











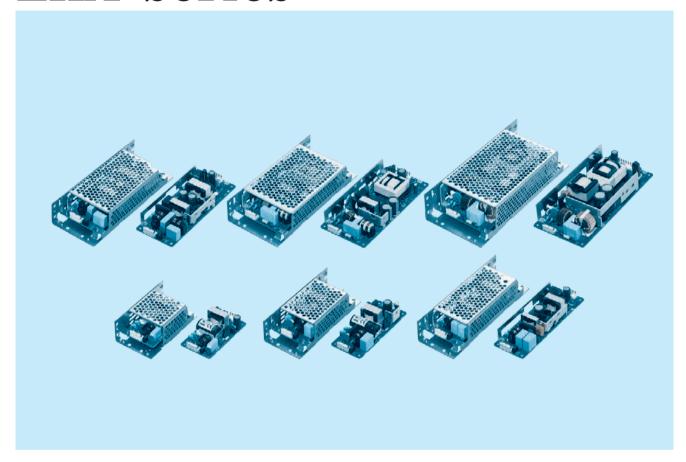








LHA-series



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

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

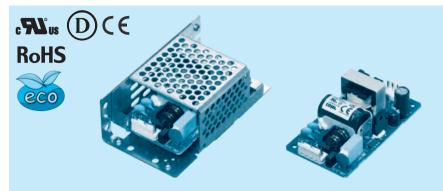
EN61000-4-5

EN61000-4-6

EN61000-4-8

EN61000-4-11

30



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(Tyco)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

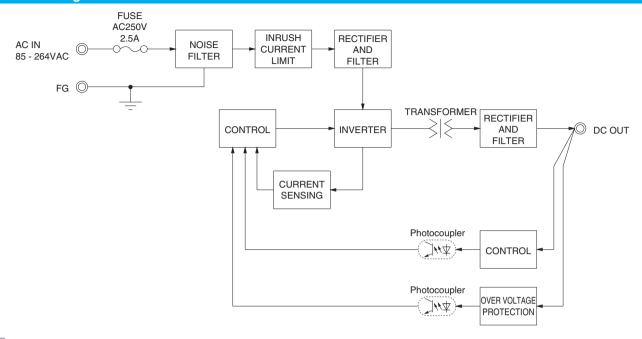
SPECIFICATIONS

	MODEL		LHA30F-3R3-Y	LHA30F-5	LHA30F-12	LHA30F-15	LHA30F-24			
	VOLTAGE[VAC]	*2	85 - 264 1 φ (Refer to	"Derating" and Instru	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			
	EFFICIENCI[%]	ACIN 230V	85.5typ	87.0typ	88.5typ	89.0typ	90.0typ			
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100%) Ta=	25°C at cold start						
	INNUSH CONNENT[A]	ACIN 230V	35typ (lo=100%) Ta=25℃ at cold start							
	LEAKAGE CURREN	T[mA]	0.20 / 0.45max (ACIN	I 100V / 240V 60Hz,	o=100%, According to	IEC62368-1 and DEN	I-AN)			
	VOLTAGE[V]		3.3	5	12	15	24			
	CURRENT[A]	*2	6.0	6.0	2.5	2.0	1.3			
	LINE REGULATION[mV] *3	20max	20max	48max	60max	96max			
	LOAD REGULATION		40max	40max	100max	120max	150max			
	DIDDI ElmVa al	0 to +50°C	80max	80max	120max	120max	120max			
	RIPPLE[mVp-p]	-10 to 0℃	140max	140max	160max	160max	160max			
	PUT RIPPLE NOISE[mVp-p]	lo=0 to 15%	300max	300max	300max	300max	300max			
		0 to +50℃	120max	120max	150max	150max	150max			
DUTPUT		-10 to 0℃	160max	160max	180max	180max	180max			
74	lo=0 to 15%	360max	360max	360max	360max	360max				
	TEMPERATURE REGULATION[mV]	0 to +50°C	50max	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	RANGE[V]	2.85 to 3.63	Fixed ("Y"option is a	vailable for adjusting o	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			
PROTECTION	OVERCURRENT PROT	ECTION	Works over 105% of	rating and recovers au	tomatically					
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							
, <u>L</u>	REMOTE SENSING		Not provided							
	INPUT-OUTPUT		, ,			(At Room Temperature				
SOLATION	INPUT-FG		, ,			(At Room Temperature	e)			
	OUTPUT-FG		,			At Room Temperature)				
	OPERATING TEMP., HUMID. AND A				g), 5,000m (16,500fee					
NVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE			g), 9,000m (30,000fee	<u> </u>				
IVINIENI	VIBRATION				60minutes each along	y X, Y and Z axis				
	IMPACT			ns, once each X, Y an						
SAFETY AND	AGENCY APPROVAL					N62368-1, Complies wi	th DEN-AN			
NOISE	CONDUCTED NOISE			<u>, , , , , , , , , , , , , , , , , , , </u>	, CISPR32-B, EN5501					
REGULATIONS	HARMONIC ATTENU				built-in power factor c					
OTHERS	CASE SIZE/WEIGHT		•		- , , ,	nax (with chassis & co	ver : 210g max)			
JIILIIO	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.

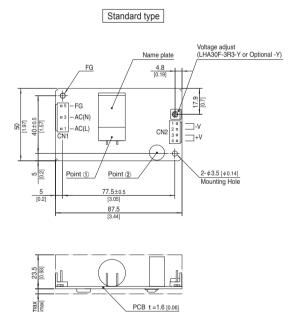
LHA-2





External view

* External size of option is different from standard type.



