



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

Electrically heated sample lines type 3/4/5/-5/30/50/80/100/120 (Ex)



Self regulated, 3 type tubes and 6 temperature versions from +5 °C to +120 °C

Special Features

- Self regulated, without thermostat
- Completely assembled
- Yard ware treated externally
- Outer shell corrugated tube of Polyamide
- PTFE tube non interchangeable type 3/
- PTFE tube interchangeable type 4/
- Stainless steel tube non interchangeable type 5/
- Tube ø 4/6-10/12 mm DN ..
- 6 temperature ranges from +5 °C to +120 °C
- Holding temperature at -20 °C
- Ex-version for zone 1, 2, 21 and 22 according to ATEX

Application

The electrically heated self regulated M&C-sample lines 3/4/5/-5/30/50/80/100/120 (Ex) are used in gas analysis technique for transportation of the sample gas from the sample point to the gas conditioning system. They prevent measurement faults in the lower temperature ranges from +5 °C to +120 °C and protect the system against freeze. A temperature monitoring of the total heated line is not possible due to the function as parallel heater band.

Description

The self regulated M&C-sample lines 3/4/5/-5/30/50/80/100/120 are supplied according to clients requirements completely assembled in the factory with connections and endings in a fixed length or as yard ware for treatment by the customer.

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

The robust manufacture of the sample line consists of an inner tube/pipe and a self regulated parallel heater band, both covered with thermoconducting aluminium as well as a further thermal insulation and the black coloured corrugated Polyamide-tube outside.

The endings of the completely assembled execution are sealed connections out of silicone.

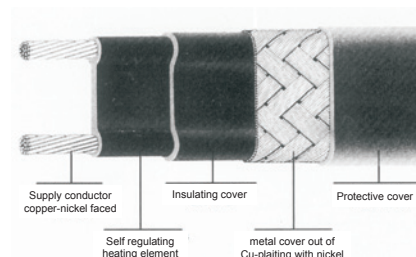
The explosion-proof versions 3/4/5/-5/30/50/80/100/120 Ex for use in hazardous area zone 1, 2, 21 and 22 are equipped with EEx proved self delimited heater bands. The sample lines assembled in our works have got a connection cable respectively a heater band for the Ex versions of 1 meter leaving the line axially. On both sides, the tube or pipe is jutting out by 500 mm.

For assembling at the customers' side, the respective accessories are available.

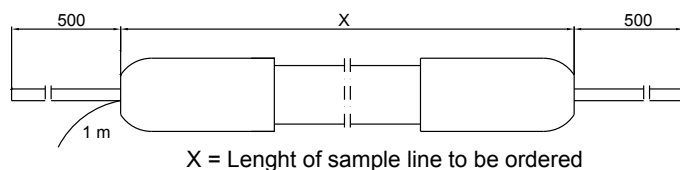
The operating temperature (guaranteed minimum temperature) of the self regulated heated sample lines of M&C is related to an ambient temperature of -20 °C. It is not necessary to use an external thermostat.

Description of the self regulated heater bands

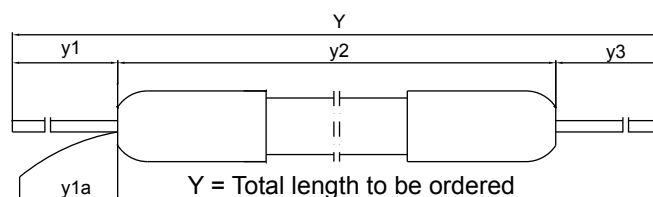
The self regulated parallel heater bands consist of two parallel supply conductors of copper which are embedded in a cross-linked and with particles of carbon doped plastic heater element with a positive temperature coefficient. The heater element changes its capacity in relation to the ambient temperature. 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. Thus, the heater band is adapting its temperature everywhere in the sample line according to individual temperature requirement.



