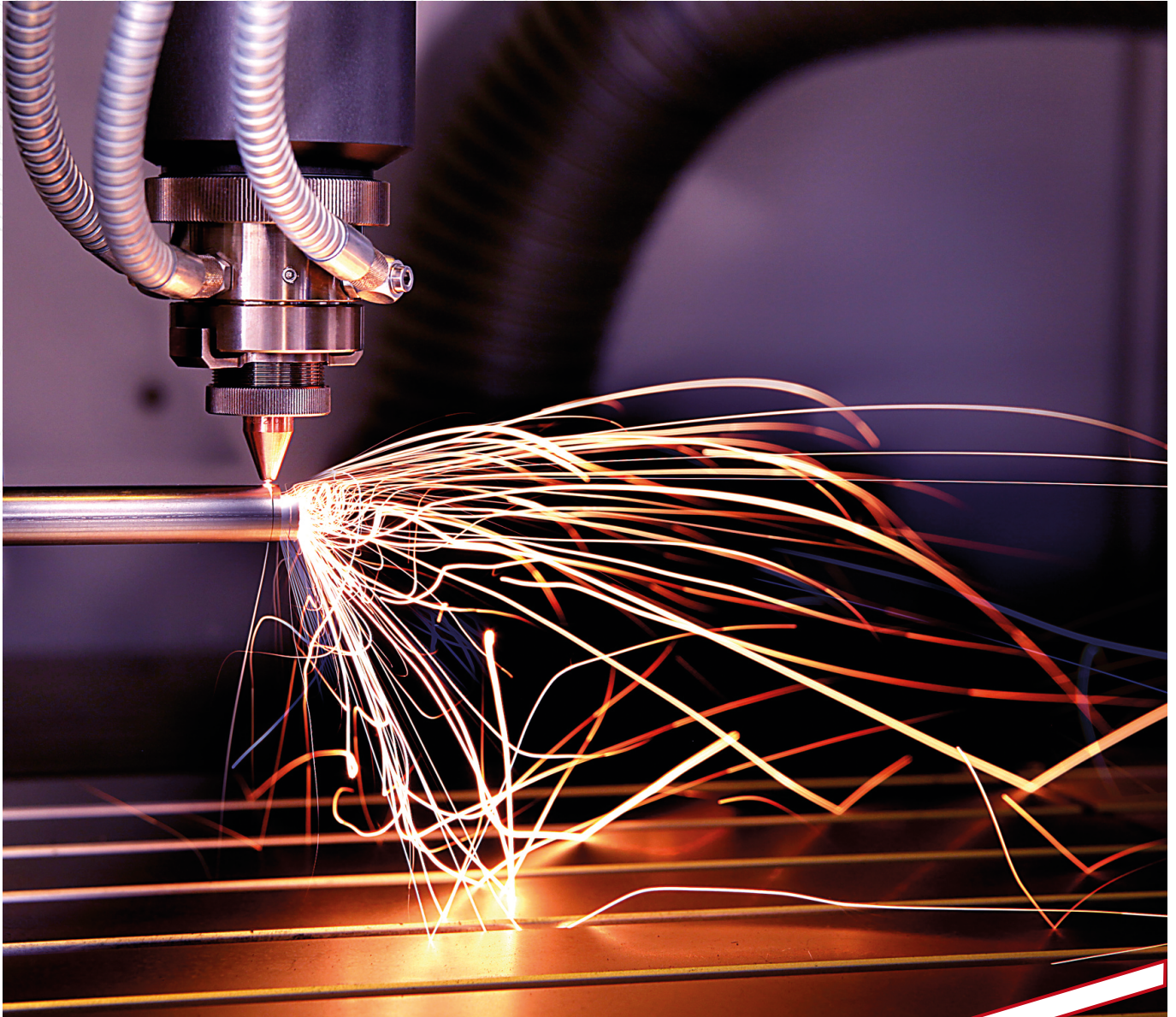
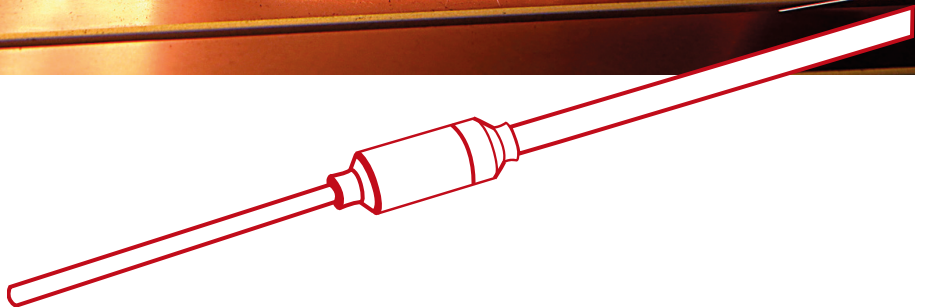


