

## POLYIMIDE FILM INSULATED FLEXIBLE HEATERS



- ✓ Rated Up to 200°C (392°F)
- ✓ Etched Foil Design
- ✓ 0.010" Max Thickness
- ✓ 2.5, 5, or 10 Watts/in<sup>2</sup>
- ✓ 115, 230+ and 28V
- ✓ Optional Pressure-Sensitive Adhesive (PSA)

Polyimide film insulated heaters are available in a variety of shapes, sizes, and wattages. Wattage ratings are 2.5, 5, or 10 W/in<sup>2</sup> at 115, 230+ or 28V. Polyimide film offers a high degree of resistance to chemicals, and has excellent outgassing properties in high vacuum environments.

Typical construction consists of an etched foil element of 0.0005" or 0.0001" thickness which is encapsulated between two layers of 0.002" Polyimide film and 0.001" FEP adhesive.

† Most sizes available in 230V. Consult heaters sales and engineering.

### KHLV Series, Rectangular, 28 Volts

#### To Order (Specify Model Number)

Width, cm (")	Length, cm (")	Total Wattage for Watt Density			Without PSA		With PSA	
		2.5W/in <sup>2</sup>	5W/in <sup>2</sup>	10W/in <sup>2</sup>	Model No.	Price	Model No.	Price
1 (0.5)	5 (2)	—	5	10	KHLV-0502/(*)	\$31	KHLV-0502/(*)-P	\$35
1 (0.5)	10 (4)	5	10	20	KHLV-0504/(*)	33	KHLV-0504/(*)-P	36
2.5 (1)	2.5 (1)	—	5	10	KHLV-101/(*)	31	KHLV-101/(*)-P	35
2.5 (1)	5 (2)	5	10	20	KHLV-102/(*)	31	KHLV-102/(*)-P	35
2.5 (1)	7.6 (3)	7.5	15	30	KHLV-103/(*)	32	KHLV-103/(*)-P	35
2.5 (1)	10 (4)	10	20	40	KHLV-104/(*)	33	KHLV-104/(*)-P	36
2.5 (1)	13 (5)	12.5	25	50	KHLV-105/(*)	34	KHLV-105/(*)-P	37
5 (2)	5 (2)	10	20	40	KHLV-202/(*)	33	KHLV-202/(*)-P	36

Lead wires exit from the upper right hand corner of width (W) side of heater. For ½ and 1" wide heaters only, leads exit centrally from width (W) side. Leads exit round heaters radially.

Pressure sensitive adhesive (PSA) is available as an option on heaters rated at 2.5 or 5 W/in<sup>2</sup>. The heaters can also be mechanically clamped or epoxy mounted by the user.

### SPECIFICATIONS

**Operating Temperature:** -200 to 200°C (-328 to 392°F) for heaters without pressure sensitive adhesive (PSA). Maximum operating temperature for heaters with pressure sensitive adhesive is 149°C (300°F).

**Maximum Thickness:** 0.010" except at lead wire exit

**Wattage:** 2.5, 5 or 10 W/in<sup>2</sup>

**Leads:** FEP insulated (MIL-W-16878), 305 mm (12") long (wire gauge varies with heater)

**Dielectric Strength:** 1250 Vac

**Minimum Bending Radius:** 0.032"

**KHR Series, Round, 115 Volts**

**■ MOST POPULAR MODELS HIGHLIGHTED!**

#### To Order (Specify Model Number)

Dia. cm (")	Total Wattage for Watt Density			Without PSA		With PSA	
	2.5 W/in <sup>2</sup>	5 W/in <sup>2</sup>	10 W/in <sup>2</sup>	Model No.	Price	Model No.	Price
5 (2)	—	—	31.4	KHR-2/(*)	\$33	KHR-2/(*)-P	\$36
7.6 (3)	17.7	35.3	70.7	KHR-3/(*)	36	KHR-3/(*)-P	40
10 (4)	31.4	62.8	126	KHR-4/(*)	41	KHR-4/(*)-P	41
13 (5)	49.1	98.2	196	KHR-5/(*)	49	KHR-5/(*)-P	54
15 (6)	70.7	141	283	KHR-6/(*)	56	KHR-6/(*)-P	62
18 (7)	96.2	192	385	KHR-7/(*)	62	KHR-7/(*)-P	68
20 (8)	126	251	503	KHR-8/(*)	68	KHR-8/(*)-P	74
23 (9)	159	318	636	KHR-9/(*)	74	KHR-9/(*)-P	81
25 (10)	196	393	785	KHR-10/(*)	80	KHR-10/(*)-P	88
28 (11)	238	475	950	KHR-11/(*)	88	KHR-11/(*)-P	97
30 (12)	283	565	1131	KHR-12/(*)	96	KHR-12/(*)-P	104

Comes complete with operator's manual.

\* Insert watt density: "2" for 2.5 W/in<sup>2</sup>, "5" for 5 W/in<sup>2</sup> or "10" for 10 W/in<sup>2</sup>.

