

1. GENERAL INFORMATION

Description

This custom TXLP/1 single conductor heating cable system is normally used in pipe trace applications due to high loads and varying lengths required for different projects. When installed properly on pipes and tanks, the system can provide frost protection, heating, and can help eliminate condensation and the build up of snow and ice on the surface.

Technical Information

- Max. continuously operating temperature outer jacket 65 °C (149 °F)
- Min. bending radius is 5x cable diameter Overall diameter approx. 6.5 mm (1/4")
- Tolerance on conductor resistance: -5 to + 10%
- Highest system voltage: 600 V
- Stranded resistance wire, XLPE insulation, earthing conductor, metallic sheath (aluminum), PVC outer jacket.

Cable Accessories

Accessories available for installation of your custom Nexans TXLP heating cable system for frost protection of pipes and tanks

HT-1 Label	Electric Heat Trace Warning Label
BT-50	Britech Roof Clip (Matt Black)
6758	Glass Cloth Mounting Tape
CT-F4010CW	Aluminum Mounting Tape
BRISK-1	Splice Kit for TXLP Cable

Controls

Thermostats, external sensors and controls are available for pipe trace applications. Contact Britech for selection assistance.

Approvals



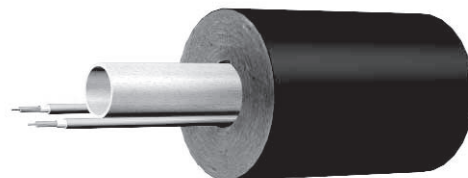
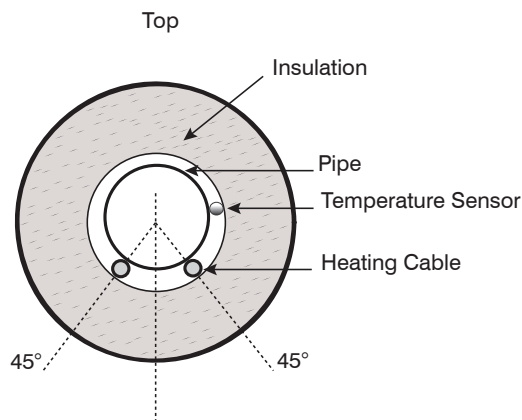
For Technical Assistance:

For product selection, design assistance and technical questions please contact Britech at 1-877-33-57790

2. FROST PROTECTION OF PIPES AND TANKS

Cable Type

Generally, for frost protection the most cost efficient solution is to use TXLP Series Resistance cables on a drum. When using TXLP on drum, it is important to take into account the maximum pipe temperature of 50 °C. In all cases a thermostat is recommended for proper temperature control. Installing a thermostat with an external sensor will ensure low power consumption and maintain a constant temperature.



Limitations for TXLP:

Pipe Temperature

Temp = 45 - 50 °C
 Temp = 30 - 44 °C
 Temp = < 30 °C

Maximum Power

10 W/m
 15 W/m
 25 W/m

TXLP cables cannot be used on pipes requiring a temperature above 50 °C (122 °F)

Calculation of Required Power in Watts:

To do a calculation for choosing the correct heating cable(s) you need the following data:

- Pipe dimensions, or the surface area of the tank
- Thermal insulation thickness
- The surrounding or ambient temperature
- Desired final temperature of the tank or pipe

Unknown and non-controllable factors require a safety factor to ensure there is enough heat should there be an unplanned or unknown occurrence. A safety margin equal to a factor of 1.2 is not uncommon.

3. INSULATED PIPES

In general pipes installed in air need to be insulated. Without insulation the heat loss will be quite high, even for small pipe diameters. For example, a non-insulated 1” water pipe will have a heat demand of 45 W/m at -30 °C, while an insulated pipe, with 1” of insulation will require only 9 W/m.

