

TRM SR-ACC-PWR/END

Self Regulating Cable Power Connection Kit Installation Instruction Manual

Kit Contents:



Item	Quantity	Description
A	2	Black Heat Shrink Tubing (5 1/2")
B	1	Green/Yellow Heat Shrink Tubing
C	1	Seal Fitting and white grommet
D	1	Lock Nut
E	1	Black Heat Shrink Tubing (1")
F	1	Gasket
G	1	Blue Grommet
H	3	Wire Nuts
I	4	Caution Labels
J	1	Mounting Bracket

WARNING:

Electric Shock Hazard. You MUST disconnect all power before installing or servicing heating cable and accessories. A qualified electrician must perform installation and servicing of heating cables and accessories. Heating cables must be grounded in accordance with the National Electrical Code. Failure to comply with this code can result in personal injury or property damage.

**Product
Certifications:**



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Assembly Tools Required:

Utility knife, wire cutters, needle-nose pliers, channel lock pliers, linesman pliers, screw-driver, heat gun, and measuring tape/ruler

Important notes:

- 1) All electrical wiring including GFCI (ground fault circuit interrupters) must be installed in compliance with the National and Local Electrical Codes by qualified person(s)
- 2) Article 426 of ANSI/NFPA 70 of the National Electrical Code (NEC Section 62 of CAN/CSA-C22.1, Canadian Electrical Code, Part 1 (CEC)) Governs the installation of these heat tracing systems
- 3) TRM SR-ACC-PWR/END (Power Connection Kit) is suitable for use with TRMSR heating Cables
- 4) Cables should be terminated into certified junction boxes that are appropriate for the cable termination location
- 5) Use 30-mA ground fault protection on each heating cable circuit for maximum protection
- 6) The black heating cable core is conductive and can short. It must be properly insulated and kept dry
- 7) Keep ends of heating devices and kit components dry before and during installation work
- 8) The conductive layer of this heating device must have a suitable grounding/earthing terminal
- 9) Do not break braid or bus wire strands when scoring the jacket or conductive core. Damaged bus wires can overheat or short out
- 10) Keep bus wires separated. Bus wires will short if they touch each other
- 11) Replace damaged components. Components damaged by heat can short.
- 12) Utilize a heat gun with a low heat flame, do not use a torch with a blue flame as that would melt/compromise the heat shrink tubing. Charring or burning the heat shrink tubing can produce fumes that may cause irritation to skin, eyes, nose, and throat
- 13) Do not heat up components of this kit (except for the heat shrink tubes)
- 14) When installing this cable, only use fire-resistant insulation materials such as fiberglass wrap
- 15) Do not twist the cable during installation

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Maximum Circuit Lengths											
Cable Selection	Start-Up Temperature		120V				240V				
	F	C	Breaker Sizes								
			15A	20A	30A	40A		15A	20A	30A	40A
TRM BR SR	50	10	225	265	265	265		450	530	530	530
5W	32	0	225	265	265	265		450	530	530	530
	14	-10	180	235	265	265		360	470	530	530
	-22	-30	125	165	245	265		245	325	490	530
TRM BR SR	50	10	150	200	210	210		300	400	420	420
8W	32	0	125	175	210	210		250	350	420	420
	14	-10	110	150	210	210		220	300	420	420
	-22	-30	85	115	175	210		170	230	350	420

Controls and GFI:

TRM SR can function safely without the use of controls, but it is strongly recommended to utilize thermostats or controllers to maximize the efficiency of the cables while simultaneously minimizing electrical costs.

For further information or for design assistance with controls and/or sensors that work in concert with our SR cable, please call TRM directly

Circuit protection depends on the breaker size being used and the start-up temperature. NEC 1999 requires the use of ground fault protection breakers for heating cable. The above chart shows the maximum circuit length for a given breaker rating. To determine the number of circuits required for each pipe, divide the total cable (circuit) length by the maximum circuit length found in the chart. Round up to the next higher number.

- The multiplier for power output (w/ft) for 5W TRM BR type cables for 208VAC operation is .85
- The multiplier for power output (w/ft) for 8W TRM BR type cables for 208VAC operation is .89

•The heating circuit lengths calculations would also change for 208VAC operation, the multiplier for AL type cables would be 0.93, and the multiplier for BR type cables would be .92

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Applications

Commercial Construction

- Cooling Towers
- Chilled Water and Plumbing Pipes
- Sump Discharge Pipes
- Wet Sprinkler System
- Exposed P-traps
- Roof and Gutter De-icing
- Heat Loss Replacement