SYSTEM- OVERVIEW



ELK-MI



CONTENT

INTRODUCTION	3
APPLICATIONS	3
APPLICATION AREAS	3
SYSTEM DESIGN	4
TRACE HEATER ELK-MI	5
AVAILABLE RESISTANCES ELK-MI VA	6
AVAILABLE RESISTANCES ELK-MI AY 825	6
CONNECTION CABLES	8
JUNCTION BOXES	9
<u>Junction boxes for Ex-areas</u>	9
ELAK-Ex-2.00, ELAK-Ex-4.21	9
ELAK-Ex-4.22, ELAK-Ex-4.23	10
<u>Junction boxes for non Ex-areas</u>	11
ELAK-3-SP, ELAK-5-SP	11
ELAK-6-SP	12
MOUNTING BRACKETS	12
EL-VSB 300, EL-VSBG 300	12
ORDERING INFORMATION	13
NOTES	14

Reservation

Subject to technical changes. Changes, errors and misprints do not constitute grounds for claims for damages. For safety components and systems, the assembly instructions as well as the relevant and currently valid standards and regulations must be observed.

eltherm GmbH Ernst-Heinkel-Str. 6-10 57299 Burbach T.: +49 2736 4413-0 F.: +49 2736 4413-50 info@eltherm.com	Document: 864301ELKMI01		System overview ELK-MI	
	Autor:	Detlef Matthes	Datum:	04.08.2023
	Revision: 1	Jonas Schmidt	Datum:	27.04.2023

INTRODUCTION

Manufactured and assembled exclusively from premium nickel/chrome Alloy 825 or stainless steel 1.4541. eltherm's revolutionary Clean Laser Seal technology (CLS) guarantees high output and reliability in all industrial applications. This technology results in a homogeneous, 100% stable system that ensures reliable function for years. CLS furthermore offers the technologically best possible protection against stress corrosion, especially with aggressive chemicals such as leachable chlorides or high sulphur content. MI trace heating consists of one- or two-wire trace heater (single and twin design) and mineral-insulated cold conductor connections (with 2.0, 2.5, 3.3 or 5.0 mm² copper conductors) with Clean Laser Seal connection. The free end of the cold conductor is sealed seamlessly and connected with a flexible supply line (diameter corresponding to the cold conductor) plus a 1.5 mm² earth connection. The end of every cold conductor has a thrust ring sleeve made of flameproof stainless steel (1.4404 / AISI 316L) with M20x1.5 or M25x1.5 thread.

ADVANTAGES

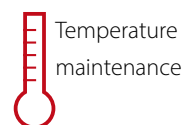
- › Highly precise, safe and reliable connections
- › Consistent quality in every trace heater
- › Absolutely steam-tight
- › No harmful flux residues
- › No impurities due to preassembly in the factory
- › Choose between flexible or rigid supply line connection
- › Lower maintenance and servicing costs
- › High insulation resistance up to 1 TΩ

