

Combustible Analog Gas Transmitters



DESCRIPTION

Microprocessor-based analog gas transmitters for the detection of combustible gases and vapors in the ambient air.

APPLICATION

To sense a wide variety of combustible gases and vapors in commercial applications such as boiler rooms (i.e. Methane), dry cell battery rooms (i.e. Hydrogen), gas/fuel spill locations (i.e. Gasoline, Hexane), laboratories and industries (i.e. Butane, Propane) and transmit to any compatible electronic analog control, DDC/PLC control or automation system.

FEATURES

- Continuous monitoring
- (0)4-20 mA, (0)2-10 VDC output, selectable
- Polarity protected
- Two-stage relay output control, optional
- Digital display, optional
- Catalytic bead pellistor, long-life
- Temperature compensated
- Performance tested sensor to UL 2075
- Easy plug-in sensor
- RFI/EMI protected
- Modular plug-in technology
- Easy maintenance



NRTL Performance Tested & Certified
Conforms to STD UL 2075

Combustible Gases/Vapors		% v/v*
Acetone	(CH ₃) ₂ CO	2.6
Ammonia	NH ₃	15.0
Benzene	C ₆ H ₆	1.2
Ethylene	C ₂ H ₄	2.3
Ethyl Acetate	CH ₃ COOC ₂ H ₅	2.2
Ethyl Alcohol	C ₂ H ₅ OH	3.3
Hydrogen	H ₂	4.0
Isopropyl Alcohol	(CH ₃) ₂ CHOH	2.2
Jet A	-	1.4
JP8	-	0.9
Methane	CH ₄	5.0
Methanol	CH ₃ OH	6.7
Methyl Ethyl Ketone	C ₄ H ₈ O	1.9
n-Butane	C ₄ H ₁₀	1.8
n-Heptane	C ₇ H ₁₆	1.05
n-Hexane	C ₆ H ₁₄	1.1
n-Octane	C ₈ H ₁₈	0.95
n-Pentane	C ₅ H ₁₂	1.4
Propane	C ₃ H ₈	2.1
Toluene	C ₇ H ₈	1.2

* x% v/v = 100% LEL
LEL = Lower Explosive Limit
v/v = Volume by Volume

SPECIFICATIONS

Electrical

Power supply	24 VAC ± 15%, 50/60 Hz, or 17-28 VDC, polarity protected
Power consumption	50 mA (1.3 VA), max.
- w/relay package	65 mA (1.6 VA), max.
- w/heater	250 mA (6 VA), max.

RFI/EMI protection	5.0 W @ 1 ft. (0.31 m) radiated
Sensor Performance	
Gas detected	Combustible gases and vapors (refer to table)
Sensor element	Catalytic bead (pellistor), diffusion
Range	0 - 100% LEL
Detection limit	0.5% LEL
Accuracy	± 1% of reading
Repeatability	± 2% of reading
Long term zero point drift	< 0.5% LEL _{methane} /month
Long term sensitivity drift	< 2% LEL _{methane} /month
Response time	t ₉₀ < 10 sec. _{methane}
Sensor life expectancy	3 yrs. normal operating environ.
Sensor coverage	Dependent on the target gas
Installation Location	
Mounting height	Dependent on the target gas
Type of Control	
General	Continuous proportional analog sensor signal output
Analog output	(0)4-20 mA, load < 500 Ω; (0)2-10 VDC, load > 50K Ω; jumper selectable, polarity protected
Optional contact outputs	(2) relays, potential free

SPECIFICATIONS

Environment

- Permissible ambient
- working temperature 14°F to 122°F (-10°C to 50°C)
- storage temperature 41°F to 104°F (5°C to 40°C)
- humidity 5 to 95% RH, non-condensing
- working pressure Atmospheric ± 10%

Physical

- Enclosure, standard
- material Galvanized steel w/zinc coating, corrosion resistant
- color Light gray
- protection NEMA1 (IP42), 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 1 hole for 1/2 in. conduit for wall (surface) mounting and 1 hole on back side of base plate for single gang electrical box

