

Recommended EMI/EMC Filter NAC-04-472

High voltage pulse noise type : NAP series Low leakage current type : NAM series

to connect with several devices.

\*The EMI/EMC Filter is recommended

- Series name
   Single output
   Output wattage
- 4)Universal input
- ⑤Output 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**

|                     | 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                           |                            |                |  |  |
|                     | CURRENT[A]                  | ACIN 100V   | 0.18typ (lo=100%)  | 0.26typ (lo=100%)          |   |                            |                |  |  |
|                     | CORRENT[A]                  | ACIN 200V   | 0.11typ (lo=100%)  | 0.16typ (Io=100%)          |   |                            |                |  |  |
|                     | FREQUENCY[Hz]               |             | 50 / 60 (47 - 440)   |                            |   |                            |                |  |  |
| INPUT               | EFFICIENCY[%]               | ACIN 100V   | 68.0typ  | 74.0typ                    | 76.5typ                                 | 77.5typ                    | 79.5typ        |  |  |
|                     | EFFICIENCI[/6]              | ACIN 200V   | 68.5typ  | 76.0typ                    | 79.0typ                                 | 80.0typ                    | 83.0typ        |  |  |
|                     | INRUSH CURRENT[A]           | ACIN 100V   | 15typ (lo=100%)  | ) (lo=100%)                |   |                            |                |  |  |
|                     | INTOSTI CONNENT[A]          | ACIN 200V   | 30typ (Io=100%)  |                            |   |                            |                |  |  |
|                     | LEAKAGE CURRENT[mA]         |             | 0.15/0.30max (ACIN 10  | 00V / 240V 60Hz, lo=10     | <del></del>                             |                            |                |  |  |
|                     | VOLTAGE[V]                  |             | 3.3  | 5                          | 12                                      | 15                         | 24             |  |  |
|                     | CURRENT[A]                  |             | 2.0  | 2.0                        | 0.9                                     | 0.7                        | 0.5            |  |  |
|                     | LINE REGULATION[n           | nV] *5      | 20max  | 20max                      | 48max                                   | 60max                      | 96max          |  |  |
|                     | LOAD REGULATION[            | mV] *5      | 40max  | 40max                      | 100max                                  | 120max                     | 150max         |  |  |
|                     | RIPPLE[mVp-p]               | 0 to +50℃   |  | 80max                      | 120max                                  | 120max                     | 120max         |  |  |
|                     | *1                          |             |  | 140max                     | 160max                                  | 160max                     | 160max         |  |  |
|                     |                             | lo=0 - 35%  |  | 160max                     | 240max                                  | 240max                     | 280max         |  |  |
| OUTPUT              | DIDDI E NOISEImVa ni        | 0 to +50℃   | 120max   | 120max                     | 150max                                  | 150max                     | 150max         |  |  |
|                     | RIPPLE NOISE[mVp-p]         | -10 - 0℃    | 160max   | 160max                     | 180max                                  | 180max                     | 180max         |  |  |
|                     |                             |             | 240max   | 240max                     | 300max                                  | 300max                     | 320max         |  |  |
|                     | TEMPERATURE REGULATION[mV]  | 0 to +50℃   | 50max  | 50max                      | 120max                                  | 150max                     | 240max         |  |  |
|                     | TEMPERATORE RECOEMING[III7] | -10 to +50℃ | 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 1 minute of applying input again from turning off the input voltage                                    |                            |   |                            |                |  |  |
|                     | HOLD-UP TIME[ms]            |             | 20typ (ACIN 100V, Io=100%)   |                            |   |                            |                |  |  |
|                     | OUTPUT VOLTAGE ADJUSTMENT I |             | 2.85 to 3.63   | · ' '                      | , | t voltage between ±10%     | <del></del>    |  |  |
|                     | OUTPUT VOLTAGE SETT         |             | 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           |             |  | ting and recovers autom    |   | T                          | 1              |  |  |
| PROTECTION          | 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 |  |  |
| 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 $\Omega$ min (At Room Temperature)   |                            |   |                            |                |  |  |
| ISOLATION           | INPUT-FG                    |             | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)  AC500V 1minute, Cutoff current = 25mA, DC500V 50M $\Omega$ min (At Room Temperature) |                            |   |                            |                |  |  |
|                     | OUTPUT-FG                   | ALTITUDE    |  |                            |   |                            |                |  |  |
|                     | OPERATING TEMP.,HUMID.AND   |             | -10 to +70°C, 20 - 90%RH (Non condensing) (Refer to Instruction Manual 3.2), 3,000m (10,000 feet) max *3   |                            |   |                            |                |  |  |
| ENVIRONMENT         | STORAGE TEMP., HUMID. AND A | ALIIIUDE    | -20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000 feet) max  10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis                         |                            |   |                            |                |  |  |
|                     | VIBRATION<br>IMPACT         |             |  | s, once each X, Y and Z    |   | anu Z axis                 |                |  |  |
| OAFETY AND          | AGENCY APPROVAL             | <u>e</u>    |  | A60950-1), EN60950-1,      |   | molios with DEN AN         |                |  |  |
| SAFETY AND<br>NOISE | CONDUCTED NOISE             |             |  | VCCI-B, CISPR-B, EN5       | <u> </u>                                | IIPIIGS MIIII DEIN-VIN     |                |  |  |
| REGULATIONS         | HARMONIC ATTENU             |             |  | 00-3-2 (Class A) *6 (Not   |   |                            |                |  |  |
|                     | CASE SIZE/WEIGHT            | AIUK        | · ·  |                            |   |                            | a may)         |  |  |
| OTHERS              |                             |             |  | 7 X 0.87 X 2.89 inches] (V |   | ui citassis a cover : 1500 | y max)         |  |  |
| COOLING METHOD      |                             |             | Convection (Refer to Instruction Manual 3.1 and 3.2) *3  |                            |   |                            |                |  |  |

This is the value that measured on measuring board with capacitor of 22  $\mu\,\text{F}$  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

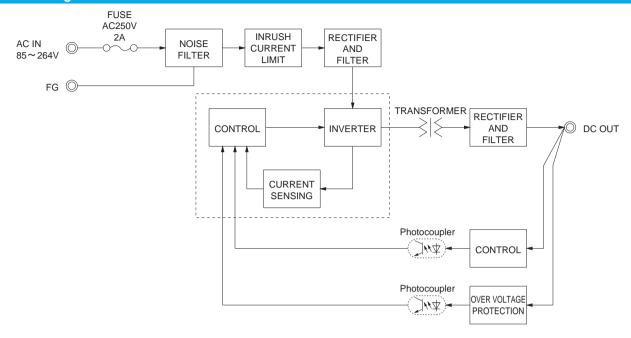
Please refer to the Instruction Manual 1.7.

- 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.

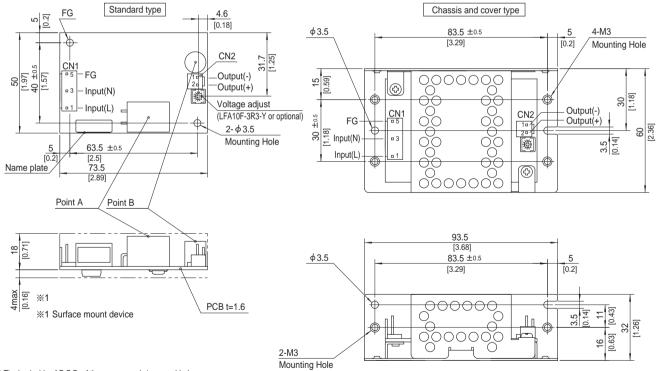
- Please contact us about dynamic load and input response
- Please contact us about another class.
- To meet the specifications. Do not operate over-loaded condition.
- Parallel operation is not possible.
- Derating is required when operated with chassis and cover.
- Sound noise may be generated by power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

# LFA10F | COSEL

# 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/C                    | I/O Connector Mating connector |                         | Terminal |           |  |
|------------------------|--------------------------------|-------------------------|----------|-----------|--|
| ONIA                   | 1-1123724-3                    | 1-1123724-3 1-1123722-5 |          | 1123721-1 |  |
| CIVI                   | 1-1123/24-3                    | 1-1123722-5             | Loose    | 1318912-1 |  |
| ONIO                   | 4 4400700 0                    | 1-1123722-2             | Chain    | 1123721-1 |  |
| CNZ                    | 1-1123723-2                    | 1-1123/22-2             | Loose    | 1318912-1 |  |
| (Mfr:Tugo Electronics) |                                |                         |          |           |  |

(Mfr:Tyco Electronics)

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

# <PIN CONNECTION>

| Input |
|-------|
| AC(L) |
|       |
| AC(N) |
|       |
| FG    |
|       |

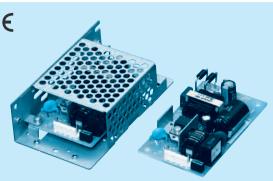
| CINZ    |        |
|---------|--------|
| Pin No. | Output |
| 1       | -V     |
| 2       | +V     |
|         |        |

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- \*\* Tolerance: ±1 [±0.04]
   \*\* Weight: 55g max (with chassis & cover: 150g max)
   \*\* PCB material / thickness: CEM3 / 1.6mm
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- \* Dimensions in mm, [ ]=inches
- Mounting torque (Mounting hole of chassis): 0.6N · m (6.3kgf · cm) max

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High voltage pulse noise type : NAP series Low leakage current type : NAM series

\*The EMI/EMC Filter is recommended to connect with several devices.

- Series name
   Single output
   Output wattage
- 4)Universal input
- ⑤Output 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                 | 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**