APPROVALS



APPLICATIONS

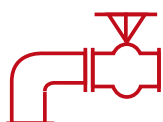
Application areas



Temperature
maintenance



Frost
prevention



Valves, pumps



Pipelines



Silos, vessels,
tanks



Container

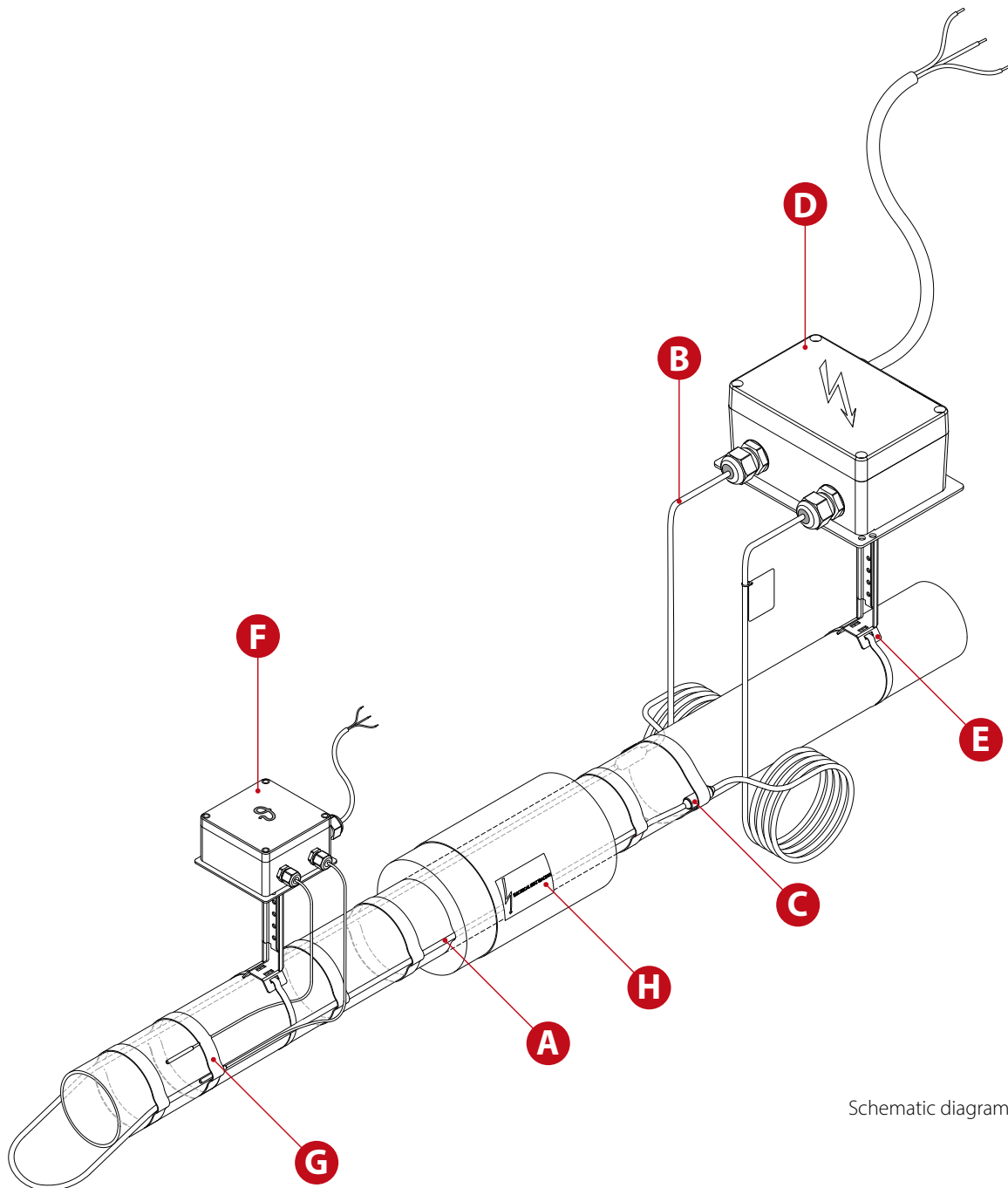


Special solutions

- › Filling systems
- › Exhaust air systems
- › Plant construction
- › Valve heating
- › Coating plants
- › Chem. process engineering
- › Container heating
- › Energy generation
- › Extruder
- › Screw conveyors
- › Mould making
- › Cartridge heating
- › Power stations
- › Cryogenic storage tanks
- › Adhesive technology
- › Plastics technology
- › Laboratory technology

