



4-5/30/50/80/100/120

Electrically Heated Sample Lines

Type 3/4/5/-5/30/50/80/100/120 (Ex)



Self-regulating, 3 types of tubes and 6 temperature versions from +5 to 120 °C [41 to 248 °F]

Special Features

- Self-regulating, without thermostat
- Complete assembly to fixed length at the factory
- Customer assembly if sold by meter
- Outer jacket: corrugated polyamide hose
- Type 3: PTFE tube, non-replaceable
- Type 4: PTFE tube, replaceable
- Type 5: stainless steel tube, non-replaceable
- Tube \varnothing DN 4/6 to 10/12
- 6 temperature ranges from +5 °C to 120 °C [41 to 248 °F]
- Holding temperature at -20 °C [-4 °F]
- Ex version for zones 1, 2, 21 and 22 according to ATEX

Application

The electrically heated self-regulating M&C sample lines 3/4/5/-5/30/50/80/100/120 (Ex) are used in gas analysis technology for the transport of sample gas from the sampling point to the gas conditioning system. They prevent measuring faults in the lower temperature ranges from +5 to +120 °C [41 to 248 °F] and serve as frost protection. Temperature monitoring of the total heated line is not possible due to the function as parallel heater band.

Description

The self-regulating M&C sample lines 3/4/5/-5/30/50/80/100/120 are supplied completely assembled to a fixed length at the factory or if sold by meter, at the customer's site.

3 types of tubes (3/4/5) and 6 versions of different temperature ranges (5/30/50/80/100/120) are available in DN 4, 6 or larger (4/6/8/10).

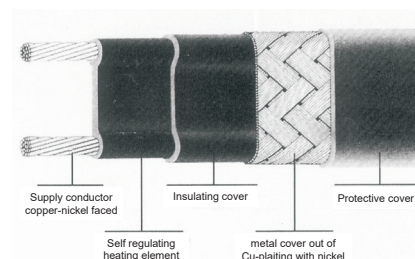
The robust design of the sample line consists of the inner medium tube, the parallel-installed self-regulating heating band, both wrapped in a heat-conducting aluminium foil, a thermal insulation designed according to the requirements and the black corrugated polyamide hose as outer jacket. The line assembly is completed by end caps out of temperature-resistant silicone.

The explosion-proof versions 3/4/5/-5/30/50/80/100/120 Ex for use in the hazardous area zones 1, 2, 21 and 22 are equipped with Ex proof self-limiting heater bands.

For the Ex-version, the factory-assembled sample lines have an axially exiting 1-m-long connection cable or heating band and a tube protrusion of 500 mm [\approx 19.7"] on both sides. Suitable accessories are available for on-site assembly.

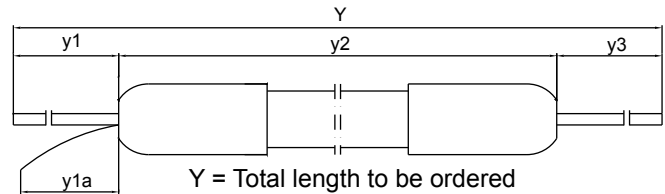
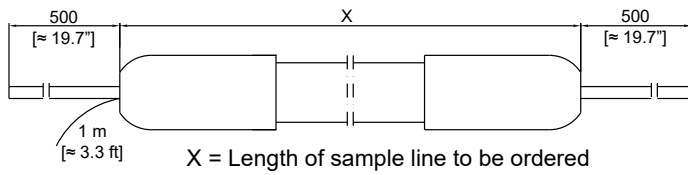
Description of Self-Regulating Heater Bands

The self-regulating parallel heater bands consist of two parallel supply conductors made of copper which are embedded in a cross-linked and carbon particle-doped plastic heating element with a positive temperature coefficient, i.e. the heating element changes its output depending on the ambient temperature. When the temperature increases, the plastic is expanding due to the molecular expansion, the compounds of the carbon particles break up, the resistance increases and, therefore, the capacity is decreasing. When cooling down, this process is reversed and the capacity increases. In this way, the heater band adjusts itself individually to the heat requirement at every point of the sample line.



