

## **GP1, HP1 AND SP1 DUCT AND PLENUM PROBE INTERNAL MOUNT INSTALLATION OVERVIEW**

This document provides the instructions necessary to install Internal Mount Probes as shown in Figure 1. Internally mounted probes are installed inside of the duct/plenum. Internal mounting is ideal for applications where access through the outside of the duct is limited or not possible and is also well suited for installation in air handling units and plenums. Installation consists of marking the duct for bracket installation and then securing the probe mounting

brackets. For detailed probe information, refer to the Duct/Plenum Probe technical manual under separate cover. For detailed information on transmitter set up and operation of the complete airflow measurement station, refer to the associated transmitter technical manual under separate cover. Observe the following installation precautions:



Figure 1. Internal Mount Probe

### **CAUTION**



Location of the probe(s) is critical for proper performance of the airflow station. Probes must be installed in accordance with the engineer's plans and EBTRON Minimum Placement Guidelines (Figures 4 and 5) for the specified location. For additional probe placement detail, refer to the probe technical manual under separate cover.



Ensure that adequate installation/service clearance exists at the installation site to permit installation of the probe into the duct/plenum, and that the cable length for the probes is sufficient to reach the planned transmitter installation. Refer to the mechanical details of Figure 2.



On applications where multiple probes are to be installed at a single measurement location, install probes in accordance with Figure 3 (Internal Mount Probe Spacing/Configuration). In addition, when traverse data is desired (Gold Series GP1 probes only), place the lowest numbered probe at the top of the duct for horizontal mounting. For vertical mounting, place the lowest numbered probe on the left side of duct when viewed from the upstream side of the mounting location, with cables exiting on the higher side to prevent any potential moisture from accumulating on the heated sensors.



Insulation that may interfere with mounting should be temporarily removed prior to installation and replaced afterwards.

### **INTERNAL MOUNTING OVERVIEW**

Figure 2 provides Standard Internal Mount probe installation details. Probes are installed from inside of the duct or plenum using the included brackets. Internal insulation that may interfere with mounting should be temporarily removed to permit installation. Internal mount probes are manufactured shorter to permit 0.75 in (19 mm) adjustment and allow for installation clearance. Install each probe as follows using the convenient check boxes at each step.

**INTERNAL MOUNT MARKING AND PREPARATION**

1.  Each probe package is factory labeled for the specific location and duct size for which it is designed. Orders for locations requiring multiple probes at a specific location are typically banded and packaged together. Determine the specific duct location for the probe(s) as indicated on the engineer's plans showing where the airflow measuring station is to be located. Refer to Figure 3 for probe spacing and orientation.
2.  Carefully open the probe packaging and inspect for damage. Proceed to the specific additional installation instructions for rectangular ducts (at step 3), round ducts (at step 6) or flat oval duct applications (at step 9).

**For Rectangular Ducts**

3.  The first dimension of the probe size indicates the length of the probe. The second dimension indicates the specific duct internal mounting inside dimension 'X' (including internal insulation). On ducts with internal insulation that cannot be removed, adjust 'X' to equal the internal mounting inside dimension, minus two times the thickness of the insulation. Refer to Figure 2 and verify that the probe is the correct size for the application duct size. Mark a point on the center of the inside of the duct at 'X'. Draw a line on the inside of the duct at this point that is perpendicular to the edge of the duct. This line will be used to locate the position of the probe mounting brackets. The probe quantity for the measurement site determines the probe installation configuration/orientation as shown in Figure 3.
4.  Using the applicable Rectangular Duct Probe mechanical and spacing details of Figures 2 and 3, mark the location for the cable exit end of each probe bracket at the location line(s) drawn in step 3.
5.  Mark the other corresponding end bracket (without cable) installation locations for each probe at the opposite side of the inside duct wall.

Proceed to step 12, Final Assembly.