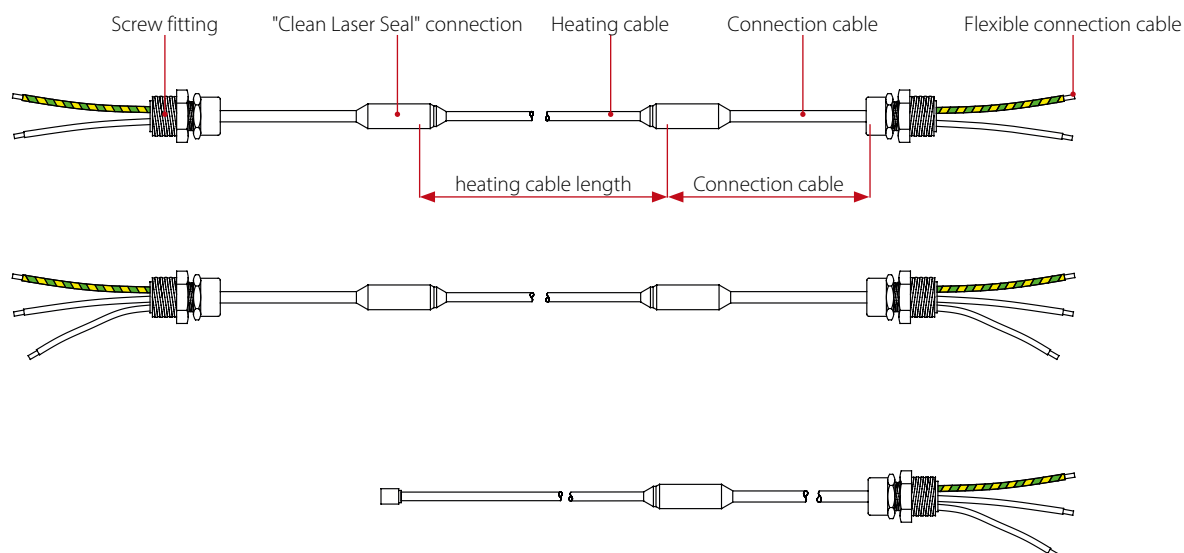
SYSTEM DESIGN

A	Heating cable	Page 5 to 7	E	Mounting bracket	
B	Connection cable	Page 8	F	Controller / limiter	see data sheet
C	"Clean Laser Seal" connection	-	G	Tension tape	see data sheet
D	Junction box	see data sheet	H	Warning sign	see data sheet



(A) TRACE HEATER ELK-MI

Parameter	ELK-MI VA single	ELK-MI VA twin	ELK-MI AY 825 single	ELK-MI AY 825 twin
Outer sheet stainless steel 1.4541 (AISI 321)	✓	✓	✓	✓
Outer sheet stainless steel NiCr 2.4858 (Alloy 825)			✓	✓
max. operation temperatur	700°C	700°C	700°C	700°C
max. operation temperatur in Ex-areas	565 °C	565 °C	700 °C	700 °C
Nominal Voltage	500 V	500 V	500 V	500 V
Nominal power output *	250 W/m	250 W/m	250 W/m	250 W/m
min. bending radius (x outer Ø)	6 x OD	6 x OD	6 x OD	6 x OD
min. installation temperature	- 60°C	- 60°C	- 60°C	- 60°C
Connection cable length single	2 x 0,50 m	2 x 0,50 m	2 x 0,50 m	2 x 0,50 m
Connection cable length twin	2 x 0,50 m	2 x 0,50 m	2 x 0,50 m	2 x 0,50 m
Connection cable length twin both sides	1 x 0,50 m	1 x 0,50 m	1 x 0,50 m	1 x 0,50 m
Ex-approved	Ex	Ex	Ex	Ex
non-Ex	✓	✓	✓	✓



i NOTE

- The output per meter of heating cable and the maximum possible operating temperatures depend on the respective application. For individual cases, we recommend that you contact our engineers we will be pleased to advise you.
- Cables shall neither intersect nor contact.
- Provide protection by means of circuit breaker FI 30mA.
- Please observe the standards IEC 62395-2, EN 60519-10.

Available resistances ELK-MI VA

Resistance [Ω/km]	ELK-MI VA Single	ELK-MI VA Twin
160	X	
200		
230		
250	X	
260		
330		X
400	X	
630	X	
750		X
1000	X	X
1250		
1600	X	X
2460		X
2500	X	
3200		X
3280		
3300	X	
4000	X	
4600		X
5200	X	
6300	X	
6600		X
9480		X
10000	X	
13120		X
19680		X
24600		X
36000		X

Available resistances ELK-MI AY 825

Resistance Ω/km	ELK-MI AY 825 Single	ELK-MI AY 825 Twin	
		300 V AC	600 V AC
14	X		
21	X		
33			X
34	X		
43			X
52			X
66			X
70	X		

