WarmlyYours
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PRO Advanced Bathroom Installation & Troubleshooting Field Guide

MASTERCLASS FIELD COMPANION GUIDE

Designed for tile professionals, electricians, and luxury remodelers to eliminate callbacks and execute zerodefect radiant tile systems.

24/7 PRO Technical Support (800) 875-5285

Section 1: High-End Bathroom Layout Engineering

Standard layout rules fail when applied to modern luxury bathroom features. Use these strict dimensions to prevent cold spots and subfloor failures.

Floating Vanities

Modern wall-hung vanities expose the tile below. **Route the heating cable exactly 4 to 6 inches under the front edge of the vanity projection.** This keeps the user's feet warm while standing at the sink without trapping thermal energy beneath solid structural bases.energy beneath solid structural bases.

Wall-Mounted Toilets

To accommodate heavy carrier frames bolted directly to the subfloor, **route your heating cables directly under the projected toilet bowl location**, maintaining absolute clearance from the carrier frame's floor bolts.

Standard Toilet Clearances

Standard toilet flanges rely on a wax seal that melts under sustained heat, leading to sewage leaks and subfloor rot. **Maintain a mandatory 4-inch clearance from the wax seal and keep the wire safely out of the drilling path of toilet mounting flange bolts.**

Cable Spacing Densities

Standard cable spacing must be maintained at 3 inches. Spacing must never be less than 3 inches and should not exceed 4 inches — gaps larger than 4 inches create highly noticeable cold stripes on the tile surface.

Spacing	Status	Result	Recommendation
2 Inches	PROHIBITED	Localized overheating, wire damage, warranty void	Never Use
3 Inches	STANDARD	Optimal heat distribution	Required minimum
4 Inches	ACCEPTABLE	Even coverage, no cold spots	Maximum allowed
>4 Inches	AVOID	Noticeable cold stripes on tile surface	Do not exceed

Section 2: Substrate Selection & Fastening Best Practices

Choosing how to secure the heating wire and managing your floor heights dictates the physical durability of the tile bond.

Substrate Type	Uncoupling Membrane (Prodeso)	Re SLU + Fixing Strips sult
Profile / Thickness	7/32" polypropylene membrane	Lowest profile method
Total Buildup	~3/4" to 7/8" (incl. thinset/tile)	~3/8" total buildup
Tile Size Limit	No tiles smaller than 2"×2" (FAQ 4115)	Required for small mosaic tiles
Key Benefit	Superior crack isolation over concrete	Encases & "armors" cable; safe troweling
Thermal Break	No thermal break over concrete slabs	Pair with Thermal Sheet over concrete

The Safe Two-Step SLU Method: Lay the wire, secure it, and pour SLU to completely encase and “armor” the cable. Once dry, walk on the flat surface and trowel thinset with zero risk of nicking the wire with your metal trowel.

Cable Fastening Best Practices

Staple Ban

Standard construction staples are a leading cause of microscopic jacket punctures and ground faults. Never staple loose heating cable.

Fixing Strips

Use high-quality double-sided tape to secure plastic or metal fixing strips to the subfloor first — not the cable itself.
On wood subfloors, screws, nails, or staples may be used to secure the plastic strips themselves, but never over the wire.

Cable Stability

Use masking tape to hold down long, loose cable runs and prevent them from floating to the surface while pouring self-leveler.

