Type LT Domestic Hot Water Temperature Maintenance System

UL:
Rated for Ordinary (Unclassified) Locations

Applications

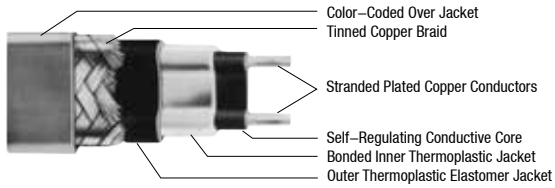
- Nelson Type LT domestic hot water heating cable is an energy-efficient and economical alternative to common recirculation systems.
- The heating cable is used to maintain water temperature in the supply piping system, reducing or eliminating the delay in obtaining hot water at each fixture.
- This cable system eliminates the need for return piping, pumps, check valves and pressure balancing valves found in recirculating systems.
- In addition, maintenance requirements are greatly reduced through the elimination of all devices with moving parts connected to the recirculating portion of the hot water supply system.
- The standard product offering has been designed to maintain nominal domestic water temperatures of 105ºF, 115ºF, 125ºF and 140ºF.
- These representative hot water temperatures are in accordance with the ASHRAE Applications Handbook, Service Water Heating.
- The heating cables are UL Listed for domestic hot water temperature maintenance and meet all requirements of IEEE Standard 515.1, Recommended Practice for the Testing, Design, Installation, and Maintenance of Electrical Resistance Heat Tracing for Commercial Applications

Features

- Nelson Type LT self-regulating heater cable is a parallel circuit electric heater strip.
- An irradiation cross-linked conductive polymer core material is extruded over the multi-stranded, tin-plated, 16-gauge copper bus wires.
- The conductive core material increases or decreases its heat output in response to temperature changes.
- Two jackets provide extra dielectric strength, moisture resistance, and protection from impact and abrasion damage. The inner thermoplastic jacket is extruded over and bonded to the core material.
- A thermoplastic elastomer over jacket is then extruded over the inner jacket.
- A stranded tinned copper metal braid is supplied on all heaters. A color-coded modified polyolefin over jacket is supplied for positive identification during installation.

Operating Principle

- The parallel bus wires apply voltage along the entire length of the heater cable.
- The conductive core provides an infinite number of parallel conductive paths permitting the cable to be cut to any length in the field with no dead or cold zones developing.
- The heater cable derives its self-regulating characteristic from the inherent properties of the conductive core material.
- As the core material temperature increases, the number of conductive paths in the core material decrease, automatically decreasing the heat output.
- As the temperature decreases, the number of conductive paths increase, causing the heat output to increase.
- This occurs at every point along the length of the cable, adjusting the power output to the varying conditions along the pipe.
- The self-regulating effect allows the cable to be overlapped without creating hot spots or burnout.



- As the cable self-regulates its heat output, it provides for the efficient use of electric power, producing heat only when and where it is needed.

Certifications and Compliances

- UL Listed: E53501
- Other Standard: IEEE 515.1-2012

Options

- Connection Kits for Power Connection, Tee Splice, Splices and End Seals (Nelson PLT Series)
- Thermostatic Controls (Nelson TH and HC Series) Junction Boxes, Tapes and Warning Signs Custom Control, Monitoring and Power Panels

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Selection Table

Service Voltage	Maximum Segment Length m (ft)	Nominal Maintenance Temperature °C (°F)	Ambient Temperature Range °C (°F)	Color Code	Catalog Number
208	246.9 (810.0)	41 (105)	23-26 (74-79)	Blue	**LT-A**
208	234.7 (770.0)	46 (115)	21-26 (70-78)	Green	**LT-B**
208	219.5 (720.0)	52 (125)	21-26 (70-78)	Yellow	**LT-C**
208	217.9 (715.0)	60 (140)	21-26 (70-78)	Red	**LT-D**
120	100.6 (330.0)	52 (125)	21-26 (70-78)	Purple	**LT-C1**

