

Recommended Noize Filter NAC-04-472



High voltage pulse noise type : NAP series Low leakage current type : NAM series *The Noize Filter is recommended to connect with several devices.

①Series name ②Single output

3 Output wattage

4 Universal input

(5) Output voltage

Optional
 C: with Coating
 G: Low leakage current

J1: VH(J.S.T.)connector type

S: with Chassis

SN: with Chassis & cover Y: with Potentiometer

Specification is changed at option, refer to Instruction Manual.

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

MODEL	LFA10F-3R3-Y	LFA10F-5	LFA10F-12	LFA10F-15	LFA10F-24
MAX OUTPUT WATTAGE[W]	6.6	10	10.8	10.5	12
DC OUTPUT	3.3V 2A	5V 2A	12V 0.9A	15V 0.7A	24V 0.5A

SPECIFICATIONS

LFA

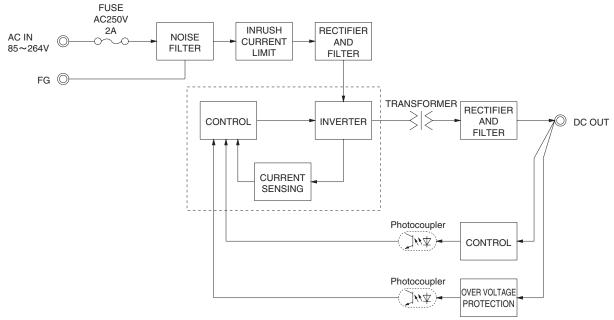
	MODEL		LFA10F-3R3-Y	LFA10F-5	LFA10F-12	LFA10F-15	LFA10F-24		
	VOLTAGE[V]		AC85 - 264 1 φ (Refer to Instruction Manual 1.1 and 3.2) *3						
	OUDDENTIAL	ACIN 100V	0.18typ (lo=100%)						
	CURRENT[A]	ACIN 200V	0.11typ (Io=100%)						
	FREQUENCY[Hz]	•	50 / 60 (47 - 440)						
INPUT	EFFICIENCY[0/]	ACIN 100V	68.0typ	74.0typ	76.5typ	77.5typ	79.5typ		
	EFFICIENCY[%]	ACIN 200V	68.5typ	76.0typ	79.0typ	80.0typ	83.0typ		
	INDUCTI CUDDENTIAL	ACIN 100V	15typ (lo=100%)	•	•		•		
	INRUSH CURRENT[A]	ACIN 200V	30typ (lo=100%)						
	LEAKAGE CURRENT	[mA]	0.15/0.30max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)						
	VOLTAGE[V]		3.3	5	12	15	24		
	CURRENT[A]		2.0	2.0	0.9	0.7	0.5		
	LINE REGULATION[n	nV]	20max	20max	48max	60max	96max		
	LOAD REGULATION	mV]	40max	40max	100max	120max	150max		
		0 to +50°C	80max	80max	120max	120max	120max		
	RIPPLE[mVp-p]	-10 - 0℃	140max	140max	160max	160max	160max		
	*1		190max	160max	240max	240max	280max		
		0 to +50°C	120max	120max	150max	150max	150max		
OUTPUT	RIPPLE NOISE[mVp-p]	-10 - 0℃	160max	160max	180max	180max	180max		
	*1		240max	240max	300max	300max	320max		
	TEMPERATURE REQUIRATIONSVI	0 to +50°C	50max	50max	120max	150max	240max		
	TEMPERATURE REGULATION[mV]	-10 to +50°C	60max	60max	150max	180max	290max		
	DRIFT[mV]	*2	20max	20max	48max	60max	96max		
	START-UP TIME[ms]		200typ (ACIN 100V, Io=100%) *Start-up time is 700ms typ for less than 1minute of applying input again from turning off the input voltage.						
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)						
	OUTPUT VOLTAGE ADJUSTMENT I	RANGE[V]	2.85 to 3.63 Fixed ("Y" option is available for adjusting output voltage between ±10%)						
	OUTPUT VOLTAGE SETT	ING[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 PROTE	ECTION	Works over 105% of	rating and recovers au	tomatically				
PROTECTION	OVERVOLTAGE PROTE	CTION	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		
CIRCUIT AND	OPERATING INDICAT	TION	Not provided						
OTHERS	REMOTE SENSING		Not provided						
	REMOTE ON/OFF		Not provided						
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)						
ISOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)						
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)						
	OPERATING TEMP.,HUMID.AND	ALTITUDE				CURVE), 3,000m (10,0	00 feet) max *3		
ENVIRONMENT	STORAGE TEMP., HUMID. AND A	ALTITUDE		%RH (Non condensing	,,				
ENVIRONMENT	VIBRATION		10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis						
	IMPACT		196.1m/s ² (20G), 11n	ns, once each X, Y and	Z axis				
CAFETY AND	AGENCY APPROVALS (At on	ly AC input)	UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN						
SAFETY AND NOISE	CONDUCTED NOISE			VCCI-B, CISPR-B, EN	55011-B, EN55022-B				
REGULATIONS	CE MARKING		Low Voltage Directive	, EMC Directive					
	HARMONIC ATTENU	ATOR		000-3-2 (Not built-in to					
OTHERS	CASE SIZE/WEIGHT		50×22×73.5mm (W	×H×D) / 55g max (wi	thout chassis and cove	er)			
OTHERS	COOLING METHOD		Convection						

This is the value that measured on measuring board with capacitor of 22 µF at 150mm from output terminal.

