



# ELK-MI AY 825: Premium Reliability for High Temperatures and Extreme Conditions

## Mineral-Insulated Trace Heating Solutions with Clean Laser Seal Technology

**Manufactured and assembled entirely from premium quality nickel/chromium Alloy 825, eltherm's revolutionary Clean Laser Seal Technology (CLS) guarantees high performance and reliability in all industrial operations.**

**It ensures a homogeneous, 100% stable system, providing reliable function and maintenance-free assembly.**

CLS offers today's best possible protection from stress corrosion cracking in applications where leachable chlorides, high sulphur content or other highly aggressive chemicals may be present.

Alloy 825 is the material of choice for high temperature process control and ideally suited for freeze protection or viscosity control applications subject to periodic high temperature exposure.

### Industries served

- › Chemical/petrochemical
- › Oil and gas
- › Food processing
- › Pharmaceutical
- › Concentrated Solar Power
- › LNG and cryogenic tanks
- › Machinery and plants
- › Power generation

### Features

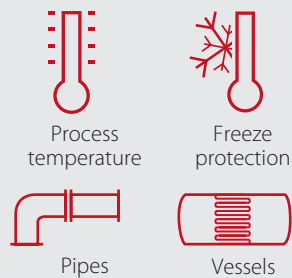
- › Factory terminated laser sealed technology
- › Components in high quality 825 alloy
- › High temperature resistance
- › Highest chemical resistance
- › High power output
- › Flexible single or two conductor configurations
- › Moisture proof, may be immersed in fluid



**Clean Laser Seal Technology takes MI Trace Heater Assemblies to the next Level.**

## At a Glance

### Applications



- › Viscosity protection in industrial processes
- › Process temperature maintain
- › Vendor skids and process modules
- › Heat tracing of instrumentation and sample stations
- › High temperature exposure
- › High watt density requirements
- › Vacuum processes
- › Heat treating processes

### Benefits

- › Purity: no foreign material
- › Full range of resistances
- › Rapid assembly, highly economical
- › No filler holes
- › Insulation (MgO) meets ASTM E1652

### Approvals



Manufactured according to

- › EN 60079-30-1

Certificates cable

- › EPS 13 ATEX 1 627 U
- › IECEx EPS 14.0013U

Certificates system

- › FM15ATEX0046X
- › IECEx FME 15.0009X

Classification cable

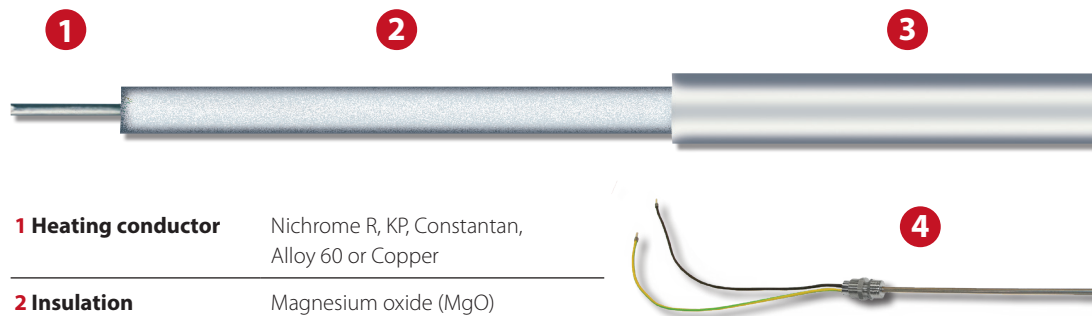
- › II 2G Ex e IIC Gb II 2D Ex tb IIIC Db

Classification System

- › II 2 G Ex db e IIC T6...T1 Gb  
Ta = -60°C to +60°C
- › II 2 D Ex tb IIIC T85°C...T450°C Db  
Ta = -60°C to +60°C

# ELK-MI AY 825 in Alloy 825

## Mineral-Insulated Clean Laser Seal Trace Heater



<b>1 Heating conductor</b>	Nichrome R, KP, Constantan, Alloy 60 or Copper
<b>2 Insulation</b>	Magnesium oxide (MgO) to ASTM E1652 standard
<b>3 Outer sheath</b>	NiCr 2.4858 (Alloy 825)
<b>4 Cable gland</b>	Stainless Steel M20 x 1,5 / M25 x 1.5

## Technical Information

<b>Process temperature</b>	700 °C
<b>Ambient temperature</b>	-60 °C ... +60 °C
<b>Nominal output</b>	Up to 250 W/m *
<b>Nominal voltage</b>	Up to 300 / 600 V AC
<b>Installation temperature</b>	> -60° C
<b>Conductor</b>	Protective connection integrated
<b>IP rating</b>	IP 65
<b>Protection class</b>	I
<b>Bending radius</b>	Diameter x 6
<b>Cold lead</b>	1/2 x 0.50 m **
<b>Cold lead cross section</b>	2.5 mm <sup>2</sup> / 6 mm <sup>2</sup>

\* Depends on operating temperature and application.

