

RAYCHEM SPECIFICATION GUIDELINE

WINTERGARD SYSTEM

FROST PROTECTION FOR PIPES

- All insulated pipes exposed to risk of freezing shall be fitted with an energy efficient, self-regulating trace heating system known as Raychem WinterGard System as manufactured by Pentair Thermal Management and supplied by KSM Limited, Unit 2 Eldon Road Industrial Estate, Attenborough, Nottinghamshire, NG9 6DZ. Contact Person: Linzi Hughes, Telephone: 0115 968 3544, Email: linzi.hughes@ksm.co.uk.
- The system shall be complete with cold components, energy-efficient controls and a 5 year product warranty. The self-regulating heating cables shall be capable of demonstrating a lifetime in excess of 25 years.
- The self-regulating heating cables shall have modified polyolefin electrical insulation (radiation cross-linked, to ensure long life expectancy), tinned copper braid and modified polyolefin over jacket with metre marks for ease of installation. The self-regulating index of the heating cable shall be at least 0.25.
- All cold water services shall be frost protected with FS-A-2X (FS-B-2X on larger pipes) and installed to a maximum circuit length of 150m (105m for FS-B-2X). Interconnection and termination shall be with cold applied, insulation displacement connectors and gel type end seals, UV resistant, IP 68, 65°C rated, with audible and visual installation confirmation, as manufactured by Pentair Thermal Management and known as RayClic.
- All LPHW services shall be frost protected with FS-C10-2X and installed to a maximum circuit length of 150m. All fatty waste services shall be protected with FS-C-2X, installed to a maximum circuit length of 90m. Interconnection and termination shall be made with heat shrinkable components and junction boxes as manufactured by Pentair Thermal Management.
- Control of heat tracing circuits shall be via an energy efficient, proportional ambient sensing control (PASC) thermostat, RAYSTAT-ECO-10 on cold water services and via a programmable, energy efficient line sensing thermostat, RAYSTAT-CONTROL-10, on LPHW or fatty waste services, as manufactured by Pentair Thermal Management.
- The controllers shall have the following functions - digital display, 'off site' programming capability without external power supply, 25 amp switching rating, sensor failure alarm, voltage failure alarm, low temperature alarm, selectable fail safe mode (either ON or OFF), alarm relay for remote BMS monitoring and additionally, for the line sensing thermostat, adjustable hysteresis and high temperature alarm.
- All heating cables shall be installed 'straight traced', within maximum circuit length, tested and commissioned strictly in accordance with the manufacturer's instructions, preferably by a specialist installer named by KSM Limited. The commissioning report must be registered to gain benefit from the 5 year product warranty.
- All pipes with electrical heat tracing shall be provided with suitable warning signs, visible from all sections, less than 5m apart, placed on alternate sides of the pipe.
- All heat tracing circuit shall be controlled and monitored via a multi circuit control panel, SBS-xx-SV, by Pentair Thermal Management, integrated with MCB's (BS EN 60898 type C/D) and RCD (30 mA sensitivity, tripping within 100 ms). All connections between the electrical supply, control panel and heat tracing circuits shall be installed by an approved electrical contractor.

In Engineering Notes Column:

- All exposed insulated pipes shall be fitted with an energy efficient, self-regulating, trace heating system, known as Raychem WinterGard manufactured by Pentair Thermal Management and supplied by KSM Limited.
- Interconnection and termination shall be with cold applied, insulation displacement type connectors and gel type end seals, known as RayClic.
- The trace heating circuits shall be controlled by an energy efficient, proportional ambient sensing thermostat (PASC), known as RAYSTAT-ECO-10.
- LPHW or fatty waste services shall be controlled by a line sensing thermostat, known as RAYSTAT-CONTROL-10.
- The WinterGard circuits shall be controlled and monitored via the multi circuit control panel, SBS-xx-SV, by Pentair Thermal Management, with integrated circuit protection.
- The self-regulating heating cables shall be installed 'straight traced', insulated, tested and commissioned strictly in accordance with the WinterGard design guide, preferably by a specialist installer named by KSM Limited.