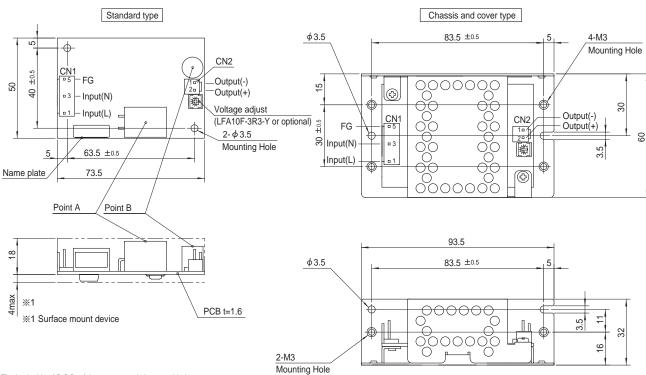
Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103). A circuit reducing standby power is built in this unit. Therefore, the internal switch element is intermittent operated, and the Ripple/Ripple Noise specification in

- load factor Io=0-35% is different. Please refer to the Instruction Manual 1.7.
- 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.
- Derating is required.
- When two or more units are operating it may not
- comply with the IEC61000-3-2. Please contact us for details.
- To meet the specifications. Do not operate over-loaded condition.
- Parallel operation is not possible.
- Derating is required when operated with chassis and cover. Sound noise may be generated by power supply in case of pulse load.

E-4



External view



- % The back side of P.C.B. of the power supply is assembled some SMDs.
- Be attention not to bump against the attached area by vibration. W Use the spacer of 8mm length or more regarding insulation.
- And do not use press-fitting bush.

 ** Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

I/O Connector		Connector Mating connector		erminal	
CNIA	1-1123724-3	1-1123722-5	Chain	1123721-1	
CIVI	1-1123724-3	1-1123722-5	Loose	1318912-1	
CNIO	4 4400700 0	1-1123722-2	Chain	1123721-1	
CN2 1-1123723-2		1-1123722-2	Loose	1318912-1	
(Mf-T Fl(: AMD)					

(Mfr:Tyco Electronics AMP)

- * I/O Connector is Mfr. Tyco Electronics AMP
- Option:-J1:(J.S.T) connector type. Refer to Instruction Manual 5.

<PIN CONNECTION>

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

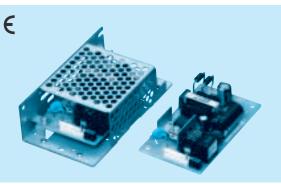
CN2	
Pin No.	Output
1	-V
2	+V

- X Tolerance: ±1
- Weight: 55g max (without chassis and cover)
- * Optional chassis and cover material: Electric galvanizing steel board.
- Mounting torque (Mounting hole of chassis): 0.6N · m (6.3kgf · cm) max

LFA15F-12







Recommended Noize Filter NAC-04-472

High voltage pulse noise type : NAP series

Low leakage current type : NAM series

*The Noize Filter is recommended to connect with several devices.

LFA15F-15

①Series name ②Single output

3 Output wattage 4 Universal input

(5) Output voltage

 Optional
 C: with Coating
 G: Low leakage current J1: VH(J.S.T.)connector type

S: with Chassis

SN: with Chassis & cover Y: with Potentiometer

Specification is changed at option, refer to Instruction Manual.

LFA15F-24

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

LFA15F-3R3-Y LFA15F-5

MODEL	LFA15F-3R3-Y	LFA15F-5	LFA15F-12	LFA15F-15	LFA15F-24
MAX OUTPUT WATTAGE[W]	9.9	15	15.6	15	16.8
DC OUTPUT	3.3V 3A	5V 3A	12V 1.3A	15V 1A	24V 0.7A

