

DESCRIPTION

Wall-mounted, NEMA 4X standalone ventilation controller with one, two, or three high-performance SC2-Series gas sensor modules.

Intuitive, menu-driven setup allows on/off, multi-speed, and variable speed control of ventilation equipment in response to user-specified gas concentration levels.

Multi-color LCD and standard horn/light module for local annunciation of escalating alarm levels.

Conforming to Safety Integrity Level 2 (SIL 2) and rigorous international standard EN 50545-1 for parking garages and tunnels, PolyGuard®2 monitoring and control systems utilize advanced self-diagnostics and flexible ventilation control functions to ensure maximum human safety without compromising energy efficiency.

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

To detect and control levels of toxic and combustible gases in a wide variety of commercial applications such as carbon monoxide and nitrogen dioxide levels in parking structures, package sorting hubs, vehicle repair shops, tunnels, and equipment rooms. Although typically operating as a standalone controller directly activating ventilation equipment in response to rising gas levels, the SGC6 can also work in conjunction with building management systems via Modbus serial communications, analog (gas value) or binary (threshold / relay) output signals.

FEATURES

- 1 or 2 on-board SC2-Series gas sensor modules
- Optional 3rd gas sensor input with DR6 Digital Remote sensor
- 2-Line, 16-character LCD display with dual color background
- Two (2) SPDT alarm relays, 30 VAC/VDC, 0.5 A
- One (1) 4-20 mA or 2-10 VDC analog output, jumper selectable
- One (1) 24 VDC digital input for relay override
- Audible / visual alarm annunciation
- RS-485 serial communications to DGC6-Series Digital Gas Controllers or other Modbus controllers

PolyGuard®2 SGC6



- UL 2075 Listed
- EMC Directives 2014/30/EU
- LVD 2014/35/EU
- CE
- EN 61010-1:2010
- EN 50271
- ANSI/UL 61010-1
- CAN/CSA-C22.2 No. 61010-1

- 24 VAC/VDC powered
- Menu-driven controller setup
- X-Change sensor technology for low-cost life cycle maintenance
- Digital measurement processing with temperature compensation
- Internal diagnostics including integrated hardware watchdog
- High-impact polycarbonate enclosure, NEMA 4X (IP65)
- Software conforms to SIL 2 standard

SPECIFICATIONS

Electrical

Power supply	24 VDC ±20%, reverse polarity protected; 24 VAC -10%/+15%, <i>VAC allowed for standalone configuration only</i>
Power consumption	24 VDC
- base (with LCD)	80 mA
- sensors	<i>See SC2 datasheet</i>
- horn & multi-status LED	5 mA
- analog output	22 mA
Alarm relays	Two (2), 30 VAC/VDC, 0.5 A, potential-free, contacts (SPDT)
Digital input	One (1), 24 VDC for relay override
Analog input	One (1), 4-20 mA overload and short-circuit proof, input resistance 200 Ω
Analog output signal	One (1), selectable, proportional, overload and short-circuit proof, load ≤ 500 Ω
- measuring range	4-20 mA / 2-10 VDC
- tolerable under range	2.4-4 mA / 1.2-2.0 VDC
- tolerable over range	> 20-21.2 mA / > 10.0-10.6 VDC
- error over range	≥ 21.2 mA / ≥ 10.6 VDC
- fault	≤ 2.0 mA / ≤ 1.0 VDC
Output for local bus	5 VDC, 250 mA max. Overload, short-circuit and polarity protected
Output signal for serial communication	Digital, RS-485, Modbus-RTU and DGC6 protocol, 19200 baud
Sensors	SC2 Series
- performance	<i>See SC2 datasheet for specific gases</i>
- coverage	<i>See SC2 datasheet for specific gases</i>
- storage time	6 months (for sensor elements)
Environmental	
Permissible ambient	<i>See SC2 datasheet for specific gases</i>
Horn & Status LED	Configurable by local thresholds or remote DGC6 parameters
Horn	
- acoustic pressure	> 85 dB (A) (dist. 0.1 m / 0.3 ft)
- frequency	2300 Hz
- protection class	NEMA 4X (IP65)
Status LED	
- color / mode	Red = Alarm; Yellow = Fault; Green = Power (Normal); Green (flashing) = Service
- protection class	NEMA 4X (IP65)
Liquid Crystal Display	
LCD	Two lines, 16 characters each, illuminated

