

Carbon Monoxide (CO) Single-Point Gas Detection System



**PolyGard
SPC3-1112**

DESCRIPTION

Wall-mounted gas monitor with built-in carbon monoxide (CO) sensor, accepts one analog remote device such as a secondary gas sensor, temperature or humidity sensor.

APPLICATION

To detect and control levels of carbon monoxide (CO) and other gases in a wide variety of commercial and industrial applications such as Carbon Monoxide level in parking structures, engine repair shops, equipment rooms and ventilation systems, etc. The controller can communicate with any compatible electronic analog control, DDC/PLC control or automation system via binary and/or analog output signal.

FEATURES

- Continuous monitoring
- One (1) built-in CO electrochemical sensor
- Easy plug-in sensor
- One (1) remote analog input, 4-20 mA
- One (1) digital input
- Two (2) relay outputs:
 - Four stage control
 - Fail-safe assignable
- One (1) analog output, (0)4-20 mA / (0)2-10 VDC
 - Selectable for low, high, or averaging
- One (1) 24 VDC switched output
- Liquid Crystal Display (LCD)
- LED status indicators
- Accepts toxic or combustible gas, refrigerant, temperature or humidity temperature remote sensor input
- Built-in horn
- Keypad user interface
- Simple menu-driven programming
- Modular technology
- Overload & short-circuit protected
- NEMA 4X enclosure
- Easy maintenance

SPECIFICATIONS

Electric		Type of Control	
Power Supply	24 VAC/VDC, -20%/+15% 50/60 Hz, reverse polarity protected	General	Four-stage (S1 to S4) control, assignable up to two (2) binary/relay, horn/audible alarm, and 24 VDC / 50 mA switched outputs, i.e. low-high stage for relay output, horn / audible alarm and switched 24 VDC at any stage for remote alarming
Power Consumption	5 VA (0.2 A) w/ (1) remote sensor connected		One (1) 4-20 mA, for additional remote sensor, load < 55 mA / 200 Ω, reverse polarity protected
Sensor Performance			Current and mean (average) value
Gas detected	Carbon monoxide (CO)	Analog input	Field adjustable over full range, four (4) stages (S1 to S4) per analog input, assignable to current or mean (average) value
Sensor element	Electrochemical, diffusion	Analog reading	
Range	Span field adjustable from 0-200 to 0-300 ppm via calibration, 0-250 ppm factory set	Stage level / setpoint	
Stability & Resolution	± 3.0 ppm of reading		
Repeatability	± 3.0 % of reading		
Long term output drift	< 0.4% signal loss/month		
Response time	t ₉₀ < 50 sec.		
Sensor life expectancy	3-5 years, normal operating environment	- hysteresis/switching differential	
Sensor coverage	5,000 sq. ft., max 10,000 sq. ft. (465 m ² , max 930 m ²), under "ideal conditions"	Digital input	Selectable for each sensor point One (1); can be assigned to any relay (R1, R2).
Installation Location		- application	Remote audio/visual alarm reset or override function
Mounting height	5 to 6 ft. (1.5-1.8 m) above floor		



City of Los Angeles Approved



NRTL Performance Tested & Certified
Conforms to STD
UL 2075

SPECIFICATION

Type of Control (Cont...)

Relay outputs (R1, R2) w/ status LEDs (1) SPDT (R1), and (1) SPST-NC or SPST-NO (R2), jumper selectable

Contact rating 30 VAC/VDC, 0.5 A, max.

- each stage level (S1-S4) Assignable to any relay

- sensor fail-safe Assignable to any stage level

Time delay switching Selectable for make and brake of each sensor point (SP1 to SP2) 0-9,999 seconds

Analog output One (1), (0)4-20 mA, load < 500 Ω; (0)2-10 VDC, load > 50K Ω; jumper selectable;

polarity protected, assignable to low, high or averaging of sensor inputs

VDC switched output One (1) 24 VDC, 50 mA max

Audible alarm 83 db @ unit, enabled or disabled, selectable; assignable to stage level S1, S2, S3 or S4

Alarm acknowledgement Menu-driven and system reset function for latched relays

User Interface

Keypad type Refer to "illustration keypad user interface"

Touch buttons Four (4)

Status LED's Four (4), for system on, stage status, and failure

Digital display Liquid Crystal Display (LCD), two lines, 16 characters per line, 1 digit resolution

- unit display Menu selectable, per sensor; ppm, %v/v, %LEL, °F or % RH

Environmental

Permissible ambient

- working temperature 14°F to 122°F (-10°C to 50°C)