SPECIFICATIONS

LFA

MODEL

	MODEL		LFA15F-3R3-Y	LFA15F-5	LFA15F-12	LFA15F-15	LFA15F-24	
	VOLTAGE[V]		AC85 - 264 1 φ (Refer to Instruction Manual 1.1 and 3.2) *3					
	CURRENTIAL	ACIN 100V	0.24typ (lo=100%)	0.35typ (Io=100%)				
	CURRENT[A]	ACIN 200V	0.15typ (lo=100%)	lo=100%) 0.20typ (lo=100%)				
	FREQUENCY[Hz]		50 / 60 (47 - 440)					
INPUT		ACIN 100V	68.0typ	73.0typ	76.0typ	77.0typ	78.0typ	
	EFFICIENCY[%]	ACIN 200V	69.0typ	76.0typ	78.5typ	80.0typ	81.5typ	
		ACIN 100V	15typ (lo=100%) (At	cold start) (Ta=25°C)		-		
	INRUSH CURRENT[A]	ACIN 200V	30typ (lo=100%) (At	cold start) (Ta=25°C)				
	LEAKAGE CURRENT[mA]		0.15/0.30max (ACIN	100V / 240V 60Hz, Io=	100%, According to IE	C60950-1 and DEN-A	AN)	
	VOLTAGE[V]		3.3	5	12	15	24	
	CURRENT[A]		3.0	3.0	1.3	1.0	0.7	
	LINE REGULATION[n	nV]	20max	20max	48max	60max	96max	
	LOAD REGULATION	mV]	40max	40max	100max	120max	150max	
		0 to +50°C	80max	80max	120max	120max	120max	
	RIPPLE[mVp-p]		140max	140max	160max	160max	160max	
	*1	lo=0 - 35%	190max	160max	240max	240max	280max	
		0 to +50°C	120max	120max	150max	150max	150max	
OUTPUT	RIPPLE NOISE[mVp-p]	-10 - 0℃	160max	160max	180max	180max	180max	
	*1	lo=0 - 35%	240max	240max	300max	300max	320max	
	TEMPERATURE REQUIREMENT AT AN	0 to +50℃	50max	50max	120max	150max	240max	
	TEMPERATURE REGULATION[mV]	-10 to +50°C	60max	60max	150max	180max	290max	
	DRIFT[mV]	*2	20max	20max	48max	60max	96max	
	START-UP TIME[ms]		200typ (ACIN 100V, lo=100%) *Start-up time is 700ms typ for less than 1minute of applying input again from turning off the input voltage.					
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)					
	OUTPUT VOLTAGE ADJUSTMENT I	RANGE[V]	2.85 to 3.63	Fixed ("Y" option is	available for adjusting	output voltage betwee	en ±10%)	
	OUTPUT VOLTAGE SETT	ING[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 PROTE	ECTION	Works over 105% of	rating and recovers aut	tomatically		•	
PROTECTION	OVERVOLTAGE PROTE	CTION	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	
CIRCUIT AND	OPERATING INDICAT	TION	Not provided	•	•		<u>'</u>	
OTHERS	REMOTE SENSING		Not provided					
	REMOTE ON/OFF		Not provided					
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)					
SOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)					
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50M Ω min (At Room Temperature)					
	OPERATING TEMP., HUMID. AND	ALTITUDE	-10 to +70°C, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000 feet) max *3					
NVIDONMENT	STORAGE TEMP., HUMID. AND A	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000 feet) max					
NVIRONMENT	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					
	AGENCY APPROVALS (At on	ly AC input)	UL60950-1, C-UL (CS	A60950-1), EN60950-	1, EN50178 Complies	with DEN-AN		
AFETY AND	CONDUCTED NOISE		Complies with FCC-B,	VCCI-B, CISPR-B, EN	55011-B, EN55022-B			
IOISE REGULATIONS	CE MARKING		Low Voltage Directive	, EMC Directive				
ILGULATIONS	HARMONIC ATTENUA	ATOR	Complies with IEC610	000-3-2 (Not built-in to	active filter *4)			
2711500	CASE SIZE/WEIGHT		50×22×87.5mm (W	×H×D) / 80g max (wi	thout chassis and cove	er)		
OTHERS	COOLING METHOD		Convection	, - \		•		
*1 This is t	the value that measured on	measuring h		tor In=0-35% is different		comply with the IEC610	00-3-2	

This is the value that measured on measuring board with capacitor of 22 µ F at 150mm from output terminal.

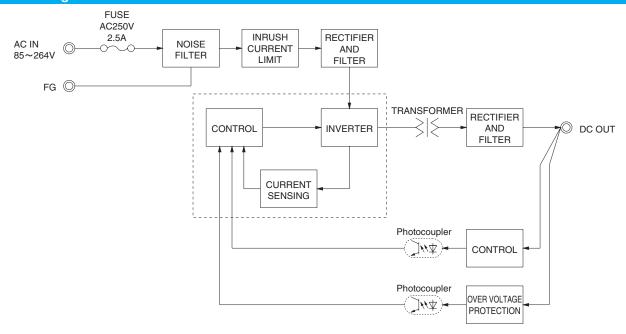
Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103). A circuit reducing standby power is built in this unit. Therefore, the internal switch element is intermittent operated, and the Ripple/Ripple Noise specification in load factor Io=0-35% is different. Please refer to the Instruction Manual 1.7.

- 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.
- Derating is required. When two or more units are operating it may not
- comply with the IEC61000-3-2. Please contact us for details.
- To meet the specifications. Do not operate over-loaded condition. Parallel operation is not possible.
- Derating is required when operated with chassis and cover. Sound noise may be generated by power supply in case

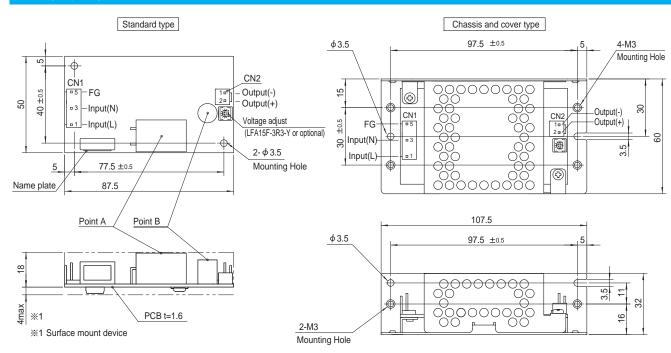
of pulse load.

LFA15F | COSEL

Block diagram



External view



- $\ensuremath{\mathbb{X}}$ The back side of P.C.B. of the power supply is assembled some SMDs.
- Be attention not to bump against the attached area by vibration. ** Use the spacer of 8mm length or more regarding insulation.

