



## HEAT-SHRINK SHEATHS

Sheaths for insulating bars inside electrical cabinets or outdoors in primary or secondary cabinets.

### Application

Primary (HV-MV) and secondary (MV-LV) electrical up to 36 kV today come in very compact sizes. Bars need to be insulated to prevent surface discharges and accidental short-circuits that are essentially caused by animal intrusion. Heat-shrink sheaths for MV can be used on round and rectangular copper or aluminium bars. They are flexible and elastic, can be installed on previously bent bars without any risks of tearing or rippling.

### Description

Sheaths utilise a special elastomer cross-linked by irradiation, with an exceptional insulating power and excellent seal over time, even in case of continuous use at high temperature. They do not contain halogens and therefore there is no risk of emission of toxic or corrosive substances in case of fire. They are resistant to solvents, UV radiation, exposure to weather, impact and tear, and therefore are fully suitable for use outdoors.

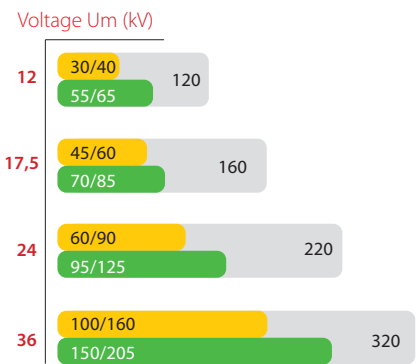
### Installation

Sheaths for MV can be easily factory installed, when dealing with mass production, using an oven for heat-shrink. In situ, shrinking can be carried out with the aid of a torch or a hot air torch. Heat the sheath to over 120°C and it will shrink on the bar without risk of damage because the material is cross-linked and very resistant to high temperatures. The great elasticity of the sheaths allows, if necessary, for being of the bars during assembly of the electric cabinet with the sheath already installed.

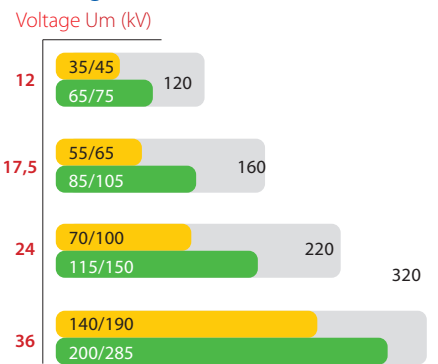
### DISTANCES ALLOWED IN BAR SYSTEMS

Phase/phase and phase/bus bars distances recommended with insulated bars with sheaths for MV. Studies and testing carried out on insulated bars have shown that it is possible to significantly reduce space with respect to those used in the case of air insulation. The minimum permitted space is defined by the absence of partial discharges at the time of testing in alternating current and by the seal upon impulse. The values shown can be applied to round or rectangular bars installed inside standard cabinets. Shapes with sharp edges or bar parallels of more than 5 m require larger spaces.

#### Round bus bars



#### Rectangular bus bars



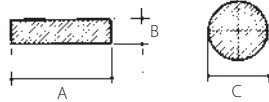
- Spacing in air according to IEC 71-2  
phase / phase (mm)  
phase / bus bars (mm)
- Insulation with BBT
- Insulation with BPM or HVBT with overlap of 2/3

For more information on different possible applications please contact Raytech.

## BBT

Flexible, **heavy duty** heat-shrink sheath.

Suitable for reducing overhead distances in MV panels up to 36 kV.  
Phase-to-phase distance reduced to approximately 1/3

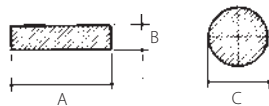


Product Item	Size of bus bars (mm)				Heat-shrink sheath (mm)			
	A+B		C		D	d	S <sub>1</sub>	S <sub>2</sub>
	from	to	from	to				
<b>BBT 40/16-A/U</b> BBT40/16-AU	28	45	18	32	40	16	1,6	3,8
<b>BBT 65/25-A/U</b> BBT65/25-AU	44	69	28	47	65	25	1,6	3,9
<b>BBT 100/40-A/U</b> BBT100/40-AU	69	102	44	72	100	40	1,6	4,0
<b>BBT 150/60-A/U</b> BBT150/60-AU	102	148	65	105	150	60	1,6	4,0

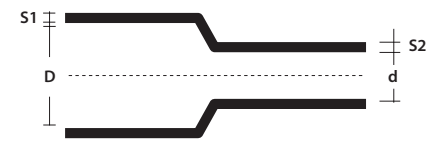
## BPM

Flexible, **medium wall** heat-shrink sheath.

