

 FIELD REFERENCE GUIDE

Technical PRO Guide

Roof & Gutter Deicing Installation by Material

A field reference for electrical, roofing, and general contractors installing **WarmlyYours Ice Shield** (Constant Wattage) and **Ice Shield PRO** (ET-SR Self-Regulating) deicing systems.

Executive Overview & Code Compliance

Fundamental Safety & Electrical Mandates



Ground-Fault Protection

Every heating cable branch circuit must be equipped with a 30-mA Ground-Fault Protection of Equipment (GFPE) breaker. Note: standard 5-mA GFCI will experience nuisance tripping.



Minimum Installation Temperature

- Cable handling: 0°F (-18°C) minimum
- Double-sided adhesive tape (ET-VHB-PAD) application: 40°F (4°C) minimum



Maximum Cable Exposure Temperature

150°F (65°C)



Junction Boxes

Must be Listed NEMA Type 3, 3S, 4, 4X, 6, or 6P — approved for wet outdoor locations.



Cold Leads & Power Connections

Non-heating leads must be protected in rigid metal or non-metallic conduit/raceway.

Roof Material Compatibility Matrix

This comprehensive matrix details the compatibility of deicing systems with various roof materials, outlining permitted cable types, primary fastening methods, and critical installation warnings to ensure optimal performance and safety.

Roof Surface / Material	Permitted Cable Type	Primary Fastening Method	Critical Installation Warning
Metal / Standing Seam / Steel	Self-Regulating ONLY (Constant wattage prohibited)	Mechanical Standing-Seam Seam Clamps or Adhesive Clips	NEVER penetrate standing seams. Constant wattage creates localized heat traps on conductive metal.
Rubber / EPDM / Flat Membrane	Self-Regulating ONLY (Constant wattage prohibited)	Adhesive Clips (ET-CL-AL) + Double-Sided Tape Pads + Primer (ET-94-PRIMER)	Zero roof penetrations. Clean membrane with solvent, prime, and mount clips with structural adhesive.
Asphalt / Fiberglass Shingle	Self-Regulating OR Constant Wattage	Aluminum 3-Prong Clips (ET-CL-AL) under shingle tabs	Nails/screws under shingles must be sealed with outdoor-grade roofing sealant.
Slate / Concrete Tile / Spanish Clay	Self-Regulating (Recommended)	Specialized tile adhesive or suspension straps	Do NOT nail or screw through tile/slate. Cables must not bridge sharp tile edges without grommets/cushions.
Cedar Shake / Wood Shingle	Self-Regulating ONLY (Recommended)	Adhesive pads or stainless steel clips under shakes	Eliminates thermal hot-spot ignition risks on combustible timber surfaces.

Detailed Installation by Material

Metal, Membrane & Shingle Roofs

Metal & Standing Seam Roofs

Cable Selection: ET-SR Self-Regulating only (ET-SR-120 or ET-SR-240)

Pattern Configuration:

- Run cable in a continuous loop up and down the standing seam valleys
- 18" Seams: Cable height = 18" to 36" up the roof panel (Multiplier: 2.5–4.3× eave length)
- 24" Seams: Cable height = 18" to 48" up the roof panel (Multiplier: 2.0–3.6× eave length)

Fastening Technique:

- Use standing seam mechanical edge clamps that pinch the raised rib without piercing the metal skin
- Alternatively, use aluminum clips bonded with ET-VHB-PAD tape on clean, degreased metal panels (apply above 40°F)

Thermal Expansion: Leave a 1" expansion slack loop at panel transitions to prevent cable tension during freeze-thaw cycles.

EPDM, PVC, TPO & Flat Membrane Roofs

Cable Selection: ET-SR Self-Regulating only

Pattern Configuration:

- Trace a perimeter heat pathway along eave edges (12"–18" depth) leading into internal drains or scuppers
- Trace all roof drains with a 2-foot immersed circular loop into the drain bowl

Fastening Technique (strictly non-penetrating):

1. Degrease and dry the membrane surface
2. Apply ET-94-PRIMER to prep the rubber/TPO substrate
3. Firmly press ET-VHB-PAD double-sided pads and mount ET-CL-AL-P25 aluminum 3-prong clips
4. Seat cable into clip prongs and bend gently with needle-nose pliers (do not pinch or crush cable jacket)

Asphalt & Fiberglass Shingle Roofs

Cable Selection: Ice Shield (Constant Wattage Kits) or ET-SR (Self-Regulating)

Pattern Configuration (Serpentine / Triangle Pattern):

