

## **RAYCHEM SPECIFICATION GUIDELINE ICESTOP**

### **SNOW MELTING SYSTEM FOR GUTTERS, ROOFS & DOWNPIPES**

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- All gutters, down pipes and roof edges shall be fitted with an energy efficient, self-regulating trace heating system, Raychem GM-2X or GM-2XT, 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](mailto:linzi.hughes@ksm.co.uk), to prevent winter damage and icicle formation.
- 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 UV resistant, modified polyolefin over jacket with metre marks for ease of installation.
- The heating cables shall be capable of demonstrating a power output of 36W/m in iced water and 18W/m in the air at 0°C, installed at a maximum circuit length of 80 metres.
- 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 trace heating circuits shall be controlled via an energy efficient, integrated ambient temperature and moisture sensing thermostat, known as Raychem EMDR-10, as manufactured by Pentair Thermal Management.
- The temperature sensor shall be a PTC (FL103) type, IP54 rated, capable of withstanding temperatures of -30°C and 80°C. The moisture sensor shall be a PTC type sensor with variable sensitivity settings.
- All heating cables shall be installed 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.
- Each heat-tracing circuit shall be protected by an MCB (BS EN 60898 type C or D or equivalent) and RCD (30mA sensitivity, tripping within 100ms). Isolators shall be provided for each circuit.
- Wiring between the trace heating circuits, terminal units, the thermostat(s), the contactor and the distribution board shall be done by an electrical contractor.
- For asphalt/bitumen roofs only the self-regulating heating cable GM-2XT can be used.

#### **In Engineering Notes Column:**

- All gutters, down pipes and roof edges shall be fitted with an energy efficient, self-regulating trace heating system, known as Raychem GM-2X or GM-2XT as manufactured by Pentair Thermal Management and supplied by KSM Limited, to prevent winter damage and icicle formation.
- Interconnection and termination shall be with cold applied, UV resistant, insulation displacement connectors and gel type end seals, known as RayClic.
- All trace heating circuits shall be controlled via an energy efficient, integrated ambient and moisture sensing thermostat, known as Raychem EMDR-10.
- The system shall be complete with a 5 year product warranty.
- The trace heating systems shall be installed, tested and commissioned strictly in accordance with Raychem's recommendations and preferably by a specialist installer named by KSM Limited.

**Energy-efficient Control & Monitoring****EMDR-10 Multi-sensor Control Unit**

- All self-regulating, gutter/roof/down pipe heating circuits shall be controlled with an energy efficient, ambient temperature and moisture sensing thermostat known as Raychem EMDR-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 energy efficient control unit must meet the following performance and technical requirements:
  - Minimum temperature range to -25°C and be variable to -5°C.
  - EMC approved to EN 50081-1 (Emission) and EN 50082-1 (Immunity)
  - Moisture sensor with variable sensitivity for energy efficiency
  - Self extinguishing housing material in accordance with UL 94 V-0
  - Variable post-ice/snow heating time control
  - PTC (FL103) ambient temperature sensor for accuracy +/-1.5K
  - Variable set-point temperature between -3°C and +6°C
  - System test function for system check purposes
- Installation shall be in accordance with the installation instructions of the manufacturer and preferably carried out by an installer recommended by KSM Limited.

**Multi-Circuit Control & Monitoring****SBS-xx-EV-10 Control Panel**

- All snow & ice melting circuits for gutters and down pipes shall be controlled and monitored via an integrated, electrically protected multi circuit control panel known as SBS-xx-EV-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 panel should be purpose built and approved for the control and monitoring of GM-2X/GM-2XT self regulating heating cables, by Pentair Thermal Management. The panel shall incorporate the energy efficient control and monitoring device, Raychem EMDR-10, by Pentair Thermal Management and have multi-sensory input for moisture and temperature control.
- The control panel shall be available, as standard, in the following variants:
  - SBS-03-EV-10 (Control & monitoring for up to 3 circuits)
  - SBS-06-EV-10 (Control & monitoring for up to 6 circuits)
  - SBS-09-EV-10 (Control & monitoring for up to 9 circuits)
  - SBS-12-EV-10 (Control & monitoring for up to 12 circuits)
- The control and monitoring panel shall have, as a minimum:
  - EN60204-1 and EN60439-1 compliance, CE approved for use with Raychem heat tracing systems.
  - RAL7035 (Light Grey) Coated Metal Housing – IP54 rated.
  - EMDR-10 multi-sensor control unit as the central control device for standard heating/economy functions
  - Type C circuit protection and residual current device (30 mA rated) per heating circuit
  - Mounted terminal blocks for easy connection of the heating circuits within the panel
  - The EMDR-10 shall also be compliant with EN60730, EN50081-1 and EN50082-1
  - A volt free alarm contact to indicate:
    - RCD or circuit breaker failure mode
    - Loss of power to the unit
    - Controller or sensor error mode
- All electrical connections between the electrical supply, control panel, and the heating circuits shall be carried out by an approved electrical contractor.