

# TEMPERATURE MEASUREMENT FOR DUCTED SYSTEMS (X)T00D Models

## IAQ ENFORCER™ Product Data Sheet

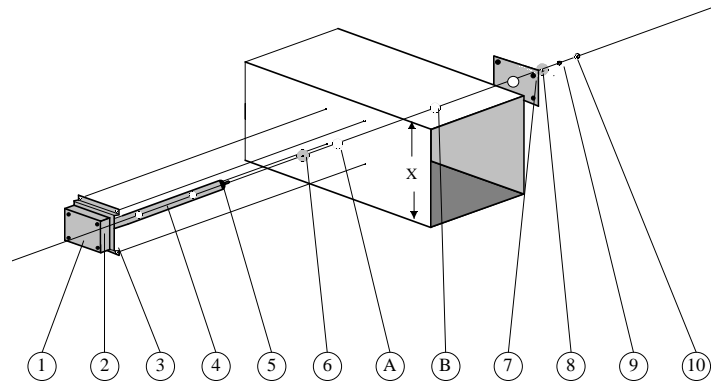
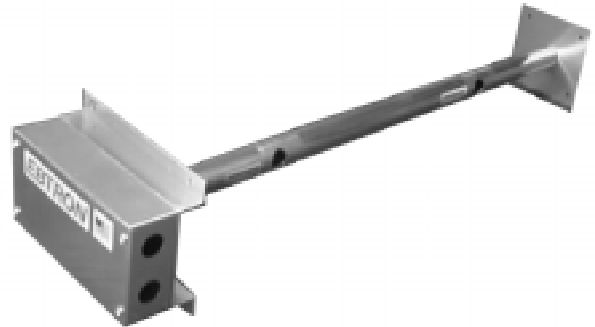
Model-T00D temperature sensor probe is designed for simple insertion into a duct. This highly accurate averaging thermistor temperature sensing probe is factory calibrated and provides the user with a linear output signal for temperature. When combined with intelligent DDC systems, the T00D affords the engineer and building manager a cost effective tool for the accurate and reliable control necessary to meet the requirements of today's air distribution systems. The microprocessor based electronics uses high quality **industrial grade** components. Its insertion probe design and "daisy chained" cable hookups results in quick and easy installation in both new and retrofit applications.

### Effective and Economical Measurement For:

- Accurate discharge air temperature control
- Mixed air temperature control
- Process temperature control

### Features:

- Microprocessor based electronics with "watchdog" timer circuitry to assure continuous operation after power resets and brownouts
- Highly reliable and stable instrument grade thermistor probes
- Each sensing point is independent
- True average temperature output
- Simple 3 conductor "daisy chain" with other **EBTRON** sensors when used with IAQ Enforcer SPC panel systems



### Mechanical Construction

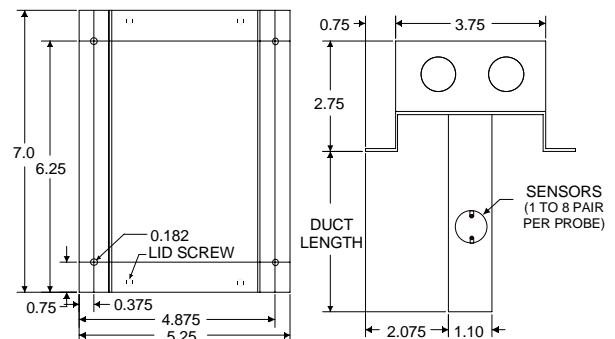
- **Enclosure and cover [1 and 2]:** Stamped, 0.04", 5052 alloy sheet, aluminum, non rated enclosure, access for two (2) 1/2" conduit connections
- **External Support Bracket [3]:** Extruded, 6063-T52 Extruded alloy, aluminum
- **Support Struts [4]:** Tubular, 6063-T6 extruded alloy, aluminum; 1.1" O.D.
- **Terminal Mounting Stud (probes ≥ 18") [5]:** 3/8"x 16, zinc plate, steel
- **Insertion Side Gasket [6]:** Neoprene Rubber
- **External Support Bracket [7]** Stamped, 0.04", 5052 alloy sheet, aluminum
- **Terminal Side Gasket (probes ≥ 18") [8]:** Neoprene Rubber
- **Fender Washer (probes ≥ 18") [9]:** Zinc plate, steel
- **Lock Nut (probes ≥ 18") [10]:** Nickel plate, steel