Industrial

- Water Treatment Facilities
- Vessel Freeze Protection
- Safety Shower Lines

Approvals

Certified for ordinary areas

SR Cable Construction

Standard

A. Buss Wires

Twin 16 AWG copper buss wires provide good current capability

B. Matrix

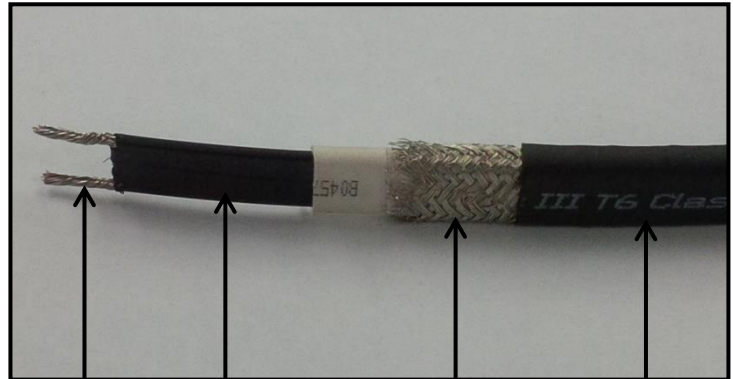
A semi-conductive polymer core whose electrical resistance varies with temperature. When process temperature drops, the core's heat output increases; conversely, as process temperature rises, heat output decreases

C. Tinned Copper Braid

The braid covering the jacket provides an effective ground path and mechanical protection

D. Jacket

The flame retardant insulation jacket is a polyolefin material with excellent water resistance. It also resists certain mildly corrosive chemicals



A

B

C

D

Description

Thermal Resources Management brand SR cable is ideal for keeping metal and plastic pipes warm in commercial construction, institutional buildings and some industrial freeze protection applications. TRM SR cable is constructed of a self-regulating polymer core that varies its output along its entire length, saving energy and eliminating hot spots along the pipe. Parallel construction makes it easier to install than zone or series types of cable since it can be cut to length at any point on the pipe. It can be single overlapped without overheating the cable.

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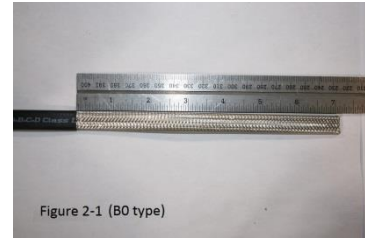
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Installation Instruction Manual



1.) **Figure 1:** After the seal fitting (C) is taken apart, slide the junction box cap, white grommet, blue grommet (G), and body onto the power connection end of cable. Once on the heating cable, loosely screw the junction box cap onto the body and slide the piece as a whole, 12" down the cable.

2.) **Figure 2-1:** Slice completely around the black outer jacket 7" from the cables end. Be careful not to cut the ground or inner jacket.



2.) **Figure 2-2:** Bend the cable where sliced to break jacket, and peel off.

3.) **Figure 3-1:** Carefully push braid back (away from the end of cable) to loosen and spread apart as shown.



Figure 3-2: Bend the cable and push the braid until there is enough room between the bottom of the cable and the braid to fit a screwdriver.

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Installation Instruction Manual

Figure 3-3: Bend cable over and hold in left hand while keeping the inner jacket pinned between your screwdriver and your right thumb as shown.

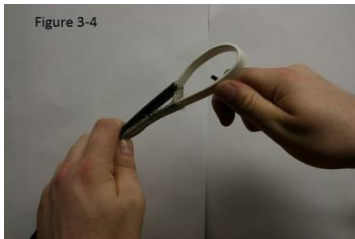
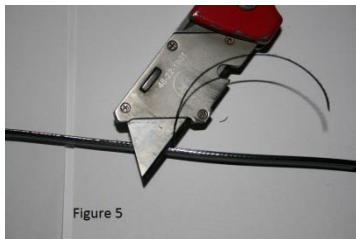


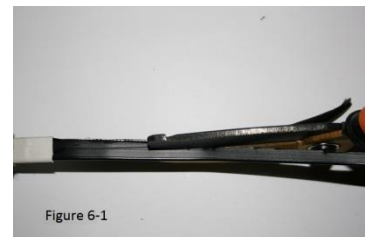
Figure 3-4: Carefully pull the cable back and out of the braid. The heating cable must be bent as shown, so it can be pulled through the braid opening.

4.) **Figure 4:** Place braid to one side of cable. Cut inner jacket of cable back 6”.



5.) **Figure 5:** Shave off outer matrix material from conductor with a utility knife. Repeat on opposite side of cable for the second.

