entry, knock out 3 holes for 1/2 in. conduit, closed w/screwed "plug"

Wire connection & size

- power supply Screw type terminal:
14 AWG (2.5 mm²)
- output 2 x spring type terminal:
Min. 20 AWG (0.5 mm²),
Max. 16 AWG (1.5 mm²)
- input Spring type:
Min. 20 AWG (0.5 mm²),
Max. 16 AWG (1.5 mm²)

Dimensions (H x W x D)

- EP-06-X-100, module 4.3 x 4.2 x 2.4 in.
(107 x 110 x 62 mm)
- EP-06-I-100, w/enclosure 7.09 x 7.17 x 3.54 in.
(180 x 182 x 90 mm)

Weight

- EP-06-X-100, module 0.5 lb (0.2 kg)
- EP-06-I-100, w/enclosure 3.3 lb (1.5 kg)

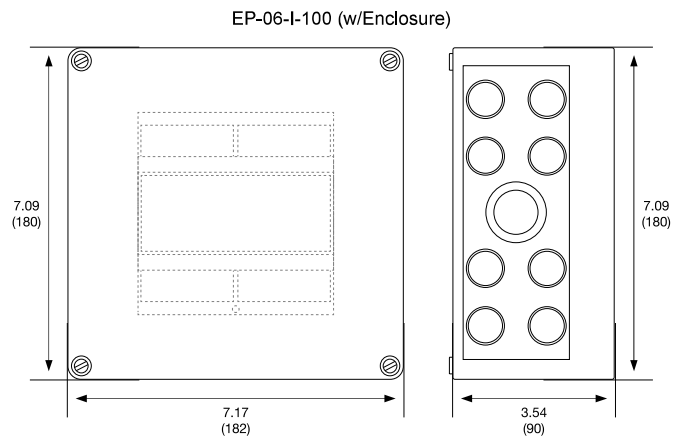
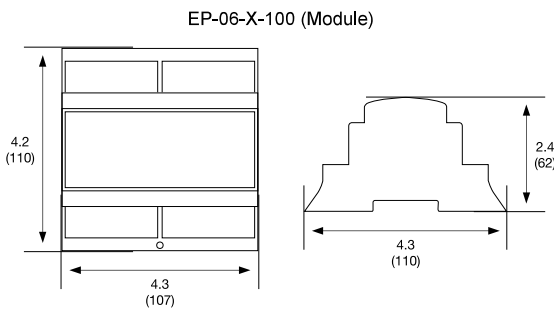
Conforms to

EMC Directive 2014/30/EU
 Low Voltage Directive 2014/35/EU
 EN 50545-1
 EN 50271
 EN 61010-1:2010
 ANSI/UL 61010-1
 CAN/CSA-C22.2 No. 61010-1
 Two years material and workmanship

Warranty

DIMENSIONS

inches (mm)



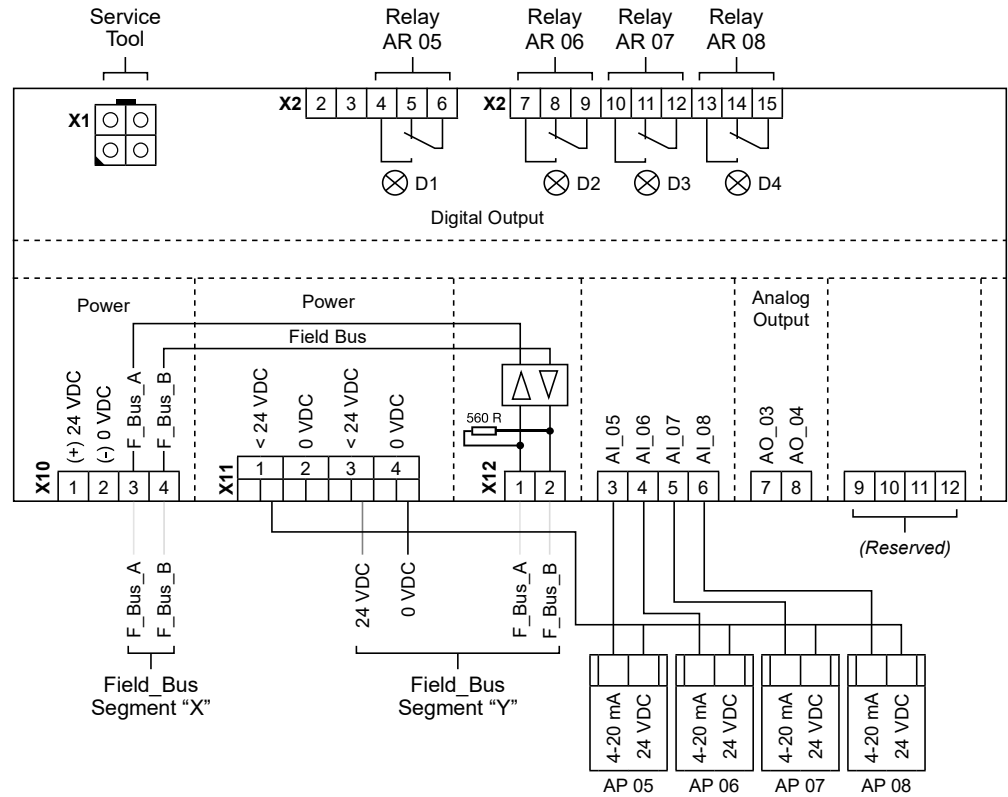
ADDRESS TABLE ASSIGNMENTS

Address Table EP-06 Modules

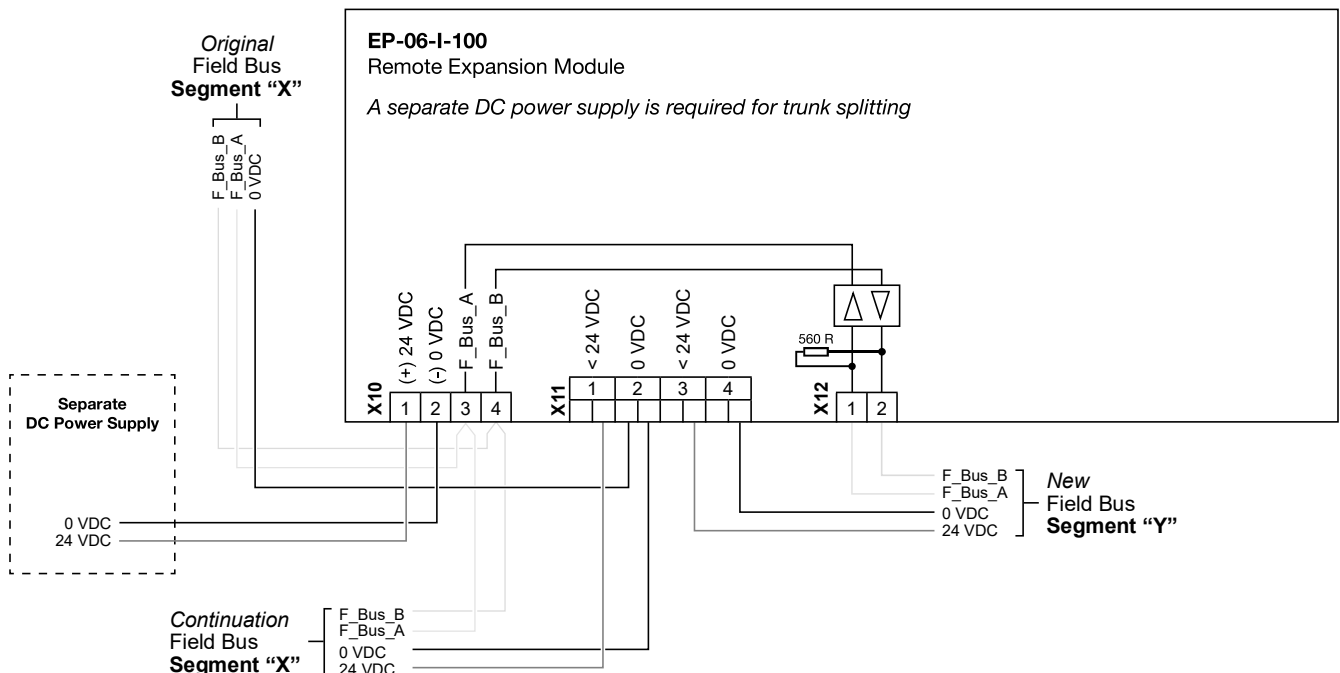
EP Number	EP Address	AP Address	Relay Number	Analog Output Number
01	01	05-08	05-08	03-04
02	02	09-12	09-12	05-06
03	03	13-16	13-16	07-08
04	04	17-20	17-20	09-10
05	05	21-24	21-24	11-12
06	06	25-28	25-28	13-14
07	07	29-32	29-32	15-16

WIRING CONFIGURATION

EP-06 Expansion Module



FIELD BUS CONNECTIONS



ORDERING INFORMATION**EP-06 - X - 100**

Enclosure Option	
X*	Module for Internal Mounting in DGC6 Chassis; <i>up to (5) local modules max., limited by chassis type</i>
I	Module Mounted in NEMA 4X Enclosure (Type "I")

*Each EP-06 Expansion Module provides (4) Alarm Relays,
(2) Analog Outputs and (4) Analog Inputs*

* Standard

Example, ordering part number:

EP-06-X-100

Configuration includes:

Housing: • No enclosure, for internal
mounting in DGC6 chassis

W202P-2288INTEC

CONNECT^{AIR}

CABLE & TECHNOLOGY SOLUTIONS

Product Data Sheet P/N W202P-2288INTEC

MADE IN USA

**20AWG 2 PAIR STRANDED BC 1PAIR SHIELDED WITH 1PAIR 20AWG UNSHIELDED NATURAL JACKET
UL TYPE CL3P/CMP**

ELEMENT 1:

CONDUCTOR:	20 AWG 7 STRAND BARE COPPER
INSULATION:	PLENUM RATED PVC
CABLE:	2 CONDUCTORS TWISTED
COLOR CODE:	BLUE, GREEN
SHIELD:	ALUMINIUM/MYLAR TAPE – 100% COVERAGE WITH 24 AWG STRANDED TINNED COPPER DRAIN WIRE
ELECTRICALS:	
IMPEDANCE:	36 OHMS +/- 10%
CAPACITANCE:	52 Pf/FT +/- 10%
DC RESISTANCE:	10.4 OHMS/MFT @20C

ELEMENT 2:

CONDUCTOR:	20 AWG 7 STRAND BARE COPPER
INSULATION:	PLENUM RATED PVC
CABLE:	2 CONDUCTORS TWISTED
COLOR CODE:	BLACK, RED
ELECTRICALS:	
IMPEDANCE:	63 OHMS +/- 10%
CAPACITANCE:	30 Pf/FT +/- 10%
DC RESISTANCE:	10.4 OHMS/MFT @20C

OVERALL ASSEMBLY:

CABLE:	2 PAIRS TWISTED WITH 3.00" LHL (4.00 TW/FT)	
JACKET:	PLENUM RATED PVC	
	NATURAL	OVERALL O.D.: .157" nom.
		WEIGHT: 23 LBS/M
JACKET PRINT:	INTEC CONTROLS (UL FILE#) 20 AWG 2 PR 75C (UL) CL3P OR FPLP OR C(UL)US CMP FT-6 "ROHS COMPLIANT" MADE IN USA (SEQUENTIAL FOOTAGE MARKERS)	

STANDARDS

CABLE SUITABLE FOR INSTALLATION UNDER NEC (NFPA 70) ARTICLES 800, 725 AN 760 GUIDELINES
CABLE SUITABLE FOR INSTALLATION IN CANADA UNDER SECTIONS 60 OF CEC, PART 1
C(UL)US LISTED AS CMP PER UL STANDARD 444 AND PER CSA C22.2 NO 214-17
UL LISTED AS CL3P PER UL STANDARD 13 AND FPLP PER UL STANDARD 1424
CABLE IS ROHS III COMPLIANT PER DIRECTIVE 2015/863/EU
OPERATING VOLTAGE: 300V RMS

Created 4/18/18 kz
Revised 8/30/2021 ju

DESCRIPTION

Digital RS-485 communicating, addressable toxic and combustible gas sensor for direct connection to the DGC6-Series Digital Gas Controller.

Compliant with Safety Integrity Level 2 (SIL 2) and rigorous international standard EN 50545-1 for parking garages and tunnels, DT6-Series sensors utilize advanced self-diagnostics and flexible ventilation control functions to ensure maximum human safety without compromising energy efficiency.

Each DT6 may be configured with one or two integrated SC2 sensor modules with X-Change sensor technology. An additional DR6 remote sensor module may “piggyback” onto the DT6 providing the capability to monitor up to three gases at one location.

Advanced, microprocessor-based X-Change sensor modules meet or exceed the EN 50545-1 self-diagnostic standards including notifying the controller when calibration is due. Although field calibration is possible, X-Change technology allows fast and cost-effective sensor module swaps minimizing field service time, eliminating system downtime and ensuring peak system performance for many years.

APPLICATION

DT6 transmitters in combination with DGC6 Digital Gas Controllers provide scalable solutions for monitoring and controlling toxic and/or combustible gas levels. DT6-CO (single gas) and DT6-CO-NO2 (dual gas) transmitters are economical electrochemical sensors ideally suited to parking garage, vehicle maintenance shops, package sorting and distribution facilities and tunnel applications. Methane monitoring is an economical addition with the DR6-COMB digital remote module.

PolyGard®2 DT6



- EMC Directive 2014/30/EU
- CE
- EN 50271
- EN 61010-1:2010
- ANSI/UL 61010-1
- CAN/CSA-C22.2 No. 61010-1
- City of Los Angeles Approved

FEATURES

- *Sensor node for 1, 2, or 3 gas sensor modules (3rd sensor with DR6 remote module)*
- *X-Change toxic and combustible gas sensor modules for reliable operation and easy maintenance*
- *RS-485 serial communications to DGC6-Series Digital Gas Controllers*
- *Digital measurement processing with temperature compensation*
- *Internal diagnostics including integrated hardware watchdog*
- *High-impact NEMA 4X (IP65) enclosure*
- *Hardware & software conforms to SIL 2 standard*

SPECIFICATIONS

Electrical

Power supply	16-29 VDC, polarity protected
Power consumption	24 VDC, 5 mA (0.2 VA)
- toxic gases & oxygen	1 mA (0.1 VA), max. per sensor
- infrared (CO ₂)	15 mA (0.4 VA), max. per sensor
- combustible gases	55 mA (1.4 VA), max. per sensor
- horn & status LED	5 mA (0.2 VA), max. per sensor
Output for local bus	5 VDC, 250 mA max. Overload, short-circuit and polarity protected

Output signal for serial communication	Digital, RS-485, proprietary DGC6 protocol, 19200 baud
---	--

Sensor Performance	<i>See SC2 datasheet for specific gases</i>
Sensor coverage	<i>See SC2 datasheet for specific gases</i>

Environmental

Permissible ambient	<i>See SC2 datasheet for specific gases</i>
---------------------	---

Serial interface

- local bus	plug connector / 19200 Baud
- field bus	RS-485 / 19200 Baud
- tool bus	2-wire / 19200 Baud

Physical

Enclosure "A", standard	
- material	Polycarbonate, UL 94-HB, fire retardant
- conforms to	UL 50
- color	Light gray
- protection	NEMA 4X (IP65)
- installation	Wall (surface) mounted, or single gang electrical box; mounted vertically for single gas sensor and horizontally for dual gas sensor

Dimensions (H x W x D)	
- base unit	5.12 x 3.70 x 2.25 in. (130 x 94 x 57 mm)
Cable entry, knock out	1 hole (long side) for 1/2 in. conduit, closed w/screwed "plug"

Wire connection	
- field bus	Screw-type removable terminal; 24 AWG (0.25 mm ²), min. 14 AWG (2.5 mm ²), max.
- local bus for SC	3-pin removable connector
Cable lengths local bus for Remote Sensor Board	16.4 ft (5 m), max.
Weight	0.7 lb (0.3 kg)

Conforms to

EMC Directive 2014/30/EU
CE
EN 50271
EN 61010-1:2010
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1
City of Los Angeles
One year material and
workmanship

Warranty

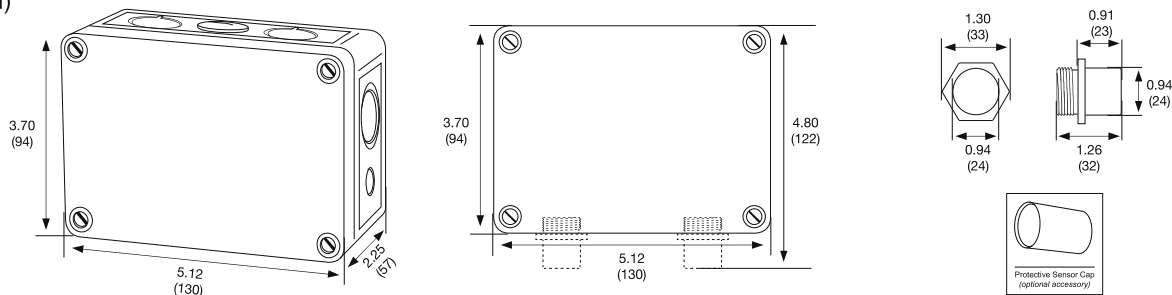
OPTIONS & ACCESSORIES

Horn & Status LED	Configurable to local thresholds set at this unit
- acoustic pressure	> 90 dB (A)
- frequency	2300 Hz
- protection class	NEMA 4X (IP65)
Status LED	
- color / mode	Red = Alarm
- protection class	NEMA 4X (IP65)
Protective Sensor Cap	XC-CAP
- protection	NEMA 4X (IP65)
- color	Red
Duct Mounting Kit	PG2-DUCTKIT
- flow rate	Min. 3.1 mph (5000 m/h), max. 12.4 mph (20,000 m/h)
- air duct diameter	Min. 3.94 in. (0.1 m), max. 39.37 in. (1.0 m)
- length of sampling tube	9.84 in. (250 mm), adaptable
- hose length	2 x 39.37 in. (1000 mm)