\*\* For other specs contact eltherm engineering

## MI System Checklist

<b>A Trace heater</b>	ELK-MI single conductor 600 V, two conductor 300 or 600 V
<b>B Temperature controller</b>	ELTC-15 electronic temperature controller
<b>C Temperature sensors</b>	ELTF-... temperature sensors and thermocouples
<b>D Junction box</b>	ELAK-3-SP or ELAK-6-SP junction box for 1, 2 or 3 heaters
<b>E Assembly parts</b>	ELMW-... assembly plates and mounting brackets
<b>F Accessories</b>	ELB-... fastening and attachment parts

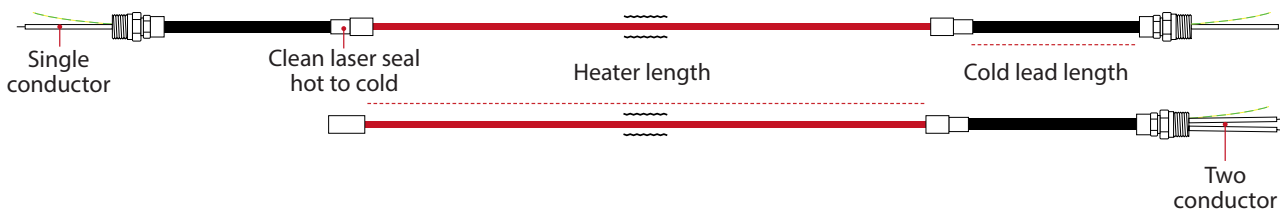
For further accessories, please refer to the Brochure MI Trace Heaters

## ELK-MI AY825: Design Configurations, Resistances, Approvals

MI-trace heaters consist of a single or two conductor series trace heater connected to mineral-insulated cold leads (with 2,0, 2,5, 3,3 or 5,0 mm<sup>2</sup> copper conductor) by means of a clean laser seal (splice). The outer sheath material is Alloy 825. The free end of the cold lead is potted and fitted with a flexible lead (cross section matching that of the cold lead conductor) for power connection and a 1.5 mm<sup>2</sup> lead for earthing. A compression ring flameproof stainless steel gland 1.4404 (AISI 316L) threaded

M20x1.5 or M25x1.5 is fitted at the end of each cold lead and prevented from possible loss by the potted end seal.

MI trace heaters are supplied prefabricated by eltherm and ready for installation. Each unit comes with a type plate bearing all information / markings. Maximum maintain temperatures are derived from the maximum sheath temperature determined by eltherm and are also indicated on the type plate.



### Twin Conductor

No.	300 V AC			600 V AC	
	Ω/m @ 20 °C	ø / mm	Radius / mm	ø / mm	Radius / mm
1	36,100	4,10	25	5,60	34
2	29,500	4,10	25	5,70	34
3	24,600	4,10	25		
4	19,700	4,10	25	5,80	35
5	16,400	4,10	25		
6	13,100	4,10	25	6,10	37
7	10,500	4,10	25		
8	8,860	4,10	25		
9	8,200	4,10	25		
10	6,560	4,10	25		
11	6,530			6,50	39
12	5,580	4,10	25		
13	4,590	4,10	25		
14	3,280	4,20	25	6,50	39
15	2,300	4,60	28	6,70	40
16	1,640	4,80	29	7,10	43
17	0,980	4,30	26	7,60	46
18	0,820	4,30	26		
19	0,660	4,33	26	6,50	39
20	0,490	4,40	26	6,70	40
21	0,330	4,80	29	7,10	43
22	0,230	5,20	31	7,50	45
23	0,160	5,70	34	7,90	47
24	0,130			8,30	50
25	0,098			8,80	53
26	0,066			6,90	41
27	0,052			7,10	43
28	0,043			7,40	44
29	0,033			7,60	46

### Single Conductor

No.	600 V AC		
	Ω/m @ 20 °C	ø / mm	Radius / mm
1	6,560	4,30	26
2	5,250	4,30	26
3	4,270	4,30	26
4	3,280	4,30	26
5	2,790	4,30	26
6	2,300	4,30	26
7	1,640	4,30	26
8	1,250	4,30	26
9	0,980	4,30	26
10	0,820	4,30	26
11	0,660	4,40	26
12	0,560	4,60	28
13	0,490	4,30	26
14	0,330	4,30	26
15	0,260	4,30	26
16	0,230	4,30	26
17	0,200	4,30	26
18	0,130	4,40	26
19	0,100	4,70	28
20	0,070	5,10	31
21	0,034	4,30	26
22	0,021	4,60	28
23	0,014	4,80	29

ø = outer diameter; radius = bend radius

Depending on the type of application ELK-MI trace heaters are also available in Stainless Steel. For custom configurations please consult with eltherm engineering.

Your **eQ**  
for Clean Laser Seal Technology



## eltherm globally

The eltherm Group with headquarters in Burbach, Germany, services global markets from 14 locations on 5 continents. The company is an engineering solution provider and a one-stop supplier for electrical heat tracing products and systems with in-house production.

All over the world, eltherm is renowned as a turn-key partner for engineering, design, installation and commissioning of electrical heat tracing for industrial plants and facilities. Its production facilities in Burbach and Calgary, Canada are home of the Clean Laser Seal Technology for Mineral-Insulated Trace Heaters featured here.

asiapacific@eltherm.com  
canada@eltherm.com  
iran@eltherm.com  
italia@eltherm.com  
morocco@eltherm.com  
russia@eltherm.com

schweiz@eltherm.com  
asiapacific@eltherm.com  
spain@eltherm.com  
southafrica@eltherm.com  
uk@eltherm.com  
usa@eltherm.com

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](http://www.eltherm.com)