- Chassis and cover type Voltage adjust (LHA30F-3R3-SNY or Optional -SNY) 97.5±0.5 ė₩ AC(N) 9 AC(L) Ф **(2)** (A) 00 Point ① Point ② 4-M4 Mounting Hole CN2 2- φ 4.5 [φ 0.18] Mounting Hole Name plate 97.5±0.5 [3.84] Mounting Hole 00000000 37.5 [1.48] 35.5 [1.4] ф 8.5 2- φ 4.5 [φ 0.18] Mounting Hole
- % 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			
ONIA	D0D5 \// I	VILID EN	Chain	SVH-21T-P1.1	
CNT	B3P5-VH	VHR-5N	Loose	BVH-21T-P1.1	
ONIO	B4P-VH	VHR-4N	Chain	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 (Tyco Electronics) connector type.
- 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]

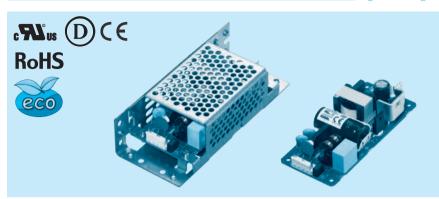
CN1

Weight: 100g max (with chassis and cover: 210g max)

CN2

- ※ PCB Material / thickness : FR-4 / 1.6mm [0.06]
- Mounting torque (Mounting hole of chassis): 1.5N·m max

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(Tyco)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

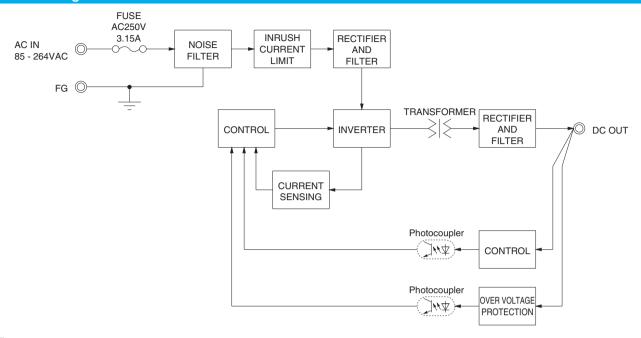
SPECIFICATIONS

	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								
	FREQUENCY[Hz]		50 / 60 (45 - 440)								
NPUT	EFFICIENCY[%]	ACIN 100V	80.0typ	83.0typ	87.0typ	85.5typ	86.0typ	86.5typ	86.5typ		
	EFFICIENCT[%]	ACIN 230V	83.5typ	86.5typ	90.5typ	89.0typ	89.0typ	90.0typ	90.0typ		
	ACIN 100V		15typ (lo=100%) Ta=25°C at col	d start						
	INRUSH CURRENT[A] ACIN 100V		35typ (lo=100%	35typ (Io=100%) Ta=25°C at cold start							
	LEAKAGE CURREN	T[mA]	0.30 / 0.65max	(ACIN 100V / 24	0V 60Hz, lo=10	00%, According to	DIEC62368-1 ar	nd 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°C	80max	80max	120max	120max	120max	150max	150max		
	RIPPLE[mVp-p]	-10 to 0℃	140max	140max	160max	160max	160max	200max	200max		
OUTPUT RIPPLE NOISE[mVp-p]	**	lo=0 to 15%	300max	300max	300max	300max	300max	300max	300max		
	0 to +50°C	120max	120max	150max	150max	150max	250max	250max			
	-10 to 0℃	160max	160max	180max	180max	180max	300max	300max			
	**	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		
	TEMPERATURE REQUESTION[IIIV]	-10 to +50°C	60max	60max	150max	180max	290max	450max	600max		
	DRIFT[mV]	*5	20max	20max	48max	60max	96max	144max	192max		
	START-UP TIME[ms]		40typ (ACIN 100V, lo=100%)								
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%) / 140typ (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	34.50 to 37.50	46.00 to 50.00		
DOTEOTION	OVERCURRENT PROT	ECTION	Works over 105	% of rating and	recovers automa	atically					
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								
JIIILIIG	REMOTE SENSING		Not provided								
	INPUT-OUTPUT					$000V$ 100M Ω mir					
SOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)								
	OUTPUT-FG					OV 100M Ω min (rature)			
	OPERATING TEMP., HUMID. AND A	ALTITUDE *2				000m (16,500fee					
NVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20	0 - 90%RH (Non	condensing), 9,	000m (30,000fee	t) max				
INVINUINIENI	VIBRATION		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							olies with DEN-A	N		
NOISE	CONDUCTED NOISE					SPR32-B, EN550		В			
REGULATIONS	HARMONIC ATTENU	JATOR *6	Complies with I	EC61000-3-2 (C	lass A) (No buil	t-in power factor	correction)				
OTHERS	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)		
DIMENS	COOLING METHOD	*2	Convection/For	ced air (Requires	s external fan) (F	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.

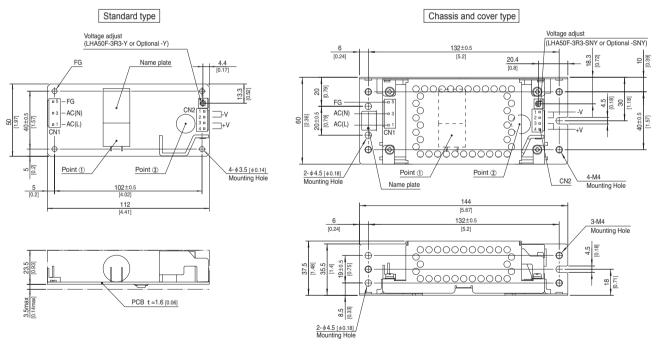
LHA-4





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			
ONIA	CN1 B3P5-VH	VILID EN	Chain	SVH-21T-P1.1	
CNT		VHR-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.)

