

## K Series with PFC

## 150 Watt AC-DC Converters



Input voltage range from 85...255 V AC  
1 or 2 isolated outputs up to 48 V DC  
4 kV AC I/O electric strength test voltage



- Rugged electrical and mechanical design
- Integrated power factor correction
- Operating ambient temperature range  
-40...71 °C with convection cooling

### Selection chart

Output 1		Output 2		Input voltage $U$ [V AC]	Efficiency $\eta_{\min}$ [%]	Type	Options
$U_{o \text{ nom}}$ [V DC]	$I_{o \text{ nom}}$ [A]	$U_{o \text{ nom}}$ [V DC]	$I_{o \text{ nom}}$ [A]				
5.1	25	-	-	85...255	78	LK 4003-6R	-9, E, D, V, P, T, B1
12	12	-	-	85...255	85	LK 4301-7R	-9, E, D, P, T, B1
15	10	-	-	85...255	85	LK 4501-7R	-9, E, D, P, T, B1
24	6	-	-	85...255	86	LK 4601-7R	-9, E, D, P, T, B1
24	6	-	-	85...255	83	LK 5320-7R	-9, E, D, P, T, B1
30	5	-	-	85...255	83	LK 5540-7R	-9, E, D, P, T, B1
48	3	-	-	85...255	84	LK 5660-7R	-9, E, D, P, T, B1
12	6	12	6	85...255	83	LK 5320-7R	-9, E, D, P, T, B1
15	5	15	5	85...255	83	LK 5540-7R	-9, E, D, P, T, B1
24	3	24	3	85...255	84	LK 5660-7R	-9, E, D, P, T, B1

**Input**

Input voltage AC	wide input range	85...255 V AC
Input frequency		50/60 Hz
Power factor	per IEC/EN 61000-3-2	>95%
Inrush current limitation	by thermistor	

**Output**

Efficiency	$U_{i \text{ nom}}, I_{o \text{ nom}}$	up to 86%
Output voltage setting accuracy	$U_{i \text{ nom}}, I_{o \text{ nom}}$	$\pm 0.6\% U_{o \text{ nom}}$
Output voltage switching noise	IEC/EN 61204, total	typ. 100 mV <sub>pp</sub>
Line regulation	$U_{i \text{ min}} \dots U_{i \text{ max}}, I_{o \text{ nom}}$	typ. $\pm 0.1\%$
Load regulation	$U_{i \text{ nom}}, 0.1 \dots I_{o \text{ nom}}$ , symmetrical output load	typ. 0.4%
Minimum load	not required	0 A
Current limitation	rectangular U/I characteristic	typ. 110...100% $I_{o \text{ nom}}$
Operation in parallel	by current limitation	
Hold-up time	$U_{i \text{ nom}}, I_{o \text{ nom}}$	20 ms

**Control and protection**

Input fuse	not user accessible	4 AT
Input undervoltage lockout		typ. 80% $U_{i \text{ min}}$
Input overvoltage lockout		typ. 115% $U_{i \text{ max}}$
Input transient protection	varistor	
Output	no-load, overload and short circuit proof	
Output overvoltage	suppressor diode in each output	typ. 130% $U_{o \text{ nom}}$
Overtemperature	switch-off with auto restart	$T_C$ typ. 100°C
Output voltage adjustment		0...110% $U_{o \text{ nom}}$
Inhibit	TTL input, output(s) disabled if open circuit	
Status indication	LEDs: OK, inhibit, overload	

**Safety**

Approvals	EN 60950, UL 1950, CSA 22.2 No. 950	
Class of equipment		class I
Protection degree		IP 30
Electric strength test voltage	I/case	2 kV AC
	I/O	4 kV AC
	O/case	1 kV AC
	O/O	0.1 kV AC

**EMC**

Electrostatic discharge	IEC/EN 61000-4-2, level 4 (8/15 kV)	criterion A
Electromagnetic field	IEC/EN 61000-4-3, level 3 (10 V/m)	criterion A
Electr. fast transients/bursts	IEC/EN 61000-4-4, level 4 (2/4 kV)	criterion A
Surge	IEC/EN 61000-4-5, level 3 (2 kV)	criterion A
Conducted disturbances	IEC/EN 61000-4-6, level 3 (10 V)	criterion A
Electromagnetic emissions	CISPR 22/EN 55022	class B

**Environmental**

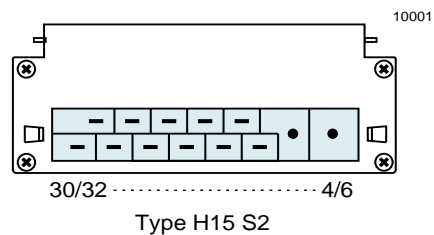
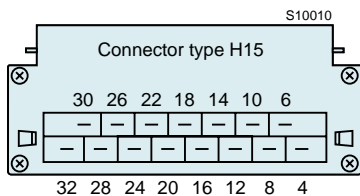
Operating ambient temperature	$U_{i\ nom}, I_{o\ nom}$ , convection cooled	-25...71 °C
Operating case temperature $T_C$	$U_{i\ nom}, I_{o\ nom}$	-25...95 °C
Storage temperature	non operational	-40...100 °C
Damp heat	IEC/EN 60068-2-3, 93%, 40 °C	56 days
Vibration, sinusoidal	IEC/EN 60068-2-6, 10...60/60...2000 Hz	0.35 mm/5 $g_n$
Shock	IEC/EN 60068-2-27, 6 ms	100 $g_n$
Bump	IEC/EN 60068-2-29, 6 ms	40 $g_n$
Random vibration	IEC/EN 60068-2-64, 20...500 Hz	4.9 $g_{n\ rms}$
MTBF	MIL-HDBK-217F, $G_B$ , 40 °C	514'000 h