6.) **Figure 6.1** Using either a pair of scissors, make a cut through the centre matrix material 6”, down to where the inner jacket begins



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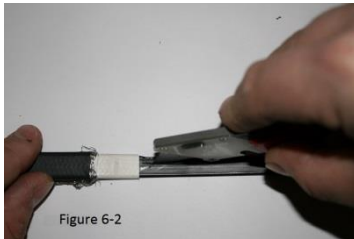


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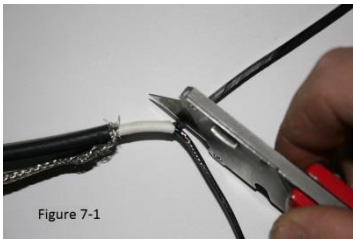
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Installation Instruction Manual



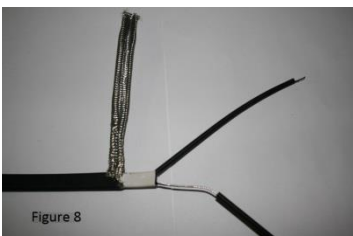
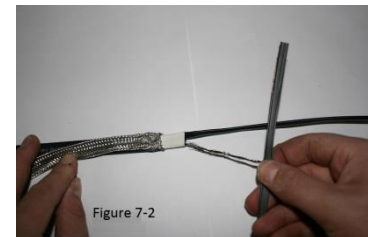
6.) **Figure 6.2:** Or, using a utility knife, slice through the matrix material 6" down to the inner jacket. (Always ensure that you cut away from yourself)

6.) **Figure 6.3:** Demonstrates the matrix material after your cuts are complete



7.) **Figure 7-1:** Using a utility knife, cut the matrix material around the base of each conductor. Be careful not to cut the conductors.

Figure 7-2: Once cut is done from 7-1, carefully peel off the matrix material from the conductor. Repeat steps 7-1 and 7-2 for second conductor.



8.) **Figure 8:** Carefully slip black heat shrink tubes (A) onto conductors up to the inner jacket.

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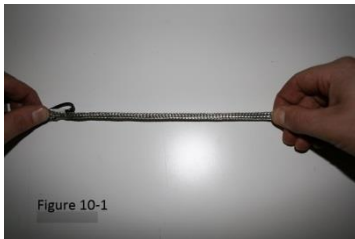
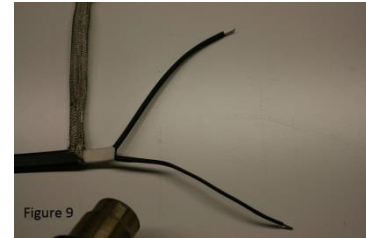


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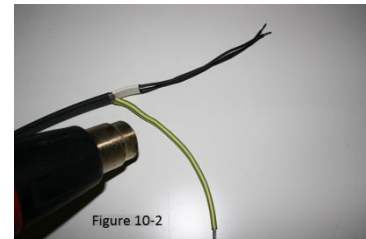
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9.) **Figure 9:** Carefully shrink tubing by moving heat source from side to side continuously. Be careful not to leave the heat source on one area for very long.



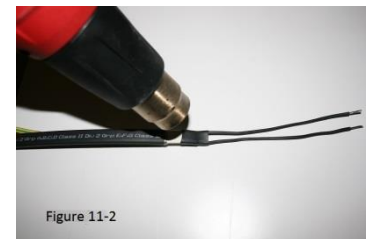
10.) Take the ground braid and stretch it out (**Figure 10-1**).

10-2.) Once stretched, slip the green/yellow heat shrink (B) over the braid and apply heat (**Figure 10-2**). (For A0 type cable, no stretching is needed)



11.) **Figure 11-1:** Centre the black heat shrink (E) over the end of cable as shown.

Figure 11-2: Heat the tube evenly until it shrinks and adhesive flows out of both ends.



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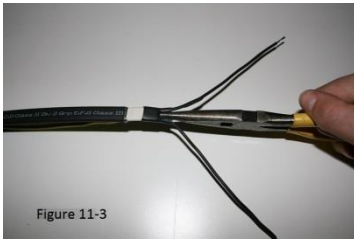


Figure 11-3: While tubing is still hot, pinch the end of the tube between the two conductors with needle nose pliers and hold for 10 seconds to ensure seal.

12.) **Figure 12:** Slide seal fitting from Step 1 back up the cable as shown.



13.) **Figure 13:** Loosely attach the metal pipe mounting bracket (J) to the pipe with the metal band. Position the bracket so that the cable and fitting come straight up and through the hole. Place blue rubber gasket (F) onto the end of the seal fitting.

14.) **Figure 14:** Use a metallic junction box to ensure a proper ground. Insert conductors & ground through $\frac{1}{2}$ " box knock out, and push through until blue rubber gasket (F) of seal fitting meets the outside of the junction box. Position the locknut (D) over conductors, onto seal fitting and tighten. Then, using channel locks, tighten the junction box cap portion of the seal fitting.



15.) Connect the power conductors to the cable leads. Connect the incoming supply ground to the cable braid and to the green ground wire. The wire nuts (H) are not for use with aluminum feed wires. The junction box needs to be grounded.

Refer to applicable application instruction manual(s) for installation and testing instructions and guidelines

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