Serial interface

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

Physical

Enclosure "C", standard	
- material	Polycarbonate, UL94 V-2, fire retardant
- color	Light gray
- protection	NEMA 4X (IP65)
- installation	Wall (surface) mounted, or single gang electrical box

Dimensions (H x W x D)

- base unit	5.12 x 5.12 x 2.95 in (130 x 130 x 75 mm)
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Cable entry, knock outs

3 holes for 1/2 in. conduit,
closed with silver "plugs"

Wire connection

- local bus (SC2)	3-pin removable connector
- remote sensor (DR6)	3-wire, max. length 16.4 ft (5 m)
- analog output	Screw-type terminal; 24 AWG (0.25 mm ²), min. 16 AWG (1.3 mm ²), max.

power supply, relays

Screw-type terminal;
24 AWG (0.25 mm²), min.
14 AWG (2.5 mm²), max.

Weight

1.32 lb (0.6 kg)

Certified to

UL 2075 Listed, NRTL
performance tested for models
SGC6-02-CO, SGC6-02-CO-CO,
SGC6-02-CO-NO2

Conforms to

EMC Directive 2014/30/EU
LVD 2014/35/EU
CE
EN 50271

EN 61010-1:2010
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1

Warranty

Two years material and
workmanship,
12 months normal exposure for
sensor element

DEFAULT SETTINGS

Trip/Setpoints

Carbon Monoxide (CO)	
- stage 1 (R1)	25 ppm
- stage 2 (R2)	150 ppm
- stage 3 (R3)	150 ppm
- stage 4	150 ppm
- hysteresis	10 ppm
Nitrogen Dioxide (NO₂)	
- stage 1 (R1)	2 ppm
- stage 2 (R2)	5 ppm
- stage 3 (R3)	5 ppm
- stage 4	5 ppm
- hysteresis	0.5 ppm

ACCESSORIES

Duct Mounting Kit

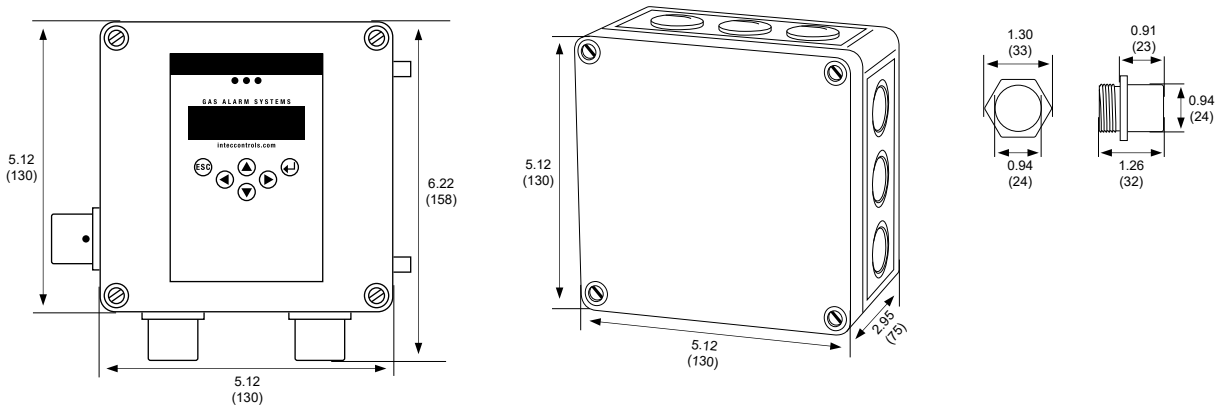
- flow rate **PG2-DUCTKIT**
Min. 3.1 mph (5000 m/h),
max. 12.4 mph (20,000 m/h)
- air duct diameter **PG2-DUCTKIT**
Min. 3.94 in. (0.1 m),
max. 39.37 in. (1.0 m)
- length of sampling tube **PG2-DUCTKIT**
9.84 in. (250 mm), adaptable
- hose length **PG2-DUCTKIT**
2 x 39.37 in. (1000 mm)