Recommended Load for Insulated Pipes (W/m)

INSIDE pipe diam. Inches	THICKNESS OF INSULATION																							
	15 mm Δt °C			20 mm Δt °C			25 mm Δt °C			30 mm Δt °C			40 mm Δt °C			50 mm Δt °C			100mm Δt °C					
	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30	10	20	30			
0.75	3.5	6.5	11	3.1	5.5	8	2.5	5.5	7	2.5	4.5	6.5	2.0	3.5	5.5	2.0	3.5	5	1.5	2.5	3.5			
1.00	4.0	8.0	12	3.5	7.0	10	3.0	6.0	9	3.0	5.0	8.0	2.5	5.0	7.0	2.0	4.0	6	1.5	3.0	4.0			
1.25	5.0	10.0	15	4.0	8.0	12	4.0	7.0	10	3.0	6.0	9.0	3.0	5.0	8.0	2.5	5.0	7	2.0	3.0	5.0			
1.50	5.5	11.0	16	4.5	9.0	13	4.0	8.0	11	4.0	7.0	10.0	3.0	6.0	8.0	2.5	5.0	7	2.0	3.5	5.0			
2.00	6.5	13.0	19	5.0	10.0	15	5.0	9.0	13	4.0	8.0	12.0	3.0	6.0	9.0	3.0	6.0	8	2.0	4.0	6.0			
2.50	8.0	16.0	24	6.0	12.0	18	5.0	10.0	15	5.0	9.0	13.0	4.0	7.0	11.0	3.0	6.0	9	2.0	4.0	6.0			
3.00	9.0	18.0	27	7.0	14.0	21	6.0	12.0	17	5.0	10.0	15.0	4.0	8.0	12.0	4.0	7.0	11	2.5	4.5	7.0			
4.00	11.0	22.0	33	9.0	18.0	27	8.0	15.0	22	6.0	12.0	18.0	5.0	10.0	15.0	4.0	8.0	12	2.5	5.0	8.0			
5.00	14.0	28.0	42	11.0	21.0	31	8.0	17.0	25	7.0	14.0	21.0	6.0	12.0	17.0	5.0	10.0	15	3.0	6.0	9.0			
6.00	15.0	30.0	45	12.0	24.0	36	10.0	20.0	30	9.0	17.0	25.0	7.0	14.0	21.0	6.0	11.0	17	3.5	7.0	10.0			
7.00	17.0	34.0	51	14.0	28.0	42	11.0	22.0	33	10.0	19.0	29.0	8.0	15.0	22.0	6.0	12.0	18	4.0	8.0	11.0			
8.00	20.0	40.0	59	15.0	30.0	45	13.0	25.0	37	11.0	21.0	32.0	9.0	17.0	25.0	7.0	14.0	21	4.0	8.0	12.0			
9.00	22.0	43.0	64	17.0	34.0	51	14.0	27.0	40	12.0	23.0	35.0	10.0	18.0	28.0	8.0	15.0	23	4.5	9.0	13.0			
10.00	23.0	46.0	69	19.0	37.0	55	15.0	30.0	45	13.0	26.0	39.0	10.0	20.0	30.0	8.0	16.0	24	5.0	10.0	14.0			

Δt = temperature difference between the surroundings and the inside of the pipe.

3. PIPES BURIED IN THE GROUND

For pipes buried in the ground without thermal insulation, you can use the following table to find the heat demand. The table shows the total heat demand of the pipe in W/m and W/ft.

Recommended Load for Non-Insulated Pipes Buried in the Ground

LOWEST WINTER AIR TEMPERATURE -30 °C (-22 °F)							
Pipe Diameter		Load requirements of pipe buried at different depths					
Inside (in)	Outside (mm)	Depth 20 inches 500 mm		Depth 32 inches 800 mm		Depth 40 inches 1000 mm	
		W/ft	W/m	W/ft	W/m	W/ft	W/m
0.50	21	2.0	6.0	1.5	5.0	1.5	5.0
0.75	27	2.5	8.0	2.0	7.0	2.0	6.0
1.00	33	3.0	10.0	2.5	8.0	2.0	7.0
1.25	42	3.5	12.0	3.0	10.0	3.0	9.0
1.50	48	4.5	14.0	3.5	11.0	3.0	10.0
2.00	60	5.0	17.0	4.0	14.0	3.5	12.0
2.50	75	6.5	21.0	5.0	17.0	4.5	15.0
3.00	89	8.0	25.0	6.5	21.0	5.5	18.0
4.00	114	10.0	32.0	8.0	26.0	7.0	23.0
6.00	165	14.0	46.0	12.0	38.0	10.0	33.0