|               | MODEL                        |              | LFA15F-3R3-Y   | LFA15F-5  | LFA15F-12                  | LFA15F-15                  | LFA15F-24      |  |
|---------------|------------------------------|--------------|--|---|----------------------------|----------------------------|----------------|--|
|               | VOLTAGE[V]                   |              | AC85 - 264 1 φ (Refe   | to Instruction Manual 1   | .1 and 3.2) *3             |                            |                |  |
|               | CURRENT[A]                   | ACIN 100V    | 0.24typ (lo=100%)  | 0.35typ (lo=100%)   |                            |                            |                |  |
|               | CORRENT[A]                   | ACIN 200V    | 0.15typ (lo=100%)  |   |                            |                            |                |  |
|               | FREQUENCY[Hz]                |              | 50 / 60 (47 - 440)   |   |                            |                            |                |  |
| NPUT          | EEEIOIENOVII/I               | 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        |  |
|               | INDUCTI CUDDENTIAL           | ACIN 100V    | 15typ (lo=100%) (At c  | old start) (Ta=25°C)  | <u> </u>                   | ·                          |                |  |
|               | INRUSH CURRENT[A]            | ACIN 200V    | 30typ (lo=100%) (At c  | old start) (Ta=25°C)  |                            |                            |                |  |
|               | LEAKAGE CURRENT              | [mA]         | 0.15/0.30max (ACIN 1   | 00V / 240V 60Hz, lo=1   | 00%, According to IE       | C60950-1 and DEN-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] *5       | 20max  | 20max   | 48max                      | 60max                      | 96max          |  |
|               | LOAD REGULATION              | mV] *5       | 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                           | lo=0 - 35%   | 190max   | 160max  | 240max                     | 240max                     | 280max         |  |
|               |                              | 0 to +50°C   | 120max   | 120max  | 150max                     | 150max                     | 150max         |  |
| DUTPUT        | RIPPLE NOISE[mVp-p]          | -10 - 0℃     | 160max   | 160max  | 180max                     | 180max                     | 180max         |  |
|               | *1                           | lo=0 - 35%   | 240max   | 240max  | 300max                     | 300max                     | 320max         |  |
|               | TEMPERATURE REQUILATIONSVI   | 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, lo=100%) *Start-up time is 700ms typ for less than 1 minute of applying input again from turning off the input volt |   |                            |                            |                |  |
|               | HOLD-UP TIME[ms]             |              | 20typ (ACIN 100V, Io=100%)   |   |                            |                            |                |  |
|               | OUTPUT VOLTAGE ADJUSTMENT    | RANGE[V]     | 2.85 to 3.63   | Fixed ("Y"option is av  | ailable for adjusting o    | utput 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 ra  | ating and recovers autor  | natically                  |                            |                |  |
| ROTECTION     | 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 |  |
| IRCUIT AND    | OPERATING INDICAT            | TION         | Not provided   |   |                            |                            |                |  |
| THERS         | REMOTE SENSING               |              | Not provided   |   |                            |                            |                |  |
|               | REMOTE ON/OFF                |              | Not provided   |   |                            |                            |                |  |
|               | INPUT-OUTPUT                 |              | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)   |   |                            |                            |                |  |
| SOLATION      | INPUT-FG                     |              | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)   |   |                            |                            |                |  |
|               | OUTPUT-FG                    |              | AC500V 1minute, Cutoff current = 25mA, DC500V 50M $\Omega$ min (At Room Temperature)   |   |                            |                            |                |  |
|               | OPERATING TEMP., HUMID. AND  | ALTITUDE     | -10 to +70°C, 20 - 90%RH (Non condensing) (Refer to Instruction Manual 3.2), 3,000m (10,000 feet) max *3                               |   |                            |                            |                |  |
| NI/IDONATAT   | STORAGE TEMP.,HUMID.AND      | ALTITUDE     | -20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000 feet) max  |   |                            |                            |                |  |
| NVIRONMENT    | VIBRATION                    |              | 10 - 55Hz, 19.6m/s² (2   | 10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis |                            |                            |                |  |
|               | IMPACT                       |              | 196.1m/s² (20G), 11ms, once each X, Y and Z axis   |   |                            |                            |                |  |
| AFETY AND     | AGENCY APPROVAL              | s            | UL60950-1, C-UL (CS  | A60950-1), EN60950-1  | , EN60065, EN50178         | Complies with DEN-AN       |                |  |
| IOISE         | CONDUCTED NOISE              |              | Complies with FCC-B,   | VCCI-B, CISPR-B, EN   | 55011-B, EN55022-B         |                            |                |  |
| EGULATIONS    | HARMONIC ATTENU              | ATOR         | Complies with IEC610   | 00-3-2 (Class A) *6 (No   | t built-in to active filte | r) *4                      |                |  |
| THERE         | CASE SIZE/WEIGHT             |              | 50×22×87.5mm [1.9  | 7×0.87×3.44 inches] (   | W×H×D) / 80g max           | (with chassis & cover : 1  | 90g max)       |  |
| OTHERS        | COOLING METHOD               |              | Convection (Refer to I   | nstruction Manual 3.1 a   | nd 3.2) *3                 |                            | •              |  |
| *1 This is th | he value that measured on me | acuring boar | d with factor to   | =0-35% is different.  |                            | Please contact us for deta | ile            |  |

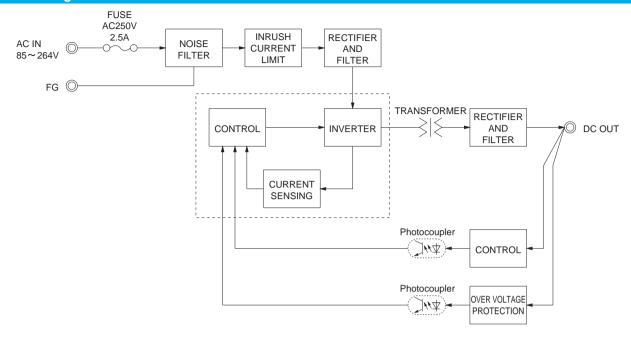
This is the value that measured on measuring board with capacitor of 22  $\mu\,\text{F}$  at 150mm from output terminal. Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103). A circuit reducing standby power is built in this unit. Therefore, the internal switch element is intermittent

operated, and the Ripple/Ripple Noise specification in load

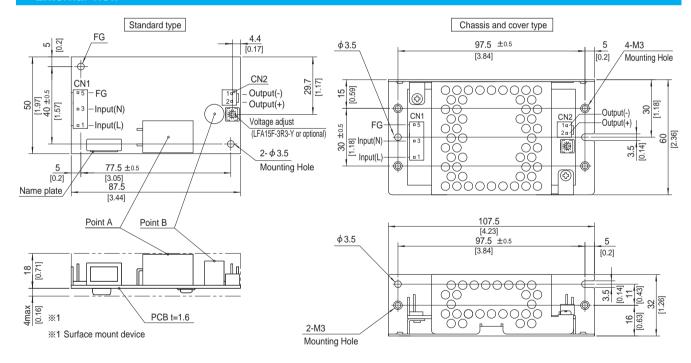
- Please refer to the Instruction Manual 1.7.
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Derating is required.
- When two or more units are operating it may not comply with the IEC61000-3-2.
- Please contact us about dynamic load and input response.
- Please contact us about another class.
- 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

# LFA15F | CO\$EL

# Block diagram



### **External view**



- $\ensuremath{\ensuremath{\%}}$  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.
- Wose 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   |             | I/O Connector Mat     |       | Mating connector | T | erminal |
|---|-----------------|-------------|-----------------------|-------|------------------|---|---------|
|   | 014             | 4 4400704 0 | 1123724-3 1-1123722-5 |       | 1123721-1        |   |         |
|   | CN1 1-1123724-3 |             | 1-1123722-5           | Loose | 1318912-1        |   |         |
|   | 0110            | 4 4400700 0 | 4 4400700 0           | Chain | 1123721-1        |   |         |
| ١ | CN2 1-1123723-2 |             | 1-1123722-2           | Loose | 1318912-1        |   |         |
|   |                 |             |                       |       |                  |   |         |

(Mfr:Tyco Electronics)

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

### <PIN CONNECTION>

| ut  |
|-----|
| uı  |
| (L) |
|     |
| N)  |
|     |
| 3   |
|     |

| CN2     |        |
|---------|--------|
| Pin No. | Output |
| 1       | -V     |
| 2       | +V     |

- ※ Tolerance: ±1 [±0.04]
- Weight: 80g max (with chassis & cover: 190g max)
- ※ PCB material / thickness : CEM3 / 1.6mm
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- $\ensuremath{\mathbb{X}}$  Mounting torque (Mounting hole of chassis) : 0.6N  $^{\circ}$  m (6.3kgf  $^{\circ}$  cm) max

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High voltage pulse noise type : NAP series Low leakage current type : NAM series

- \*The EMI/EMC Filter is recommended to connect with several devices.
- Series name
   Single output
   Output wattage
- 4)Universal input
- ⑤Output 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                 | 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  |

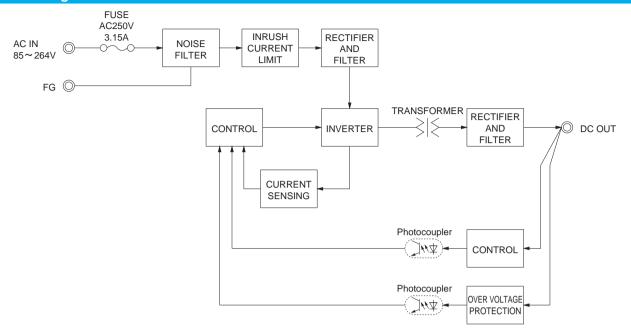
|             | MODEL                              |               | LFA30F-3R3-Y   | LFA30F-5                 | LFA30F-12                | LFA30F-15              | LFA30F-24          |  |
|-------------|------------------------------------|---------------|--|--------------------------|--------------------------|------------------------|--------------------|--|
|             | VOLTAGE[V]                         |               | AC85 - 264 1 φ (Refe   | r to Instruction Manual  | 1 1.1 and 3.2) *3        |                        |                    |  |
|             | CURRENTIAL                         | ACIN 100V     | 0.50typ (lo=100%)  | 0.65typ (lo=100%)        | ,                        |                        |                    |  |
|             | CURRENT[A]                         | ACIN 200V     | 0.30typ (lo=100%)  |                          |                          |                        |                    |  |
|             | FREQUENCY[Hz]                      |               | 50 / 60 (47 - 440)   |                          |                          |                        |                    |  |
| INPUT       | EFFICIENCY[%]                      | ACIN 100V     | 73typ  | 76typ                    | 79typ                    | 81typ                  | 82typ              |  |
|             | EFFICIENCI[%]                      | ACIN 200V     | 75typ  | 79typ                    | 81typ                    | 83typ                  | 84typ              |  |
|             | INRUSH CURRENT[A]                  | ACIN 100V     | 15typ (lo=100%) (At o  | cold start) (Ta=25°C)    |                          |                        |                    |  |
|             | INKUSH CUKKENI[A]                  | ACIN 200V     | 30typ (Io=100%) (At o  | cold start) (Ta=25°C)    |                          |                        |                    |  |
|             | LEAKAGE CURRENT                    | T[mA]         | 0.30 / 0.65max (ACIN   | 1 100V / 240V 60Hz, ld   | =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[I                  | mV] *5        | 20max  | 20max                    | 48max                    | 60max                  | 96max              |  |
|             | LOAD REGULATION                    | [mV] *5       | 40max  | 40max                    | 100max                   | 120max                 | 150max             |  |
|             | RIPPLE[mVp-p]                      | 0 to +50°C *1 | 80max  | 80max                    | 120max                   | 120max                 | 120max             |  |
|             | KIPPLE[IIIVP-P]                    | -10-0℃ *1     | 140max   | 140max                   | 160max                   | 160max                 | 160max             |  |
|             | RIPPLE NOISE[mVp-p]                | 0 to +50°C *1 | 120max   | 120max                   | 150max                   | 150max                 | 150max             |  |
| OUTPUT      | KIPPLE NOISE[IIIVP-P]              | -10-0℃ *1     | 160max   | 160max                   | 180max                   | 180max                 | 180max             |  |
|             | TEMPERATURE REGULATION[mV]         | 0 to +50℃     | 50max  | 50max                    | 120max                   | 150max                 | 240max             |  |
|             | TEMI ENATONE NEODEATION[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   | Fixed ("Y"option is av   | vailable for adjusting o | utput voltage between  |                    |  |
|             | OUTPUT VOLTAGE SET                 | TING[V]       | 3.30 to 3.40   | 4.90 to 5.30             | 11.50 to 12.50           | 14.40 to 15.60         | 23.00 to 25.00     |  |
|             | OVERCURRENT PROT                   |               | Works over 105% of r   | rating and recovers aut  | omatically               |                        |                    |  |
| 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     |  |
| IRCUIT 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 $\Omega$ min (At Room Temperature)   |                          |                          |                        |                    |  |
| SOLATION    | INPUT-FG                           |               | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)   |                          |                          |                        |                    |  |
|             | OUTPUT-FG                          |               | AC500V 1minute, Cutoff current = 25mA, DC500V 50M $\Omega$ min (At Room Temperature)   |                          |                          |                        |                    |  |
|             | OPERATING TEMP., HUMID. AND        |               |  | %RH (Non condensing      |                          | ,,,,                   | 10,000feet) max *3 |  |
| NVIRONMENT  | STORAGE TEMP., HUMID. AND          | ALTITUDE      | · ·  | %RH (Non condensing      | ,                        |                        |                    |  |
|             | 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<br>  UL60950-1, C-UL (CSA60950-1), EN60950-1, EN60065, EN50178 Complies with DEN-AN |                          |                          |                        |                    |  |
| SAFETY AND  | AGENCY APPROVAL                    |               |  |                          |                          |                        | AN                 |  |
| VOISE       | CONDUCTED NOISE                    |               | · ·  | B, VCCI-B, CISPR-B, E    |                          |                        |                    |  |
| REGULATIONS | HARMONIC ATTENU                    |               |  | 00-3-2 (Class A) *6 (Not |                          |                        |                    |  |
| OTHERS      | CASE SIZE/WEIGHT                   |               |  | .97 × 1.04 × 4.13 inche  |                          | max (with chassis & co | over : 260g max)   |  |
|             | COOLING METHOD                     |               | Convection (Refer to   | Instruction Manual 3.1   | and 3.2) *3              |                        |                    |  |

- 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:
- 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.

