Chapter 33 HEAT TRACE

MANUFACTURER/DISTRIBUTOR:

FUSIONEX, EMCO DIVISION
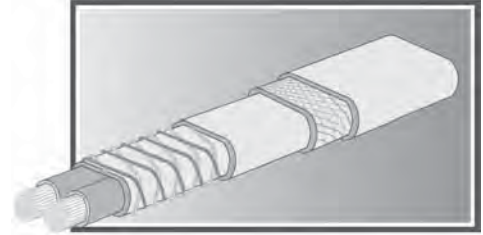a/s Annie Allard
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Submittal Data #147 E
Thermocable

Short Form Specifications

The electric heat tracing shall be constant watt parallel resistance THERMOCABLE® , supplied by Urecon.

Product Description

Urecon THERMOCABLE® is specifically designed for freeze protection of Urecon UIP® pre-insulated pipe. The THERMOCABLE® is a parallel resistance type heating strip which uses a thermally stable nichrome heating wire. The cable is has a series of heating zones which produce constant, predictable wattage per meter *(per ft)* output. Some of THERMOCABLE® features are:

- Smooth Teflon® overjacket permits easy conduit pulling
- Metallic ground braiding
- Can be cut to length in the field
- Moisture resistant

- Since Constant Watt cable does not have inrush current as with Self Limiting cables, smaller circuit breakers, wiring and fewer feed points are required resulting in reduced installation cost of the system.
- Cables are color coded for easy field identification. Helps eliminate the mistake of pulling in the wrong cable on projects where several cable types are being installed
- Over 20 years proven experience with millions of meters installed across North America
- All cable is CSA certified for wet locations

THERMOCABLE® can be used on any type of pipe, either metal or plastic. THERMOCABLE® is also available in several different watt densities and voltages as indicated on the Table 1.0.

Table 1.0 – THERMOCABLE® offered by Urecon

Part Number	Color	Watts		Volts	AWG	Maximum Circuit Length	
		per meter	*per foot*			meters	*feet*
C7-120-COJ	Blue	7	2	120	12	140	*450*
C8-120-COJ	Red	8	2.4	120	16	80	*275*
C13-120-COJ	Yellow	13	4	120	12	125	*400*
C10-240-COJ	Green	10	3	240	12	245	*800*
C13-240-COJ	Red	13	4	240	12	245	*800*
C20-240-COJ	Orange	20	6	240	12	200	*650*
C26-240-COJ	White	26	8	240	12	175	*570*
C13-575-COJ	Clear	13	4	575	12	425	*1400*
C20-575-COJ	Red	20	6	575	12	365	*1200*

Accessories

Urecon also provides electrical accessories for the THERMOCABLE® (power feed kit, splice kit, ect.) A complete listing of the electrical accessories can be found on table 1.1.

Table 1.1 – Accessories for THERMOCABLE®

A1333-12-COJ	Power and end termination kit for #12 AWG bus cable
A1333-12-COJ	Power and end termination kit for #16 AWG bus cable
E1336-COJ	Three pack end termination kits for #12 and #16 AWG bus cable
S1334-12-COJ	Splice Kit for #12 AWG bus cables
S1334-16-COJ	Splice Kit for #16 AWG bus cables
PFK 1	6m *(20ft)* power feed kit; contains all necessary material to connect two #12 AWG bus wire THERMOCABLE® on pre-insulated pipe to a Urecon Controller
PFK 4	3m *(10ft)* power feed kit; contains all necessary material to connect a 120 volts THERMOCABLE® on pre-insulated pipe to a Urecon Controller

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CANADA

I S O 9 0 0 1: 2000
Registered Company

Local Representative

UNITED STATES

URECON
PRE-INSULATED PIPE

Submittal Data #151 E

Electronic Thermostat
Model No. UTC-2030 *program code #*
and
Model No. UTC-2230 *program code #*
(with circuit breaker)

SHOP DRAWING

Reviewed by: Samuel Charbonneau

Date: 17 juin 2016

Reviewed	X
Reviewed as noted	☐
Resubmit	☐

Out for approval

SIFEC NORTH INC.

This state-of-the-art electronic thermostat is designed to control one or more heating cables operating between 120 and 240 Vac having a total current draw that does not exceed 30A. It can be fitted with up to three temperature sensors as required by the application. Because separate temperature sensors are used, they may be installed on the pipe during the initial installation phase while the controller itself may be installed at a later date.

