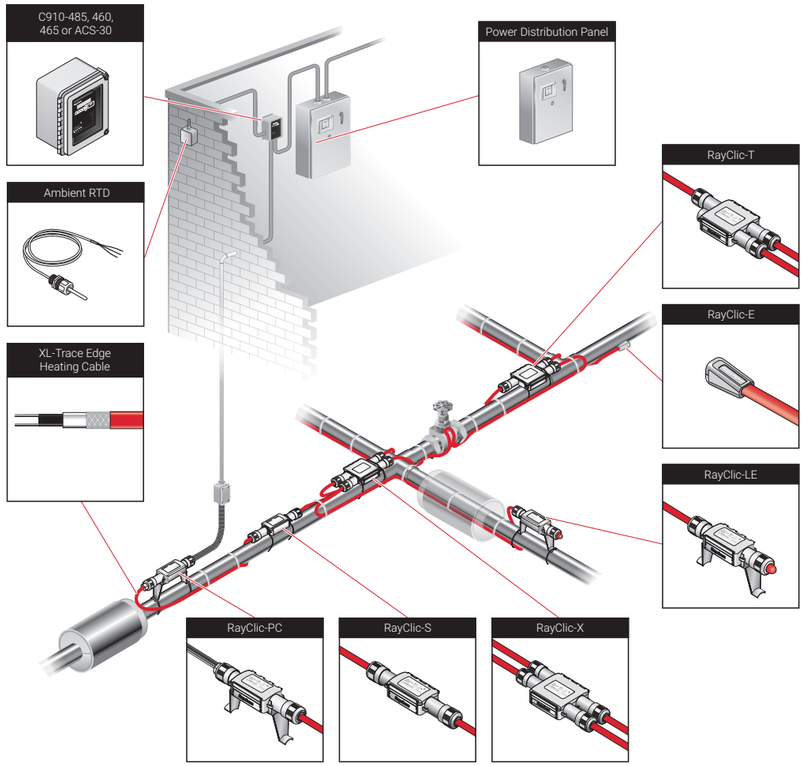
Quick Reference

PIPE FREEZE PROTECTION SYSTEM FOR BUILDINGS - NORTH AMERICA



Catalog number: 3, 5, 8 or 12 XLE 1 or 2 -CR -CT

- Power output (W/ft)
- Product family
- Voltage 1 = 120 V (only available for 3, 5 or 8)
  2 = 208, 240, 277 V (available for 3, 5, 8, or 12)
- Jacket type: Polyolefin
  or
  Fluoropolymer (only available for 5, 8 or 12; required for buried pipes, grease and fuel lines)

XL-Trace Edge Temperature Ratings

- Maximum Operating Temperature: 154°F (68°C)
- Maximum Exposure Temperature: 185°F (85°C)
- Minimum Installation Temperature: 0°F (-18°C)
- Minimum Bend Radius: ½ in (12mm)

XL-Trace Edge Applications

- Freeze protection of insulated metal or plastic aboveground or buried water piping, fire supply and standpipes, branch lines with/without sprinkers
- Flow maintenance of insulated aboveground or buried grease waste lines and aboveground metal piping containing #2 fuel oil

Pipe Freeze Protection and Flow Maintenance Design Steps:

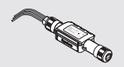
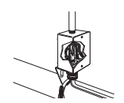
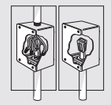
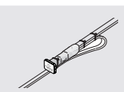
1. Determine design conditions and pipe heat loss
2. Select the heating cable
3. Determine the heating cable length and maximum allowable cable circuit length
4. Determine the electrical parameters
5. Select the connection kits and accessories
6. Select the control system
7. Select the power distribution
8. Complete the Bill of Materials

