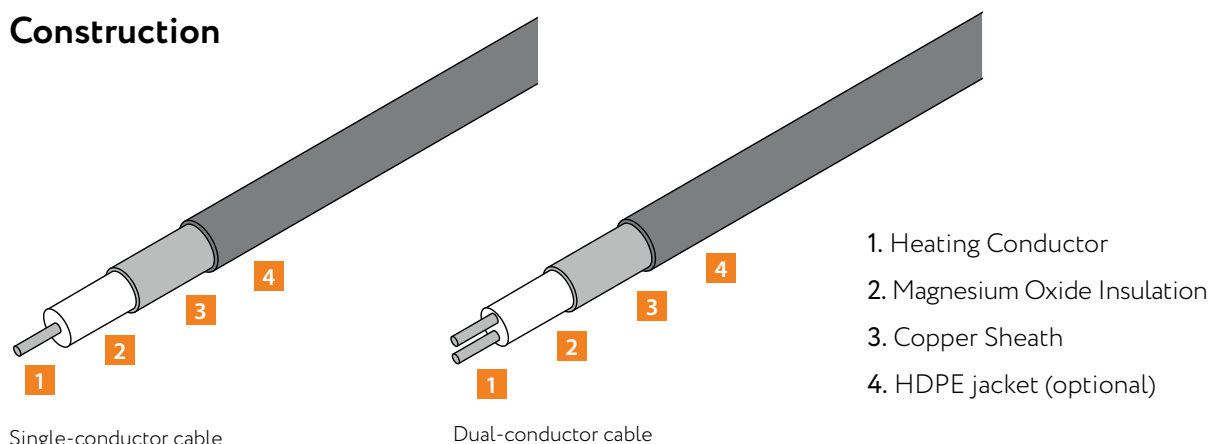


# Mineral Insulated Heating Cable MICU

The MICU range of copper sheathed Mineral Insulated (MI) heating cable has been developed to meet the specific need for a cable having a high temperature capability and electrical resistance values needed for long circuit lengths. Copper sheath combined with heating conductors allows to enable an operating temperature of 250°C with resistance values from 0.68Ω/km down to 2000Ω/km. However, an high density polyethylene (HDPE) outer sheath must be used when the cable is used in special situations, such as corrosion re-

sistance or burying or snow melting application. HDPE jacketed copper-sheathed heating cables (MIHC) have an operating temperature of 90°C. MI cables have excellent mechanical strength and are resistant to corrosion. They are series resistance heaters which must be designed to provide the required heat output. Shipped as cable or ready-made heating units. Heating unit consists of a heating cable, couplings, cold cable inserts, cable glands and flexible installation wires.

## Construction



## Application

| Bare copper-sheathed heating cable                          | Max. power output (W/m) |
|-------------------------------------------------------------|-------------------------|
| De-icing of metal gutters and downspouts                    | 49                      |
| De-icing of nonmetallic gutters and downspouts              | 16                      |
| Process temperature maintenance (pipes and vessels)         | 59                      |
| Freeze protection of metal pipes and vessels                | 59                      |
| Snow melting on metal roofs                                 | 49                      |
| <b>HDPE jacketed copper-sheathed heating cable</b>          |                         |
| Freeze protection of metal pipes and vessels                | 26                      |
| Freeze protection of nonmetallic pipes and vessels          | 13                      |
| Snow melting in road-grade asphalt slab                     | 82                      |
| Snow melting on nonmetal roof                               | 26                      |
| De-icing of metal gutters and downspouts                    | 26                      |
| De-icing of nonmetallic gutters and downspouts              | 16                      |
| Floor warming in concrete slab                              | 33                      |
| Frost heave prevention in sand under freezer or arena floor | 23                      |
| Snow melting in concrete and mastic asphalt slab            | 99                      |

**Note:** When designing heating cables for pipe and vessel tracing, the 'Max. power output' values may have to be decreased to ensure that the sheath temperature does not exceed the maximum exposure temperature or the autoignition temperature of the area (hazardous location only).

## Specification

### Heating Units Ordering Code

Example: MI CU-B 16K3200/60/2520/220/E1  
Digit:           ①   ②   ③   ④   ⑤   ⑥   ⑦

| Digit number | Description         | Explication       |
|--------------|---------------------|-------------------|
| 1            | Sheath material     | CU                |
| 2            | Cable configuration | See Table 1       |
| 3            | Cable reference     | See Table 2, 3, 4 |
| 4            | Cable length        | In meter          |
| 5            | Cable wattage       | In Watts          |
| 6            | Cable voltage       | In volt           |
| 7            | Gland size          | See Table 5       |

### Heating Cable Decoding

Example: 1   6   K   3200  
Digit:       ①   ②   ③   ④

| Digit number | Description             | Explication          |
|--------------|-------------------------|----------------------|
| 1            | Number of conductors    | 1 or 2               |
| 2            | Maximum voltage rating  | 3=300V, 6=600V       |
| 3            | Conductor material      | C, K                 |
| 4            | Cable resistance × 1000 | 3200=3.22 Ω/m × 1000 |