Features include:

- Universal power supply allowing operation at 120 to 240 Vac without wiring modifications (no neutral required).
- 2-pole, 30A, 240 Vac circuit breaker that allows operation from 120 to 240 Vac provides a local means of disconnect (on model 2230 only).
- Internal ground fault detection circuitry eliminating the need for an external ground fault device. "Alarm only" or "alarm and trip" is activated when ground fault condition is present.
- Three temperature sensor inputs: TS1 for pipe temperature control, TS2 (when enabled) for pipe temperature control at second location on the piping system and TS3 (when enabled) to serve as a high temperature limit for plastic piping protection. An alarm is activated when an enabled "open" or "shorted" sensor is detected.
- Low temperature alarm on both controlling sensors TS1 and TS2. Alarm level is factory set at dedicated level for each sensor. Feature is enabled at customer request.
- On-off control with a 1^0C *(1.8^{0}F)* temperature dead band for accurate control of piping systems. This close tolerance control can save thousands of kilowatt hours of power consumption and is ideal to control electric

tracing systems in locations where power is costly.
- Override input (factory programmable): timed between 1-48 hours or non-timed. This feature forces the output "on" or "off" to suit the application.
- Auto-cycle function (when enabled) momentarily turns heating cable "on" at 24 hour interval to monitor ground fault condition of the load.
- One three-color LED indicator lamp mounted on the door of the controller operates as follows:
-
  ❖ Green: When illuminated, the power supply to the controller is "on" and the pipe temperature at the sensor is above the set point. When extinguished, the power supply is "off".
  ❖ Amber: When illuminated, the temperature controller is calling for heat.
  ❖ Red: When illuminated, this indicates that one of the alarms has been triggered. Controller is not calling for heat.
  ❖ Amber and Red (alternating): This indicates that one of the alarms has been triggered. Controller is calling for heat.
- Non-volatile memory retains all programmed parameters in the event of a power outage.

Sensor type:

This temperature controller can be factory programmed to operate with one of two different types of temperature sensor. By default the controller is programmed for 100 ohms Platinum RTD sensor(s). It can also be programmed for 2252 ohms thermistor(s) on special request. The last two digits of the controller's catalog number indicate the programming code. Control program codes from 01 to 49 are for use with RTDs and codes from 51 to 99 are for thermistors. Ensure that the proper type

of temperature sensor is used with the controller.
Program codes are listed in tables 5 and 6.

URTD Temperature sensor:
100 ohms RTD temperature sensor for use with the
UTC line of electronic thermostats. Available with 6
m *(20 ft),* 15 m *(50 ft)* or 30 m *(100 ft)* of grey or red
PVC extension lead wire for ease of identification.

UTC-2030 specifications:

Alarm output:
1A max, 240 Vac max., 50/60 Hz, SPDT (form C)
relay output configured for "fail safe" operation.

Approvals:
CSA "C" – "US" for ordinary locations.

Enclosure:
Nema 4, grey painted steel with ¼ turn latch.

Indicator light:
Nema 4 multi-function three color LED.

Input voltage range:
120-240 Vac, 50/60 Hz.

Monitoring and alarming:
The electronics monitor low temperature, ground
fault current, open / shorted temperature sensor(s)
and high cable temperature.

Operating ambient:
-40 to +40^{0}C (-40 to + 104^{0}F).

Power output:
2-pole relay output rated 30A - 240 Vac.

Terminal blocks:

Power terminals for #22 to #8 AWG		Spring loaded signal terminals for #28 to #12 AWG	
Power in	L1, N or L2	Sensors: TS1	#1 – 2 – 3 - 4
Heater out	H1, N or H2	TS2	#5 – 6 – 7 - 8
		TS3	#12 – 13 – 14 – 15
		Alarm relay	#9 – 10 – 11
		Alarm reset	#16 – 17
		Override input	#18 - 19

Factory programmable:
Note: You can use the default settings of the
following features by selecting the appropriate
program code.

Auto cycle:
When the temperature controller is energized, and
then at 24 hours intervals, the controller performs
an auto-cycle test by turning on the load to
measure the ground fault leakage current. If the
measured ground fault current is above the set
level, the ground fault current alarm is activated.
Can be disabled at the factory upon special request
Ground fault detection

Factory adjustable to trip and alarm or alarm only.
Setting @ 30 or 100 ma.

Remote override:
The user may force the unit on/off via a remote dry
contact. Factory adjustable to operate in timed (1 –
48 hours) or continuous mode.

Temperature control: Three 3-wire 100 Ω @ 0^{0}C
Platinum RTD.(alpha = 0,00385 Ω/Ω/^{0}C0, lead
compensated to 20 Ω per lead.
or
three 2-wire 2 252 Ω @ 25 ^{0}C NTC Thermistor.

Dead band:
1 to 5 ^{0}C *(1.8 to 9 ^{0}F).*

Control temperature set point range:
-5 to 75 ^{0}C *(23 to 167 ^{0}F).*

Low temperature alarm:
Feature can be enabled to provide low temperature alarm on TS1 and TS2.

Low temperature set point range:
-10 to 75 ^{0}C *(14 to 167 ^{0}F).*

High cable temperature:
The third temperature sensor (referred to as TS3) is used as a high cable temperature limit for plastic piping system protection. When TS3 is enabled the high limit feature will override demand for heat and shut off the load when a high cable temperature condition is reached.

High temperature set point range:
25 to + 100 ^{0}C *(77 to +212 ^{0}F).*

UTC-2230 specifications:
Same as the UTC-2030 except for the following:
Circuit breaker: 2-pole, 30 A, 240 Vac, pre-wired to the temperature control board.

Terminal blocks:
Incoming power lugs at the circuit breaker for #14 to #4 AWG.

Enclosure:
Nema 4, grey painted steel with clips.

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