Standalone Gas Controller

INTEC CONTROLS

**PolyGard®2
SGC6**

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, PolyGard®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.

ISO**9001** CERTIFIED · CSA® · TÜV SÜD · PG · ETL

- 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

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) 4-20mA analog output
- Audible / visual alarm annunciation
- RS-485 serial communications to DGC6-Series Digital Gas Controllers or other Modbus controllers
- 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

SGC6

INTEC
C O N T R O L S

SPECIFICATIONS

Electrical

Power supply	24 VDC ±20%, reverse polarity protected; 24 VAC -10%/+15%, *VAC allowed for standalone configuration only*
Power consumption	24 VDC
- base (with LCD)	80 mA
- sensors	*See SC2 datasheet*
- horn & multi-status LED	5 mA
- analog output	22 mA
Alarm relays	Two (2), 30 VAC/VDC, 0.5 A, potential-free, contacts (SPDT); 1 alarm & 1 fault/alarm
Analog input	One (1), 4-20 mA overload and short-circuit proof, input resistance 200 Ω
Analog output signal	One (1), proportional, overload and short-circuit proof, load ≤ 500 Ω
	4-20 mA = measuring range; 3.0 < 4 mA = under range; > 20-21.2 mA = over range; 2.0 mA = fault
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

Sensor Performance — *See SC2 datasheet for specific gases*

Sensor coverage	*See SC2 datasheet for specific gases*
Storage time	6 months (for sensor elements)

Environmental

Permissible ambient	*See SC2 datasheet for specific gases*

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)
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 mm^2), min. 14 AWG (2.5 mm^2), max.
Weight	1.32 lb (0.6 kg)

Conforms to	EMC Directive 2014/30/EU LVD 2014/35/EU CE EN 50271 EN 61010-1:2010
Certified to	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	25 ppm
- stage 2	150 ppm
- stage 3	150 ppm
- stage 4	150 ppm
- hysteresis	10 ppm

Nitrogen Dioxide (NO_2)

- stage 1	2 ppm
- stage 2	5 ppm
- stage 3	5 ppm
- stage 4	5 ppm
- hysteresis	0.5 ppm

ACCESSORIES

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)

Calibration Kits

- carbon monoxide   **CALKIT-PG2-CO**
Calibration Kit includes:
Sensor calibration adapter
w/ tube and cup, 150 mL/min
regulator, 17 L 200 ppm carbon
monoxide gas bottle,
17 L 99.99% nitrogen gas bottle,
carrying case

- nitrogen dioxide   **CALKIT-PG2-NO2**
Calibration Kit includes:
Sensor calibration adapter
w/ tube and cup, 500 mL/min
regulator, 58 L 5 ppm nitrogen
dioxide gas bottle, 58 L 99.99%
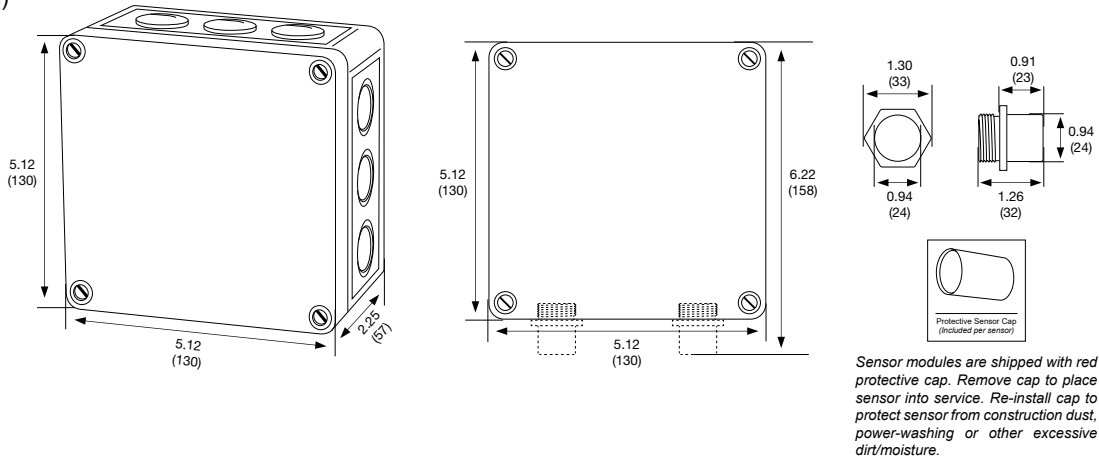nitrogen gas bottle, carrying case

