

## FM:

Class I, Division 2, Groups B, C, D  
Class II, Division 2, Groups F, G  
Class III, Division 2

## Application

- Nelson Type NC constant wattage heater cable is ideal for use in maintaining fluid flow under low ambient conditions.
- Freeze protection and process temperature maintenance systems such as product pipelines, process water, dust suppression systems, lube oil and condensate return are typical applications for this product.
- The base product is supplied with a tinned copper metal braid that may be used in both general applications and in dry, non-corrosive hazardous (classified) areas.
- It is also used to provide a conductive ground path when cable is installed on nonconductive surfaces, such as plastic or painted pipe.

## Features

- Nelson Type NC constant wattage heater cable is a parallel resistance electric heater strip.
- A fluoropolymer sheath material is extruded over the two multi-stranded, nickel-plated, 12-gauge copper bus wires.
- The nichrome heating element is spirally applied around parallel construction and in contact with the bus wires at specific intervals known as zones.
- A fluoropolymer over jacket is then extruded over the construction to provide dielectric strength, moisture resistance, and for protection from impact and abrasion damage.
- A stranded tinned copper metal braid is supplied on all heaters.
- An optional stainless steel braid is available for mechanical abuse situations.
- An optional fluoropolymer over jacket can be specified when the heater cable is to be installed in wet or corrosive environments.
- Nelson Heat Tracing Systems products are supplied with a limited warranty.

## Operating Principle

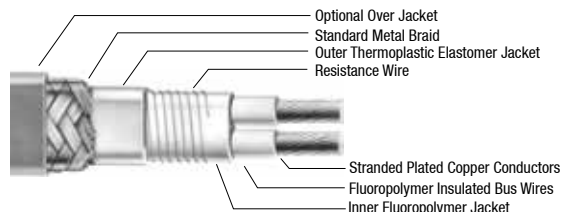
- The parallel bus wires supply voltage along the entire length of the heater cable.
- A resistance wire heating element is spirally wrapped around bus wires contacting alternate bus wires at specific intervals forming heating zones.
- This series of parallel heating zones provides a constant power output for each zone, irrespective of where the cable is cut along the length of the bus wires.
- Each cable construction has the heating zone resistance sized to provide multiple power ratings when used on different voltages.
- This variation is accomplished using different spiral wrap spacing and heater zone lengths.
- There is no change of power output as the temperature changes, giving a steady power output anywhere in its recommended operating range.

## Options

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

## Certifications and Compliances

- FM Approved: JI 1N0A8.AF
- Other Standards: IEEE 515-2004, IEEE 515.1-2005



# NC Constant Wattage Heater Cable

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**NELSON**<sup>TM</sup>

INDUSTRIAL HEATING SYSTEMS: SELF-REGULATING HEATING CABLES

Selection Table

Service Voltage	Watts/m (Watts/ft)	Maximum Segment Length m (ft)	Maximum Maintenance Temperature °C (°F)	Maximum Intermittent Exposure °C (°F)	T-Rating	Catalog Number
120	13.1 (4.0)	123 (405)	572 (300)	752 (400)	T3	NC4
208	39.4 (12.0)	123 (405)	302 (150)	752 (400)	T3	
120	26.2 (8.0)	87 (285)	410 (210)	752 (400)	T3	NC8
120	4.9 (1.5)	203 (665)	572 (300)	752 (400)	T3	NC26
208	14.8 (4.5)	203 (665)	545 (285)	752 (400)	T3	
220	16.4 (5.0)	203 (665)	518 (270)	752 (400)	T3	
240	19.7 (6.0)	203 (665)	473 (245)	752 (400)	T3	
277	26.2 (8.0)	203 (665)	410 (210)	752 (400)	T3	
120	8.2 (2.5)	157 (515)	572 (300)	752 (400)	T3	NC210
208	24.6 (7.5)	157 (515)	419 (215)	752 (400)	T3	
220	27.9 (8.5)	157 (515)	392 (200)	752 (400)	T3	
240	32.8 (10.0)	157 (515)	347 (175)	752 (400)	T3	
120	9.8 (3.0)	143 (470)	572 (300)	752 (400)	T3	NC212
208	29.5 (9.0)	143 (470)	374 (190)	752 (400)	T3	
220	32.8 (10.0)	143 (470)	347 (175)	752 (400)	T3	
240	39.4 (12.0)	143 (470)	302 (150)	752 (400)	T3	

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## Circuit Breaker Selection

Maximum Length in Meters (Feet) Vs. Circuit Breaker Size											
Voltage	Watts/m (Watts/ft)	115/120 Vac			208/220 Vac			240/277 Vac			Catalog Number
		15A	20A	30A	15A	20A	30A	15A	20A	30A	
120	13.1 (4.0)	117 (385)	123 (405)	—	—	—	—	—	—	—	NC4
208	39.4 (12.0)	—	—	—	64 (210)	87 (285)	123 (405)	—	—	—	
120	26.2 (8.0)	56 (185)	78 (255)	86.9 (285)	—	—	—	—	—	—	NC8
120	4.92 (1.5)	203 (665)	—	—	—	—	—	—	—	—	
208	14.8 (4.5)	—	—	—	180 (590)	87 (285)	—	—	—	—	NC26
220	16.4 (5.0)	—	—	—	52 (555)	81 (265)	—	—	—	—	
240	19.7 (6.0)	—	—	—	—	—	—	152 (500)	203 (665)	—	
277	26.2 (8.0)	—	—	—	—	—	—	131 (430)	180 (590)	203 (665)	
120	8.2 (2.5)	157 (515)	—	—	—	—	—	—	—	—	NC210
208	24.6 (7.5)	—	—	—	104 (340)	143 (470)	157 (515)	—	—	—	
220	27.9 (8.5)	—	—	—	98 (320)	136 (445)	157 (515)	—	—	—	
240	32.8 (10.0)	—	—	—	—	—	—	90 (295)	122 (400)	157 (515)	
120	9.8 (3.0)	143 (470)	—	—	—	—	—	—	—	—	NC212
208	29.5 (9.0)	—	—	—	87 (285)	119 (390)	143 (470)	—	—	—	
220	32.8 (10.0)	—	—	—	81 (265)	111 (365)	143 (470)	—	—	—	
240	39.4 (12.0)	—	—	—	—	—	—	75 (245)	101 (330)	143 (470)	

### NOTES:

1. Circuit breakers are sized per article NFPA 70, National Electrical Code..
2. When using 2 or more heater cables of different wattage 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 NEC sizing factor in Article 427-4.
3. Heater cables with CB optional constructions contain a metal ground shield as required by Article 427-23 of the NEC.
4. Article 427-22 of the NEC requires ground fault equipment protection for each branch circuit supplying electric heating equipment. Exceptions to this requirement can be found in NFPA 70, National Electrical Code.

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## Maximum Allowable Wattage Based on Maintenance Temperature