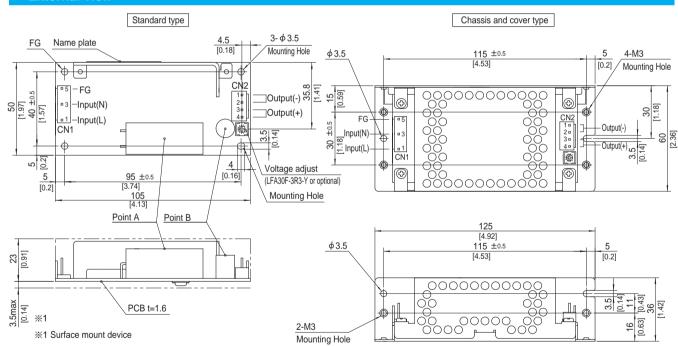
- When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
- Please contact us about dynamic load and input response. Please contact us about another class.
- To meet the specifications. Do not operate over-loaded condition.
- Parallel operation is 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**



- \* 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 |       |           |  |  |  |
|-------------------|-------------|------------------|-------|-----------|--|--|--|
| 014               | 1-1123724-3 | 1-1123722-5      | Chain | 1123721-1 |  |  |  |
| CIVI              | 1-1123724-3 | 1-1123722-5      | Loose | 1318912-1 |  |  |  |
| ONIO              | 4 4400700 4 | 4 4400700 4      | Chain | 1123721-1 |  |  |  |
| CN2 1-1123723-4 1 |             | 1-1123722-4      | Loose | 1318912-1 |  |  |  |
|                   |             |                  |       |           |  |  |  |

(Mfr:Tyco Electronics)

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

#### <PIN CONNECTION>

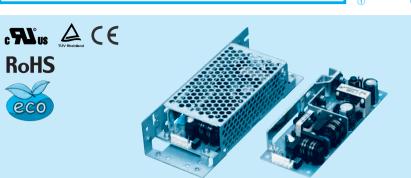
| Input |
|-------|
| AC(L) |
|       |
| AC(N) |
|       |
| FG    |
|       |

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

- % Tolerance :  $\pm 1$  [  $\pm 0.04$  ] % Weight: 130g max (with chassis & cover : 260g max)
- ※ PCB material / thickness : CEM3 / 1.6mm
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- \* Dimensions in mm, [ ]=inches
- Mounting torque (Mounting hole of chassis): 0.6N · m (6.3kgf · cm) max
- % Keep drawing current per pin below 5A for CN2.

CN2

LFA50F





High voltage pulse noise type : NAP series Low leakage current type : NAM series

to connect with several devices.

\*The EMI/EMC Filter is recommended

- Series name
   Single output
   Output wattage 4)Universal input
  - ⑤Output 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.

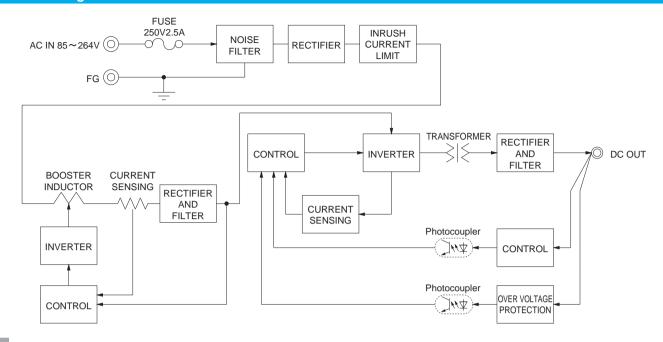
| MODEL                 | LFA50F-3R3-Y | LFA50F-5 | LFA50F-12 | LFA50F-15 | LFA50F-24 | LFA50F-36 | LFA50F-48 |
|-----------------------|--------------|----------|-----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 33           | 50       | 51.6      | 52.5      | 50.4      | 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  |

| MC           | ODEL                       |              | LFA50F-3R3-Y   | LFA50F-5  | LFA50F-12           | LFA50F-15                               | LFA50F-24       | LFA50F-36          | LFA50F-48      |  |  |
|--------------|----------------------------|--------------|--|---|---------------------|---|-----------------|--------------------|----------------|--|--|
| VC           | DLTAGE[V]                  |              | AC85 - 264 1 φ   | (Refer to Instruc   | tion Manual 1.1     | and 3.2) *3                             | •               |                    |                |  |  |
| 01           | IDDENITIAL                 | ACIN 100V    | 0.47typ (lo=100%)  | 0.67typ (lo=100   | 1%)                 |   |                 |                    |                |  |  |
| CC           | URRENT[A]                  | ACIN 200V    | 0.27typ (lo=100%)  |   |                     |   |                 |                    |                |  |  |
| FR           | REQUENCY[Hz]               |              | 50 / 60 (47 - 63)  |   |                     |   |                 |                    |                |  |  |
|              |                            | ACIN 100V    | 73.5typ  | 77.5typ   | 80.0typ             | 80.5typ                                 | 81.5typ         | 82.0typ            | 81.0typ        |  |  |
| NPUT EF      | EFFICIENCY[%]              | ACIN 200V    | 74.0typ  | 79.0typ   | 81.5typ             | 81.5typ                                 | 83.0typ         | 83.5typ            | 82.5typ        |  |  |
|              |                            | ACIN 100V    | 0.96typ  | 0.97typ   |                     |   |                 |                    |                |  |  |
| PO           | POWER FACTOR (Io=100%)     |              | 0.83typ 0.90typ  |   |                     |   |                 |                    |                |  |  |
|              | ACIN 100                   |              | 15typ (lo=100%   | (At cold start)   | Га=25°С)            |   |                 |                    |                |  |  |
| INF          | RUSH CURRENT[A]            | ACIN 200V    |  | (At cold start)   |                     |   |                 |                    |                |  |  |
| LE           | AKAGE CURRENT              | Γ[mA]        | 0.40 / 0.75max   | (ACIN 100V / 24   | 0V 60Hz, lo=10      | 0%, According t                         | o IEC60950-1 an | d DEN-AN)          |                |  |  |
| VC           | DLTAGE[V]                  |              | 3.3  | 5   | 12                  | 15                                      | 24              | 36                 | 48             |  |  |
| CL           | URRENT[A]                  |              | 10.0   | 10.0  | 4.3                 | 3.5                                     | 2.1             | 1.4                | 1.1            |  |  |
| LIN          | NE REGULATION[r            | mV] *4       | 20max  | 20max   | 48max               | 60max                                   | 96max           | 144max             | 192max         |  |  |
|              | DAD REGULATION             |              | 40max  | 40max   | 100max              | 120max                                  | 150max          | 240max             | 240max         |  |  |
|              |                            |              | 80max  | 80max   | 120max              | 120max                                  | 120max          | 150max             | 150max         |  |  |
| RII          | PPLE[mVp-p]                | -10 - 0℃ *1  | 140max   | 140max  | 160max              | 160max                                  | 160max          | 200max             | 200max         |  |  |
|              |                            | 0 to +50℃ *1 | 120max   | 120max  | 150max              | 150max                                  | 150max          | 250max             | 250max         |  |  |
| UTPUT RIP    | PPLE NOISE[mVp-p]          | -10 - 0°C *1 | 160max   | 160max  | 180max              | 180max                                  | 180max          | 300max             | 300max         |  |  |
|              | TEMPERATURE REGULATION[mV] | 0 to +50°C   |  | 50max   | 120max              | 150max                                  | 240max          | 360max             | 480max         |  |  |
| TEM          |                            | -10 to +50°C |  | 60max   | 150max              | 180max                                  | 290max          | 450max             | 600max         |  |  |
| DR           | RIFT[mV]                   | *2           | 20max  | 20max   | 48max               | 60max                                   | 96max           | 144max             | 192max         |  |  |
|              | START-UP TIME[ms]          |              | 350typ (ACIN 100V, Io=100%)  |   |                     |   |                 |                    |                |  |  |
| нс           | OLD-UP TIME[ms]            |              | 20typ (ACIN 100V, Io=100%)   |   |                     |   |                 |                    |                |  |  |
| OUT          | TPUT VOLTAGE ADJUSTMENT    | RANGE[V]     | 2.85 to 3.63   | Fixed ("Y"option  | is available for    | adjusting output                        | voltage between | ±10%)              |                |  |  |
| ou           | JTPUT VOLTAGE SETT         | 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 |  |  |
| OV           | ERCURRENT PROT             | ECTION       | Works over 105   | % of rating and i   | ecovers automa      |   | '               | '                  |                |  |  |
| ROTECTION OV | /ERVOLTAGE 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  | 41.40 to 50.40     | 55.20 to 67.20 |  |  |
|              | PERATING INDICAT           | TION         | Not provided   |   | ı                   |   | <u>'</u>        |                    |                |  |  |
| THERS RE     | EMOTE SENSING              |              | Not provided   |   |                     |   |                 |                    |                |  |  |
| RE           | EMOTE ON/OFF               |              | Not provided   |   |                     |   |                 |                    |                |  |  |
| INI          | PUT-OUTPUT                 |              | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature) |   |                     |   |                 |                    |                |  |  |
| SOLATION INI | PUT-FG                     |              | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)         |   |                     |   |                 |                    |                |  |  |
| ΟL           | UTPUT-FG                   |              | AC500V 1minute, Cutoff current = 25mA, DC500V 50M $\Omega$ min (At Room Temperature)   |   |                     |   |                 |                    |                |  |  |
| OPE          | ERATING TEMP., HUMID. AND  | ALTITUDE     |  |   |                     |   |                 |                    |                |  |  |
| STO          | ORAGE TEMP., HUMID. AND    | ALTITUDE     | -20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max                     |   |                     |   |                 |                    |                |  |  |
| NVIRONMENT   | BRATION                    |              |  | 10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis |                     |   |                 |                    |                |  |  |
| IM           | IPACT                      |              | 196.1m/s² (20G), 11ms, once each X, Y and Z axis                                       |   |                     |   |                 |                    |                |  |  |
| AFETY AND AG | GENCY APPROVAL             | _S           | UL60950-1, C-UL (CSA60950-1), EN60950-1, EN60065, EN50178 Complies with DEN-AN         |   |                     |   |                 |                    |                |  |  |
|              | ONDUCTED NOISE             |              |  | CC-B, VCCI-B,   |                     |   |                 |                    |                |  |  |
|              | ARMONIC ATTENU             |              |  | EC61000-3-2 (C  |                     |   |                 |                    |                |  |  |
| CA           | ASE SIZE/WEIGHT            |              |  |   |                     | V×H×D) / 1650                           | max (with chass | sis & cover : 3250 | g max)         |  |  |
| OTHERS —     | OOLING METHOD              |              | fer to Instruction   |   | , ,                 | , |                 | ,,                 |                |  |  |
| ((           | COLING WIL I HOD           |              | Convection (Re   | iei io ilistruction   | iviailuai 3. i allu | J. 2) *3                                |                 |                    |                |  |  |

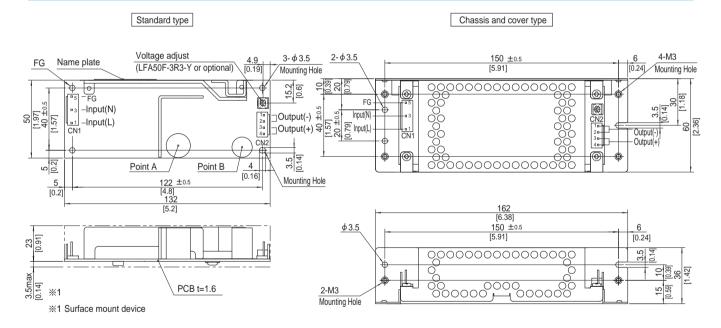
- This is the value that measured on measuring board with capacitor of 22  $\mu\,F$  at 150mm from output terminal.
  - Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Derating is required.
- Please contact us about dynamic load and input response.
- Please contact us about another class.
- 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.

