

DESCRIPTION

Analog gas sensor with 4-20 mA (2-10 V) output for connection to any compatible electronic analog control, DDC/PLC control or automation system.

Compliant with Safety Integrity Level 2 (SIL 2) and rigorous international standard EN 50545-1 for parking garages and tunnels, AT6-Series sensors utilize advanced self-diagnostics and flexible ventilation control functions to ensure maximum human safety without compromising energy efficiency.

The AT6 includes 1 or 2 high performance sensing elements (electrochemical, infrared or pellistor type), and an amplifier as well as a microprocessor. All important data and measured values of the sensor element are stored fail-safe in the module and transmitted digitally via the local bus to the transmitter. Calibration management is also integrated in the microprocessor of the sensor cartridge.

Calibration is done either by simply swapping the sensor cartridge or by using the user friendly, integrated calibration routine directly at the system.

APPLICATION

AT6 transmitters, connected to the DC6-Series, in combination with DGC6 Digital Gas Controllers or MGC2 Analog Gas Controllers provide scalable solutions for monitoring and controlling toxic and/or combustible gas levels. AT6-CO and AT6-NO2 transmitters are economical electrochemical sensors ideally suited to parking garage, vehicle maintenance shops, package sorting and distribution facilities and tunnel applications. AT6-COMB transmitters provide monitoring of methane, propane, hydrogen and other combustible gases using reliable pellistor type sensing elements.

FEATURES

- 4-20 mA (2-10 V) analog output
- Single (3-wire) or dual gas modules (4-wire)
- Temperature compensated
- Internal diagnostics including integrated hardware watchdog
- High-impact NEMA 4X (IP65) enclosure
- Hardware & software conforms to SIL 2 standard

PolyGard®2 AT6



- UL 2075 Listed
- EMC Directive 2014/30/EU
- CE
- EN 50271
- EN 61010-1:2010
- ANSI/UL 61010-1
- CAN/CSA-C22.2 No. 61010-1
- EN 50104 (for O₂)

SPECIFICATIONS

Electrical

Power supply 16-29 VDC,
reverse polarity protected

Power consumption

- toxic gases & oxygen 50 mA (.6 VA), max. per sensor
- infrared (CO₂) 40 mA (1.0 VA), max. per sensor
- combustible gases 70 mA (1.8 VA), max. per sensor

Sensor Performance

See *Sensor Performance Table*;
see also *Ordering Information*

Sensor element

- toxic gases & oxygen Electrochemical
- infrared (CO₂) Infrared (NDIR)
- combustible gases Pellistor (catalytic bead sensor)

Sensor coverage

See *Ordering Information*;
max. sq ft, affected by static
and dynamic variables

Analog output signal

One (1) per sensor module,
proportional,
overload and short-circuit proof,
load $\leq 500 \Omega$
4-20 mA = measuring range;
3.2 < 4 mA = under range;
> 20-21.2 mA = over range;
2.0 mA = fault
> 21.8 mA or 10.9 V = fault High

Pressure range

- toxic gases & oxygen Atmospheric $\pm 20\%$
- infrared (CO₂) Atmospheric $\pm 30\%$

(interference + 1.6% on
measured value per kPa)

- combustible gases Atmospheric $\pm 20\%$

Storage temperature

41°F to 86°F (5°C to 30°C)

Storage time

6 months

Environmental

Permissible ambient

See *Sensor Performance Table*;
see also *Ordering Information*

Physical

Enclosure "A", standard

- material Polycarbonate,
UL 94-HB, fire retardant

- conforms to UL 50

- 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 3.70 x 2.25 in.

(130 x 94 x 57 mm)

Cable entry, knock out

1 hole (short side) for 1/2 in.
conduit, closed w/screwed "plug"

Weight

0.7 lb (0.3 kg)

Certified to

UL 2075 Listed,
NRTL performance tested
for model AT6-E1110-E

Conforms to

EMC Directive 2014/30/EU
CE
EN 50271
EN 61010-1:2010
ANSI/UL 61010-1
CAN/CSA-C22.2 No. 61010-1
EN 50104 (for O₂)

