

UNITHERM™ 2256/2266 SELF-REGULATING ELECTRIC TRACE TUBING HIGH TEMPERATURE MAINTENANCE AND STEAM CLEANED LINES

Principal of Operation

Unitherm 2256/2266 HTM (High Temperature Maintenance) Electric Trace tubing is comprised of single or multiple process tubes, a high temperature self-regulating heating element with tinned copper braid, a heat reflecting foil wrap, moisture resistant, non-wicking, inorganic, fibrous glass thermal insulation, and a 105°C black flame retardant PVC jacket. This highly efficient design will provide temperature maintenance of 100°F (38°C) at -40°F (-40°C) ambient. In addition, the heating element will withstand exposure temperatures up to 366°F (185°C). This allows the process tube(s) to be steam purged with 150 spig saturated steam with no damage to the heating element. The standard product is available with a 10 W/ft. 120 VAC or 240 VAC self-regulating heating element. Designs are Factory Mutual Approved for Class 1, Division 2, Groups B,C,& D areas.

Features

- Self-regulating heating element.
- Pre-insulated and prefabricated for fast, easy installation.
- Consistent and predictable thermal characteristics.
- Maintenance free
- Class I, Division 2 design.

Applications

- Analyzer and Instrument lines
- Small diameter process lines
- Impulse lines

How to Specify

Example: 2256-20A50

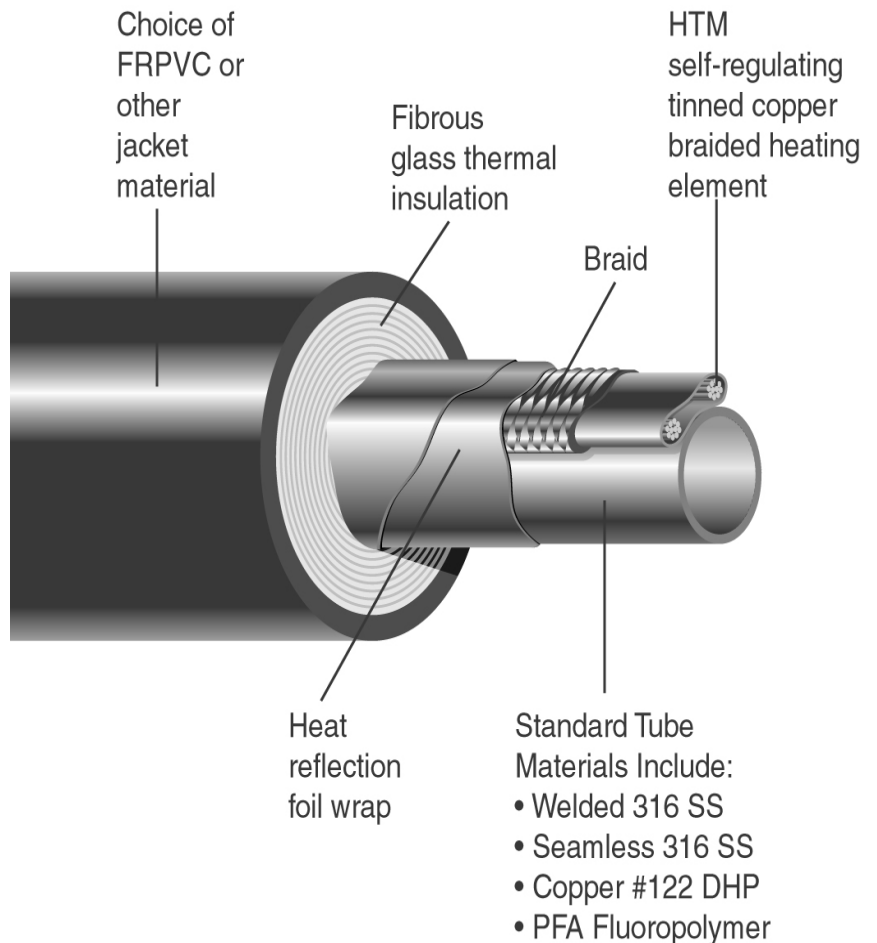
Unitherm self-regulating HTM electric trace tubing (1) 1/4" O.D. x .035" wall 316-Welded S/S tube; 10 W/ft @ 120 VAC self-regulating tinned copper braided heating element; moisture resistant, non-wicking, inorganic fibrous glass thermal insulation; 105°C black PVC jacket;

MTR**= 366°F (185°C)

**Maximum Temperature Rating is the design condition for which this product is manufactured. Temperatures in excess of this rating may result in deterioration of the components or changes in the operational characteristics.