*Values are rounded off

The table shows the load requirement per meter (W/m) or per foot (W/ft) of pipeline. Single conductor TXLP/1 heating cables should normally be used. The heating cable is laid back and forth in a loop. The linear load of the cable shall be half the requirement per unit length of pipe as shown in the table. Should you decide to use twin conductor TXLP/2 cable, consult Britech for specific heat and voltage requirements.

4. TANKS

The load demand for tanks is calculated and based on the following parameters:

- Entering liquid temperature
- Desired final temperature
- Amount of liquid to be added to the tank in one hour
- Ambient air temperature
- Insulation factor



5. GENERAL INSTALLATION FOR PIPES AND TANKS

The surface on which the heating is installed should be even without any sharp edges. The heating cable should be in good contact with the surface along the entire length of the cable. Insulation should be protected against water intrusion.

To keep a constant and even temperature in pipes with a diameter less than 100 mm, it is normal to apply two cables along the length of the pipe. With a single conductor cable this is achieved by installing the cable in a loop along the length of the entire pipe. For pipes with a diameter larger than 100 mm, it is normal to install four cables along the pipe to ensure even heat distribution. Heating cables can also be installed spiraled on pipe. **Series resistant heating cables can not overlap or cross each other.**

The cable should be fixed to the pipe every 30 cm with glass fibre tape. The cable should then be covered by aluminum foil tape along the entire pipe length. This foil or tape ensures good thermal contact/conductivity to the tank or pipe. At valves and flanges the installation of cables should be arranged so that disassembly of these valves or flanges is possible without harming or cutting the heating cable.

The thermal insulation should be well protected against moisture and water intrusion. The ground wire of the heating cable must be connected to the ground. Electrical insulation of the heating cable is measured before and after applying thermal insulation.

- A Ground Fault Circuit Interrupter (GFCI) is required in Canada.
- Do not exceed 15 amps per circuit
- To reduce connected amperage loads pipe trace cables can be supplied up to 600 volt (consult Britech for custom cables)

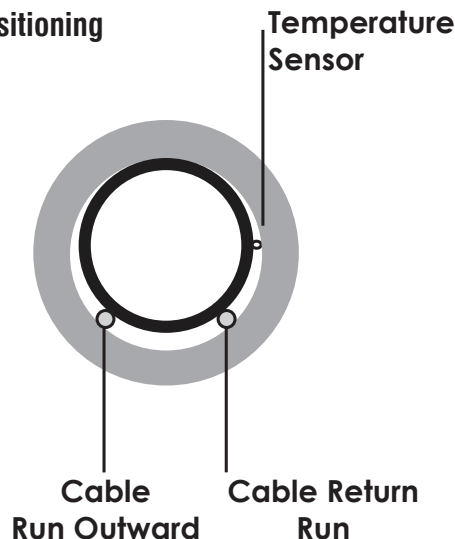
NOTE: TXLP heating cables usually require 2 runs along the pipe as well as a temperature sensor. Refer to the load demand tables to determine the correct wattage per foot of cable corresponding to the pipe to be heat traced.

DO NOT CROSS, OVERLAP OR GROUP THE CABLES

6. TYPICAL PIPE INSTALLATIONS

The following diagrams show general installation methods. Actual installation configurations will vary depending on the number of heating cables being installed and the shape of the objects being traced.

