









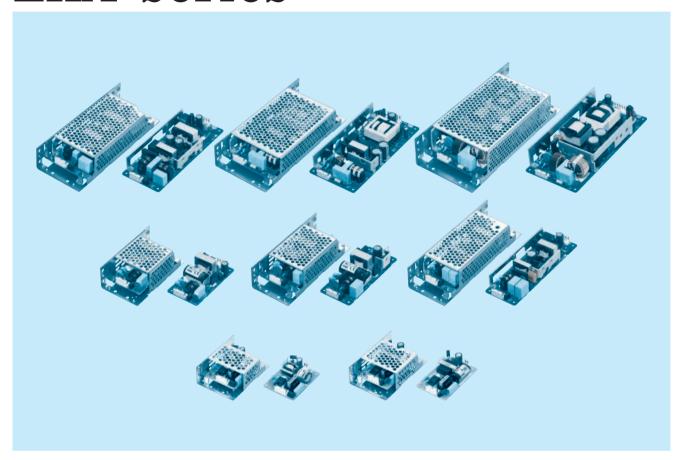








LHA-series



Feature

EN62477-1 (OVC III)

Low-profile

Small and compact PCB construction

High efficiency

Low noise

Harmonic attenuator (Complies with IEC61000-3-2)

Power factor correction (LHA75F-300F)

Universal input (85-264VAC)

Built-in inrush current, overcurrent and overvoltage protection circuits

Safety agency approvals

UL62368-1, C-UL (equivalent to CAN/CSA-C22.2 No.62368-1),

EN62368-1

EN62477-1 (OVC III): LHA150F, 300F

Complies with DEN-AN

5-year warranty (refer to Instruction Manual)

CE marking

Low Voltage Directive RoHS Directive

UKCA marking

Electrical Equipment Safety Regulations RoHS Regulations

EMI

Complies with FCC-B, CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, VCCI-B

EMS Compliance : EN61204-3, EN61000-6-2

EN61000-4-2

EN61000-4-3

EN61000-4-4

EN61000-4-5

EN61000-4-6

EN61000-4-8

EN61000-4-11

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High voltage pulse noise type : EAP series Low leakage current type : EAM series

*A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply. Series name
 Single output
 Output wattage

4)Universal input

⑤Output voltage

Optional *1
 C: with Coating
 J4: EP (TE Connectivity) connector type

S: with Chassis

SN: with Chassis & cover Y: with Potentiometer

For option details, refer to Instruction Manual 6.

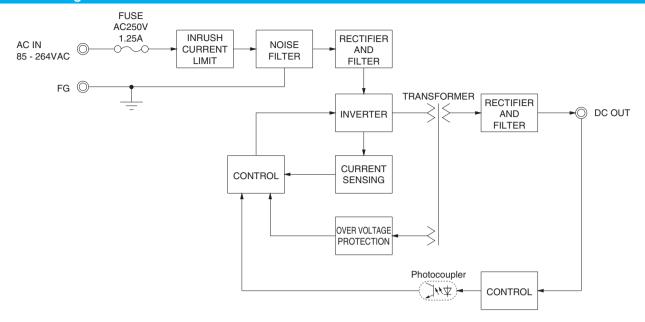
This power supply is manufactured by SMD technology. The stress to PCB like twisting or bending causes the defect of the unit, so handle the unit with care. *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LHA10F-3R3-Y	LHA10F-5	LHA10F-12	LHA10F-15	LHA10F-24
MAX OUTPUT WATTAGE[W] *2	6.6	10	10.8	10.5	12
DC OUTPUT *2	3.3V 2A	5V 2A	12V 0.9A	15V 0.7A	24V 0.5A

	MODEL		LHA10F-3R3-Y	LHA10F-5	LHA10F-12	LHA10F-15	LHA10F-24		
	VOLTAGE[VAC]	*2	85 - 264 1 φ (Refer to "Derating" and Instruction Manual 1.1)						
	CURRENT[A]	ACIN 100V	0.18typ	0.26typ					
	CURRENT[A]	ACIN 230V	0.10typ	0.14typ					
	FREQUENCY[Hz]		50 / 60 (45 - 440)						
NPUT	EFFICIENCY[%]	ACIN 100V	72.0typ	77.0typ	79.5typ	81.0typ	82.5typ		
	EFFICIENCY[%]	ACIN 230V	72.0typ	78.5typ	81.0typ	83.0typ	84.5typ		
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100%)						
	INHUSH CURRENT[A]	ACIN 230V	35typ (lo=100%)						
	LEAKAGE CURREN	T[mA]	0.07 / 0.15max (ACIN	I 100V / 240V, 60Hz	, lo=100%, According to	IEC62368-1, and DEN	I-AN)		
	VOLTAGE[V]		3.3	5	12	15	24		
	CURRENT[A]	*2	2.0	2.0	0.9	0.7	0.5		
[LINE REGULATION[mV] *3	20max	20max	48max	60max	96max		
	LOAD REGULATION	[mV] *3	40max	40max	100max	120max	150max		
	DIDDLET	0 to +60°C *7	80max	80max	120max	120max	120max		
	RIPPLE[mVp-p]	-10 to 0°C	140max	140max	160max	160max	160max		
	**	lo=0 to 25%	300max	300max	300max	300max	300max		
		0 to +60°C *7	120max	120max	150max	150max	150max		
UTPUT	RIPPLE NOISE[mVp-p]	-10 to 0°C	160max	160max	180max	180max	180max		
	ተ 4 .	lo=0 to 25%	360max	360max	360max	360max	360max		
	TEMPERATURE REGULATION[mV]	0 to +60°C *7	50max	50max	120max	150max	240max		
		-10 to +60℃ *7	60max	60max	150max	180max	290max		
Ī	DRIFT[mV] *5		20max	20max	48max	60max	96max		
Ī	START-UP TIME[ms]		40typ (ACIN 100V, Io=100%)						
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%) / 150typ (ACIN 230V, Io=100%)						
	OUTPUT VOLTAGE ADJUSTMENT	RANGE[V]	2.85 to 3.63 Fixed ("Y"option is available for adjusting output voltage between ±10%)						
	OUTPUT VOLTAGE SET	TING[V]	3.30 to 3.40	4.90 to 5.30	11.50 to 12.50	14.40 to 15.60	23.00 to 25.00		
	OVERCURRENT PROT	ECTION	Works over 105% of i	ating and recovers	automatically	·			
ROTECTION	OVERVOLTAGE PROTE	ECTION	4.00 to 6.00	5.75 to 8.00	13.80 to 18.00	17.25 to 23.30	27.60 to 34.50		
IRCUIT AND	OPERATING INDICA	TION	Not provided			·			
IIIENO	REMOTE SENSING		Not provided						
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)						
OLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)						
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 100M Ω min (At Room Temperature)						
	OPERATING TEMP., HUMID. AND A	ALTITUDE *2							
NVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max						
NVIRONWENT	VIBRATION		10 - 55Hz, 19.6m/s ² (10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis					
	IMPACT		196.1m/s² (20G), 11ms, once each X, Y and Z axis						
AFETY AND	AGENCY APPROVAL	LS	UL62368-1, C-UL (ed	uivalent to CAN/CS	A-C22.2No.62368-1), E	N62368-1, Complies w	ith DEN-AN		
OISE	CONDUCTED NOISE	•	Complies with FCC-B	, VCCI-B, CISPR11	-B, CISPR32-B, EN550	11-B, EN55032-B			
EGULATIONS	HARMONIC ATTENU	JATOR *6	Complies with IEC61	000-3-2 (Class A) (N	No built-in power factor	correction)			
	CASE SIZE/WEIGHT		50×21.5×62.5mm [1.97×0.85×2.46 in	ches] (W×H×D) / 45g	max			
OTHERS	COOLING METHOD	*2	Convection/Forced air (Reguires external fan) (Refer to "Derating")						

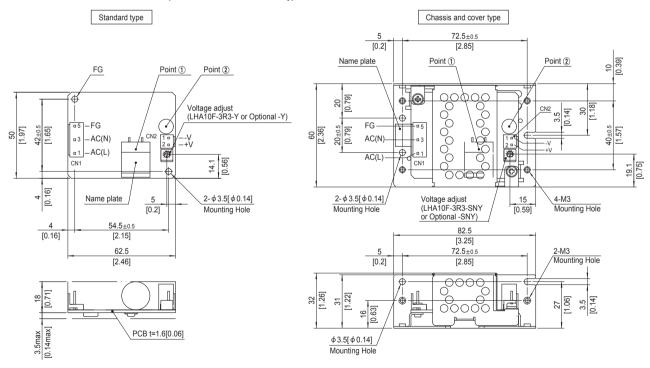
- The listed options may affect the published standard specifications. Please contact us for
- detailed product specifications. Derating is required.
- At low load conditions, the burst mode operation will start. To check load regulation, you will
- need to measure the characteristics at average mode with instruments. This is the value that measured on measuring board with capacitor of 22 μ F and 0.1 μ F at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104).
 - Ripple and ripple noise spec is change at lo=0 to 25% by burst operation. Audible noise may be generated.
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Please contact us about another class. When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
- 3.3V, 5V, 12V output product, the maximum temperature of 55°C.
- To meet the specification, do not operate overload condition.
- Parallel operation is not possible
- Sound noise may be generated by power supply in case of pulse load.





External view

* External size of option is different from standard type.



- % The back side of PCB of the power supply is assembled some
- Be careful not to bump against the attached area by vibration. W Use the spacer of 8mm [0.31] length or more for isolation.
- And do not use press-fitting bush.
- % Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

I/O Connector		Mating connector			
CNIA	B3P5-VH	VHR-5N	Chain	SVH-21T-P1.1	
CN1 E	B3P5-VH	VIIK-SIN	Loose	BVH-21T-P1.1	
0110	B2P-VH	VHR-2N	Chain	SVH-21T-P1.1	
CINZ	BZP-VH	VHR-ZIV	Loose	BVH-21T-P1.1	

(Mfr: J.S.T.)

- ※ I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.

CN1 Pir

V 1		CN2	
in No.	Input	Pin No.	Output
1	AC(L)	4	-V
2		'	-v
3	AC(N)	2	+V
4			+v
5	FG		

- % Pin No.2 and 4 is NC at CN1.

- Dimensions in mm, []=inches
 Tolerance: ±1 [±0.04]
 Weight: 45g max (with chassis and cover: 115g max)
- PCB Material / thickness : CEM-3 / 1.6mm [0.06]
 Optional chassis and cover material : Galvanizing steel board
- Mounting torque (Mounting hole of chassis): 1.5N m max

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Example recommended EMI/EMC filter EAC-03-472

High voltage pulse noise type : EAP series Low leakage current type : EAM series

*A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply. Series name
 Single output
 Output wattage

- 4)Universal input
- ⑤Output voltage
- Optional *1
 C: with Coating
 J4: EP (TE Connectivity) connector type
 - S: with Chassis
- SN: with Chassis & cover Y: with Potentiometer

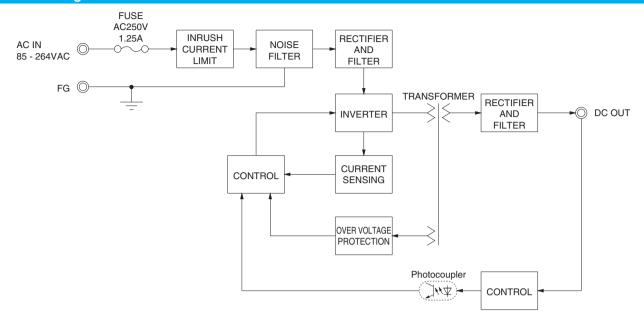
For option details, refer to Instruction Manual 6.