Complete treatment of sample line in factory



Assembling of sample line at customers' side



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

Technical Data

Sample line type 3/4/5... DN4 or 6	../5-.. (Ex)	../30-.. (Ex)	../50-.. (Ex)	../80-.. (Ex)	../100-.. (Ex)	../120-.. (Ex)
Inside tube	type 3/ 4/...: PTFE, ø 4/6 mm or 6/8 mm, type 3/... non interchangeable, type 4/... interchangeable type 5/...: stainless steel 316, ø 4/6 mm or 6/8 mm, non interchangeable when assembled in the factory, tube 500 mm jutting out on both sides					
Holding temperature at -20 °C Ambient temperature	+5 °C	+30 °C	+50 °C	+80 °C	+100 °C	+120 °C
Version EX-Temperature class	T6	T6	T3	T3	T3	T2
Power consumption, cold start at -20 °C	16 W/m	45 W/m	45 W/m	54 W/m	54 W/m	71 W/m
cold start at 0 °C	13 W/m	37 W/m	40 W/m	49,5 W/m	49,5 W/m	66 W/m
cold start at +10 °C	9,2 W/m	30 W/m	38 W/m	47 W/m	47 W/m	63 W/m
with operating temperature	11,5 W/m	20 W/m	28 W/m	30,5 W/m	26 W/m	35 W/m
Max. length allowed for -20 °C ambient temperature	109 m	52 m	65 m	55 m	55 m	40 m
Max. length of one piece	99 m	99 m	99 m	99 m	99 m	99 m
Max. operating temp. allowed when current supply ON	65 °C	65 °C	120 °C	120 °C	120 °C	120 °C
Max. operating temp. allowed when current supply OFF	85 °C	85 °C	180 °C	180 °C	180 °C	180 °C
Corrugated Polyamide-tube outside, black	ø 42,5 mm o.d.					ø 55 mm o.d.
Ambient temperature allowed	standard: -20 °C to +65 °C					
Thermal isolation	glass fibre					
Operating pressure	type 3/ 4/...: max. 3 bar g, type 5/...: max. 100 bar g					
Heater band	Self-limiting, to be cut into any length you like Version Ex: Type ELSR-N... II 2 G EEx e II T6, (LCIE 01 ATEX6019X) resp. II 2G Ex e II and II 2D Ex tD A21 Tmax 80°C, (PTB08ATEX1014U) Type .XTV2-CT, II 2 G/D EEx e II T4/T3/T250°C (T2) IP66 T130°C/T195°C/T250°C, (PTB 98 ATEX1105X)					
Power supply	230V 50Hz* or 115V/60Hz, 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)=.W totally					
Electrical connection at type 3/4/5/... DN4 or DN6	direct on the heater band by means of shrinkdown technique; prepared in factory with 1 m connection cable of silicone 3x 1,5 mm ² , heat resistant					
Electrical connection at type 3/4/5/... Ex DN4 or DN6	lead through the heater band and put into Ex-connection box; prepared in factory: 1 m heater band lead out on EEx e connection box, 122x120x90 mm, with 2x M25 cable gland and blind plug each, terminals 6x 2,5 mm ²					
Marking	II 2 GD EEx e II T... IP65 TX (temperature class see type plate)					
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					
Protection	IP64 EN60529					
Weight	approx. 0,9 kg per meter plus 1,1 kg for beginning and end connection					
Application fields / smallest bending radius	mobile and stationary, mountage inside and outside / 200 mm					

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

Part numbers

Sample line type 3/4/5... DN4 or 6	../5-... (Ex)	../30-... (Ex)	../50-... (Ex)	../80-... (Ex)	../100-... (Ex)	../120-... (Ex)
Part No. type 3/... DN4, lenght 1 meter	01B6300	01B6305	01B6310	01B6315	01B6320	01B6325
Part No. type 3/... Ex DN4, lenght 1 meter	01B6300Ex	01B6305Ex	01B6310Ex	01B6315Ex	01B6320Ex	01B6325Ex
Part No. type 3/... DN6, lenght 1 meter	01B6350	01B6355	01B6360	01B6365	01B6370	01B6375
Part No. type 3/... Ex DN6, lenght 1 meter	01B6350Ex	01B6355Ex	01B6360Ex	01B6365Ex	01B6370Ex	01B6375Ex
Part No. type 4/... DN4, lenght 1 meter	01B6400	01B6405	01B6410	01B6415	01B6420	01B6425
Part No. type 4/... Ex DN4, lenght 1 meter	01B6400Ex	01B6405Ex	01B6410Ex	01B6415Ex	01B6420Ex	01B6425Ex
Part No. type 4/... DN6, lenght 1 meter	01B6450	01B6455	01B6460	01B6465	01B6470	01B6475
Part No. type 4/... Ex DN6, lenght 1 meter	01B6450Ex	01B6455Ex	01B6460Ex	01B6465Ex	01B6470Ex	01B6475Ex
Part No. type 5/... DN4, lenght 1 meter	01B6500	01B6505	01B6510	01B6515	01B6520	01B6525
Part No. type 5/... Ex DN4, lenght 1 meter	01B6500Ex	01B6505Ex	01B6510Ex	01B6515Ex	01B6520Ex	01B6525Ex
Part No. type 5/... DN6, lenght 1 meter	01B6550	01B6555	01B6560	01B6565	01B6570	01B6575
Part No. type 5/... Ex DN6, lenght 1 meter	01B6550Ex	01B6555Ex	01B6560Ex	01B6565Ex	01B6570Ex	01B6575Ex
Options for sample line 3/4/5/... DN4 or 6						
Completely assembled for type 3-5/... DN4 or 6	01B7050	01B7050	01B7050	01B7055	01B7055	01B7060
Completely assembled for type 3-5/... Ex DN4 or 6	01B7050Ex	01B7050Ex	01B7065Ex	01B7055Ex	01B7055Ex	01B7060Ex
Accessories for assembling at customers' side for type 3-5/... DN4 or 6	beginning and end connection-black, 3,2 m connection cable of silicone 3x 1,5 mm ² , end splices, Isolating and small parts, Part-No. 01B7100					
Accessories for assembling at customers' side for type 3-5/... Ex DN4 or 6	beginning and end connection-black, end splices, shrinking, isolating and small parts, EEx e connecting box, 122x120x90 mm, with 2x M25 cable glands and blind plugs each, terminals 6x 2,5 mm ² , Part-No. 01B7100Ex					
Electrically heated sample line with power 115VAC instead of 230VAC	03 B 9999					

Current 115V/60Hz please specify with order, 230V/50Hz is standard
Further accessories and other executions on request.

To specify with order:

- Type (3/4/5/)
- Current 230V/50Hz or 115V/60Hz
- Tube-ø i/o (-4/6, 6/8, 8/10, 10/12 mm)
- Standard assembling at factory
- Accessories
- Temperature version (5, 30, 50, 80, 100, 120)
- EEx version (Ex)
- Length of sample line in meters X or Y
- Assembling at customers' side

For example:

6x 01B6300 X = 6 m heated, self-regulated sample line version 3/5-4, ø 4/6 mm, +5 °C holding temperature, with PTFE-tube 4/6 non interchangeable, 230V/50Hz. 1x 01B7050 ready-for-use ex factory.