FIG. 1: Cable Positioning



CAUTION:

Series resistance heating cables such as TXLP/1 must not cross or touch each other at any point on the pipe or tank. Failure to use correct spacing and/or maintain a 2" separation along the entire length of the cable may result in burnout, cable failure and will void the warranty.

FIG. 2: Pipe Strap Spacing

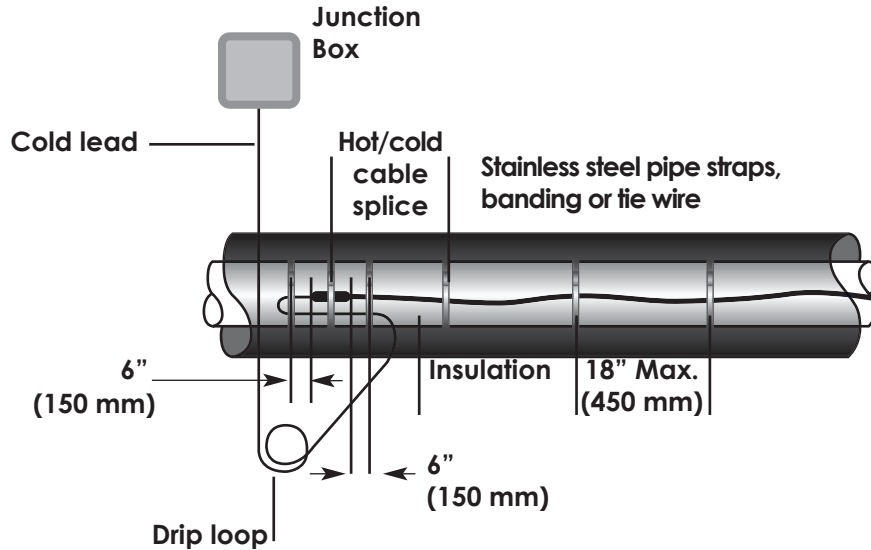
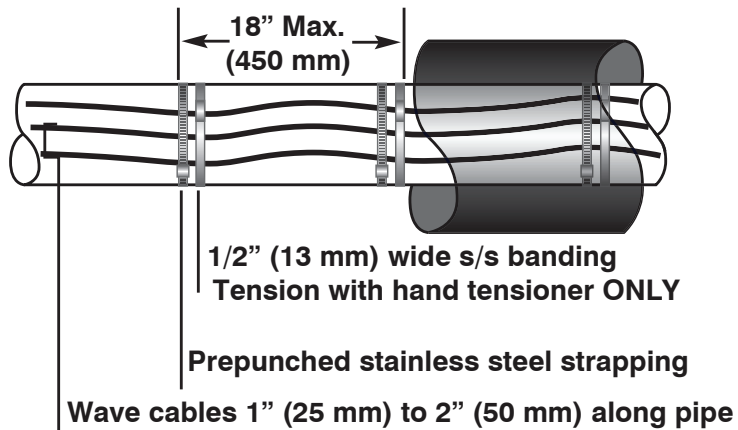


FIG. 3: Fastening Several Runs of Cable



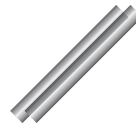
CAUTION:

Series resistance heating cables such as TXLP/1 must not cross or touch each other at any point on the pipe or tank. Failure to use correct spacing and/or maintain a 2" separation along the entire length of the cable may result in burnout, cable failure and will void the warranty.