This power supply is manufactured by SMD technology. The stress to PCB like twisting or bending causes the defect of the unit, so handle the unit with care. *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LHA15F-3R3-Y	LHA15F-5	LHA15F-12	LHA15F-15	LHA15F-24
MAX OUTPUT WATTAGE[W] *2	9.9	15	15.6	15	16.8
DC OUTPUT *2	3.3V 3A	5V 3A	12V 1.3A	15V 1.0	24V 0.7A

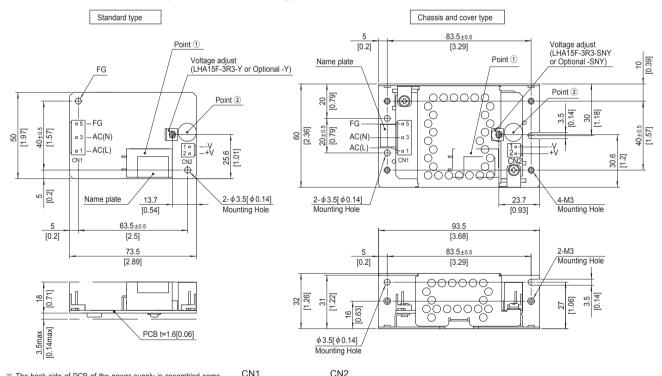
	MODEL		LHA15F-3R3-Y	LHA15F-5	LHA15F-12	LHA15F-15	LHA15F-24		
	VOLTAGE[VAC]	*2	85 - 264 1 φ (Refer to "Derating" and Instruction Manual 1.1)						
	CURRENT[A]	ACIN 100V		0.35typ					
	CORNEIVI[A]	ACIN 230V							
	FREQUENCY[Hz]		50 / 60 (45 - 440)						
NPUT	EFFICIENCY[%]	ACIN 100V	71.5typ	75.0typ	79.0typ	80.0typ	81.5typ		
	EFFICIENCI[%]	ACIN 230V	72.5typ	77.0typ	82.0typ	83.0typ	84.5typ		
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100%) Ta=2	25℃ at cold start					
	INNUSH CONNENT[A]	ACIN 230V	35typ (lo=100%) Ta=2	25℃ at cold start					
	LEAKAGE CURREN	T[mA]	0.05 / 0.10max (ACIN	100V / 240V, 60Hz, lo	=100%, According to IE	C62368-1, and DEN-A	N)		
	VOLTAGE[V]		3.3	5	12	15	24		
	CURRENT[A]	*2	3.0	3.0	1.3	1.0	0.7		
	LINE REGULATION[mV] *3	20max	20max	48max	60max	96max		
	LOAD REGULATION	[mV] *3	40max	40max	100max	120max	150max		
	DIDDI Eleviter 1	0 to +60°C *7	80max	80max	120max	120max	120max		
	RIPPLE[mVp-p]	-10 to 0°C	140max	140max	160max	160max	160max		
		lo=0 to 25%	300max	300max	300max	300max	300max		
	DIDDI E NOIGEL IV	0 to +60°C *7	120max	120max	150max	150max	150max		
UTPUT	RIPPLE NOISE[mVp-p]	-10 to 0°C	160max	160max	180max	180max	180max		
	*4	lo=0 to 25%	360max	360max	360max	360max	360max		
	TEMBED ATTIBE DECITI ATTION (mV)	0 to +60°C *7	50max	50max	120max	150max	240max		
		-10 to +60°C *7	60max	60max	150max	180max	290max		
	DRIFT[mV] *5		20max	20max	48max	60max	96max		
	START-UP TIME[ms]		40typ (ACIN 100V, Io=100%)						
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%) / 150typ (ACIN 230V, Io=100%)						
	OUTPUT VOLTAGE ADJUSTMENT	RANGE[V]	2.85 to 3.63	Fixed ("Y"option is av	ailable for adjusting out	put voltage between ±	10%)		
	OUTPUT VOLTAGE SET	TING[V]	3.30 to 3.40	4.90 to 5.30	11.50 to 12.50	14.40 to 15.60	23.00 to 25.00		
	OVERCURRENT PROT	ECTION	Works over 105% of r	ating and recovers aut	omatically		•		
ROTECTION	OVERVOLTAGE PROTE	ECTION	4.00 to 6.00	5.75 to 8.00	13.80 to 18.00	17.25 to 23.30	27.60 to 34.50		
THERS	OPERATING INDICA	TION	Not provided	,	•				
IIIENS	REMOTE SENSING		Not provided						
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)						
SOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)						
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 100M Ω min (At Room Temperature)						
	OPERATING TEMP., HUMID. AND A	ALTITUDE *2	-10 to +70°C, 20 - 90°	%RH (Non condensing)), 5,000m (16,500feet) r	nax			
NVIDONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90°	%RH (Non condensing)), 9,000m (30,000feet) r	nax			
NVIRONMENT	VIBRATION		10 - 55Hz, 19.6m/s ² (2	2G), 3minutes period, 6	60minutes each along X	X, Y and Z axis			
			196.1m/s² (20G), 11ms, once each X, Y and Z axis						
AFETY AND	AGENCY APPROVAL	LS	UL62368-1, C-UL (eq	uivalent to CAN/CSA-0	C22.2No.62368-1), EN6	2368-1, Complies with	DEN-AN		
IOISE	CONDUCTED NOISE		Complies with FCC-B	, VCCI-B, CISPR11-B,	CISPR32-B, EN55011-	B, EN55032-B			
REGULATIONS	HARMONIC ATTENU	JATOR *6	Complies with IEC610	000-3-2 (Class A) (No b	ouilt-in power factor cor	rection)			
	CASE SIZE/WEIGHT		50×21.5×73.5mm [1	1.97×0.85×2.89 inche	es] (W×H×D) / 60g ma	ax			
OTHERS	COOLING METHOD	*2	Convection/Forced air	r (Requires external far	n) (Refer to "Derating")				

- The listed options may affect the published standard specifications. Please contact us for
- detailed product specifications. Derating is required.
- *3 At low load conditions, the burst mode operation will start. To check load regulation, you will
- need to measure the characteristics at average mode with instruments. This is the value that measured on measuring board with capacitor of 22 μ F and 0.1 μ F at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104).
 - Ripple and ripple noise spec is change at lo=0 to 25% by burst operation. Audible noise may be generated.
- *****5 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Please contact us about another class. When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
- 3.3V, 5V, 12V output product, the maximum temperature of 55°C.
- To meet the specification, do not operate overload condition.
- Parallel operation is not possible
- Sound noise may be generated by power supply in case of pulse load.



External view

* External size of option is different from standard type.



- * The back side of PCB of the power supply is assembled some SMDs.
- Be careful not to bump against the attached area by vibration.
- * Use the spacer of 8mm [0.31] length or more for isolation. And do not use press-fitting bush.
- % Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

I/O Connector		Mating connector		Terminal		
ONIA	DODE VIII	VHR-5N	Chain	SVH-21T-P1.1		
CN1 B3P5	B3P5-VH	VHK-5IN	Loose	BVH-21T-P1.1		
ONO	B2P-VH	VHR-2N	Chain	SVH-21T-P1.1		
CNZ	BZP-VH	VHR-ZN	Loose	BVH-21T-P1.1		

(Mfr: J.S.T.)

- * I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.
- Pin No. 1 2 3 4 5

OINZ									
Input		Pin No.	Output						
AC(L)		1	-V						
			- v						
AC(N)		2	+V						
			+v						
FG									

- % Pin No.2 and 4 is NC at CN1.

- Dimensions in mm, []=inches
 Tolerance: ±1 [±0.04]
 Weight: 60g max (with chassis and cover: 140g max)
- # PCB Material / thickness : CEM-3 / 1.6mm [0.06]

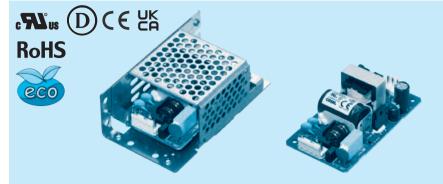
 Optional chassis and cover material : Galvanizing steel board

 Mounting torque (Mounting hole of chassis) : 1.5N m max

Ordering information

LHA30F

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Example recommended EMI/EMC filter EAC-03-472

High voltage pulse noise type : EAP series Low leakage current type : EAM series

*A higher current rating EMI/EMC filter

may be recommended in view of the other devices that could be connected in parallel with the power supply.

Series name
 Single output
 Output wattage

4)Universal input ⑤Output voltage

 Optional *1
 C : with Coating
 G: Low leakage current J4 : EP (TE Connectivity) connector type

S: with Chassis

SN: with Chassis & cover

Y: with Potentiometer

For option details, refer to Instruction Manual 6.

This power supply is manufactured by SMD technology. The stress to PCB like twisting or bending causes the defect of the unit, so handle the unit with care. *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LHA30F-3R3-Y	LHA30F-5	LHA30F-12	LHA30F-15	LHA30F-24
MAX OUTPUT WATTAGE[W] *2	19.8	30	30	30	31.2
DC OUTPUT *2	3.3V6A	5V6A	12V2.5A	15V2A	24V1.3A