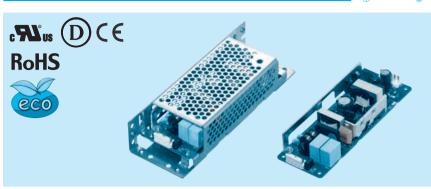
- * I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (Tyco Electronics) connector type.
- CN1 CN₂ Pin No. Pin No. Output Input AC(L) 1, 2 AC(N) 3 3. 4 4 FG
- ※ Pin No.2 and 4 is NC at CN1.
- ※ Keep drawing current per pin below 5A for CN2.
- ※ Dimensions in mm, []=inches
- % Tolerance : ±1 [±0.04]
- Weight: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

-V

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

LHA75F

A 75 F



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(Tyco)connector type

S: with Chassis

SN: with Chassis & cover

Y: with Potentiometer

For option details, refer to Instruction Manual 6.

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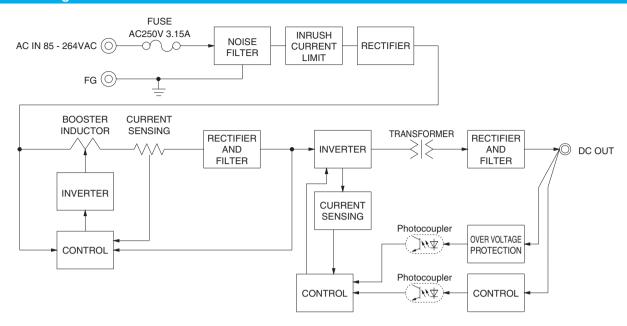
MODEL	LHA75F-3R3-Y	LHA75F-5	LHA75F-12	LHA75F-15	LHA75F-24	LHA75F-36	LHA75F-48
MAX OUTPUT WATTAGE[W] *2	39.6	60	75.6	75	76.8	75.6	76.8
DC OUTPUT *2	3.3V12A	5V12A	12V6.3A	15V5A	24V3.2A	36V2.1A	48V1.6A

SPECIFICATIONS

	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)					
	CURRENT[A]	ACIN 100V	0.6typ	0.8typ	0.9typ						
	CONNENT[A]	ACIN 230V		0.4typ	0.5typ						
	FREQUENCY[Hz]		50 / 60 (45 - 66)								
INPUT EFFICIENCY	EEEICIENCVI0/1	ACIN 100V	74.0typ	79.0typ	84.5typ	85.5typ	86.0typ	87.5typ	87.5typ		
	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							
	FOWER PACTOR (10=100%)	ACIN 230V	0.70typ	0.80typ							
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100%	yp (Io=100%) Ta=25℃ at cold start							
	INNUSH CONNENT[A]	ACIN 230V		at col							
	LEAKAGE CURRENT	T[mA]	0.40 / 0.75max	(ACIN 100V / 24	0V 60Hz, lo=10	00%, According t	to IEC62368-1 ar	nd 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[I	mV] *3	20max	20max	48max	60max	96max	144max	192max		
	LOAD REGULATION	[mV] *3	40max	40max	100max	120max	150max	240max	240max		
	RIPPLE[mVp-p]	0 to +50°C *7	80max	80max	120max	120max	120max	150max	150max		
		-10 to 0℃	140max	140max	160max	160max	160max	200max	200max		
		lo=0 to 15%	300max	300max	360max	500max	500max	500max	500max		
	DIDDLE HOLDER IV. 1	0 to +50°C *7	120max	120max	150max	150max	150max	250max	250max		
JTPUT RIPPLE NOISE[mVp-p]	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 RECUI ATION(VI	0 to +50°C *7	50max	50max	120max	150max	240max	360max	480max		
	TEMPERATURE REGULATION[mV]	-10 to +50℃*7	60max	60max	150max	180max	290max	450max	600max		
	DRIFT[mV]	*5	20max	20max	48max	60max	96max	144max	192max		
	START-UP TIME[ms]		100typ (ACIN 100V, Io=100%)								
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)								
	OUTPUT VOLTAGE ADJUSTMENT	RANGE[V]	2.85 to 3.63	Fixed ("Y"option		djusting output vo	oltage 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	34.50 to 37.50	46.00 to 50.00		
POTEOTION	OVERCURRENT PROT	ECTION	Works over 105	% of rating and	recovers automa	atically	*	`			
ROTECTION RICUIT 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		
THERS	OPERATING INDICA	TION	Not provided								
IIILNO	REMOTE SENSING		Not provided								
	INPUT-OUTPUT		AC3,000V 1mir	ute, Cutoff curre	nt = 10mA, DC5	$00V~100 { m M}\Omega$ mi	n (At Room Temp	perature)			
SOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω 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	-10 to +70°C, 20	0 - 90%RH (Non	condensing), 5,	000m (16,500fee	et) max				
NVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20	0 - 90%RH (Non	condensing), 9,	000m (30,000fee	et) max				
NVINONWENT	VIBRATION		10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis								
	IMPACT		196.1m/s ² (20G	i), 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, Comp	olies with DEN-A	N		
IOISE	CONDUCTED NOISE		Complies with F	CC-B, VCCI-B,	CISPR11-B, CIS	SPR32-B, EN550	11-B, EN55032-	В			
REGULATIONS	HARMONIC ATTENU	JATOR *6	Complies with I	EC61000-3-2 (C	lass A)						
OTHERS	CASE SIZE/WEIGHT		50×27×150m	m [1.97×1.07×	5.91 inches] (W X	(H×D) / 190g m	ax (with chassis	& cover : 370g m	nax)		
	COOLING METHOD	-	Convection/For								

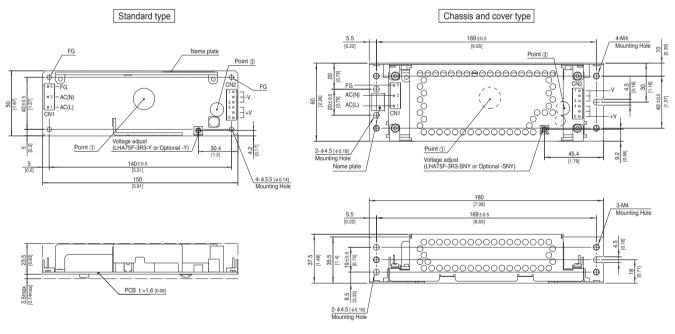
- The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
- Derating is required.
- At low load conditions, the burst mode operation will start. To check load regulation, you
- will need to measure the characteristics at average mode 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			
ONIA	CN1 B3P5-VH	VILID EN	Chain	SVH-21T-P1.1	
CNT		VHR-5N	Loose	BVH-21T-P1.1	
ONIO	DOD VIII	V/LID ON	Chain	SVH-21T-P1.1	
CN2	B6P-VH	VHR-6N	Loose	BVH-21T-P1.1	

(Mfr: J.S.T.)