 And do not use press-fitting bush.
- ※ Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

I/C	I/O Connector Mating connecto		Terminal		
CNIA	1-1123724-3	1-1123722-5	Chain	1123721-1	
CN1 1-1	1-1123724-3	1-1123722-5	Loose	1318912-1	
0110	1-1123723-2	1-1123722-2	Chain	1123721-1	
CNZ	1-1123723-2	1-1123722-2	Loose	1318912-1	

(Mfr:Tyco Electronics AMP)

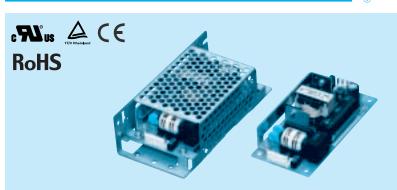
- % I/O Connector is Mfr. Tyco Electronics AMP
- W Option:-J1:(J.S.T) connector type. Refer to Instruction Manual 5.

<PIN CONNECTION>

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

CN2					
Pin No.	Output				
1	-V				
2	+V				

- % Tolerance : ±1
- Weight: 80g max (without chassis and cover)
- Weight: Gog Max (William Strategie and Got)
 PCB material / thickness: CEM3 / 1.6mm
- % Optional chassis and cover material : Electric galvanizing steel board.
- Dimensions in mm
- $\ensuremath{\textrm{\%}}$ Mounting torque (Mounting hole of chassis) : 0.6N $^{\bullet}$ m (6.3kgf $^{\bullet}$ cm) max



Recommended Noize Filter NAC-04-472

High voltage pulse noise type : NAP series

*The Noize Filter is recommended to connect with several devices.

LFA30F-15

Low leakage current type : NAM series

①Series name ②Single output 3 Output wattage 4 Universal input

(5) Output voltage

 Optional
 C: with Coating
 G: Low leakage current J1: VH(J.S.T.)connector type

S: with Chassis

SN: with Chassis & cover Y: with Potentiometer

Specification is changed at option, refer to Instruction Manual.

LFA30F-24

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

LFA30F-3R3-Y LFA30F-5

MODEL	LFA30F-3R3-Y	LFA30F-5	LFA30F-12	LFA30F-15	LFA30F-24
MAX OUTPUT WATTAGE[W]	19.8	30.0	30.0	30.0	31.2
DC OUTPUT	3.3V 6A	5V 6A	12V 2.5A	15V 2A	24V 1.3A

LFA30F-12

SPECIFICATIONS

MODEL

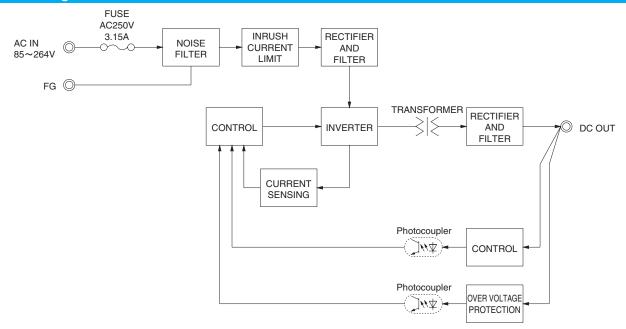
	MODEL		LFA3UF-3H3-1	LFA3UF-5	LFA3UF-12	LFA3UF-15	LFA3UF-24	
	VOLTAGE[V]		AC85 - 264 1 φ (Ref	er to Instruction Manı	ual 1.1 and 3.2) *3			
	OUDDENTIAL	ACIN 100V	0.50typ (lo=100%)	0.65typ (Io=100%)				
	CURRENT[A]	ACIN 200V	0.30typ (lo=100%) 0.35typ (lo=100%)					
	FREQUENCY[Hz]		50 / 60 (47 - 440)					
INPUT	EFFICIENCY[9/1	ACIN 100V	73typ	76typ	79typ	81typ	82typ	
	EFFICIENCY[%]	ACIN 200V	75typ	79typ	81typ	83typ	84typ	
	ACIN 100V		15typ (lo=100%) (At	cold start) (Ta=25°C)	•		•	
	INRUSH CURRENT[A]	ACIN 200V	30typ (lo=100%) (At	cold start) (Ta=25°C)				
	LEAKAGE CURREN	T[mA]	0.30 / 0.65max (ACII	N 100V / 240V 60Hz,	Io=100%, According	to IEC60950-1 and [DEN-AN)	
	VOLTAGE[V]		3.3	5	12	15	24	
	CURRENT[A]		6.0	6.0	2.5	2.0	1.3	
	LINE REGULATION[mV]	20max	20max	48max	60max	96max	
	LOAD REGULATION	[mV]	40max	40max	100max	120max	150max	
	DIDDI E[m/m m]	0 to +50°C *1	80max	80max	120max	120max	120max	
	RIPPLE[mVp-p]	-10 - 0°C *1	140max	140max	160max	160max	160max	
	DIDDI E NOICE[m/m m]	0 to +50°C *1	120max	120max	150max	150max	150max	
OUTPUT	RIPPLE NOISE[mVp-p]	-10 - 0℃ *1	160max	160max	180max	180max	180max	
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	120max	150max	240max	
	TEMPERATURE REGULATION[IIIV]	-10 to +50°C	60max	60max	150max	180max	290max	
	DRIFT[mV]	*2	20max	20max	48max	60max	96max	
	START-UP TIME[ms]		150typ (ACIN 100V, Io=100%)					
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)					
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		2.85 to 3.63	· ·	available for adjusting	output voltage betwee		
	OUTPUT VOLTAGE SETTING[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	rating and recovers a				
PROTECTION	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	
CIRCUIT AND	OPERATING INDICA	TION	Not provided					
OTHERS	REMOTE SENSING		Not provided					
	REMOTE ON/OFF		Not provided					
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)					
ISOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)					
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50M Ω min (At Room Temperature)					
	OPERATING TEMP.,HUMID.AND	ALTITUDE	-10 to +70°C, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max *3					
ENVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max					
LittinoniiiLiti	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					
SAFETY AND	AGENCY APPROVALS (At onl	<u> </u>			0-1, EN50178 Compli			
NOISE	CONDUCTED NOISE		<u> </u>	· · · · · ·	N55011-B, EN55022-	В		
REGULATIONS	CE MARKING		Low Voltage Directiv	<u>'</u>				
	HARMONIC ATTENU			000-3-2 (Not built-in	,			
OTHERS	CASE SIZE/WEIGHT		,	W×H×D) / 130g ma:	x (without chassis and	d cover)		
	COOLING METHOD		Convection					

