Self Calibrating - CO$_2$ Transmitters

With BACnet® or LonMark® Certified Communicating Options

| Wall Mount TR9290 | Wall Mount TR9294 | In-Duct Mount TR9291 | Splash Resistant Wall Mount TR9293 | Aspiration Duct Probe TR9292 |

A No Calibration CO$_2$ Transmitter

The TR9290 family of sensors are quality-engineered CO$_2$ transmitter targeted at applications where a dependable CO$_2$ sensor is required that never needs calibration.

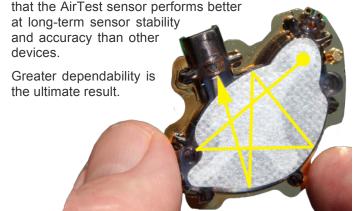Key features of these CO$_2$ transmitters include:

- ❑ Internal self-calibration method based on background measurement that also eliminates need for outdoor CO$_2$ sensor.

- ❑ Choice of outputs: 0-10V, 0-5V or 4-20mA and LonWorks®.

- ❑ Built to ISO 9001 standards

- ❑ Mounting options include wall, duct and in-duct.

- ❑ Utilizes a proven infrared measurement technology with over 18 years of flawless operating history.

- ❑ Supported by a team of knowledgeable application specialists. We are just a phone call away if you have questions.

- ❑ LonMark® Certified output option.

AirTest also offers CO$_2$ sensors that feature self-calibrating dual beam technology, and that integrate CO$_2$ temperature and humidity in one device. We also have a wide variety of other sensors to measure combustible and toxic gases, humidity, dew point and air velocity. Contact us for more information.
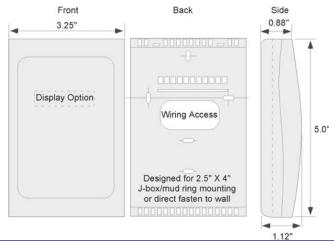
Length Does Matter…

The AirTest CO$_2$ transmitter has proven itself to be the most trouble free CO$_2$ product available today. An important reason for this is the unique, patented, oval design of the sensor. All competitive sensors use a straight path of infrared energy shining through an air sample to measure CO$_2$. The amount of gas that can be sampled, called the "path length" is limited by the size constraints of their wall-mounted and duct-mounted cases.
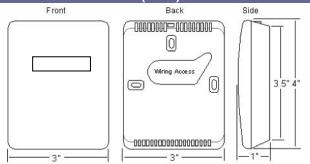
The AirTest design, using a similar sized case, provides over double the path length of any other CO$_2$ sensor (4.8") by bouncing the light around the small oval sensor element. Longer path length means that a larger sample of air is measured. In technical terms this results in an incre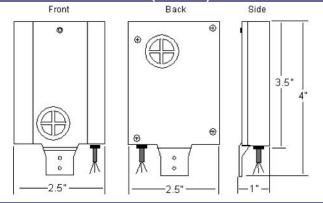ased signal-to-noise ratio. This means that the AirTest sensor performs better at long-term sensor stability and accuracy than other devices.

Greater dependability is the ultimate result.

Dimensions TR9294 (New Wall Mount)

Front — 3.25"
Display Option

Back
Wiring Access
Designed for 2.5" X 4" J-box/mud ring mounting or direct fasten to wall

Side — 0.88"
5.0"
1.12"

Dimensions: TR-9290 (Wall)

Front
Back — Wiring Access
Side — 3.5" 4"
3" — 3" — 1"

Dimensions: TR-9291 (In-Duct)

Front
Back
Side — 3.5" 4"
2.5" — 2.5" — 1"

Dimesions: TR9292 (Aspiration Duct Probe)

8.0" — 1.7" 1.8" — 3.3"
Duct Probe
5.6"

Distributed By:

Specifications

General

CO_2 Detection Method: Gold Plated Non-Dispersive Infrared Optical Sensor with Automatic Baseline Correction for Self-Calibration, 4.8" optical path length, diffusion sampling.

Certification: CE, EMC89/336/EEC, CA Energy Commission, NYSERDA, LonMark® Certifed (V3.4).

Transmitter Rated Life: minimum 15 years

Operating Conditions: 32 to 122º F (0 to 50ºC), 0 to 95% RH

Storage Conditions: -40 to 158º F (-40 to 70º C)

Performance

CO_2 Measurement Range: 0-2000 ppm (factory adjustable to 10,000 ppm upon request),

CO_2 Accuracy: +/- 1% of measurement range +/- 3% of measured value.

Calibration: Self Calibrating, Calibration Not Required

Response Time: T90 = <2 minutes (diffusion), < 15 seconds for flow through.

