PRODUCT SPECIFICATIONS

POWERBLANKET/THERMON HTL 2000

HEATED TRANSFER LINE

APPLICATION

In semiconductor fabrication, maintaining the thermal stability of process gases and precursors during transfer is critical to ensuring repeatability and yield. The HTL2000 Heated Transfer Line provides precise, uniform heating along gas delivery pathways, preventing condensation, adsorption, and phase instability of sensitive chemistries such as metalorganics, dopants, and etchants. By mitigating line deposition and particle generation, the HTL2000 enables consistent mass flow control and process uniformity across CVD, ALD, and etch applications, aligning with the stringent requirements of advanced device manufacturing.

GENERAL DESCRIPTION

The Powerblanket/Thermon HTL2000 is a flexible, heated transfer solution engineered to maintain uniform temperature control for process gases, with support for specialty fluids as needed. Built with Thermon Self-Regulating Heat Cable, the HTL2000 ensures stable gas delivery by preventing condensation, adsorption, and phase change within transfer lines. This provides robust freeze protection, precise thermal management, and reliable mass flow consistency critical to advanced processes. With customizable lengths and configurations, the HTL2000 is designed to meet the demanding requirements of semiconductor, chemical, and composite manufacturing environments.

KEY FEATURES

- Custom Power Density & Lengths: Tailored wattage output 5–20 W/f (16-65 W/m) and configurable line lengths from 3-100 ft. (0.5 to 30m).
- Thermon Self Regulating Cable varies in response to the surrounding temperature by reducing its thermal output with increasing temperature.
- Temperature Control Ready: Integrated Type K Thermocouple, RTD, or Thermistor at key points for precise closed-loop control.
- Flexible Construction: Maintains bend radius <100 mm even at low temperatures.
- Sample Integrity Protection: Maintains internal fluid or gas temperature between 0°C–200°C with ±1°C stability (with controller).
- Insulation: Meta Aramid Felt (up to 1/2” thick) for energy retention and burn protection.
- End Connections: Custom swaged fittings or compression-style, with optional quick connects, or raw tube ends.

CERTIFICATIONS/APPROVALS

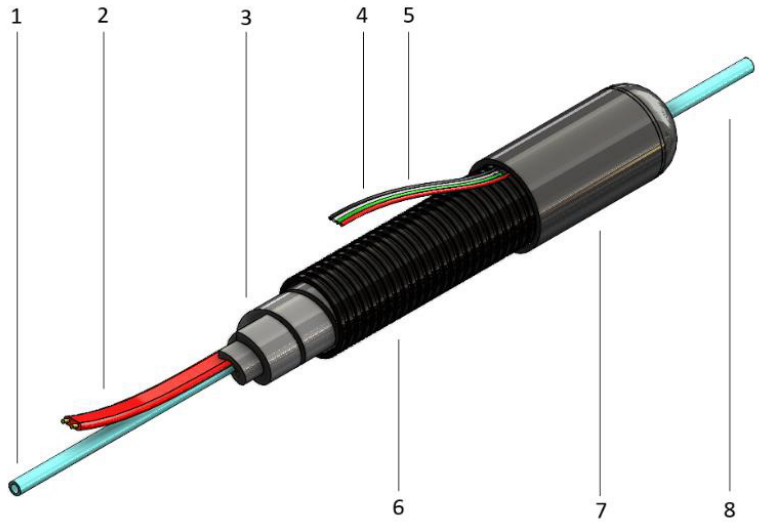
FM Approved

FM Approvals
Ordinary Locations
Hazardous (Classified) Locations
Class I, Division 2, Groups B, C and D
Class II, Division 2, Groups F and G
Class III, Divisions 1 and 2
Class I, Zones 1 and 2, AEx eb IIC, AEx tb IIIC

Canadian Standards Association
Ordinary Locations
Hazardous (Classified) Locations
Class I, Division 1, Groups A, B, C and D
Class II, Division 1, Groups E, F and G
Class I, Division 2, Groups A, B, C and D
Class II, Division 2, Groups E, F and G
Ex eb IIC, Ex tb IIIC

