

Raychem SPECIFICATION GUIDELINE



HWAT-STANDARD SYSTEM SINGLE PIPE HOT WATER SYSTEM

- The system shall be complete with cold components and have a 5 year product warranty.
- The self-regulating heating cables shall be specifically designed for this application, comply with HSE HS (G) 70 and be capable of demonstrating a lifetime in excess of 25 years.
- The self-regulating heating cables shall have modified polyolefin (radiation cross-linked, to ensure long life expectancy) electrical insulation, laminated aluminium foil layer, tinned copper braid and modified polyolefin over jacket with metre marks for ease of installation.
- The appropriate Raychem HWAT heating cable shall be selected to provide a maintained temperature of 50-55°C, variations in ambient conditions shall be taken into consideration. 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.
- The HWAT cables shall be installed 'straight traced', within their maximum circuit lengths, tested and commissioned strictly in accordance with the manufacturer's instructions and preferably by a specialist installer named by the supplier.
- The commissioning report must be registered to gain benefit from the 5 year product warranty. The system should be installed to within 1000 mm of each outlet or blending valve, or as close as is reasonably practicable, and in accordance with hot water maintenance regulations. Insulation selection and thickness shall be in strict accordance with the HWAT design guide, take into account variations in ambient temperature, be applied without delay after the heating cable installation, affixed with suitable warning signs, placed less than 3 m apart, on alternate sides of the pipe and visible from all sections.
- Each circuit shall be protected by an MCB (BS EN 60898 type C or D or equivalent) and RCD (30 mA sensitivity, tripping within 100ms). Isolators shall be provided for each heat tracing circuit.
- All connections between the electrical supply and HWAT circuits shall be installed by an approved electrical contractor.

In Engineering Notes Column

- The domestic hot water supply has been designed as a single pipe system. No return pipes shall be fitted.
- All hot water service pipes shall be fitted with an energy efficient, self-regulating heating cable system, Raychem HWAT, as manufactured by Pentair Thermal Management, to compensate for heat losses and maintain a temperature of 50-55°C.
- The cables shall be installed to within 1000 mm of each outlet or blending valve, or as close to the draw-off point as is reasonably practicable whilst observing the requirements of relevant hot water maintenance regulations.
- The termination of self-regulating heating cables shall be with insulation displacement type connectors and gel type end seals, RayClic, as manufactured by Pentair Thermal Management.
- The appropriate HWAT cable type shall be selected to ensure correct temperatures are maintained for all anticipated ambient temperatures.
- The HWAT cables shall be installed 'straight traced', insulated, tested and commissioned strictly in accordance with the HWAT design guide and preferably by a specialist installer named by Pentair Thermal Management.
- Insulation selection and thickness shall be in strict accordance with the HWAT design guide.

Raychem SPECIFICATION GUIDELINE

HWAT-ADVANCED SYSTEM SINGLE PIPE HOT WATER SYSTEM



- The domestic hot water supply has been designed as a single pipe system. No return pipes shall be fitted.
- All hot water service pipes shall be fitted with an energy efficient, self-regulating heating cable system, Raychem HWAT R, as manufactured by Pentair Thermal Management, to compensate for heat losses and maintain pipe temperatures in the range 50-65°C.
- The system shall be complete with cold components, energy efficient controls and a 5 year product warranty.
- The self-regulating heating cables shall be specifically designed for this application, comply with HSE HS (G) 70 and capable of demonstrating a lifetime in excess of 25 years.
- The self-regulating heating cables shall have modified polyolefin (radiation cross-linked, to ensure long life expectancy) electrical insulation, laminated aluminium foil layer, tinned copper braid and modified polyolefin over jacket with metre marks for ease of installation.
- 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.
- Control of HWAT circuits shall be via an energy saving, programmable controller to provide adjustable maintained temperatures in the range 50-65°C, HWAT ECO, as manufactured by Pentair Thermal Management. The controller shall have a boiler temperature sensor and alarm system, 7-day programmable temperature v time function, integrated clock, pre-set specific building programs, thermal shock program, LCD user interface, password protection, optical and acoustic alarm fault messages. It shall be capable of receiving 1-10V dc signals from the building management system, overriding the functions of the controller.
- The HWAT cables shall be installed 'straight traced', within their maximum circuit lengths, tested and commissioned strictly in accordance with the manufacturer's instructions, preferably by a specialist installer named by the supplier. The commissioning report must be registered to gain benefit from the 5 year product warranty. The system should be installed to within 1000mm of each outlet or blending valve, or as close as is reasonably practicable, and in accordance with hot water maintenance regulations.
- Insulation selection and thickness shall be in strict accordance with the HWAT design guide, take into account variations in ambient temperature, be applied without delay after the heating cable installation, affixed with suitable warning signs, placed less than 3 m apart, on alternate sides of the pipe and visible from all sections.
- All HWAT circuit shall be controlled and monitored via a multi circuit control panel, SBS-xx-HV-ECO-10, 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 HWAT circuits shall be installed by an approved electrical contractor.