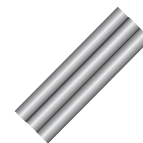
X do not cross



X do not overlap



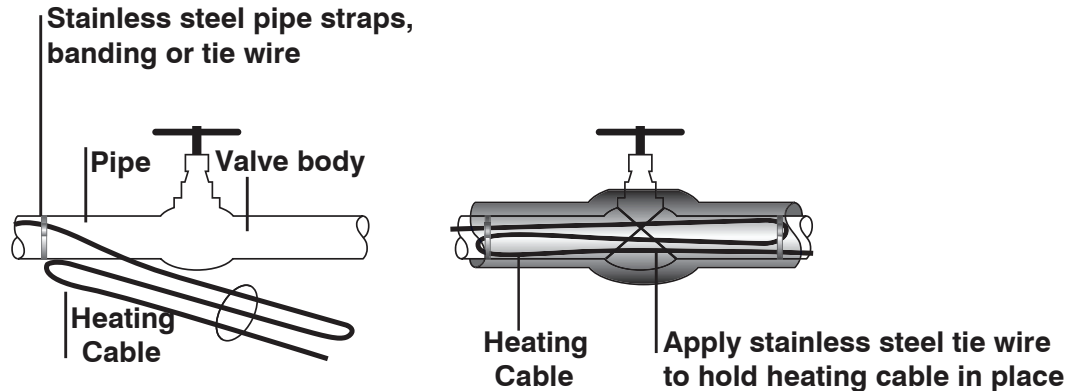
X do not group



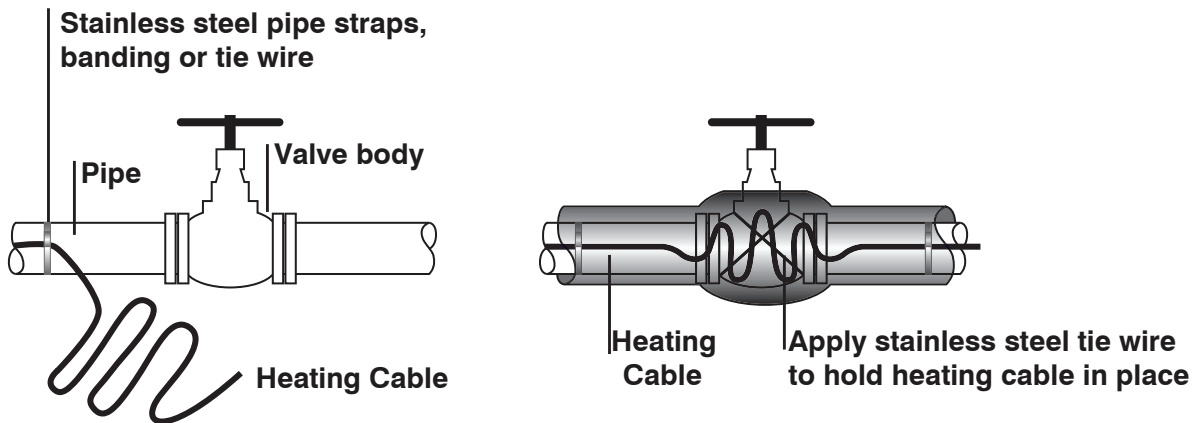
IMPORTANT: Do not cross, overlap or group cables

FIG. 4: Attaching Cable to Valves

For valve sizes 3-1/2" (90 mm) or smaller



For valve sizes larger than 3-1/2" (90 mm)



CAUTION:

Series resistance heating cables such as TXLP/1 must not cross or touch each other at any point on the pipe or tank. Failure to use correct spacing and/or maintain a 2" separation along the entire length of the cable may result in burnout, cable failure and will void the warranty.

IMPORTANT: Do not cross, overlap or group cables

Product Name: _____

Model #: _____ **Watts:** _____ **Volts:** _____

Supplier/Purchased from: _____

APPLICATION: FLOOR WARMING RADIANT HEATING SNOW MELTING ROOF DE-ICING PIPE TRACING OTHER

LOCATION : _____

TEST	Before commencing installation	After installation but before final surface	After final surface installation
Continuity			
Resistance of Cable (OHMS)			
Insulation Resistance (M OHMS)			

Address of Installation: _____

Date of Installation: _____ / _____ / _____ (MM/DD/YY)

Name of Qualified Electrician: _____

Signature of Qualified Electrician: _____

IMPORTANT: The system warranty is not valid without evidence that the system resistance has been tested. Control Card must be completed and given to the property or homeowner upon completion of installation and required testing.

