# PolyGard®2 MGC6

## DESCRIPTION

Wall-mounted, NEMA 4X standalone ventilation controller for one, two, or three high-performance AT- or AT6-Series gas sensor modules or other 4-20 mA sensors.

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.

## 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. The standalone controller typically provides local alarm annunciation and directly activating ventilation equipment in response to rising gas levels, or a binary (threshold / relay) output signal.

## FEATURES

- *Accepts 4-20 mA signals from up to three AT-, AT6- or other 4-20 mA sensors*
- *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*
- *Audible / visual alarm annunciation*
- *24 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*

- EMC Directives 2014/30/EU
- Low Voltage Directive 2014/35/EU
- CE, UKCA
- EN 61010-1:2010
- EN 50271, EN 50270 Type I,
- IEC/EN 61508-1-3,
- EN 45544-1, -3, EN 14624,
- EN 60335, EN 378
- ANSI/UL 61010-1
- CAN/CSA-C22.2 No. 61010-1

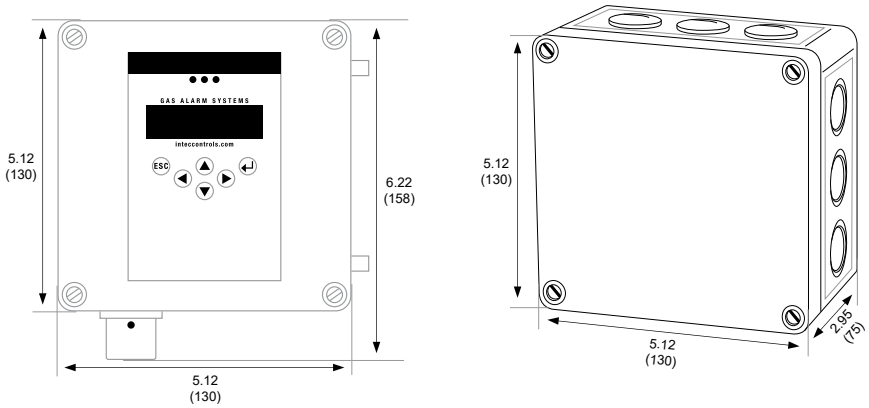
## SPECIFICATIONS

| | |
|---|---|
| **Electrical** | |
| Power supply | 24 VDC ±20%, reverse polarity protected; |
| Power consumption | 24 VDC |
| - base | 160 mA |
| - sensors | *See AT6 or other datasheets* |
| Alarm relays | Two (2) |
| - relays 1 & 2 | 250 VAC, 5 A; 30 VDC, 2 A, potential-free, contacts (SPDT) |
| Fault relay | One (1) |
| - relay 3 | Factory set; always energized |
| Transistor outputs | Two (2), 24 VDC/0, 1 A (switching to plus) only at 24 VDC power supply |
| Digital inputs | Two (2), potential-free |
| Analog inputs | Three (3), 4-20 mA, overload and short-circuit proof, input resistance 130 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 |
| **Sensors** | AT6 Series, or 4-20 mA sensors |
| - performance | *See AT6 or other datasheets for specific gases* |
| - coverage | *See AT6 or other datasheets for specific gases* |
| - storage time | 6 months (for sensor elements) |
| **Environmental** | |
| Permissible ambient | *See AT6 or other datasheets for specific gases* |
| Temperature range | -4°F to 140°F (-20°C to +60°C) |
| Humidity range | 15-95% RH, non-condensing |
| Storage temperature | -4°F to 149°F (-20°C to +65°C) |
| **Horn & Status LED** | |
| 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 |
| Operation | Menu driven via 6 pushbuttons |
| **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 | |
| - 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) |
| **Regulations** | |
| Directives | EMC Directives 2014/30/EU Low Voltage Directive 2014/35/EU CE, UKCA EN 61010-1:2010 |
| Conformity | EN 50271, EN 50270 Type I, IEC/EN 61508-1-3, EN 45544-1, -3, EN 14624, EN 60335, EN 378 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1 |
| **Warranty** | Two years material and workmanship |