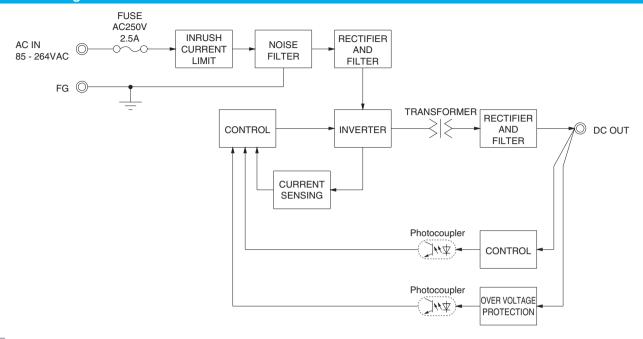
SPECIFICATIONS

	MODEL		LHA30F-3R3-Y	LHA30F-5	LHA30F-12	LHA30F-15	LHA30F-24			
	VOLTAGE[VAC]	*2	85 - 264 1 φ (Refer to	"Derating" and Instruc	ction Manual 1.1)					
	CURRENT[A]	ACIN 100V	0.42typ	0.62typ						
	CONNENT[A]	ACIN 230V	0.23typ 0.32typ							
	FREQUENCY[Hz]		50 / 60 (45 - 440)							
INPUT	EFFICIENCY[%]	ACIN 100V	83.0typ	83.0typ	85.0typ	85.5typ	87.0typ			
	EFFICIENCT[%]	ACIN 230V	85.5typ	87.0typ	88.5typ	89.0typ	90.0typ			
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100%) Ta=2	25℃ at cold start						
	INNUSTI CUNNENT[A]	ACIN 230V	35typ (lo=100%) Ta=2	25℃ at cold start						
	LEAKAGE CURREN	T[mA]	0.20 / 0.45max (ACIN	0.20 / 0.45max (ACIN 100V / 240V 60Hz, lo=100%, According to IEC62368-1 and DEN-AN)						
	VOLTAGE[V]		3.3	5	12	15	24			
	CURRENT[A]	*2	6.0	6.0	2.5	2.0	1.3			
	LINE REGULATION[20max	48max	60max	96max			
	LOAD REGULATION			40max	100max	120max	150max			
	DIDDI ElmVn ni	0 to +50°C		80max	120max	120max	120max			
	RIPPLE[mVp-p]		140max	140max	160max	160max	160max			
			300max	300max	300max	300max	300max			
	RIPPLE NOISE[mVp-p]		120max	120max	150max	150max	150max			
DUTPUT	*4	-10 to 0℃	160max	160max	180max	180max	180max			
			360max	360max	360max	360max	360max			
	TEMPERATURE REGULATION[mV]	0 to +50℃		50max	120max	150max	240max			
		-10 to +50°C	60max	60max	150max	180max	290max			
	DRIFT[mV] *5		20max	20max	48max	60max	96max			
	START-UP TIME[ms]		40typ (ACIN 100V, lo=100%)							
	HOLD-UP TIME[ms]		25typ (ACIN 100V, Io=100%) / 170typ (ACIN 230V, Io=100%)							
	OUTPUT VOLTAGE ADJUSTMENT		2.85 to 3.63	<u> </u>	, ,	utput voltage between				
	OUTPUT VOLTAGE SET	TING[V]	3.30 to 3.40	4.90 to 5.30	11.50 to 12.50	14.40 to 15.60	23.00 to 25.00			
PROTECTION	OVERCURRENT PROT	ECTION		rating and recovers aut	omatically					
CIRCUIT AND	OVERVOLTAGE PROTE		4.00 to 5.25	5.75 to 7.00	13.80 to 16.80	17.25 to 21.00	27.60 to 33.60			
OTHERS	OPERATING INDICA	TION	Not provided							
	REMOTE SENSING		Not provided		,					
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)							
SOLATION	INPUT-FG		, ,			At Room Temperature)				
	OUTPUT-FG		,	toff current = 25mA, D						
	OPERATING TEMP., HUMID. AND A			%RH (Non condensing						
ENVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE		%RH (Non condensing	,, , , , ,					
	VIBRATION	-		2G), 3minutes period,		X, Y and Z axis				
	IMPACT		196.1m/s² (20G), 11ms, once each X, Y and Z axis UL62368-1, C-UL (equivalent to CAN/CSA-C22.2No.62368-1), EN62368-1, Complies with DEN-AN							
SAFETY AND	AGENCY APPROVAL		, ,	<u></u>			h DEN-AN			
NOISE	CONDUCTED NOISE			, VCCI-B, CISPR11-B						
REGULATIONS	HARMONIC ATTENU			000-3-2 (Class A) (No						
OTHERS	CASE SIZE/WEIGHT		•			ax (with chassis & cove	er : 210g max)			
COOLING METHOD		*2	Convection/Forced ai	r (Requires external fa	n) (Refer to "Derating")					

- The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
- Derating is required.
- At low load conditions, the burst mode operation will start. To check load regulation, you will
- need to measure the characteristics at average mode with instruments. This is the value that measured on measuring board with capacitor of 22 μ F and 0.1 μ F at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104). Ripple and ripple noise spec is change at lo=0 to 15% by burst operation.
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Please contact us about another class. When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
- To meet the specification, do not operate overload condition
- Parallel operation is not possible.
- Sound noise may be generated by power supply in case of pulse load.

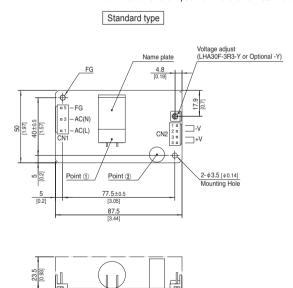
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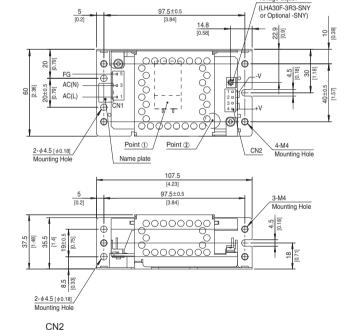




External view

* External size of option is different from standard type.





Chassis and cover type

Voltage adjust

 $\ensuremath{\,\times\,}$ The back side of PCB of the power supply is assembled some SMDs.

PCB t=1.6 [0.06]

- Be careful not to bump against the attached area by vibration.
- W Use the spacer of 8mm [0.31] length or more for isolation. And do not use press-fitting bush.
- % Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

I/O Connector		Mating connector		Terminal
ONIA	DODE VIII	VHR-5N	Chain	SVH-21T-P1.1
CNT	B3P5-VH	VHK-5N	Loose	BVH-21T-P1.1
ONIO	B4P-VH			SVH-21T-P1.1
CNZ	B4P-VH	VHR-4N	Loose	BVH-21T-P1.1

(Mfr: J.S.T.)

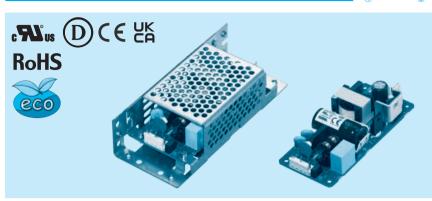
- % I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.
- 4

CN1			CN2		
Pin No.	Input		Pin No.	Output	
1	AC(L)		1, 2	-V	
2			1, 2	-v	
3	AC(N)		3, 4	+V	
4			3, 4	T V	
-	FG	1			

- * Pin No.2 and 4 is NC at CN1.
- ※ Keep drawing current per pin below 5A for CN2.
- ※ Dimensions in mm, []=inches
- ※ Tolerance: ±1 [±0.04]
- Weight: 100g max (with chassis and cover: 210g max)
- ※ PCB Material / thickness : FR-4 / 1.6mm [0.06]
- ※ Optional chassis and cover material : Galvanizing steel board
- Mounting torque (Mounting hole of chassis): 1.5N·m max

Ordering information

50



Example recommended EMI/EMC filter EAC-03-472

High voltage pulse noise type : EAP series Low leakage current type : EAM series

*A higher current rating EMI/EMC filter

may be recommended in view of the other devices that could be connected in parallel with the power supply.

- Series name
 Single output
 Output wattage 4)Universal input
- ⑤Output voltage
- Optional *1
 C : with Coating
 G: Low leakage current
- J4 : EP (TE Connectivity) connector type
- S: with Chassis
- SN: with Chassis & cover
- Y: with Potentiometer

For option details, refer to Instruction Manual 6.

This power supply is manufactured by SMD technology. The stress to PCB like twisting or bending causes the defect of the unit, so handle the unit with care. *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LHA50F-3R3-Y	LHA50F-5	LHA50F-12	LHA50F-15	LHA50F-24	LHA50F-36	LHA50F-48
MAX OUTPUT WATTAGE[W] *2	26.4	40	51.6	52.5	50.4	50.4	52.8
DC OUTPUT *2	3.3V8A	5V8A	12V4.3A	15V3.5A	24V2.1A	36V1.4A	48V1.1A

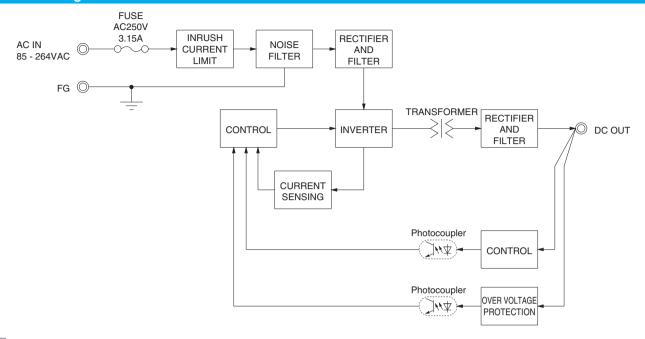
SPECIFICATIONS

	MODEL		LHA50F-3R3-Y	LHA50F-5	LHA50F-12	LHA50F-15	LHA50F-24	LHA50F-36	LHA50F-48	
	VOLTAGE[VAC]	*2	85 - 264 1 φ (R	efer to "Derating"	" and Instruction	Manual 1.1)				
	CUDDENTIAL	ACIN 100V	0.56typ	0.82typ	1.05typ					
	CURRENT[A]	ACIN 230V	0.30typ	0.42typ	0.52typ					
	FREQUENCY[Hz]		50 / 60 (45 - 440)							
NPUT	EEEIOIENOVIO/1	ACIN 100V	80.0typ	83.0typ	87.0typ	85.5typ	86.0typ	86.5typ	86.5typ	
	EFFICIENCY[%]	ACIN 230V	83.5typ	86.5typ	90.5typ	89.0typ	89.0typ	90.0typ	90.0typ	
	INDUCUI QUEDENTIAL	ACIN 100V	15typ (lo=100%) Ta=25°C at col	d start			· · · · · · · · · · · · · · · · · · ·	, , ,	
	INRUSH CURRENT[A] ACIN 230V									
	LEAKAGE CURREN	T[mA]	0.30 / 0.65max (ACIN 100V / 240V 60Hz, lo=100%, According to IEC62368-1 and DEN-AN)							
	VOLTAGE[V]		3.3	5	12	15	24	36	48	
	CURRENT[A]	*2	8.0	8.0	4.3	3.5	2.1	1.4	1.1	
	LINE REGULATION	mV] *3	20max	20max	48max	60max	96max	144max	192max	
	LOAD REGULATION	[mV] *3	40max	40max	100max	120max	150max	240max	240max	
		0 to +50℃	80max	80max	120max	120max	120max	150max	150max	
	RIPPLE[mVp-p]	-10 to 0℃	140max	140max	160max	160max	160max	200max	200max	
	* 4	lo=0 to 15%	300max	300max	300max	300max	300max	300max	300max	
		0 to +50°C	120max	120max	150max	150max	150max	250max	250max	
OUTPUT	RIPPLE NOISE[mVp-p]	-10 to 0°C	160max	160max	180max	180max	180max	300max	300max	
	*4·	lo=0 to 15%	360max	360max	360max	360max	360max	360max	360max	
	TEMPERATURE REGULATION[mV]	0 to +50°C	50max	50max	120max	150max	240max	360max	480max	
		-10 to +50°C	60max	60max	150max	180max	290max	450max	600max	
	DRIFT[mV]	*5		20max	48max	60max	96max	144max	192max	
	START-UP TIME[ms]		40typ (ACIN 100V, Io=100%)							
	HOLD-UP TIME[ms]		20typ (ACIN 100V, lo=100%) / 140typ (ACIN 230V, lo=100%)							
	OUTPUT VOLTAGE ADJUSTMENT	RANGE[V]	2.85 to 3.63	Fixed ("Y"option	n is available for	adjusting output	voltage between	1 ±10%)		
	OUTPUT VOLTAGE SET	TING[V]	3.30 to 3.40	4.90 to 5.30	11.50 to 12.50	14.40 to 15.60	23.00 to 25.00	34.50 to 37.50	46.00 to 50.00	
	OVERCURRENT PROT	ECTION	Works over 105	% of rating and	recovers automa	atically			•	
ROTECTION	OVERVOLTAGE PROTE	ECTION	4.00 to 5.25	5.75 to 7.00	13.80 to 16.80	17.25 to 21.00	27.60 to 33.60	41.40 to 50.40	55.20 to 67.20	
IRCUIT AND	OPERATING INDICA	TION	Not provided							
IIILNO	REMOTE SENSING		Not provided							
	INPUT-OUTPUT		AC3,000V 1min	ute, Cutoff curre	nt = 10mA, DC5	$000V~100 { m M}\Omega~{ m mir}$	(At Room Temp	perature)		
SOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)							
	OUTPUT-FG		AC500V 1minut	te, Cutoff current	t = 25mA, DC500	0V 100M Ω min (At Room Tempe	rature)		
	OPERATING TEMP., HUMID. AND A	ALTITUDE *2								
NVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max							
NVIKONWENI	VIBRATION		10 - 55Hz, 19.6	10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis						
	IMPACT		196.1m/s ² (20G), 11ms, once ea	ach X, Y and Z a	xis				
AFETY AND	AGENCY APPROVAL	LS	UL62368-1, C-l	JL (equivalent to	CAN/CSA-C22.	.2No.62368-1), E	N62368-1, Com	plies with DEN-A	N	
IOISE	CONDUCTED NOISE		Complies with F	CC-B, VCCI-B,	CISPR11-B, CIS	SPR32-B, EN550	11-B, EN55032-	В		
EGULATIONS	HARMONIC ATTENU	JATOR *6	Complies with I	EC61000-3-2 (C	lass A) (No buil	t-in power factor	correction)			
	CASE SIZE/WEIGHT		50×27×112m	m [1.97×1.07×	4.41 inches] (W	×H×D) / 140g n	nax (with chassis	s & cover : 280g i	max)	
OTHERS	COOLING METHOD	*2				Refer to "Derating			•	