	Catalog number	Description	Standard packaging	Usage
Accessories				
	RayClic-SB-04	Pipe mounting bracket. Required for mounting the kits off the pipe for exposure temperatures greater than 150°F (65°C) and for grease and fuel line splices and tees.	1	As required
	RayClic-SB-02	Wall mounting bracket	1	As required
	ETL	"Electric Traced" label (use 1 label per 10 feet of pipe)	1	1 label per 10 feet (3 m) of pipe
	GT-66	Glass cloth adhesive tape for attaching heating cable to pipe at 40°F (4°C) or above.	66 ft (20 m)	See "Table 1"
	GS-54	Glass cloth adhesive tape for attaching heating cable to pipe above −40°F (−40°C).	54 ft (20 m)	See "Table 1"
	AT-180	Aluminum tape. Required for attaching heating cable to plastic pipe (use 1 foot of tape per foot of heating cable).	180 ft (55 m)	1 ft/ft [0.3 m/m] of heating cable

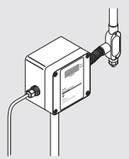
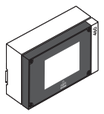
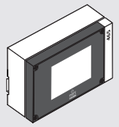
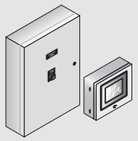
Note: For buried water piping and grease waste lines, all connections must be aboveground and no splices or tees are allowed.

Table 1: Rolls needed per 100ft of cable

Pipe diameter (IPS) in inches					
Tape type	**1/2**	**1**	**2**	**3**	**4**
GT-66	0.6	1.2	4	4	6
GS-54	0.6	1.2	4	6	6
AT-180	Use one foot of tape per foot of heating cable				

	Catalog number	Description	Standard packaging	Usage
Connection kits				
	RayClic-PC	Power connection and end seal (RayClic-SB-04 pipe mounting bracket included)	1	1 per circuit
	RayClic-PS	Powered splice and end seal (RayClic-SB-04 pipe mounting bracket included)	1	1 per circuit
	RayClic-PT	Powered tee and end seal (RayClic-SB-04 pipe mounting bracket included)	1	1 per circuit
	FTC-P[2]	Power connection and end seal kit **Note:** FTC-P is required for circuits requiring 40 A circuit breakers.	1	1 per circuit
	FTC-XC	The FTC-XC power connection and end seal kit is for use with XL-Trace Edge heating cable that is run through conduit to a junction box. Materials for one power connection and end seal is included in the kit. **Note:** FTC-XC is required for circuits requiring 40 A circuit breakers.	1	1 per circuit
	RayClic-S	Splice used to join two sections of heating cable	1	As required
	RayClic-T	Tee kit with end seal; use as needed for pipe branches	1	As required
	RayClic-X	Cross connection to connect four heating cables	1	As required
	FTC-HST -PLUS[3]	Low-profile splice/tee; use as needed for pipe branches	2	As required
	RayClic-LE	Lighted end seal (RayClic-SB-04 pipe mounting bracket included)	1	Alternate end seal
	RayClic-E	Replacement end seal	1	Additional end seal

CONTROL SYSTEMS

	Catalog number	Description
Electronic Controllers		
	ECW-GF	Single point, pipe freeze protection and flow maintenance heat tracing controller. Includes 30mA GFEP.
	460	Single point, pipe freeze protection and flow maintenance heat tracing controller. Includes 30mA GFEP, touchscreen programming, rated for indoor use.
	465	Single point, UL 515A listed fire sprinkler systems heat tracing controller. Includes 30mA GFEP, touchscreen programming, rated for indoor use.
	C910-485	Single point, full featured pipe freeze protection and flow maintenance heat tracing controller. Includes 30mA GFEP, Modbus/BACnet BMS integration, meets c-CSA-us standards for Fire Sprinkler Applications. ACS-30 platform compatible.
	ACS-UIT3 ACS-PCM2-5	Multi-point full featured heat tracing system controller, scale-able for 1-260 circuits. Designed to handle multiple heat trace application types including pipe freeze protection, flow maintenance, fire sprinkler, roof de-icing, surface snow melting. This system includes 30mA GFEP, touchscreen programming, Modbus/BACnet BMS integration.