Warranty

12 months normal exposure for
sensor element

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

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

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

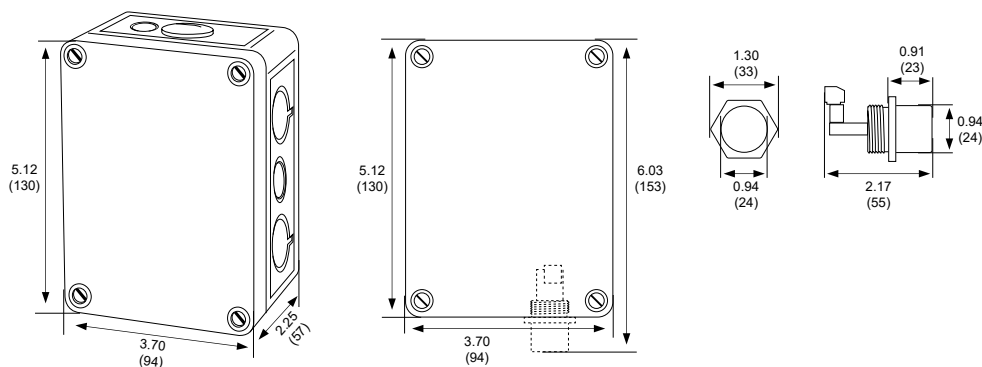
- carbon monoxide
& nitrogen dioxide

CALKIT-PG2-CO-NO2

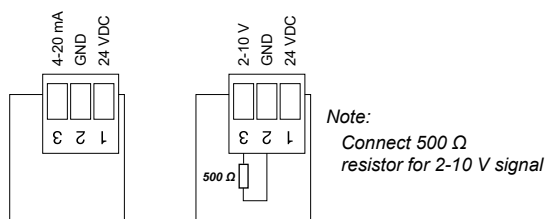
Sensor calibration adapter
w/ tube and cup, 500 mL/min.
regulator (for CO), 500 mL/
min. regulator (stainless steel,
for NO₂), 17L 200 ppm carbon
monoxide, 70L 99.99% nitrogen,
70L 10 ppm nitrogen dioxide,
and (2) carrying cases

DIMENSIONS

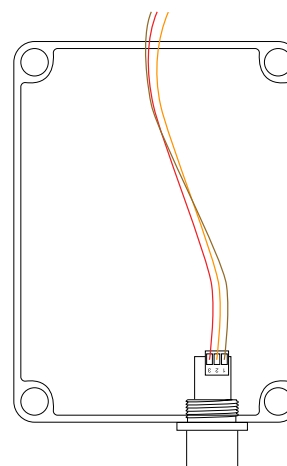
inches (mm)



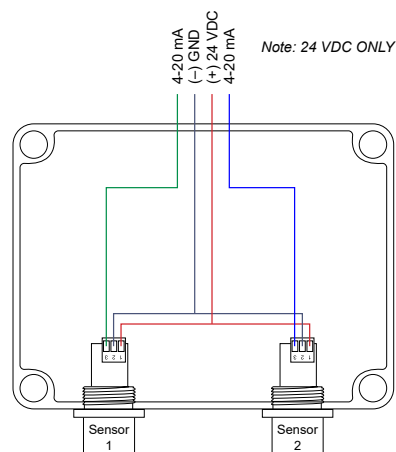
WIRING CONFIGURATION



AT6 (Single)



AT6 (Dual)