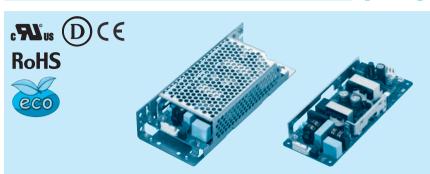
- * I/O Connector is Mfr.J.S.T.
- ※ Option:-J4:EP (Tyco Electronics) connector type.
- CN1 Pin No. 3 4

	CN2	
Input	Pin No.	Output
AC(L)	1 to 3	-V
AC(N)	4 to 6	+V
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 : Hot-dip galvanizing steel board
- ※ Mounting torque (Mounting hole of chassis): 1.5N⋅m max

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(Tyco)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

SPECIFICATIONS

	IODEL		LHA100F-5	LHA100F-12	LHA100F-15	LHA100F-24	LHA100F-36	LHA100F-48		
V	OLTAGE[VAC]	*2	85 - 264 1 φ (Refe	er to "Derating" and	Instruction Manual	1.1)				
_	URRENT[A]	ACIN 100V	1.0typ	1.2typ						
	ONNENT[A]	ACIN 230V	0.5typ	0.6typ						
F	REQUENCY[Hz]		50 / 60 (45 - 66)							
_		ACIN 100V	82.0typ	87.0typ	88.0typ	86.5typ	87.0typ	87.0typ		
NPUT E	FFICIENCY[%]	ACIN 230V	84.0typ	89.0typ	90.0typ	89.0typ	89.0typ	89.0typ		
		ACIN 100V	0.97typ	0.97typ	7.	71	7.	, ,,		
PC	OWER FACTOR (Io=100%)	ACIN 230V	0.83typ	0.87typ						
		ACIN 100V		a=25℃ at cold sta	rt					
II.	NRUSH CURRENT[A]	ACIN 230V	71 \	a=25℃ at cold sta						
L	EAKAGE CURREN		71 \		60Hz, lo=100%, Acc	cording to IEC6236	8-1 and DFN-AN)			
	OLTAGE[V]	. []	5	12	15	24	36	48		
	CURRENT[A]	*2	15.0	8.5	6.7	4.3	2.8	2.1		
	INE REGULATION[20max	48max	60max	96max	144max	192max		
	OAD REGULATION		40max	100max	120max	150max	240max	240max		
-	III GOLAHON	0 to +50℃*7	80max	120max	120max	120max	150max	150max		
R	RIPPLE[mVp-p]	-10 to 0°C	140max	160max	160max	160max	200max	200max		
	*4		300max	360max	500max	500max	500max	500max		
<u> </u>		0 to +50°C *7	120max	150max	150max	150max	250max	250max		
LITELIT RI	TPUT RIPPLE NOISE[mVp-p]	-10 to 0°C	160max	180max	180max	180max	300max	300max		
OIF OI		lo=0 to 15%	360max	400max	600max	600max	600max	600max		
		0 to +50°C *7	50max	120max	150max	240max	360max	480max		
TE	EMPERATURE REGULATION[mV]	-10 to +50°C *7	60max	150max	180max	290max	450max	600max		
D	DRIFT[mV] START-UP TIME[ms]	*5	20max	48max	60max	96max	144max	192max		
_			100typ (ACIN 100		Oomax	Joinax	ITTIIIAX	TOZITIAX		
	IOLD-UP TIME[ms]		20typ (ACIN 100V							
	UTPUT VOLTAGE ADJUSTMENT	RANGE[V]			ting output voltage	hetween ±10%)				
	UTPUT VOLTAGE SET	- 11	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		
	VERCURRENT PROT			of rating and recov		20.00 to 20.00	04.00 10 07.00	+0.00 10 30.00		
	VERVOLTAGE PROTE		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		Not provided	10.00 to 10.00	17.20 to 21.00	27.00 to 00.00	1 + 1.40 to 50.40	33.20 10 07 .20		
	REMOTE SENSING		Not provided							
·	REMOTE CONTROL	(BC)		etruction Manual 6	: 1)					
	NPUT-OUTPUT-RC			Option (Refer to Instruction Manual 6.1) AC3,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)						
IN	NPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)							
SOLATION —	UTPUT·RC-FG	*8			mA, DC500V 100M					
	OUTPUT-RC	*8			mA, DC100V 10M					
	PERATING TEMP.,HUMID.AND A				lensing), 5,000m (1		mporataro)			
\$1	TORAGE TEMP., HUMID.AND				lensing), 9,000m (3					
VVIRONMENT —	IBRATION	ALITIODE			eriod, 60minutes e		7 avis			
	MPACT			11ms, once each X		acraiong A, r and	_ 3/10	<u> </u>		
	GENCY APPROVAL	S				68-1) FN62368-1	Complies with DEN	J-AN		
	CONDUCTED NOISE	,			R11-B, CISPR32-B			47114		
	IARMONIC ATTENU			61000-3-2 (Class A		, LINOSOTI-D, LINO	000 <u>2</u> -D			
	ASE SIZE/WEIGHT					/ 250g may (with c	hassis & cover : 45	 Ωα may)		
)IHERS —	COOLING METHOD	*2			ernal fan) (Refer to '		11a3313 & CUVET . 43	og max)		
U	COLING WILLIAUD	*2	Convection/i dice	a an (nequires exte	ina ian) (neiel to	Derailing)				