- storage temperature 23°F to 86°F (-5°C to 30°C)

- humidity 15 to 95% RH, non-condensing

- working pressure Atmospheric ± 10%

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 and 1 hole on back side of base plate for single gang electrical box mounting

Wire connection Terminal blocks, screw type for lead wire

Wire size Min. 24 AWG (0.25 mm²)

Max 14 AWG (2.5 mm²)

Wire distance Max. loop resistance 450 Ω (= wire distance plus controller input resistance)

Weight 0.6 lbs (0.3 kg)

Approvals / Listings

- unit rating NRTL Performance Tested & Certified

Conforms to STD ANSI/UL 2075

City of Los Angeles

CE

VDI 2053, C-No. 418791

EMV-Compliance 2004/108/EWG

Low voltage directive 73/23/EWG

UL Recognized, E41515

CSA, C22.2 No. 0, No. 14

(File No. LR31928)

- relays (R1-R2) UL Listed, E208470

- enclosure CSA Certified, E208470

One year material and

workmanship

Warranty

OPTIONS

Enclosure Metal,

wall-mount

- material Galvanized steel w/zinc coating, corrosion resistant

- color Light gray

- protection NEMA 1, general purpose

- installation Wall (surface) mounted, or single gang electrical box

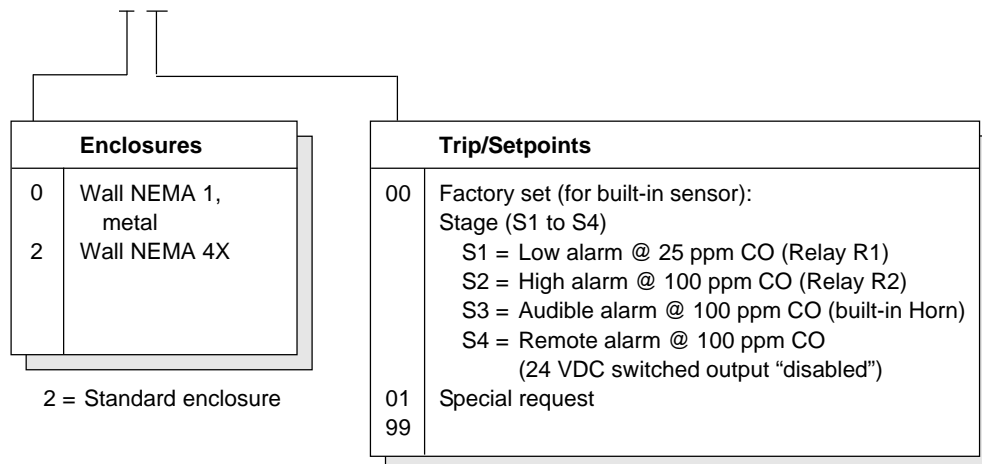
Dimensions (H x W x D) 5.59 x 5.59 x 2.48 in.

(142 x 142 x 63 mm)

Cable entry 3 holes for 1/2 in. conduit for wall (surface) mounting and 1 hole on back side of base plate for single gang electrical box mounting

ORDERING INFORMATION

SPC3-1112 - 2 00 US



Standard control system, ordering part number:

SPC3 - 1112 - 200 US,

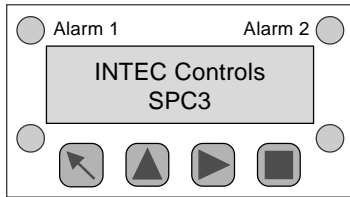
configuration includes:

Digital, programmable controller with
menu-driven keypad user interface,
LCD & LEDs, 24 VAC/VDC, 50/60 Hz
NEMA 4X enclosure