DIMENSIONS

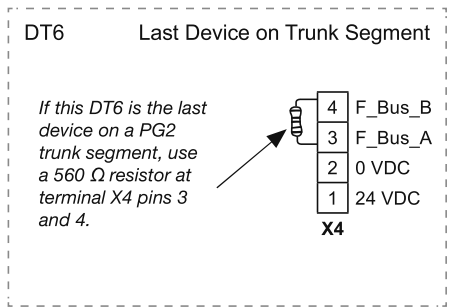
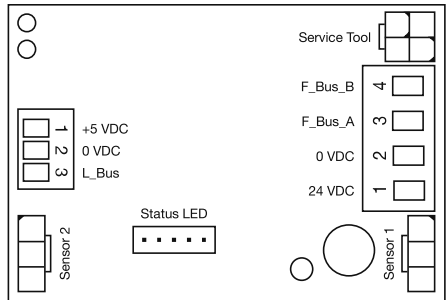
inches (mm)



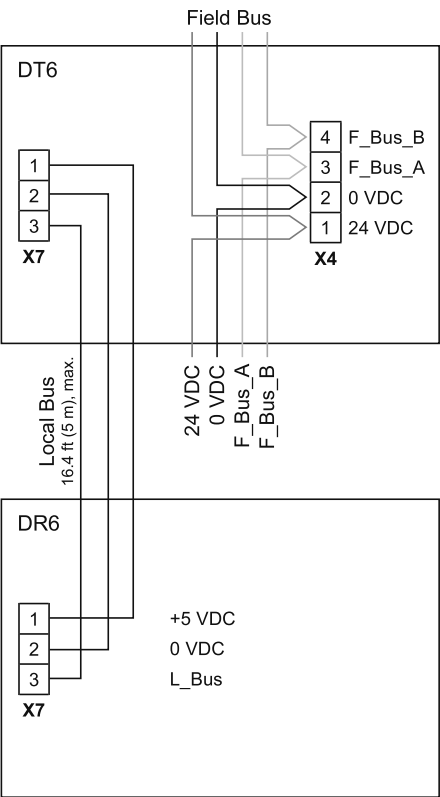
Mounting Recommendation		Vertical for single gas sensor
		Horizontal for dual gas sensor
		Horizontal for dual gas sensor with <i>optional</i> Horn & Status LED

WIRING CONFIGURATION

DT6 Sensor Board



DT6 with piggybacked DR6 remote transmitter



ORDERING INFORMATION

PART NUMBER DESCRIPTION

BUNDLED SENSORS AND CONTROLS

DT6-E1110-E-02 DT6, DGC6 Protocol,
(1) 0-250 ppm CO sensor

DT6-E1110-E-E1130-B-02 DT6, DGC6 Protocol,
(1) 0-250 ppm CO sensor,
(1) 0-20 ppm NO₂ sensor

DT6-E1110-E-E1130-B-32 DT6, DGC6 Protocol,
(1) 0-250 ppm CO sensor,
(1) 0-20 ppm NO₂ sensor,
Horn & Status LED

SENSOR PLATFORM

DT6-02 DT6, DGC6 Protocol,
up to (3) sensor inputs capable;
includes "A" enclosure;
sensor cartridges ordered
separately

□□□-3□ **OPTION:**
Horn & Status LED

SC2 Sensor Cartridges available separately.
See SC2 datasheet for specifications.

The DT6 accepts up to (2) SC2 Sensor Cartridges simultaneously.

In a 2-sensor configuration, both sensor modules (a) must have the same mounting height requirements and (b) sensor-1 and sensor-2 module cannot be identical part numbers.

A 3-sensor configuration is possible with a remote DR6. The DR6's chosen sensor module cannot be an identical part number to ones that already exists on the connected DT6 transmitter.

Gas Sensor & Range

#	TOXIC GASES AND OXYGEN			Mounting Height (ft)
E1110-E	Carbon Monoxide	CO	0-250 ppm	5-6
E1110-F	Carbon Monoxide	CO	0-300 ppm	5-6
E1130-A	Nitrogen Dioxide	NO ₂	0-10 ppm	5-6
E1130-B	Nitrogen Dioxide	NO ₂	0-20 ppm	5-6
E1130-C	Nitrogen Dioxide	NO ₂	0-30 ppm	5-6
E1130-D	Nitrogen Dioxide	NO ₂	0-500 ppm	5-6
E1129-C	Nitric Oxide	NO	0-100 ppm	5-6
E1129-D	Nitric Oxide	NO	0-1000 ppm	5-6
E1125-C	Ammonia	NH ₃	0-300 ppm	Ceiling
E1125-D	Ammonia	NH ₃	0-1000 ppm	Ceiling
E1193-C	Chlorine	Cl ₂	0-10 ppm	Floor
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Ceiling
E1189-C	Ethylene	C ₂ H ₄	0-200 ppm	5-6
E1185-B	Formaldehyde	CH ₂ O	0-10 ppm	Floor
E1190-A	Ozone	O ₃	0-5 ppm	Floor
E1196-B	Sulfur Dioxide	SO ₂	0-20 ppm	Floor
E1197-A	Hydrogen Sulfide	H ₂ S	0-50 ppm	Floor
E1195-A	Oxygen	O ₂	0-25 Vol%	5-6
#	INFRARED SENSORS			Mounting Height (ft)
I1164-A	Carbon Dioxide	CO ₂	0-2000 ppm	5-6
I1164-B	Carbon Dioxide	CO ₂	0-5 Vol%	5-6
I1164-C	Carbon Dioxide	CO ₂	0-2 Vol%	5-6
#	COMBUSTIBLE GASES			Mounting Height (ft)
P3485-A	Acetone	C ₃ H ₆ O	0-100% LEL	Floor
P3408-A	Ammonia	NH ₃	0-100% LEL	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	-
P3460-A	Butane	C ₄ H ₁₀	0-100% LEL	Floor
P3472-A	Cyclopentane	C ₅ H ₁₀	0-100% LEL	Floor
P3427-A	Ethyl Acetate	C ₄ H ₈ O ₂	0-100% LEL	Floor
P3425-A	Ethyl Alcohol	C ₂ H ₅ OH	0-100% LEL	Floor
P3410-A	Ethylene	C ₂ H ₄	0-100% LEL	Ceiling
P3491-A	Heptane	C ₇ H ₁₆	0-100% LEL	Floor
P3435-A	Hexane	C ₆ H ₁₄	0-100% LEL	Floor
P3476-A	Isopentane	C ₅ H ₁₂	0-100% LEL	Floor
P3482-A	Isopropyl Alcohol	C ₃ H ₈ O	0-100% LEL	Floor
P3498-A	JP8	-	0-100% LEL	-
P3402-A	LPG	-	0-100% LEL	-
P3400-A	Methane	CH ₄	0-100% LEL	Ceiling
P3450-A	Methanol	CH ₃ OH	0-100% LEL	Floor
P3458-A	Methyl Ethyl Ketone	C ₄ H ₈ O	0-100% LEL	Floor
P3475-A	Pentane	C ₅ H ₁₂	0-100% LEL	Floor
P3480-A	Propane	C ₃ H ₈	0-100% LEL	Floor
P3484-A	Propyl Alcohol	C ₃ H ₈ O	0-100% LEL	Floor
P3490-A	Toluene	C ₇ H ₈	0-100% LEL	Floor
P3440-A	Hydrogen	H ₂	0-100% LEL	Ceiling
#	ACCESSORIES			
XC-CAP	(1) Replacement protective sensor cap			
PG2-DUCTKIT	(1) Duct mounting kit for SC2 / AT6 sensor			



RS-485 Repeater/Power Booster Modules

Specifications subject to change without notice. | USA 130305 | Page 1 of 3



DESCRIPTION

Wall-mounted, digital RS-485 communicating signal repeater and VDC power booster for field bus arrangement of DGC5 digital controller.

APPLICATION

To extend the field trunk/bus cable length of the DGC5 system.

FEATURES

- RS-485 digital bus serial communication
- - 2,900 ft. trunk/bus extension for up to (30) transmitters and/or relay modules
- 24 VAC, 1.5 A power boosting
- Overload, over-voltage and reverse polarity protection
- NEMA 4X enclosure
- Maintenance-free

PolyGard
REP5/PB5-PS1.5



Module "CON5-B"
NRTL Tested & Certified
Conforms to STD **UL 2017**

SPECIFICATIONS

Power Booster

Power supply	24 VAC (22-28 VAC)
Power consumption	35 VA max.
Bus Supply	
- voltage	24 VDC
- current	1.5 A, max.

