



- High constant power output per meter
- Extremely high mechanical strength
- Highly resistant to chemicals

The BARTEC EMK heating circuits have the main characteristics that they are extremely robust and mechanical loadable. Additional advantages of the laser welded heating circuits are the suitability for highest operating temperatures and the good chemical resistance. Typical applications are frost protection, maintaining temperature and heat-up for example in pipes, tanks, pumps, valves and vessels.

Function

The application of a supply voltage to the resistance cable generates heat. The quantity of heat is dependent on the resistance value of the heating cable and the supply voltage.



Explosion protection

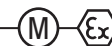
Marking	Ex II 2G Ex e IIC Gb Ex II 2D Ex tb IIIC Db
Certification	BVS 13 ATEX E 034 U IECEX BVS 13.0042U

Other approvals and certificates, see www.bartec.de

Technical data

Structure	Heating element: Copper (Cu), Copper nickel (CuNi), Nickel chromium (NiCr) Insulation: Magnesium oxide (MgO) Outer jacket: SS 1.4541 or SS 2.4816 (Inconel)*
Nominal voltage	500 V/750 V
Ambient temperature	-55 °C to +70 °C
Operating temperature Heating cable	
Version Ex	
Type 27-3641-4...	-70 °C to +600 °C
Type 27-3641-3..., Type 27-3641-7...*	-70 °C to +650 °C
Version M	
Type 27-3643-1..., Type 27-3643-2...	-70 °C to +500 °C
Type 27-3643-4...	-70 °C to +600 °C
Type 27-3643-3...	-70 °C to +800 °C
Type 27-3643-7...*	-70 °C to +1000 °C
Min. installation temperature	-20 °C
Max. Power output	
27-364.-1...; 27-364.-2...;	
27-364.-4...	150 W/m
27-364.-3...; 27-364.-7...*	250 W/m
Bending radius	16 to 33 mm (depending on version)
Cross section cold lead	SS 2.5 mm ² (SS 6.0 mm ² *)
Length cold lead	1 m (2 m*)
Material cable gland	M20 brass (stainless steel*) M25 brass* (stainless steel*)

* on request



Ordering information EMK heating circuits pre-assembled

Short form title	Ω/km at +20 °C	Conductor material	Outer diameter (mm)	Order no.
EMK VA 0011 Cu**	11	Cu	4.9	27-3643-1 <input type="checkbox"/> 31/00111000
EMK VA 0017 Cu**	17	Cu	4.6	27-3643-1 <input type="checkbox"/> 31/00171000
EMK VA 0025 Cu**	25	Cu	3.7	27-3643-1 <input type="checkbox"/> 31/00251000
EMK VA 0040 CuNi**	40	CuNi 5	4.0	27-3643-2 <input type="checkbox"/> 31/00401000
EMK VA 0063 Cu**	63	Cu	3.2	27-3643-1 <input type="checkbox"/> 31/00631000
EMK VA 0160 CuNi	160	CuNi	4.9	27-364 <input type="checkbox"/> -4 <input type="checkbox"/> 31/01601000
EMK VA 0250 CuNi	250	CuNi	4.4	27-364 <input type="checkbox"/> -4 <input type="checkbox"/> 31/02501000
EMK VA 0400 CuNi	400	CuNi	4.0	27-364 <input type="checkbox"/> -4 <input type="checkbox"/> 31/04001000
EMK VA 0630 CuNi	630	CuNi	3.7	27-364 <input type="checkbox"/> -4 <input type="checkbox"/> 31/06301000
EMK VA 1000 CuNi	1000	CuNi	3.4	27-364 <input type="checkbox"/> -4 <input type="checkbox"/> 31/10001000
EMK VA 1600 CuNi	1600	CuNi	3.2	27-364 <input type="checkbox"/> -4 <input type="checkbox"/> 31/16001000
EMK VA 0160 NiCr	160	NiCr	6.5	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/01601000
EMK VA 0250 NiCr	250	NiCr	5.6	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/02501000
EMK VA 0400 NiCr	400	NiCr	5.0	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/04001000
EMK VA 0630 NiCr	630	NiCr	4.5	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/06301000
EMK VA 1000 NiCr	1000	NiCr	4.1	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/10001000
EMK VA 1600 NiCr	1600	NiCr	3.8	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/16001000
EMK VA 2500 NiCr	2500	NiCr	3.6	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/25001000
EMK VA 4000 NiCr	4000	NiCr	3.2	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/40001000
EMK VA 6300 NiCr	6300	NiCr	3.2	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/63001000
EMK VA 010K NiCr	10000	NiCr	3.2	27-364 <input type="checkbox"/> -3 <input type="checkbox"/> 31/010K1000

Version	Code no.	Nominal voltage	Code no.
Ex	1	500 V	2
Non-Ex	3	750 V**	5

Complete order no. Please insert correct code.