Calibration Kits

- carbon monoxide **CALKIT-PG2-CO**
Sensor calibration adapter
w/ tube and cup, 500 mL/min.
regulator, 17L 200 ppm carbon
monoxide, 17L 99.99% nitrogen,
carrying case
- combustible gases **CALKIT-PG2-COMB**
Sensor calibration adapter
w/ tube and cup, 150 mL/min.
regulator, 17L 2.5% methane,
17L 99.99% nitrogen,
carrying case
- nitrogen dioxide **CALKIT-PG2-NO2**
Sensor calibration adapter
w/ tube and cup, 500 mL/min.
regulator (stainless steel),
70L 10 ppm nitrogen dioxide,
70L 99.99% nitrogen,
carrying case
- carbon monoxide
& nitrogen dioxide **CALKIT-PG2-CO-NO2**
Sensor calibration adapter
w/ tube and cup, 500 mL/min.
regulator (for CO), 500 mL/
min. regulator (stainless steel,
for NO2), 17L 200 ppm carbon
monoxide, 70L 99.99% nitrogen,
70L 10 ppm nitrogen dioxide,
and (2) carrying cases

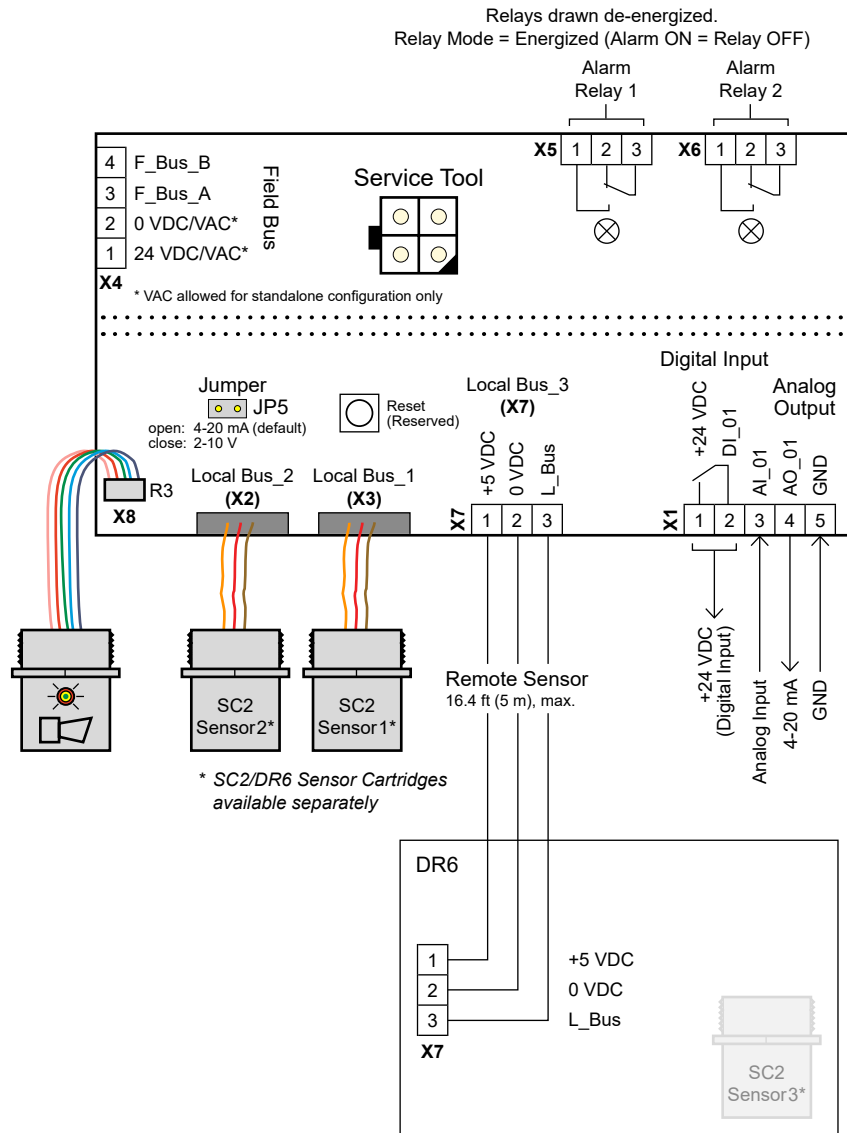
DIMENSIONS

inches (mm)