**Ordering Example:** KHLV-104/5-P, 2.5 x 10 cm (1 x 4"), 28V, 5 W/in<sup>2</sup> Polyimide film heater with PSA, \$36.

**Note:** Heaters are available in only the watt densities where total wattage is indicated.

## POLYIMIDE FILM INSULATED FLEXIBLE HEATERS

KH Series, Rectangular, 115 Volts

  **MOST POPULAR MODELS HIGHLIGHTED!**

To Order (Specify Model Number)								
Width, cm (")	Length, cm (")	Total wattage for Watt Density			Without PSA		With PSA	
		2.5W/in <sup>2</sup>	5W/in <sup>2</sup>	10W/in <sup>2</sup>	Model No.	Price	Model No.	Price
2.5 (1)	7.6 (3)	—	—	30	KH-103/(*)	\$32	KH-103/(*)-P	n/a
2.5 (1)	10 (4)	—	20	40	KH-104/(*)	33	KH-104/(*)-P	\$36
2.5 (1)	7.6 (3)	—	25	50	KH-105/(*)	34	KH-105/(*)-P	37
2.5 (1)	15 (6)	15	30	60	KH-106/(*)	35	KH-106/(*)-P	38
2.5 (1)	13 (8)	20	40	80	KH-108/(*)	37	KH-108/(*)-P	40
2.5 (1)	25 (10)	25	50	100	KH-110/(*)	38	KH-110/(*)-P	42
2.5 (1)	30 (12)	30	60	120	KH-112/(*)	40	KH-112/(*)-P	44
5 (2)	5 (2)	—	20	40	KH-202/(*)	32	KH-202/(*)-P	35
5 (2)	7.6 (3)	15	30	60	KH-203/(*)	34	KH-203/(*)-P	37
5 (2)	10 (4)	20	40	80	KH-204/(*)	36	KH-204/(*)-P	39
5 (2)	13 (5)	25	50	100	KH-205/(*)	37	KH-205/(*)-P	41
5 (2)	15 (6)	30	60	120	KH-206/(*)	39	KH-206/(*)-P	43
5 (2)	20 (8)	40	80	160	KH-208/(*)	42	KH-208/(*)-P	46
5 (2)	25 (10)	50	100	200	KH-210/(*)	45	KH-210/(*)-P	50
5 (2)	30 (12)	60	120	240	KH-212/(*)	48	KH-212/(*)-P	53
7.6 (3)	7.6 (3)	22.5	45	90	KH-303/(*)	36	KH-303/(*)-P	40
7.6 (3)	10 (4)	30	60	120	KH-304/(*)	39	KH-304/(*)-P	42
7.6 (3)	13 (5)	37.5	75	150	KH-305/(*)	41	KH-305/(*)-P	45
7.6 (3)	15 (6)	45	90	180	KH-306/(*)	43	KH-306/(*)-P	47
7.6 (3)	20 (8)	60	120	240	KH-308/(*)	48	KH-308/(*)-P	52
7.6 (3)	25 (10)	75	150	300	KH-310/(*)	52	KH-310/(*)-P	57
7.6 (3)	30 (12)	90	180	360	KH-312/(*)	57	KH-312/(*)-P	62
10 (4)	10 (4)	40	80	160	KH-404/(*)	41	KH-404/(*)-P	46
10 (4)	13 (5)	50	100	200	KH-405/(*)	44	KH-405/(*)-P	49
10 (4)	15 (6)	60	120	240	KH-406/(*)	47	KH-406/(*)-P	52
10 (4)	20 (8)	80	160	320	KH-408/(*)	53	KH-408/(*)-P	58
10 (4)	25 (10)	100	200	400	KH-410/(*)	59	KH-410/(*)-P	65
10 (4)	30 (12)	120	240	480	KH-412/(*)	65	KH-412/(*)-P	71
13 (5)	13 (5)	62.5	125	250	KH-505/(*)	48	KH-505/(*)-P	53
13 (5)	15 (6)	75	150	300	KH-506/(*)	52	KH-506/(*)-P	57
13 (5)	20 (8)	100	200	400	KH-508/(*)	59	KH-508/(*)-P	65
13 (5)	25 (10)	125	250	500	KH-510/(*)	67	KH-510/(*)-P	74
13 (5)	30 (12)	150	300	600	KH-512/(*)	75	KH-512/(*)-P	82
15 (6)	15 (6)	90	180	360	KH-606/(*)	56	KH-606/(*)-P	62
15 (6)	20 (8)	120	240	480	KH-608/(*)	65	KH-608/(*)-P	71
15 (6)	25 (10)	150	300	600	KH-610/(*)	74	KH-610/(*)-P	81
15 (6)	30 (12)	180	360	720	KH-612/(*)	83	KH-612/(*)-P	91
20 (8)	20 (8)	160	320	640	KH-808/(*)	67	KH-808/(*)-P	74
20 (8)	25 (10)	200	400	800	KH-810/(*)	77	KH-810/(*)-P	87
20 (8)	30 (12)	240	480	960	KH-812/(*)	86	KH-812/(*)-P	95
25 (10)	25 (10)	250	500	1000	KH-1010/(*)	79	KH-1010/(*)-P	87
25 (10)	30 (12)	300	600	1200	KH-1012/(*)	89	KH-1012/(*)-P	98
30 (12)	30 (12)	360	720	1440	KH-1212/(*)	95	KH-1212/(*)-P	103

n/a = not available with PSA.

Comes complete with operator's manual.

\* Insert watt density: "2" for 2.5 W/in<sup>2</sup>, "5" for 5 W/in<sup>2</sup>, "10" for 10 W/in<sup>2</sup>.

**Ordering Example:** KH-310/2, 7.6 x 25 cm (3 x 10"), 115 Vac, 2.5 W/in<sup>2</sup>, Polyimide film heater, \$52.

**Note:** Heaters are available in only the watt densities where total wattage is indicated.

Recommended Reference Book:  
Engineering Economy: Applying Theory to Practice,  
**PE-1414, \$100.**

See Section Y for Additional Books.



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