

Pipe Frost Protection

GENERAL:

All insulated pipework exposed to the risk of freezing shall be fitted with an energy efficient frost protection system, known as DEVIpipelineguard™ LSZH, manufacturer DEVI™ by Danfoss.

The pipe frost protection system shall be complete with low smoke zero halogen self-regulating trace heating cables, advanced energy efficient controllers and cold applied components.

The self-regulating trace heating cables shall be designed specifically for pipe frost protection and each shall be suitable for use on cold water pipes, sprinklers and low pressure heating services, with extended maximum circuit length capability and suitable to use with 32 A MCB (BS EN 60898 type C). Environmental Product Declarations (EPD) shall be provided for all system components to transparently report and document the environmental impact, based on a product life-cycle assessment (LCA).

BIM families shall be provided for the frost protection system components.

SELF-REGULATING HEATING CABLES:

The self-regulating trace heating cables shall be qualified for a useful lifetime in excess of 25 years, CE marked and tested to demonstrate compliance with:

- IEC EN 61034-2:2005/A1:2013
- IEC EN 60754-1:2014
- IEC EN 60754-2:2014
- IEC EN 62395-1:2013
- IEC 60068-2-5 and 2-9
(low smoke emission, zero halogen, self-extinguishing, resistant to and colour fast under UV exposure)

The cables shall consist of a conductive polymer core, modified low smoke zero halogen electrical insulation (radiation cross-linked to ensure long life expectancy), tinned copper braid and modified low smoke, zero halogen over jacket (printed with cable type, batch number and metre marks).

All insulated pipework exposed to the risk of freezing shall be fitted with self-regulating trace heating cables, with DEVIpipelineguard™ 10 LSZH installed on cold water pipes, sprinklers or low-pressure heating services (DEVIpipelineguard™ 25 LSZH or DEVIpipelineguard™ 33 LSZH on larger pipes). All shall be installed within their defined maximum circuit lengths, namely 226m for DEVIpipelineguard™ 10 LSZH on 20 A MCB, 146m for DEVIpipelineguard™ 25 LSZH on 25 A MCB and 120m for DEVIpipelineguard™ 33 LSZH on 32 A MCB. All maximum lengths assume a minimum 0°C switch on.

DEVIpipelineguard™ LSZH is a range of low smoke, zero halogen, self-regulating trace heating cables designed specifically for pipe frost protection and covered by an Environmental Product Declaration. The manufacturer is DEVI™ by Danfoss

INTERCONNECTION AND TERMINATION COMPONENTS:

Interconnection and end terminations shall be made with high performance, cold applied insulation displacement connectors and gel filled end seals. All shall be UV resistant, IP66 and 85°C rated and suitable for 2500 V DC insulation resistance test. The components shall be DEVI™-Easyconnect The manufacturer is DEVI™ by Danfoss and covered by an Environmental Product Declaration.

ENERGY EFFICIENT, CONTROL SYSTEM [SELECT ONE OR MORE OPTIONS]:

[1] Multi circuit, multi-application programmable control and monitoring system:

All frost protection trace heating circuits shall be controlled with a 7 channel electronic programmable controller installed on a DIN rail. Each channel can be set up individually with 3 control modes – temperature sensing, time proportional power regulation without sensor and manually on/off with time limitation. Channel inputs can be selected by software between 8 types of temperature sensors, including NTC 15kOhm at 25°C. BMS control can be utilised with the Modbus RS485 opto-insulated serial interface. The controller shall be DEVIreg™Multi. Manufacturer DEVI™ by Danfoss, covered by an Environmental Product Declaration,

[2] Single circuit, single application electronic thermostat, surface mounted:

All frost protection trace heating circuits shall controlled with a surface mounted electronic thermostat The thermostat shall be DEVIreg™610, Manufacturer DEVI™ by Danfoss, covered by an Environmental Product Declaration.

DESIGN:

The manufacturer or operations partner shall be able to provide all design calculations, including heat loss and corresponding selection of heating cables; electrical schedules providing cable lengths, circuit breakers, circuit start up currents, operating currents and loads, line list summary and single line details; system layout and schematic drawings indicating power connections, tees and end seals; controller configuration listing and wiring diagrams.

EXECUTION:

Trace Heating Installation :

All pipe frost protection cables shall be installed, tested and commissioned in strict accordance with the design plans and the DEVI Pipe Frost Protection Application Manual. Thermal insulation installation shall be closely coordinated with the responsible sub-contractors, thickness in accordance with the same manual. Professional grade aluminium tape shall be used on plastic pipes.

[SELECT ONE OPTION]

[1] The system shall be installed, tested and commissioned by specialist installers trained by the manufacturer

[2] The system shall be installed, tested and commissioned under periodic supervision by the manufacturer or specialist installation partner

Thermal Insulation:

Insulation selection and thickness shall be strictly in accordance with the design plans.

Electrical Connection:

Connections between the electrical supply, control panel and pipe freeze protection circuits shall be installed by an approved electrical contractor and protected by MCB (BS EN 60898 type C or D) and RCD (30 mA sensitivity, tripping within 100ms).