Complete assembly of sample line at factory

Assembly of sample line at customer's site



For mounting the Ex version, a 2-pole residual-current device 300 mA is necessary (M&C recommends 30 mA).

Technical Data

Sample line type 3/4/5 DN 4 or 6	.../5-... [Ex]	.../30-... [Ex]	.../50-... [Ex]	.../80-... [Ex]	.../100-... [Ex]	.../120-... [Ex]
Inside tube	Type 3/4: PTFE, ø DN 4/6 or 6/8, type 3: non-replaceable, type 4: replaceable Type 5: stainless steel 316Ti, ø DN 4/6 or 6/8, non-replaceable, in case of factory assembly 500 mm [≈ 19.7"] protruding on both sides					
Holding temperature at -20 °C [-4 °F] ambient temperature	+5 °C [41 °F]	+30 °C [86 °F]	+50 °C [122 °F]	+80 °C [176 °F]	+100 °C [212 °F]	+120 °C [248 °F]
Version Ex temperature class	T6	T6	T3	T3	T3	T3
Power consumption, cold start at +10 °C [50 °F]	10 W/m	30 W/m	30 W/m	45 W/m	45 W/m	60 W/m
Max. length allowed for -20 °C [-4 °F] ambient temperature	109 m [≈ 357.6 ft]	52 m [≈ 170.6 ft]	65 m [≈ 213.3 ft]	55 m [≈ 180.5 ft]	55 m [≈ 180.5 ft]	40 m [≈ 131.2 ft]
Max. length of one piece	99 m [≈ 324.8 ft]	99 m [≈ 324.8 ft]	99 m [≈ 324.8 ft]	99 m [≈ 324.8 ft]	99 m [≈ 324.8 ft]	99 m [≈ 324.8 ft]
Max. operating temp. allowed when power supply ON	65 °C [149 °F]	65 °C [149 °F]	120 °C [248 °F]	120 °C [248 °F]	120 °C [248 °F]	120 °C [248 °F]
Max. operating temp. allowed when power supply OFF	85 °C [185 °F]	85 °C [185 °F]	180 °C [356 °F]	180 °C [356 °F]	180 °C [356 °F]	180 °C [356 °F]
Corrugated polyamide hose outer jacket, black	ø 42.5 mm O.D. [≈ ø 1.7" O.D.]					ø 55 mm O.D. [≈ ø 2.2" O.D.]
Ambient temperature allowed	Standard: -20 to +65 °C [-4 to 149 °F]					
Thermal insulation	Thermo fleece					
Operating pressure	Type 3/4: max. 3 bar g, type 5: max. 100 bar g					
Heater band	Self-limiting, to be cut to any length Version Ex: Type ELSR-N... ⚠ II 2 G Ex e II T6, (LCIE 01 ATEX6019X) resp. ⚠ II 2 G Ex e II and ⚠ II 2 D Ex tD A21 Tmax 80°C, (PTB08ATEX1014U) Type ..XTV2-CT, ⚠ II 2 G/D Ex e II T4/T3/T250°C (T2) IP66 T130°C/T195°C/T250°C, (PTB 98 ATEX1105X)					
Power supply	230 V 50 Hz* or 115 V/60 Hz, over-current release according to request, max. 25 A time-lag, characteristic C					
Power consumption	Depending on version and length of the line: W/m x length [m] = total W					
Electrical connection using type 3/4/5 DN 4 or 6	Directly on the heating band using crimping and shrinking methods; assembled at factory with 1 m [≈ 3.3 ft] connection cable of silicone 3 x 1.5 mm ² , heat-resistant					
Marking	⚠ II 2 GD Ex e II T... IP65 TX (temperature class, see type plate)					
Electrical connection using type 3/4/5 Ex DN 4 or 6	Lead out the heating band and place it in the Ex junction box; factory-assembled: 1 m [≈ 3.3 ft] heating band led out to EX-E terminal box, 122 x 120 x 90 mm, with 2 x M25 cable glands and blind plugs each, terminals: 6 x 2.5 mm ²					
Electrical standard	EN61010, EN60335-1/Version Ex: EN 60079-0:2006, EN 60079-30-1:2007, EN 61241-0:2006, EN 61241-1:2004, EN 50281-1-1:1998 + A1, EN 50014, EN 50019, EN 60519-1, EN 60519-2					
Degree of protection	IP64 EN 60529					
Weight	Approx. 0.9 kg [≈ 2.0 lbs] per meter, plus connection and end cap 1.1 kg [≈ 2.4 lbs]					
Application fields/smallest bending radius	Mobile and stationary, indoor and outdoor mounting/200 mm [≈ 7.9"]					