Notes

1. *The Nelson Domestic Hot Water Temperature Maintenance System has been designed to provide nominal pipe temperatures under specific conditions. Due to variations in sealing techniques, operating environment, installation methods, etc., exact temperatures cannot be assured without thermostatic control. This is recommended in applications where critical temperature tolerances are required.*
2. *If the specified installation does not comply with published application values, please consult your authorized factory representative. Product is designed for applications on copper supply piping with standard fiberglass insulation of the thickness noted in the Product Selection Tables. Contact your Nelson representative if using other types of insulation.*

Circuit Breaker Selection

Start–Up Temp. °C (°F)	Service Voltage	Maximum Length in Meters (Feet) Vs. Circuit Breaker Size 120 Vac 15A	20A	30A	40A	Cable Type
10 (50)	208	247 (810)	329 (1080)	494 (1620)	658 (2160)	LT-A
10 (50)	208	157 (515)	209 (685)	314 (1030)	418 (1370)	LT-B
10 (50)	208	104 (340)	137 (450)	207 (680)	276 (905)	LT-C
10 (50)	208	87 (285)	116 (380)	174 (570)	232 (760)	LT-D
10 (50)	120	70 (230)	93 (305)	140 (460)	186 (610)	LT-C1

Notes

1. *Maximum segment length is the maximum continuous heater run with minimal voltage drop. For breaker loading, multiple heater segments can be installed in parallel providing no individual length is longer than the maximum segment length.*
2. *Circuit breakers are sized per North American electrical codes.*
3. *When using 2 or more heater cables of different ratings in parallel on a single circuit breaker, use the 15A column amperage of 15 amps, divide it by the maximum footage to arrive at an amps/foot figure for each cable. You can then calculate circuit breaker sizes for these combination loads. These amps/foot factors include the sizing factors required by North American electrical codes.*
4. *North American electrical codes require ground-fault equipment protection for each branch circuit supplying electric pipe heating equipment.*

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+41°C (+105°F) Hot Water System LT-A @ 208V

Insulation Thickness ① Millimeters (Inches)	Copper Pipe Diameter (IPS) in Inches										
	½	¾	1	1–¼	1–½	2	2–½	3	4	5	6
12 (0.5)	X	X	X	X	X						
25 (1.0)					X	X	X	X			
38 (1.5)							X	X	X	X	
50 (2.0)									X	X	X

+46°C (+115°F) Hot Water System LT-B @ 208V

Insulation Thickness ① Millimeters (Inches)	Copper Pipe Diameter (IPS) in Inches										
	½	¾	1	1–¼	1–½	2	2–½	3	4	5	6
12 (0.5)	X	X	X	X							
25 (1.0)				X	X	X	X				
38 (1.5)						X	X	X	X		
50 (2.0)							X	X	X	X	X

+52°C (+125°F) Hot Water System LT-C @ 208V

Insulation Thickness ① Millimeters (Inches)	Copper Pipe Diameter (IPS) in Inches										
	½	¾	1	1–¼	1–½	2	2–½	3	4	5	6
12 (0.5)	X	X	X	X							
25 (1.0)				X	X	X	X				
38 (1.5)						X	X	X	X		
50 (2.0)							X	X	X	X	X

+60°C (+140°F) Hot Water System @ 208V

Insulation Thickness ① Millimeters (Inches)	Copper Pipe Diameter (IPS) in Inches										
	½	¾	1	1–¼	1–½	2	2–½	3	4	5	6
12 (0.5)	X	X									
25 (1.0)		X	X	X	X						
38 (1.5)				X	X	X	X				
50 (2.0)						X	X	X	X	X	X

52°C (125°F) Hot Water System LT-C1 @ 120V

Insulation Thickness ① Millimeters (Inches)	Copper Pipe Diameter (IPS) in Inches										
	½	¾	1	1–¼	1–½	2	2–½	3	4	5	6
12 (0.5)	X	X	X								
25 (1.0)			X	X	X	X					
38 (1.5)					X	X	X	X			
50 (2.0)							X	X	X	X	X

① *Fiberglass Insulation*