- The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
- Derating is required.
- At low load conditions, the burst mode operation will start. To check load regulation, you
- will need to measure the characteristics at average mode with instruments. This is the value that measured on measuring board with capacitor of 22 μ F and 0.1 μ F at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104). Ripple and ripple noise spec is change at lo=0 to 15% by burst operation.
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Please contact us about another class. When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
- To meet the specification, do not operate overload condition
- Parallel operation is not possible.
- Sound noise may be generated by power supply in case of pulse load.

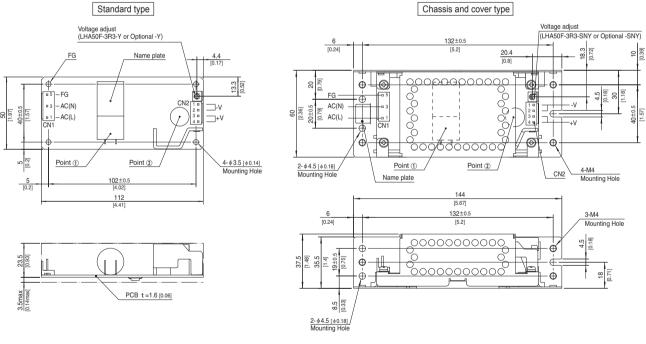
LHA-8 December 27, 2022 www.cosel.co.jp/en/





External view

* External size of option is different from standard type.



- $\ensuremath{\,\times\,}$ The back side of PCB of the power supply is assembled some
- Be careful not to bump against the attached area by vibration. W Use the spacer of 8mm [0.31] length or more for isolation. And do not use press-fitting bush.
- * Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

I/O	Connector	Mating connector		Terminal
ONIA	DODE VIII	VHR-5N	Chain	SVH-21T-P1.1
CNT	B3P5-VH	VHK-5N	Loose	BVH-21T-P1.1
ONIO	D4D VIII	V/UD 4N	Chain	SVH-21T-P1.1
CN2	B4P-VH	VHR-4N	Loose	BVH-21T-P1.1

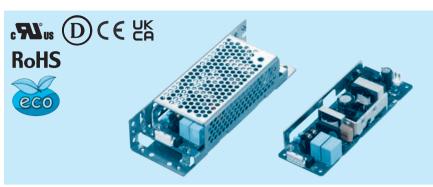
(Mfr: J.S.T.)

- % I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.
- CN1 CN₂ Pin No. Pin No. Output Input AC(L) 1, 2 -V AC(N) 3 3. 4 4 FG
- ※ Pin No.2 and 4 is NC at CN1.
- ※ Keep drawing current per pin below 5A for CN2.
- ※ Dimensions in mm, []=inches
- % Tolerance : ±1 [±0.04]
- Weight: 140g max (with chassis and cover: 280g max)
- ※ PCB Material / thickness : FR-4 / 1.6mm [0.06]
- ※ Optional chassis and cover material : Galvanizing steel board
- Mounting torque (Mounting hole of chassis): 1.5N·m max

Ordering information

LHA75F

75



Example recommended EMI/EMC filter EAC-03-472

High voltage pulse noise type : EAP series Low leakage current type : EAM series

*A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply.

LUATER 40 LUATER 45 LUATER 04 LUATER 00 LUATER 40

- Series name
 Single output
 Output wattage
- 4)Universal input
- ⑤Output voltage
- Optional *1
 C : with Coating
 G: Low leakage current
 - J4 : EP (TE Connectivity) connector type
 - S: with Chassis
 - SN: with Chassis & cover
- Y: with Potentiometer

For option details, refer to Instruction Manual 6.

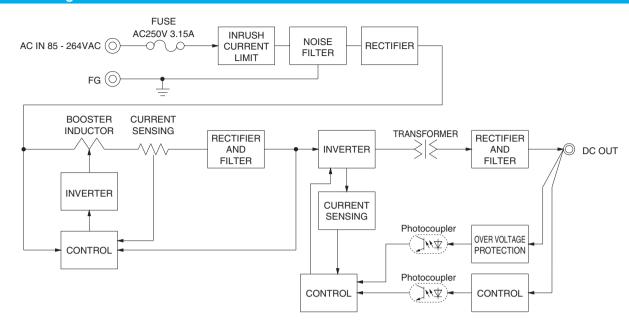
This power supply is manufactured by SMD technology. The stress to PCB like twisting or bending causes the defect of the unit, so handle the unit with care. *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

LUATER ODO V LUATER E

MODEL	LHA75F-3R3-Y	LHA75F-5	LHA75F-12	LHA75F-15	LHA75F-24	LHA75F-36	LHA75F-48
MAX OUTPUT WATTAGE[W] *2	39.6	60	75.6	75	76.8	75.6	76.8
DC OUTPUT *2	3.3V12A	5V12A	12V6.3A	15V5A	24V3.2A	36V2.1A	48V1.6A

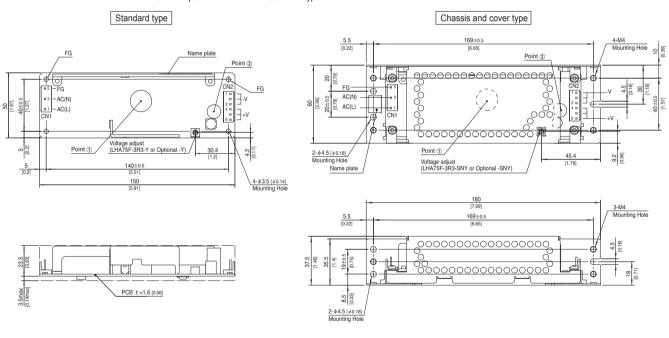
	MODEL		LHA75F-3R3-Y	LHA75F-5	LHA75F-12	LHA75F-15	LHA75F-24	LHA75F-36	LHA75F-48	
	VOLTAGE[VAC]	*2	85 - 264 1 φ (R	efer to "Derating	and Instruction	Manual 1.1)				
	CUDDENTIAL	ACIN 100V	0.6typ	0.8typ	0.9typ					
	CURRENT[A]	ACIN 230V	0.3typ	0.4typ	0.5typ					
	FREQUENCY[Hz]		50 / 60 (45 - 66)							
	EFFICIENCY[0/1	ACIN 100V	74.0typ	79.0typ	84.5typ	85.5typ	86.0typ	87.5typ	87.5typ	
INPUT	EFFICIENCY[%]	ACIN 230V	75.0typ	81.0typ	86.5typ	87.5typ	88.0typ	89.5typ	89.5typ	
	POWER FACTOR (Io=100%)	ACIN 100V	0.96typ	0.97typ	,					
	POWER FACTOR (10=100%)	ACIN 230V	0.70typ	0.80typ						
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100%) Ta=25°C at col	d start					
		ACIN 230V	35typ (lo=100%) Ta=25°C at col	d start					
	LEAKAGE CURREN	T[mA]	0.40 / 0.75max	(ACIN 100V / 24	0V 60Hz, lo=10	0%, According to	IEC62368-1 an	d DEN-AN)		
	VOLTAGE[V]		3.3	5	12	15	24	36	48	
	CURRENT[A]	*2	12.0	12.0	6.3	5.0	3.2	2.1	1.6	
	LINE REGULATION[mV] *3	20max	20max	48max	60max	96max	144max	192max	
	LOAD REGULATION	[mV] *3	40max	40max	100max	120max	150max	240max	240max	
	DIDDLES 1/ -	0 to +50°C *7	80max	80max	120max	120max	120max	150max	150max	
	RIPPLE[mVp-p]	-10 to 0℃	140max	140max	160max	160max	160max	200max	200max	
	**	lo=0 to 15%	300max	300max	360max	500max	500max	500max	500max	
		0 to +50°C *7	120max	120max	150max	150max	150max	250max	250max	
OUTPUT RIPPLE NOISI	RIPPLE NOISE[mVp-p]	-10 to 0℃	160max	160max	180max	180max	180max	300max	300max	
	**	lo=0 to 15%	360max	360max	400max	600max	600max	600max	600max	
	TEMPERATURE REQUIRATIONSVI	0 to +50°C *7	50max	50max	120max	150max	240max	360max	480max	
	TEMPERATURE REGULATION[mV]	-10 to +50°C *7	60max	60max	150max	180max	290max	450max	600max	
	DRIFT[mV]	*5	20max	20max	48max	60max	96max	144max	192max	
	START-UP TIME[ms]		100typ (ACIN 1	00V, Io=100%)		•				
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)							
	OUTPUT VOLTAGE ADJUSTMENT	RANGE[V]	2.85 to 3.63	Fixed ("Y"option	is available for a	djusting output vo	ltage between ±1	10%)		
	OUTPUT VOLTAGE SET	TING[V]	3.30 to 3.40	4.90 to 5.30	11.50 to 12.50	14.40 to 15.60	23.00 to 25.00	34.50 to 37.50	46.00 to 50.00	
DDOTECTION	OVERCURRENT PROT	ECTION	Works over 105	% of rating and	ecovers automa	tically				
PROTECTION CIRCUIT AND	OVERVOLTAGE PROTE	ECTION	4.00 to 5.25	5.75 to 7.00	13.80 to 16.80	17.25 to 21.00	27.60 to 33.60	41.40 to 50.40	55.20 to 67.20	
OTHERS	OPERATING INDICA	TION	Not provided							
JIIIENS	REMOTE SENSING		Not provided							
	INPUT-OUTPUT		AC3,000V 1min	ute, Cutoff curre	nt = 10mA, DC5	00V 100M Ω mir	(At Room Temp	erature)		
SOLATION	INPUT-FG		AC2,000V 1min	ute, Cutoff curre	nt = 10mA, DC5	00V 100M Ω mir	(At Room Temp	erature)		
	OUTPUT-FG		AC500V 1minut	e, Cutoff current	= 25mA, DC500	$NV\ 100M\Omega\ min\ ($	At Room Temper	rature)		
	OPERATING TEMP., HUMID. AND A	ALTITUDE *2	-10 to +70°C, 20) - 90%RH (Non	condensing), 5,0	000m (16,500fee	t) max			
ENVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max							
INVINCINIMENT	VIBRATION		10 - 55Hz, 19.6	m/s² (2G), 3minu	tes period, 60mi	nutes each alon	g X, Y and Z axis	3		
	IMPACT), 11ms, once ea						
SAFETY AND	AGENCY APPROVAL							plies with DEN-A	N	
NOISE	CONDUCTED NOISE			CC-B, VCCI-B,		PR32-B, EN550	11-B, EN55032-I	В		
REGULATIONS	HARMONIC ATTENU	JATOR *6		EC61000-3-2 (C						
OTHERS	CASE SIZE/WEIGHT		50×27×150mi	m [1.97×1.07×5	5.91 inches] (WX	H×D) / 190g m	ax (with chassis	& cover : 370g m	ax)	
OITERS	COOLING METHOD	*2	Convection/Ford	ced air (Requires	external fan) (R	efer to "Derating	")			

