



## HDF/HDC



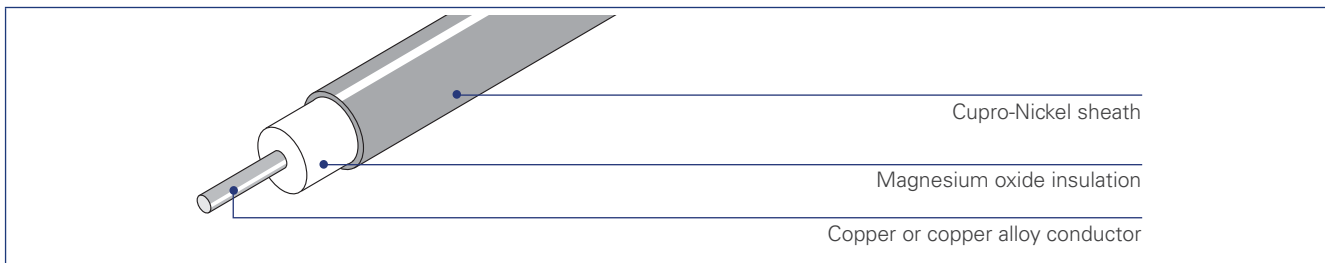
### Mineral insulated copper sheathed heating cable

Pyrotенax HDC/HDF mineral insulated (MI) Cupro-Nickel series heating cables are suited for use in hazardous areas. They are extensively used for a wide variety of industries, such as oil and gas, chemical and petrochemical, power generation, gas storage and many other industrial applications. Cupro-Nickel heating cables with

copper conductors (HDC) are available in very low resistances to allow for long line applications with a limited amount of supply points, in particular for applications exceeding the capabilities of Polymer Insulated (PI) series heating cables. The heating cables can be used for exposure temperatures up to 400°C and a typical

power output up to 70 W/m. The heating cables are offered as bulk cable as well as factory-terminated heating units to ensure optimum quality of the connections. The offering is completed with a full range of components for installation, connection and splicing of the heating cables.

#### Heating cable construction



#### Application

Area classification Hazardous areas, Zone 1 or Zone 2 (Gas) and Zone 21 or Zone 22 (Dust)  
Ordinary areas

#### Approvals

System (heating units) Baseefa02ATEX0046X  
 II 2GD Ex e II T6 to T1 Ex tD A21 IP6X  
 Actual T class temperature determined by design

Bulk cable Baseefa02ATEX0045U  
 II 2G Ex e II

Heating units are also approved for Dust environments. Temperature classification (T-rating) has to be established by using the principles of stabilised design or the use of a temperature limiting device. Use TraceCalc design software or contact Tyco Thermal Controls.

This product also has all required approvals for use in Kazakhstan, Russia and other countries. Contact your local Tyco Thermal Controls representative for more details.

#### Technical Data

Cable sheath material	70/30 Cupro-Nickel	
Conductor material	Copper (HDC) or Copper Alloy (HDF)	
Max. exposure temperature	400°C	
Min. installation temperature	-60°C	
Min. bending radius	6 x outer diameter at -60°C	
Max. supply voltage and power	Voltage (U <sub>0</sub> /U) 300/500 Vac	Max. power output* 70 W/m
	* typical value, depending on application	
Earth leakage	3 mA/100 m (nominal at 20°C, 230Vac, 50 - 60Hz)	
Min. cable spacing	25 mm for hazardous areas	

MI series heating cables HDF/HDC					
Order Reference	Nominal resistance ( $\Omega$ /km @ 20°C)	Outer diameter (mm)	Temp. coefficient (x 10 <sup>-3</sup> /K)	Max. coil length [m]	Nom. weight (kg/km)
HDF1M1600	1600	3.2	0.04	625	40
HDF1M1000	1000	3.4	0.04	550	45
HDF1M630	630	3.7	0.04	465	55
HDF1M400	400	4.0	0.04	400	67
HDF1M250	250	4.4	0.04	330	84
HDF1M160	160	4.9	0.04	265	108
HDC1M63	63	3.2	3.9	620	39
HDC1M40	40	3.4	3.9	550	44
HDC1M25	25	3.7	3.9	440	55
HDC1M17	17	4.6	3.9	300	84
HDC1M11	11	4.9	3.9	265	98
HDC1M7	7	5.3	3.9	225	119
HDC1M4	4	5.9	3.9	180	155

Resistance tolerance:  $\pm 10\%$

Recommended cold leads for HDF/HDC MI series heating cables				
Nom. cross section [mm <sup>2</sup> ]	Order reference	Max. current (design B)	Outer diameter (mm)	Standard gland size
2.5	DC1H2.5	34	5.3	M20
6	DC1H6	57	6.4	M20
10	DC1H10	77	7.3	M25
16	DC1H16	102	8.3	M25

Brass glands are standard on all heating units. Other materials are possible, contact Tyco Thermal Controls for more information.

Delivery length of bulk cable on coil depends on type of resistance and is limited by max. coil length as indicated in the table on top. Factory terminated elements are limited by a max. weight of 50kg, however to ensure practical and safe on-site handling, it is strongly recommended to limit element lengths to 25 - 30kg. Not all resistances are standard items and as such may not be in stock. Contact Tyco Thermal controls to confirm lead time. Tyco Thermal Controls requires the use of a 30 mA residual current device to provide maximum safety and protection from fire.

Where design results in higher leakage current, the preferred trip level for adjustable devices is 30 mA above any inherent capacitive leakage characteristic of the heater as specified by the trace heater supplier or alternatively, the next common available trip level for non adjustable devices, with a maximum of 300 mA. All safety aspects need to be proven.

Also refer to the components section for more details on heating units, accessories and nomenclatures. Page 118.

Chemical resistance											
Sheath Material	Maximum Cable Sheath Temp (°C)	Description	Sulphuric Acid	Hydrochloric Acid	Hydrofluoric Acid	Phosphoric Acid	Nitric Acid	Organic Acid	Alkalis	Sea Water	Chloride
Cupro-Nickel	400	Cupro-Nickel alloy 70% copper 30% nickel	NR	X	X	X	X	X	X	GE	GE

**Note:** NR Not recommended, A acceptable, GE Good to excellent, X Check for specific data

Corrosion resistance data is dependent on temperature and concentration.

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