Resistance Ω/km	ELK-MI AY 825 Single	ELK-MI AY 825 Twin	
		300 V AC	600 V AC
98			X
100	X		
130	X		X
160	X	X	X
200	X		
230	X	X	X
260	X		
330	X	X	X
390	X		
490	X	X	X
560	X		
660		X	X
750			X
820	X	X	
980	X	X	X
1250	X		
1640	X	X	X
2300		X	X
2790	X		
3280	X	X	X
4000	X		
4270	X		
4590		X	X
5250	X		
5580		X	
6170	X		
6560	X	X	X
8820		X	
8860		X	
9840	X		X
10500		X	
13100		X	X
16400		X	
19700		X	X
24600		X	X
29500		X	X
36100		X	X

(B) - CONNECTION CABLES

This section provides information on the permissible combinations of connection cables with the respective ELK-MI types.

Connection cables ELK-MI VA

Type	Article N°.	ELK-MI VA Single	ELK-MI VA Twin
Power connection line VA, SINGLE , 500 V, 2,5 mm ² , Ø 5,3 mm		20330K0025	
Power connection line VA, SINGLE , 500 V, 6,0 mm ² , Ø 6,4 mm		20330K0060	
Power connection line VA, TWIN , 400 V, 2x 1,5 mm ² , Ø 7,5 mm			20330K0015

Connection cables ELK-MI AY 825

Type	Article N°.	ELK-MI VA Single	ELK-MI VA Twin	
			300 V AC	600 V AC
Power connection line Alloy 825, SINGLE , 600 V, 2,08 mm ² , Ø 5,3 mm		20340K0016		
Power connection line Alloy 825, SINGLE , 600 V, 3,32 mm ² , Ø 5,7 mm		20340K0033		
Power connection line Alloy 825, SINGLE , 600 V, 5,17 mm ² , Ø 6,4 mm		20340K0052		
Power connection line Alloy 825, SINGLE , 600 V, 8,30 mm ² , Ø 7,2 mm		20340K0052		
Power connection line Alloy 825, TWIN , 300 V, 2,08 mm ² , Ø 7,1 mm			20340K0026	
Power connection line Alloy 825, TWIN , 300 V, 3,32 mm ² , Ø 8,0 mm			20340K0041	
Power connection line Alloy 825, TWIN , 600 V, 2,08 mm ² , Ø 8,9 mm				20340K0027
Power connection line Alloy 825, TWIN , 600 V, 3,32 mm ² , Ø 9,7 mm				20340K0042
Power connection line Alloy 825, TWIN , 600 V, 5,17 mm ² , Ø 11,0 mm				20340K0062

(B) - JUNCTION BOXES

This section is intended to provide an overview of the eltherm junction boxes for use with the ELK-MI Heating cable. For detailed information about the junction boxes, please refer to the respective data sheets.

Junction boxes for Ex-areas

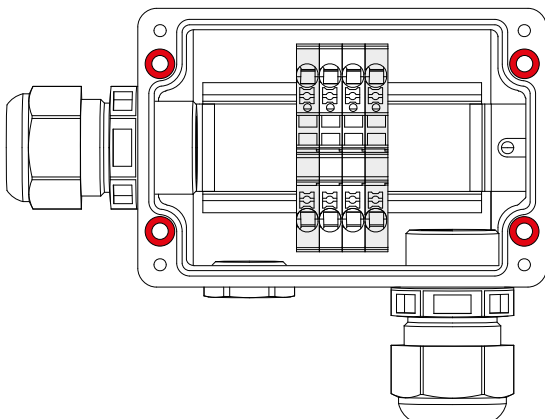
ELAK-Ex 2.00

ELK-MI-VA single ELK-MI-VA twin ELK-MI-AY single ELK-MI-AY twin

Ex- Junction box for 1x ELK-MI single & twin trace heater & 1x connection cable

Dimensions: 110 x 75 x 57 mm (WxHxD)

Article N°: 0X85200



- 1x M20 blind plug
 - 1x Cable gland M25 1-fold
 - 1x Cable gland M25 2-fold
 - 1x Reduction M25 to M20*
 - 2x Feed-through terminal
 - 2x Protective conductor terminal block
- *Enclosed, loose