For assistance with your heating cable product please contact Britech by calling 1-877-335-7790 or email info@britech.ca

WARRANTY POLICY

All products sold in Canada by Britech Corp. carry the original manufacturers warranties. Britech's policy is to exchange any non-performing product with a similar product or product of equal value during its warranty period as outlined in the terms below. Full product warranties can be obtained from the manufacturer online and/or by request.

Britech will administer and promptly process all warranties in accordance with the manufacturer's specific warranty policies and procedures.

Britech will provide technical assistance to assist the end user or installer in the best method of operation, application and installation.

Custom heating cables carry a twenty (20) year warranty. Warranty on custom TXLP cables is provided by Nexans (refer to their warranty statement summary).

For more information regarding warranty terms or for assistance with your heating cable product please contact Britech Corp. at 1-877-335-7790

Warranty Terms for Heating Cables, Mats & Custom Cable Units:

BRITECH Terms of Limited Warranty (Summary):

This guarantee applies to the following Britech label products: TECH-MAT™, SNOW-MAT™, SNOW-MELT™ and BRI-THIN™ Cables.

Britech warrants to the original purchaser only, that the product is to be free of any defects in material or workmanship during the first twenty (20) years after the date of purchase under proper and normal use of the system. This guarantee is a material warranty only and does not cover any labor or other installation cost. The warranty does not cover installations made by unauthorized persons or faults caused by incorrect design by others, misuse, damage caused by others, damage in transit, incorrect installation and any other subsequent damage that may occur. Repair and/or replacement will be fully chargeable if damage is result of any of the above reasons.

Britech is under no circumstances liable for any incidental, special, or consequential damages or losses including without limitation the loss or profit arising from any cause whatsoever. To obtain a replacement under this warranty, please send a description of the defect, proof of purchase, and the damaged product, shipping paid to Britech at the address noted below. The warranty is void if there is any payment default and if data is not filled-in on the control card. www.britech.ca

NEXANS Terms of Limited Warranty (Summary):

Nexans Norway warrants the products manufactured by it to be free from defects in material and workmanship from the date the warranty form attached to the product is correctly and completely filled in and for a period of twenty (20) years thereafter, or a period of twenty-one (21) years after the production date, whichever period ends first, under proper and normal use and service. Nexans Norway's responsibility does not include defects caused by material obtained by the buyer or by constructions specified by it. Nexans Norway further warrants that the products will have passed those performance tests, if any, called for in the applicable specifications.

The buyer must give Nexans Norway written notice of any defect within thirty (30) days following the discovery of the defect, and in no event later than two (2) weeks after the expiry of the warranty period.

www.nexans.com

Warranty Terms for Controls, Thermostats & Sensors:

ASE / Automated Systems Engineering Terms of Limited Warranty (Summary):

ASE Products are warranted against defects in workmanship and materials for two (2) years from date of sale. This warranty does not apply to damage resulting from accident, misuse, or alteration nor where connected voltage is more than 5% above the configured operating voltage, nor to equipment improperly installed or wired or maintained in violation of the Owner's Manual. No other written or oral warranty applies. No employee, agent, dealer or other person is authorized to give any warranties on behalf of ASE. The customer shall be responsible for all costs incurred in the removal or reinstallation and shipping of the product for repairs. Within the limitations of this warranty, inoperative units should be returned, freight prepaid, to ASE, and we will repair or replace, at our option, at no charge to you with return freight paid by ASE. It is agreed that such repair or replacement is the exclusive remedy available from ASE and that ASE IS NOT RESPONSIBLE FOR DAMAGES OF ANY KIND, INCLUDING INCIDENTAL AND CONSEQUENTIAL DAMAGE. www.goase.com

BRITECH / HONEYWELL

Terms of Limited Warranty (Summary):

Honeywell warrants its products, excluding battery, to be free from defects in the workmanship or materials, under normal use and service, for a period of three (3) years from the date of manufacture. If at any time during the warranty period the product is determined to be defective or malfunctions, Honeywell shall repair or replace it (at Honeywell's option) through Britech.