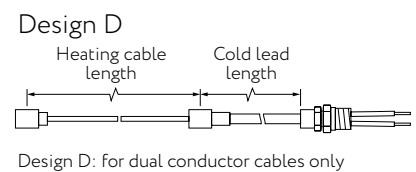
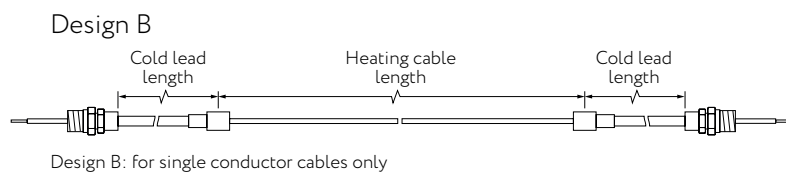
# Copper Sheathed Mineral Insulated Heating Cable

## Technical Data

|                            |                                                                         |
|----------------------------|-------------------------------------------------------------------------|
| Operating voltage          | Up to 600 V                                                             |
| Maximum thermal resistance | Up to +250 °C                                                           |
| Ex marking                 | Ex 60079-30-1 IIC T1 to T6 Gb<br>Ex 60079-30-1 IIIC T450 °C to T85°C Db |
| Resistance at 20 °C        | 0.68–2000 Ω/m                                                           |
| Construction               | 1 or 2 conductors                                                       |

## Cable Configurations

Table 1



## Cable References

Table 2 Single Conductor 600V

| Cable ref | Diameter | OD of HDPE Jacket | Resiet. at 20 °C | Nominal Length | Nominal Weight With jacket |
|-----------|----------|-------------------|------------------|----------------|----------------------------|
|           | mm       | mm                | Ω/m              | m              | kg/km                      |
| 16C1.7    | 7.3      | 9.7               | 0.0017           | 550            | 314.1                      |
| 16C2.2    | 7.0      | 9.4               | 0.0022           | 600            | 282.3                      |
| 16C2.9    | 6.4      | 8.8               | 0.0029           | 550            | 237.2                      |
| 16C4      | 5.9      | 8.3               | 0.004            | 600            | 196.2                      |
| 16C7      | 5.3      | 7.7               | 0.007            | 245            | 157.6                      |
| 16C11     | 4.9      | 7.3               | 0.011            | 280            | 134.7                      |
| 16C13     | 4.6      | 7                 | 0.013            | 325            | 119.8                      |
| 16C17     | 4.6      | 7                 | 0.017            | 325            | 118.5                      |
| 16C21     | 4.6      | 7                 | 0.021            | 325            | 115.3                      |
| 16C25     | 4.6      | 7                 | 0.025            | 325            | 116.2                      |
| 16C33     | 4.6      | 7                 | 0.033            | 325            | 113.9                      |
| 16C40     | 3.4      | 5.8               | 0.04             | 410            | 70.5                       |
| 16C63     | 3.2      | 5.6               | 0.063            | 450            | 62.8                       |
| 16K80     | 5.3      | 7.7               | 0.08             | 245            | 158.3                      |
| 16K100    | 5.2      | 7.6               | 0.1              | 270            | 146.5                      |
| 16K140    | 4.9      | 7.3               | 0.14             | 300            | 130.7                      |
| 16K197    | 4.45     | 6.85              | 0.197            | 350            | 109.6                      |
| 16K220    | 4.5      | 6.9               | 0.22             | 330            | 113.8                      |
| 16K315    | 4.3      | 6.7               | 0.315            | 370            | 108.1                      |
| 16K345    | 4.2      | 6.6               | 0.345            | 380            | 103.5                      |
| 16K450    | 4.0      | 6.4               | 0.45             | 430            | 94.6                       |
| 16K630    | 4.0      | 6.4               | 0.63             | 430            | 92.2                       |
| 16K800    | 3.5      | 5.9               | 0.8              | 390            | 74.5                       |
| 16K1280   | 3.7      | 6.1               | 1.28             | 350            | 78.5                       |
| 16K2000   | 3.6      | 6                 | 2.0              | 370            | 75.4                       |

# Mineral Insulated Heating Cable MICU

**Table 3 Dual Conductor 600V**

| Cable ref | Diameter | Resiet. at 20 °C<br>Ω/m | Nominal Length<br>m | Nominal Weight<br>kg/km |
|-----------|----------|-------------------------|---------------------|-------------------------|
|           | mm       |                         |                     |                         |
| 26C3.4    | 12.9     | 0.0034                  | 150                 | 849.7                   |
| 26C4.4    | 12.2     | 0.0044                  | 160                 | 748.6                   |
| 26C5.8    | 11.3     | 0.0058                  | 170                 | 637.5                   |
| 26C8.6    | 9.90     | 0.0086                  | 180                 | 489.5                   |
| 26C11.4   | 9.30     | 0.0114                  | 200                 | 498.9                   |
| 26C13.8   | 9.00     | 0.0138                  | 210                 | 399.2                   |
| 26C17.2   | 8.60     | 0.0172                  | 220                 | 363.3                   |
| 26023     | 8.00     | 0.023                   | 250                 | 314.7                   |
| 26C34.4   | 7.50     | 0.0344                  | 280                 | 275.4                   |
| 26C49.2   | 7.10     | 0.0492                  | 300                 | 246.5                   |
| 26K240    | 9.90     | 0.24                    | 180                 | 489.4                   |
| 26K320    | 9.30     | 0.32                    | 200                 | 498.6                   |
| 26K384    | 9.00     | 0.384                   | 210                 | 399.2                   |
| 26K480    | 8.60     | 0.48                    | 220                 | 363.2                   |
| 26K640    | 8.00     | 0.64                    | 250                 | 314.7                   |
| 26K960    | 7.50     | 0.96                    | 280                 | 275.3                   |