- combustible gases   **CALKIT-PG2-COMB**
Calibration Kit includes:
Sensor calibration adapter
w/ tube and cup, 150 mL/min
regulator, 17 L 2.5% methane gas
bottle, 17 L 99.99% nitrogen gas
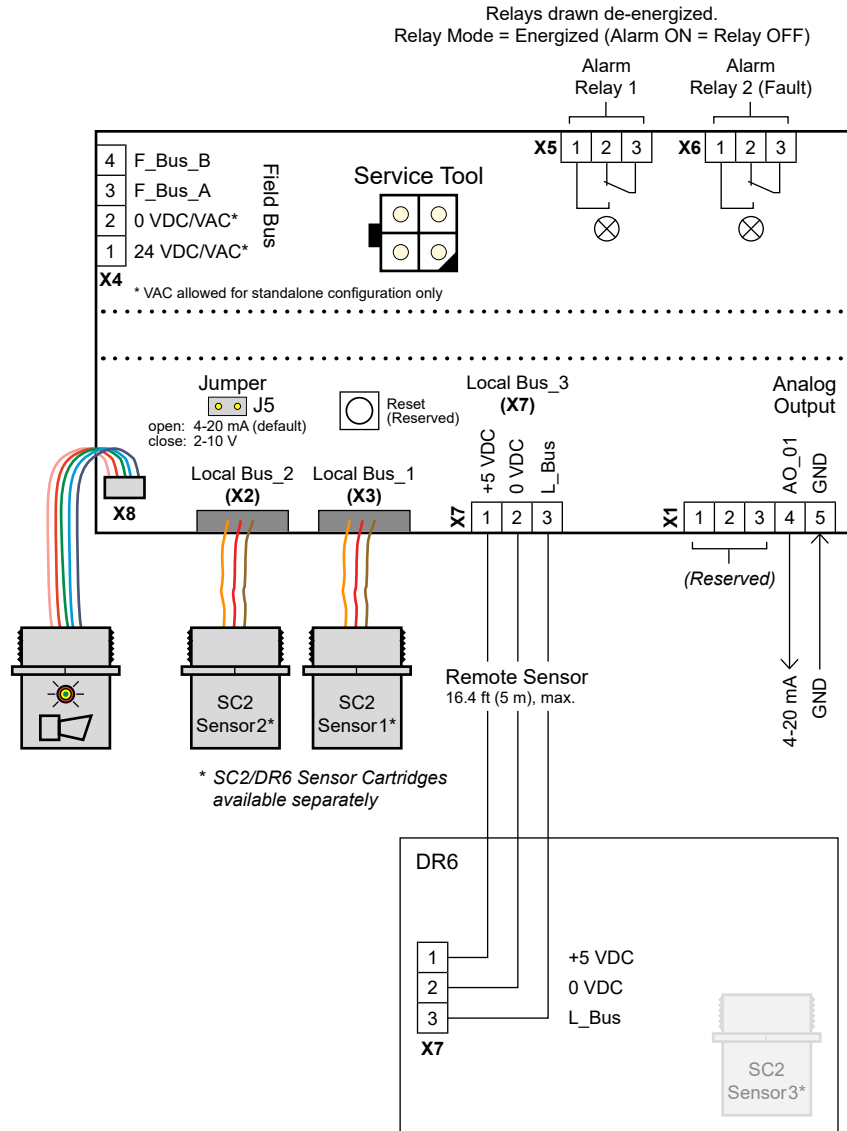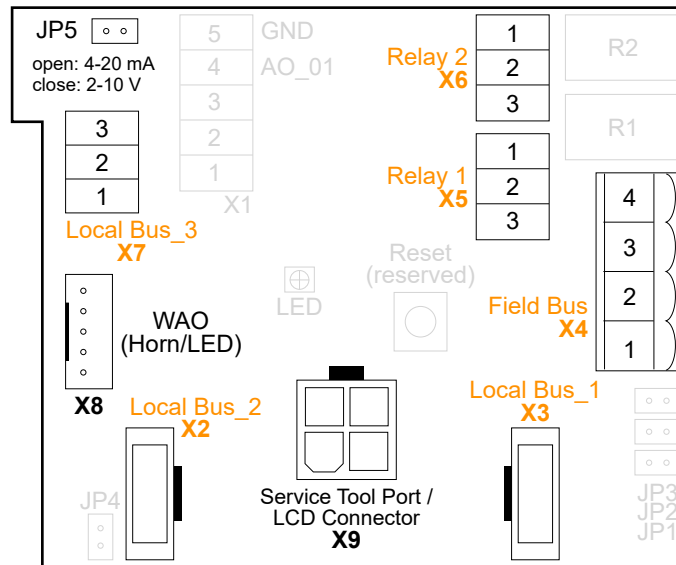bottle, carrying case