- This is the value that measured on measuring board with capacitor of 22 $\mu\,F$ at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at
- 25℃, with the input voltage held constant at the rated input/output. Derating is required.

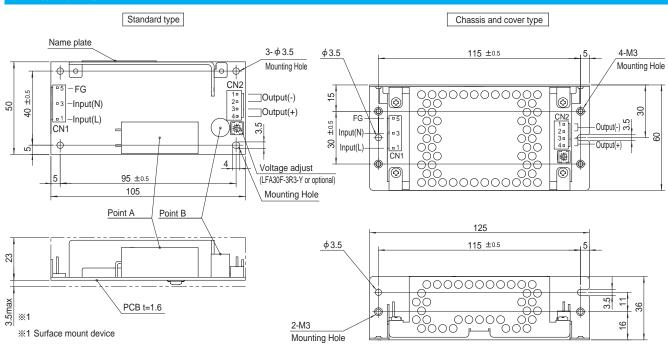
- When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
- To meet the specifications. Do not operate over-loaded condition.
- Parallel operation is not possible.
- Derating is required when operated with chassis and cover. Sound noise may be generated by power supply in case of pulse load.



Block diagram



External view



- ¾ 4 Mounting holes are existing.
- % The back side of P.C.B. of the power supply is assembled some SMDs. Be attention not to bump against the attached area by vibration.
- W Use the spacer of 8mm length or more regarding insulation. And do not use press-fitting bush.
- * Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

I/C	Connector	Mating connector	T	erminal
CNIA	1-1123724-3	1-1123722-5	Chain	1123721-1
CIVI	1-1123/24-3	1-1123722-5	Loose	1318912-1
CNIO	1-1123723-4	1-1123722-4	Chain	1123721-1
CINZ	1-1123723-4	1-1123722-4	Loose	1318912-1
(Mfr:Tyco Electronics AMP				

- $\ensuremath{\, \times \,}$ I/O Connector is Mfr. Tyco Electronics AMP
- % Option:-J1:(J.S.T) connector type. Refer to Instruction Manual 5.

<PIN CONNECTION>

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

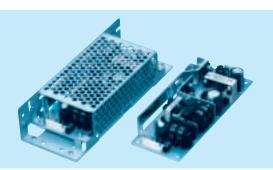
	CN2						
		Pin No.	Output				
_		1, 2	-V				
_		3, 4	+V				

- X Tolerance: ±1
- Weight: 130g max (without chassis and cover)
- * Optional chassis and cover material : Electric galvanizing steel board.
- Mounting torque (Mounting hole of chassis): 0.6N · m (6.3kgf · cm) max

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









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High voltage pulse noise type : NAP series

Low leakage current type : NAM series

*The Noize Filter is recommended to connect with several devices.

- ①Series name ②Single output ③Output wattage ④Universal input
- (5) Output voltage
- Optional
 C: with Coating
 G: Low leakage current
 - J1: VH(J.S.T.)connector type
 - S: with Chassis
 - SN: with Chassis & cover Y: with Potentiometer

Specification is changed at option, refer to Instruction Manual.

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

MODEL	LFA50F-3R3-Y	LFA50F-5	LFA50F-12	LFA50F-15	LFA50F-24	LFA50F-36	LFA50F-48
MAX OUTPUT WATTAGE[W]	33	50	51.6	52.5	50.4	50.4	52.8
DC OUTPUT	3.3V 10A	5V 10A	12V 4.3A	15V 3.5A	24V 2.1A	36V 1.4A	48V 1.1A