# LFA50F | COSEL

# 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.

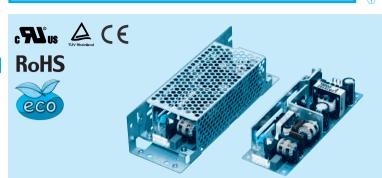
| I/C                    | Connector       | Mating connector | Terminal |           |  |  |  |
|------------------------|-----------------|------------------|----------|-----------|--|--|--|
| 0014                   | 4 4400704 0     | 1-1123722-5      | Chain    | 1123721-1 |  |  |  |
| CNT                    | CN1 1-1123724-3 | 1-1123/22-5      | Loose    | 1318912-1 |  |  |  |
| CNIO                   | 1-1123723-4     | 1-1123722-4      | Chain    | 1123721-1 |  |  |  |
| CNZ                    | 1-1123723-4     | 1-1123722-4      | Loose    | 1318912-1 |  |  |  |
| (Mfr:Tyco Electronics) |                 |                  |          |           |  |  |  |

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

### <PIN CONNECTION>

| CN1     |       |   | CN2     |        |
|---------|-------|---|---------|--------|
| Pin No. | Input |   | Pin No. | Output |
| 1       | AC(L) |   | 1, 2    | -V     |
| 2       |       |   | 1, 2    | - v    |
| 3       | AC(N) |   | 3, 4    | +V     |
| 4       |       |   | 3, 4    | + v    |
| 5       | FG    | ' |         |        |

- ※ Tolerance : ±1 [±0.04]
- Weight: 165g max (with chassis & cover: 325g max)
- PCB material / thickness : CEM3 / 1.6mm
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- ※ Dimensions in mm, [ ]=inches
- Mounting torque (Mounting hole of chassis): 0.6N · m (6.3kgf · cm) max







High voltage pulse noise type : NAP series Low leakage current type : NAM series

\*The EMI/EMC Filter is recommended to connect with several devices.

- Series name
   Single output
   Output wattage
  - 4)Universal input
  - ⑤Output 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.

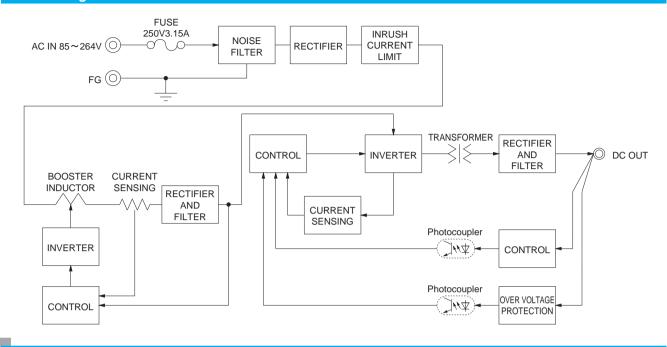
| MODEL                 | LFA75F-3R3-Y | LFA75F-5 | LFA75F-12 | LFA75F-15 | LFA75F-24 | LFA75F-36 | LFA75F-48 |
|-----------------------|--------------|----------|-----------|-----------|-----------|-----------|-----------|
| MAX OUTPUT WATTAGE[W] | 49.5         | 75       | 75.6      | 75        | 76.8      | 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  |

|                     | MODEL                       |               | LFA75F-3R3-Y  | LFA75F-5  | LFA75F-12           | LFA75F-15       | LFA75F-24              | LFA75F-36        | LFA75F-48      |  |  |  |
|---------------------|-----------------------------|---------------|---|---|---------------------|-----------------|------------------------|------------------|----------------|--|--|--|
| ,                   | VOLTAGE[V]                  |               | AC85 - 264 1 φ  | AC85 - 264 1 φ (Refer to Instruction Manual 1.1 and 3.2) *3   |                     |                 |                        |                  |                |  |  |  |
|                     | OUDDENITAL                  | ACIN 100V     | 0.70typ (lo=100%)   | 1.00typ (lo=100   | 0%)                 | ·               |                        |                  |                |  |  |  |
|                     | CURRENT[A]                  | ACIN 200V     | 0.40typ (lo=100%)   |   |                     |                 |                        |                  |                |  |  |  |
|                     | FREQUENCY[Hz]               |               | 50 / 60 (47 - 63)   |   |                     |                 |                        |                  |                |  |  |  |
|                     | EEELOJENIOV(0/1             | ACIN 100V     | 73.5typ   | 78.0typ   | 81.5typ             | 81.5typ         | 82.5typ                | 82.5typ          | 82.5typ        |  |  |  |
| NPUT                | EFFICIENCY[%]               | ACIN 200V     | 75.0typ   | 80.0typ   | 83.0typ             | 83.0typ         | 84.5typ                | 84.5typ          | 84.5typ        |  |  |  |
|                     | DOMED ELOTOD (L. 4000())    | ACIN 100V     | 0.96typ   | 6typ 0.97typ  |                     |                 |                        |                  |                |  |  |  |
|                     | POWER FACTOR (Io=100%)      | ACIN 200V     | 0.83typ   | 71 71   |                     |                 |                        |                  |                |  |  |  |
|                     | ACIN                        |               | 15typ (lo=100%  | (a) (At cold start)   | Ta=25℃)             |                 |                        |                  |                |  |  |  |
|                     | INRUSH CURRENT[A]           | ACIN 200V     |   | (a) (At cold start)   |                     |                 |                        |                  |                |  |  |  |
|                     | LEAKAGE CURREN              | T[mA]         |   |   |                     | 0%. According t | o IEC60950-1 an        | nd 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[            | mV1 *4        | 20max   | 20max   | 48max               | 60max           | 96max                  | 144max           | 192max         |  |  |  |
| H-                  | LOAD REGULATION             |               | 40max   | 40max   | 100max              | 120max          | 150max                 | 240max           | 240max         |  |  |  |
|                     |                             | 0 to +50℃*1   |   | 80max   | 120max              | 120max          | 120max                 | 150max           | 150max         |  |  |  |
|                     | RIPPLE[mVp-p]               | -10 - 0°C *1  |   | 140max  | 160max              | 160max          | 160max                 | 200max           | 200max         |  |  |  |
|                     |                             | 0 to +50°C *1 | 120max  | 120max  | 150max              | 150max          | 150max                 | 250max           | 250max         |  |  |  |
| UTPUT               | RIPPLE NOISE[mVp-p]         | -10 - 0°C *1  | 160max  | 160max  | 180max              | 180max          | 180max                 | 300max           | 300max         |  |  |  |
|                     |                             |               | 50max   | 50max   | 120max              | 150max          | 240max                 | 360max           | 480max         |  |  |  |
|                     | TEMPERATURE REGULATION[mV]  | -10 to +50°C  |   | 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"option is available for adjusting output voltage between ±10%)                   |   |                     |                 |                        |                  |                |  |  |  |
| -                   | OUTPUT VOLTAGE SET          |               | 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            |               |   | % of rating and   |                     |                 | 20.00 to 20.00         | 01.00 to 01.00   | 10.00 10 00.01 |  |  |  |
| -                   | 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         | 41.40 to 50.40   | 55.20 to 67.20 |  |  |  |
|                     | OPERATING INDICA            |               | Not provided  | 0.70 10 7.00  | 10.00 10 10.00      | 11.20 10 2.100  | 27.00 10 00.00         |                  | 00.20 to 07.20 |  |  |  |
|                     | REMOTE SENSING              |               | Not provided  Not provided  |   |                     |                 |                        |                  |                |  |  |  |
| -                   | REMOTE ON/OFF               |               | Not provided  Not provided  |   |                     |                 |                        |                  |                |  |  |  |
|                     | INPUT-OUTPUT                |               | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)                  |   |                     |                 |                        |                  |                |  |  |  |
| <u> </u>            | INPUT-FG                    |               | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)                          |   |                     |                 |                        |                  |                |  |  |  |
| -                   | OUTPUT-FG                   |               | AC500V 1minute, Cutoff current = 10ffA, DC500V 50M $\Omega$ min (At Room Temperature)                   |   |                     |                 |                        |                  |                |  |  |  |
|                     | OPERATING TEMP., HUMID. AND | ΔI TITUDE     | -10 to +70°C, 20 - 90%RH (Non condensing) (Refer to Instruction Manual 3.2), 3,000m (10,000feet) max *3 |   |                     |                 |                        |                  |                |  |  |  |
|                     | STORAGE TEMP., HUMID.AND    |               | -20 to +75°C, 20 - 90%RH (Non condensing) (Refer to Instruction Manual 3.2), 3,000m (10,000leet) max *3 |   |                     |                 |                        |                  |                |  |  |  |
| $NVIRONMENT \vdash$ | VIBRATION                   |               |   | - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis  |                     |                 |                        |                  |                |  |  |  |
|                     | IMPACT                      |               |   |   |                     |                 | 9, 1 and <b>2</b> axio | •                |                |  |  |  |
|                     | AGENCY APPROVAL             | S             |   | 196.1m/s² (20G), 11ms, once each X, Y and Z axis UL60950-1, C-UL (CSA60950-1), EN60950-1, EN60065, EN50178 Complies with DEN-AN |                     |                 |                        |                  |                |  |  |  |
| / <u> </u>          | CONDUCTED NOISE             |               |   | CC-B, VCCI-B,   |                     |                 |                        |                  |                |  |  |  |
|                     | HARMONIC ATTENU             |               |   | EC61000-3-2 (C  |                     | D, L1400022     |                        |                  |                |  |  |  |
|                     | CASE SIZE/WEIGHT            |               |   |   |                     | XHXD) / 230g    | max (with chassis      | s & cover · 440a | max)           |  |  |  |
| OTHERS ⊢            |                             |               |   | fer to Instruction  |                     | , ,             | THAN (WILLI CHASSI     | 3 G 50VEI . 740g | mux)           |  |  |  |
|                     | CCCLING MILITIOD            |               | Convection (Re  | iei io ilialiuction   | iviailuai J. i allu | J.L) *·         |                        |                  |                |  |  |  |

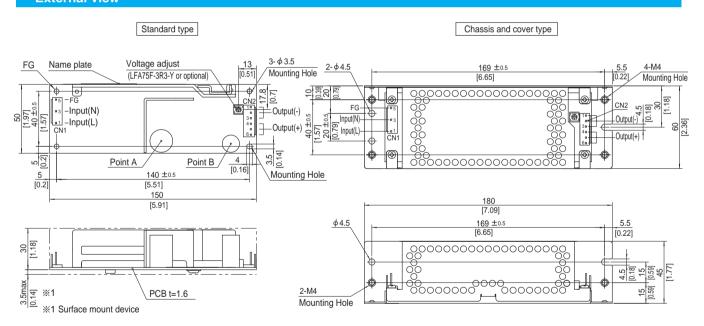
- This is the value that measured on measuring board with capacitor of 22  $\mu\,F$  at 150mm from output terminal.
  - Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).
- Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with the input voltage held constant at the rated input/output.
- Derating is required.
- Please contact us about dynamic load and input response.
- Please contact us about another class.
- 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.