RAYCHEM SPECIFICATION GUIDELINE WINTERGARD SYSTEM

FROST PROTECTION FOR PIPES

Energy-efficient Control & Monitoring

RAYSTAT-ECO-10 - Ambient Sensing (PASC) Control Unit

- All self-regulating heat tracing circuits shall be controlled via an energy efficient, proportional ambient sensing control (PASC) thermostat, RAYSTAT-ECO-10, as manufactured by Pentair Thermal Management and supplied by KSM Limited, Unit 2 Eldon Road Industrial Estate, Attenborough, Nottinghamshire, NG9 6DZ. Contact Person: Linzi Hughes, Telephone: 0115 968 3544, Email: linzi.hughes@ksm.co.uk.
 - The controller must have the following functions:
 - Proportional Ambient Sensing Control (PASC)
 - Low temperature alarm function
 - Digital display
 - Capacity for "Off-site" programming without external power supply
 - 25 amp switching capacity rating
 - Sensor failure alarm
 - Voltage failure alarm
 - Selectable fail safe mode, either ON or OFF
 - Alarm relay for remote BMS monitoring
 - System error codes for quick diagnostic of system failure
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Energy-efficient Control & Monitoring

RAYSTAT-CONTROL-10 - Line Sensing Control Unit

- All self-regulating heat tracing circuits shall be controlled and monitored with a line sensing thermostat, RAYSTAT-CONTROL-10, as manufactured by Pentair Thermal Management and supplied by KSM Limited, Unit 2 Eldon Road Industrial Estate, Attenborough, Nottinghamshire, NG9 6DZ. Contact Person: Linzi Hughes, Telephone: 0115 968 3544, Email: linzi.hughes@ksm.co.uk.
- The controller must have the following functions:
 - Adjustable hysteresis
 - High and low temperature alarm function
 - Digital display
 - Capacity for "Off-site" programming without external power supply
 - 25 amp switching capacity rating
 - Sensor failure alarm
 - Voltage failure alarm
 - Selectable fail safe mode, either ON or OFF
 - Alarm relay for remote BMS monitoring
 - System error codes for quick diagnostic of system failure

Multi-Circuit Control & Monitoring**SBS-xx-SV Control Panel**

- All frost protection trace heating circuits shall be controlled and monitored via an integrated electrically protected, multi circuit control panel, SBS-xx-SV, manufactured by Pentair Thermal Management and supplied by KSM Limited, Unit 2 Eldon Road Industrial Estate, Attenborough, Nottinghamshire, NG9 6DZ. Contact Person: Linzi Hughes, Telephone: 0115 968 3544, Email: linzi.hughes@ksm.co.uk.
- The panel shall provide control and monitoring functionality for a multiple circuit pipe frost protection system including the provision of all electrical and circuit protection devices. The electrical panel shall be certified and approved by the manufacturer for use with the trace heating system. The control panel shall be available, as standard, in the following variants:
 - SBS-03-SV (Up to 3 circuit control and monitoring)
 - SBS-06-SV (Up to 6 circuit control and monitoring)
 - SBS-09-SV (Up to 9 circuit control and monitoring)
 - SBS-12-SV (Up to 12 circuit control and monitoring)
- The control panel shall have an integrated power load management algorithm device to avoid peak power loading, with phased switch-on of heating circuits to manage the power loading.
- The control panel shall be capable of either ambient temperature sensor or line temperature sensing control and monitoring. Where ambient sensing is specified, proportional ambient sensing control (PASC) shall be implemented to ensure energy efficiency. Where line sensing is specified, a line sensor shall be provided for every 3 circuits to facilitate greater control of the system and energy efficiency.
- The control and monitoring panel shall have, as a minimum:
 - EN60204-1/EN60439-1 compliance, CE approved for use with heat tracing systems.
 - RAL7035 (Light Grey) Coated Metal Housing – IP54 rated.
 - Selection switch to enable system testing and override capability
 - Lights to indicate when circuits are on (green) and warning lights (red) to indicate alarm or failure.
 - Type C circuit protection and residual current device (30mA rated) per heating circuit. Built-in potential free alarm contact to signal:
 - Circuit breaker failure mode
 - RCD failure mode
 - Loss of power mode
 - Controller failure or error mode
- All electrical connections between the electrical supply, control panel, and the heating circuits shall be carried out by an approved electrical contractor.

In Engineering Notes Column

- All frost protection heat tracing circuits shall be controlled and monitored via a multi-circuit control panel, SBS-xx-SV manufactured by Pentair Thermal Management and supplied by KSM Limited with integrated circuit protection, MCB's (BS EN 60898 type C/D) and RCD (30 Ma sensitivity, tripping within 100 ms).
- The control panel shall be EN60204-1/EN60439-1 compliant, CE approved for use with heat tracing systems.
- The panel shall include, for ambient sensing, an integrated proportional ambient sensing controller (PASC), or for line sensing, a line sensing controller with a minimum of 1 sensor per 3 heating circuits.