### Sensor Construction

- **Temperature Sensor:** glass encapsulated, hermetically sealed, industrial thermistor probe
- **Sensor Housing:** Glass Filled Polypropylene
- **Sensor Assembly Compounds:** epoxy
- **Internal Wiring:** Kynar® coated copper

### General Construction & Features

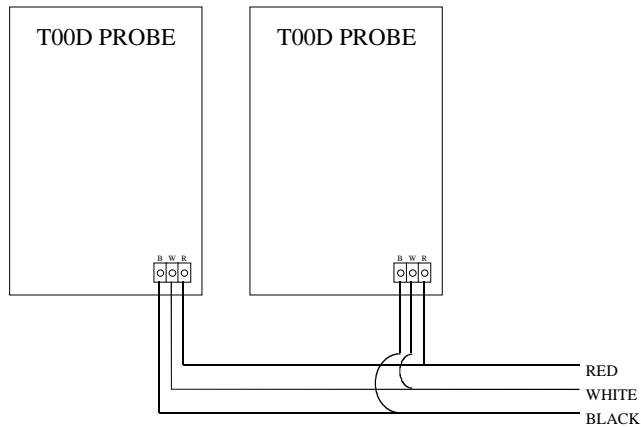
CONSTRUCTION		
Sensor Accuracy - Temperature	typ.	0.18° F
	max.	0.36° F
OUTPUT SCALING		
Temperature	std.	Custom when ordered
ELECTRICAL CONNECTIONS		
Between T00D Series Satellites	cable	See 'Wire Selection' Tables
	termination	Terminal Block
SPC Panel or Remote X-Head to T00D Series Satellites	cable	See 'Wire Selection' Tables
	termination	Terminal Block
OPERATING RANGES		
Operating Temperature Range		-20° to 160° F
Operating Humidity Range		0 to 99% RH
PRESSURE DROP		
Pressure Drop @ 2000 ft/min	max.	0.005 in w.g.
CONSTRUCTION		
Sensors per Probe		1 to 8
Probes per Location		1 to 8
Probe Enclosure	std.	Aluminum 5052
	opt.	NEMA 4
		304 Stainless Steel
Probe Body	std.	Aluminum 6063 T52
	opt.	316 Stainless Steel
Sensor Housing	std.	Glass Filled Polypropylene
	opt.	Kynar
Temperature Sensor		Instrument Grade Thermistor



NOTE: 3/8" X 1.5" THREADED ROD EXTENDS FROM END WHEN UNIT IS 18" OR LONGER

\* 3.50 inches with integral "X" head electronics installed

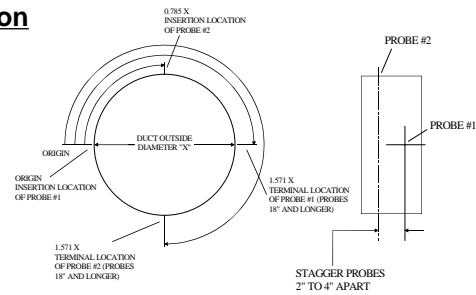
## Wiring



### NOTES:

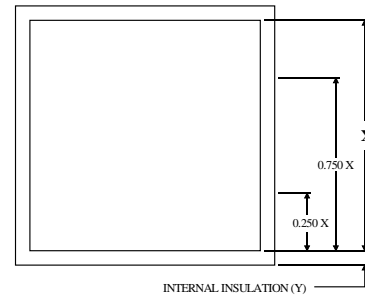
- CONNECT LIKE COLORS FROM EACH SATELLITE TERMINAL TO THE EQUIVALENT COLOR CODED TERMINAL ON EITHER THE IAQ ENFORCER SPC PANEL OR "X" HEAD ELECTRONICS (SINGLE SATELLITE SYSTEMS WITH INTEGRAL X-HEAD ELECTRONICS ARE PREWIRED AT THE FACTORY).
- USE 3 CONDUCTOR CABLE, SHIELDING IS NOT REQUIRED BETWEEN SATELLITES.
- CHECK THE SPC OR "X" HEAD *INSTALLATION GUIDES* FOR WIRE GAUGE SELECTION AND TO DETERMINE MAXIMUM WIRE LENGTHS FOR EACH SINGLE RUN OR "DAISY CHAIN".