Repeater

Module "CON5-B"	RS-485 serial trunk/bus connections
Overload protection	Internally regulated

Environmental

Permissible ambient	
- working temperature	32°F to 158°F (0°C to 70°C)
- storage temperature	32°F to 122°F (0°C to 50°C)
- humidity	15-95% RH non-condensing

Physical

Enclosure (panel)	
- material	Polycarbonate, UL 94-HB, fire-retardant
- conformity	UL 50 standards
- color	Light gray
- protection	NEMA 4X (IP65)
- installation	Wall (surface) mounted, or single gang electrical box
Dimensions (H x W x D)	5.12 x 5.12 x 2.95 in. (130 x 130 x 75 mm)
Cable entry	3 holes for 1/2 in. conduit for wall (surface) mounting, covered. 1 hole on back side of base plate for single gang electrical box mounting
Wire connection	Terminal blocks, Push-on connect and screw type for lead wire

Wire size

- power supply input	Min. 16 AWG (1.5 mm ²) Max. 14 AWG (2.5 mm ²)
- trunk connection	Min. 20 AWG (0.5 mm ²) Max. 16 AWG (1.5 mm ²)
Weight	0.7 lbs (0.3 kg)

Approvals / Listings

- module "CON5-B"	NRTL Perf. Tested & Certified Conforms to STD ANSI/UL 2017 CE EMC-Compliance 89/336/EWG LVD 73/23/EWG UL Listed, E208470 CSA Certified E208470
- enclosure (panel)	
- unit rating	

REP5-PS1.5

PB5-PS1.5

Warranty

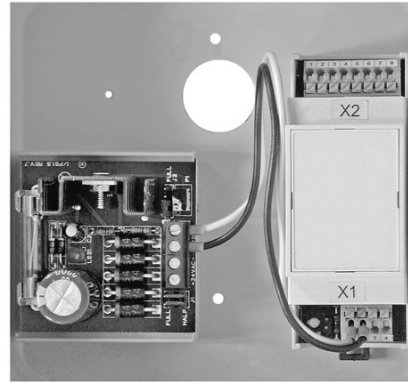
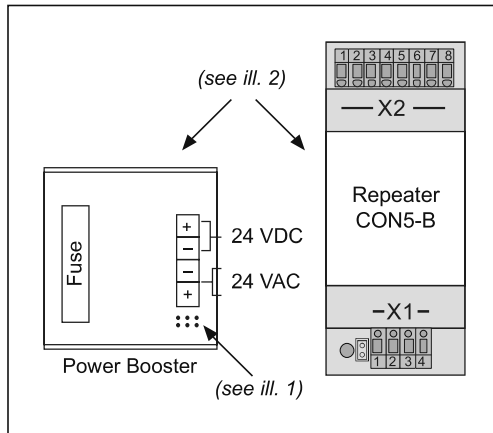
NRTL Perf. Tested & Certified
Conforms to STD ANSI/UL 2017
Certification to STD
ANSI/UL 61010-1
Two years material and workmanship

ORDERING INFORMATION

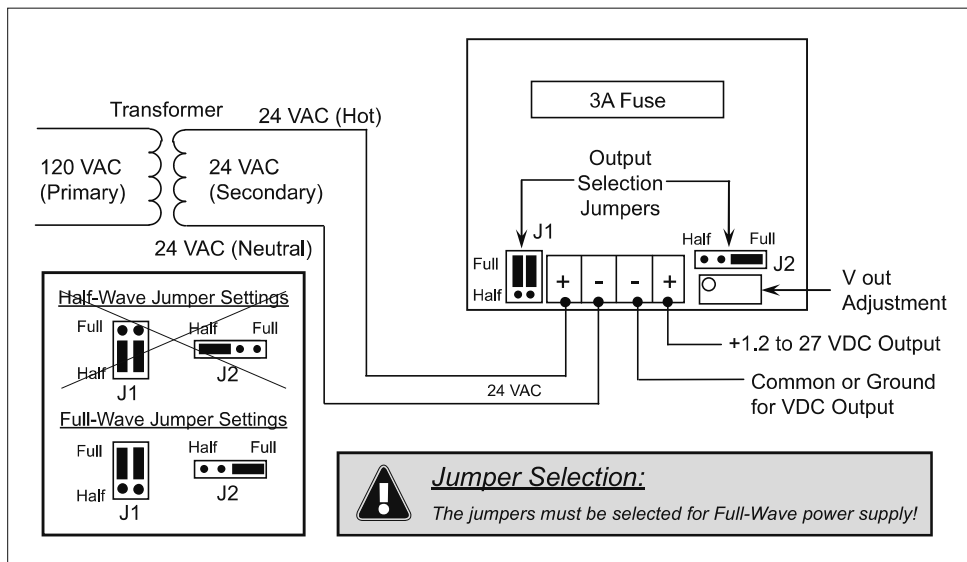
REP5-PS1.5	RS-485 communicating repeater and 24 VDC, 1.5 A power booster, NEMA 4X enclosure
PB5-PS1.5	24 VDC, 1.5 A power booster, NEMA 4X enclosure

FIELD WIRING CONFIGURATION

REP5-PS1.5, Repeater & Power Booster

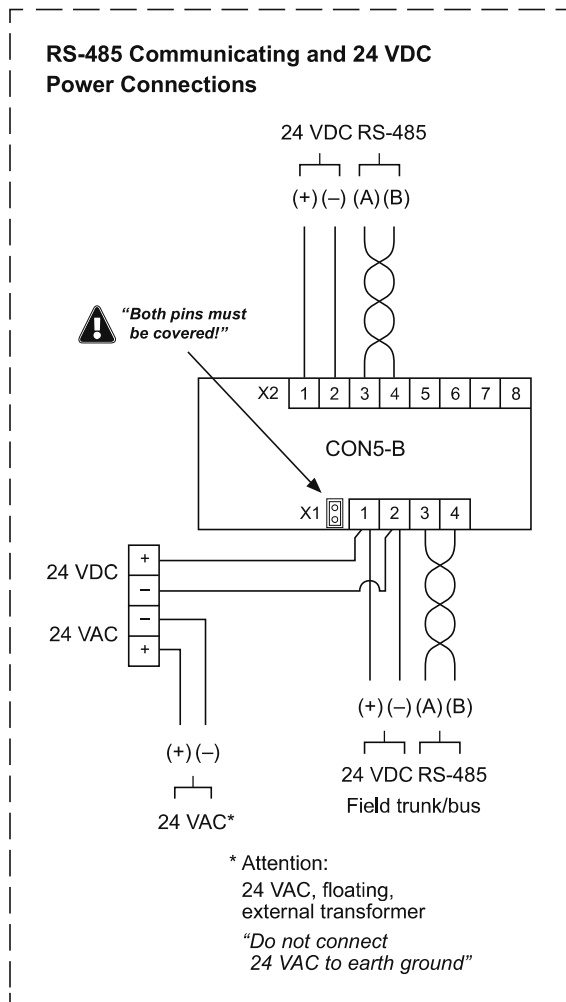


PB5-PS1.5, Power Booster

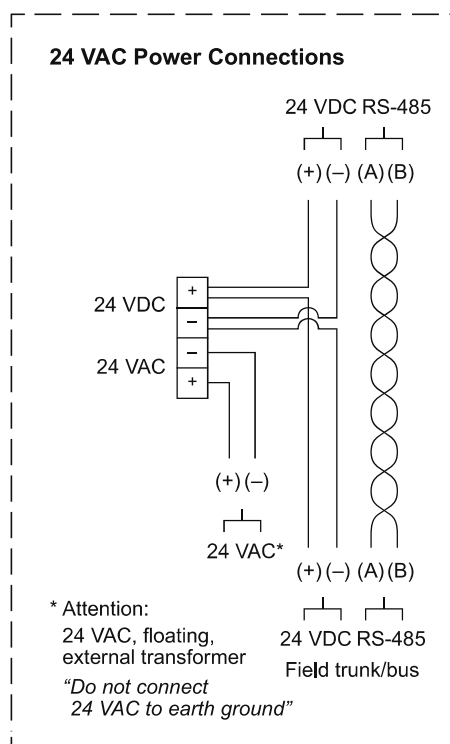


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FIELD WIRING CONFIGURATION (CONT...)



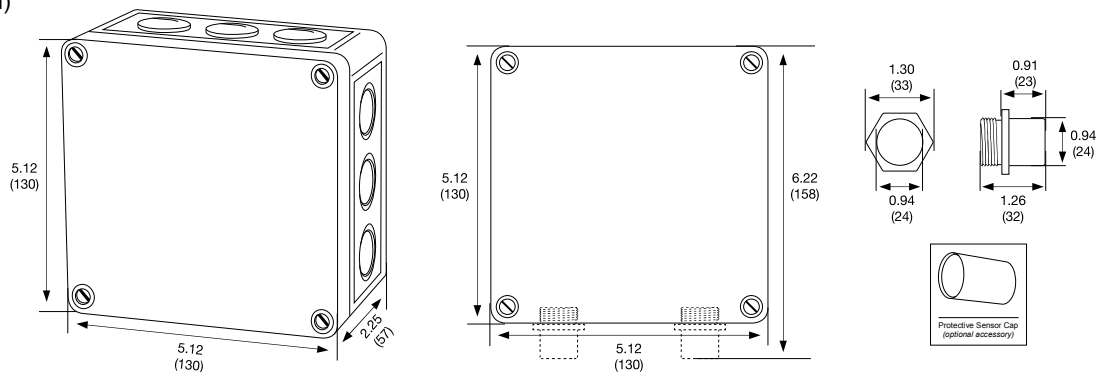
ill. 2



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DIMENSIONS

inches (mm)



Short Description of the Function: Digital Outputs With Three Relays

Action	Reaction Relay 1 (Alarm 1)	Reaction Relay 2 (Alarm 2)	Reaction Strobe Light (Alarm 2)	Reaction Horn (Alarm 2)	Reaction Relay 3 (Alarm 2 + fault)	Reaction LED
Gas signal < alarm threshold 1	OFF	OFF	OFF	OFF	ON	GREEN
Gas signal > alarm threshold 1	ON	OFF	OFF	OFF	OFF	RED
Gas signal > alarm threshold 2	ON	ON	ON	ON	ON	RED
Gas signal ≥ alarm threshold 2, but button Horn OFF activated	OFF		ON	OFF after delay ON		RED
Gas signal < (alarm threshold 2 - hysteresis) but ≥ alarm threshold 1	ON	OFF	OFF	OFF	OFF	RED
No alarm, no fault	OFF	OFF	OFF	OFF	ON	GREEN
No fault, but service due	OFF	OFF	OFF	OFF	ON	GREEN (flashing)
Internal error	OFF	OFF	ON	OFF	OFF	YELLOW