# LFA75F | COSEL

# 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         |             | /O Connector Mating connector |       | erminal   |  |  |  |
|--|-----------------------|-------------|-------------------------------|-------|-----------|--|--|--|
|  | CNIA                  | 4 4400704 0 | 1-1123722-5                   | Chain | 1123721-1 |  |  |  |
|  | CN1 1-11.             | 1-1123724-3 | 1-1123722-5                   | Loose | 1318912-1 |  |  |  |
|  | CN2 1-1123723-6       |             | 4 4400700 0                   | Chain | 1123721-1 |  |  |  |
|  |                       |             | 1-1123722-6                   | Loose | 1318912-1 |  |  |  |
|  | (Mfr:Tyco Floctronics |             |                               |       |           |  |  |  |

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

### <PIN CONNECTION>

#### CN1 CN2 Pin No. 1 2 3

| Input | Pin No. | Output |
|-------|---------|--------|
| AC(L) | 1 to 3  | -V     |
|       | 1 10 3  | - V    |
| AC(N) | 4 to 6  | +V     |
|       | 4106    | +٧     |
| FG    |         |        |

- ※ Tolerance : ±1 [±0.04]
- Weight: 230g max (with chassis & cover: 440g max)
- ※ PCB material / thickness : CEM3 / 1.6mm
- ※ Optional chassis and cover material : Electric galvanizing steel board.
- Dimensions in mm, [ ]=inches
   Mounting torque (Mounting hole of chassis) :1.5N · m (16kgf · cm) max



Recommended EMI/EMC Filter NAC-04-472

High voltage pulse noise type : NAP series

\*The EMI/EMC Filter is recommended to connect with several devices.

Low leakage current type : NAM series

 Series name
 Single output
 Output wattage 4)Universal input

⑤Output voltage

(a) Output voltage
(b) Optional \*1
C: with Coating
G: Low leakage current
H: with the function to be acceptable

to output peak current (only 24V)

J1: VH(J.S.T.)connector type R: with Remote ON/OFF R2: with Remote ON/OFF

S: with Chassis

SN: with Chassis & cover

Y: with Potentiometer

Please refer to Instruction manual 5.

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                    | LFA100F-3R3-Y | LFA100F-5-Y | LFA100F-12 | LFA100F-15 | LFA100F-24 | LFA100F-24-H   | LFA100F-36 | LFA100F-48 |
|--------------------------|---------------|-------------|------------|------------|------------|----------------|------------|------------|
| MAX OUTPUT WATTAGE[W] *5 | 66            | 100         | 102        | 100.5      | 103.2      | 103.2 (129.6)  | 100.8      | 100.8      |
| DC OUTPUT *5             | 3.3V 20A      | 5V 20A      | 12V 8.5A   | 15V 6.7A   | 24V 4.3A   | 24V 4.3 (5.4)A | 36V 2.8A   | 48V 2.1A   |

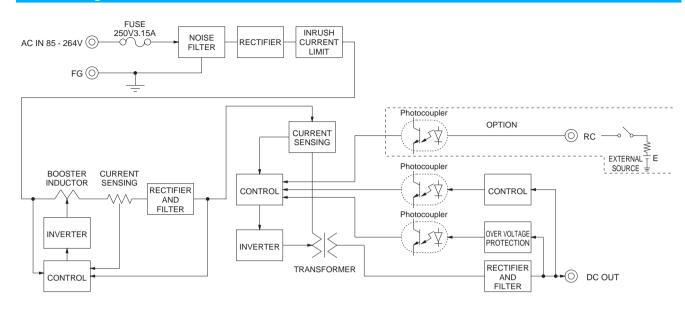
|                | MODEL                              |                | LFA100F-3R3-Y  | LFA100F-5-Y                              | LFA100F-12                    | LFA100F-15      | LFA100F-24                            | LFA100F-24-H         | LFA100F-36     | LFA100F-48     |  |
|----------------|------------------------------------|----------------|--|--|-------------------------------|-----------------|---------------------------------------|----------------------|----------------|----------------|--|
|                | VOLTAGE[V]                         |                | AC85 - 264 1   | φ (Refer to Ins                          | struction Manu                | al 1.1 and 3.2) | *4                                    |                      |                |                |  |
|                | OUDDENITAL                         | ACIN 100V      | 0.9typ (lo=100%)   | 1.3typ (lo=10                            | 0%)                           |                 |                                       |                      |                |                |  |
|                | CURRENT[A]                         | ACIN 200V      | 0.5typ (lo=100%)   | 0.7typ (lo=10                            | 0%)                           |                 |                                       |                      |                |                |  |
| INPUT          | FREQUENCY[Hz]                      |                | 50 / 60 (47 - 63)  |  |                               |                 |                                       |                      |                |                |  |
|                | EEEIGIENGVIII/I                    | ACIN 100V      | 77.0typ  | 82.0typ                                  | 82.0typ                       | 83.0typ         | 84.0typ                               | 84.0typ              | 84.0typ        | 84.5typ        |  |
| NPUT           | EFFICIENCY[%]                      | ACIN 200V      | 79.0typ  | 84.0typ                                  | 84.5typ                       | 85.5typ         | 87.0typ                               | 87.0typ              | 87.0typ        | 87.0typ        |  |
|                | POWER FACTOR (Io=100%)             | ACIN 100V      | 0.98typ  | 0.99typ                                  |                               |                 |                                       |                      |                |                |  |
|                | ACIN 200                           |                | 0.92typ 0.95typ  |  |                               |                 |                                       |                      |                |                |  |
|                | INRUSH CURRENT[A]                  |                | 15typ (Io=100%) (At cold start) (Ta=25°C)  |  |                               |                 |                                       |                      |                |                |  |
|                | INKOSH COKKENT[A]                  | ACIN 200V      | 30typ (Io=100  | 30typ (Io=100%) (At cold start) (Ta=25℃) |                               |                 |                                       |                      |                |                |  |
|                | LEAKAGE CURREN                     | T[mA]          | 0.40 / 0.75max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60950-1 and DEN-AN)  |  |                               |                 |                                       |                      |                |                |  |
|                | VOLTAGE[V]                         |                | 3.3  | 5  | 12                            | 15              | 24                                    | 24                   | 36             | 48             |  |
|                | CURRENT[A]                         | *5             | 20   | 20                                       | 8.5                           | 6.7             | 4.3                                   | 4.3 (Peak 5.4)       | 2.8            | 2.1            |  |
| оитрит         | LINE REGULATION[                   |                | 20max  | 20max                                    | 48max                         | 60max           | 96max                                 | 96max                | 144max         | 192max         |  |
|                | LOAD REGULATION                    | <del></del>    | 40max  | 40max                                    | 100max                        | 120max          | 150max                                | 150max               | 240max         | 240max         |  |
|                | RIPPLE[mVp-p]                      | 0 to +50℃ *2   |  | 80max                                    | 120max                        | 120max          | 120max                                | 240max               | 150max         | 150max         |  |
|                |                                    | -10 - 0°C *2   | 140max   | 140max                                   | 160max                        | 160max          | 160max                                | 320max               | 200max         | 200max         |  |
|                | RIPPLE NOISE[mVp-p]                |                | 120max   | 120max                                   | 150max                        | 150max          | 150max                                | 300max               | 250max         | 250max         |  |
|                |                                    | -10 - 0°C *2   | 160max   | 160max                                   | 180max                        | 180max          | 180max                                | 360max               | 300max         | 300max         |  |
|                | TEMPERATURE REGULATION[mV]         |                | 50max  | 50max                                    | 120max                        | 150max          | 240max                                | 240max               | 360max         | 480max         |  |
|                |                                    | -10 to +50°C   |  | 60max                                    | 150max                        | 180max          | 290max                                | 290max               | 450max         | 600max         |  |
|                | DRIFT[mV]                          | *3             | 20max  | 20max                                    | 48max                         | 60max           | 96max                                 | 96max                | 144max         | 192max         |  |
|                | START-UP TIME[ms]                  |                | 350typ (ACIN 100V, Io=100%)  |  |                               |                 |                                       |                      |                |                |  |
|                | HOLD-UP TIME[ms]                   |                | 20typ (ACIN 100V, lo=100%)<br>  2.85 to 3.63   4.50 to 5.50   Fixed ("Y"option is available for adjusting output voltage)                                      |  |                               |                 |                                       |                      |                |                |  |
|                | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] |                |  |  |                               |                 |                                       |                      | 04 50 4- 07 50 | 10 00 1- 50 00 |  |
|                | OUTPUT VOLTAGE SET                 |                | 3.30 to 3.40   |  |                               | 14.40 to 15.60  | 23.00 to 25.00                        | 23.00 to 25.00       | 34.50 to 37.50 | 46.00 to 50.00 |  |
|                | OVERCURRENT PROT                   |                |  | 5.75 to 7.00                             | works over 10° 13.80 to 16.80 | 1% of peak cur  | 27.60 to 33.60                        | 27.60 to 33.60       | 41.40 to 50.40 | 55.20 to 67.20 |  |
|                | OPERATING INDICA                   |                |  | 5.75 10 7.00                             | 13.00 10 10.00                | 17.25 10 21.00  | 27.00 10 33.00                        | 27.00 10 33.00       | 41.40 10 50.40 | 33.20 10 67.20 |  |
| OTHERS         | REMOTE SENSING                     | IION           | Not provided   |  |                               |                 |                                       |                      |                |                |  |
| OTTLETTO       | REMOTE ON/OFF                      |                | Not provided Option (Refer to Instruction Manual)  |  |                               |                 |                                       |                      |                |                |  |
|                | INPUT-OUTPUT-RC                    | *6             | <del>- ` ` </del>  |  |                               | DC500V 50M      | IO min (At Roo                        | om Temperatur        | · 6)           |                |  |
|                | INPUT-FG                           |                | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)  AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) |  |                               |                 |                                       |                      |                |                |  |
| ISOLATION      | OUTPUT-RC-FG                       | *6             |  |  |                               |                 |                                       |                      |                |                |  |
|                | OUTPUT-RC                          | *6             |  |  |                               |                 |                                       |                      |                |                |  |
|                | OPERATING TEMP., HUMID. AND        | ALTITUDE *4    |  |  | Non condensin                 |                 |                                       |                      |                | nax            |  |
|                | STORAGE TEMP., HUMID.AND           |                | ,  |  | Non condensin                 | 0/ (            |                                       |                      | . (,           | TIGH.          |  |
| ENVIRONMENT    | VIBRATION                          |                |  |  | minutes period                | <u> </u>        | · · · · · · · · · · · · · · · · · · · |                      |                |                |  |
|                | IMPACT                             |                |  |  | e each X, Y an                |                 | <u> </u>                              |                      |                |                |  |
| SAFETY AND     | AGENCY APPROVAL                    | LS             |  |  | 50-1), EN6095                 |                 | EN50178 Con                           | nplies with DE       | N-AN           |                |  |
| NOISE          | CONDUCTED NOISE                    |                | Complies with  | FCC-B, VCC                               | I-B, CISPR-B, I               | EN55011-B, EI   | N55022-B                              |                      |                |                |  |
| REGULATIONS    | HARMONIC ATTENU                    | JATOR          | Complies with  | 1EC61000-3-                              | 2 (Class A) *8                |                 |                                       |                      |                |                |  |
|                | CASE SIZE/WEIGHT                   |                | 62×33.5×15   | 55mm [2.44×1                             | .32×6.10 inch                 | ies] (W×H×D     | ) / 280g max (                        | with chassis &       | cover : 480g m | ıax)           |  |
| OTHERS         | COOLING METHOD                     |                | Convection (F  | Refer to Instruct                        | ion Manual 3.1                | and 3.2) *4     |                                       |                      |                |                |  |
| *1 Specificati | on is changed at option, refer t   | to Instruction | Manual   | at the rated input/or                    | itnut                         |                 | * Place                               | e contact us about a | nother class   |                |  |

- \$1 Specification is changed at option, refer to Instruction Manual.
- 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).
- 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.
- ( ) means peak current. There is a possibility that an internal device is damaged when the specification is exceeded. Please contact us about the detail.
- Applicable when Remote ON/OFF (optional) is added.
- Please contact us about dynamic load and input response.
- \*8 Please contact us about another class.
- 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.