- The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
- Derating is required.
- At low load conditions, the burst mode operation will start. To check load regulation, you
- will need to measure the characteristics at average mode with instruments. This is the value that measured on measuring board with capacitor of 22 μ F and 0.1 μ F at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104).
- Ripple and ripple noise spec is change at lo=0 to 15% by burst operation.
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Please contact us about another class.
- 3.3V and 5V output product, the maximum temperature of 40°C. To meet the specification, do not operate overload condition.
- Parallel operation is not possible.
- Sound noise may be generated by power supply in case of pulse load.



External view

* External size of option is different from standard type.



- $\ensuremath{\,\times\,}$ The back side of PCB of the power supply is assembled some SMDs.
- Be careful not to bump against the attached area by vibration. W Use the spacer of 8mm [0.31] length or more for isolation. And do not use press-fitting bush.
- % Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

I/O	Connector	Mating connector		Terminal
ONIA	B3P5-VH	VHR-5N	Chain	SVH-21T-P1.1
CNT	B3P5-VH		Loose	BVH-21T-P1.1
ONIO	B6P-VH	V/LID ON	Chain	SVH-21T-P1.1
CNZ	B6P-VH	VHR-6N	Loose	BVH-21T-P1.1

(Mfr: J.S.T.)

- % I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.
- CN1 Pin

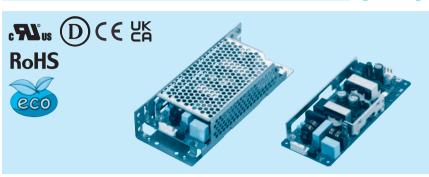
1			CN2	
No.	Input		Pin No.	Output
ı	AC(L)		1 to 3	-V
2			1 10 3	-v
3	AC(N)		4 to 6	+V
1			4 10 6	
5	FG	'		

- * Pin No.2 and 4 is NC at CN1.
- ※ Keep drawing current per pin below 5A for CN2.
- * Dimensions in mm, []=inches
- % Tolerance : ±1 [±0.04]
- Weight: 190g max (with chassis and cover: 370g max)
- * PCB Material / thickness : FR-4 / 1.6mm [0.06]
- ※ Optional chassis and cover material : Galvanizing steel board

Ordering information

LHA100F

100



Example recommended EMI/EMC filter

High voltage pulse noise type : EAP series

Low leakage current type : EAM series

*A higher current rating EMI/EMC filter

may be recommended in view of the other devices that could be connected in parallel with the power supply.

 Series name
 Single output
 Output wattage 4)Universal input

⑤Output voltage

Optional *1
 C : with Coating
 G: Low leakage current

J4 : EP (TE Connectivity) connector type

R2: with Remote ON/OFF S: with Chassis

SN: with Chassis & cover

Y: with Potentiometer

For option details, refer to Instruction Manual 6.

This power supply is manufactured by SMD technology. The stress to PCB like twisting or bending causes the defect of the unit, so handle the unit with care. *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

					-	
MODEL	LHA100F-5	LHA100F-12	LHA100F-15	LHA100F-24	LHA100F-36	LHA100F-48
MAX OUTPUT WATTAGE[W] *2	75	102	100.5	103.2	100.8	100.8
DC OUTPUT *2	5V15A	12V8.5A	15V6.7A	24V4.3A	36V2.8A	48V2.1A

	MODEL		LHA100F-5	LHA100F-12	LHA100F-15	LHA100F-24	LHA100F-36	LHA100F-48		
V	/OLTAGE[VAC]		85 - 264 1 φ (Refe	er to "Derating" and	Instruction Manual	1.1)				
	CURRENT[A]	ACIN 100V	1.0typ	1.2typ						
	JUNNENT[A]	ACIN 230V	0.5typ	0.6typ						
F	REQUENCY[Hz]		50 / 60 (45 - 66)							
_	EFFICIENCY[%]	ACIN 100V	82.0typ	87.0typ	88.0typ	86.5typ	87.0typ	87.0typ		
NPUT	FFICIENCY[%]	ACIN 230V	84.0typ	89.0typ	90.0typ	89.0typ	89.0typ	89.0typ		
	OWED FACTOR (In 1000/)	ACIN 100V	0.97typ	97typ 0.97typ						
	OWER FACTOR (Io=100%)	ACIN 230V	0.83typ 0.87typ							
	NRUSH CURRENT[A]	ACIN 100V	15typ (lo=100%) T	īa=25℃ at cold sta	rt					
	NHUSH CUNNENT[A]	ACIN 230V	35typ (lo=100%) T	īa=25℃ at cold sta	rt					
L	EAKAGE CURREN	Γ[mA]	0.40 / 0.75max (A	CIN 100V / 240V 6	60Hz, lo=100%, Ac	cording to IEC6236	8-1 and DEN-AN)			
V	/OLTAGE[V]		5	12	15	24	36	48		
C	CURRENT[A]	*2	15.0	8.5	6.7	4.3	2.8	2.1		
L	INE REGULATION[I	mV] *3	20max	48max	60max	96max	144max	192max		
L	OAD REGULATION	[mV] *3	40max	100max	120max	150max	240max	240max		
	NDDI E[\/1	0 to +50°C *7	80max	120max	120max	120max	150max	150max		
	RIPPLE[mVp-p]	-10 to 0°C	140max	160max	160max	160max	200max	200max		
		lo=0 to 15%	300max	360max	500max	500max	500max	500max		
OUTPUT RIPPLE I	RIPPLE NOISE[mVp-p] *4	0 to +50°C *7	120max	150max	150max	150max	250max	250max		
		-10 to 0℃	160max	180max	180max	180max	300max	300max		
		lo=0 to 15%	360max	400max	600max	600max	600max	600max		
т.	EMPERATURE REGULATION[mV]	0 to +50°C *7	50max	120max	150max	240max	360max	480max		
["	TEMPERATURE REGULATION[IIIV]	-10 to +50°C * 7	60max	150max	180max	290max	450max	600max		
D	DRIFT[mV] *5		20max	48max	60max	96max	144max	192max		
S	START-UP TIME[ms]		100typ (ACIN 100V, lo=100%)							
Н	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)							
0	UTPUT VOLTAGE ADJUSTMENT	RANGE[V]	Fixed ("Y"option is	available for adjus	ting output voltage	between ±10%)				
0	OUTPUT VOLTAGE SET		4.90 to 5.30	11.50 to 12.50	14.40 to 15.60	23.00 to 25.00	34.50 to 37.50	46.00 to 50.00		
0	OVERCURRENT PROT	ECTION	Works over 105%	of rating and recov						
PROTECTION	OVERVOLTAGE PROTE	CTION	5.75 to 7.00	13.80 to 16.80	17.25 to 21.00	27.60 to 33.60	41.40 to 50.40	55.20 to 67.20		
_	PERATING INDICA	TION	Not provided							
_	REMOTE SENSING		Not provided							
	REMOTE CONTROL			Option (Refer to Instruction Manual 6.1)						
_	NPUT-OUTPUT-RC	*8				$DM\Omega$ min (At Room				
SOLATION II	NPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)							
C	DUTPUT-RC-FG					$M\Omega$ min (At Room Π				
	OUTPUT-RC					Ω min (At Room Te	emperature)			
	PERATING TEMP.,HUMID.AND A	_	-10 to +70°C, 20 -							
$NVIRONMENT \longrightarrow$	TORAGE TEMP.,HUMID.AND	ALTITUDE			lensing), 9,000m (3					
V	/IBRATION					ach along X, Y and	Z axis	· · ·		
	MPACT			11ms, once each X						
	AGENCY APPROVAL						, Complies with DE	N-AN		
	CONDUCTED NOISE		Complies with FC	C-B, VCCI-B, CISP	R11-B, CISPR32-E	B, EN55011-B, EN5	5032-B			
REGULATIONS H	HARMONIC ATTENU	ATOR *6		61000-3-2 (Class A						
DIHERS -	CASE SIZE/WEIGHT						chassis & cover : 45	0g max)		
C	COOLING METHOD	*2	Convection/Forced	d air (Requires exte	rnal fan) (Refer to	"Derating")				

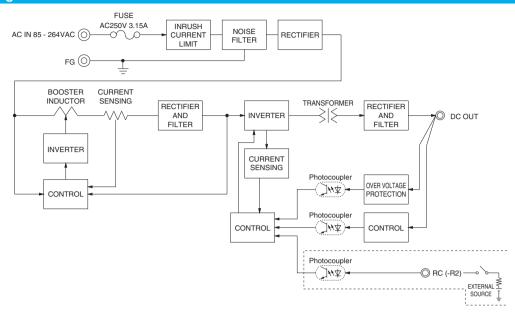
- The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
- specifications.

 Derating is required.

 At low load conditions, the burst mode operation will start. To check load regulation, you will need to measure the characteristics at average mode with instruments.