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

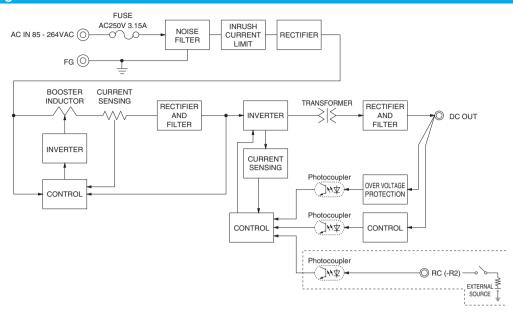
 Derating is required.

 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 $^{\circ}$ C, with the input voltage held constant at the rated input/output.
- Please contact us about another class.

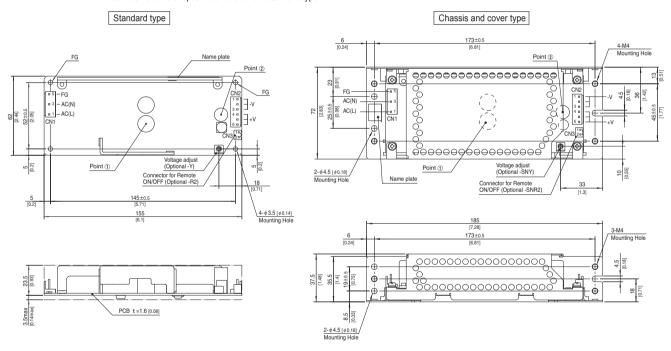
- rrease contact us about another class. 5V output product, the maximum temperature of 40°C. Applicable when Remote ON/OFF (optional) is added. To meet the specification, do not operate overload condition. Parallel operation is not possible. Sound noise may be generated by power supply in case of pulse 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
	-211-61.1
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 (Tyco Electronics) 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: Hot-dip galvanizing steel board
 Mounting torque (Mounting hole of chassis): 1.5N·m max

CN1	CN2			
Pin No.	Input		Pin No.	Output
1	AC(L)		1 to 3	-V
2			1 10 3	-v
3	AC(N)		4 to 6	+V
4			4 10 0	+ν
5	FG			

×.	Din	No.2	and	1	ic	NIC	at	CN1	
ж.	PIII	INO.Z	anu	4	ıs	INC	aı	CIVI	

* Keep drawing current per pin below 5A for CN2.

CN3 Option (Mfr:J.S.T.)					
PIN No.					
1	RC(+)				

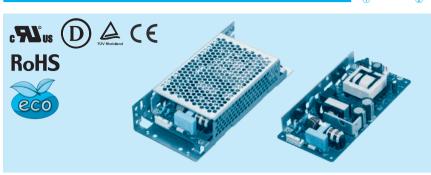
RC(-)

Model B2B-XH-A Mating Connector (Terminal) XHP-2

BXH-001T-P0.6

or SXH-001T-P0.6

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(Tyco)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

SPECIFICATIONS

	MODEL		LHA150F-12	LHA150F-24	LHA150F-36	LHA150F-48		
	VOLTAGE[VAC]	*2	85 - 264 1 φ (Refer to "Dera	ting" and Instruction Manual	1.1)			
	OUDDENTIAL	ACIN 100V	1.8typ					
	CURRENT[A]	ACIN 230V						
	FREQUENCY[Hz]		50 / 60 (45 - 66)					
	EEEIOIENOVIO/1	ACIN 100V	86.5typ	89.0typ	89.5typ	90.0typ		
INPUT	EFFICIENCY[%]	ACIN 230V	89.5typ	92.0typ	92.5typ	93.0typ		
	DOWED FACTOR (L. 4000()	ACIN 100V	0.99typ					
	POWER FACTOR (Io=100%) ACIN 230		0.91typ					
	INRUSH CURRENT[A] ACIN 100V ACIN 230V		15typ (Io=100%) Ta=25℃ a	t cold start				
			35typ (Io=100%) Ta=25℃ a	t cold start				
	LEAKAGE CURREN	T[mA]	0.40 / 0.75max (ACIN 100V	/ 240V 60Hz, lo=100%, Acc	ording to IEC62368-1 and DE	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		
	DIDDI Elm\/n n3	0 to +50℃*7	120max	120max	150max	150max		
	RIPPLE[mVp-p]	-10 to 0℃	160max	160max	200max	200max		
		lo=0 to 10%	160max	160max	200max	200max		
	DIDDI E NOICEIV1	0 to +50°C *7	150max	150max	250max	250max		
OUTPUT	RIPPLE NOISE[mVp-p] *4	-10 to 0℃	180max	180max	300max	300max		
		lo=0 to 10%	230max	230max	300max	300max		
	TEMPERATURE REGULATION[mV]	0 to +50°C *7	120max	240max	360max	480max		
	TEMPERATURE REGULATION[IIIV]	-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			for adjusting output voltage I				
	OUTPUT VOLTAGE SET		11.50 to 12.50	23.00 to 25.00	34.50 to 37.50	46.00 to 50.00		
	OVERCURRENT PROT		Works over 105% of rating a		1			
PROTECTION	OVERVOLTAGE PROTI		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	-	<u> </u>	Not provided				
	REMOTE ON/OFF		Option (Refer to Instruction		MO /ALD T			
	INPUT-OUTPUT-RC	*8	AC3,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)					
ISOLATION	INPUT-FG OUTPUT-RC-FG	*8	AC2,000V 1minute, Cutoff current = 10mA, DC500V 100M Ω min (At Room Temperature)					
	OUTPUT-RC	*8	(· · · · · · · · · · · · · · · · · · ·					
	OPERATING TEMPHUMID.AND		AC100V 1minute, Cutoff current = 25mA, DC100V 10M Ω min (At Room Temperature) -10 to +70 $^{\circ}$ C, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max (EN62477-1 (OVC III) : 2,000m (6,600feet) max)					
	STORAGE TEMP., HUMID. AND							
ENVIRONMENT	VIBRATION	ALIIIODE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max 10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis					
	IMPACT		196.1m/s² (20G), 11ms, one		2011 GIOTIS A, 1 GITG 2 GAIS			
SAFETY AND	AGENCY APPROVA	LS			1). EN62368-1. EN62477-1 (O	VC III), Complies with DEN-AN		
NOISE	CONDUCTED NOISE		, , ,	I-B, CISPR11-B, CISPR32-B		, , complice man DEIT / III		
	HARMONIC ATTENU		Complies with IEC61000-3-		,,			
	CASE SIZE/WEIGHT				/ 320g max (with chassis & c	over : 570g max)		
OTHERS	COOLING METHOD	*2		uires external fan) (Refer to "				