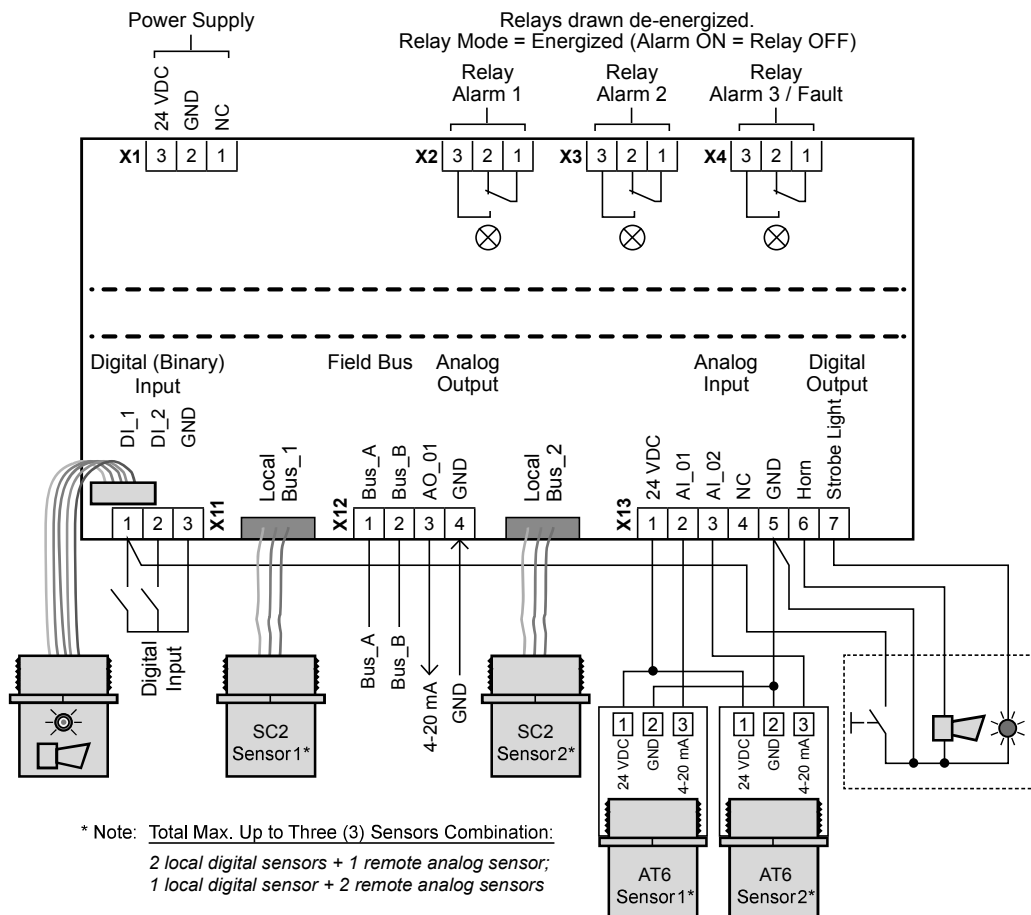
Note 1: Status OFF = Relay is configured “Alarm ON = Relay” or in the event of a power failure.

Note 2: Alarm thresholds can have the same value, therefore the relays and/or the horn and strobe can be triggered together.



WIRING CONFIGURATION

DC6 Sensor Board



ORDERING INFORMATION

DC6 - XXXXX-X - XXXXX-X - 03

 Sensor 1 Sensor 2*
 (optional)

 * Sensor 2 must have same mounting height as Sensor 1;
 Sensor 2 and Sensor 1 cannot be identical type and range.

Gas Sensor & Range				
TOXIC GASES AND OXYGEN				Mounting Height (ft)
E1110-E	Carbon Monoxide	CO	0-250 ppm	5-6
E1110-F	Carbon Monoxide	CO	0-300 ppm	5-6
E1130-A	Nitrogen Dioxide	NO ₂	0-10 ppm	5-6
E1130-B	Nitrogen Dioxide	NO ₂	0-20 ppm	5-6
E1130-C	Nitrogen Dioxide	NO ₂	0-30 ppm	5-6
E1130-D	Nitrogen Dioxide	NO ₂	0-500 ppm	5-6
E1129-C	Nitric Oxide	NO	0-100 ppm	5-6
E1129-D	Nitric Oxide	NO	0-1000 ppm	5-6
E1125-C	Ammonia	NH ₃	0-300 ppm	Ceiling
E1125-D	Ammonia	NH ₃	0-1000 ppm	Ceiling
E1193-C	Chlorine	Cl ₂	0-10 ppm	Floor
E1181-A	Chlorine Dioxide	ClO ₂	0-1 ppm	Floor
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Ceiling
E1189-C	Ethylene	C ₂ H ₄	0-200 ppm	5-6
E1198-A	Fluorine	F ₂	0-1 ppm	Floor
E1185-B	Formaldehyde	CH ₂ O	0-10 ppm	Floor
E1190-A	Ozone	O ₃	0-5 ppm	Floor
E1187-A	Phosphine	PH ₃	0-5 ppm	Floor
E1196-B	Sulfur Dioxide	SO ₂	0-20 ppm	Floor
E1197-A	Hydrogen Sulfide	H ₂ S	0-50 ppm	Floor
E1188-A	Silane	SiH ₄	0-50 ppm	Floor
E1195-A	Oxygen	O ₂	0-25 Vol%	5-6
COMBUSTIBLE GASES				Mounting Height (ft)
P3485-A	Acetone	C ₃ H ₆ O	0-100% LEL	Floor
P3405-A	Acetylene	C ₂ H ₂	0-100% LEL	Ceiling
P3408-A	Ammonia	NH ₃	0-100% LEL	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	-
P3460-A	Butane	C ₄ H ₁₀	0-100% LEL	Floor
P3472-A	Cyclopentane	C ₅ H ₁₀	0-100% LEL	Floor
P3427-A	Ethyl Acetate	C ₄ H ₈ O ₂	0-100% LEL	Floor
P3425-A	Ethyl Alcohol	C ₂ H ₅ OH	0-100% LEL	Floor
P3410-A	Ethylene	C ₂ H ₄	0-100% LEL	Ceiling
P3491-A	Heptane	C ₇ H ₁₆	0-100% LEL	Floor
P3435-A	Hexane	C ₆ H ₁₄	0-100% LEL	Floor
P3476-A	Isopentane	C ₅ H ₁₂	0-100% LEL	Floor
P3482-A	Isopropyl Alcohol	C ₃ H ₈ O	0-100% LEL	Floor
P3498-A	JP8	-	0-100% LEL	-
P3402-A	LPG	-	0-100% LEL	-
P3400-A	Methane	CH ₄	0-100% LEL	Ceiling
P3450-A	Methanol	CH ₃ OH	0-100% LEL	Floor
P3458-A	Methyl Ethyl Ketone	C ₄ H ₈ O	0-100% LEL	Floor
P3475-A	Pentane	C ₅ H ₁₂	0-100% LEL	Floor
P3480-A	Propane	C ₃ H ₈	0-100% LEL	Floor
P3484-A	Propyl Alcohol	C ₃ H ₈ O	0-100% LEL	Floor
P3490-A	Toluene	C ₇ H ₈	0-100% LEL	Floor
P3440-A	Hydrogen	H ₂	0-100% LEL	Ceiling

Options

OUTPUT SIGNAL – ANALOG / BUS	
3*	Analog Output & RS-485 with DGC6 Protocol
5	Analog Output & RS-485 with Modbus Protocol
VISUAL/ AUDIBLE ALARM	
0*	No Option
4	Horn & Status LED

* Standard

Example 1 ordering part number:

DC6-E1110-E-03

Configuration includes:

- Housing: • Type "C" enclosure, 5.12 x 5.12 x 2.95 in
- Sensor: • Carbon Monoxide, 0-250 ppm
- Comms: • RS-485 with DGC6 Protocol

Example 2 ordering part number:

DC6-E1110-E-E1130-B-45

Configuration includes:

- Housing: • Type "C" enclosure, 5.12 x 5.12 x 2.95 in
- Sensor 1: • Carbon Monoxide, 0-250 ppm
- Sensor 2: • Nitrogen Dioxide, 0-20 ppm
- Comms: • RS-485 with Modbus Protocol
- Features: • Horn & Status LED

Accessories

PROTECTIVE CAP FOR SENSOR	
XC-CAP	(1) Sensor cap



DESCRIPTION

The sensor cartridge SC2 includes a high performance sensing element (electrochemical for toxic gases and pellistor type for combustible gases), and an amplifier as well as a microprocessor. All important data and measured values of the sensor element are stored fail-safe in the module and transmitted digitally via the local bus to the transmitter or controller. The calibration management is also integrated in the microprocessor of the sensor cartridge.

Calibration is done either by simply swapping the sensor cartridge or by using the user friendly, integrated calibration routine directly at the system.

APPLICATION

The PolyGard®2 X-Change Sensor Cartridge is used for the detection of toxic gases, oxygen and combustible gases.