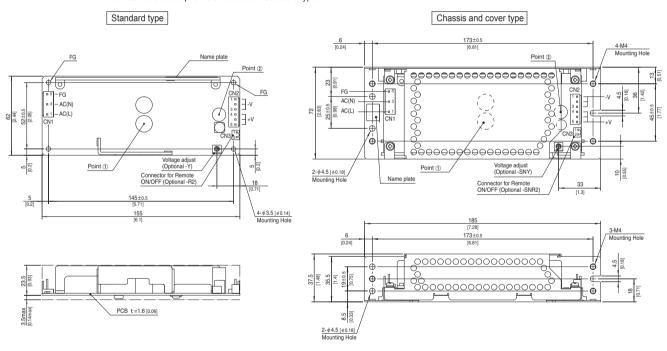
 This is the value that measured on measuring board with capacitor
- of 22 µ F and 0.1 µ F at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104).
- Ripple and ripple noise spec is change at lo=0 to 15% by burst operation.
- operation. Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Please contact us about another class.
- riesse contact us about another class. 5V output product, the maximum temperature of 40°C. Applicable when Remote ON/OFF (optional) is added. To meet the specification, do not operate overload condition. Parallel operation is not possible. Sound noise may be generated by power supply in case of pulse load.





External view

* External size of option is different from standard type.



- $\ensuremath{\,\times\,}$ The back side of PCB of the power supply is assembled some SMDs.
- Be careful not to bump against the attached area by vibration.
- W Use the spacer of 8mm [0.31] length or more for isolation. And do not use press-fitting bush.
- * Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

Chain	SVH-21T-P1.1
	3 VIII-Z I I -F I. I
CN1 B3P5-VH VHR-5N Loose	BVH-21T-P1.1
CN2 B6P-VH VHR-6N Chain	SVH-21T-P1.1
CN2 B6P-VH VHR-6N Loose	BVH-21T-P1.1

(Mfr: J.S.T.)

- % I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.

- ※ Dimensions in mm, []=inches
- % Tolerance : ±1 [±0.04]
- Weight: 250g max (with chassis and cover: 450g max)
- ※ PCB Material / thickness : FR-4 / 1.6mm [0.06]
- * Optional chassis and cover material: Galvanizing steel board
- Mounting torque (Mounting hole of chassis): 1.5N·m max

CN1		CN2	
Pin No.	Input	Pin No.	Out
1	AC(L)	1 to 3	-\
2		1 10 3	- ۷
3	AC(N)	4 to 6	+\
4		4 10 0	
5	FG		

Output	PIN No.	Contents	
-V	1	RC(+)	
- v	2	RC(-)	
+V	Model B2B Mating Cor	-XH-A nnector (Termi	nal)

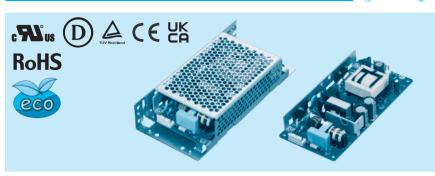
XHP-2 BXH-001T-P0.6

CN3 Option (Mfr:J.S.T.)

※ Pin No.2 and 4 is NC at CN1. ※ Keep drawing current per pin below 5A for CN2.

LHA150F

150



Example recommended EMI/EMC filter EAC-03-472



High voltage pulse noise type : EAP series Low leakage current type : EAM series

*A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply. Series name
 Single output
 Output wattage

4)Universal input

⑤Output voltage

Optional *1
 C : with Coating
 G: Low leakage current

J4 : EP (TE Connectivity) connector type R2: with Remote ON/OFF

S: with Chassis

SN: with Chassis & cover

U1: Can be attached the external capacitor unit

Y: with Potentiometer

For option details, refer to Instruction Manual 6.

This power supply is manufactured by SMD technology. The stress to PCB like twisting or bending causes the defect of the unit, so handle the unit with care. *Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations.

MODEL	LHA150F-12	LHA150F-24	LHA150F-36	LHA150F-48
MAX OUTPUT WATTAGE[W] *2	150	151.2	151.2	153.6
DC OUTPUT *2	12V 12.5A	24V 6.3A	36V 4.2A	48V 3.2A

	MODEL		LHA150F-12	LHA150F-24	LHA150F-36	LHA150F-48		
	VOLTAGE[VAC]	*2	85 - 264 1 φ (Refer to "Dera	ating" and Instruction Manual	1.1)			
	CUDDENTIAL	ACIN 100V	1.8typ					
	CURRENT[A]	ACIN 230V						
	FREQUENCY[Hz]		50 / 60 (45 - 66)					
	EEEIOIENOV(0/1	ACIN 100V	86.5typ	89.0typ	89.5typ	90.0typ		
PROTECTION CIRCUIT AND	EFFICIENCY[%]	ACIN 230V	89.5typ	92.0typ	92.5typ	93.0typ		
	DOWED FACTOR (L. 4000()	ACIN 100V	0.99typ					
	POWER FACTOR (Io=100%)	ACIN 230V	0.91typ					
	INDUCUI OUDDENTIAL	ACIN 100V	15typ (lo=100%) Ta=25°C at cold start					
	INRUSH CURRENT[A]	ACIN 230V	35typ (lo=100%) Ta=25°C at cold start					
	LEAKAGE CURREN	T[mA]	0.40 / 0.75max (ACIN 100V	/ / 240V 60Hz, lo=100%, Acc	cording to IEC62368-1 and D	EN-AN)		
	VOLTAGE[V]		12	24	36	48		
	CURRENT[A]	*2	12.5	6.3	4.2	3.2		
	LINE REGULATION[mV] *3	48max	96max	144max	192max		
	LOAD REGULATION	[mV] *3	100max	150max	240max	240max		
	RIPPLE[mVp-p] *4 RIPPLE NOISE[mVp-p] *4	0 to +50°C *7	120max	120max	150max	150max		
		-10 to 0℃	160max	160max	200max	200max		
		lo=0 to 10%	160max	160max	200max	200max		
		0 to +50°C *7	150max	150max	250max	250max		
OUTPUT		-10 to 0℃	180max	180max	300max	300max		
		lo=0 to 10%	230max	230max	300max	300max		
	TEMPERATURE REQUIRATIONS	0 to +50°C *7	120max	240max	360max	480max		
	TEMPERATURE REGULATION[mV]	-10 to +50°C *7	150max	290max	450max	600max		
	DRIFT[mV] *5		48max	96max	144max	192max		
	START-UP TIME[ms]		700typ (ACIN 100V, Io=100%)					
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)					
	OUTPUT VOLTAGE ADJUSTMENT	RANGE[V]	Fixed ("Y"option is available for adjusting output voltage between +10%, -5%)					
	OUTPUT VOLTAGE SET	TING[V]	11.50 to 12.50	23.00 to 25.00	34.50 to 37.50	46.00 to 50.00		
	OVERCURRENT PROT	ECTION	Works over 105% of rating	and recovers automatically				
PROTECTION	OVERVOLTAGE PROTI	ECTION	13.80 to 16.80	27.60 to 33.60	41.40 to 50.40	55.20 to 67.20		
	OPERATING INDICA	TION	Not provided					
OTHERS	REMOTE SENSING		Not provided					
	REMOTE ON/OFF		Option (Refer to Instruction					
	INPUT-OUTPUT-RC	*8			$DM\Omega$ min (At Room Temperate			
ISOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)					
IOOLATION	OUTPUT-RC-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 100M Ω min (At Room Temperature)					
	OUTPUT-RC	*8	The real filling edition edition. Zentri, 201001 femiliary					
			-10 to +70°C, 20 - 90%RH (Non condensing), 5,000m (16,500feet) max (EN62477-1 (OVC III) : 2,000m (6,600feet) max)					
ENVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max					
	VIBRATION			minutes period, 60minutes e	ach along X, Y and Z axis			
	IMPACT	_	196.1m/s² (20G), 11ms, on					
SAFETY AND	AGENCY APPROVA		, , ,		, , , , , , , , , , , , , , , , , , , ,	VC III), Complies with DEN-AN		
NOISE	CONDUCTED NOISE			CI-B, CISPR11-B, CISPR32-B	B, EN55011-B, EN55032-B			
REGULATIONS	HARMONIC ATTENU		Complies with IEC61000-3					
OTHERS	CASE SIZE/WEIGHT				/ 320g max (with chassis & o	cover : 570g max)		
	COOLING METHOD	*2	Convection/Forced air (Rec	uires external fan) (Refer to '	Derating")			

- The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
- Specifications.

 Derating is required.

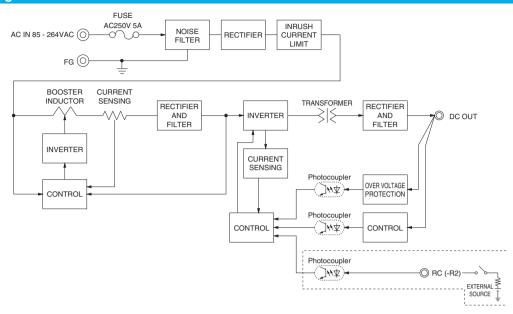
 At low load conditions, the burst mode operation will start. To check load regulation, you will need to measure the characteristics at average mode with instruments.
- This is the value that measured on measuring board with capacitor of 22 µ F and 0.1 µ F at 150mm from output terminal. Measured
- by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104). Ripple and ripple noise spec is change at lo=0 to 10% by burst
- operation.

 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25 C, with the input voltage held constant at the rated input/output.
- Please contact us about another class.

 12V output product, the maximum temperature of 40°C
- Applicable when Remote ON/OFF (optional) is added. To meet the specification, do not operate overload condition.

- . arctical operation is not possible. Sound noise may be generated by power supply in case of pulse load.

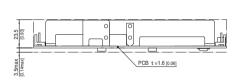




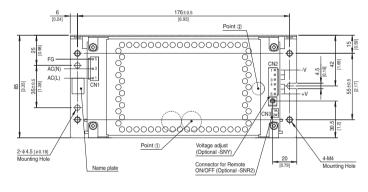
External view

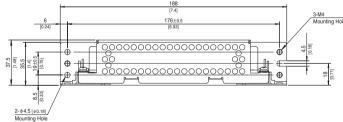
* External size of option is different from standard type.

Standard type Point ② 93 - AC(N) - AC(L) Point (1 I- φ3.5 [φ0.14]



Chassis and cover type





- $\ensuremath{\,\times\,}$ The back side of PCB of the power supply is assembled some SMDs.
- Be careful not to bump against the attached area by vibration. W Use the spacer of 8mm [0.31] length or more for isolation.
- And do not use press-fitting bush.
- ※ Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

I/O	Connector	Mating connector		Terminal
ONIA	DODE VIII	VHR-5N	Chain	SVH-21T-P1.1
CIVI	B3P5-VH	VHK-5N	Loose	BVH-21T-P1.1
ONIO	NO DOD VIII VIIID ON		Chain	SVH-21T-P1.1
CNZ	B6P-VH	VHR-6N	Loose	BVH-21T-P1.1

(Mfr: J.S.T.)

- ※ I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.