** Only available in version media protected.

Technical data subject to change without notice.

1



The "Ex" connection kits for EMK heating cables are available in 3 versions: EMK Ex 300, EMK Ex 400 S and EMK Ex 400 D. The necessary junction box must be ordered for each pre-assembled EMK heating circuit depending on the type of wiring (single-phase, two-phase, star connection, delta connection).

Explosion protection Ex junction box

Marking	Ⓜ II 2G Ex e IIC T6, T5 Gb Ⓜ II 2D Ex tb IIC, T80 °C, T95 °C Db
Certification	PTB 08 ATEX 1064 IECEX PTB 09.0009X
Other approvals and certificates, see www.bartec.de	

Technical data

Material	Polyester, glass-fibre reinforced
Colour	black
Surface resistance	$\leq 10^9 \Omega$
Protection class	IP 65
Cable gland	IP 65
Cover screws	stainless steel

Technical data Cold leads

Standard length	1.0 m
Outer diameter	4.9 mm
Cross section	2.5 mm ²
Conductor material	Copper
Outer jacket material	VA 1.4541
Bend radius	25 mm
Gland, terminal connection	M20

Explosion protection Hot to cold connection joint

Marking	Ⓜ II 2G Ex e IIC Gb Ⓜ II 2D Ex tb IIC Db
Certification	BVS 13 ATEX E 034 U IECEX BVS 13.0042U

Technical data

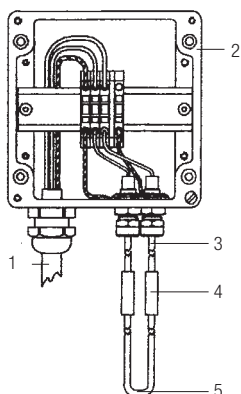
Material	SS 1.4541
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Ordering information Ex Junction boxes

Version Heating circuit	Supply voltage AC	Qty/ enclosure size (mm)	Qty/ terminal with 6 mm ²	Terminal identification	Qty/ terminals	Qty/cold leads dry connections	Glands per enclosure	Terminal range	Order no.
300 CuNi 300 VA	up to 500 V	1 unit 160 x 160 x 90	each 2	L N (L1; L2)	2 with 6 mm ²	2	1 x M25 2 x threaded M20	Ø 7 to 17 mm	07-5177-9100
400 S CuNi 400 S VA		2 unit 160 x 160 x 90	each 6	3 x L1; 3 x N; 1 - 6 (L2; L3)	4 with 6 mm ²	6	1 x M25 4 x threaded M20		2 unit 07-5177-9098
400 D CuNi 400 D VA		1 unit 260 x 160 x 90	each 6	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 6 mm ²	6	1 x M25 3 x threaded M20		07-5177-9099

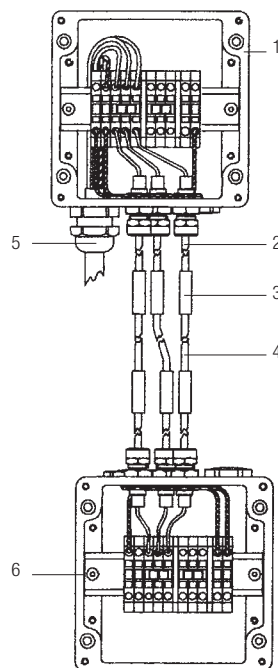
Technical data subject to change without notice.