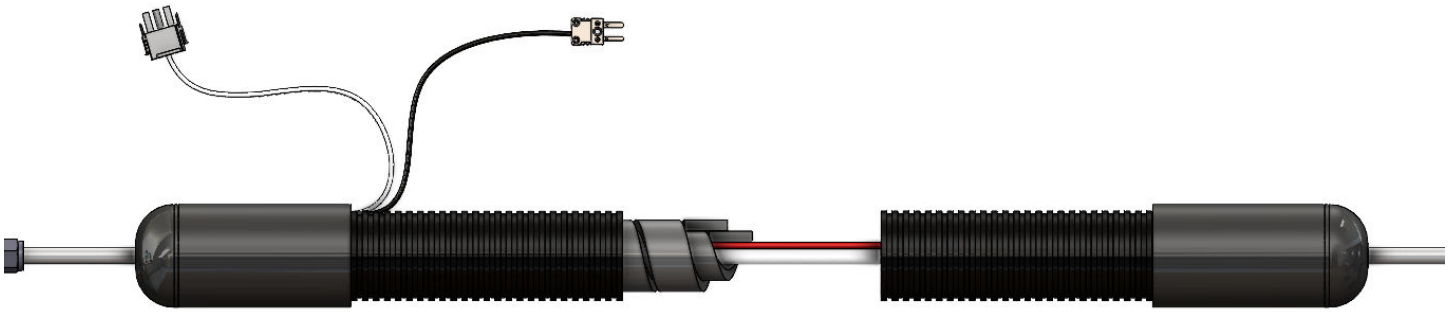
TECHNICAL SPECIFICATIONS

Parameter	Value/Range
Heating Element	Self Regulating Heat Cable/Power-Limiting Heating Cable
Heater Jacket	Fluoropolymer Overjacket
Max Operating Temp	Maintain 200C (400F)
Min Bend Radius	100 mm (4 in)
Voltage	120/208/240/VAC
Heated Length	Typically 0.5 -30meters (1.5-100ft)
Optional Temp. Controller	GHT2002J, ExoTouch, PID
Sensor Options	RTD, Thermistor, Type K, Type J
Tube Material	Teflon or Alloy Options
Insulation	1/2" Meta Aramid Felt
Outer Jacket	Corrogated Polyamid or Braided Sleeving



HEATER CONSTRUCTION

1. PROCESS TUBE
2. SELF REGULATING OR POWER LIMITING
3. 1/2” META ARAMID FELT INSULATION
4. POWER LEADS
5. OPTIONAL TEMPERATURE SENSOR
6. OUTER JACKET
7. END SEALS
8. OPTIONAL END CONNECTIONS



HSL	300	HS	T12	C12	A3	P36/S36	M1/K1	276	3C1/35	62-7	RTD120	AN	CP	HS	T12	C12	A3

HSL — Line Type
HSL= Heated Sample Line

300 — Overall Length (in)

HS — Power End Termination
HS=Heat Shrink
HCO=heat shrink w/ cable outlet
X=Special

T12 — Tube Lead Length (Power End)
T#=tube (in.)

C12 — Heater Cable Lead Length
C#=Cable (length in.)

A3 — Tube Fitting
0 = None
A= A fitting type
B= B fitting type
C= C fitting type
X= Special

P36/S36 — Power Wire Lead Length/ Sensor Wire Lead Length
P#=Power lead (in.)
S#=Sensor lead (in.)

M1/K1 — Power Cable Plug
0 = None
L1= Leviton plug 515PA
M1= Molex plug Single Row 3CKT 42816032
A1= Amphenol plug MS3106A
X= Special

276 — Heated Length (in)

3C1/35 — Process Tube OD
1 = 3/8"
2 = 1/4"
3 = 3/8"
4 = 1/2"
5 = 5/8"
6 = 3/4"
8 = 1"

62-7 — Process Tube Material
A = 316 SS Welded
B = #122 Copper
C = PFA Teflon2
D = Monel3
E = Titanium
F = 316 SS Seamless
G = 304 SS Welded
H = 304 SS Seamless
J = Alloy C276
K = Alloy 825

RTD120 — Process Tube(s) Wall Thickness
028 = .028"
030 = .030"
032 = .032" (Copper Only)
035 = .035"
040 = .040" (Plastic Only)
047 = .047" (Plastic Only)
049 = .049"
062 = .062" (Plastic Only)
065 = .065"
083 = .083" (SS Only)

AN — Sensor Type & Length (in)
RTD#= Resistance Temp. Detector (length in.)
TCK#: Type K thermocouple (length in.)
TCJ#: Type J thermocouple (length in.)

CP — Insulation Type
AN= Aramid Nomex
SIL=Silicon insulation

HS — Outer Jacket Type
CP= Corrugated Polyamide
WP= Weaved Polyamide
SIL= Siliconwrap

T12 — End Termination (Non-Power End)
HS=Heat Shrink
HCO=heat shrink w/ cable outlet
X=Special

C12 — Tube Lead Length (Power End)
T#=tube (in.)

A3 — Heater Cable Lead Length
C#=Cable (length in.)

Tube Fitting
0 = None
A= A fitting type
B= B fitting type
C= C fitting type
X= Special

Heat Tracing Type (See Heat Trace Application Below). Contact Thermon for TubeTrace SE/ME instrument tubing bundles with alternative heat trace options such as parallel constant watt and series constant watt.

Self-Regulating Heat Trace		Power-Limiting Heat Trace
40 = BSX 3 W/ft. 120 Vac	60 = HTSX 3 W/ft. 120 Vac	50 = HPT 5 W/ft. 120 Vac
41 = BSX 3 W/ft. 240 Vac	61 = HTSX 3 W/ft. 240 Vac	51 = HPT 5 W/ft. 240 Vac
42 = BSX 5 W/ft. 120 Vac	62 = HTSX 6 W/ft. 120 Vac	52 = HPT 10 W/ft. 120 Vac
43 = BSX 5 W/ft. 240 Vac	63 = HTSX 6 W/ft. 240 Vac	53 = HPT 10 W/ft. 240 Vac
44 = BSX 8 W/ft. 120 Vac	64 = HTSX 9 W/ft. 120 Vac	54 = HPT 15 W/ft. 120 Vac
45 = BSX 8 W/ft. 240 Vac	65 = HTSX 9 W/ft. 240 Vac	55 = HPT 15 W/ft. 240 Vac
46 = BSX 10 W/ft. 120 Vac	66 = HTSX 12 W/ft. 120 Vac	56 = HPT 20 W/ft. 120 Vac
47 = BSX 10 W/ft. 240 Vac	67 = HTSX 12 W/ft. 240 Vac	57 = HPT 20 W/ft. 240 Vac
90 = VSX-HT 5 W/ft. 120 Vac	68 = HTSX 15 W/ft. 120 Vac	
91 = VSX-HT 5 W/ft. 240 Vac	69 = HTSX 15 W/ft. 240 Vac	