SPECIFICATIONS

	MODEL		LFA50F-3R3-Y	LFA50F-5	LFA50F-12	LFA50F-15	LFA50F-24	LFA50F-36	LFA50F-48
	VOLTAGE[V]		AC85 - 264 1 ¢	(Refer to Instr	uction Manual	1.1 and 3.2) *3			
	CUDDENTIAL	ACIN 100V	0.47typ (lo=100%)	.47typ (lo=100%) 0.67typ (lo=100%)					
	CURRENT[A]	ACIN 200V	0.27typ (Io=100%) 0.36typ (Io=100%)						
	FREQUENCY[Hz]	•	50 / 60 (47 - 6						
	EFFICIENOVIO/1	ACIN 100V	73.5typ	77.5typ	80.0typ	80.5typ	81.5typ	82.0typ	81.0typ
INPUT	EFFICIENCY[%]	ACIN 200V	74.0typ	79.0typ	81.5typ	81.5typ	83.0typ	83.5typ	82.5typ
	DOWED FACTOR (In 1009/)	ACIN 100V	0.96typ	0.97typ				•	
	POWER FACTOR (lo=100%)	ACIN 200V	0.83typ	0.90typ					
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100	%) (At cold start	t) (Ta=25℃)				
	INKUSH CUKKENT[A]	ACIN 200V	30typ (lo=100	%) (At cold start	t) (Ta=25°C)				
	LEAKAGE CURREN	T[mA]	0.40 / 0.75max	(ACIN 100V /	240V 60Hz, lo=	=100%, Accordi	ng to IEC60950	-1 and DEN-AN	
	VOLTAGE[V]		3.3	5	12	15	24	36	48
	CURRENT[A]		10.0	10.0	4.3	3.5	2.1	1.4	1.1
	LINE REGULATION	mV]	20max	20max	48max	60max	96max	144max	192max
	LOAD REGULATION	I[mV]	40max	40max	100max	120max	150max	240max	240max
	RIPPLE[mVp-p]	0 to +50°C *1	80max	80max	120max	120max	120max	150max	150max
	nieere[iiivp-p]	-10 - 0℃ *1	140max	140max	160max	160max	160max	200max	200max
	RIPPLE NOISE[mVp-p]	0 to +50°C * 1	120max	120max	150max	150max	150max	250max	250max
OUTPUT	HIPPLE NOISE[IIIVP-P]	-10 - 0℃ *1	160max	160max	180max	180max	180max	300max	300max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	120max	150max	240max	360max	480max
	TEMPERATURE REGULATION[IIIV]	-10 to +50℃	60max	60max	150max	180max	290max	450max	600max
	DRIFT[mV]	*2	20max	20max	48max	60max	96max	144max	192max
	START-UP TIME[ms]		350typ (ACIN 100V, Io=100%)						
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)						
	OUTPUT VOLTAGE ADJUSTMENT	FRANGE[V]	2.85 to 3.63	` '		or adjusting outp			
	OUTPUT VOLTAGE SET	TING[V]	3.30 to 3.40	4.90 to 5.30		14.40 to 15.60	23.00 to 25.00	34.50 to 37.50	46.00 to 50.00
	OVERCURRENT PROT			5% of rating an	1				
	OVERVOLTAGE PROT		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
	OPERATING INDICA	TION	Not provided						
OTHERS	REMOTE SENSING		Not provided						
	REMOTE ON/OFF		Not provided						
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)						
ISOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)						
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50M Ω min (At Room Temperature)						
	OPERATING TEMP., HUMID. ANI		-10 to +70°C, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max *3						
ENVIRONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max						
	VIBRATION		10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis						
	IMPACT		196.1m/s ² (20G), 11ms, once each X, Y and Z axis						
SAFETY AND	AGENCY APPROVALS (At on		UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B						
NOISE	CONDUCTED NOISI	.			· · · · · · · · · · · · · · · · · · ·	5011-B, EN5502	22-B		
REGULATIONS	CE MARKING			irective, EMC D	irective				
	HARMONIC ATTENU		Complies with						
OTHERS	CASE SIZE/WEIGHT	_		mm (W×H×D) / 165g max (v	vithout chassis	and cover)		
	COOLING METHOD		Convection						
ded This is a	the color that measured a			to = of 00 H F at 150	4.0	Daratina ia rasui			

- This is the value that measured on measuring board with capacitor of 22 $\mu\,F$ at 150mm from output terminal.
 - Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:
- RM103).

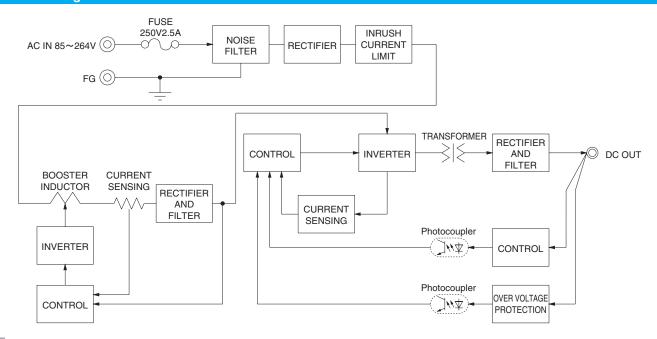
 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Derating is required.

 To meet the specifications. Do not operate over-loaded condition.
 - Parallel operation is not possible.
- Derating is required when operated with chassis and cover. Sound noise may be generated by power supply in case of pulse load.

