

## H Series

## 50 Watt AC-DC Converters



Input voltage range 85...255 V AC  
1, 2 or 3 isolated outputs up to 48 V DC  
4 kV AC I/O electric strength test voltage



- Rugged electrical and mechanical design
- Output 1 regulated, outputs 2 and 3 tracking
- Operating ambient temperature range  
–10...50°C with convection cooling

### Selection chart

Output 1		Output 2		Output 3		Rated power $P_{o\ tot}$ [W]	Type Input voltage 85...255 V AC	Options
$U_{o\ nom}$ [V DC]	$I_{o\ nom}$ [A]	$U_{o\ nom}$ [V DC]	$I_{o\ nom}$ [A]	$U_{o\ nom}$ [V DC]	$I_{o\ nom}$ [A]			
5.1	11	-	-	-	-	56	LH 1001-2R	D, V
12	6	-	-	-	-	72	LH 1301-2R	D
15	4.5	-	-	-	-	67	LH 1501-2R	D
24	3	-	-	-	-	72	LH 1601-2R	D
48	1.5	-	-	-	-	72	LH 1901-2R	D
12	2	12	2	-	-	48	LH 2320-2	D
15	1.7	15	1.7	-	-	51	LH 2540-2	D
5.1	5	12	0.7	12	0.7	42	LH 3020-2	D, V
5.1	5	15	0.6	15	0.6	43	LH 3040-2	D, V

### Input

Input voltage	continuous range	85...255 V AC
Input frequency		47...63 Hz
Inrush current limitation	by thermistor	

### Output

Efficiency	$U_{i\ nom}, I_{o\ nom}$	up to 83%
Output voltage 1 setting acc.	$U_{i\ nom}, I_{o\ nom}$	$\pm 2\% U_{o1\ nom}$
Output voltage 2, 3 setting acc.	$U_{i\ nom}, I_{o\ nom}$	$\pm 5\% U_{o2,3\ nom}$
Output voltage switching noise	IEC/EN 61204, total	typ. 200 mV <sub>pp</sub>
Line regulation	$U_{i\ min} \dots U_{i\ max}, I_{o\ nom}$	typ. $\pm 1\% U_{o\ nom}$
Load regulation output 1	$U_{i\ nom}, 0 \dots I_{o1\ nom}$	typ. 0.2% $U_{o1\ nom}$
Load regulation output 2, 3	10...100% $I_{o2,3\ nom}$	typ. 0.7 V
Output voltage 2, 3	$U_{i\ nom}, I_{o1\ nom}, I_{o2,3} = 0$	max. 115% $U_{o2,3\ nom}$
Cross load regulation outp. 2, 3	0...100% $I_{o1\ nom}$	typ. 0.7 V
Minimum output current	not required	0 A
Current limitation main output	rectangular U/I characteristic	typ. 110% $I_{o\ nom}$
Current limitation aux. output(s)	rectangular U/I characteristic	typ. 120% $I_{o\ nom}$
Operation in parallel	by current limitation	
Hold-up time	$U_i = 230\ V\ AC, I_{o\ nom}$	typ. 70 ms

**Protection**

Input undervoltage lockout		typ. 60 V AC
Input overvoltage lockout		typ. 280 V AC
Input transient protection	varistor	
Output	no-load, overload and short circuit proof	
Output overvoltage	suppressor diode in each output	typ. 150% $U_{o\text{ nom}}$
Overtemperature	switch-off with auto restart	$T_C$ typ. 100°C

**Control**

Output voltage adjustment	single output types	0...110% $U_{o1\text{ nom}}$
Inhibit	TTL input, output(s) disabled if left open-circuit	
Status indication	LEDs: OK, inhibit	

**Safety**

Approvals	EN 60950, UL 1950, CSA C22.2 No. 950	
Class of equipment		class I
Protection degree	units without options	IP 40
Electric strength test voltage	I/case	2 kV AC
	I/O	4 kV AC
	O/case	1 kV AC
	O/O	0.2 kV AC

**EMC**

Electrostatic discharge	IEC/EN 61000-4-2, contact discharge, level 2 (4 kV)	criterion A
Electromagnetic field	IEC/EN 61000-4-3, level x (20 V/m)	criterion A
Electr. fast transients/bursts	IEC/EN 61000-4-4, input, level 1 (0.5 kV)	criterion A
Surge	IEC/EN 61000-4-5, input, level 1 (0.5 kV)	criterion A
Electromagnetic emissions	CISPR 22/EN 55022, conducted	class A
	CISPR 22/EN 55022, radiated	class B

