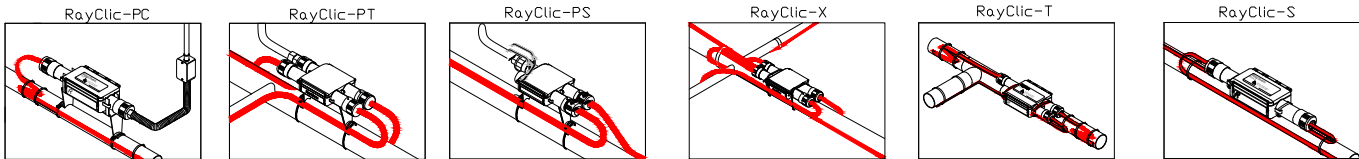


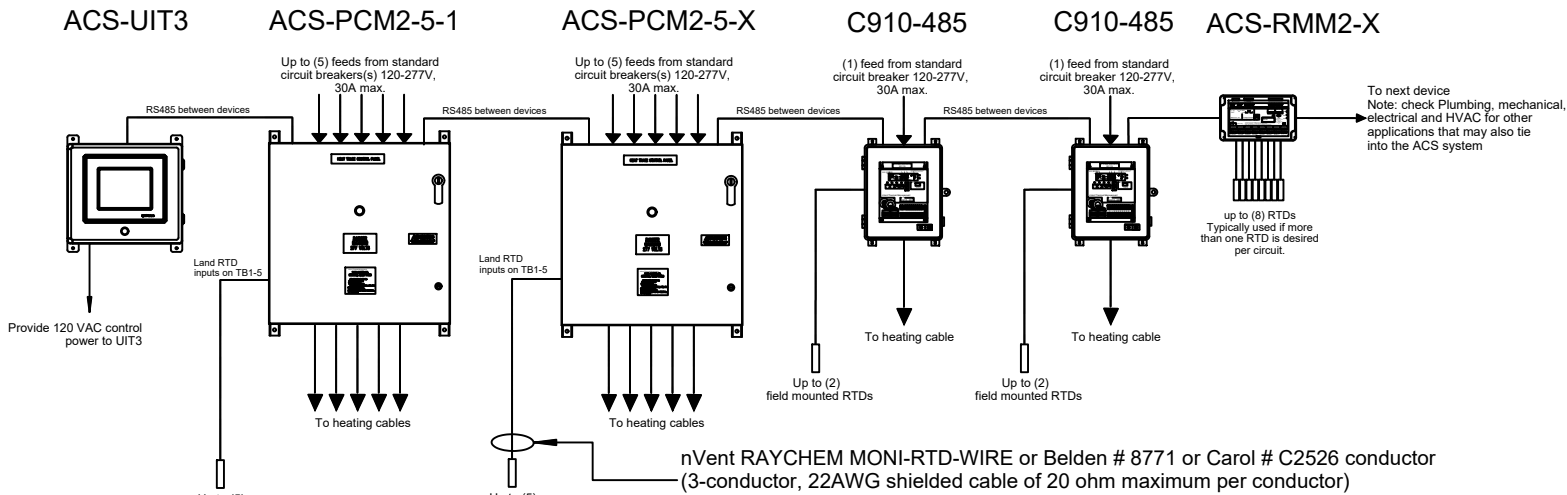
NOTES:

- A. Heating Cable (Plumbing, Mechanical, Fire Protection, Domestic Water) – Maintain 40F using nVent RAYCHEM XL–Trace Edge self-regulating heating cable manufactured by nVent Thermal Management. The heating cable shall operate on line voltages of 208–277 volts without the use of transformers. For above ground piping heating cable shall have polyolefin (–CR) outer jacket, where as for below ground piping heating cable shall have an fluoropolymer (–CT) outer jacket.
- B. Heating Cable (Fuel Lines) – Maintain 110F using XL–Trace Edge self-regulating heating cable manufactured by nVent Thermal Management. The heating cable shall operate on line voltages of 208–277 volts without the use of transformers. The heating cable shall be covered in a fluoropolymer (–CT) jacket outer jacket.
- C. Heating Cable (Grease Lines) – Maintain 110F using XL–Trace Edge self-regulating heating cable manufactured by nVent Thermal Management. The heating cable shall operate on line voltages of 208–277 volts without the use of transformers. The heating cable shall be covered in a fluoropolymer (–CT) jacket outer jacket.
- D. Connection Kits – Pipe Tracing, Gutter De-Icing: nVent RAYCHEM RayClic connection kits. All components shall be UV stabilized and shall not require the installing contractor to cut into the heating–cable core to expose the bus wires.
- E. Accessories – Pipe Tracing: High temperature, glass filament tape for attachment of heating cable to metal pipe. High temperature, aluminium tape for attachment of heating cable to plastic pipe. (Catalog Number: GT–66, GS–54, or AT–180). Provide warning labels every 10 feet on exterior of insulation, opposite sides of pipe. (Catalog Number: ETL)
- F. Controls:
- F.1. Smart Control Platform – nVent RAYCHEM ACS–30 Multiple Circuit Distributed Digital Control System: Circuits shall be controlled through the ACS–UIT3 in conjunction with the ACS–PCM2–5, C910–485, RMM2 as required. All appropriate RTD’s shall be used.
- F.1.A. Plumbing & Mechanical Freeze Protection: Ambient Sensing PASC control
- F.1.B. Fuel Lines: Line Sensing Temperature Control, Maintain 110F
- F.1.C. Grease Lines: Line Sensing Temperature Control, Maintain 110F
- F.1.D. Fire Protection: Ambient Control, Line temperature monitoring. Alarms to Fire Protection Panel.
- F.2. The ACS–30 Smart Control Platform provides the ground fault protection required for all electric heat tracing applications. Standard breakers shall be used for power distribution.
- F.3. Contractor shall provide 120V control power to ACS–UIT3.
- F.4. Contractor shall provide a 485 communications link between all control components. (Use RS–485 cable, 2 wire shielded, 22AWG) 5.485 devices may be “daisy chained” in any order but must be in a straight line. Tee’s not allowed.
- G. System Listing – The system (heating cable, connection kits, and controller) shall be UL Listed, CSA Certified, or FM Approved for associated applications. Fire Sprinkler freeze protection shall meet NFPA–13 requirements by carrying a c–CSA–us system certification for freeze protection of fire suppression branch lines. No parts of the system may be substituted or exchanged.
- H. Installation – Install and secure the heating cable in accordance with the Manufacturer’s System Installation and Operation Manual.
- I. Testing – Test per Manufacturer’s System Installation and Operation Manual. Insulation resistance must be tested up to 2500Vdcmegohmmeter. Minimum acceptable insulation resistance shall be 1000 megohms. Contractor shall submit to owner results of installation tests required by the manufacturer.
- J. Start-up – Start-up of system shall be performed by factory technician or factory representative per the owner’s requirements.
- K. Warranty – Manufacturer shall provide a standard ten (10) year limited warranty for heating cables and components. 10 Year Warranty shall be openly published on manufacturer’s website. Provide one (1) year warranty for all heat trace controllers.
- Manufacturer – Manufacturer basis of design is nVent Thermal Management, LLC. For pricing and technical information, contact your local Area Sales Manager.



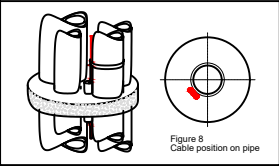
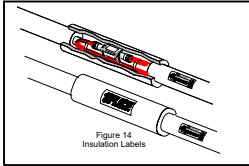
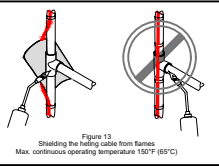
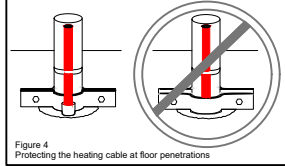
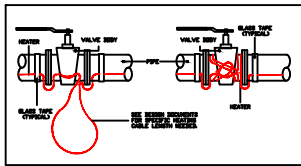
Freeze Protection Heating Cable System Schedule

Circuit Number	PC Location	Operating Temperature	Estimated Length	Circuit Breaker (A)	Max. CT. Length	Notes:
1/1	Roof at CT1	50	XXX	30	300	Make-up water
1/2	Roof at CT1	50	XXX	30	300	CW Supply Tower 1
1/3	Roof at CT1	50	XXX	30	300	CW Return Tower 1
1/4	Roof at CT2	50	XXX	30	300	CW Supply Tower 2
1/5	Roof at CT2	50	XXX	30	300	CW Return Tower 2
2/1	XXX	115	XXX	30	300	SPARE
2/2	Roof at Chiller 1	115	XXX	30	300	Chiller 1
2/3	Roof at Chiller 2	115	XXX	30	300	Chiller 2
2/4	XXX	XXX	XXX	30	300	SPARE
2/5	XXX	XXX	XXX	30	300	SPARE
3/1	Roof at DW Tank	115	XXX	30	300	Domestic Water tank
4/1	Roof at DW Tank	115	XXX	30	300	Domestic Water

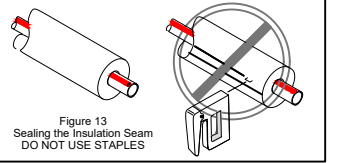
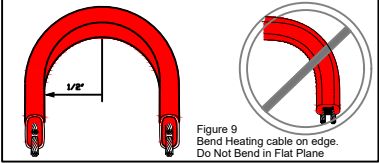
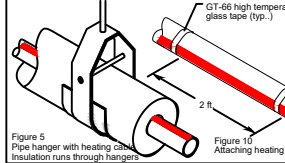
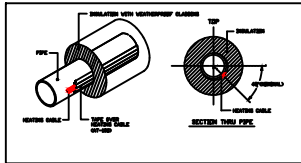


Typical ACS Control System for XL-Trace Edge Heating Cable

Typical heating cable Valve



Use AT-180 AL Tape along full length of heating cable for plastic pipe



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TITLE:

ACS-30
System Control Schematic

SCALE: NONEDWG. NO: ACS-1REV. B