■ Terminal for earthing or electrical protection

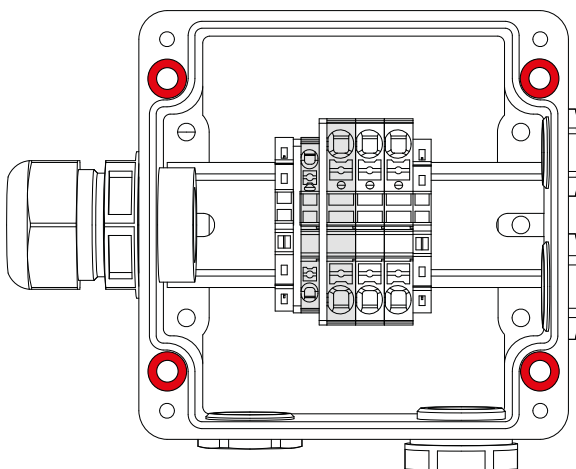
ELAK-Ex 4.21

ELK-MI-VA single ELK-MI-VA twin ELK-MI-AY single ELK-MI-AY twin

Ex- Junction box for 1x ELK-MI single & twin trace heater & 1x connection cable

Dimensions: 122 x 120 x 90 mm (WxHxD)

Article N°: 0X85421



- 2x M25 Blind plug
 - 1x M20 Blind plug
 - 1x Cable gland M25 1-fold*
 - 1x Cable gland M32 1-fold
 - 1x Reduction M32 to M25*
 - 1x Reduction M25 to M20
 - 2x Feed-through terminal PT6
 - 1x Protective conductor terminal PT6-PE
 - 1x Protective conductor terminal PT2,5-PE
- *Enclosed, loose

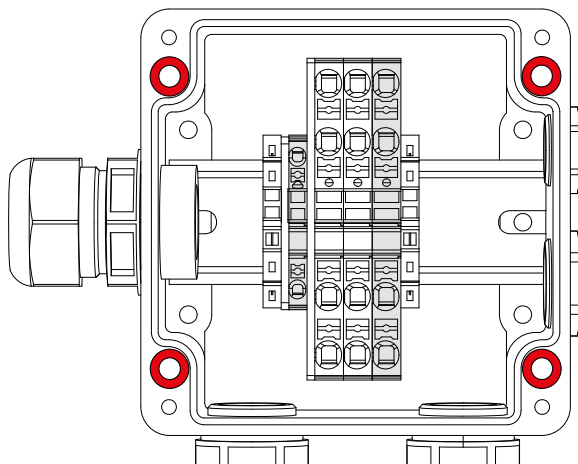
■ Terminal for earthing or electrical protection

ELAK-Ex 4.22

Ex- Junction box for 2x ELK-MI single & twin trace heater & 1x connection cable

Dimensions: 122 x 120 x 90 mm (WxHxD)

Article N°: 0X85422



- 1x M25 Blind plug
 - 1x M20 Blind plug
 - 1x Cable gland M25 1-fold*
 - 1x Cable gland M32 1-fold
 - 1x Reduction M32 to M25*
 - 2x Reduction M25 to M20
 - 1x Reduction M25 to M20*
 - 2x Feed-through terminal PT6-Quattro
 - 1x Protective conductor terminal block PT6-PE-Quattro
 - 1x Protective conductor terminal block PT2,5-PE
- *Enclosed, loose

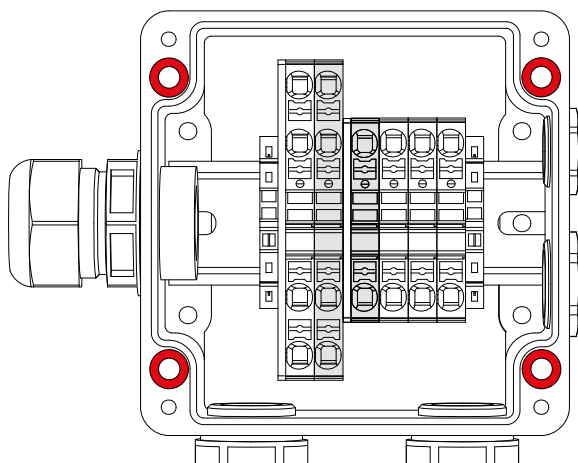
■ Terminal for earthing or electrical protection

ELAK-Ex 4.23

Ex- Junction box for 3x ELK-MI single & twin trace heater & 1x connection cable, or star point

Dimensions: 122 x 120 x 90 mm (WxHxD)