**For Round Ducts**

6.  Mark and draw a line around the inside circumference of the duct at the point where the probe brackets are to be installed. The number of probes for this specific measurement site determines the probe installation configuration and orientation as shown in Figure 3. Applications with multiple probes must be staggered 1.5 to 2 in (38.1 to 50.8 mm) from each other as shown in Round Duct Probe Spacing detail of Figure 4 to prevent probes from intersecting at the center of the duct.
7.  Using the Round Duct Probe Spacing detail of Figure 3, locate and mark the individual probe mounting location(s) on the circumference line drawn in step 6.
8.  Mark the non cable end bracket installation locations for each probe on the opposite side of the inside duct wall.

Proceed to step 12, Final Assembly.

**For Flat Oval Ducts**

9.  Mark and draw a line around the inside circumference of the duct at the point where the probes are to be installed. For oval duct applications, orientation is as shown in the Oval Duct Probe Spacing table and detail application illustrations of Figure 3. Configuration '2b', '3b' and '4b' probes must be staggered 1.5 to 2 in (38.1 to 50.8 mm) from each other in order to prevent probes from intersecting at the center of the duct.
10.  Using the Round Duct Probe Spacing detail of Figure 3, locate and mark the individual probe installation location(s) for the cable exit end of each probe bracket on the circumference line drawn in step 6.
11.  Mark the non cable end bracket installation locations for each probe on the opposite side of the inside duct wall.

Proceed to step 12, Final Assembly.

### FINAL ASSEMBLY FOR STANDARD PROBES

12.  Ensure that provision has been made for an appropriate cable exit hole through the duct/plenum. The cable exit hole must be of sufficient size to pass the probe connector (which is approximately 0.85 in [20.8 mm]) PLUS any other cables planned for this exit hole. The edges of the cable exit hole must be prepared to ensure that no damage occurs to cable or insulating jacket during or after installation.
13.  Loosen the Non-Cable End Adjustment Screws on both sides of the probe as shown in the detail of Figure 2 for Standard Probes to permit pivoting the probe and bracket.
14.  Carefully place the non-cable end bracket at the non cable end marked location on the inside of the duct wall so that when the probe is installed, airflow will be in the direction of the arrows printed on the bracket and/or probe. For ease of installation, the probe can pivot within the bracket after loosening the non-cable end Adjustment Screws (completed in step 13).

#### **NOTE:**

If the airflow direction labels are not visible on the bracket and/or probe, orient the probe so that the sensor SET SCREWS (two per sensor insert) face the DOWNSTREAM side of the probe as shown in Figure 2. (There are no setscrews on the upstream side of the sensor inserts).

15.  Fasten the Non-Cable End mounting bracket to the duct at two places with appropriate field supplied fasteners, again making sure that printed airflow arrows on the bracket and/or probe are in the actual direction of duct air flow.
16.  Carefully route the probe cable through the cable exit hole prepared in step 12, and pivot the cable end probe bracket to the marked location on the duct wall.
17.  Fasten the cable end mounting bracket to the duct at two places with appropriate field supplied fasteners, again making sure that printed airflow arrows on the bracket and/or probe are in the actual direction of duct air flow.
18.  Slightly loosen the cable end probe Adjustment screws on both sides of the probe to permit probe movement within the bracket.
19.  Carefully center the probe in the duct opening, and then tighten the probe Adjustment Screws on both sides of the cable end bracket, and then on both sides of the non-cable end bracket as shown in Figure 2 detail. (There are 4 Adjustment Screws total).
20.  Repeat steps 12 through 19 for all probes.
21.  Seal all cable exit holes with suitable sealant material.
22.  Connect all sensor probes to the transmitter supplied for the specific location. This completes probe installation.

Complete the installation, wiring and set up of the associated transmitter as detailed in the separate Transmitter Installation Guide and the Installation, Operation and Maintenance Technical Manual (each provided under separate cover).