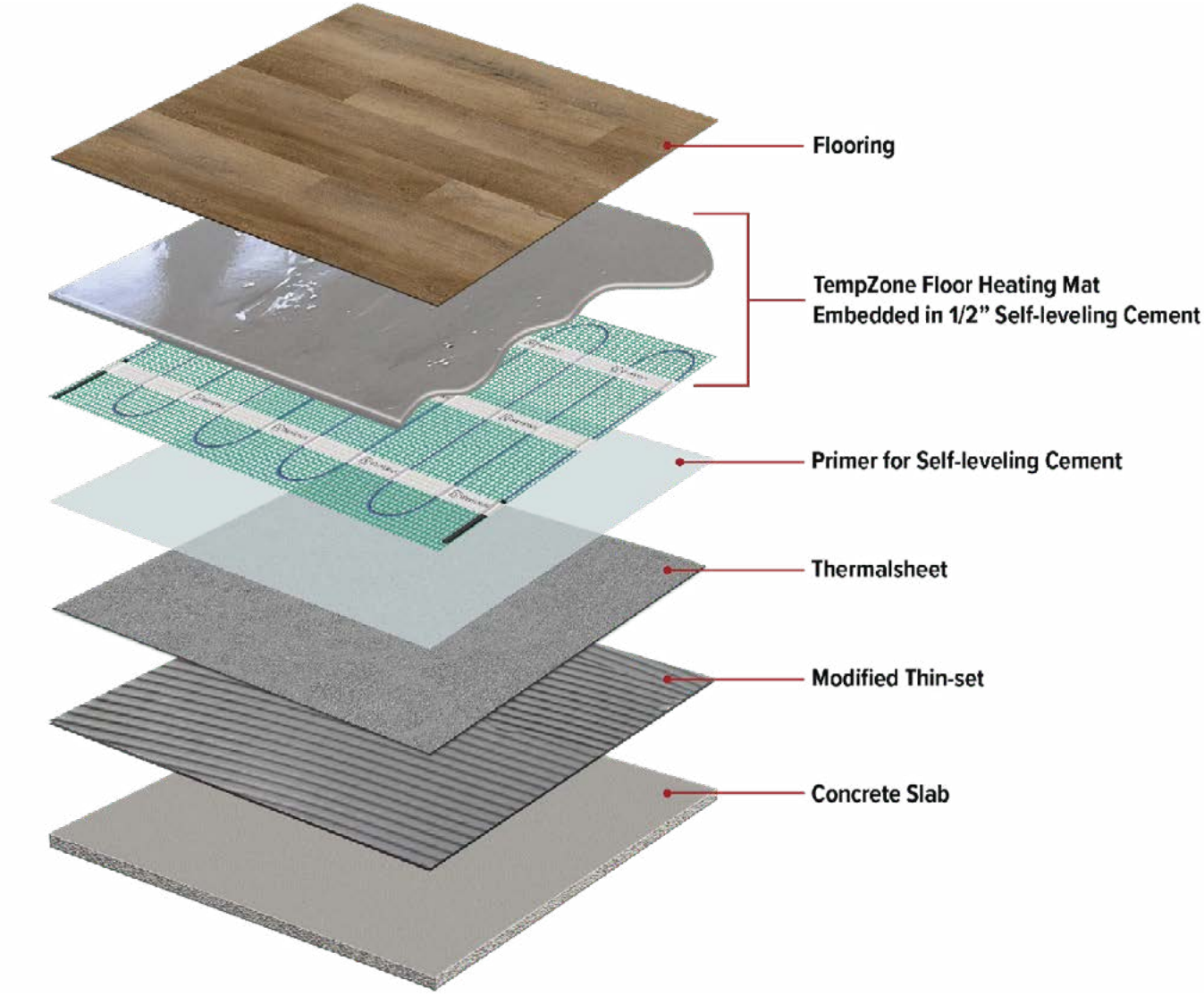
Hot Glue Restriction

Hot glue is used exclusively with mesh heating rolls. Never use hot glue to secure loose cables directly to underlayments.

Concrete Slabs & Thermal Isolation

Uninsulated concrete slabs act as massive heat sinks, pulling radiant heat downward and slowing warm-up times. Note that **uncoupling membranes like Prodeso add no thermal break over concrete slabs.**

To prevent downward heat loss, a dedicated **Thermal Sheet underlayment** must be installed over the concrete before installing the heating system.



Section 3: Wet-Zone (Shower) & Electrical Engineering

Wet-Area Isolation

Standard shower heating installations require a separate cable for the wet shower area rather than snaking a single room cable from dry to wet zones. Install the cable beneath the primary waterproofing system (sheet or topical membrane) to protect the cable from pooling moisture.

The 12-Inch Factory Splice Buffer

The factory-molded joint where the black non-heating power lead meets the blue heating cable, as well as the end-seal cap, must remain at least 12 inches outside the shower tray/membrane opening. Only the continuous blue heating cable is permitted to cross into the wet shower pan.

This buffer rule is non-negotiable — violating it exposes the non-heating lead to moisture ingress, risking ground faults, system failure, and potential electrical hazard in a wet environment.

Thermostat Power Thresholds

Thermostats are limited to 15 amps. Exceeding coverage area on a single thermostat requires a Power Module (relay) integration.