DIMENSIONS

inches (mm)

5.12 (130)
2.25 (57)
5.12 (130)
5.12 (130)
6.22 (158)
5.12 (130)

1.30 (33)
0.91 (23)
0.94 (24)
0.94 (24)
1.26 (32)

Protective Sensor Cap
(included per sensor)

Sensor modules are shipped with red protective cap. Remove cap to place sensor into service. Re-install cap to protect sensor from construction dust, power-washing or other excessive dirt/moisture.

WIRING CONFIGURATION

SGC6 Connections

Relays drawn de-energized.
Relay Mode = Energized (Alarm ON = Relay OFF)

Alarm Relay 1
Alarm Relay 2 (Fault)

X5 | 1 | 2 | 3
X6 | 1 | 2 | 3

X4
4	F_Bus_B
3	F_Bus_A
2	0 VDC/VAC*
1	24 VDC/VAC*

Field Bus

Service Tool

* VAC allowed for standalone configuration only

Jumper J5
open: 4-20 mA (default)
close: 2-10 V

Reset (Reserved)

Local Bus_3 (X7)

Analog Output

X8

Local Bus_2 (X2)
Local Bus_1 (X3)

+5 VDC
0 VDC
L_Bus

X7 | 1 | 2 | 3

AO_01
GND

X1 | 1 | 2 | 3 | 4 | 5

(Reserved)

SC2 Sensor 2*
SC2 Sensor 1*

Remote Sensor
16.4 ft (5 m), max.

4-20 mA
GND
GND

* SC2/DR6 Sensor Cartridges available separately

DR6

1	+5 VDC
2	0 VDC
3	L_Bus

X7

SC2 Sensor 3*

SENSOR BOARD COMPONENTS

SGC6

JP5	∘∘

open: 4-20 mA
close: 2-10 V

5	GND
4	AO_01
3	
2	
1	
	X1

Relay 2
X6

| 1 |
| 2 |
| 3 |

R2

| 3 |
| 2 |
| 1 |

Local Bus_3
X7

Relay 1
X5

| 1 |
| 2 |
| 3 |

R1

Field Bus
X4

| 4 |
| 3 |
| 2 |
| 1 |

Reset
(reserved)

LED

WAO
(Horn/LED)

X8

Local Bus_2
X2

Service Tool Port /
LCD Connector
X9

Local Bus_1
X3

JP4

JP3
JP2
JP1

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.

F_Bus_B
F_Bus_A
0 VDC
24 VDC

Field Bus

4	F_Bus_B
3	F_Bus_A
2	0 VDC
1	24 VDC
X4	

SGC6

F_Bus_B	4
F_Bus_A	3
	2
	1
	X4

SGC6
Last Device on Trunk Segment

If this SGC6 is the last device on a PG2 trunk segment, use a 560 Ω resistor at terminal X4 pins 4 and 3.