FEATURES

- *Digital measurement value processing including temperature compensation*
- *Internal diagnostics including integrated hardware watchdog*
- *Data / measured values in Sensor Cartridge, therefore simple exchange of SC uncalibrated <> calibrated*
- *High accuracy, selectivity and reliability*
- *Low zero point drift*
- *Sensor with long life expectancy*
- *Hardware & software according to SIL 2 compliant development process*
- *Modular technology (plug-in and replaceable)*
- *X-Change, easy maintenance and calibration by exchange of the sensor cartridge or by user friendly on-site calibration*
- *Reverse polarity protected, overload and short-circuit proof*

PolyGard®2 SC2



- EMC Directive 2014/30/EU
- CE
- EN 50271
- EN 61010-1:2010
- ANSI/UL 61010-1
- CAN/CSA-C22.2 No. 61010-1
- EN 50104 (for O₂)
- City of Los Angeles Approved

SPECIFICATIONS

Electrical

Power consumption

- toxic gases & oxygen 1 mA (0.1 VA), max. per sensor
- infrared (CO₂) 15 mA (0.4 VA), max. per sensor
- combustible gases 55 mA (1.4 VA), max. per sensor

Sensor Performance

See *Sensor Performance Table*;
see also *Ordering Information*

Sensor element

- toxic gases & oxygen Electrochemical
- infrared (CO₂) Infrared (NDIR)
- combustible gases Pellistor (catalytic bead sensor)

Pressure range Atmospheric $\pm 20\%$

Storage temperature 41°F to 86°F (5°C to 30°C)

Sensor coverage See *Ordering Information*;
max. sq ft, affected by static
and dynamic variables

Physical

- material M25, Polycarbonate
- conforms to UL94 V-2, fire retardant
- color Light gray
- protection NEMA 4X (IP65)
- installation Screw mounting
- Dimensions (D x H) 0.94 x 0.87 in (24 x 22 mm)
- Connection type 3-pin connector
- Weight 0.07 lb (30 g)

Conforms to

EMC Directive 2014/30/EU
CE
EN 50271
EN 61010-1:2010
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1
EN 50104 (for O₂)
City of Los Angeles
One year material and
workmanship

Warranty

ACCESSORIES

Protective Sensor Cap

- protection
- color

XC-CAP

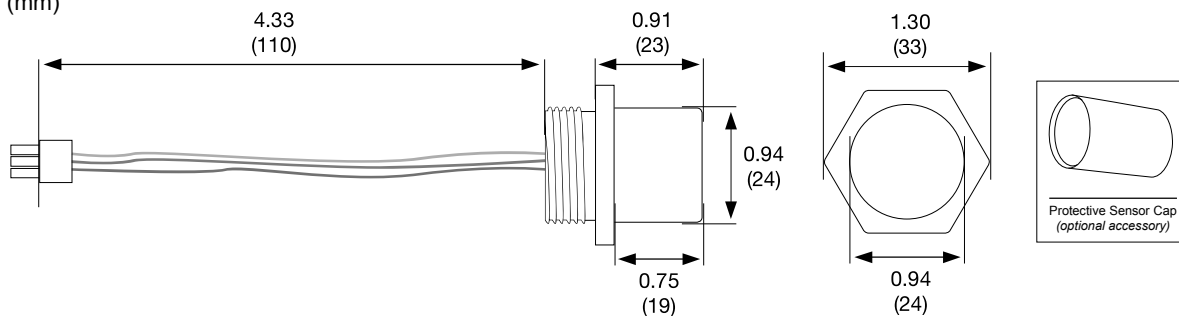
NEMA 4X (IP65)
Red

Duct Mounting Kit

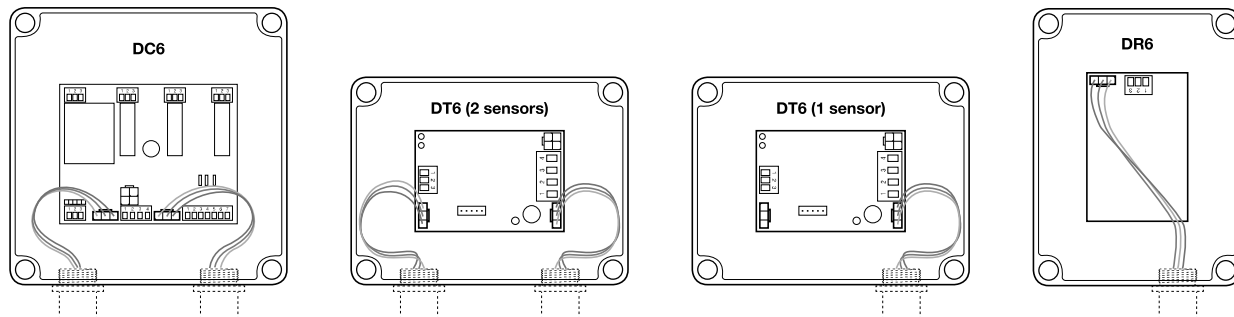
- flow rate **PG2-DUCTKIT**
Min. 3.1 mph (5000 m/h),
max. 12.4 mph (20,000 m/h)
- air duct diameter Min. 3.94 in. (0.1 m),
max. 39.37 in. (1.0 m)
- length of sampling tube 9.84 in. (250 mm), adaptable
- hose length 2 x 39.37 in. (1000 mm)

DIMENSIONS

inches (mm)



WIRING CONFIGURATION



SENSOR PERFORMANCE TABLE

Part Number	Molecular Formula	Measuring Range	Accuracy	Resolution	Repeatability	Response Time	Zero Point Variation	Long Term Drift		Working Temperature	Humidity Range (non-condensing)	Sensor Life Expectancy ¹ , Normal Conditions	Relative Gas Density	Mounting Height	Calibration Interval ¹
								Zero	Gain						
TOXIC GASES AND OXYGEN															
		ppm	± ppm	ppm	< ± % sig.	t90 < sec.	± ppm	< % signal/ mo.		°F	% RH	> mo.	Air = 1	(ft)	mo.
E1110-E	CO	0-250	3	0.5	5	50	4	0.4	0.4	5/122	10-95	72	0.97	5-6	12
E1110-F	CO	0-300	3	0.5	5	50	4	0.4	0.4	5/122	10-95	72	0.97	5-6	12
E1130-A	NO ₂	0-10	0.5	0.1	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1130-B	NO ₂	0-20	0.5	0.1	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1130-C	NO ₂	0-30	0.5	0.1	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1130-D	NO ₂	0-500	20	2	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1129-C	NO	0-100	0.15	0.1	2	45	0.5	1	2	14/122	15-90	36	1.04	5-6	12
E1129-D	NO	0-1000	20	2	2	45	24	1	2	14/122	15-90	36	1.04	5-6	12
E1125-C	NH ₃	0-300	30	2	10	120	50	1	2	14/122	15-90	24	0.59	Ceiling	12
E1125-D	NH ₃	0-1000	30	4	10	120	50	1	2	14/122	15-90	24	0.59	Ceiling	12
E1193-C	Cl ₂	0-10	0.1	0.1	2	90	0.2	1	2	-4/122	15-90	24	2.4	Floor	6
E1183-C	HCN	0-100	0.2	0.1	2	20	1	1	2	14/113	15-90	24	0.93	Ceiling	6
E1189-C	C ₂ H ₄	0-200	1.0	0.3	1	60	4	1	3	-4/122	15-90	24	0.97	5-6	12
E1185-B	CH ₂ O	0-10	0.5	0.01	2	50	0.2	1	2	14/113	15-90	36	1.09	Floor	6
E1190-A	O ₃	0-5	0.1	0.05	5	60	0.15	1	2	14/113	15-90	24	1.66	Floor	12
E1196-B	SO ₂	0-20	0.2	0.2	2	20	0.1	1	2	14/113	15-90	24	2.26	Floor	12
E1197-A	H ₂ S	0-50	0.2	0.1	2	60	0.1	1	2	14/122	15-90	24	1.19	Floor	12
		% Vol	% Vol	% Vol											
E1195-A	O ₂	0-25	0.5	0.05	--	15	--	--	0.3	14/122	5-95	24	--	5-6	24
INFRARED SENSORS															
		ppm	ppm			100	--	--	--	31/104	0-95	180	1.67	5-6	60
I1164-A	CO ₂	0-2000	< 10% ²	--	--	100	--	--	--	31/104	0-95	180	1.67	5-6	60
		% Vol	% Vol												
I1164-B	CO ₂	0-5	< 10% ²	--	--	100	--	--	--	31/104	0-95	180	1.67	5-6	60
I1164-C	CO ₂	0-2	< 10% ²	--	--	100	--	--	--	31/104	0-95	180	1.67	5-6	60

¹ Manufacturer-recommended calibration interval for normal environmental conditions² of Reading

SENSOR PERFORMANCE TABLE

Part Number	Molecular Formula	Measuring Range	Accuracy	Resolution	Repeatability	Response Time	Zero Point Variation	Long Term Drift		Working Temperature	Humidity Range (non-condensing)	Sensor Life Expectancy ¹ , Normal Conditions	Relative Gas Density	Mounting Height	Calibration Interval ¹
								Zero	Gain						
COMBUSTIBLE GASES ²															
		% LEL	± %LEL (CH ₄)	% (CH ₄)	< % sig. (CH ₄)	t90 < sec.	% (CH ₄)	< % LEL / mo. (CH ₄)		°F	% RH	> mo.	Air = 1	(ft)	mo.
P3485-A	C ₃ H ₆ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.00	Floor	6
P3408-A	NH ₃	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.60	Ceiling	6
P3496-A	vapors	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	-	6
P3460-A	C ₄ H ₁₀	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.11	Floor	6
P3472-A	C ₅ H ₁₀	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	Floor	6
P3427-A	C ₄ H ₈ O ₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.04	Floor	6
P3425-A	C ₂ H ₅ OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.59	Floor	6
P3410-A	C ₂ H ₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.98	Ceiling	6
P3491-A	C ₇ H ₁₆	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.46	Floor	6
P3435-A	C ₆ H ₁₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.98	Floor	6
P3476-A	C ₅ H ₁₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.48	Floor	6
P3482-A	C ₃ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.08	Floor	6
P3498-A	JP8	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	-	6
P3402-A	LPG	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	-	6
P3400-A	CH ₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.55	Ceiling	6
P3450-A	CH ₃ OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.11	Floor	6
P3458-A	C ₄ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.15	Floor	6
P3475-A	C ₅ H ₁₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.49	Floor	6
P3480-A	C ₃ H ₈	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.55	Floor	6
P3484-A	C ₃ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.08	Floor	6
P3490-A	C ₇ H ₈	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.18	Floor	6
P3440-A	H ₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.07	Ceiling	6

¹ Manufacturer-recommended calibration interval for normal environmental conditions

² The sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned/destroyed by them.