# LFA100F | COSEL

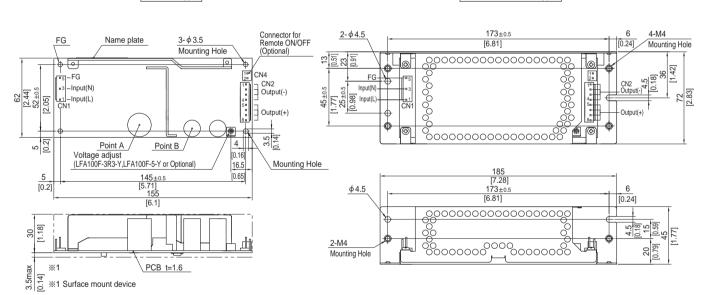
# Block diagram



#### **External view**

\* External size of option is different from standard model.

Standard type Chassis and cover type



- % 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 | Terminal |           |  |
|------|-----------------|------------------|----------|-----------|--|
| ONIA | 4 4400704 0     | 1-1123722-5      | Chain    | 1123721-1 |  |
| CN1  | CN1 1-1123724-3 | 1-1123722-5      | Loose    | 1318912-1 |  |
| ONIO | 1-1123723-8     | 4 4400700 0      | Chain    | 1123721-1 |  |
| CN2  | 1-1123723-8     | 1-1123722-8      | Loose    | 1318912-1 |  |

(Mfr:Tyco Electronics)

- **% I/O Connector is Mfr. Tyco Electronics**
- Option:-J1:VH(J.S.T) connector type.

### <PIN CONNECTION>

#### 

| 1 to 4 -V |
|-----------|
|           |
| 5 to 8 +V |

- % Tolerance : ±1 [±0.04]
- Weight: 280g max (with chassis & cover: 480g max)
- ※ PCB material : CEM3
- $\ensuremath{\mathbb{X}}$  Optional chassis and cover material : Electric galvanizing steel board.
- \* Dimensions in mm, [ ]=inches
- Mounting torque (Mounting hole of chassis) :1.5N \* m (16kgf \* cm) max

### Connector type

CN4 Option (Mfr:J.S.T)

| PIN No. | Contents |
|---------|----------|
| 1       | RC(+)    |
| 2       | RC(-)    |

Barrier strip type

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

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

c Sus Livrheinsed CE **RoHS** eco

Recommended EMI/EMC Filter NAC-04-472

High voltage pulse noise type : NAP series Low leakage current type : NAM series

\*The EMI/EMC Filter is recommended to connect with several devices.

Series name
 Single output
 Output wattage

4)Universal input ⑤Output voltage

(a) Output voltage
(b) Optional \*1
C: with Coating
G: Low leakage current
H: with the function to be acceptable

to output peak current (only 24V)

J1: VH(J.S.T.)connector type R: with Remote ON/OFF R2: with Remote ON/OFF

S: with Chassis SN: with Chassis & cover

Y: with Potentiometer

Please refer to Instruction manual 5.

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                    | LFA150F-3R3-Y | LFA150F-5-Y | LFA150F-12 | LFA150F-15 | LFA150F-24 | LFA150F-24-H   | LFA150F-36 | LFA150F-48 |
|--------------------------|---------------|-------------|------------|------------|------------|----------------|------------|------------|
| MAX OUTPUT WATTAGE[W] *5 | 99            | 150         | 150        | 150        | 151.2      | 151.2 (189.6)  | 151.2      | 153.6      |
| DC OUTPUT *5             | 3.3V 30A      | 5V 30A      | 12V 12.5A  | 15V 10A    | 24V 6.3A   | 24V 6.3 (7.9)A | 36V 4.2A   | 48V 3.2A   |

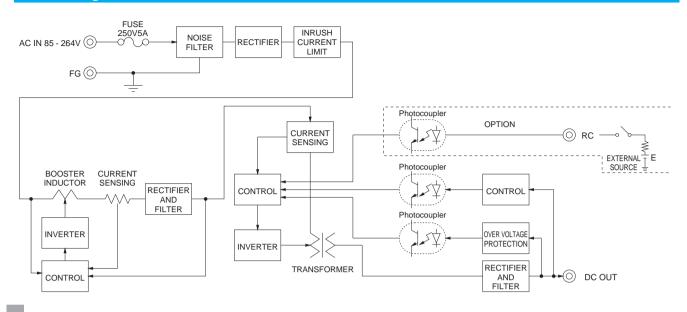
| INPUT  EFFI  POWE  INRU  LEAI  VOLT  CUR | EQUENCY[Hz] FICIENCY[%]  ER FACTOR (Io=100%) | ACIN 100V ACIN 200V ACIN 100V ACIN 200V ACIN 100V ACIN 200V | 1.4typ (lo=100%)<br>0.7typ (lo=100%)<br>50 / 60 (47 - 6<br>80.0typ<br>82.0typ          | 2.0typ (lo=10<br>1.0typ (lo=10<br>33)<br>82.5typ | 0%)              | al 1.1 and 3.2) | *4                                    |                      |                 |                |  |  |  |  |
|--|--|---|--|--|------------------|-----------------|---------------------------------------|----------------------|-----------------|----------------|--|--|--|--|
| INPUT EFFI POWE INRU LEAI VOLT CUR       | EQUENCY[Hz] FICIENCY[%]  ER FACTOR (Io=100%) | ACIN 200V ACIN 100V ACIN 200V ACIN 100V                     | 0.7typ (lo=100%)<br>50 / 60 (47 - 6<br>80.0typ<br>82.0typ                              | 1.0typ (lo=10<br>i3)<br>82.5typ                  | 0%)              |                 |                                       |                      |                 |                |  |  |  |  |
| INPUT EFFI POWE INRU LEAI VOLT CUR       | EQUENCY[Hz] FICIENCY[%]  ER FACTOR (lo=100%) | ACIN 100V<br>ACIN 200V<br>ACIN 100V                         | 50 / 60 (47 - 6<br>80.0typ<br>82.0typ  | 82.5typ  | ,                |                 |                                       |                      |                 |                |  |  |  |  |
| INPUT EFFI POWE INRU LEAI VOLT CUR       | FICIENCY[%]  ER FACTOR (Io=100%)             | ACIN 200V<br>ACIN 100V                                      | 80.0typ<br>82.0typ   | 82.5typ  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| POWE INRU LEA VOL' CUR                   | ER FACTOR (Io=100%)                          | ACIN 200V<br>ACIN 100V                                      | 82.0typ  |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| POWE INRU LEA VOL' CUR                   | ER FACTOR (lo=100%)                          | ACIN 100V   |  |  | 82.5typ          | 84.0typ         | 85.0typ                               | 85.0typ              | 85.0typ         | 85.5typ        |  |  |  |  |
| INRU LEA VOL*                            | ER FACTOR (Io=100%)                          |   |  | 85.5typ  | 85.0typ          | 86.5typ         | 87.5typ                               | 87.5typ              | 87.5typ         | 88.0typ        |  |  |  |  |
| INRU LEA VOL*                            | USH CURRENTIAL                               | ACIN 200V   | 0.98typ  | 0.99typ  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| LEAI<br>VOLT<br>CUR                      | USH CURRENT[∆1⊦                              |   | 0.92typ  | 0.95typ  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| LEAI<br>VOLT<br>CUR                      | USH CURRENI[A]                               | ACIN 100V   | 15typ (Io=100%) (At cold start) (Ta=25°C)  |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| VOL <sup>-</sup><br>CUR                  |  | ACIN 200V   | 30typ (lo=100  | %) (At cold sta                                  | rt) (Ta=25°C)    |                 |                                       |                      |                 |                |  |  |  |  |
| CUR                                      | LEAKAGE CURRENT[mA]                          |   | 0.40 / 0.75ma  | x (ACIN 100V                                     | / 240V 60Hz,     | lo=100%, Acco   | ording to IEC60                       | 0950-1 and DE        | N-AN)           |                |  |  |  |  |
|  | TAGE[V]                                      |   | 3.3  | 5  | 12               | 15              | 24                                    | 24                   | 36              | 48             |  |  |  |  |
| I INIE                                   | RRENT[A]                                     | *5  | 30   | 30   | 12.5             | 10              | 6.3                                   | 6.3 (Peak 7.9)       | 4.2             | 3.2            |  |  |  |  |
| LINE                                     | E REGULATION[n                               | nV] *7  | 20max  | 20max  | 48max            | 60max           | 96max                                 | 96max                | 144max          | 192max         |  |  |  |  |
| LOA                                      | AD REGULATION                                |   | 40max  | 40max  | 100max           | 120max          | 150max                                | 150max               | 240max          | 240max         |  |  |  |  |
| DIDE                                     | DI Elm\/n n1                                 | 0 to +40℃*2   | 80max  | 80max  | 120max           | 120max          | 120max                                | 240max               | 150max          | 150max         |  |  |  |  |
| RIPP                                     | PLE[mVp-p]                                   | -10 - 0°C *2  | 140max   | 140max   | 160max           | 160max          | 160max                                | 320max               | 200max          | 200max         |  |  |  |  |
| DIDDI                                    | N E NOICE[V1                                 | 0 to +40°C *2   | 120max   | 120max   | 150max           | 150max          | 150max                                | 300max               | 250max          | 250max         |  |  |  |  |
| OUTPUT KIPPL                             | RIPPLE NOISE[mVp-p]                          | -10 - 0°C *2  | 160max   | 160max   | 180max           | 180max          | 180max                                | 360max               | 300max          | 300max         |  |  |  |  |
| TEMPE                                    | EDATUDE DECLII ATIONI                        | 0 to +40°C  | 50max  | 50max  | 120max           | 150max          | 240max                                | 240max               | 360max          | 480max         |  |  |  |  |
| TEMPER                                   | TEMPERATURE REGULATION[mV]                   | -10 to +40°C  | 60max  | 60max  | 150max           | 180max          | 290max                                | 290max               | 450max          | 600max         |  |  |  |  |
| DRIF                                     | DRIFT[mV] *3                                 |   | 20max  | 20max  | 48max            | 60max           | 96max                                 | 96max                | 144max          | 192max         |  |  |  |  |
| STA                                      | START-UP TIME[ms]                            |   | 350typ (ACIN 100V, Io=100%)  |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| HOL                                      | HOLD-UP TIME[ms]                             |   | 20typ (ACIN 100V, lo=100%)   |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| OUTPU                                    | UT VOLTAGE ADJUSTMENT I                      | RANGE[V]  | 2.85 to 3.63   | 4.50 to 5.50                                     | Fixed ("Y"opti   | on is available | for adjusting o                       | utput voltage)       |                 |                |  |  |  |  |
| OUTF                                     | PUT VOLTAGE SETT                             | ING[V]  | 3.30 to 3.40   | 5.00 to 5.15                                     | 11.50 to 12.50   | 14.40 to 15.60  | 23.00 to 25.00                        | 23.00 to 25.00       | 34.50 to 37.50  | 46.00 to 50.00 |  |  |  |  |
| OVE                                      | RCURRENT PROTE                               | ECTION  | Works over 10  | 05% of rating (                                  | works over 10°   | 1% of peak cur  | rent at option -                      | H) and recove        | rs automaticall | У              |  |  |  |  |
| PROTECTION OVER                          | RVOLTAGE 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                        | 27.60 to 33.60       | 41.40 to 50.40  | 55.20 to 67.20 |  |  |  |  |
| CIRCUIT AND OPE                          | ERATING INDICAT                              | ΓΙΟΝ  | Not provided   |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| OTHERS REM                               | MOTE SENSING                                 |   | Not provided   |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| REM                                      | MOTE ON/OFF                                  |   | Option (Refer to Instruction Manual)   |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
|  | UT-OUTPUT-RC                                 | *6  |  |  | urrent = 10mA    |                 |                                       |                      |                 |                |  |  |  |  |
| ISOLATION -                              | UT-FG  |   | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature) |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
| OUT                                      | TPUT-RC-FG                                   | *6  |  |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
|  | TPUT-RC                                      | *6  | AC100V 1minute, Cutoff current = 25mA, DC100V 10M $\Omega$ min (At Room Temperature)   |  |                  |                 |                                       |                      |                 |                |  |  |  |  |
|  | ATING TEMP.,HUMID.AND A                      |   |  |  | Non condensin    | 0, (            |                                       | al 3.2), 3,000m      | (10,000feet) r  | max            |  |  |  |  |
| FNVIRONMENT ├──                          | RAGE TEMP.,HUMID.AND                         | ALTITUDE  |  | ,  | Non condensin    | <u> </u>        | · · · · · · · · · · · · · · · · · · · |                      |                 |                |  |  |  |  |
| VIBR                                     | RATION                                       |   | · · · · · · · · · · · · · · · · · · ·  | , ,.   | minutes period   |                 | ch along X, Y a                       | and Z axis           |                 |                |  |  |  |  |
| IMPA                                     |  | _   |  | ,, ,   | e each X, Y an   |                 |                                       |                      |                 |                |  |  |  |  |
| O/ (1 E 1 1 / (1 1 E                     | ENCY APPROVAL                                |   |  |  | 50-1), EN6095    |                 |                                       | nplies with DEI      | N-AN            |                |  |  |  |  |
|  | NDUCTED NOISE                                |   |  |  | -B, CISPR-B, I   | EN55011-B, EN   | N55022-B                              |                      |                 |                |  |  |  |  |
| REGULATIONS HAR                          |  | ATOR  |  | IEC61000-3-2                                     |                  |                 |                                       |                      |                 |                |  |  |  |  |
| OTHERS                                   | SE SIZE/WEIGHT                               |   |  |  | .46 × 6.30 inche | . ,             | / 390g max (wi                        | ith chassis & c      | over : 650g ma  | ax)            |  |  |  |  |
| COO                                      | OLING METHOD<br>hangeed at option, refer     |   |  | efer to Instruct                                 | tion Manual 3.   | 1 and 3.2) *4   |                                       | e contact us about a |                 |                |  |  |  |  |