SENSOR PERFORMANCE TABLE – TOXIC GAS AND OXYGEN, INFRARED SENSORS

Part Number	Molecular Formula	Measuring Range	Accuracy	Resolution	Repeatability	Response Time	Zero Point Variation	Long Term Drift		Working Temperature	Humidity Range (non-condensing)	Sensor Life Expectancy, Normal Conditions	Relative Gas Density	Mounting Height	Calibration Interval ¹
								Zero	Gain						
TOXIC GASES AND OXYGEN															
		ppm	± ppm	ppm	< ± % sig.	t90 < sec.	± ppm	< % signal/mo.		°F	% RH	> mo.	Air = 1	ft	mo.
E1110-E	CO	0-250	3	0.5	5	50	4	0.4	0.4	5/122	10-95	72	0.97	5-6	12
E1110-F	CO	0-300	3	0.5	5	50	4	0.4	0.4	5/122	10-95	72	0.97	5-6	12
E1130-A	NO ₂	0-10	0.5	0.1	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1130-B	NO ₂	0-20	0.5	0.1	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1130-C	NO ₂	0-30	0.5	0.1	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1130-D	NO ₂	0-500	20	2	2	25	0.2	1	2	-4/122	15-90	24	1.59	5-6	12
E1125-A	NH ₃	0-100	5	0.1	10	120	5	1	2	-22/122	15-90	24	0.60	Ceiling	12
E1125-B	NH ₃	0-300	3	0.1	10	120	5	1	2	-22/122	15-90	24	0.60	Ceiling	12
E1125-C	NH ₃	0-500	3	0.1	10	120	5	1	2	-22/122	15-90	24	0.60	Ceiling	12
E1125-D	NH ₃	0-1000	3	1	10	120	10	1	2	-22/122	15-90	24	0.60	Ceiling	12
E1193-C	Cl ₂	0-10	0.1	0.1	2	90	0.2	1	2	-4/122	15-90	24	2.4	Floor	6
E1183-C	HCN	0-100	0.2	0.1	2	20	1	1	2	14/113	15-90	24	0.93	Ceiling	6
E1189-C	C ₂ H ₄	0-200	1.0	0.3	1	60	4	1	3	-4/122	15-90	24	0.97	5-6	12
E1185-B	CH ₂ O	0-10	0.5	0.01	2	50	0.2	1	2	14/113	15-90	36	1.09	Floor	6
E1190-A	O ₃	0-5	0.1	0.05	5	60	0.15	1	2	14/113	15-90	24	1.66	Floor	12
E1196-B	SO ₂	0-20	0.2	0.2	2	20	0.1	1	2	14/113	15-90	24	2.26	Floor	12
E1197-A	H ₂ S	0-50	0.2	0.1	2	60	0.1	1	2	14/122	15-90	24	1.19	Floor	12
		% Vol	% Vol	% Vol											
E1195-A2	O ₂	0-25	0.5	0.05	--	15	--	--	0.3	14/122	5-95	24	--	5-6	6
INFRARED SENSORS															
		% Vol	% Vol												
I1164-B	CO ₂	0-5	< 10% ²	--	--	100	--	--	--	31/104	0-95	180	1.67	5-6	60
I1164-C	CO ₂	0-2	< 10% ²	--	--	100	--	--	--	31/104	0-95	180	1.67	5-6	60

¹ Manufacturer-recommended calibration interval for normal environmental conditions² of Reading

SENSOR PERFORMANCE TABLE – COMBUSTIBLE GAS SENSORS

Part Number	Molecular Formula	Measuring Range	Accuracy	Resolution	Repeatability	Response Time	Zero Point Variation	Long Term Drift		Working Temperature	Humidity Range (non-condensing)	Sensor Life Expectancy, Normal Conditions	Relative Gas Density	Mounting Height	Calibration Interval ¹
								Zero	Gain						
COMBUSTIBLE GASES ²															
		% LEL	< % sig. (CH ₄)	%LEL	< % sig. (CH ₄)	t90 < sec.	% (CH ₄)	< % LEL / mo. (CH ₄)		°F	% RH	> mo.	Air = 1	ft	mo.
P3485-A	C ₃ H ₆ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.00	Floor	12
P3408-A	NH ₃	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.60	Ceiling	12
P3496-A	vapors	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	-	12
P3460-A	C ₄ H ₁₀	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.11	Floor	12
P3472-A	C ₅ H ₁₀	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	Floor	12
P3427-A	C ₄ H ₈ O ₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.04	Floor	12
P3425-A	C ₂ H ₅ OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.59	Floor	12
P3410-A	C ₂ H ₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.98	Ceiling	12
P3491-A	C ₇ H ₁₆	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.46	Floor	12
P3435-A	C ₆ H ₁₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.98	Floor	12
P3476-A	C ₅ H ₁₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.48	Floor	12
P3482-A	C ₃ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.08	Floor	12
P3402-A	LPG	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	-	12
P3400-A	CH ₄	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.55	Ceiling	12
P3450-A	CH ₃ OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.11	Floor	12
P3458-A	C ₄ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.15	Floor	12
P3475-A	C ₅ H ₁₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.49	Floor	12
P3480-A	C ₃ H ₈	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.55	Floor	12
P3484-A	C ₃ H ₈ O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.08	Floor	12
P3490-A	C ₇ H ₈	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.18	Floor	12
P3440-A	H ₂	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	0.07	Ceiling	12
		ppm	< % sig. (C ₃ H ₈)	ppm	< % sig. (C ₃ H ₈)										
P3480-C	C ₃ H ₈	0-5000	2	1	2	15	0.5	0.3	1	-4/122	5-95	36	1.55	Floor	12

¹ Manufacturer-recommended calibration interval for normal environmental conditions

² The sensitivity of Pellistor sensors can be influenced by substances containing silicon compounds and even poisoned/destroyed by them.

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
SINGLE SENSOR	
AT6-XXXXX-X	AT6, Single Analog Signal; select XXXXX-X from "Gas Sensor & Range"
BUNDLED DUAL SENSORS	
AT6-E1110-E-E1130-A-01	AT6, Dual Analog Signals, (1) 0-250 ppm CO sensor, (1) 0-10 ppm NO ₂ sensor
AT6-E1110-E-E1130-B-01	AT6, Dual Analog Signals, (1) 0-250 ppm CO sensor, (1) 0-20 ppm NO ₂ sensor

The AT6 accepts up to (2) sensor cartridges simultaneously.