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

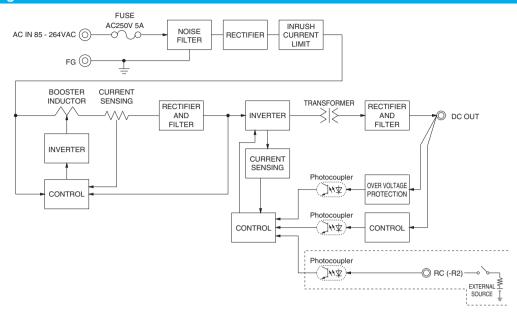
 Derating is required.

 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.



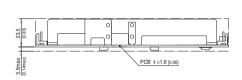


External view

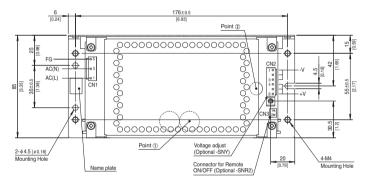
* External size of option is different from standard type.

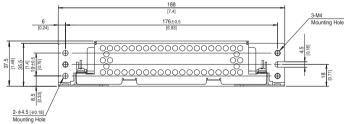
Point ② 93 - AC(N) - AC(L) Point ① I- φ3.5 [φ0.14]

Standard type



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	B3P5-VH	VILID EN	Chain	SVH-21T-P1.1
CNT	B3P5-VH	VHR-5N	Loose	BVH-21T-P1.1
ONIO	DOD VIII	VHR-6N	Chain	SVH-21T-P1.1
CNZ	B6P-VH		Loose	BVH-21T-P1.1

(Mfr: J.S.T.)

- ※ I/O Connector is Mfr.J.S.T.
- * Option:-J4:EP (Tyco Electronics) 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: Hot-dip 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

	J1 1/2	
	Pin No.	Output
	1 to 3	-V
	4 to 6	+V
_		

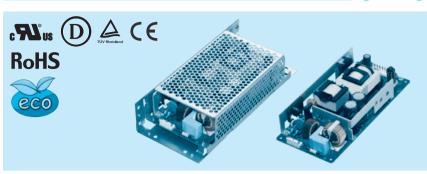
CN3 Option (Mfr:J.S.T.)					
PIN No.	Contents				
1	RC(+)				
2	RC(-)				
Model B2B-XH-A Mating Connector (Terminal) XHP-2					

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

BXH-001T-P0.6 or SXH-001T-P0.6

LHA300F

300



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. ①Series name ②Single output

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

G: Low leakage current

J4: EP(Tyco)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

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.

For option details, refer to 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

SPECIFICATIONS

	MODEL		LHA300F-12-Y	LHA300F-24-Y	LHA300F-48-Y			
	VOLTAGE[VAC]	*2	85 - 264 1 φ (Refer to "Derating" a	and Instruction Manual 1.1)				
	CUDDENTIAL	ACIN 100V	3.5typ					
	CURRENT[A]	ACIN 230V						
	FREQUENCY[Hz]		50 / 60 (45 - 66)					
	EFFICIENCY[0/1	ACIN 100V	90.0typ	91.5typ	92.0typ			
INPUT	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					
	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 / 240	V 60Hz, lo=100%, According to	IEC62368-1 and DEN-AN)			
	VOLTAGE[V]		12	24	48			
	CURRENT[A]	*2	25.0	12.5	6.3			
Ī	LINE REGULATION[mV] *3	48max	96max	192max			
Ī	LOAD REGULATION	[mV] *3	100max	150max	240max			
		0 to +50°C *7	120max	120max	150max			
	RIPPLE[mVp-p]	-10 to 0℃	160max	160max	200max			
	**	lo=0 to 10%	160max	160max	200max			
Ī		0 to +50°C *7	150max	150max	250max			
OUTPUT	RIPPLE NOISE[mVp-p]	-10 to 0℃	180max	180max	300max			
	ተ 4 :	lo=0 to 10%	180max	180max	300max			
	TEMPERATURE REGULATION[mV]	0 to +50°C *7	120max	240max	480max			
		-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 recovers automatically					
PROTECTION	OVERVOLTAGE PROTE	CTION	13.80 to 16.80	27.60 to 33.60	55.20 to 67.20			
CIRCUIT AND	OPERATING INDICA	TION	Not provided					
OTHERS	REMOTE SENSING		Not provided					
	REMOTE ON/OFF		Option (Refer to Instruction Manu					
	INPUT-OUTPUT-RC	*8	AC3,000V 1minute, Cutoff curren					
ISOLATION	INPUT-FG		AC2,000V 1minute, Cutoff curren					
ISOLATION	OUTPUT-RC-FG	*8	AC500V 1minute, Cutoff current = 25mA, DC500V 100M Ω min (At Room Temperature)					
	OUTPUT-RC	*8	AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)					
	OPERATING TEMP., HUMID. AND	ALTITUDE *2	,	<u> </u>	x (EN62477-1 (OVC III) : 2,000m (6,600feet) max)			
ENVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non c					
FIAAIUOMMEMI	VIBRATION		10 - 55Hz, 19.6m/s ² (2G), 3minute	es period, 60minutes each along	X, Y and Z axis			
	IMPACT		196.1m/s² (20G), 11ms, once each X, Y and Z axis					
SAFETY AND	AGENCY APPROVAL				68-1, EN62477-1 (OVC III), Complies with DEN-AN			
NOISE	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, C		1-B, EN55032-B			
REGULATIONS HARMONIC ATTENUATOR ★ Complies with IEC61000-3-2 (Class A)								
OTHERS	CASE SIZE/WEIGHT		84×37×180mm [3.31×1.46×7.	09 inches] (W×H×D) / 580g ma	x (with chassis & cover : 890g max)			
JL110	COOLING METHOD	*2	Convection/Forced air (Requires	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 10% by burst
- 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.