- Triangles must extend at least 6" past the interior wall line into the heated space footprint
- Standard Clip Requirement: Use 5 clips per triangle (1 at apex, 2 along sides, 2 at base/eave transition)

Fastening Technique:

- Lift shingle tab slightly; fasten aluminum clips into the roof deck using weatherproof roofing nails or neoprene-gasketed screws
- Apply roofing sealant over fasteners before letting shingle tab settle
- When using Constant Wattage, verify cable loop spacing is at least 3" apart and never touches or crosses itself

SECTION 3 — CONTINUED

Detailed Installation — Tile, Slate & Architectural Masonry Roofs

Cable Selection: ET-SR Self-Regulating only

Fastening Technique:

- Fasten via high-tack exterior construction adhesive or specialized bracket hangers hooked onto the top edge of tiles beneath the overlap
- Avoid placing cable across sharp fractured edges of natural slate; use UV-resistant conduit sleeves or edge guards where cable turns corners



Critical: Do NOT nail or screw through tile or slate. Cables must not bridge sharp tile edges without grommets or cushions.

Gutters, Valleys & Downspouts Tracing Rules



ROOF VALLEYS

Run cable 2/3 of the way up the valley and loop back down.



EAVE / GUTTER

- Attach cable inside gutter every 10 ft with clips.
- Place 1 clip immediately BEFORE and AFTER each downspout.



DOWNSPOUTS

- End of run: Single drop to 6" below freeze line.
- Center of run: Loop cable DOWN and BACK UP (2× length).



CRITICAL: Never locate field end seal inside standing water or at the ground drainage discharge point.

Technical Sizing & Electrical Design Data

Self-Regulating (ET-SR) Maximum Circuit Run Length (Feet) at 0°F Start-Up

Circuit Breaker Rating	120V (ET-SR-120)	208V (ET-SR-240)	240V (ET-SR-240)	277V (ET-SR-240)
15 A	140 ft	268 ft	285 ft	311 ft
20 A	190 ft	357 ft	380 ft	414 ft
30 A	270 ft	508 ft	540 ft	589 ft
40 A	270 ft	508 ft	540 ft	589 ft

 Note: Thermal output at 32°F in ice/snow is 10 W/ft; nominal rated output is 5 W/ft in dry air.

10 W/ft

Output in ice/snow at 32°F

5 W/ft

Nominal rated output in dry air

Quality Control, Testing & Commissioning

Mandatory 3-Stage Electrical Testing (Required for 10-Year Warranty)

Test Stage	Procedure & Tool	Expected Value / Passing Result	Action if Failed
1. Out-of-Box Test (Before Unspooling)	Megohmmeter (500 VDC min, 2500 VDC recommended) between bus wires & ground braid.	> 20 MΩ (Megohms) minimum.	Do not install; contact technical support.
2. Post-Lay Test (After Fastening to Roof)	Megohmmeter test on all circuits before final terminations.	> 20 MΩ (Megohms).	Inspect for mechanical cuts, crushed jacket, or overdriven clips.
3. Final Energized Test (After Junction Box Tie-in)	Measure operating current (amps) with Clamp Meter; verify voltage.	Compare amp draw against start-up table vs. ambient temp.	Check breaker size and ground-fault trip threshold (30 mA).

Commissioning Verification

- Energize the system and monitor for 60 minutes. Standing water or frost contact in gutters should exhibit active melting and feel warm to the touch within 1 hour.
- Ensure supplied Warning Labels are affixed visibly to the junction box face and breaker panel door.



Successful commissioning verifies proper operation and ensures compliance for the 10-year warranty.

Partner with the Experts: Elevate Your Business

At WarmlyYours, we don't just provide cutting-edge products; we empower our partners with the knowledge and tools to succeed. By collaborating with us, you gain a competitive edge, driving growth and becoming a recognized authority in your field. Our commitment extends beyond product delivery to fostering your professional development and market dominance.



Become an Industry Expert

Leverage our comprehensive training, detailed technical guides, and direct access to our engineering team to deepen your understanding of radiant heating solutions, making you the go-to specialist for your clients.



Drive Significant Business Growth

Expand your service offerings and attract new customers with our high-quality, reliable products and unparalleled support, translating directly into increased revenue and market share.



Out-Win the Competition

Differentiate your business with superior products and expert-level service. Our innovative solutions and your enhanced expertise will set you apart from competitors.

Ready to transform your business and secure your position at the forefront of the industry? Join our network of successful partners and let's achieve greatness together.

[Contact Our Partnership Team](#)