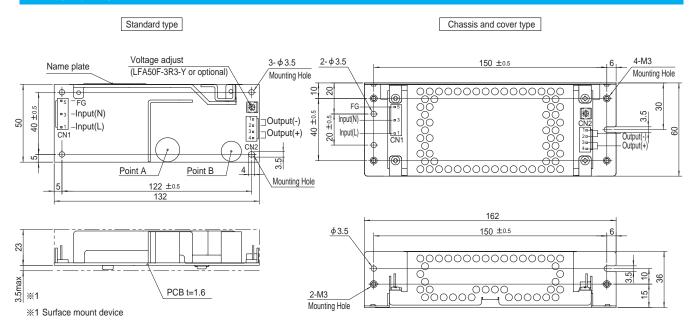
LFA



Block diagram



External view



- * The back side of P.C.B. of the power supply is assembled some SMDs. Be attention not to bump against the attached area by vibration.
- W Use the spacer of 8mm length or more regarding insulation. And do not use press-fitting bush.
- * Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

I/O Connector		Mating connector	T	erminal
CNIA	4 4400704 0	1-1123722-5	Chain	1123721-1
CN1	1-1123724-3	1-1123722-5	Loose	1318912-1
CNO	1-1123723-4	1-1123722-4	Chain	1123721-1
CNZ	1-1123723-4	1-1123722-4	Loose	1318912-1
(Mfr:Tyco Electronics AMP)				

- $\ensuremath{\, \times \,}$ I/O Connector is Mfr. Tyco Electronics AMP
- $\ensuremath{\ensuremath{\%}}$ Option:-J1:(J.S.T) connector type. Refer to Instruction Manual 5.

<PIN CONNECTION>

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

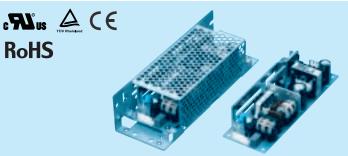
CINZ						
	Pin No.	Output				
	1, 2	-V				
	3, 4	+V				

- X Tolerance: ±1
- * Weight: 165g max (without chassis and cover)
- ※ PCB material / thickness : CEM3 / 1.6mm
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- Mounting torque (Mounting hole of chassis): 0.6N · m (6.3kgf · cm) max

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

CN2









Low leakage current type : NAM series

*The Noize Filter is recommended to connect with several devices.

- ①Series name ②Single output ③Output wattage ④Universal input
- **⑤** Output voltage
- Optional
 C: with Coating
 G: Low leakage current
 - J1: VH(J.S.T.)connector type
- S: with Chassis
- SN: with Chassis & cover Y: with Potentiometer

Specification is changed at option, refer to Instruction Manual.

This power supply is manufactured by SMD technology. The stress to P.C.B like twisting or bending causes the defect of the unit, so handle the unit with care.

MODEL	LFA75F-3R3-Y	LFA75F-5	LFA75F-12	LFA75F-15	LFA75F-24	LFA75F-36	LFA75F-48
MAX OUTPUT WATTAGE[W]	49.5	75	75.6	75	76.8	75.6	76.8
DC OUTPUT	3.3V 15A	5V 15A	12V 6.3A	15V 5A	24V 3.2A	36V 2.1A	48V 1.6A

SPECIFICATIONS

	MODEL		LFA75F-3R3-Y	LFA75F-5	LFA75F-12	LFA75F-15	LFA75F-24	LFA75F-36	LFA75F-48
	VOLTAGE[V]		AC85 - 264 1 φ (Refer to Instruction Manual 1.1 and 3.2) *3						
	CURRENT[A]	ACIN 100V	0.70typ (lo=100%)	1.00typ (Io=10	0%)				
	ACIN 200V		0.40typ (lo=100%) 0.50typ (lo=100%)						
	FREQUENCY[Hz]		50 / 60 (47 - 6	3)					
	EFFICIENCY[%]	ACIN 100V	73.5typ	78.0typ	81.5typ	81.5typ	82.5typ	82.5typ	82.5typ
INPUT	EFFICIENCY[%]	ACIN 200V	75.0typ	80.0typ	83.0typ	83.0typ	84.5typ	84.5typ	84.5typ
	POWER FACTOR (lo=100%)	ACIN 100V	0.96typ	0.97typ					
	POWER FACTOR (IO=100%)	ACIN 200V	0.83typ	0.90typ					
	INRUSH CURRENT[A]	ACIN 100V	15typ (lo=100	%) (At cold start) (Ta=25°C)				
	INKUSH CUKKENT[A]	ACIN 200V	30typ (lo=100	%) (At cold start) (Ta=25°C)				
	LEAKAGE CURREN	T[mA]	0.40 / 0.75max	(ACIN 100V / 2	240V 60Hz, lo=	100%, Accordi	ng to IEC60950	-1 and DEN-AN)
	VOLTAGE[V]		3.3	5	12	15	24	36	48
	CURRENT[A]		15.0	15.0	6.3	5.0	3.2	2.1	1.6
	LINE REGULATION[mV]	20max	20max	48max	60max	96max	144max	192max
	LOAD REGULATION	l[mV]	40max	40max	100max	120max	150max	240max	240max
	DIDDI ElmVa1	0 to +50°C *1	80max	80max	120max	120max	120max	150max	150max
	RIPPLE[mVp-p]	-10 - 0℃ *1	140max	140max	160max	160max	160max	200max	200max
		0 to +50°C *1	120max	120max	150max	150max	150max	250max	250max
OUTPUT	RIPPLE NOISE[mVp-p]	-10 - 0℃ *1	160max	160max	180max	180max	180max	300max	300max
	TEMPERATURE REQUIRATIONS AND	0 to +50°C	50max	50max	120max	150max	240max	360max	480max
	TEMPERATURE REGULATION[mV]	-10 to +50°C	60max	60max	150max	180max	290max	450max	600max
	DRIFT[mV]	*2	20max	20max	48max	60max	96max	144max	192max
	START-UP TIME[ms]		350typ (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" opt	ion is available f	or adjusting outp	out voltage betwe	een ±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 10	5% of rating an	d recovers auto	matically			
PROTECTION	OVERVOLTAGE PROTI	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
CIRCUIT AND	OPERATING INDICA	TION	Not provided						
OTHERS	REMOTE SENSING		Not provided Not provided						
	REMOTE ON/OFF		Not provided						
	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)						
ISOLATION	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M Ω min (At Room Temperature)						
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50M Ω min (At Room Temperature)						
	OPERATING TEMP., HUMID. AND	ALTITUDE	-10 to +70°C, 20 - 90%RH (Non condensing) (Refer to DERATING CURVE), 3,000m (10,000feet) max *3						feet) max *3
ENVIDONMENT	STORAGE TEMP., HUMID. AND	ALTITUDE	-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max						
ENVIRONMENT	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						
	AGENCY APPROVALS (At on	ly AC input)	UL60950-1, C-UL (CSA60950-1), EN60950-1, EN50178 Complies with DEN-AN						
SAFETY AND NOISE	CONDUCTED NOISE	.	Complies with	FCC-B, VCCI-B,	CISPR-B, EN5	5011-B, EN5502	22-B		
REGULATIONS	CE MARKING		Low Voltage D	irective, EMC D	irective				
	HARMONIC ATTENU	JATOR	Complies with	IEC61000-3-2					
OTHERS	CASE SIZE/WEIGHT		50×33.5×150	mm (W×H×D) / 230g max (w	vithout chassis a	and cover)		
OTHERS	COOLING METHOD		Convection						