Article N°: 0X85423



- 1x M25 Blind plug*
 - 1x M25 Blind plug
 - 1x M20 Blind plug
 - 1x Cable gland M25 1-fold*
 - 1x Cable gland M32 1-fold
 - 1x Reduction M32 to M25*
 - 2x Reduction M25 to M20
 - 1x Reduction M25 to M20*
 - 1x Feed-through terminal PT6
 - 1x Feed-through terminal PT6-Quattro
 - 1x Protective conductor terminal block PT6-PE-Quattro
- *Enclosed, loose

■ Terminal for earthing or electrical protection

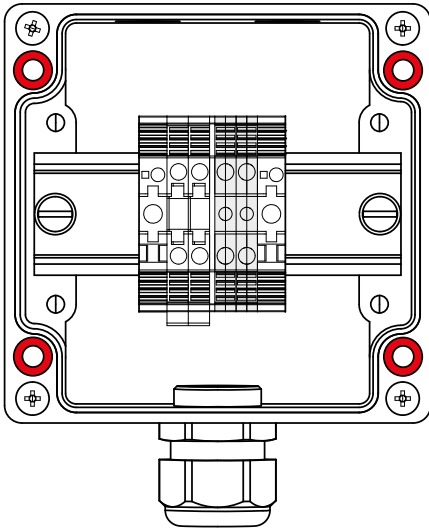
Junction boxes for non Ex-Area

ELAK-3-SP

ELK-MI-VA single ELK-MI-VA twin ELK-MI-AY single ELK-MI-AY twin

Junction box for 1x ELK-MI single & twin trace heater & 1x connection cable

Dimensions: 122 x 120 x 90 mm (WxHxD), Material Aluminium, Article N°: MDA0003



- 1x Cable gland M25x1,5; 9-17mm
- 2x Drilling M20
- 2x Protective conductor terminal WPE 4,0 mm²
- 2x Feed-through terminal WDU 4,0 mm²

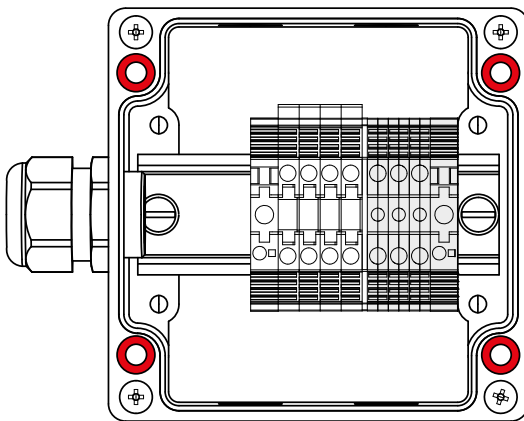
■ Terminal for earthing or electrical protection

ELAK-5-SP

ELK-MI-VA single ELK-MI-VA twin ELK-MI-AY single ELK-MI-AY twin

Junction box for 2x ELK-MI single & twin trace heater & 1x connection cable

Dimensions: 122 x 120 x 90 mm (WxHxD), Material Aluminium, Article N°: MDA0005



- 1x Cable gland M25x1,5; 9-17mm
- 4x Drilling M20
- 3x Protective conductor terminal WPE 4,0 mm²
- 4x Feed-through terminal WDU 4,0 mm²

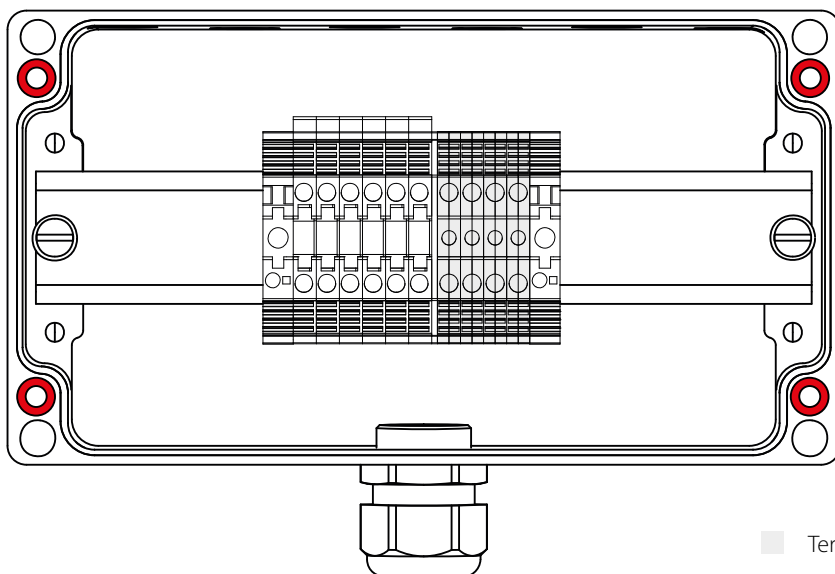
■ Terminal for earthing or electrical protection

