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 O_2)

SPECIFICATIONS

Electrical	
Power supply	16-29 VDC, reverse polarity protected
Power consumption	
- toxic gases & oxygen	50 mA (.6 VA), max. per sensor
- infrared (CO_2)	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 (CO_2)	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 ≤ 500 Ω 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 ± 20%
- infrared (CO_2)	Atmospheric ± 30% (interference + 1.6% on measured value per kPa)
- combustible gases	Atmospheric ± 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)

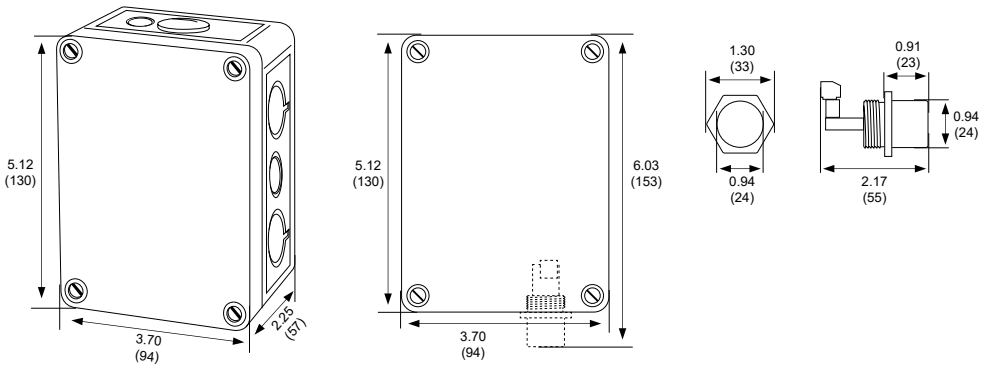
Certified to	UL 2075 Listed, NRTL performance tested for model AT6-E1110-E
Conforms to	EMC Directive 2014/30/EU CE EN 50271 EN 61010-1:2010 ANSI/UL 61010-1 CAN/CSA-C22.2 No. 61010-1 EN 50104 (for O_2)
Warranty	12 months normal exposure for sensor element

ACCESSORIES

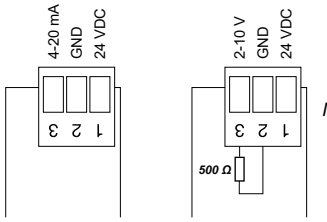
Duct Mounting Kit	**PG2-DUCTKIT**
- flow rate	Min. 3.1 mph (5000 m/h), max. 12.4 mph (20,000 m/h)
- air duct diameter	Min. 3.94 in. (0.1 m), max. 39.37 in. (1.0 m)
- length of sampling tube	9.84 in. (250 mm), adaptable
- hose length	2 x 39.37 in. (1000 mm)
Calibration Kits	
- carbon monoxide	**CALKIT-PG2-CO** 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)

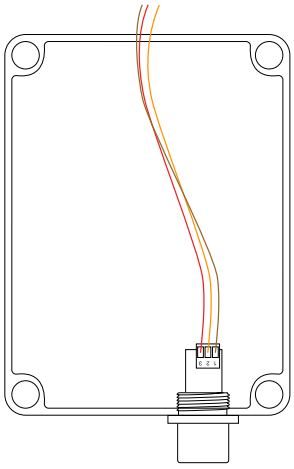


WIRING CONFIGURATION

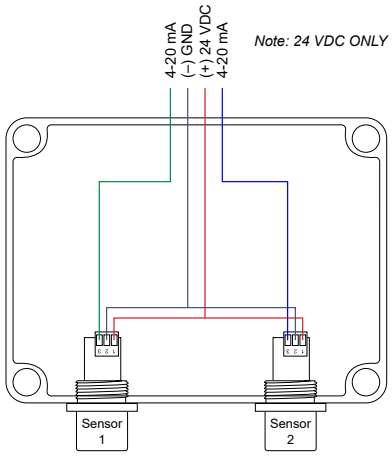


Note:
Connect 500 Ω resistor for 2-10 V signal

AT6 (Single)



AT6 (Dual)



SENSOR PERFORMANCE TABLE

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_2H_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_2O	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_2S	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]	--	--	5	--	--	--	-31/122	0-85	180	1.67	5-6	60
I1164-C	CO_2	0-2	< 10%[2]	--	--	5	--	--	--	-31/122	0-85	180	1.67	5-6	60

[1] Manufacturer-recommended calibration interval for normal environmental conditions
[2] of Reading

SENSOR PERFORMANCE TABLE *(Cont...)*

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_3H_6O	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_4H_{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_5H_{10}	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	-	Floor	12
P3427-A	$C_4H_8O_2$	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	3.04	Floor	12
P3425-A	C_2H_5OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.59	Floor	12
P3410-A	C_2H_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_7H_{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_6H_{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_5H_{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_3H_8O	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_3OH	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.11	Floor	12
P3458-A	C_4H_8O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	1.15	Floor	12
P3475-A	C_5H_{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_3H_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_3H_8O	0-100	1	0.2	1	15	0.5	0.3	1	-4/122	5-95	36	2.08	Floor	12
P3490-A	C_7H_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_3H_8)	ppm	< % sig. (C_3H_8)										
P3480-C	C_3H_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_2H_4	0-200 ppm	5,000	5-6
E1185-B	Formaldehyde	CH_2O	0-10 ppm	Contact Rep	Floor
E1183-C	Hydrogen Cyanide	HCN	0-100 ppm	Near Source	Ceiling
E1197-A	Hydrogen Sulfide	H_2S	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	CO2	0-5 Vol%	7,500	5-6
I1164-C	Carbon Dioxide	CO2	0-2 Vol%	7,500	5-6
#	COMBUSTIBLE GASES			Coverage Area (ft^2), Max.	Mounting Height (ft)
P3485-A	Acetone	C_3H_6O	0-100% LEL	4,000	Floor
P3408-A	Ammonia	NH_3	0-100% LEL	4,000	Ceiling
P3460-A	Butane	C_4H_{10}	0-100% LEL	4,000	Floor
P3472-A	Cyclopentane	C_5H_{10}	0-100% LEL	4,000	Floor
P3427-A	Ethyl Acetate	$C_4H_8O_2$	0-100% LEL	4,000	Floor
P3425-A	Ethyl Alcohol	C_2H_5OH	0-100% LEL	4,000	Floor
P3410-A	Ethylene	C_2H_4	0-100% LEL	4,000	Ceiling
P3496-A	Gasoline Vapors	-	0-100% LEL	4,000	-
P3491-A	Heptane	C_7H_{16}	0-100% LEL	4,000	Floor
P3435-A	Hexane	C_6H_{14}	0-100% LEL	4,000	Floor
P3440-A	Hydrogen	H_2	0-100% LEL	4,000	Ceiling
P3476-A	Isopentane	C_5H_{12}	0-100% LEL	4,000	Floor
P3482-A	Isopropyl Alcohol	C_3H_8O	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_3OH	0-100% LEL	4,000	Floor
P3458-A	Methyl Ethyl Ketone	C_4H_8O	0-100% LEL	4,000	Floor
P3475-A	Pentane	C_5H_{12}	0-100% LEL	4,000	Floor
P3480-A	Propane	C_3H_8	0-100% LEL	4,000	Floor
P3480-C	Propane	C_3H_8	0-5000 ppm	4,000	Floor
P3484-A	Propyl Alcohol	C_3H_8O	0-100% LEL	4,000	Floor
P3490-A	Toluene	C_7H_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 & NO2 calibration kit for SC2 / AT6 sensors