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

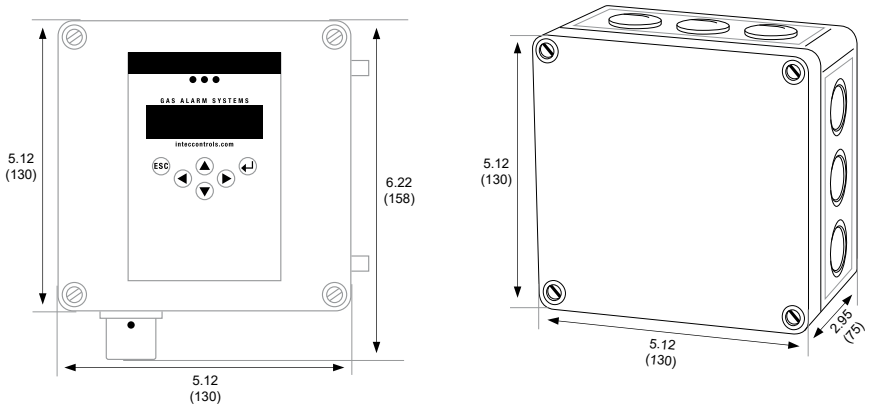
SPECIFICATIONS

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)
Serial interface	
- field bus	RS-485 / 19200 Baud
- tool bus	2-wire / 19200 Baud
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

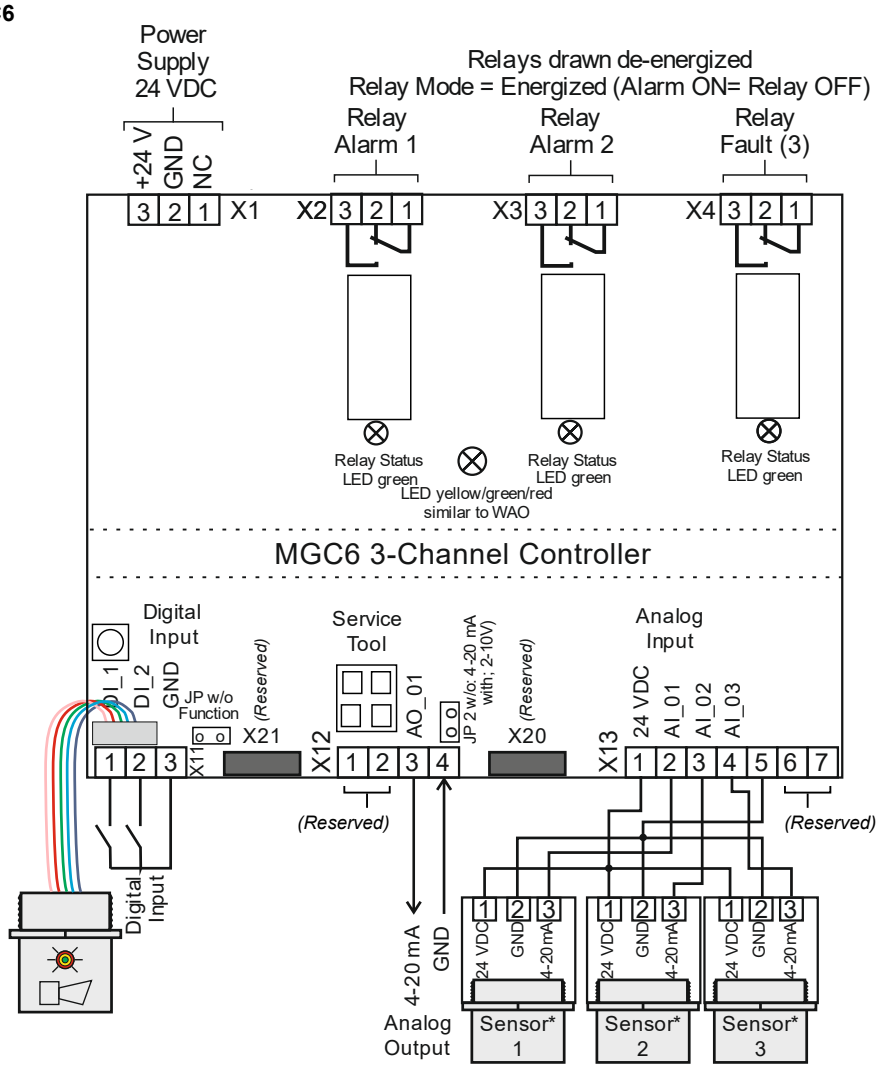
DIMENSIONS

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
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Ceiling
E1197-A	Hydrogen Sulfide	H_2S	0-50 ppm	Floor
E1195-A2	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**			**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
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