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Form 2256/66HTSRET 040903



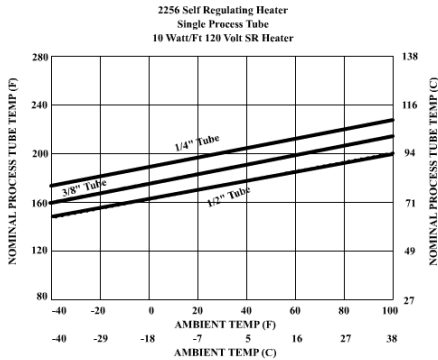
Refer to Product Derivation for options on Tube Mat'l's & Jackets

| | | | | | | |
|--|--|---|---|--|---|------------------------|
| How to order: 2256- | X | X | A* | X | X | Single Process Line |
| How to order: 2266- | X | X | X | X | X | Multiple Process Lines |
| Process Tube O.D. 2 = 1/4" 3 = 3/8" 4 = 1/2" 5 = 5/8" 6 = 3/4" *Single Tube Only | Process Tube Material 0 = 316 S/S Welded 1 = #122 Copper 4 = PFA Fluoropolymer 7 = 316 S/S Seamless | | Number of Process Tubes A = 1 B = 2 C = 3 D = 4 E = 5 | Heater Type 50= 10 W/ft./ 120 VAC Tinned Copper Braid Class 1 Div. 2 B0= 10 W/ft. /240 VAC Tinned Copper Braid Class 1 Div. 2 | | |
| <p>Note: Constructions and materials other than listed above are available upon request. Factory Mutual approvals require the use of Unitherm components and accessories. CSA approved heater. See page 3 for expanded product offering.</p> | | | | | | |

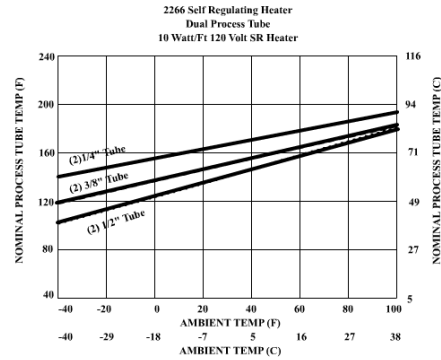
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Due to imaging and distortion chart points can only be used for approximations.

See pages 4 & 5 for large view of graphs



See pages 4 & 5 for large view of graphs



Electrical Specifications

| | |
|-----------------------------|---|
| Heater Type..... | Self-Regulating |
| Heater Insulation... | Flame Retardant Thermoplastic |
| Circuit Length..... | 180 Ft. @ 120 VAC 280 Ft. @ 240 VAC |
| Bus Wire Size (AWG)..... | 16 |
| Power Output..... | 10 watts/ft. @120 VAC or 240 VAC @ 50°F |
| Alternate Voltage... | Unitherm 240 VAC Self- regulating heaters can be operated at alternative voltages. The chart below compares heater power output with product rating. |

| | |
|-------------------|--------------|
| Adjustment Factor | 208 VAC 76% |
| Adjustment Factor | 277 VAC 128% |

Rating per N.E.C.
500..... T3

| Breaker Sizing vs Max Circuit Length (feet) | | | |
|---|-----------|-----------|-----------|
| if | 15A | 20A | 30A |
| started | 120V 240V | 120V 240V | 120V 240V |
| @50°F | 90 140 | 120 190 | 180 280 |
| @ 0°F | 85 130 | 110 175 | 165 260 |
| @-40°F | 80 125 | 105 170 | 160 250 |

Alternate flame retardant jacket materials
available
including:

- Low Temperature Flame Retardant Polyvinyl
- Flame Retardant Urethane
- Flame Retardant Thermoplastic Elastomer

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| Tube O.D | Standard Wall Thickness*** | Material (1) | ASTM | Working Pressure @ 200°F | Max. Coil Length Feet |
|----------|----------------------------|--------------|-----------|--------------------------|-----------------------|
| 1/4" | .035" | 316-S/S WLD | A-269 | 5320 psi** | 500'* |
| 3/8" | .035" | 316-S/S WLD | A-269 | 3400 psi** | 400'* |
| 1/2" | .035" | 316-S/S WLD | A-269 | 2500 psi** | 300'* |
| 1/4" | .030" | #122 Copper | B-68 B-75 | 1600 psi | 1000' |
| 3/8" | .032" | #122 Copper | B-68 B-75 | 1200 psi | 1000' |
| 1/2" | .035" | #122 Copper | B-68 B-75 | 950 psi | 1000' |
| 1/4" | .040" | PFA | -- | 75 psi | 500'* |
| 3/8" | .062" | PFA | -- | 75 psi | 500'* |
| 1/2" | .062" | PFA | -- | 50 psi | 500'* |