SGC6

INTEC CONTROLS
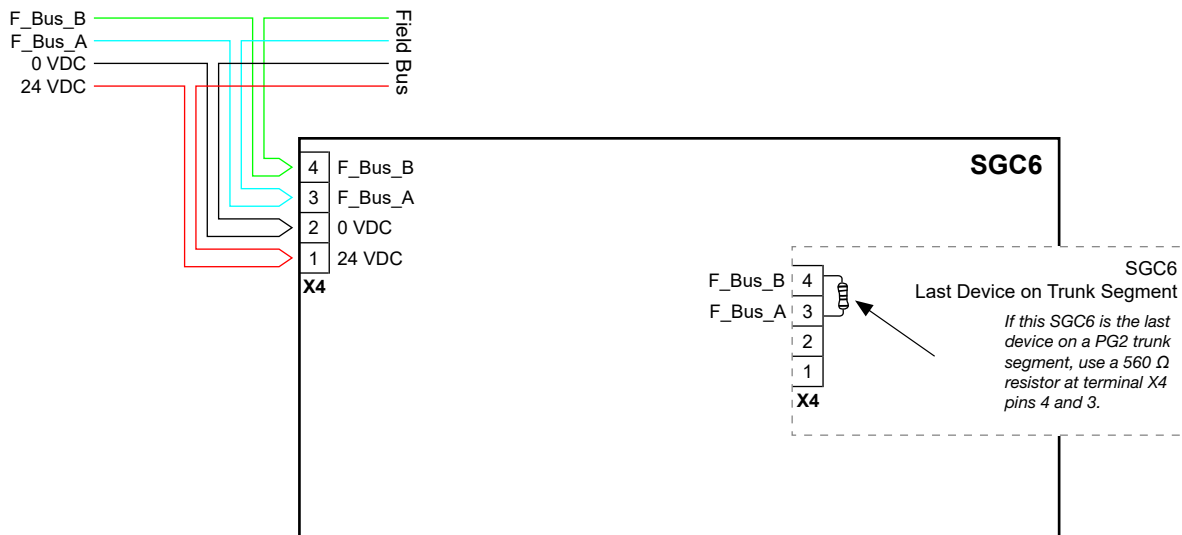
ORDERING INFORMATION

PART NUMBER	DESCRIPTION
BUNDLED SENSORS AND CONTROLS	
SGC6-00-CO	SGC6, DGC6 Protocol, (1) 0-250 ppm CO sensor
SGC6-00-CO-NO2	SGC6, DGC6 Protocol, (1) 0-250 ppm CO sensor, (1) 0-20 ppm NO2 sensor
SENSOR PLATFORM	
SGC6-00	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

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 (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 SGC6 transmitter. 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	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
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_2H_4	0-200 ppm	5-6
E1185-B	Formaldehyde	CH_2O	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_2S	0-50 ppm	Floor
E1195-A	Oxygen	O_2	0-25 Vol%	5-6
#	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	C_3H_6O	0-100% LEL	Floor
P3408-A	Ammonia	NH_3	0-100% LEL	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	-
P3460-A	Butane	C_4H_{10}	0-100% LEL	Floor
P3472-A	Cyclopentane	C_5H_{10}	0-100% LEL	Floor
P3427-A	Ethyl Acetate	$C_4H_8O_2$	0-100% LEL	Floor
P3425-A	Ethyl Alcohol	C_2H_5OH	0-100% LEL	Floor
P3410-A	Ethylene	C_2H_4	0-100% LEL	Ceiling
P3491-A	Heptane	C_7H_{16}	0-100% LEL	Floor
P3435-A	Hexane	C_6H_{14}	0-100% LEL	Floor
P3476-A	Isopentane	C_5H_{12}	0-100% LEL	Floor
P3482-A	Isopropyl Alcohol	C_3H_8O	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_3OH	0-100% LEL	Floor
P3458-A	Methyl Ethyl Ketone	C_4H_8O	0-100% LEL	Floor
P3475-A	Pentane	C_5H_{12}	0-100% LEL	Floor
P3480-A	Propane	C_3H_8	0-100% LEL	Floor
P3480-C	Propane	C_3H_8	0-5000 ppm	Floor
P3484-A	Propyl Alcohol	C_3H_8O	0-100% LEL	Floor
P3490-A	Toluene	C_7H_8	0-100% LEL	Floor
P3440-A	Hydrogen	H_2	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-NO2	Nitrogen dioxide calibration kit for SC2 / AT6 sensors
CALKIT-PG2-COMB	Combustible calibration kit for SC2 / AT6 sensors