- % Dimensions in mm, []=inches
 % Tolerance : ±1 [±0.04]
- Weight: 320g max (with chassis and cover: 570g max)
- ※ PCB Material / thickness : FR-4 / 1.6mm [0.06]
- ※ Optional chassis and cover material : Galvanizing steel board
- Mounting torque (Mounting hole of chassis): 1.5N·m max

CN1 Pin No. Input AC(L) 2 AC(N) 3 4 FG

CN2	
Pin No.	Output
1 to 3	-V
4 to 6	+V

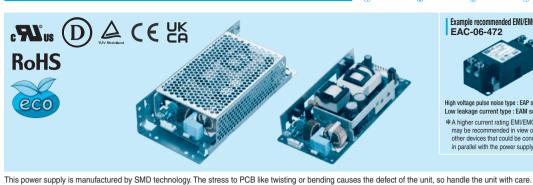
CN3 Option (Mfr:J.S.T.)					
PIN No.	Contents				
1	RC(+)				
2	RC(-)				
Model B2B Mating Cor (HP-2	-XH-A nnector (Term	inal)			

BXH-001T-P0.6

※ Pin No.2 and 4 is NC at CN1.※ Keep drawing current per pin below 5A for CN2.

LHA300F

300



I HA300E-12-V

Example recommended EMI/EMC filter EAC-06-472

High voltage pulse noise type : EAP series Low leakage current type : EAM series

*A higher current rating EMI/EMC filter may be recommended in view of the other devices that could be connected in parallel with the power supply. 1)Series name 2)Single output

3 Output wattage
4 Universal input
5 Output voltage
6 Optional *1
C: with Coating

G: Low leakage current

4: EDW learkage current
J4: EP (TE Connectivity) connector type
J5: 8 pin type(Output connector)
R2: with Remote ON/OFF
S: with Chassis

SN: with Chassis & cover

T: Terminal block type
T4: Push-in Terminal block type
U1: Can be attached the external

capacitor unit

1 HA300E-48-V

For option details, refer to Instruction Manual 6.

*Make sure necessary tests will be carried out on your end equipment with the power supply installed in accordance with any required EMC/EMI regulations. Instruction Manual 6.							
MODEL LHA300F-12-Y LHA300F-24-Y LHA300F-48-Y							
MAX OUTPUT WATTAGE[W] *2	300	300	302.4				
DC OUTPUT *2	12V 25A	24V 12.5A	48V 6.3A				

I HA300E-24-V

SPECIFICATIONS

MODEL

	MODEL		LHA300F-12-Y	LHA300F-24-Y	LHA300F-48-Y			
	VOLTAGE[VAC]	*2	85 - 264 1 \$\phi\$ (Refer to "Derating" and Instruction Manual 1.1)					
	CUDDENTIAL	ACIN 100V	3.5typ	-				
	CURRENT[A]	ACIN 230V	1.6typ					
	FREQUENCY[Hz]		50 / 60 (45 - 66)					
OUTPUT PROTECTION CIRCUIT AND OTHERS ISOLATION	EEEIOIENOVIO/1	ACIN 100V	90.0typ	91.5typ	92.0typ			
	EFFICIENCY[%]	ACIN 230V	92.0typ	93.5typ	94.0typ			
	DOWED FACTOR (In 1000()	ACIN 100V	0.99typ					
	POWER FACTOR (Io=100%)	ACIN 230V	0.93typ					
	INDUCUI OUDDENTIAL	ACIN 100V	20typ (lo=100%) Ta=25°C at cold start					
	INRUSH CURRENT[A]	ACIN 230V	40typ (lo=100%) Ta=25℃ at cold start					
	LEAKAGE CURREN	T[mA]	0.40 / 0.75max (ACIN 100V / 240V 6	0Hz, lo=100%, According to IEC62368	l-1 and DEN-AN)			
	VOLTAGE[V]		12	24	48			
	CURRENT[A]	*2	25.0	12.5	6.3			
	LINE REGULATION[mV] *3	48max	96max	192max			
	LOAD REGULATION	[mV] *3	100max	150max	240max			
ОИТРИТ	DIDDLES Y	0 to +50°C *7	120max	120max	150max			
	RIPPLE[mVp-p]	-10 to 0℃	160max	160max	200max			
	***	lo=0 to 10%	160max	160max	200max			
	RIPPLE NOISE[mVp-p]	0 to +50°C *7	150max	150max	250max			
		-10 to 0℃	180max	180max	300max			
	**	lo=0 to 10%	180max	180max	300max			
	TEMPEDATURE RECUI ATIONS VI	0 to +50°C *7	120max	240max	480max			
	TEMPERATURE REGULATION[IIIV]	-10 to +50°C *7	150max	290max	600max			
	DRIFT[mV] *5		48max	96max	192max			
	START-UP TIME[ms]		700typ (ACIN 100V, Io=100%)					
	HOLD-UP TIME[ms]		25typ (ACIN 100V, Io=100%)					
	OUTPUT VOLTAGE ADJUSTMENT	RANGE[V]	11.40 to 13.20	22.80 to 26.40	45.60 to 52.80			
	OUTPUT VOLTAGE SET	TING[V]	12.00 to 12.48	24.00 to 24.96	48.00 to 49.92			
	OVERCURRENT PROT	ECTION	Works over 105% of rating and recove	ers automatically				
PROTECTION	OVERVOLTAGE PROTE	ECTION	13.80 to 16.80	27.60 to 33.60	55.20 to 67.20			
	OPERATING INDICA	TION	Not provided					
OTHERS	REMOTE SENSING	-	Not provided					
		*8						
ISOI ATION								
IOOLATION			, , , , , , , , , , , , , , , , , , , ,					
			1 011 1 1 1 1 1 1					
ENVIRONMENT		ALTITUDE	, , , , , ,					
					Z axis			
SAFETY AND			, , ,					
NOISE					032-B			
REGULATIONS								
OTHERS	RIPPLE NOISE[mVp-p]							
	COOLING METHOD	*2	Convection/Forced air (Requires exte	rnal fan) (Refer to "Derating")				

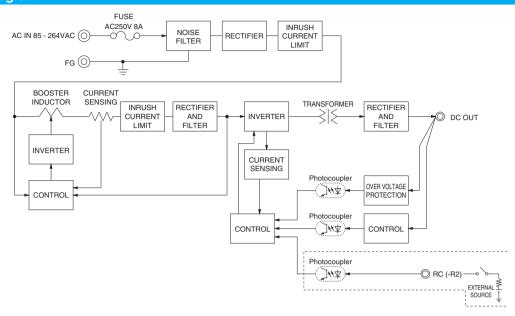
- The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
- Derating is required.
- At low load conditions, the burst mode operation will start. To check load regulation, you will need to measure the characteristics at average mode with instruments.
- This is the value that measured on measuring board with capacitor of 22 μ F and 0.1 μ F at 150mm from output terminal. Measured
- by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:RM104).
 Ripple and ripple noise spec is change at lo=0 to 10% by burst
- operation. Drift is the change in DC output for an eight hour period after a halfhour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Please contact us about another class.
- 12V output product, the maximum temperature of 35℃.
- Applicable when Remote ON/OFF (optional) is added.
- Applicable When Hendrie Ordon (Optional) is added.

 To meet the specification, do not operate overload condition.

 Parallel operation is not possible.

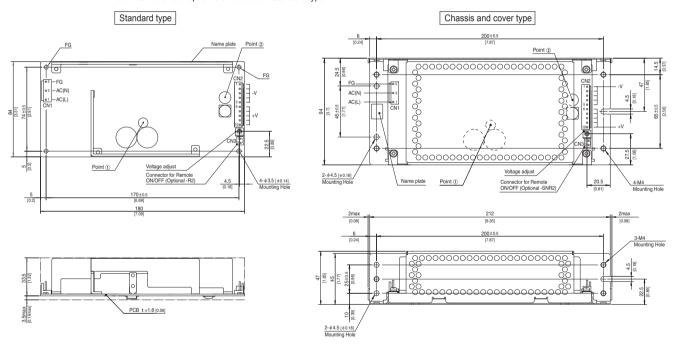
 Sound noise may be generated by power supply in case of pulse





External view

* External size of option is different from standard type.



- $\ensuremath{\,\times\,}$ The back side of PCB of the power supply is assembled some SMDs.
- Be careful not to bump against the attached area by vibration.
- W Use the spacer of 8mm [0.31] length or more for isolation. And do not use press-fitting bush.
- ※ Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

I/O	Connector	Mating connector	Terminal	
ONIA	DODE VIII	VHR-5N	Chain	SVH-21T-P1.1
CNT	B3P5-VH	VHK-5N	Loose	BVH-21T-P1.1
ONIO	B10P-VH	VHR-10N	Chain	SVH-21T-P1.1
CNZ	B10P-VH	VHR-10N	Loose	BVH-21T-P1.1

(Mfr: J.S.T.)

- * I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (TE Connectivity) connector type.
- * Option:-J5:Output connector as 8 pin type.

- ※ Dimensions in mm, []=inches
- % Tolerance : ±1 [±0.04]
- Weight: 580g max (with chassis and cover: 890g max)
- ※ PCB Material / thickness : FR-4 / 1.6mm [0.06]
- ※ Optional chassis and cover material : Galvanizing steel board ※ Mounting torque (Mounting hole of chassis) : 1.5N⋅m max

C١ Pi

N1		CN2
in No.	Input	Pin No
1	AC(L)	1 to 5
2		1 10 3
3	AC(N)	6 to 1
4		0 10 1
5	FG	

CN2	
Pin No.	Output
1 to 5	-V
6 to 10	+V

1 RC(+) 2 RC(-) Model B2B-XH-A Mating Connector (Terminal) XHP-2				
ut		PIN No.	Contents	
		1	RC(+)	
		2	RC(-)	
		Mating Cor XHP-2	nector (Term	inal)
		BXH-0017	T-P0.6)

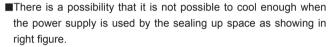
Assembling and Installation Method

Installation method

- ■This power supply is manufactured by SMD technology. Do not touch any SMD components on the unit. Be especially careful when handling.
- ■If using a metal chassis, keep proper insulation between the component and metal chassis, use the spacer of 8mm or more between bottom of power supply and metal chassis.

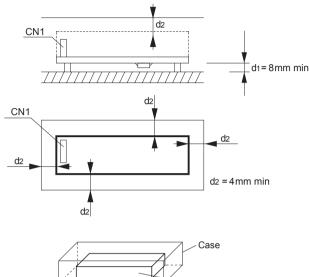
If d1 and/or d2 are less than the value mentioned in right figure, insert an insulating sheet with reinforced insulation between the power supply unit and metal chassis.

The following distance is not satisfactory for cooling condition. Please refer to "Derating" and Instruction Manual 3 for cooling method.

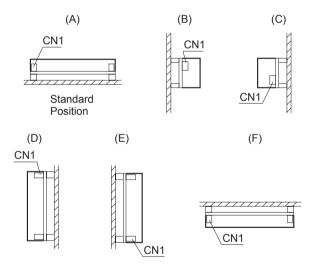


Please use it after confirming the temperature of points ① and points ② of Instraction Manual 3.

- ■Installation method shown right is possible.
- ■In optional -SN, Method (F) is not available with convection cooling. If method (F) is used, use with forced air cooling or derate temperature / load. For more details, please contact us.