ORDERING INFORMATION

SC2 - XXXXX-X

Gas Sensor & Range					
#	TOXIC GASES AND OXYGEN			Coverage Area (ft ²), Max.	Mounting Height (ft)
E1110-E	Carbon Monoxide	CO	0-250 ppm	7,500	5-6
E1110-F	Carbon Monoxide	CO	0-300 ppm	7,500	5-6
E1130-A	Nitrogen Dioxide	NO ₂	0-10 ppm	7,500	5-6
E1130-B	Nitrogen Dioxide	NO ₂	0-20 ppm	7,500	5-6
E1130-C	Nitrogen Dioxide	NO ₂	0-30 ppm	7,500	5-6
E1130-D	Nitrogen Dioxide	NO ₂	0-500 ppm	7,500	5-6
E1129-C	Nitric Oxide	NO	0-100 ppm	5,000	5-6
E1129-D	Nitric Oxide	NO	0-1000 ppm	5,000	5-6
E1125-C	Ammonia	NH ₃	0-300 ppm	4,000	Ceiling
E1125-D	Ammonia	NH ₃	0-1000 ppm	4,000	Ceiling
E1193-C	Chlorine	Cl ₂	0-10 ppm	Near Source	Floor
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Near Source	Ceiling
E1189-C	Ethylene	C ₂ H ₄	0-200 ppm	5,000	5-6
E1185-B	Formaldehyde	CH ₂ O	0-10 ppm	Contact Rep	Floor
E1190-A	Ozone	O ₃	0-5 ppm	5,000	Floor
E1196-B	Sulfur Dioxide	SO ₂	0-20 ppm	5,000	Floor
E1197-A	Hydrogen Sulfide	H ₂ S	0-50 ppm	5,000	Floor
E1195-A	Oxygen	O ₂	0-25 Vol%	5,000	5-6
#	INFRARED SENSORS			Coverage Area (ft ²), Max.	Mounting Height (ft)
I1164-A	Carbon Dioxide	CO ₂	0-2000 ppm	7,500	5-6
I1164-B	Carbon Dioxide	CO ₂	0-5 Vol%	7,500	5-6
I1164-C	Carbon Dioxide	CO ₂	0-2 Vol%	7,500	5-6
#	COMBUSTIBLE GASES			Coverage Area (ft ²), Max.	Mounting Height (ft)
P3485-A	Acetone	C ₃ H ₆ O	0-100% LEL	4,000	Floor
P3408-A	Ammonia	NH ₃	0-100% LEL	4,000	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	4,000	-
P3460-A	Butane	C ₄ H ₁₀	0-100% LEL	4,000	Floor
P3472-A	Cyclopentane	C ₅ H ₁₀	0-100% LEL	4,000	Floor
P3427-A	Ethyl Acetate	C ₄ H ₈ O ₂	0-100% LEL	4,000	Floor
P3425-A	Ethyl Alcohol	C ₂ H ₅ OH	0-100% LEL	4,000	Floor
P3410-A	Ethylene	C ₂ H ₄	0-100% LEL	4,000	Ceiling
P3491-A	Heptane	C ₇ H ₁₆	0-100% LEL	4,000	Floor
P3435-A	Hexane	C ₆ H ₁₄	0-100% LEL	4,000	Floor
P3476-A	Isopentane	C ₅ H ₁₂	0-100% LEL	4,000	Floor
P3482-A	Isopropyl Alcohol	C ₃ H ₈ O	0-100% LEL	4,000	Floor
P3498-A	JP8	-	0-100% LEL	4,000	-
P3402-A	LPG	-	0-100% LEL	4,000	-
P3400-A	Methane	CH ₄	0-100% LEL	4,000	Ceiling
P3450-A	Methanol	CH ₃ OH	0-100% LEL	4,000	Floor
P3458-A	Methyl Ethyl Ketone	C ₄ H ₈ O	0-100% LEL	4,000	Floor
P3475-A	Pentane	C ₅ H ₁₂	0-100% LEL	4,000	Floor
P3480-A	Propane	C ₃ H ₈	0-100% LEL	4,000	Floor
P3484-A	Propyl Alcohol	C ₃ H ₈ O	0-100% LEL	4,000	Floor
P3490-A	Toluene	C ₇ H ₈	0-100% LEL	4,000	Floor
P3440-A	Hydrogen	H ₂	0-100% LEL	4,000	Ceiling
#	ACCESSORIES				
XC-CAP	(1) Replacement protective sensor cap				
PG2-DUCTKIT	(1) Duct mounting kit for SC2 / AT6 sensor				

Example, ordering part number:

SC2-E1110-E

Configuration includes:

 X-Change Replacement Sensor:
 • Carbon Monoxide, 0-250 ppm




HS-24 OUTDOOR SERIES EVACUATION SIGNALS



Features

- Nominal voltage 24VDC
- Unit is shipped with ANSI/UL1638 listed strobe or horn/strobe
- Super-Slide® - Ease of Supervision Testing
- Checkmate® - Instant Voltage Verification
- Switch selection for high or low dBA
- Switch for mechanical and 2400Hz tone
- Switch for continuous tone or temporal 3 (not available on whoop tone)
- Tamperproof re-entrant grill
- Prewire entire system, install mounting bracket, then install signals
- Separate horn and strobe functions
- Synchronize strobe and/or horn by using AVSM Control Module
- Listed to ANSI/UL1638 when used with the WPBB or WPLPBB enclosure
- WPBB/WPLPBB made of clear Lexan® - provides maximum visibility and reliability for effective visible signaling - allowing full 75cd output
- Input terminals accept 12 to 18 AWG
- Faceplate available in red or off-white

Unit Dimensions

- WP Unit: 5.75" (14.605 cm) high x 4.75" (12.065 cm) wide x 4.18" (10.617 cm) deep
- LP Unit: 5.75" (14.605 cm) high x 4.75" (12.065 cm) wide x 3.25" (8.255 cm) deep



Description

The Outdoor Series offers dependable visible and/or audible alarms for all outdoor needs.

Included with the HS-24 Series is the WPBB or WPLPBB outdoor enclosure. The enclosure is made of high quality Lexan® material, providing protection from weather related conditions and allowing the necessary full candela output. This highly constructed enclosure meets various installation requirements including deterring moisture from entering the enclosures.

The Outdoor Series is equipped with the 4" mounting plate which incorporates the Super-Slide® feature that allows the installer to easily test for supervision. The product also features a locking mechanism which secures the product to the bracket without any screws showing.

The Series also features the Checkmate® - Instant Voltage Verification feature which allows the installer to check the voltage drop draw and match it to ten blueprint.

The Series strobe has a minimal operating current and has a minimum flash rate of 1Hz regardless of input voltage.

The Series appliances are ANSI/UL 464 and ANSI/UL 1638 listed for use with fire protective systems and are warranted for three years from date of purchase.





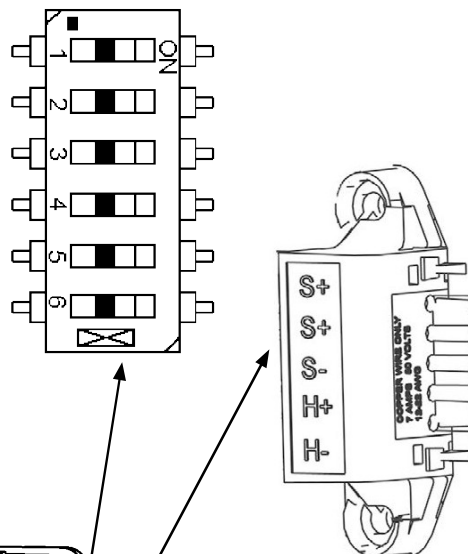
HS-24 OUTDOOR SERIES EVACUATION SIGNALS

Tone Switch Locations

TONE	SWITCH POSITION		
	3	4	5
Mechanical Temporal 3	ON	ON	ON
Mechanical - Continuous	OFF	ON	ON
2400 Hz - Temporal 3	ON	OFF	ON
2400 Hz - Continuous	OFF	OFF	ON
Chime - Temporal 3	ON	ON	OFF
Chime - Continuous	OFF	ON	OFF
Whoop	ON	OFF	OFF
Whoop	OFF	OFF	OFF

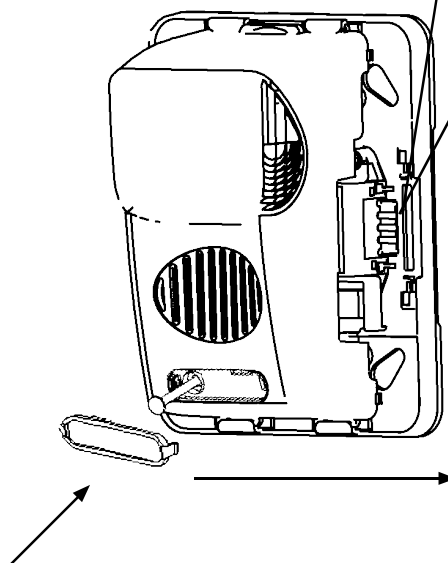
NOTE:

- Switch Positions 1 and 2 in the OFF position to select isolated horn and strobe power inputs
- Switch Position 6 ON = HIGH dBA
- Switch Position 6 OFF = LOW dBA



Super-Slide® Mounting Bracket

Allows the installer to pre-wire the system, test for system supervision, remove the signal head until occupancy, switch out Gentex signals without changing mounting brackets and has locking edge connector for snap-in-place installation.