**Options**

Extended temperature range	-40...71 °C, ambient, operating	-9
Electronic inrush current limitation		E
Output voltage adjustment	40...100% $U_{o\ nom}$ , excludes feature R and vice versa	P
Input and/or output undervoltage monitoring, excludes option V		D0...D9
Input and/or output undervoltage monitoring (VME), excludes option D		V0, V2, V3
Current sharing		T
Cooling plate		B1

**Pin allocation**

Pin	LK 4003		LK 4301, LK 4501, LK 4601		LK 5000	
4	Vo1+	Output 1	Vo1+	Output 1	Vo2+	Output 2
6			Vo1+		Vo2+	
8	Vo1-	Output 1	Vo1-	Output 1	Vo2-	Output 2
10			Vo1-		Vo2-	
12	S+	Sense	S+	Sense	Vo1+	Output 1
14	S-	Sense	S-	Sense	Vo1-	Output 1
16	R	Control of $U_{o1}$	R	Control of $U_{o1}$	R	Control of $U_{o1}$
18	i	Inhibit	i	Inhibit	i	Inhibit
20	D	Save data	D	Save data	D	Save data
	V	ACFAIL				
22	T	Current sharing	T	Current sharing	T	Current sharing
24	⊕	Protective earth	⊕	Protective earth	⊕	Protective earth
26	N~	Input	N~	Input	N~	Input or Neutral
28			N~		N~	
30	P~	Input	P~	Input	P~	Input or Phase
32			P~		P~	

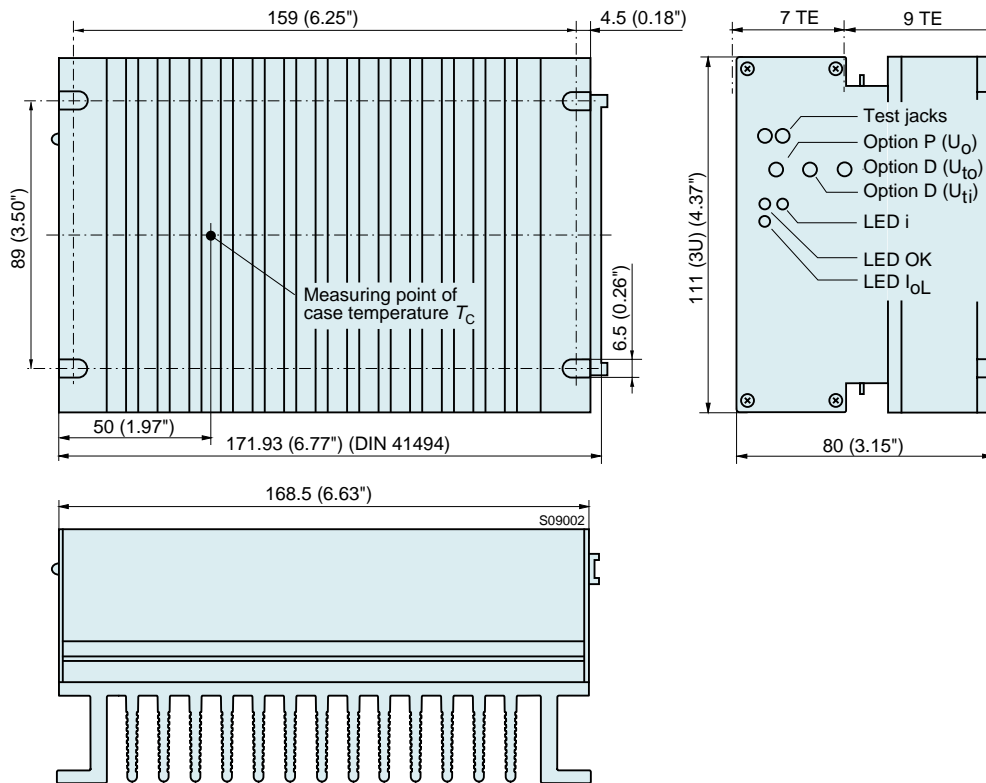


## Cassette Style

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### Mechanical data

Tolerances  $\pm 0.3$  mm (0.012") unless otherwise indicated.



### Accessories

Front panels 19" (Schroff/Intermas)

Mating H15/H15S4 connectors with screw, solder, fast-on or press-fit terminals

Connector retention facilities and code key system for connector coding

Chassis or wall mounting plates for frontal access

Universal mounting brackets for chassis or DIN-rail mounting