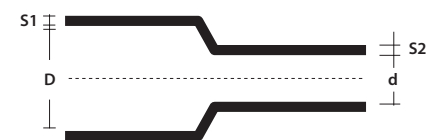
Suitable for optimising space in MV panels and for protection from discharges and accidental contact for systems up to 24 kV. Phase-to-phase distance reduced to approximately 1/2



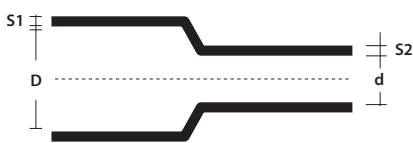
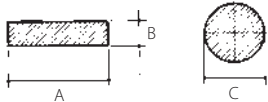
Product Item	Size of bus bars (mm)				Heat-shrink sheath (mm)			
	A+B		C		D	d	S <sub>1</sub>	S <sub>2</sub>
	from	to	from	to				
<b>BPM 15/6-A/U</b> BPM15/6-AU	12	20	6,5	12	15	6	1,1	2
<b>BPM 30/12-A/U</b> BPM30/12-AU	20	38	13,5	25	30	12	1,1	2,2
<b>BPM 50/20-A/U</b> BPM50/20-AU	36	65	22	43	50	20	1,1	2,4
<b>BPM 75/30-A/U</b> BPM75/30-AU	55	95	33	63	75	30	1,1	2,4
<b>BPM 120/50-A/U</b> BPM120/50-AU	90	165	55	105	120	50	1,3	2,8



D = Ø minimum before shrinkage  
d = Ø maximum after free shrinkage  
S<sub>1</sub> = nominal thickness as supplied  
S<sub>2</sub> = minimum nominal thickness after free shrinkage



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D = Ø minimum before shrinkage  
 d = Ø maximum after free shrinkage  
 S1 = nominal thickness as supplied  
 S2 = minimum nominal thickness after free shrinkage

## BPTM

Flexible, **medium wall** heat-shrink sheath.

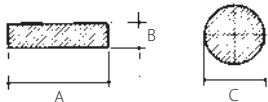
Suitable for optimising space in MV panels and for protection from discharges and accidental contact for systems up to 24 kV. Phase-to-phase distance reduced to approximately 1/2

Product Item	Size of bus bars (mm)				Heat-shrink sheath (mm)			
	A+B		C		D	d	S <sub>1</sub>	S <sub>2</sub>
<b>BPTM 15/6-A/U</b> 5904284002	12	20	6,5	12	15	6	1,1	1,9
<b>BPTM 30/12-A/U</b> 723955-000	20	38	13,5	25	30	12	1,1	2,2
<b>BPTM 50/20-A/U</b> 2246244002	36	65	22	43	50	20	1,1	2,35
<b>BPTM 75/30-A/U</b> 6129164002	55	95	33	63	75	30	1,1	2,35
<b>BPTM 100/40-A/U</b> 178238-000	70	130	44	86	100	40	1,1	2,35
<b>BPTM 120/50-A/U</b> 412147-000	90	165	55	105	120	50	1,3	2,8
<b>BPTM 175/70-A/U</b> 920423-000	125	235	80	150	175	70	1,3	2,8
<b>BPTM 205/110-A/U</b> 499685-000	200	276	127	190	205	110	1,3	2,8

## BBIT

Flexible, **heavy duty** heat-shrink sheath.

Suitable for reducing overhead distances in MV panels up to 36 kV. Phase-to-phase distance reduced to approximately 1/3



D = Ø minimum before shrinkage  
 d = Ø maximum after free shrinkage  
 S1 = nominal thickness as supplied  
 S2 = minimum nominal thickness after free shrinkage

Product Item	Size of bus bars (mm)				Heat-shrink sheath (mm)			
	A+B		C		D	d	S <sub>1</sub>	S <sub>2</sub>
<b>BBIT 25/10-A/U</b> 5609274001	17	28	11	20	25	10	1,6	3,6
<b>BBIT 40/16-A/U</b> 560931-000	28	45	18	32	40	16	1,6	3,6
<b>BBIT 65/25-A/U</b> 5609364001	44	69	28	47	65	25	1,6	3,6
<b>BBIT 100/40-A/U</b> 560981-000	69	102	44	72	100	40	1,6	3,6
<b>BBIT 150/60-A/U</b> 560982-000	102	148	65	105	150	60	1,6	3,6
<b>BBIT 175/80-A/U</b> 426377-000	133	196	85	125	175	80	1,6	3,6