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

Gas Sensor & Range					
#	TOXIC GASES AND OXYGEN			Coverage Area (ft ²), Max.	Mounting Height (ft)
E1110-E	Carbon Monoxide	CO	0-250 ppm	7,500	5-6
E1110-F	Carbon Monoxide	CO	0-300 ppm	7,500	5-6
E1130-A	Nitrogen Dioxide	NO ₂	0-10 ppm	7,500	5-6
E1130-B	Nitrogen Dioxide	NO ₂	0-20 ppm	7,500	5-6
E1130-C	Nitrogen Dioxide	NO ₂	0-30 ppm	7,500	5-6
E1130-D	Nitrogen Dioxide	NO ₂	0-500 ppm	7,500	5-6
E1125-A	Ammonia	NH ₃	0-100 ppm	4,000	Ceiling
E1125-B	Ammonia	NH ₃	0-300 ppm	4,000	Ceiling
E1125-C	Ammonia	NH ₃	0-500 ppm	4,000	Ceiling
E1125-D	Ammonia	NH ₃	0-1000 ppm	4,000	Ceiling
E1193-C	Chlorine	Cl ₂	0-10 ppm	Near Source	Floor
E1189-C	Ethylene	C ₂ H ₄	0-200 ppm	5,000	5-6
E1185-B	Formaldehyde	CH ₂ O	0-10 ppm	Contact Rep	Floor
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Near Source	Ceiling
E1197-A	Hydrogen Sulfide	H ₂ S	0-50 ppm	5,000	Floor
E1195-A2	Oxygen	O ₂	0-25 Vol%	5,000	5-6
E1190-A	Ozone	O ₃	0-5 ppm	5,000	Floor
E1196-B	Sulfur Dioxide	SO ₂	0-20 ppm	5,000	Floor
#	INFRARED SENSORS			Coverage Area (ft ²), Max.	Mounting Height (ft)
I1164-B	Carbon Dioxide	CO ₂	0-5 Vol%	7,500	5-6
I1164-C	Carbon Dioxide	CO ₂	0-2 Vol%	7,500	5-6
#	COMBUSTIBLE GASES			Coverage Area (ft ²), Max.	Mounting Height (ft)
P3485-A	Acetone	C ₃ H ₈ O	0-100% LEL	4,000	Floor
P3408-A	Ammonia	NH ₃	0-100% LEL	4,000	Ceiling
P3460-A	Butane	C ₄ H ₁₀	0-100% LEL	4,000	Floor
P3472-A	Cyclopentane	C ₅ H ₁₀	0-100% LEL	4,000	Floor
P3427-A	Ethyl Acetate	C ₄ H ₈ O ₂	0-100% LEL	4,000	Floor
P3425-A	Ethyl Alcohol	C ₂ H ₅ OH	0-100% LEL	4,000	Floor
P3410-A	Ethylene	C ₂ H ₄	0-100% LEL	4,000	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	4,000	-
P3491-A	Heptane	C ₇ H ₁₆	0-100% LEL	4,000	Floor
P3435-A	Hexane	C ₆ H ₁₄	0-100% LEL	4,000	Floor
P3440-A	Hydrogen	H ₂	0-100% LEL	4,000	Ceiling
P3476-A	Isopentane	C ₅ H ₁₂	0-100% LEL	4,000	Floor
P3482-A	Isopropyl Alcohol	C ₃ H ₈ O	0-100% LEL	4,000	Floor
P3402-A	LPG	-	0-100% LEL	4,000	-
P3400-A	Methane	CH ₄	0-100% LEL	4,000	Ceiling
P3450-A	Methanol	CH ₃ OH	0-100% LEL	4,000	Floor
P3458-A	Methyl Ethyl Ketone	C ₄ H ₈ O	0-100% LEL	4,000	Floor
P3475-A	Pentane	C ₅ H ₁₂	0-100% LEL	4,000	Floor
P3480-A	Propane	C ₃ H ₈	0-100% LEL	4,000	Floor
P3480-C	Propane	C ₃ H ₈	0-5000 ppm	4,000	Floor
P3484-A	Propyl Alcohol	C ₃ H ₈ O	0-100% LEL	4,000	Floor
P3490-A	Toluene	C ₇ H ₈	0-100% LEL	4,000	Floor

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 & NO ₂ calibration kit for SC2 / AT6 sensors