If product is defective, return it to the following address: Britech Corp., 17 Pullman Court, Toronto, Ontario M1X 1E4 Toll Free: 1-877-335-7790 • Email: info@britech.ca

This warranty does not cover removal or reinstallation costs. This warranty shall not apply if it is shown by Honeywell that the defect or malfunction was caused by damage which occurred while the product was in the possession of a consumer. Honeywell's sole responsibility shall be to repair or replace the product within the terms stated above. www.honeywell.com

JOHNSON CONTROLS

Terms of Limited Warranty (Summary):

The Company warrants all products manufactured by it to be free from defects in workmanship or materials under normal use and service. If any part of the product herein described, and sold by the Company proves to be defective in workmanship or material, and if such part is within three (3) years from date of sale, returned to the Company transportation charges prepaid and if the same is found by the Company to be defective in workmanship or material, credit based on current prices will be allowed. The date of sale must be established by a receipt showing the purchase date, seller and product sold. If the date of sale cannot be determined, the warranty shall extend for three (3) years from the date of manufacture. www.jci.com

NEXTRON Terms of Limited Warranty (Summary):

The manufacturer warrants each control that it manufactures to be free from defective material or workmanship for a period of 12 months from date of purchase. Under this warranty, the obligation of the manufacturer is limited to repairing or replacing the defective control at its option, when returned to the manufacturer's factory with shipping charges prepaid. If failure has been caused by misuse, incorrect application or alteration of the control, this warranty will be void. UNLESS SPECIFICALLY PROVIDED FOR IN WRITING IN THIS WARRANTY, EACH CONTROL IS PROVIDED WITHOUT ANY WARRANTY OF ANY KIND EITHER EXPRESSED OR IMPLIED. The user shall be made aware that if the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. www.nextron.ca

Warranty Terms for BRI-GFI Ground Fault Interrupter:

BRITECH Terms of Limited Warranty (Summary):

Britech warrants the BRI-GFI (Ground Fault Interrupter) is manufactured to be free from defective material or workmanship for a period of 12 months from date of purchase. Under this warranty, the obligation of Britech is limited to repairing or replacing the defective control at its option, when returned to the manufacturer's factory with shipping charges prepaid. If failure has been caused by misuse, incorrect application or alteration of the control, this warranty will be void. BRITECH IS UNDER NO CIRCUMSTANCES RESPONSIBLE FOR DAMAGES OF ANY KIND, INCLUDING INCIDENTAL AND CONSEQUENTIAL DAMAGES. This guarantee is a material warranty for components only and does not cover any labor. To obtain a replacement under this warranty, please send a description of the defect, proof of purchase, and the damaged product, shipping paid to Britech at the address noted herein.

Warranty Terms for Self-Regulating Cables (FT-FREEZE TRACE/ST-SMART TRACE)

BRITECH Terms of Limited Warranty (Summary):

This guarantee applies to Britech's Self-Regulating Cables: FT (5) five years / ST (2) two years

Britech warrants to the original purchaser only, that the product is to be free of any defects in material or workmanship (during warranty term as noted above) after the date of purchase under proper and normal use of the system. This guarantee is a material warranty only and does not cover any labor or other installation cost. The warranty does not cover installations made by unauthorized persons or faults caused by incorrect design by others, misuse, damage caused by others, damage in transit, incorrect installation and any other subsequent damage that may occur. Repair and/or replacement will be fully chargeable if damage is result of any of the above reasons.

Britech is under no circumstances liable for any incidental, special, or consequential damages or losses including without limitation the loss or profit arising from any cause whatsoever. To obtain a replacement under this warranty, please send a description of the defect, proof of purchase, and the damaged product, shipping paid to Britech at the address noted herein. The warranty is void if there is any payment default and if data is not filled-in on the control card. www.britech.ca