Standard 300



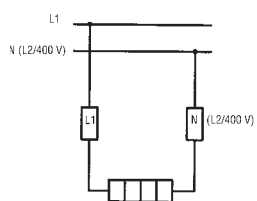
- 1 Mains supply
- 2 Heating circuit junction box
- 3 Cold lead
- 4 Hot to cold connection joint
- 5 Heating cable

Standard 400 S Typical star connection diagram



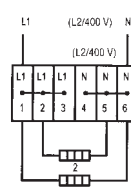
- 1 Heating circuit junction box
- 2 Cold lead
- 3 Hot to cold connection joint
- 4 Heating cable
- 5 Mains supply
- 6 EMK Standard star connection enclosure

Connection diagram Standard 300

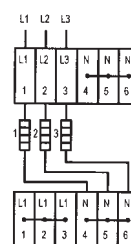


Connection diagram Standard 400 S

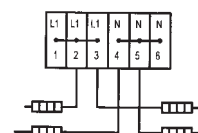
Double junction box



Star connection

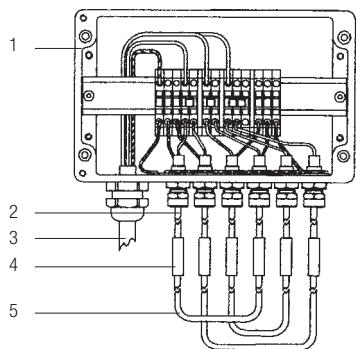


Intermediate junction box



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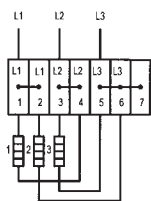
Standard 400 D Typical delta connection diagram



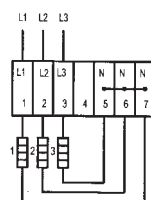
- 1 Heating circuit junction box
- 2 Cold lead
- 3 Mains supply
- 4 Hot to cold connection joint
- 5 Heating cable

Connection diagram Standard 400 D

Delta connection



Star connection



The "Standard" connection kits for EMK heating cables are available in 5 versions: EMK Standard 300, EMK Standard 400 S, EMK Standard 400 D, EMK Standard 690 and EMK Standard 690 S/D. The necessary junction box must be ordered for each pre-assembled EMK heating circuit depending on the required mains voltage and the type of wiring (single-phase, two-phase, star connection, delta connection).

Technical data Junction box Standard

Material	Polyester, glass-fibre reinforced
Colour	grey, black
Surface resistance	$> 10^{12} \Omega$
Protection class	IP 65
Cable gland	IP 54 to IP 65
Cover screws	stainless steel

Technical data Cold leads

Standard length	1.0 m
Outer diameter	4.9 mm
Cross section	2.5 mm ²
Conductor material	Copper
Outer jacket material	SS 1.4541
Bend radius	25 mm
Gland, terminal connection	M20

Technical data Hot to cold connection joint

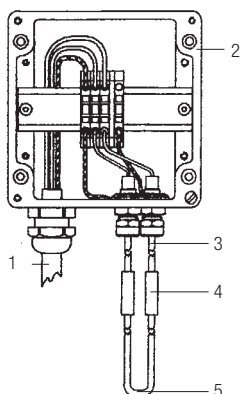
Material	SS 1.4541
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Ordering information Standard Junction boxes

Version Heating circuit	Supply voltage AC	Qty/ enclosure size (mm)	Qty/ terminal	Terminal identification	Qty/ terminals	Qty/cold leads dry connections	Glands per enclosure	Terminal range	Order no.
300 CuNi 300 VA	up to 500 V	1 unit 160 x 160 x 90	each 2 with 6 mm ²	L N (L1; L2)	2 with 6 mm ²	2	1 x M25 2 x threaded M20	Ø 7 to 17 mm	07-5177-9100
400 S CuNi 400 S VA		2 unit 160 x 160 x 90	each 6 with 6 mm ²	3 x L1; 3 x N; 1 - 6 (L2; L3)	4 with 6 mm ²	6	1 x M25 4 x threaded M20		2 unit 07-5177-9098
400 D CuNi 400 D VA		1 unit 260 x 160 x 90	each 6 with 6 mm ²	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 6 mm ²	6	1 x M25 3 x threaded M20		07-5177-9099
690	up to 690 V	1 unit 160 x 160 x 90	each 2 with 16 mm ²	L N (L1; L2)	2 with 16 mm ²	2	1 x M40 2 x threaded M20	Ø 17 to 28 mm	07-5103-9219
690 S/D		1 unit 260 x 160 x 90	each 7 with 16 mm ²	2 x L1; 2 x L2; 2 x L3; 1 - 7	6 with 16 mm ²	6	1 x M40 6 x threaded M20		07-5103-9220