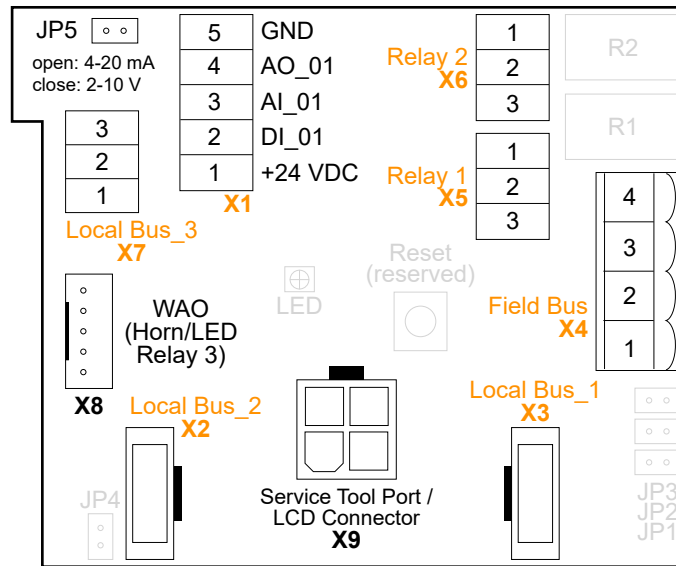
WIRING CONFIGURATION

SGC6 Connections



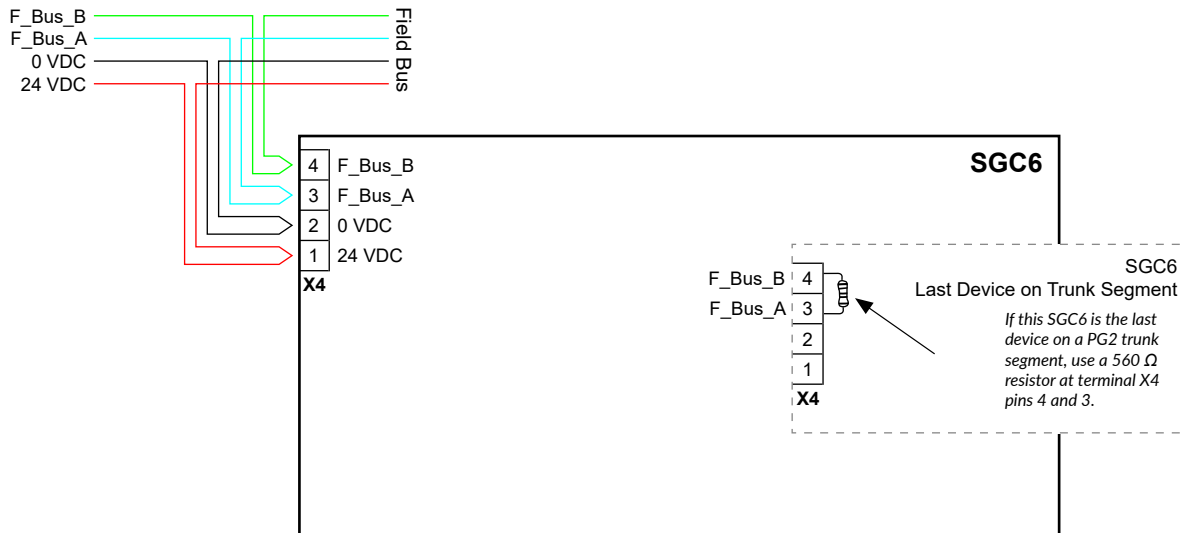
SENSOR BOARD COMPONENTS

SGC6



FIELD WIRING CONFIGURATION

The SGC6 is a fully capable standalone controller. In specific applications where interfacing to the DGC6 (PG2 Gas Detection System) is required, observe the following wiring connections.