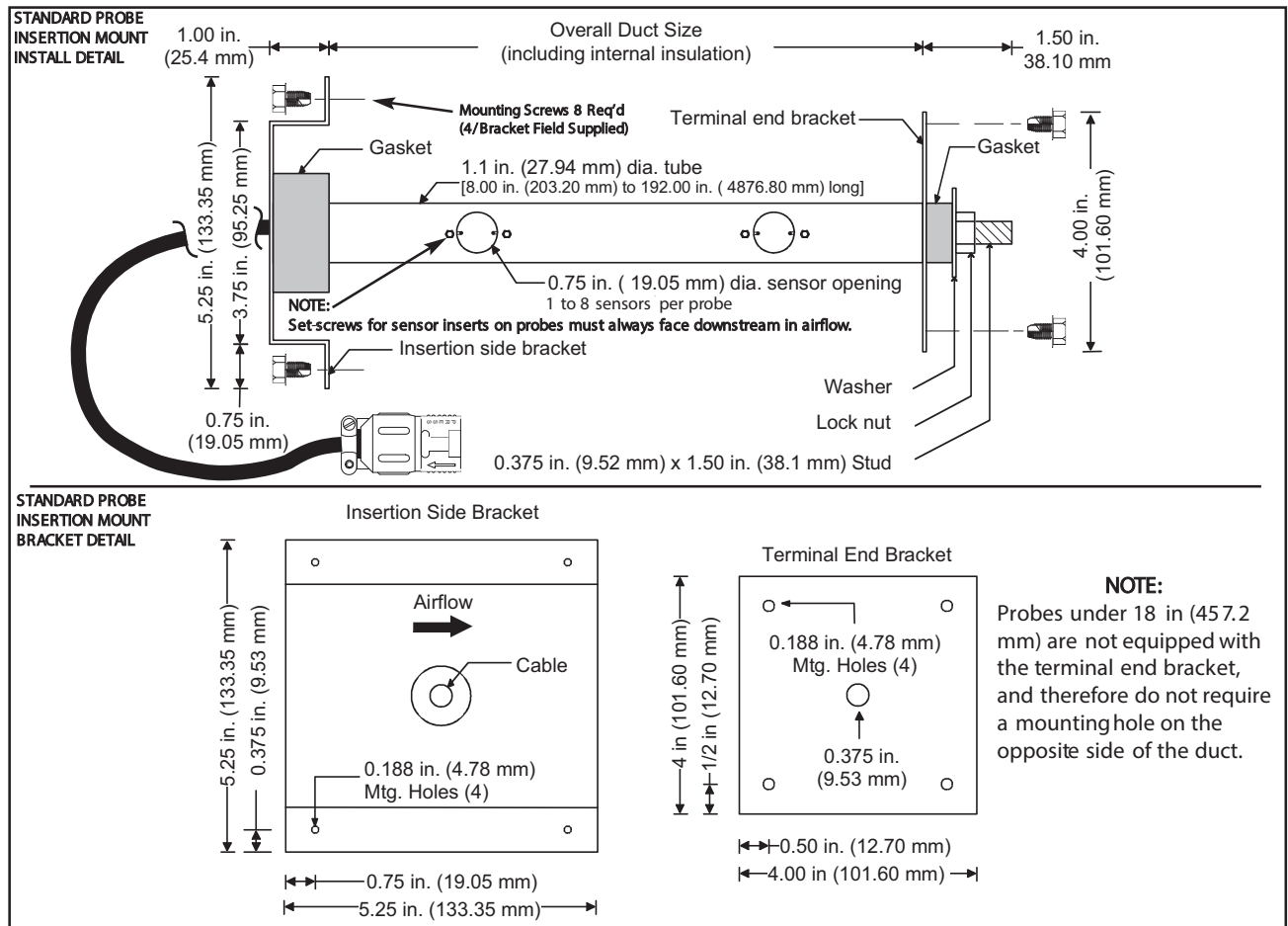


Figure 2. Standard Internal Mount Probe Mechanical Detail