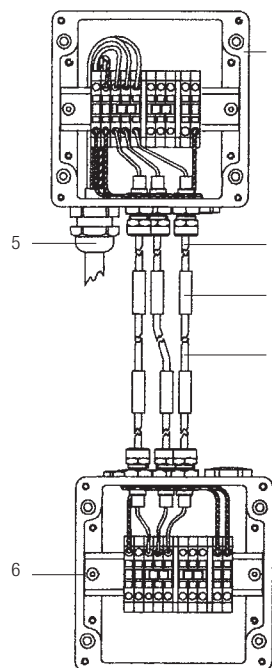
Technical data subject to change without notice.

Standard 300



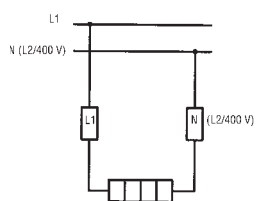
- 1 Mains supply
- 2 Heating circuit junction box
- 3 Cold lead
- 4 Hot to cold connection joint
- 5 Heating cable

Standard 400 S Typical star connection diagram



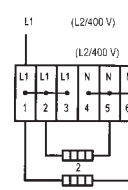
- 1 Heating circuit junction box
- 2 Cold lead
- 3 Hot to cold connection joint
- 4 Heating cable
- 5 Mains supply
- 6 EMK "Standard" star connection enclosure

Connection diagram Standard 300

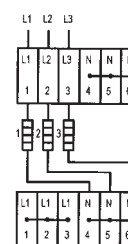


Connection diagram Standard 400 S

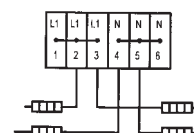
Double junction box



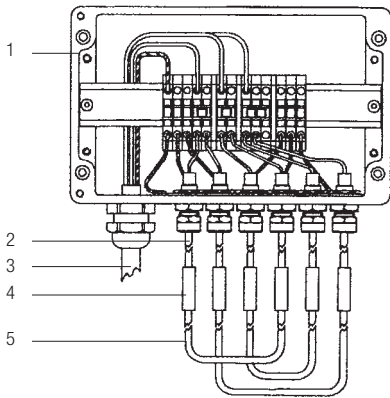
Star connection



Intermediate junction box



Standard 400 D Typical delta connection diagram

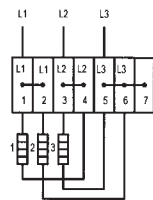


- 1 Heating circuit junction box
- 2 Cold lead
- 3 Mains supply
- 4 Hot to cold connection joint
- 5 Heating cable

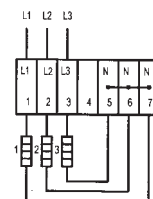
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Connection diagram Standard 400 D

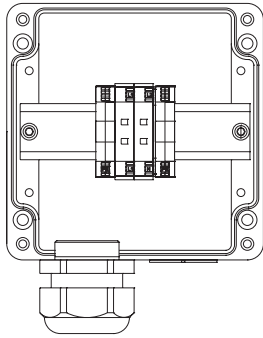
Delta connection



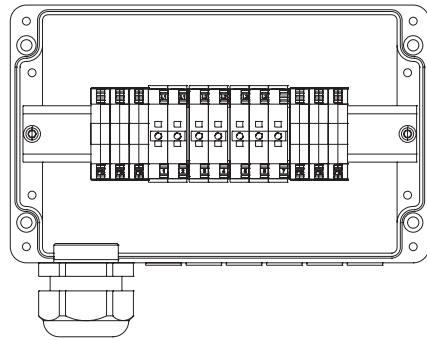
Star connection



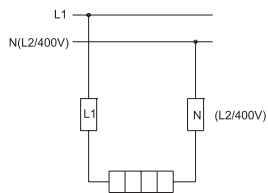
Junction box Ex 690



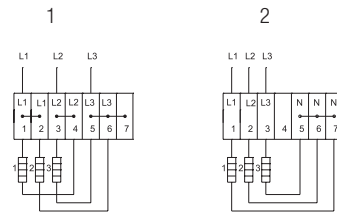
Junction box/terminal box Ex 690 S/D



Connection diagram for junction box Ex 690



Connection diagram for junction box Ex 690 S/D



1 Delta connection

2 Star connection