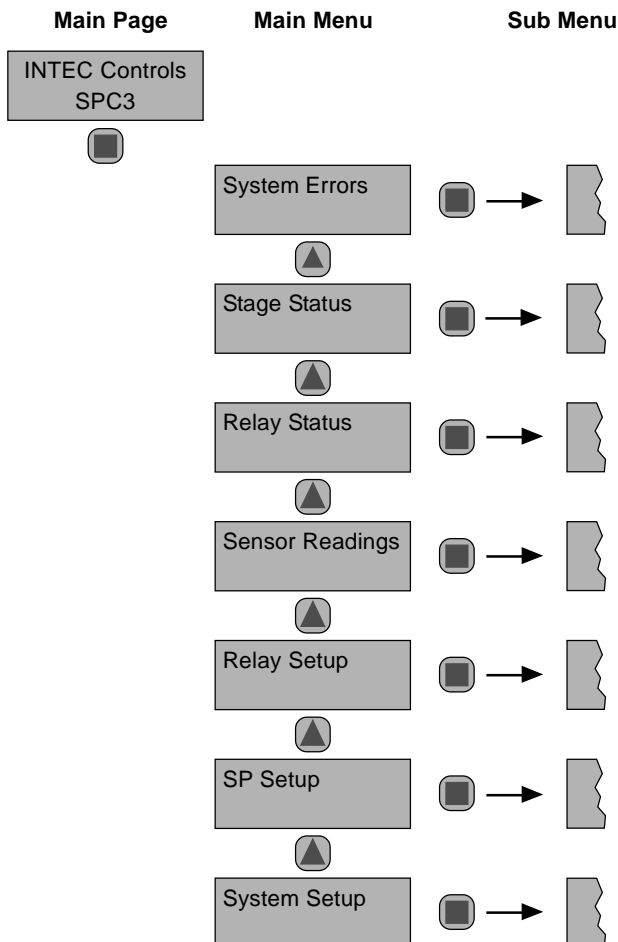
- Built-in: (1) CO sensor/transmitter
(1) Horn, audible alarm
- Input: (1) 4-20 mA, for remote sensor
- Outputs: (2) Relays, 30 VAC/VDC 0.5 A;
1-SPDT (R1) and
1-SPST-NO/NC (R2),
jumper selectable
(1) Switched 24 VDC, 50 mA
(1) (0)4-20 mA or (0)2-10 VDC,
selectable

USER INTERFACE & CONTROLLER

Keypad User Interface



- Alarm 1**
"Orange LED" Flashes when any stage level setpoint is exceeded; steady when any relay output is in manual override operation.
- Alarm 2**
"Red LED" Flashes when high alarm stage 2 or multiple alarm stage level setpoints are exceeded; steady when any relay output is in manual override operation
- Failure**
"Yellow LED" Flashes when system or sensor fails
- Power**
"Green LED" Steady when power is ON
- Scroll down in Main menu and Sub menus; decreases a value
- Navigates through menus on the same level; moves cursor when inputting data
- Exits programming and saves settings or return to previous level or menu
- Enter Sub menus or stores data; horn silence (if assigned)



System Operation

All Programming is made via the keypad user interface in combination with the display screen. Security is provided via two password levels. The lower level password allows to override or to reset system status functions. The upper level password allows all programming and override functions.

Main Page Display

After powered on, displays INTEC and part number and changes to sensor reading display unless a system error occurs; then the error is displayed.

Main Menu

Displays headings of "System Errors", "Stage Status", "Relay Status", "Sensor Readings", "Relay Setup", "SP (Sensor Point) Setup", and "System Setup".

Sub Menu "System Errors"

Displays errors, reset corrected errors, and historical error summary.

Sub Menu "Stage Status"

Displays status of each "SP" sensor point, stage level/setpoint exceeded.

Sub Menu "Relay Status"

Displays status and manual control of each output relay.

Sub Menu "Sensor Readings"

The current and mean/average values are displayed for each "SP" sensor point with sensing type and engineering unit (ppm, %v/v, %LEL, F, %RH).

Sub Menu "Relay Setup"

Enter and /or change parameters of each relay.

- Assign de-energized or energized normal operation
- Select steady or flashing function
- Select horn function
- Select latching or non-latching mode
- Select digital input usage, and assign to any output relay
- Set delay ON/OFF time

Sub Menu "SP Setup"

Enter and/or change parameters of each sensor point.

- Activate sensor point
- Select sensor point type (gas, temperature, humidity)
- Select measuring range
- Select sensor signal
- Select stage/setpoint 1 to 4
- Select hysteresis
- Set delay ON/OFF time
- Select current or mean/average value
- Assign sensor point fault to stage level setpoint
- Assign setpoint 1 to 4 to any output relay
- Assign to analog output

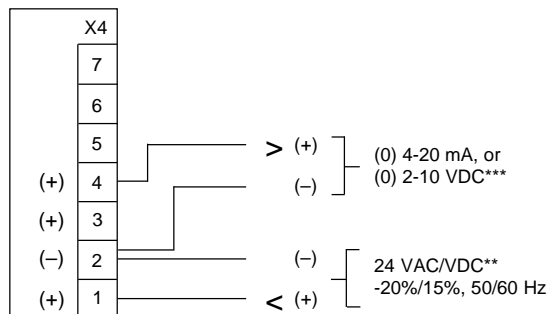
Sub Menu "System Setup"

Enter and/or change system parameters.