* Longer Coil Length available upon request ** Value given are for Welded. Seamless is slightly higher
*** Heavier wall thickness available (1) Other tube material available

Product Specifications

| | |
|---------------------|--|
| Jacket..... | 105°C Black PVC |
| Insulation..... | Moisture resistant, non-wicking, Inorganic Fibrous Glass |
| Product Rating..... | 185°F (85°C) |

| | | |
|-----------------------|--------------------------|--------------------|
| Nominal Bundle O.D... | Process Tube O.D. | Bundle O.D. |
| | 1/4" | 1.25" |
| | 3/8" | 1.40" |
| | 1/2" | 1.50" |
| | (2) 1/4" | 1.50" |
| | (2) 3/8" | 2.0" |
| | (2) 1/2" | 2.3" |

| | | |
|------------------------|--------------------------|----------------------|
| Nominal Weight (Lb/ft) | Process Tube O.D. | Bundle Weight |
| | 1/4" | .4 |
| | 3/8" | .5 |
| | 1/2" | .6 |
| | (2) 1/4" | .5 |
| | (2) 3/8" | .7 |
| | (2) 1/2" | 1.0 |

Installation Recommendation

See Installation Guidelines for details.
Maximum Support Centers..... Vertical – 15 Feet
Horizontal – 6 Feet

| | | |
|-----------------------------|--------------------------|--------------------|
| Maximum Bending Radius..... | Process Tube O.D. | Bundle O.D. |
| | 1/4" | 6" |
| | 3/8" | 8" |
| | 1/2" | 10" |
| | (2) 1/4" | 8" |
| | (2) 3/8" | 10" |
| | (2) 1/2" | 12" |

Minimum Installation Temperature for PVC + 15°F (-9°C)

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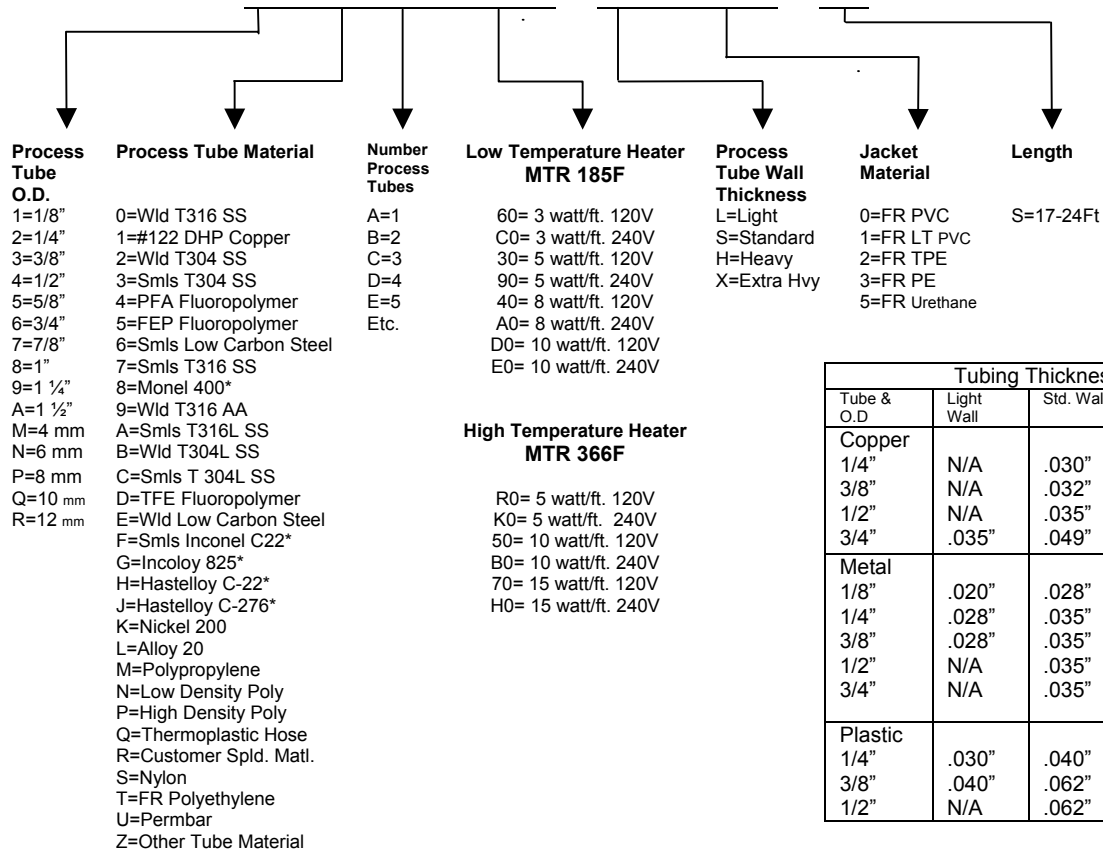
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Product Derivation Dekoron/Unitherm Self-Regulating (SR) Electric Trace Tubing – MTR 185°F or 366°F