Gentex Checkmate® Instant Voltage Verification

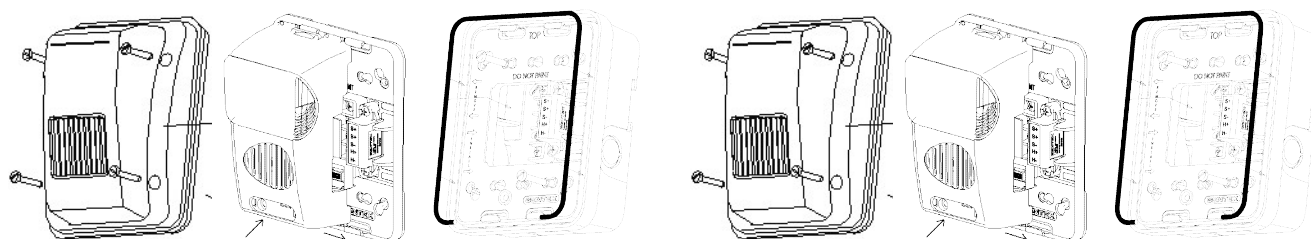
It is often necessary to confirm the voltage drop along a line of devices. The access holes are provided in the back of the terminal block to allow the voltage to be measured directly without removing the device. Typically this would be done at the end of the line to confirm design criteria. Most measurements will be taken using the S+ and S- locations although access is provided to other locations.

NOTE: Care should be taken to not short the test probes.

Mounting Outdoor Enclosure

Super-Slide® Mounting Plate:
Mounts to Outdoor Enclosure

Super-Slide® Mounting Plate:
Mounts to GOELP Outdoor Enclosure





HS-24

OUTDOOR SERIES

EVACUATION SIGNALS

HS-24 Outdoor Horn/Strobe

Model Number	Part Number	Nominal Voltage	Candela (ANSI/UL 1638)	Reverberant dBA @ 10 ft. per ANSI/UL 464	In Anechoic Room dBA @ 10 ft.
HS-24WR-WP	4890060	24 VDC	75	70-82	100
HS-24WW-WP	4890061	24 VDC	75	70-82	100
HS-24PWR-WP	4890062	24 VDC	75	70-82	100
HS-24PWW-WP	4890063	24 VDC	75	70-82	100
HSLP-24WR	4890064	24 VDC	75	70-82	100
HSLP-24WW	4890065	24 VDC	75	70-82	100
HSLP-24PWR	4890066	24 VDC	75	70-82	100
HSLP-24PWW	4890067	24 VDC	75	70-82	100

Horn Mode	Horn Decibel Levels		Horn Current Ratings
	Minimum SPL at 10 feet per ANSI/UL 464 (HIGH)	Minimum SPL at 10 feet per ANSI/UL 464 (LOW)	Regulated 24 VDC Max. Operating at High Setting
Temp 3 2400 Hz	78 dBA	71* dBA	28 mA
Temp 3 Mechanical	76 dBA	70* dBA	25 mA
Temp 3 Chime	70* dBA	66* dBA	15 mA
Continuous 2400 Hz	81 dBA	74* dBA	28 mA
Continuous Mechanical	80 dBA	72* dBA	25 mA
Continuous Chime	70* dBA	66* dBA	15 mA
Whoop	82 dBA	69* dBA	56 mA

WGE Series Product Strobe Current Ratings	
Candela	75 cd
24 VDC	112 mA
UL Max ¹	170 mA

NOTES:

- The HS-24 WP Series are listed for outdoor use.

Indoor Operating Temperature: 32°F to 120°F (0°C to 49°C).
 Outdoor Operating Temperature: -31°F to 150°F (-35° C to 66°C).
- For nominal and peak current across ANSI/UL regulated voltage range for filtered DC power and unfiltered (FWR [Full Wave Rectified]) power, see installation manual.
- Using a coded or pulsing signaling circuit with any of our strobe products is not recommended.
- The sound output for the temporal 3 tone is rated lower since the time the horn is off is averaged into the sound output rating. While the horn is producing a tone in the temporal 3 mode its sound pressure is the same as the continuous mode.
- * Operating the horn in this mode at this voltage will result in not meeting the minimum UL reverberant sound level required for public mode fire protection service. These settings are acceptable only for private mode fire alarm use. Use the high dBA setting for public mode application (not applicable when using the chime tone. The chime tone is always private mode).



HS-24 OUTDOOR SERIES EVACUATION SIGNALS

Architect & Engineering Specifications

The audible and/or visible signal shall be HS-24 Series or approved equal and shall be listed by Underwriters Laboratories Inc. per ANSI/UL 1638 and/or ANSI/UL 464. The notification appliance shall also be listed with the California State Fire Marshal (CSFM).

The notification appliance (combination audible/visible) shall produce a peak sound output of 100dBA or greater at as measured in an anechoic chamber. The signaling appliance shall also have the capability to silence the audible signal while leaving the visible signal energized with the use of a single pair of power wires. Additionally, the user shall be able to select either continuous or temporal tone output with the temporal signal having the ability to be synchronized.

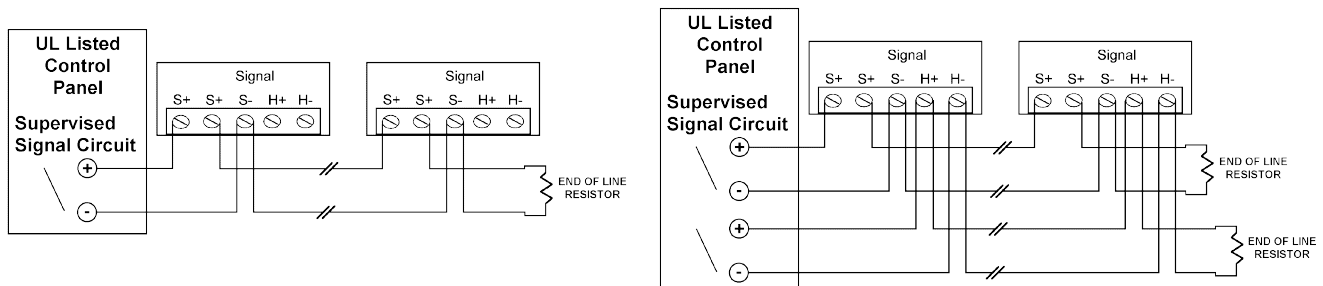
The audible/visible and visible signaling appliance shall also maintain a minimum flash rate of 1Hz or up to 2 Hz regardless of power input voltage. The appliance shall have an operating current of 170mA or less for the 75Cd strobe circuit. The appliance shall also be capable of meeting the candela requirements of the ADA (75cd).

The appliance shall be polarized to allow for electrical supervision of the system wiring. The unit shall be provided with a mounting bracket with terminals with barriers for input/output wiring and be able to mount to a single gang or double gang box or double workbox without the use of an adapter plate. The unit shall have an input voltage range of 16-33 volts with either direct current of full wave rectified power for 24 volt models.

The appliance shall be capable of testing supervision without disconnecting wires. Also the appliance shall be capable of mounting to a surface back box. The unit shall also be able to verify voltage at the unit without removing unit.

The appliance has extended temperature range of -31° to 150°F (-35° to 66° C). The appliance shall satisfy virtually all outdoor and severe environment applications. The Enclosure includes a gasket that must be inserted between the box and mounting bracket. There are drain holes in the back box to allow for drainage, the seal on the GOE Enclosure is not water tight. The LP Enclosure includes a weather seal for mounting to wall and intended for use with universal electrical box. To allow for drainage, bottom edge of enclosure is not water tight.

Conventional Wiring Diagrams for Emergency Notification Evacuation Series



NOTES:

- All strobes are designed to flash as specified with continuous applied voltage. Strobes should not be used on coded or pulsing signaling circuits. However, use of the AVSM control module or Gentex synchronization protocol is permitted to synchronize the strobe, horn and/or mute the horn.
- FOR SYNCHRONIZATION WIRING INFORMATION, REFERENCE AVSM CONTROL MODULE DATA SHEET (8830050) AND/OR AVSM CONTROL MODULE MANUAL FOR SYNCHRONIZATION MODULE WIRING DIAGRAMS.**