- This is the value that measured on measuring board with capacitor of 22 $\mu\,F$ at 150mm from output terminal.
 - Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN:
- RM103).

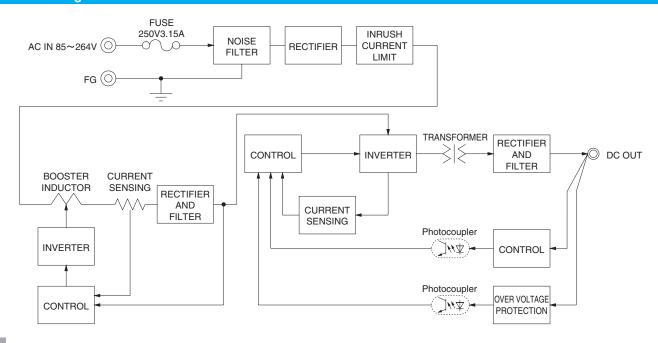
 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Derating is required.

 To meet the specifications. Do not operate over-loaded condition.
 - Parallel operation is not possible.
- Derating is required when operated with chassis and cover.
 Sound noise may be generated by power supply in case of pulse load.

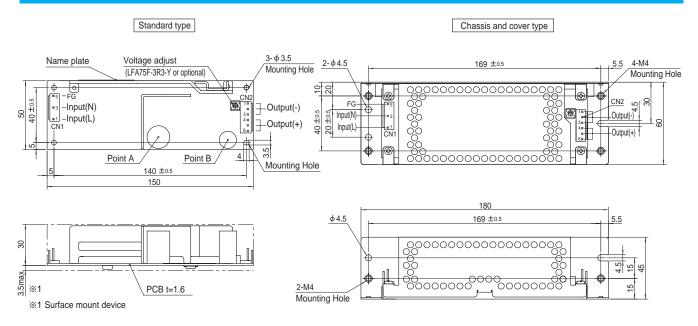
LFA



Block diagram



External view



- % 4 Mounting holes are existing.
- % The back side of P.C.B. of the power supply is assembled some SMDs.
- Be attention not to bump against the attached area by vibration. * Use the spacer of 8mm length or more regarding insulation.
- And do not use press-fitting bush.
- * Point A, Point B are thermometry points. Please refer to Instruction Manual 3.

I/O Connector		Mating connector	T	erminal
CN1 1-1123724-3		1-1123722-5	Chain	1123721-1
CIVI	1-1123724-3	1-1123722-3	Loose	1318912-1
CNO	1-1123723-6	3723-6 1-1123722-6	Chain	1123721-1
CN2	1-1123723-6	1-1123722-6	Loose	1318912-1

(Mfr:Tyco Electronics AMP) ※ I/O Connector is Mfr. Tyco Electronics AMP

Option:-J1:(J.S.T) connector type. Refer to Instruction Manual 5.

<PIN CONNECTION>

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

0142		
	Pin No.	Output
	1 to 3	-V
	4 to 6	+V

- % Tolerance : ±1
- % Weight: 230g max (without chassis and cover)
- ※ PCB material / thickness : CEM3 / 1.6mm
- $\ensuremath{\mathbb{X}}$ Optional chassis and cover material : Electric galvanizing steel board.
- * Dimensions in mm
- Mounting torque (Mounting hole of chassis) :1.5N · m (16kgf · cm) max

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