ORDERING INFORMATION

PART NUMBER	DESCRIPTION
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BUNDLED SENSORS AND CONTROLS

SGC6-02-CO	SGC6, DGC6 Protocol, (1) 0-250 ppm CO sensor
SGC6-02-CO-CO	SGC6, DGC6 Protocol, (2) 0-250 ppm CO sensors
SGC6-02-CO-NO2	SGC6, DGC6 Protocol, (1) 0-250 ppm CO sensor, (1) 0-20 ppm NO2 sensor
SGC6-02-E1195-A	SGC6, DGC6 Protocol, (1) 0-25% v/v O2 sensor (2-Year Est. Life)

SENSOR PLATFORM

SGC6-02	Standalone gas controller, remote relay and AO module, DGC6 Protocol; up to (3) sensor inputs capable; 2-line, 16-char LCD display; (2) SPDT relays; (1) 4-20 mA analog output; horn & status LED; includes "C" enclosure; sensor cartridges ordered separately
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SC2 Sensor Cartridges available separately. See SC2 datasheet for specifications.

The SGC6 accepts up to (2) SC2 Sensor Cartridges simultaneously.

In a 2-sensor configuration, both sensor modules must have the same mounting height requirements.

A 3-sensor configuration is possible with a remote DR6. The max. distance allowed between the SGC6 and DR6 is 16.4 ft (5 m).

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	NO2	0-10 ppm	5-6
E1130-B	Nitrogen Dioxide	NO2	0-20 ppm	5-6
E1130-C	Nitrogen Dioxide	NO2	0-30 ppm	5-6
E1130-D	Nitrogen Dioxide	NO2	0-500 ppm	5-6
E1125-C	Ammonia	NH3	0-300 ppm	Ceiling
E1125-D	Ammonia	NH3	0-1000 ppm	Ceiling
E1193-C	Chlorine	Cl2	0-10 ppm	Floor
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Ceiling
E1189-C	Ethylene	C2H4	0-200 ppm	5-6
E1185-B	Formaldehyde	CH2O	0-10 ppm	Floor
E1190-A	Ozone	O3	0-5 ppm	Floor
E1195-A	Oxygen	O2	0-25 Vol%	5-6
E1196-B	Sulfur Dioxide	SO2	0-20 ppm	Floor
E1197-A	Hydrogen Sulfide	H2S	0-50 ppm	Floor
#	INFRARED SENSORS			Mounting Height (ft)
I1164-B	Carbon Dioxide	CO2	0-5 Vol%	5-6
I1164-C	Carbon Dioxide	CO2	0-2 Vol%	5-6
#	COMBUSTIBLE GASES			Mounting Height (ft)
P3485-A	Acetone	C3H6O	0-100% LEL	Floor
P3408-A	Ammonia	NH3	0-100% LEL	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	-
P3460-A	Butane	C4H10	0-100% LEL	Floor
P3472-A	Cyclopentane	C5H10	0-100% LEL	Floor
P3427-A	Ethyl Acetate	C4H8O2	0-100% LEL	Floor
P3425-A	Ethyl Alcohol	C2H5OH	0-100% LEL	Floor
P3410-A	Ethylene	C2H4	0-100% LEL	Ceiling
P3491-A	Heptane	C7H16	0-100% LEL	Floor
P3435-A	Hexane	C6H14	0-100% LEL	Floor
P3476-A	Isopentane	C5H12	0-100% LEL	Floor
P3482-A	Isopropyl Alcohol	C3H8O	0-100% LEL	Floor
P3402-A	LPG	-	0-100% LEL	-
P3400-A	Methane	CH4	0-100% LEL	Ceiling
P3450-A	Methanol	CH3OH	0-100% LEL	Floor
P3458-A	Methyl Ethyl Ketone	C4H8O	0-100% LEL	Floor
P3475-A	Pentane	C5H12	0-100% LEL	Floor
P3480-A	Propane	C3H8	0-100% LEL	Floor
P3480-C	Propane	C3H8	0-5000 ppm	Floor
P3484-A	Propyl Alcohol	C3H8O	0-100% LEL	Floor
P3490-A	Toluene	C7H8	0-100% LEL	Floor
P3440-A	Hydrogen	H2	0-100% LEL	Ceiling

ACCESSORIES

PG2-DUCTKIT	(1) Duct mounting kit for SC2 / AT6 sensor
CALKIT-PG2-CO	Carbon monoxide calibration kit for SC2 / AT6 sensors
CALKIT-PG2-COMB	Combustible calibration kit for SC2 / AT6 sensors
CALKIT-PG2-NO2	Nitrogen dioxide calibration kit for SC2 / AT6 sensors
CALKIT-PG2-CO-NO2	CO & NO2 calibration kit for SC2 / AT6 sensors