ELAK-6-SP

ELK-MI-VA single ELK-MI-VA twin ELK-MI-AY single ELK-MI-AY twin

Junction box für 3x ELK-MI single & twin trace heater & 1x connection cable

Dimensions: 220 x 120 x 90 mm (WxHxD), Material Aluminium, Article N°: MDA0006



- 1x Cable gland M25, 9-17mm
- 6x Drilling M20
- 6x Feed-through terminal WDU 4 mm²
- 4x PE-terminal WPE 4 mm²

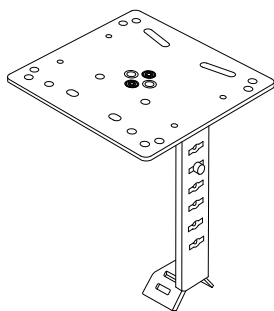
■ Terminal for earthing or electrical protection

(F) - MOUNTING BRACKET

EL-VSB 300

Article N°: 0941085

Variable mounting bracket for ELAK-Ex-2.00, ELAK-Ex-4.X as well as ELAK-2.00, ELAK-4.X, ELAK-3-SP & -5-SP junction boxes (max. insulation thickness 280 mm)



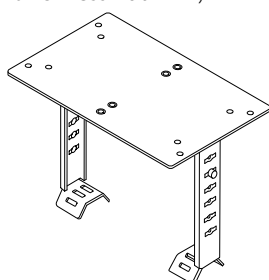
Enclosed every mounting bracket:

Type	Qty.
Cylinder head screw M6x30	4
Cylinder head screw M4x25	4
Nut M6 self-locking	4
Nut M4 self-locking	4

EL-VSBG 300

Article N°: 0941084

Variable mounting bracket for ELAK-6-SP junction boxes (max. insulation thickness 280 mm)



Enclosed every mounting bracket:

Type	Qty.
Cylinder head screw M6x30	4
Cylinder head screw M4x25	4
Nut M6 self-locking	4
Nut M4 self-locking	4

ORDERING INFORMATION

ELK-MI-Type:		Resistance: [Ω/km]	Nominal voltage: [V AC]	Ex-Article:	Order quantity:
Art.Nº.:	Description:	Suitable for use:		Ex-Article:	Order quantity:
0X85200	ELAK-Ex-2.00 Junction box Ex e	1x Supply line 1x ELK-MI Single, Twin		Yes	
0X85421	ELAK-Ex-4.21 Junction box Ex e	1x Supply line 1x ELK-MI Single, Twin		Yes	
0X85422	ELAK-Ex-4.22 Junction box Ex e	1x Supply line 2x ELK-MI Single, Twin		Yes	
0X85423	ELAK-Ex-4.23 Junction box Ex e	1x Supply line 3x ELK-MI Single, Twin		Yes	
MDA0003	ELAK-3-SP Junction box	1x Supply line 1x ELK-MI Single, Twin		No	
MDA0005	ELAK-5-SP Junction box	1x Supply line 2x ELK-MI Single, Twin		No	
MDA0002	ELAK-6-SP Junction box	1x Supply line 2x ELK-MI Single, Twin		No	
0941085	EL-VSB 300 Variable mounting bracket	ELAK-Ex-2.00, ELAK-Ex-4.X, ELAK-2.00, ELAK-4.X, ELAK-3-SP, ELAK-5-SP		No	
0941084	EL-VSBG 300 Variable mounting bracket	ELAK-6-SP		No	

NOTES



You can also find this document on the eltherm website.
Visit our download area.



eltherm GmbH

Ernst-Heinkel-Straße 6-10
57299 Burbach. Germany

T.: +49 2736 4413-0
F.: +49 2736 4413-50
info@eltherm.com

www.eltherm.com