120V Systems

Maximum **120 sq. ft.** on a single thermostat

240V Systems

Maximum **240 sq. ft.** on a single thermostat

Oversized Rooms

Rooms exceeding thresholds require a **Power Module (relay) integration**

Thermostat Limit

All thermostats capped at **15 amps** maximum load

Section 4: Dual Floor Sensors & Testing Protocols

Protect the system from a single point of failure and run continuous quality control throughout the installation process.

Dual-Sensor Redundancy

Install Two Sensors Side-by-Side

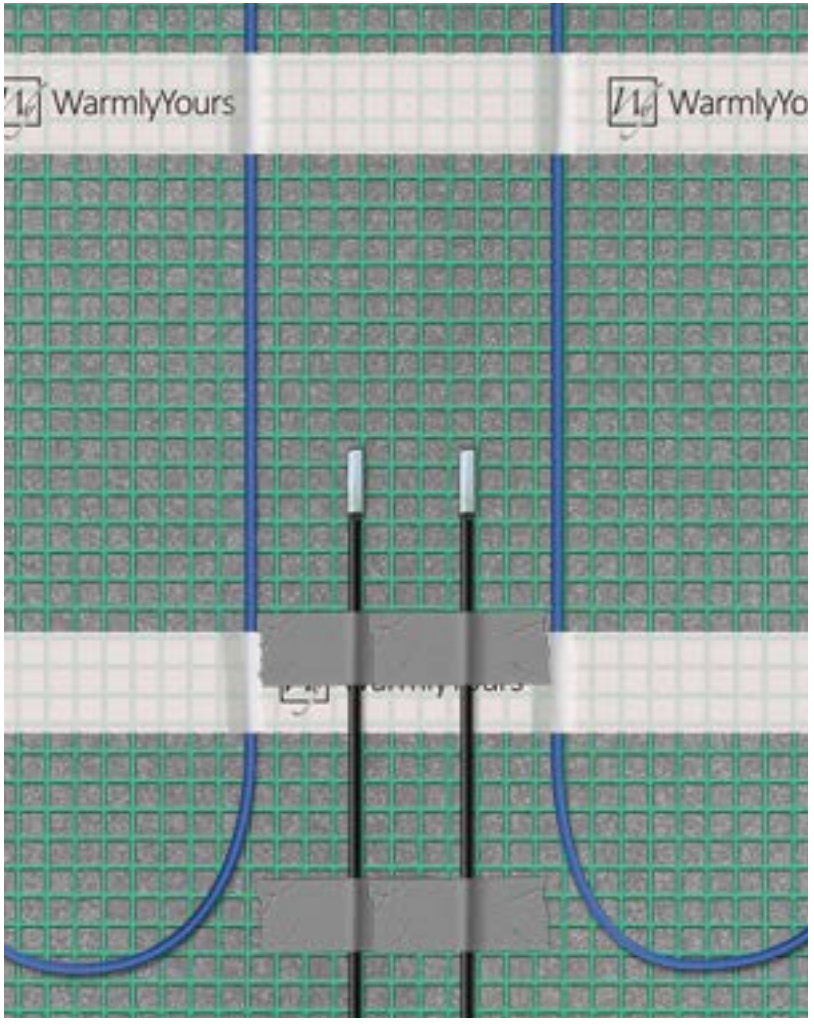
Always install two floor sensors during the initial layout. Center the sensor tips exactly between two runs of heating cable — never let them touch or cross.

Route Both to Junction Box

Route both sensor leads to the junction box. Connect only the primary sensor to the thermostat.

Label the Backup

Neatly label the backup sensor lead for future reference. If the primary fails, the backup can be connected without any tile removal.



Conduit Isolation & Verification

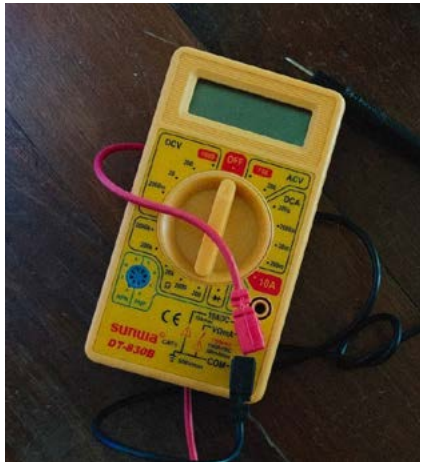
Never run low-voltage sensor wires in the same conduit or stud bay as high-voltage lead wires to prevent electromagnetic interference (EMI) and thermostat error codes.