## Installation



Number of Probes	Distance Along Duct Circumference				
	Side	Probe 1	Probe 2	Probe 3	Probe 4
1	Insertion	Origin			
	Terminal	1.571 X			
2	Insertion	Origin	0.785 X		
	Terminal	1.571 X	2.356 X		
3	Insertion	Origin	0.524 X	1.047 X	
	Terminal	1.571 X	2.094 X	2.618 X	
4	Insertion	Origin	0.392 X	0.785 X	1.178 X
	Terminal	1.571 X	1.963 X	2.356 X	2.749 X

X=Outside Diameter of Duct



Number of Probes	Distance From Edge of Duct*			
	Probe 1	Probe 2	Probe 3	Probe 4
1	0.500 X			
2	0.250 X	0.750 X		
3	0.167 X	0.500 X	0.833 X	
4	0.125 X	0.375 X	0.625 X	0.875 X

X=Inside Duct Dimension of Insertion Side

\* Add internal insulation to distance calculated

## Suggested Engineers Guide Specification

A. & B. Insert appropriate specification from product data sheet for either the IAQ Enforcer SPC Panel or "X"-Head electronics.

C. Manufacturer

1. Base Bid: **EBTRON** Inc., Model T00D

B. Temperature Measurement: Averaging temperature sensor using instrument grade thermistor temperature sensors. Measurement drift shall not exceed Manufacturer's repeatability statement for the life of the equipment. Manufacturer shall provide test data for accuracy performance prior to bid date.

1. **EBTRON** Model T00D Duct Mounted Sensor

a) Flow Station Construction

(1) Type: Duct Mounted

(2) Sensors : One glass encapsulated thermistor temperature sensor for each sensing point.

(3) Sensor Housing: Glass Filled Polypropylene

[option for corrosive environments, insert: Kynar]

(4) Sensors per probe: 1 to 8

(5) Support Struts: Tubular Aluminum 6061 [option for corrosive environments, insert: 316 Stainless Steel]

(6) Supporting Bracket: Aluminum 6063 [option for corrosive environments, insert 304 Stainless Steel]

b) Electronics

(1) Type: Microprocessor Based, totally solid state.

(2) Electrical Connections Electronics to IAQ Enforcer SPC Panel or X-Head: 3 conductor, provided by others.

(3) Enclosure: Aluminum, indoor use only. [option, insert: NEMA 4, outdoor use][option for corrosive environments, insert: 304 Stainless Steel]

c) Performance

(1) Electronics temperature range: -20 to 160 F

(2) Temperature sensor temperature range: -20 to 160 F

(3) Pressure drop: less than 0.005 inwc @ 2000 ft./min

(4) Humidity range: 0 to 99% RH (non-condensing)

(6) Digital Output Signals to Sensor Signal Processor:

(a) Sensor temperature accuracy: typ. 0.18 F, max. 0.36 F

(b) Type: linear

(d) Warranty

(1) 36 months from shipment, parts and factory labor as described in the Company's Standard Terms & Conditions of Sale

## Ordering Information

T a b D c d e f g

a- Probes per location: 1 to 8

b- Sensors per Probe: 1 to 8

c- Probe Length (inches)

d- Internal Insulation (inches, each side of duct)

e- Shape and Material: 1=alum. rect., 2=alum. rnd., 3=alum. oval, 4=SS rect., 5=SS rnd., 6=SS oval

f-Output Signal(s): 1=0-5 VDC 2=0-10 VDC., 3\*=4-20 mA

g- Temperature Signal Range: 1=30°-80°F, 2=Custom °F, 3=Custom °C

\* Optional configuration, may require additional charges

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