**Environmental**

Operating ambient temperature	$U_{\text{ nom}}, I_{\text{ o nom}},$ convection cooled	-10...50°C
Operating case temperature $T_C$	$U_{\text{ nom}}, I_{\text{ o nom}}$	-10...80°C
Storage temperature	non operational	-25...100°C
Damp heat	IEC/EN 60068-2-3, 93 %, 40 °C	21 days
Vibration, sinusoidal	IEC/EN 60068-2-6, 10...60/60...150 Hz	0.15 mm/2 $g_n$
Shock	IEC/EN 60068-2-27, 6 ms	15 $g_n$
Bump	IEC/EN 60068-2-29, 16 ms	10 $g_n$
MTBF	MIL-HDBK-217E, $G_B$ , 40 °C, single output types	384'000 h

**Options**

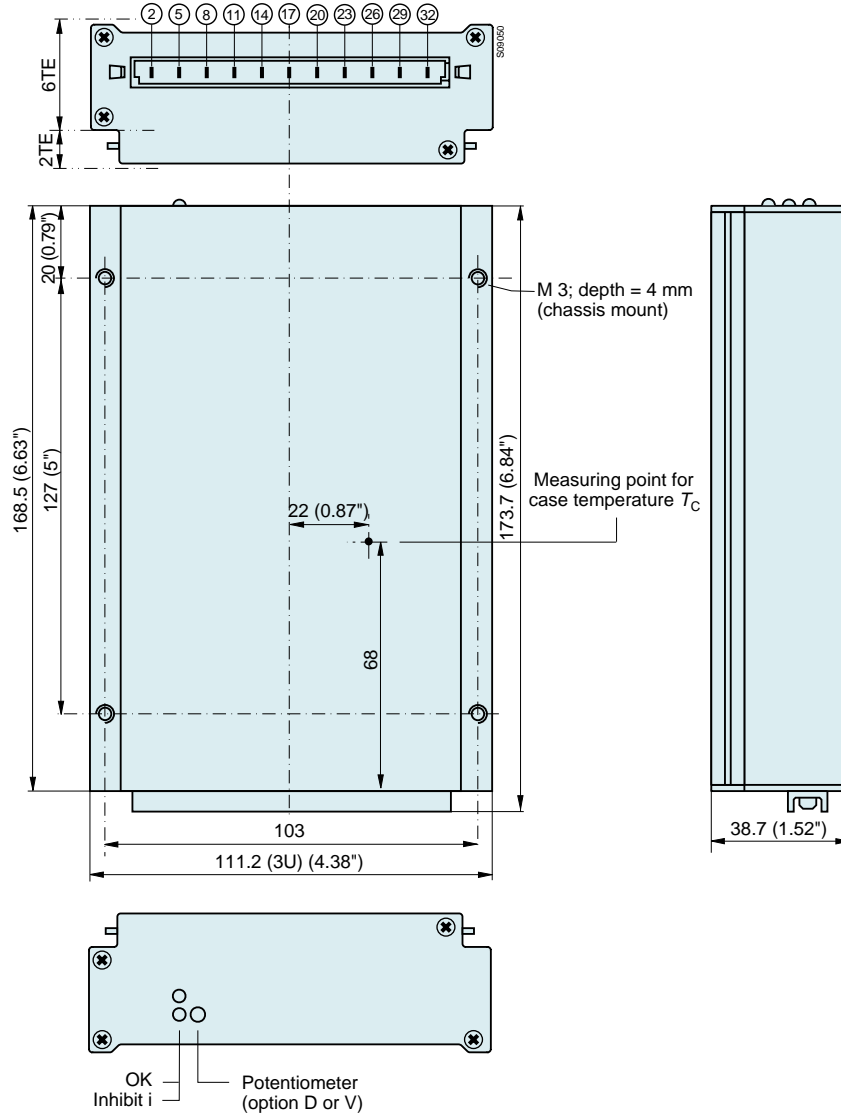
Input and/or output undervoltage monitoring, excludes option V	D1...D8
Input and/or output undervoltage monitoring (VME), excludes option D	V2, V3

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## Mechanical data

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



**Pin allocation**

Pin	Electrical Determination	LH1000	LH2000	LH3000
2	Inhibit control input	i	i	i
5	Safe Data or ACFAIL	D or V	D or V	D or V
8	Output voltage (positive)	Vo1+		Vo3+
11	Output voltage (negative)	Vo1-		Vo3-
14	Control input +	R		
17	Control input -	G		
14	Output voltage (positive)		Vo2+	Vo2+
17	Output voltage (negative)		Vo2-	Vo2-
20	Output voltage (positive)	Vo1+	Vo1+	Vo1+
23	Output voltage (negative)	Vo1-	Vo1-	Vo1-
26	Protective earth	⊕	⊕	⊕
29	AC input voltage	N ~	N ~	N ~
32	AC input voltage	P ~	P ~	P ~

**Accessories**

Front panels 19" (Schroff/Intermas)

Mating H11 connectors with screw, solder, fast-on or press-fit terminals

Connector retention facilities and code key system for connector coding

Flexible PCB for connecting the converter via an H11 connector, if mounted on a PCB

Chassis or wall mounting plates for frontal access

Universal mounting brackets for chassis or DIN-rail mounting

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