operation.

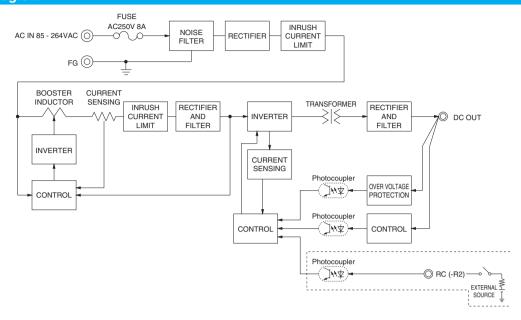
- 12V output product, the maximum temperature of 35℃.
- Applicable when Remote ON/OFF (optional) is added.

- To meet the specification, do not operate overload condition.

 Parallel operation is not possible.

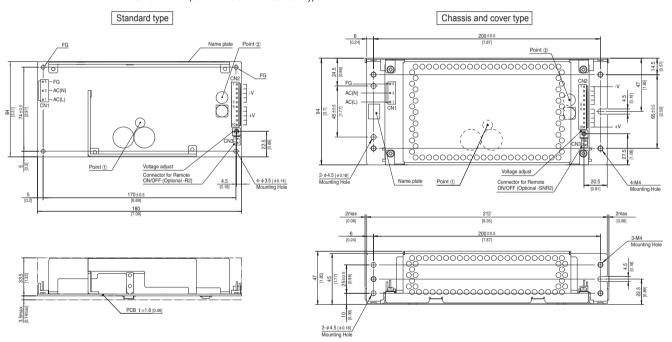
 Sound noise may be generated by power supply in case of pulse





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	D40D \#1	NO DAOD VIII		V/II V/IID 40N	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 (Tyco Electronics) 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: Hot-dip galvanizing steel board
- Mounting torque (Mounting hole of chassis): 1.5N·m max

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

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

CN3 Option (Mfr:J.S.T.)					
Contents					
RC(+)					
RC(-)					
Model B2B-XH-A Mating Connector (Terminal) KHP-2					
	Contents RC(+) RC(-) -XH-A				

BXH-001T-P0.6 or SXH-001T-P0.6

※ Keep drawing current per pin below 5A for CN2.

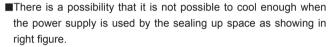
Assembling and Installation Method

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.

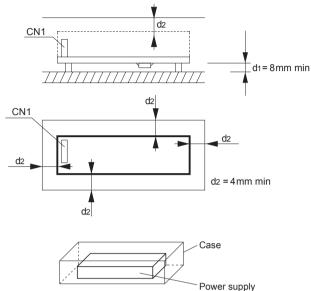
If d1 and/or d2 are less than the value mentioned in right figure, insert an insulating sheet with reinforced insulation between the power supply unit and metal chassis.

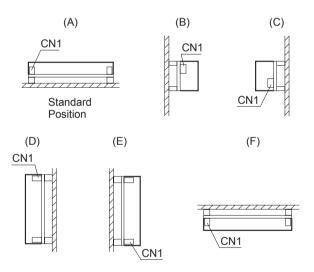
The following distance is not satisfactory for cooling condition. Please refer to "Derating" and Instruction Manual 3 for cooling method.



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.

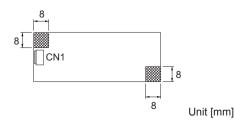




Mounting screw

■The mounting screw should be ϕ 3mm. The hatched area shows the allowance of metal parts for mounting.

LHA30F



LHA50F, LHA75F, LHA100F, LHA150F, LHA300F

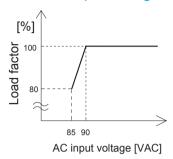


- ■If mounting metallic fittings on the board surface, ensure there is no contact with components.
- ■This product uses SMD technology. Please avoid the PCB installation method which includes the twisting stress or the bending stress.