- \*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).
- \*3 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
- \*4 Derating is required. \*5 ( ) means peak current. There is a possibility that an internal device is damaged when the specification is exceeded. Please contact us about the detail.
- Applicable when remote control (optional) is added.
- \*7 Please contact us about dynamic load and input response.
- 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.

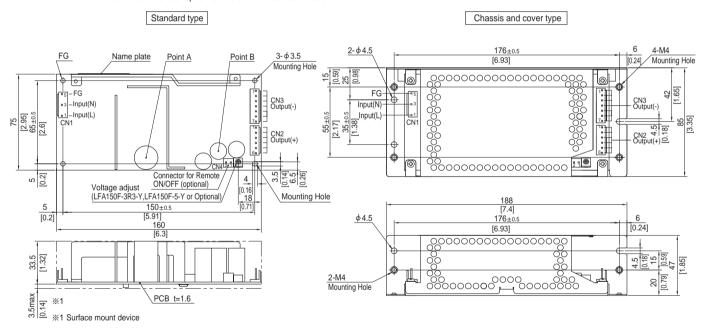
# LFA150F | COSEL

# Block diagram



#### **External view**

\* External size of option is different from standard model.



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

| 1/0  | O Connector   | Mating connector | Terminal |           |  |
|------|---------------|------------------|----------|-----------|--|
| CNI  | 1-1123724-3   | 1-1123722-5      | Chain    | 1123721-1 |  |
| CIV  | 1-1123724-3   | 1-1123722-5      | Loose    | 1318912-1 |  |
| ONIC | 1-1123723-6   | 1-1123722-6      | Chain    | 1123721-1 |  |
| CNZ  | 1-1123723-6   | 1-1123/22-6      | Loose    | 1318912-1 |  |
| ONIC | 1-1123723-7   | 1-1123722-7      | Chain    | 1123721-1 |  |
| CINS | 3 1-1123723-7 | 1-1123/22-/      | Loose    | 1318912-1 |  |

(Mfr:Tyco Electronics)

- \* I/O Connector is Mfr. Tyco Electronics
- % Option:-J1:VH(J.S.T) connector type.

# <PIN CONNECTION>

| CN1     |       | ( | CN2     |        | CN3     |        |
|---------|-------|---|---------|--------|---------|--------|
| Pin No. | Input |   | Pin No. | Output | Pin No. | Output |
| 1       | AC(L) |   |         |        |         |        |
| 2       |       |   |         |        |         |        |
| 3       | AC(N) |   | 1 to 6  | +V     | 1 to 7  | -V     |
| 4       |       |   |         |        |         |        |
| 5       | FG    |   |         |        |         |        |
|         |       |   |         |        | <br>    |        |

- ※ Keep drawing current per pin below 5A for CN2,CN3.
- % Tolerance : ±1 [±0.04]
- Weight: 390g max (with chassis & cover: 650g max)
- ※ PCB material : CEM3 ※ Optional chassis and cover material: Electric galvanizing steel board.
- ※ Dimensions in mm, [ ]=inches Mounting torque (Mounting hole of chassis) :1.5N · m (16kgf · cm) max

### Connector type

| CN4 Option | n (Mfr:J.S.T) |
|------------|---------------|
| PIN No.    | Contents      |

| PIN No. | Contents |
|---------|----------|
| 1       | RC(+)    |
| 2       | RC(-)    |
|         |          |

Barrier strip type

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

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

c Su'us 🛕 ( E **RoHS** eco

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

High voltage pulse noise type : NAP series Low leakage current type : NAM series

Recommended EMI/EMC Filter NAC-06-472

- Series name
   Single output
   Output wattage
- 4)Universal input
- ⑤Output voltage
- ®Optional \*1
   C : with Coating
   G : Low leakage current
  - H: with the function to be acceptable to output peak current (only 24V) J1: VH(J.S.T.)connector type R: with Remote ON/OFF

  - R2: with Remote ON/OFF S: with Chassis
  - SN: with Chassis & cover
  - T: Vertical terminal block Y: with Potentiometer

Please refer to Instruction manual 5.

| MODEL                    | LFA240F-24 | LFA240F-24-H   | LFA240F-36 | LFA240F-48 |
|--------------------------|------------|----------------|------------|------------|
| MAX OUTPUT WATTAGE[W] *5 | 240        | 240 (300)      | 241.2      | 240        |
| DC OUTPUT *5             | 24V 10A    | 24V 10 (12.5)A | 36V 6.7A   | 48V 5A     |

### **SPECIFICATIONS**

so handle the unit with care.

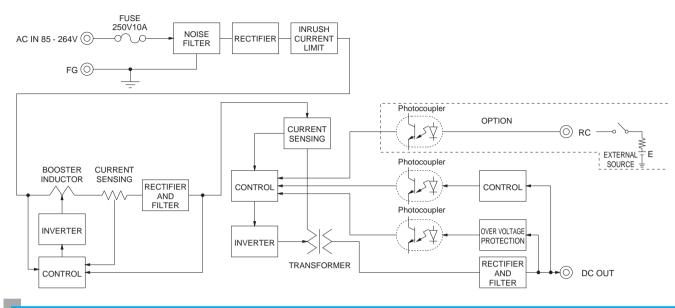
|                  | MODEL                              |               | LFA240F-24  | LFA240F-24-H                | LFA240F-36                 | LFA240F-48                |  |  |  |
|------------------|------------------------------------|---------------|---|-----------------------------|----------------------------|---------------------------|--|--|--|
|                  | VOLTAGE[V]                         |               | AC85 - 264 1 φ (Refer to Ins  | struction Manual 1.1 and 3. | 2) *4                      |                           |  |  |  |
| l                | OUDDENTIAL                         | ACIN 100V     | 3.3typ (lo=100%)  |                             |                            |                           |  |  |  |
| ļ                | CURRENT[A]                         | ACIN 200V     | 1.7typ (lo=100%)  |                             |                            |                           |  |  |  |
| ŀ                | FREQUENCY[Hz]                      |               | 50 / 60 (47 - 63)   |                             |                            |                           |  |  |  |
| INDUT            | EFFICIENCY[0/1                     | ACIN 100V     | 84.5typ   | 84.5typ                     | 84.5typ                    | 84.5typ                   |  |  |  |
| NPUT             | EFFICIENCY[%]                      | ACIN 200V     | 87.5typ   | 87.5typ                     | 87.5typ                    | 87.5typ                   |  |  |  |
|                  | ACIN 100V                          |               | 21 21 21  |                             |                            |                           |  |  |  |
| ļ                | POWER FACTOR (lo=100%)             | ACIN 200V     | 0.95typ   |                             |                            |                           |  |  |  |
|                  | INDUCUI CUDDENTIAL                 | ACIN 100V     | 15 / 30typ (Io=100%) (Prim  | ary inrush current /Secon   | dary inrush current) (More | then 3 sec. to re-start)  |  |  |  |
|                  | INRUSH CURRENT[A]                  | ACIN 200V     | 30 / 30typ (lo=100%) (Primary inrush current /Secondary inrush current) (More then 3 sec. to re-start)  |                             |                            |                           |  |  |  |
|                  | LEAKAGE CURREN                     | T[mA]         | 0.40 / 0.75max (ACIN 100V / 240V 60Hz, lo=100%, According to IEC60950-1 and DEN-AN)   |                             |                            |                           |  |  |  |
|                  | VOLTAGE[V]                         |               | 24  | 24                          | 36                         | 48                        |  |  |  |
|                  | CURRENT[A]                         | *5            | 10  | 10 (Peak12.5)               | 6.7                        | 5                         |  |  |  |
|                  | LINE REGULATION[mV] *7             |               | 96max   | 96max                       | 144max                     | 192max                    |  |  |  |
| OUTPUT           | LOAD REGULATION                    | [mV] *7       | 150max  | 150max                      | 240max                     | 240max                    |  |  |  |
|                  | RIPPLE[mVp-p]                      | 0 to +40℃*2   | 120max  | 240max                      | 150max                     | 150max                    |  |  |  |
|                  | KIFFEE[IIIVP-P]                    | -10 - 0°C *2  | 160max  | 320max                      | 200max                     | 200max                    |  |  |  |
|                  | RIPPLE NOISE[mVp-p]                | 0 to +40°C *2 | 150max  | 300max                      | 250max                     | 250max                    |  |  |  |
|                  | KIPPLE NOISE[IIIVP-P]              | -10 - 0°C *2  | 180max  | 360max                      | 300max                     | 300max                    |  |  |  |
|                  | TEMPERATURE REGULATION[mV]         | 0 to +40°C    | 240max  | 240max                      | 360max                     | 480max                    |  |  |  |
|                  | TEMPERATURE REGULATION[IIIV]       | -10 to +40°C  | 290max  | 290max                      | 450max                     | 600max                    |  |  |  |
|                  | DRIFT[mV] *3                       |               | 96max   | 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] |               | Fixed ("Y"option is available for adjusting output voltage)   |                             |                            |                           |  |  |  |
|                  | OUTPUT VOLTAGE SET                 | TING[V]       | 23.00 to 25.00  | 23.00 to 25.00              | 34.50 to 37.50             | 46.00 to 50.00            |  |  |  |
|                  | OVERCURRENT PROT                   | ECTION        | Works over 105% of rating   | (works over 101% of peak    | current at option -H) and  | recovers automatically    |  |  |  |
| ROTECTION        | OVERVOLTAGE PROTE                  | CTION         | 27.60 to 33.60  | 27.60 to 33.60              | 41.40 to 50.40             | 55.20 to 67.20            |  |  |  |
| IRCUIT AND       | OPERATING INDICA                   | TION          | Not provided  |                             |                            |                           |  |  |  |
| THERS            | REMOTE SENSING                     |               | Not provided  |                             |                            |                           |  |  |  |
|                  | REMOTE ON/OFF                      |               | Option (Refer to Instruction Manual)  |                             |                            |                           |  |  |  |
|                  | INPUT-OUTPUT-RC                    | *6            | AC3,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)  |                             |                            |                           |  |  |  |
| SOLATION         | INPUT-FG                           |               | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50M $\Omega$ min (At Room Temperature)  |                             |                            |                           |  |  |  |
| SOLATION         | OUTPUT-RC-FG                       | *6            | AC500V 1minute, Cutoff current = 25mA, DC500V 50M $\Omega$ min (At Room Temperature)  |                             |                            |                           |  |  |  |
|                  | OUTPUT-RC                          | *6            | AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)  |                             |                            |                           |  |  |  |
| ŀ                | OPERATING TEMP., HUMID. AND        | ALTITUDE *4   | -10 to +70°C, 20 - 90%RH (Non condensing) (Refer to Instruction Manual 3.2), 3,000m (10,000feet) max  |                             |                            |                           |  |  |  |
| NVIRONMENT       | STORAGE TEMP., HUMID. AND          | ALTITUDE      | -20 to +75°C, 20 - 90%RH (  |                             |                            |                           |  |  |  |
| INVIINOINIE IN I | VIBRATION                          |               | 10 - 55Hz, 19.6m/s <sup>2</sup> (2G), 3   |                             | s each along X, Y and Z a  | ixis                      |  |  |  |
|                  | IMPACT                             |               | 196.1m/s² (20G), 11ms, once each X, Y and Z axis  |                             |                            |                           |  |  |  |
| AFETY AND        | AGENCY APPROVAL                    |               | UL60950-1, C-UL (CSA60950-1), EN60950-1, EN60065, EN50178 Complies with DEN-AN  |                             |                            |                           |  |  |  |
| NOISE            | CONDUCTED NOISE                    |               | Complies with FCC-B, VCC  |                             | B, EN55022-B               |                           |  |  |  |
| REGULATIONS      |                                    |               | Complies with IEC61000-3-   |                             |                            |                           |  |  |  |
| OTHERS           | CASE SIZE/WEIGHT                   |               |   |                             |                            | assis & cover : 880g max) |  |  |  |
| OTHERS           | COOLING METHOD                     |               | 84×46.5×180mm [3.31×1.83×7.09 inches] (W×H×D) / 550g max (with chassis & cover : 880g max)  Convection (Refer to Instruction Manual 3.1 and 3.2) *4 |                             |                            |                           |  |  |  |