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 resistance plus controller input resistance)

Weight 0.7 lbs. (0.3 kg)

Calibration Adjustment via onboard zero and gain potentiometers

Approvals/Listings

- unit rating[▲] NRTL Performance Tested & Certified
- Conforms to STD ANSI/UL 2075 CE
- EMV-Compliance 2004/108/EWG, low voltage directives 73/23/EWG

Warranty Two years material and workmanship

OPTIONS

Digital Display Liquid crystal display "LCD", w/o backlight, two lines, 16 characters, 1/10 digit resolution

Display LEL% values

Permissible ambient -4°F to 158°F (-20°C to 70°C)

Enclosures

- Duct mounted "1"** NEMA 3 (IP45)
- w/probe* 7/8 in. (22 mm) diameter and 7.16 in. (182 mm) length
- cable entry 1 hole for 1/2 in. conduit

(▲) Performance tested with Methane and Propane gases

(*) Duct's probe element and enclosure type "4" are not a part of the NRTL STD 2075 Certification

OPTIONS

- Wall mounted "A"** NEMA 12 (IP55)
- material Polycarbonate, UL 94-HB, fire-retardant
- conformity UL 50
- color Light gray
- 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 1 hole for 1/2 in. conduit for wall (surface) mounting and 1 hole on back side of base plate for single gang electrical box

- enclosure approval UL Listed, E208470
CSA Certified, E208470

Wall mounted "C"

- material NEMA 4X (IP65)
- conformity Polycarbonate, UL 94-HB, fire-retardant
- color UL 50
- gas inlet Light gray
- installation Special moisture filter protection
- dimensions (H x W x D) Wall (surface) mount 5.12 x 5.12 x 2.95 in. (130 x 130 x 75 mm)

- cable entry (1) PG 13.5 compression fitting, removeable, hole fits 1/2 in. conduit conductor

- enclosure approval UL Listed, E208470
CSA Certified, E208470

Wall mounted "4"*

- material NEMA 4X (IP65), w/splash guard
- color ABS UL94V0
- color Light gray
- installation Wall (surface) mounted
- dimensions (H x W x D) 4.80 x 4.72 x 3.42 in. (122 x 120 x 87 mm)
- cable entry (1) PG 13.5 compression fitting, removeable, hole fits 1/2 in. conduit conductor

Relay Package

Type (1) SPDT (R1), and (1) SPST-NC or SPST-NO (R2), jumper selectable

Contact rating 30 VAC/VDC, 0.5 A max.

Setpoint (factory set) Lo / SPDT = 20% LEL*
Hi / SPST = 40% LEL*

Switching differential (factory set) 5% LEL*

* other values on special request at time of ordering

Relay mode De-energized for each relay, energized (fail-safe) mode on special request

Status indicator (2) LEDs, one for each relay

Heater, built-in For low temperature environment -40°F (-40°C)

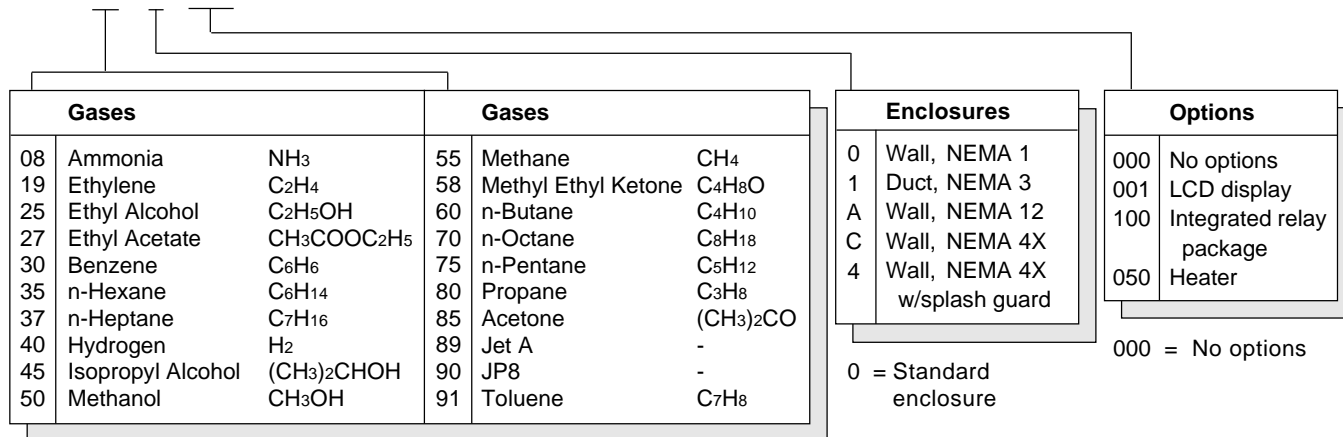
Ambient temperature 0.2 A (5 VA), max.