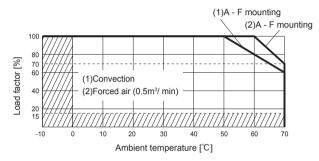


Derating

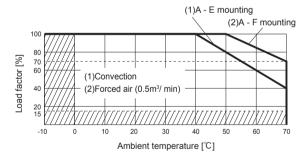
Derating curve for input voltage



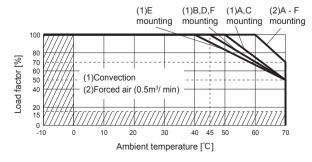
LHA30F-3R3-Y,-5,-12,-15,-24 Ambient temperature derating curve (Reference value)



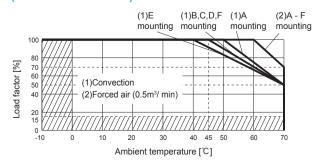
LHA30F-3R3-SNY,-5-SN,-12-SN,-15-SN,-24-SN Ambient temperature derating curve (Reference value)



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



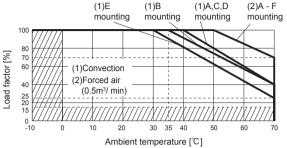
LHA50F-12, -15 Ambient temperature derating curve (Reference value)



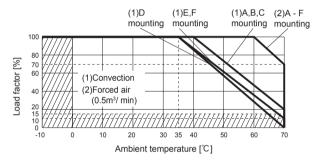
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Derating

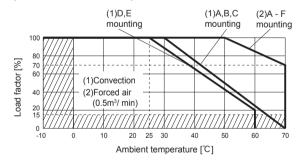
 LHA50F-3R3-SNY,-12-SN,-24-SN,-36-SN,-48-SN Ambient temperature derating curve (Reference value)



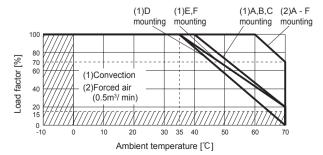
LHA75F-3R3-Y, -5
 Ambient temperature derating curve (Reference value)



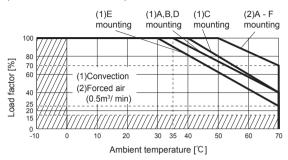
LHA75F-3R3-SNY,-5-SN
 Ambient temperature derating curve (Reference value)



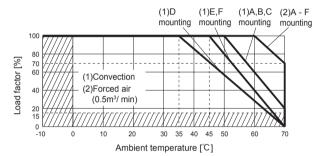
LHA100F-5
 Ambient temperature derating curve (Reference value)



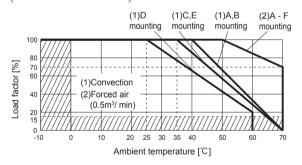
LHA50F-5-SN,-15-SN
 Ambient temperature derating curve (Reference value)



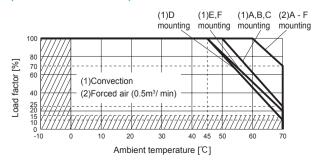
■ LHA75F-12, -15, -24, -36, -48 Ambient temperature derating curve (Reference value)



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



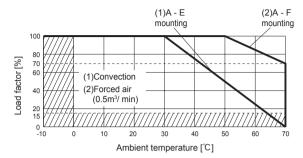
● LHA100F-12, -15, -24, -36, -48 Ambient temperature derating curve (Reference value)



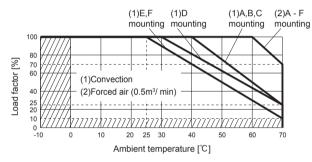


Derating

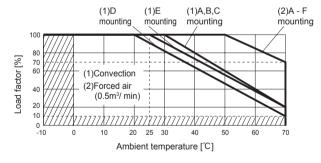
LHA100F-5-SN Ambient temperature derating curve (Reference value)



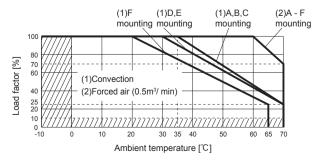
LHA150F-12 Ambient temperature derating curve (Reference value)



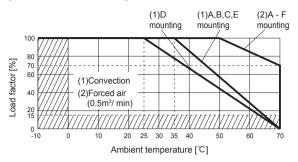
LHA150F-12-SN Ambient temperature derating curve (Reference value)



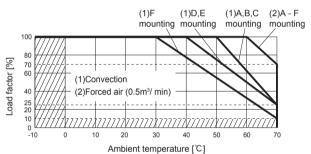
■ LHA300F-12-Y Ambient temperature derating curve (Reference value)



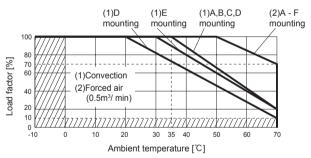
LHA100F-12-SN.-15-SN.-24-SN.-36-SN.-48-SN Ambient temperature derating curve (Reference value)



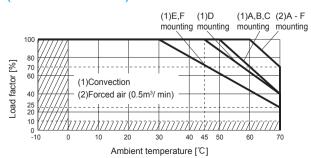
LHA150F-24, -36, -48 Ambient temperature derating curve (Reference value)



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



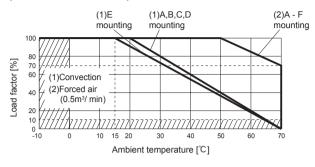
LHA300F-24-Y, -48-Y Ambient temperature derating curve (Reference value)



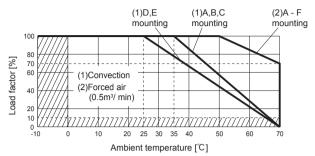
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Derating

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://en.cosel.co.jp/product/powersupply/LHA/ Before using our product https://en.cosel.co.jp/technical/caution/index.html





Basic Characteristics Data

Model	Circuit method frequence	Switching	Input current	Inrush	PCB/Pattern		Series/Parallel operation availability		
		[kHz] *1 *2 *3 [A]	current protection	Material	Single sided	Double sided	Series operation	Parallel operation	
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
	Flyback converter	50 to 140							
LHA100F	Active filter	15 to 300	1.2	Thermistor	FR-4	-	Yes	Yes	No
	Flyback converter	35 to 130							
LHA150F	Active filter	15 to 300	1.8	Thermistor	FR-4	-	Yes	Yes	No
	LLC resonant converter	90 to 280							
LHA300F	Active filter	15 to 300	3.5	Thermistor	FR-4	-	Yes	Yes	No
	LLC resonant converter	65 to 200							

- *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.