2256- X X A X X - X X 0 - X Single Process Tube
2266- X X X X X - X X 0 - X Multiple Process Tube



| Tubing Thickness Standards | | | | |
|----------------------------|------------|-----------|----------|------------|
| Tube & O.D | Light Wall | Std. Wall | Hvy Wall | X-Hvy Wall |
| Copper | | | | |
| 1/4" | N/A | .030" | .032" | .049" |
| 3/8" | N/A | .032" | .035" | .049" |
| 1/2" | N/A | .035" | .049" | .065" |
| 3/4" | .035" | .049" | .065" | .093" |
| Metal | | | | |
| 1/8" | .020" | .028" | .035" | N/A |
| 1/4" | .028" | .035" | .049" | .065" |
| 3/8" | .028" | .035" | .049" | .065" |
| 1/2" | N/A | .035" | .049" | .065" |
| 3/4" | N/A | .035" | .049" | .065" |
| Plastic | | | | |
| 1/4" | .030" | .040" | .047" | .062" |
| 3/8" | .040" | .062" | .093" | N/A |
| 1/2" | N/A | .062" | .093" | N/A |

NOTES:

- Reference tubing and material selection are to determine appropriate derivations.
- Thirteen (13) digit part numbers are used only for products which require outer jacketing material other than our standard FR PVC or if material is required in 17'-24' straight length rather than maximum coil length.
- Specially designed bundles can be engineered for temperatures beyond the maximum temperature rating (MTR).
- Jacketing material with "FR" = Flame – Retardant.
- Heater styles noted are supplied with tinned copper overbraid approved for use in FM and CSA Class 1, Division 2, Groups B, C & D areas providing the approved connection/termination kit is used. Alternate jacket materials are available for Class 1, Division 2, and General Purpose area. Please contact factory.

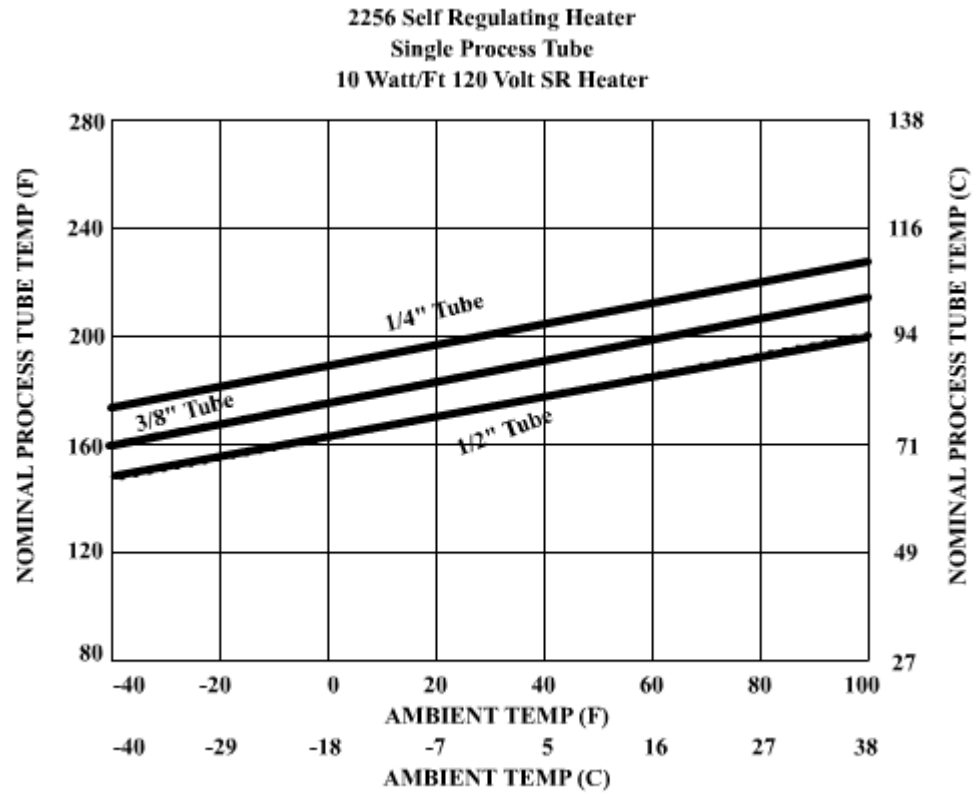
*Hastelloy is a trade name of Haynes International, Inc.

*Monel, Inconel, and Incoloy are trade names of Inco Alloys International, Inc.

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