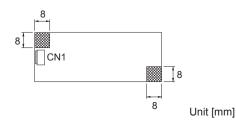


Power supply



Mounting screw

- \blacksquare The mounting screw should be ϕ 3mm. The hatched area shows the allowance of metal parts for mounting.
- LHA10F, LHA15F, LHA30F



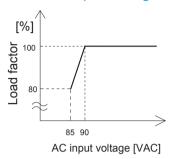
LHA50F, LHA75F, LHA100F, LHA150F, LHA300F



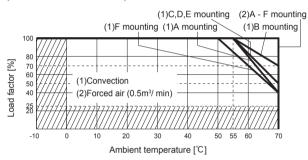
- ■If mounting metallic fittings on the board surface, ensure there is no contact with components.
- ■This product uses SMD technology. Please avoid the PCB installation method which includes the twisting stress or the bending stress.



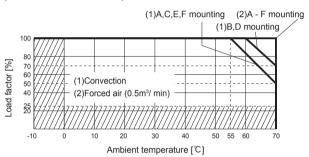
Derating curve for input voltage



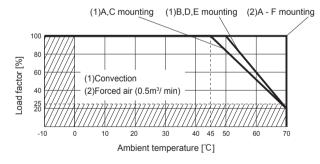
LHA10F-3R3-Y,-5,-12 Ambient temperature derating curve (Reference value)



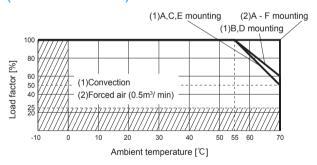
LHA10F-15,-24 Ambient temperature derating curve (Reference value)



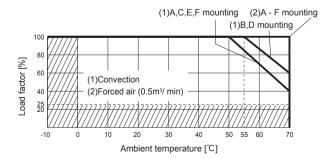
LHA10F-3R3-SNY,-5-SN,-12-SN Ambient temperature derating curve (Reference value)



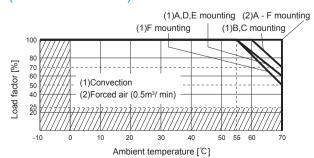
LHA10F-15-SN,-24-SN Ambient temperature derating curve (Reference value)



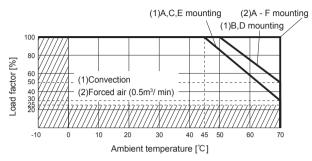
LHA15F-3R3-Y,-5,-12 Ambient temperature derating curve (Reference value)



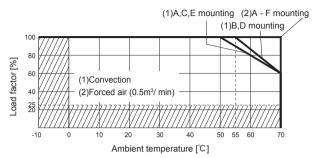
LHA15F-15,-24 Ambient temperature derating curve (Reference value)



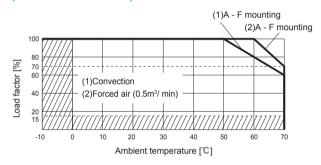
 LHA15F-3R3-SNY,-5-SN,-12-SN Ambient temperature derating curve (Reference value)



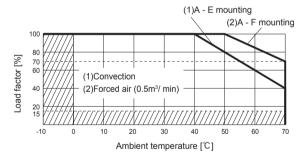
LHA15F-15-SN,-24-SN
 Ambient temperature derating curve (Reference value)



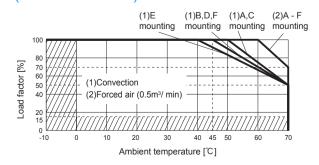
 LHA30F-3R3-Y,-5,-12,-15,-24
 Ambient temperature derating curve (Reference value)



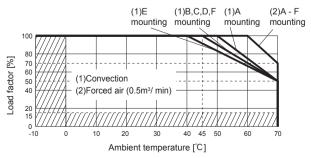
 LHA30F-3R3-SNY,-5-SN,-12-SN,-15-SN,-24-SN Ambient temperature derating curve (Reference value)



■ LHA50F-3R3-Y, -5, -24, -36, -48 Ambient temperature derating curve (Reference value)

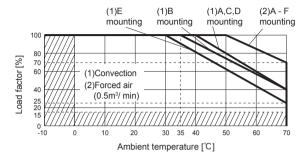


LHA50F-12, -15
 Ambient temperature derating curve (Reference value)

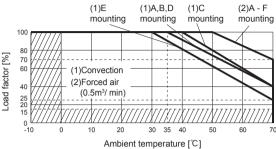




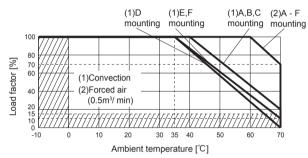
LHA50F-3R3-SNY.-12-SN.-24-SN.-36-SN.-48-SN Ambient temperature derating curve (Reference value)



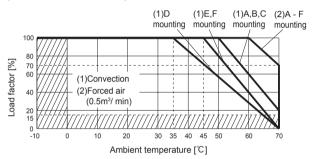
LHA50F-5-SN.-15-SN Ambient temperature derating curve (Reference value)



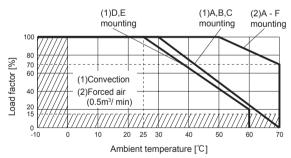
LHA75F-3R3-Y, -5 Ambient temperature derating curve (Reference value)



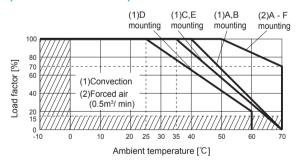
) LHA75F-12, -15, -24, -36, -48 Ambient temperature derating curve (Reference value)



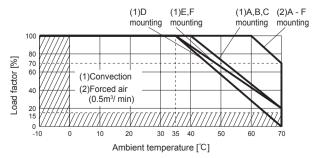
LHA75F-3R3-SNY,-5-SN Ambient temperature derating curve (Reference value)



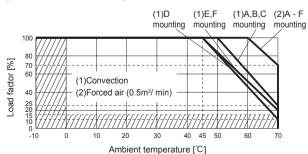
LHA75F-12-SN,-15-SN,-24-SN,-36-SN,-48-SN Ambient temperature derating curve (Reference value)



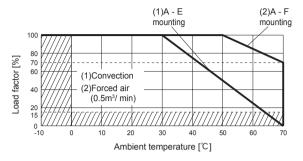
■ LHA100F-5 Ambient temperature derating curve (Reference value)



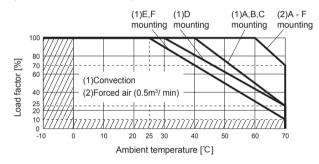
LHA100F-12, -15, -24, -36, -48 Ambient temperature derating curve (Reference value)



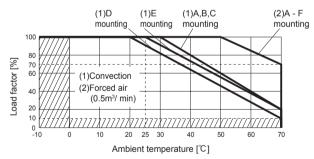
LHA100F-5-SN
 Ambient temperature derating curve (Reference value)



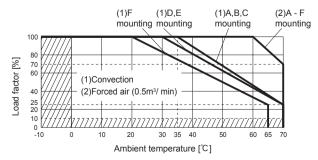
 LHA150F-12 Ambient temperature derating curve (Reference value)



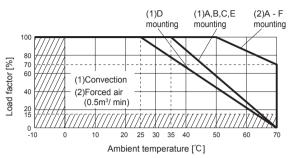
LHA150F-12-SN
 Ambient temperature derating curve (Reference value)



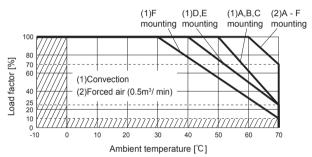
LHA300F-12-Y Ambient temperature derating curve (Reference value)



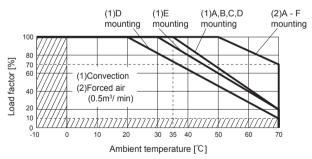
 LHA100F-12-SN,-15-SN,-24-SN,-36-SN,-48-SN Ambient temperature derating curve (Reference value)



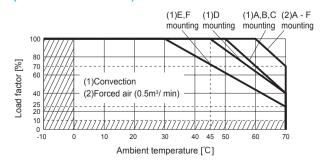
LHA150F-24, -36, -48
 Ambient temperature derating curve (Reference value)



 LHA150F-24-SN, -36-SN, -48-SN Ambient temperature derating curve (Reference value)

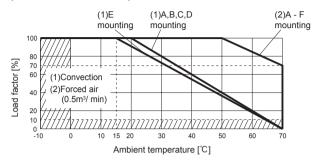


■ LHA300F-24-Y, -48-Y Ambient temperature derating curve (Reference value)

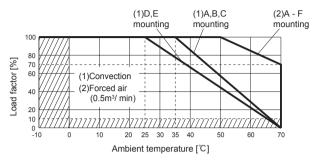




LHA300F-12-SNY Ambient temperature derating curve (Reference value)



LHA300F-24-SNY, -48-SNY Ambient temperature derating curve (Reference value)



- ■The operating ambient temperature is different by with / without chassis cover or mounting position.
- ■In the hatched area, the specification of Ripple, Ripple Noise is different from other area.
- The ambient temperature should be measured 5 to 10 cm away from the power supply so that it won't be influenced by the heat from the power supply.
- ■Please make sure the maximum component temperature rise given in Instruction manual 3 is not exceeded.
- ■Please contact us for more information about operating ambient temperature.

Instruction Manuals

Please see catalog and instructionmanual before you use.

Instruction Manuals https://www.cosel.co.jp/redirect/catalog/en/LHA/ Before using our product https://en.cosel.co.jp/technical/caution/index.html





Basic Characteristics Data

Model	Circuit method	Switching frequency	Input Inrush current		PCB/Patte	ern		Series/Parallel operation availability	
Iviodei	Circuit method	[kHz] *1 *2		protection	Material	Single sided	Double sided	Series operation	Parallel operation
LHA10F	Flyback converter	20 to 125	0.26	Resistance *4	CEM-3	Yes	-	Yes	No
LHA15F	Flyback converter	20 to 125	0.35	Thermistor	CEM-3	Yes	-	Yes	No
LHA30F	Flyback converter	30 to 130	0.62	Thermistor	FR-4	-	Yes	Yes	No
LHA50F	Flyback converter	30 to 130	1.05	Thermistor	FR-4	-	Yes	Yes	No
LHA75F	Active filter	15 to 300	0.9	Thermistor	FR-4		Yes	Yes	No
LHA/5F	Flyback converter	50 to 140	0.9	mermision	FN-4	-	res	res	INO
1114400	Active filter	15 to 300	1.2	Theymieter	FR-4		V/2.2	Yes	No
LHA100F	Flyback converter	35 to 130	1.2	Thermistor	FR-4	-	Yes	res	INO
1 11 1 1 5 0 5	Active filter	15 to 300	1.8	Thermister	FR-4		Yes	Yes	No
LHA150F	LLC resonant converter	90 to 280	1.8	Thermistor	г п- 4	-	res	res	INO
1114000	Active filter	15 to 300	0.5	Theymieter	ED 4		\/	.,	No
LHA300F	LLC resonant converter	65 to 200	3.5	Thermistor	FR-4	-	Yes	Yes	No

^{*1} The value changes depending on input and load.

^{*2} At light load, burst operation is performed to reduce input power. The switching frequency is changed by using condition. Please contact us for more details.

^{*3} The value of input current is at ACIN 100V and rated load.

^{*4} Resistance of the line filter.