Technical data only for 230 V/50 Hz, for 115 V/60 Hz on request
*standard

Type 3/4/5 (Ex) DN 4 or 6, length: 1 m [≈ 3.3 ft]	.../5-... (Ex)	.../30-... (Ex)	.../50-... (Ex)	.../80-... (Ex)	.../100-... (Ex)	.../120-... (Ex)	
Type 3	DN 4	01B6300	01B6305	01B6310	01B6315	01B6320	01B6325
	Ex DN 4	01B6300Ex	01B6305Ex	01B6310Ex	01B6315Ex	01B6320Ex	01B6325Ex
	DN 6	01B6350	01B6355	01B6360	01B6365	01B6370	01B6375
	Ex NW6	01B6350Ex	01B6355Ex	01B6360Ex	01B6365Ex	01B6370Ex	01B6375Ex
Type 4	DN 4	01B6400	01B6405	01B6410	01B6415	01B6420	01B6425
	Ex DN 4	01B6400Ex	01B6405Ex	01B6410Ex	01B6415Ex	01B6420Ex	01B6425Ex
	DN 6	01B6450	01B6455	01B6460	01B6465	01B6470	01B6475
	Ex DN 6	01B6450Ex	01B6455Ex	01B6460Ex	01B6465Ex	01B6470Ex	01B6475Ex
Type 5	DN 4	01B6500	01B6505	01B6510	01B6515	01B6520	01B6525
	Ex DN 4	01B6500Ex	01B6505Ex	01B6510Ex	01B6515Ex	01B6520Ex	01B6525Ex
	DN 6	01B6550	01B6555	01B6560	01B6565	01B6570	01B6575
	Ex DN6	01B6550Ex	01B6555Ex	01B6560Ex	01B6565Ex	01B6570Ex	01B6575Ex

Options for sample line 3/4/5 DN 4 or 6

Completely assembled for type 3-5 DN 4 or 6	01B7050	01B7050	01B7050	01B7055	01B7055	01B7060
Completely assembled for type 3-5 Ex DN 4 or 6	01B7050Ex	01B7050Ex	01B7065Ex	01B7055Ex	01B7055Ex	01B7060Ex
Accessories for assembling at customer's site for type 3-5 DN 4 or 6	Connection and end cap black silicone, 3,2 m [≈ 10.5 ft] connection cable out of silicone 3 x 1.5 mm ² , connectors, end splices, insulating and small parts, Part No. 01B7100					
Accessories for assembling at customer's site for type 3-5 Ex DN 4 or 6	Connection and end cap black silicone, end splices, shrinking, insulating and small parts, EX-E terminal box, 122 x 120 x 90 mm [≈ 4.8" x 4.7" x 3.54"], with 2 x M25 cable glands and blind plugs each, terminals 6 x 2.5 mm ² , Part No. 01B7100Ex					
Electrically heated sample line with 115 V AC instead of 230 V AC	03B9999					

Power supply 115 V/60 Hz, please specify with order, 230 V/50 Hz is standard
Further accessories and other versions on request

To specify with order:

- Type (3/4/5)
- Power supply 230 V/50 Hz or 115 V/60 Hz
- Tube ø i/o (DN 4/6, 6/8, 8/10, 10/12)
- Factory standard assembly
- Accessories
- Temperature version (5, 30, 50, 80, 100, 120)
- Ex version (Ex)
- Length of sample line in meters X or Y
- Assembling at customer's site

For example:

6 x 01B6300 X = 6 m heated, self-regulating sample line version 3/5-4, ø DN 4/6, +5 °C [41 °F] holding temperature, with PTFE tube 4/6 non-replaceable, 230 V/50 Hz, 1 x 01B7050 factory standard assembly