**Table 4 Dual Conductor 300V**

| Cable ref | Diameter | Resiet. at 20 °C<br>Ω/m | Nominal Length<br>m | Nominal Weight<br>kg/km |
|-----------|----------|-------------------------|---------------------|-------------------------|
|           | mm       |                         |                     |                         |
| 23C3.4    | 12.4     | 0.0034                  | 200                 | 797.2                   |
| 23C4.4    | 11.3     | 0.0044                  | 220                 | 660.6                   |
| 23C5.8    | 10.4     | 0.0058                  | 240                 | 555.8                   |
| 23C8.6    | 9.00     | 0.0086                  | 260                 | 417.6                   |
| 23C11.4   | 8.40     | 0.0114                  | 280                 | 361.3                   |
| 23C13.8   | 8.00     | 0.0138                  | 300                 | 326.9                   |
| 23C17.2   | 7.60     | 0.0172                  | 320                 | 294.1                   |
| 23023     | 7.10     | 0.0 23                  | 340                 | 256.2                   |
| 23C34.4   | 6.60     | 0.0344                  | 360                 | 220.5                   |
| 23C49.2   | 6.20     | 0.0492                  | 380                 | 194.4                   |
| 23K160    | 10.4     | 0.16                    | 220                 | 556.4                   |
| 23K240    | 9.00     | 0.24                    | 240                 | 417.5                   |
| 23K320    | 8.40     | 0.32                    | 265                 | 361.0                   |
| 23K384    | 8.00     | 0.384                   | 280                 | 326.9                   |
| 23K480    | 170      | 0.48                    | 300                 | 300.6                   |
| 23K640    | 710      | 0.64                    | 320                 | 256.3                   |
| 23K960    | 6.50     | 0.96                    | 350                 | 214.7                   |

**Note:** For the required voltage 600 V above application, please contact us.

# Copper Sheathed Mineral Insulated Heating Cable

## Gland Size

Table 5

| Max. voltage (V) | Design A, D, E      |                      |          | Design B            |                      |          | Design C, F, G      |                      |          |
|------------------|---------------------|----------------------|----------|---------------------|----------------------|----------|---------------------|----------------------|----------|
|                  | Max. current (amps) | Gland size (English) | (Metric) | Max. current (amps) | Gland size (English) | (Metric) | Max. current (amps) | Gland size (English) | (Metric) |
| 600              | 15                  | E1                   | M1       | 20                  | E1                   | M1       | 15                  | E1                   | M1       |
| 600              | 20                  | E1                   | M1       | 25                  | E1                   | M1       | 20                  | E1                   | M1       |
| 600              | 30                  | E2                   | M2       | 40                  | E2                   | M2       | 30                  | E2                   | M2       |
| 600              | 50                  | E2                   | M2       | 70                  | E2                   | M2       | 50                  | E2                   | M2       |
| 600              | 70                  | E2                   | M2       | 100                 | E2                   | M2       | 70                  | E2                   | M2       |

**Note 1:** E1 stands for 1/2" NPT; E2 stands for 3/4" NPT; M1 stands for gland diameter M20; M2 stands for gland diameter M25. Stands model shall be advised properly while design.

**Note 2:** 2-meter-long cold lead is supplied with heating cable. For special requirement, please contact us.

## Corrosion Resistance

Table 6

| Substance         | MICU                    | MIHC            |
|-------------------|-------------------------|-----------------|
| Sulphuric Acid    | Not Recommended         | Good-Excellent  |
| Hydrochloric Acid | Not Recommended         | Good-Excellent  |
| Hydrofluoric Acid | Acceptable              | Acceptable      |
| Phosphoric Acid   | Acceptable              | Acceptable      |
| Nitric Acid       | Not Recommended         | Acceptable      |
| Organic Acid      | Acceptable              | Not Recommended |
| Alkalis           | Acceptable              | Acceptable      |
| Sea Water         | Not Recommended         | Acceptable      |
| Chloride          | Check for specific data | Acceptable      |

## Explosion Proof

MICU cable has excellent mechanical strength and high corrosion resistance, can operate in aggressive, hazardous environments, explosive areas included.

## Approval



CML 22ATEX3487

IECEx CML 16.0075

Ex 60079-30-1 IIC T1 to T6 Gb

Ex 60079-30-1 IIIC T450°C to T85°C Db