Power consumption 32°F (0°C) ± 5°F (3°C)

Thermostatic control

ORDERING INFORMATION

AT-3300 - 0 - 000 - 0 (Product label "AT-33xx-x-xxx-0 V3")



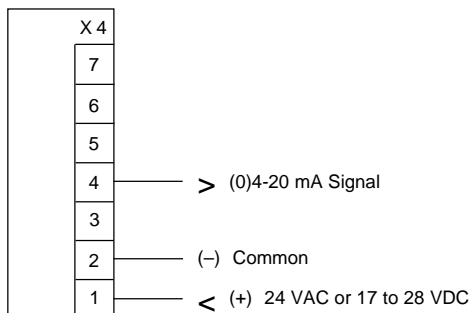
Standard sensor transmitter, ordering part number:

AT - 3355 - 0 - 000 - 0 , Analog Methane sensor/transmitter, w/wall NEMA 1 enclosure, 0-100% LEL range, no options

WIRING CONFIGURATION

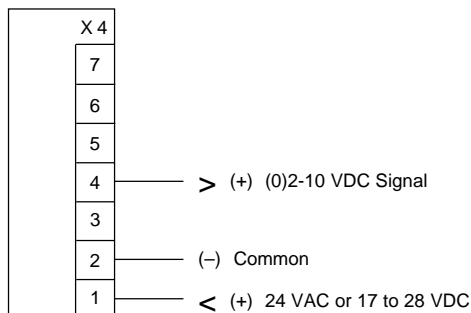
AT-3300

(0)4-20 mA signal, 3-wire, 24 VAC or 24 VDC**



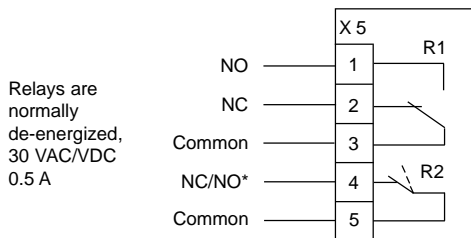
AT-3300

(0)2-10 VDC signal, 3-wire, 24 VAC or 24 VDC



Optional relay package

(0)4-20 mA signal, 3-wire, 24 VAC or 24 VDC**



*Jumper SPST relay NC/NO selector:

- NC Covers top two pins = SPST-NC
- NO Covers bottom two pins = SPST-NO

Note: When using AT-3300 transmitter w/relay package as a stand-alone unit (no connection to a controller), pins on jumpers "V-A" and "0-20%" must be covered.

See **Jumper output signal range selectors**.

Jumper output signal range selectors:

- V-A Over both pins = VDC
Pins not covered = mA
- 0-20% Over both pins = 4-20 mA / 2-10 VDC
Pins not covered = 0-20 mA / 0-10 VDC

Notes:

2-wire loop-powered wire configuration allow only 4-20 mA signal.

Signal range jumper selection:

- V-A Pins not covered
- 0-20% Pins both covered

** For (0)4-20 mA signal with optional relay package, LCD and/or heater, the 3-wire configuration must be applied.

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

Shield should be grounded only at the controller. DO NOT ground shield at both ends!

With optional heater:

The wiring must be sized appropriately for a power of 0.3 A, 24 VDC.