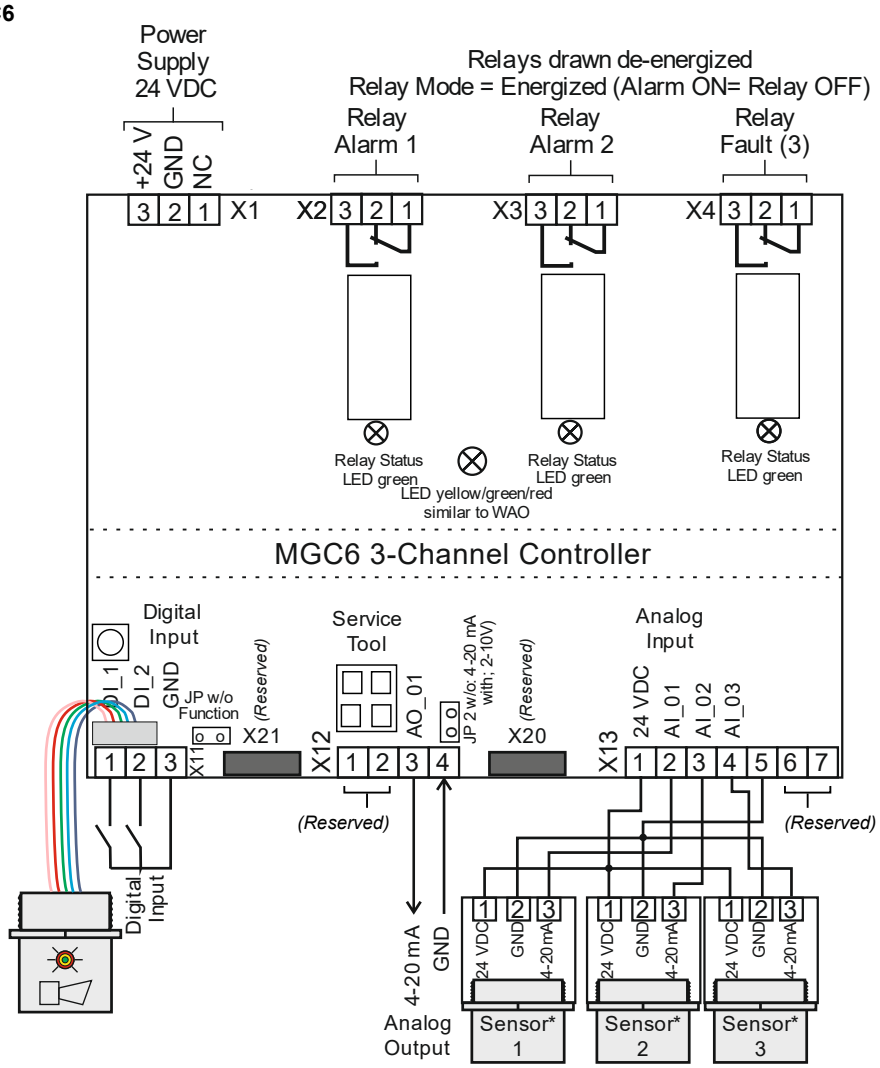
## DIMENSIONS

inches (mm)




## WIRING CONFIGURATION

### MGC6




*Notes:*

- *Relay Fault (3) is always energized.*
- *The connection of 2x AT6 sensor heads with IR sensor is not allowed.*
- *When connecting 2x AT6 sensors, at least 1x must be an electrochemical sensor from the AT6-E11XX series.*
- *When connecting 3x AT6 sensors, at least 2x must be electrochemical sensors from the AT6-E11XX series.*
- *Max. 3 sensors in total.*

## ORDERING INFORMATION

| PART NUMBER | DESCRIPTION |
|---|---|
| **POWER SUPPLY** | |
| **MGC6-0000US** | Controller, Analog PolyGard®2 for (3) Ext. Sensor Inputs (4-20mA); Includes (3) Alarm Relays, (1) AO, (2) DI, Horn and LCD/Keypad, 24 VDC |

**AT6 Gas Transmitters available separately.**
See AT6 datasheet for specifications.

The MGC6 accepts up to (3) AT6 Transmitters simultaneously.

*The connection of 2x AT6 IR sensors is not allowed.*

*When connecting 2x AT6 sensors, at least 1x must be an electrochemical sensor from the AT6-E11XX series.*

*When connecting 3x AT6 sensors, at least 2x must be electrochemical sensors from the AT6-E11XX series.*

### AT6-Series for MGC6
(Available separately; see AT6 datasheet)

**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-A | Ammonia | $NH_3$ | 0-100 ppm | Ceiling |
| E1125-B | Ammonia | $NH_3$ | 0-300 ppm | Ceiling |
| E1125-C | Ammonia | $NH_3$ | 0-500 ppm | Ceiling |
| E1125-D | Ammonia | $NH_3$ | 0-1000 ppm | Ceiling |
| E1193-C | Chlorine | $Cl_2$ | 0-10 ppm | Floor |
| E1189-C | Ethylene | $C_2H_4$ | 0-200 ppm | 5-6 |
| E1185-B | Formaldehyde | $CH_2O$ | 0-10 ppm | Floor |
| E1186-D | Hydrogen Chloride | HCl | 0-20 ppm | Floor |
| E1183-C | Hydrogen Cyanide | HCN | 0-100 ppm | Ceiling |
| E1197-A | Hydrogen Sulfide | $H_2S$ | 0-50 ppm | Floor |
| E1195-A | Oxygen | $O_2$ | 0-25 Vol% | 5-6 |
| E1190-A | Ozone | $O_3$ | 0-5 ppm | Floor |
| E1196-B | Sulfur Dioxide | $SO_2$ | 0-20 ppm | Floor |
| **#** | **INFRARED SENSORS** *(Incompatible with DR6 module)* | | | Mounting Height (ft) |
| I1164-B | Carbon Dioxide | CO2 | 0-5 Vol% | 5-6 |
| I1164-C | Carbon Dioxide | CO2 | 0-2 Vol% | 5-6 |
| I1164-D | Carbon Dioxide | CO2 | 0-5000 ppm | 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 |
| 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 |
| P3496-A | Gasoline Vapors | - | 0-100% LEL | - |
| P3491-A | Heptane | $C_7H_{16}$ | 0-100% LEL | Floor |
| P3435-A | Hexane | $C_6H_{14}$ | 0-100% LEL | Floor |
| P3440-A | Hydrogen | $H_2$ | 0-100% LEL | Ceiling |
| P3476-A | Isopentane | $C_5H_{12}$ | 0-100% LEL | Floor |
| P3482-A | Isopropyl Alcohol | $C_3H_8O$ | 0-100% LEL | Floor |
| 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 |