Before pouring mortar, verify sensor health using a digital ohmmeter:

Healthy sensor reading: 8kΩ to 18kΩ (measured on a 20k range)

Active Monitoring

Always connect the Circuit Check tool to the cold leads before beginning the layout and keep it turned ON during the entire tile-setting or self-leveling process. If a trowel nicks the wire, the alarm sounds instantly.



3-Stage Testing Log

	Stage	What to Test & Log
1	Out of the box	Core resistance (ohms) + core-to-
2	After layout is se-cured	Core resistance (ohms) + core-to-ground insulation
3	After thinset/SLU dried	Core resistance (ohms) + core-to-ground insulation

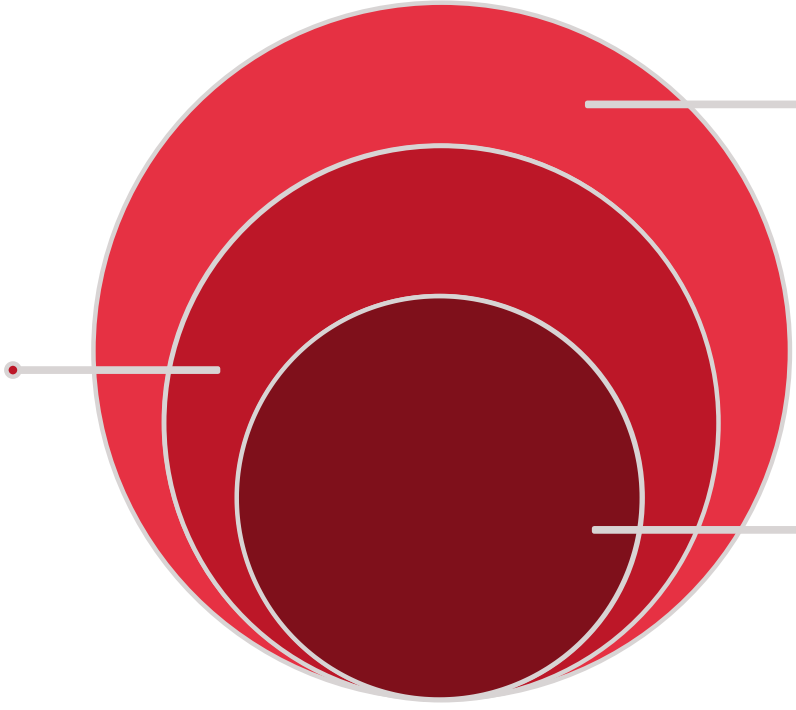
Use a high-quality digital multimeter for all readings. Log all values on the warranty card — this documentation is required for warranty validation.

Section 5: Fault Finding & Handover Protocols

What to do if a failure occurs, and how to hand over the system safely to the homeowner.

Precision Repair — No Full Tear-Out Required

If a cable is damaged, a full-floor tear-out is not required. WarmlyYours rents professional diagnostic kits utilizing **Time-Domain Reflectometry (TDR)** to pinpoint a wire break **within 3 to 5 feet**. Handheld thermal imaging then identifies the exact heat anomaly on the tile surface, allowing you to pop only 1 or 2 tiles to perform a localized splice repair.



Localized Splice Repair

Conducting targeted repairs on damaged fiber optic splices.

Thermal Imaging

Using infrared to detect heat anomalies and potential failures.

TDR Diagnostics

Pinpointing cable faults with time-domain reflectometry for precise analysis.

Strict Structural Cure Wait

Turning the system on too early forces moisture out of the curing mortar unevenly, destroying the thinset bond and cracking the tile.

Follow the mortar manufacturer's specified instructions. Portland cement-based mortars typically require up to a **28-day structural** cure before the system is turned on. Do not allow homeowners to override this waiting period regardless of urgency.

Thermal Trapping Warning

Instruct homeowners never to place thick, rubber-backed bath mats or memory foam rugs over the heated tile areas.

These act as thermal blankets, causing localized overheating that can damage the tile bond or the floor structure. this is a critical homeowner education point that must be communicated at handover and documented in the project closeout notes.

Section 5: Fault Finding & Handover Protocols

4–6 in.

Cable offset under floating vanity front edge

4 in.

Mandatory clearance from toilet wax ring

3–4 in.

