

Carrier Tube Umbilicals

Dekoron® Unitherm™ supports the process analyzer industry through the development of a line of electric traced tubing bundles that allow the engineer and end user to tailor a single product for multiple tasks. The CTx Series Process Analyzer Umbilicals provide single or dual sample tubes with heater and sensor conduits that allow the umbilical to be provisioned for temperature range and sensor type required for each application without the need of separate designs.



Specifications:

Process Tube:	Single or Dual Tube Design <ul style="list-style-type: none">• 1/8" to 3/8" OD• 316/316L Seamless SS<ul style="list-style-type: none">• Optional SilcoTek 1000• Optional Electropolished• PFA Fluoropolymer
Sensor Tube:	3/8" OD PFA Fluoropolymer cabled with the process tubes
Heater Conduit:	Centrally located 3/4" heater conduit to allow easy insertion of a range of electric heat tapes <ul style="list-style-type: none">• 316L Welded SS• PFA Fluoropolymer

Electric Heat Tape Selection:

The heater conduit is sized to accommodate a number of different electric heater types and outputs, including:

- Low or High Temperature Self-Regulating Heaters
- Power-Limiting Heaters
- Constant Power Density Heaters
- Mineral Insulated Heaters

Features and Benefits

Feature:	Benefit:
<ul style="list-style-type: none">• Centrally located heater conduit	<ul style="list-style-type: none">• Single bundle can be used for multiple applications• Reduces need for special designs• Allows longer length heater installations• Reduces pulling tension• Reduces chance of heater damage
<ul style="list-style-type: none">• Large diameter heater conduit	<ul style="list-style-type: none">• Allows a wide range of electric heaters
<ul style="list-style-type: none">• Integral sensor tube	<ul style="list-style-type: none">• Allows insertion of control sensor to match system• Sensor can be placed in position to meet control requirements

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Standard Model Numbers

Model Number	No. Process Tubes	Process Tube OD	Process Tube Material	Conduit Material	Jacket
6252-37B35-6010	2	.375"	316L Smls Stainless Steel	316L Welded Stainless Steel	FRPVC
6252-34B62-6010	2	.375"	PFA Fluoropolymer	316L Welded Stainless Steel	FRPVC
6252-47A35-6010	1	.500"	PFA Fluoropolymer	316L Welded Stainless Steel	FRPVC

Pulling tension for common heaters

The maximum recommended pulling tension for all heating cables is 30 lbs. The table below shows values obtained in testing as a guide. These values are based on a horizontal pull in a straight tube and are for reference only:

Heater	Tension	Heater	Tension
Low Temp SR	8.0 lbs	Power Limiting	11 lbs
High Temp SR	7.5 lbs	CPD	2.5 lbs

Effect of bending on pulling tension

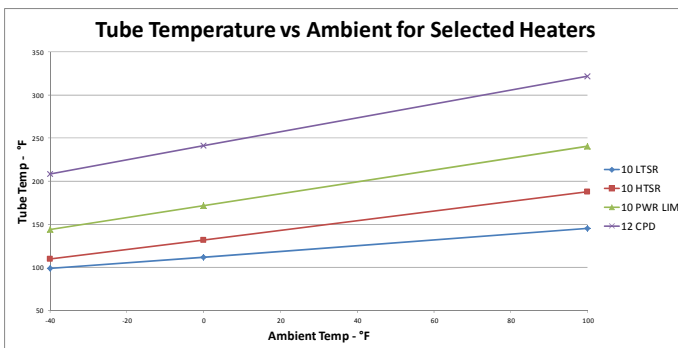
Bending the bundle will increase the pulling tension on all heaters. The amount of increase is based on the type and number of bends. The following guide can assist in determining the maximum run length of an installation. These values are for reference only. The maximum pulling tension applies.

For each 45° bend add 0.5 pounds.

For each 90° bend add 1.0 pounds.

For each 180° bend add 1.5 pounds

For any change in the bending plane add an additional 3.0 pounds



Typical Specifications *Typical data for 2 SS Tubes, SS Conduit*

Nominal Outside Diameter.....	1.75 inches
Nominal Weight per Foot	1.0 pounds
Minimum Bending Radius	20 inches
Maximum Coil Length	200 feet
Maximum Process Temperature	400°F
Minimum Installation Temperature	-25°F
Outer Jacket Temperature	<140°F

Heater and Sensor Installation

The heater can be pushed into the conduit on small runs with few or no bends. For longer runs, it will need to be drawn into the conduit using a fish tape or string. We have pulled runs up to 100 feet easily using a binder cord. The binder cord can be blown down the tube then attached to the heater. An easy way to attach the cord is to strip back the outer jacket of the heater to expose 2 inches of the buss wire. Use a standard barrel crimp to connect the two buss wires together. Loop the draw cord between the buss wires and tie it off. This creates a very secure and tight connection which reduces the pulling tension, especially around bends.

Thermocouple sensors can typically be inserted into the 3/8" sensor tube for distances up to 15 feet with no fish tape or draw cord. RTD sensors may require the same installation method as used for the heater.

Accessories Insertions RTD's and T/C's (sensor bulb with small dia wires inside 1/8" PFA tube)