HWAT-ADVANCED SYSTEM

In Engineering Notes Column

- The domestic hot water supply has been designed as a single pipe system. No return pipes shall be fitted.
- All hot water service pipes shall be fitted with the energy efficient, self-regulating heating cables, HWAT R, as manufactured by Pentair Thermal Management to maintain an adjustable temperature in the range 50-65°C.
- Termination of the self-regulating heating cables shall be with insulation displacement type connectors and gel type end seals, Rayclic, as manufactured by Pentair Thermal Management.
- The circuits shall be controlled via an energy saving, programmable controller, HWAT ECO, as manufactured by Pentair Thermal Management, to provide adjustable temperatures in the range 50-65°C.
- The HWAT circuit shall be controlled and monitored via the multi circuit control panel, SBS-xx-HV-ECO-10, by Pentair Thermal Management, integrated with circuit protection.
- The HWAT cables shall be installed 'straight traced', insulated, tested and commissioned strictly in accordance with the HWAT design guide and preferably by a specialist installer named by Pentair Thermal Management.
- The cables shall be installed to within 1000 mm of each outlet or blending valve, or as close to the draw-off point as is reasonably practicable.
- Insulation selection and thickness shall be in strict accordance with the HWAT design guide.

Raychem SPECIFICATION GUIDELINE

HWAT-ECO SINGLE PIPE HOT WATER SYSTEM



ENERGY EFFICIENT CONTROL & MONITORING

- All HWAT circuits shall be controlled via an energy saving, programmable controller to provide an adjustable maintained temperature in the range 50-65°C, HWAT ECO, as manufactured by Pentair Thermal Management.

The controller shall have the following functions:

- Adjustable maintained temperatures in the range 50-65°C
- Integrated power off timer
- Boiler temperature
- Master/slave function for large hot water systems. One control unit (=Master) shall be programmable. The other control units (=slaves) shall automatically copy the master settings when connected to it. The master control unit shall have the facility to operate a further 8 slave units
- BMS connection via a variable DC voltage
- IP54 rated
- 9 editable built-in building specific programs for temperature maintenance
- Automatic summer/winter time and leap year correction programming
- Visible and audible alarm

Raychem SPECIFICATION GUIDELINE

SBS-01-HM-ECO-10

SINGLE PIPE HOT WATER SYSTEM MULTI CIRCUIT



CONTROL & MONITORING PANEL

- All hot water temperature maintenance trace-heating circuits shall be controlled and monitored via an integrated electrically protected, single circuit control panel, SBS-01-HM-ECO-10, by Pentair Thermal Management.
- The HWAT panel shall provide control and monitoring functionality for a single circuit, single pipe hot water temperature maintenance system including the provision of all electrical and circuit protection devices for safety purposes. The electrical panel shall be approved for use with the HWAT system and be certified for use by Pentair Thermal Management.

The control and monitoring panel shall have, as a minimum:

- EN60204-1 and EN60439-1 compliance, CE approved for use with heat tracing systems.
- RAL7035 (Light Grey) Coated Metal Housing – IP54 rated.
- A volt free alarm contact to indicate
 - RCD or circuit breaker failure mode
 - Loss of power to the unit
 - Controller or sensor error mode
- An HWAT-ECO control unit as the central control device for standard heating and economy set-back mode programmable 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.
- An integrated boiler output temperature sensor for water output temperature monitoring capability.
- 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 HWAT circuits shall be controlled and monitored via the single circuit control panel, SBS-01-HM-ECO-10, by Pentair Thermal Management, 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 EN60204-1/EN60439-1 compliant and CE approved for use with heat tracing systems.
- The panel shall include an HWAT-ECO control unit as the central control device.

Raychem SPECIFICATION GUIDELINE

SBS-XX-HV-ECO-10

SINGLE PIPE HOT WATER SYSTEM MULTI CIRCUIT



CONTROL & MONITORING PANEL

- All hot water temperature maintenance trace-heating circuits shall be controlled and monitored via an integrated electrically protected, multi circuit control panel, SBS-xx-HV-ECO-10, by Pentair Thermal Management.
- The HWAT panel shall provide control and monitoring functionality for a multiple circuit single pipe hot water temperature maintenance system including the provision of all electrical and circuit protection devices for safety purposes. The electrical panel shall be approved for use with the HWAT system and be certified for use by Pentair Thermal Management. The control panel shall be available, as standard, in the following variants:
 - SBS-03-HV-ECO-10 (Control & monitoring for up to 3 circuits)
 - SBS-06-HV-ECO-10 (Control & monitoring for up to 6 circuits)
 - SBS-09-HV-ECO-10 (Control & monitoring for up to 9 circuits)
- The panel shall comprise an integrated power load management algorithm to avoid peak power loading.

The control and monitoring panel shall have, as a minimum:

- EN60204-1 and EN60439-1 compliance, CE approved for use with heat tracing systems.
- RAL7035 (Light Grey) Coated Metal Housing – IP54 rated.
- A volt free alarm contact to indicate:
 - SRCD or circuit breaker failure mode
 - Loss of power to the unit
 - Controller or sensor error mode
- A phased switch on system built-in, to allow peak load management. The phased switching should be managed by an integrated time shift duty cycle control method.
- An HWAT-ECO control unit as the central control device for standard heating and economy set-back mode programmable 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.
- An integrated boiler output temperature sensor for water output temperature monitoring capability.
- 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 HWAT circuits shall be controlled and monitored via the single circuit control panel, SBS-01-HM-ECO-10, by Pentair Thermal Management, with integrated circuit protection, MCB's (BS EN 60898 type C/D) and RCD (30mA sensitivity, tripping within 100 ms).
- The control panel shall EN60204-1/EN60439-1 compliant and CE approved for use with heat tracing systems.
- The panel shall include an HWAT-ECO control unit as the central control device.