INSTALLATION GUIDELINES

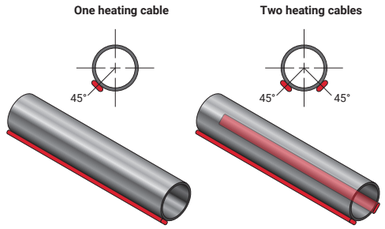


Figure 1: Positioning the heating cable

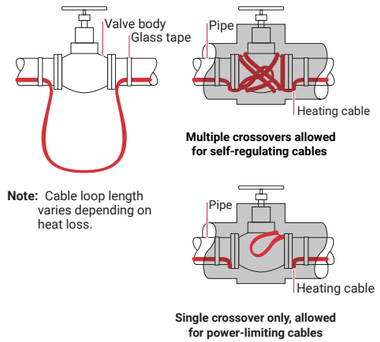


Figure 2: Positioning the heating cable

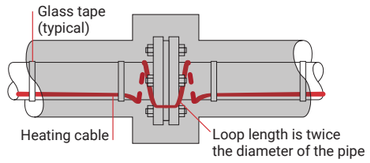


Figure 3: Flange

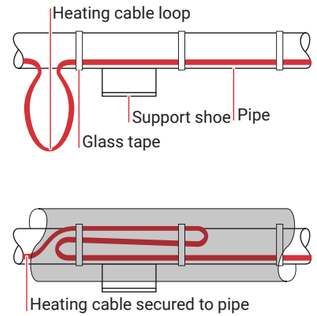


Figure 4: Pipe support shoe

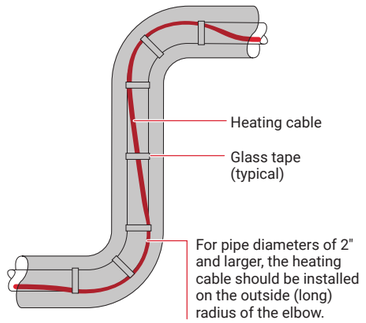


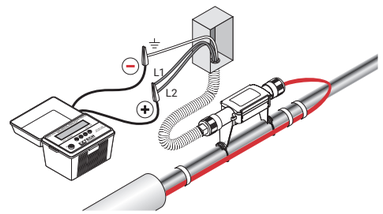
Figure 5: Elbow

TEST PROCEDURES

Conduct the following tests after the thermal insulation has been installed on the pipe:

1. Visual inspection
2. Insulation resistance test, >1000MOhms @ 2,500VDC
3. Circuit length verification (Capacitance test)
4. Power test
5. Temperature test

Test A



Test B

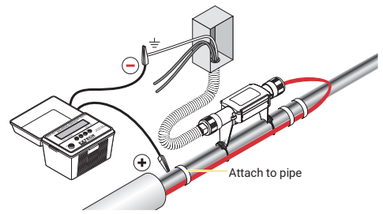


Figure 6: Insulation resistance test

Table 2: Capacitance Factors

Capacitance factor		
Heating cable	**ft/nF**	**(m/nF)**
3XLE	6.7	(2.1)
5XLE and 8XLE	5.0	(1.6)
12XLE	5.8	(1.8)

Compare the calculated circuit length to the design drawings and circuit breaker sizing tables.

Figure 7: Capacitance test

This guide is not intended to provide comprehensive installation instructions. For complete XL-Trace Edge pipe freeze protection and flow maintenance system installation instructions, please refer to the following additional required documents: • XL-Trace Edge System Installation and Operation Manual (H58033) • Additional installation instructions are included with the connection kits, thermostats, controllers, and accessories If you do not have these documents, you can obtain them from our website at nVent.com/RAYCHEM. For products and applications not covered by this design guide, please contact your nVent representative or call (800) 545-6258. Safety Guidelines As with any electrical equipment, the safety and reliability of any system depends on the quality of the products selected and the manner in which they are installed and maintained. Incorrect design, handling, installation, or maintenance of any of the system connection kits could damage the system and may result in inadequate performance, overheating, electric shock, or fire. To minimize these risks and to ensure that the system performs reliably, read and carefully follow the information, warnings, and instructions in this guide.

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