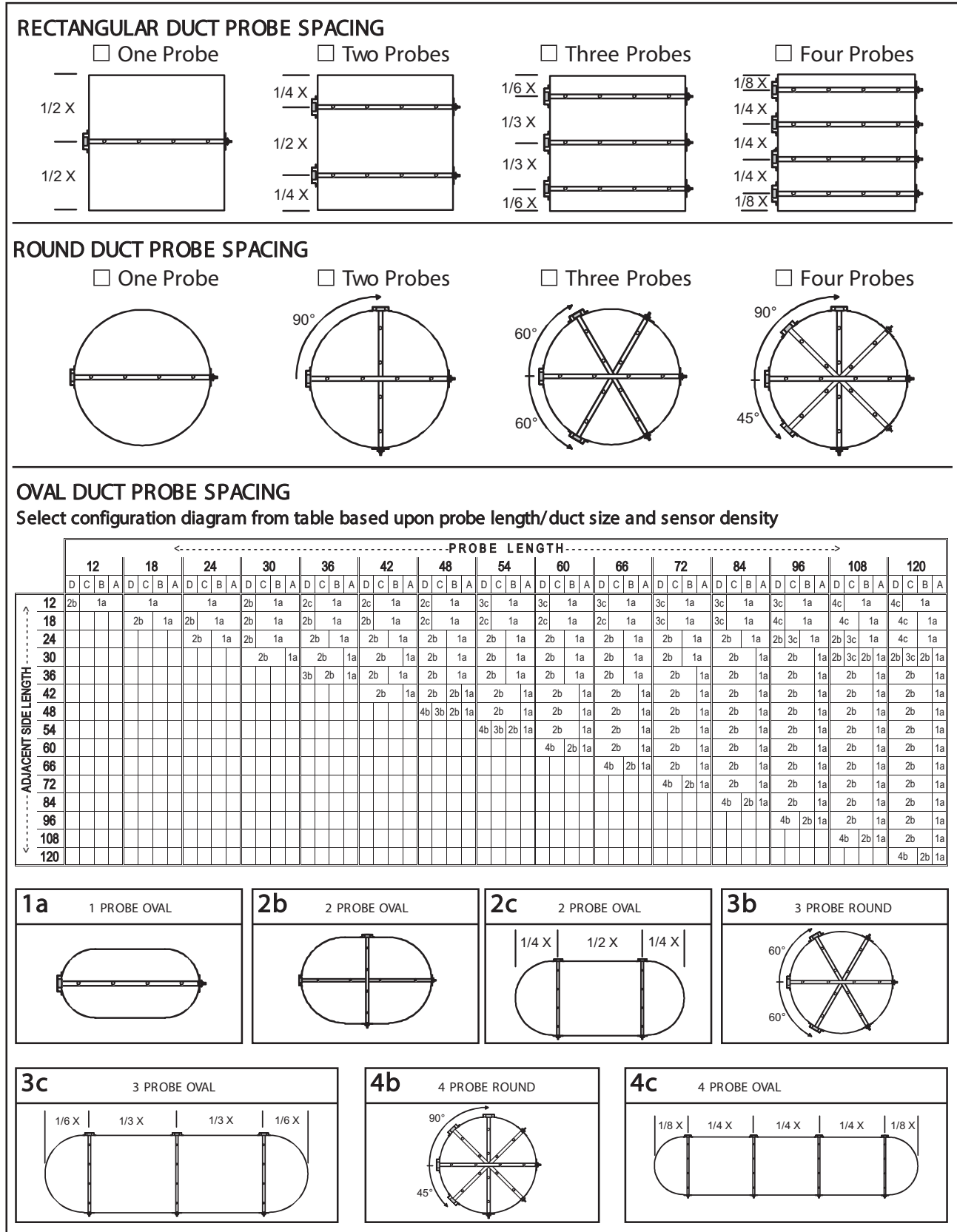


Figure 3. Internal Mount Probe Spacing/Configuration