- Select service mode
- Display software version
- Set next maintenance date
- Select service phone number
- Select averaging function, time and overlay, of any SP
- Set date, time and time format
- Change customer password
- Set failure relay
- Select power ON time
- Select analog output function

WIRING CONFIGURATION

24 VAC/VDC Input Power Supply, and Analog Output "AO01"

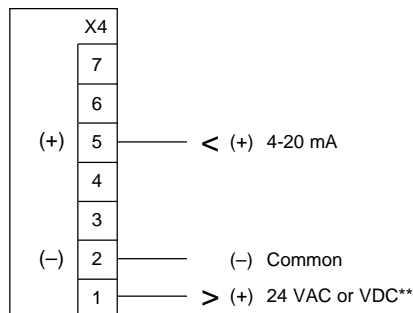


***Jumper output signal "AO01" range selectors:

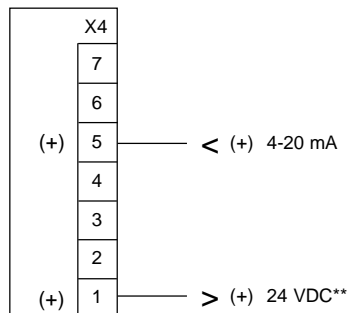
<input type="checkbox"/>	V-A	Over both pins = VDC
<input type="checkbox"/>		Pins not covered = mA
<input type="checkbox"/>	0-20%	Over both pins = 4-20 mA / 2-10 VDC
<input type="checkbox"/>		Pins not covered = 0-20 mA / 0-10 VDC

Optional 4-20 Remote AT-...V3 Series Sensor/Transmitter Input "SP02",

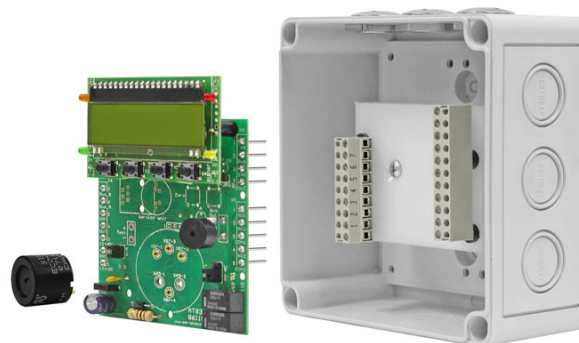
4-20 mA, 3-wire sensor/transmitter



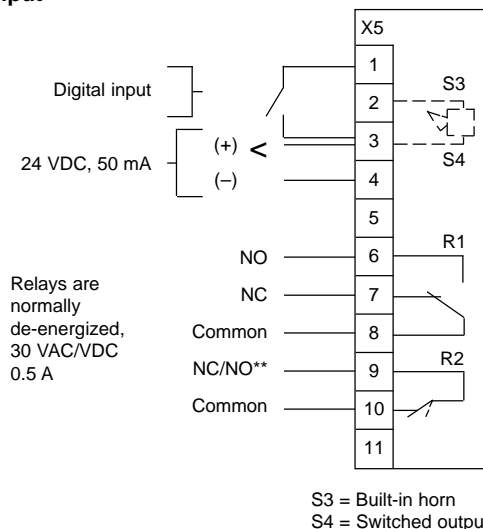
4-20 mA, 2-wire loop-powered sensor/transmitter



Twisted, shielded wire is recommended for 2- or 3-wire configurations.



Binary-Relay Outputs "R01 and R02", 24 VDC switched Output "S4", and Digital Input



**Jumper SPST relay (R2) NC/NO selector:

<input type="checkbox"/>	NC	Covers top two pins = SPST-NC
<input type="checkbox"/>	NO	Covers bottom two pins = SPST-NO

/ Be Alert:

- Only the same type of power, VAC or VDC, as supplied to the unit, is available for the remote transmitter.
I. E. When 24 VDC transmitter power is required, the unit must be powered with 24 VDC.
- 2-wire loop powered transmitter can use the internal power.
- 3-wire transmitters that allow power common to DC common can use the same power supply to power the SPC3 and the transmitter.
- 3-wire transmitters that require separate power common from DC common must use a separate power source.