Required cable spacing range (never 2 in.)

12 in.

Factory splice buffer outside shower membrane

8–18 kΩ

Healthy floor sensor reading (20k range)

28 Days

Portland cement structural cure before power-on

Absolute Prohibitions

Never Do This	Why It Fails
Staple loose heating cable	Causes microscopic jacket punctures and ground faults
Use 2-inch cable spacing	Localized overheating, wire damage, warranty void
Run sensor wire with high-voltage leads	EMI interference causes thermostat error codes
Lay mosaic tiles (<2”×2”) over Prodeso	Point loads crack grout into hollow membrane spaces
Use hot glue on loose cables	Hot glue is for mesh rolls only — damages loose cable jacket
Power on before 28-day cure	Uneven moisture expulsion destroys thinset bond, cracks tile
Allow rubber-backed rugs over heated tile	Thermal trapping causes localized overheating and bond failure

Substrate & Height Profile Decision Guide

Use this guide to select the correct substrate system based on tile size, floor height constraints, and slab type.

Thermal Sheet Requirement Over Concrete

Without Thermal Sheet

- Concrete acts as a massive heat sink
- Radiant heat pulled downward into slab
- Significantly slower warm-up times
- Higher energy consumption per cycle
- Prodeso membrane provides zero thermal break

With Thermal Sheet

- Dedicated thermal barrier over concrete
- Heat directed upward into tile surface
- Faster warm-up response times
- Reduced energy consumption
- Required for all concrete slab installations

Electrical Load & Thermostat Sizing Reference

Proper thermostat and circuit sizing is critical for code compliance and system longevity. Use this reference to determine when a Power Module (relay) is required.

120V System - Standard	120V System — Standard	Oversized Rooms - Power Module Required
Up to 120 sq. ft. on a single 15-amp thermostat. Ideal for small bathrooms, powder rooms, and ensuite floors. No relay required within this threshold.	Up to 240 sq. ft. on a single 15-amp thermostat. Suitable for master bathrooms and larger open-plan heated floors. No relay required within this threshold.	For rooms exceeding 120 sq. ft. (120V) or 240 sq. ft. (240V), a Power Module (relay) must be integrated. The thermostat controls the relay; the relay handles the full amperage load. Never exceed the 15-amp thermostat limit directly.

Wet-Zone Electrical Separation Summary

Component	Permitted in Wet Zone?	Requirement
Blue heating cable (continuous)	Yes	Only section allowed to cross into shower pan
Black non-heating power lead	No	membrane opening
Factory splice joint	No	Must stay 12+ inches outside membrane opening
End-seal cap	No	Must stay 12+ inches outside membrane opening
Separate wet-zone cable	Required	Do not snake single cable from dry to wet zone

Project Closeout & Homeowner Handover Checklist

A complete handover ensures zero callbacks and protects your warranty. Complete every item before leaving the job site.

Installation Verification

- ☐ 3-stage resistance test logged on warranty card (out of box, post-layout, post-cure)
- ☐ Dual floor sensors installed, primary connected, backup labeled
- ☐ Circuit Check tool used throughout tile-setting process
- ☐ Sensor ohm reading confirmed between 8kΩ and 18kΩ
- ☐ Factory splice joint confirmed 12+ inches outside shower membrane
- ☐ Sensor wires routed in separate conduit from high-voltage leads
- ☐ Cable spacing verified at 3–4 inches throughout layout
- ☐ 4-inch clearance maintained from all toilet wax seals

Homeowner Education

- ☐ 28-day cure period communicated — system must not be powered on before cure
- ☐ Rubber-backed bath mat prohibition explained and documented
- ☐ Thermostat operation demonstrated to homeowner
- ☐ Backup sensor location explained to homeowner
- ☐ TDR diagnostic rental process explained for future fault finding
- ☐ Warranty card completed and provided to homeowner
- ☐ Emergency contact for WarmlyYours diagnostic support provided

For precision fault repair after handover: WarmlyYours rents professional TDR diagnostic kits that pinpoint wire breaks within 3 to 5 feet. Combined with handheld thermal imaging, repairs typically require removing only 1 to 2 tiles — no full floor tear-out necessary.

Document

Log all resistance readings on the warranty card before leaving

Educate

Walk the homeowner through thermostat operation and care rules

Verify

Confirm all checklist items signed off before project closeout

Protect

Zero callbacks start with a complete, documented handover