Power

Input: 24 VAC/VDC ±20%, 50-60 hz (half-wave rectified). **Note:** TR9292-Lon is 24VDC only.

Average Power Consumption: ≤< 1 Watt average

Ground: Analog output transmitters must share common ground with control system.

Outputs

Linear Analog Output: Two simultaneous dual output options available: A) 0-5V & 4-20mA, B) 0-10V & 4-20mA.

LonWorks®: CO_2 ppm & % SNVT (See LonWorks® Specification on next page). LonMark® Certified.
  More Information: www.airtest.com/net/Lon.pdf

BACnet® MS/TP:
  User Interface: Simple DIP Switch Selection
  Output To Host Control: RS485 BACnet® MS/TP
  Baud Rates: 9.6K, 19.2K, 38.4K, 57.6K, 76.8K
  More Information: www.airtest.com/net/BACnet.pdf

Model Number		Output	Display
TR9290	- Wall (EU-3.5' x 3")	A - 0-5V, 4-20mA	_ - No Display
TR9291	- In Duct	B - 0-10V, 4-20mA	L - Display[2]
TR9292	- Duct Probe	Lon - LonWorks®[1]	
TR9293	- Splash Resistant	BAC - BACnet MS/TP[1]	
TR9294	- Wall (US-3.25 x 5")		

Notes: 1 - Only available on TR9294
2 - Not Available On TR9291

CE BACnet 3.4

Covered By US Patents: 6194735, 6016203, other patents pending

AirTest™ Technologies Inc. specializes in the application of cost effective, state-of-the-art air monitoring technology to ensure the comfort, security, health and energy efficiency of buildings.

AirTest™
Sensors That Make Buildings Smart!

4/05/19

AirTest LonWorks® Specifications

Description: This LonWorks® output is only available for the AirTest Model TR9294 wall Mount CO_2 Transmitter. These sensors are all self-calibrating and will not require any maintenance for the life for the sensor (typically 15 years). These sensors provide a CO_2 ppm & % SNVT for 0-2000 ppm CO_2. Other ranges up to 0-10,000 can be factory set.

TR9294-Lon   *TR9294-L-Lon*

LonMark® Specification:

AirTest Models:	TR9294-L-Lon, TR9294-Lon, TR9292-Lon (**Note:** TR9292-Lon is 24VDC only)
Category:	Sensor
Measurement Range:	0-2000 ppm (factory adjustable to 10,000 ppm)
Standard Program ID:	80:00:E5:0A:46:06:04:01
LonMark® Version:	3.4
Manufacturer ID:	229
Device Class:	CO_2 Sensor (10.70)
Usage:	06 – Residential/Commercial
XIF/DRF Download:	www.airtest.ca/support/sw/AirTestLon.zip
Transceiver:	04-TPFT-10
Model:	1
XIF Available:	True
DRF available:	True
LonMark Objects:	0000 Node object (1), 1070 CO_2 Sensor (1)
Clock Rate:	10 MHz
Power Requirement:	18-30VAC/VDC (1/2 wave rectified) < 1 W average
Object Details:	See diagram

CO2 Sensor

Network Variables

nv1	nvoCO2ppm SNVT_ppm
nv1 nv2	nvoCO2percent SNVT_lev_percent

Configuration properties

cp1	nciMaxSendTime SCPTmaxSendTime
cp2	nciMinSendTime SCPTminSendTime
cp3	nciCO2MinDelta SCPTsendDelta
cp4	nciGain SCPTgain
cp5	nciCO2Offset SCPToffset

AirTest CO$_2$ BACnet® Specifications

Description: This BacNet® output is only available for the AirTest Model TR9294 wall Mount CO$_2$ Transmitter. These sensors are all self-calibrating and will not require any maintenance for the life for the sensor (typically 15 years). These sensors provide a CO$_2$ ppm output object for 0-2000 ppm CO$_2$.

TR9294-?-BAC   TR929-?-4-L-BAC

TR9294-BAC Overview

The BACnet® objects associated with the TR9294 permits display of current values of the CO$_2$ transmitter. The BACnet® objects associated with the TR9294 are described below.

BACnet® Device Object

The device object allows the configuration of the TR9294. Object properties can be specified as follows.

BACnet® Device Object	Description
TR9294	This allows the operator to specify the following:
	Device name
	Device location
	Time and Date
	Universal Time Coordinates Offset
	APDU properties
	MS/TP properties
	Object Identifer

BACnet Analog (AI) Objects

The analog inout objects permit display of present values of the following values.