- Specification is changeed at option, refer to Instruction Manual.
- 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).
- 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. ( ) means peak current. There is a possibility that an internal device is damaged when the specification is exceeded. Please contact us about the detail.
- Applicable when remote control (optional) is added.
- \*7 Please contact us about dynamic load and input response.
- Please contact us about another class.
- 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.

# LFA240F | COSEL

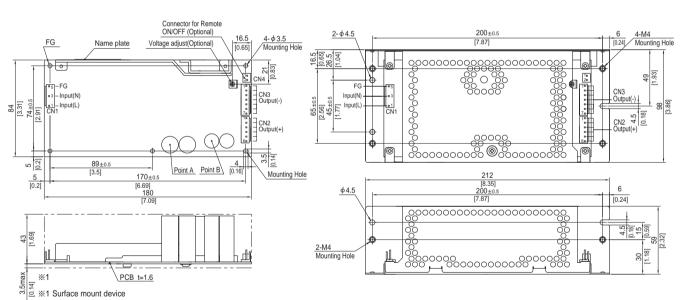
# Block diagram



#### **External view**

\* External size of option is different from standard model.

Chassis and cover type Standard type



- % The back side of P.C.B. of the power supply is assembled some
- 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  | Connector   | Mating connector | Terminal |           |  |  |
|--|------|-------------|------------------|----------|-----------|--|--|
|  | CNIA | 1-1123724-3 | 1-1123722-5      | Chain    | 1123721-1 |  |  |
|  | CIVI | 1-1123/24-3 | 1-1123722-5      | Loose    | 1318912-1 |  |  |
|  | ONIO | 1-1123723-6 | 1-1123722-6      | Chain    | 1123721-1 |  |  |
|  | CINZ | 1-1123723-0 | 1-1123722-0      | Loose    | 1318912-1 |  |  |
|  | 0.10 | 4 4400700 7 | 4 4400700 7      | Chain    | 1123721-1 |  |  |
|  | CN3  | 1-1123723-7 | 1-1123722-7      | Loose    | 1318912-1 |  |  |
|  |      |             |                  |          |           |  |  |

(Mfr:Tyco Electronics)

- % I/O Connector is Mfr. Tyco Electronics
- ※ Option:-J1:VH(J.S.T) connector type.

### <PIN CONNECTION>

| CN1   |       |  | CN2     |        | CN3     |        |    |  |  |  |
|---|-------|--|---------|--------|---------|--------|----|--|--|--|
| Pin No.   | Input |  | Pin No. | Output | Pin No. | Output |    |  |  |  |
| 1   | AC(L) |  |         |        |         |        |    |  |  |  |
| 2   |       |  | 1 to 6  | +V     |         | 1 to 7 |    |  |  |  |
| 3   | AC(N) |  |         |        |         |        | -V |  |  |  |
| 4   |       |  |         |        |         |        |    |  |  |  |
| 5   | FG    |  |         |        |         |        |    |  |  |  |
| W Keep drawing current per pin below EA for CN2 CN2 |       |  |         |        |         |        |    |  |  |  |

- % Keep drawing current per pin below 5A for CN2,CN3.
- % Tolerance : ±1 [±0.04]
- Weight: 550g max (with chassis & cover: 880g max)
- \* PCB material : CEM3
- \* Optional chassis and cover material: Electric galvanizing steel board.
- \* Dimensions in mm, [ ]=inches
- Mounting torque (Mounting hole of chassis) :1.5N · m (16kgf · cm) max

### Connector type

CN4 Option (Mfr:J.S.T)

| PIN No. | Contents |  |
|---------|----------|--|
| 1       | RC(+)    |  |
| 2       | RC(-)    |  |
|         |          |  |

Barrier strip type

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

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

c**71**°us △ (€ **RoHS** ec0

Recommended EMI/EMC Filter NAC-06-472



High voltage pulse noise type : NAP series Low leakage current type : NAM series

(1) Series name
(2) Single output
(3) Output wattage
(4) Universal input
(5) Output voltage
(6) Optional \*1
C: with Coating
G: Low leakage current
H: with the function to be acceptable
to output peak current
(Only 24V, 30V, 36V and 48V)
J: EP (Tyco Electronics) connector type
(Except 3.3V and 5V)
H: VH (J.S.T.) connector type
(Except 3.3V and 5V)
R: with Remote ON/OFF
S: with Remote ON/OFF
S: with Chassis
SNF: with Chassis & cover & fan
(Only 5V, 12V and 24V)
T1: Holizontal terminal block
Please refer to Instruction manual 5.

Please refer to Instruction manual 5.

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 |                        |            | LFA300F-3R3-TY | LFA300F-5-TY | LFA300F-12-TY | LFA300F-15-TY | LFA300F-24-TY | LFA300F-24-HTY | LFA300F-30-TY | LFA300F-36-TY | LFA300F-48-TY |
|-------|------------------------|------------|----------------|--------------|---------------|---------------|---------------|----------------|---------------|---------------|---------------|
| MA    | K OUTPUT WATTAGE[W] *5 |            | 198            | 300          | 324           | 330           | 336           | 336 (456)      | 330           | 338.4         | 336           |
| DC    | DC OUTPUT *5           | Convection | 3.3V 40A       | 5V 40A       | 12V 17A       | 15V 14A       | 24V 12.5A     | 24V 12.5 (19)A | 30V 10A       | 36V 8.4A      | 48V 6.3A      |
| DC    |                        | Forced air | 3.3V 60A       | 5V 60A       | 12V 27A       | 15V 22A       | 24V 14A       | 24V 14 (19)A   | 30V 11A       | 36V 9.4A      | 48V 7A        |

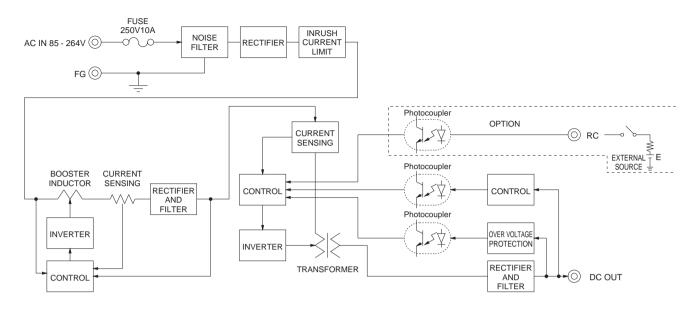
| VOLTAGE[V]  |             | MODEL                           |            | LFA300F-3R3-TY   | LFA300F-5-TY | LFA300F-12-TY    | LFA300F-15-TY  | LFA300F-24-TY   | LFA300F-24-HTY   | LFA300F-30-TY  | LFA300F-36-TY   | LFA300F-48-TY |  |  |
|---|-------------|---------------------------------|------------|--|--------------|------------------|----------------|-----------------|------------------|----------------|-----------------|---------------|--|--|
| CURRENT[A]  |             | VOLTAGE[V]                      |            | AC85 - 264 1 $\phi$ (Refer to Instruction Manual 1.1 and 3.2) *4 |              |                  |                |                 |                  |                |                 |               |  |  |
| FREQUENCY[Hz]   |             | ACIN ACIN                       |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
|   |             | CORKENT[A]                      | ACIN 200V  | 1.4\p( 0=100\%) 2.0\typ( 0=100\%)                                |              |                  |                |                 |                  |                |                 |               |  |  |
| NPUT   FFICIENCY  |             | FREQUENCY[Hz]                   |            | 50 / 60 (47 -  | 63)          |                  |                |                 |                  |                |                 |               |  |  |
| POWER FACTOR ( o=100%)   ACM 100%   77.0 μp   82.5 typ   83.0 typ   84.5 typ   88.0 typ   POWER FACTOR ( o=100%)   ACM 100%   0.9 typ   0.9  |             | EEEICIENCVI0/1                  | ACIN 100V  | 75.0typ  | 79.0typ      | 80.0typ          | 81.5typ        | 85.0typ         | 85.0typ          | 85.5typ        | 85.5typ         | 85.5typ       |  |  |
| POWER FACTOR (60-100%)   Dec 200%   0.935/py   0.955/py   10.958/pw   10.95 | INPUT       | EFFICIENCT[%]                   | ACIN 200V  | 77.0typ  | 82.5typ      | 83.0typ          | 84.5typ        | 88.0typ         | 88.0typ          | 88.0typ        | 88.0typ         | 88.0typ       |  |  |
| NRUSH CURRENT[A]   ACM 2007   157 30 yp   (0-9109%) (Primary inrush current /Secondary inrush current) (More then 3 sec. to re-start)   |             | DOMED EACTOR (In-100%)          | ACIN 100V  | 0.98typ  | 0.99typ      |                  |                |                 |                  |                |                 |               |  |  |
| INRIGHE CURRENT[A]   AGN 260V   30 / 30 lyp (lo=100%) (Primary inrush current / Secondary inrush current) (More then 3 sec. to re-start)  |             | POWER PACTOR (10=100%)          |            | 0.92typ  | 0.95typ      |                  |                |                 |                  |                |                 |               |  |  |
| LEAKAGE CURRENT[m]   30 / 30 / yp (10=100%) (Primary inrush current /Secondary inrush inrush /Secondary inrush inrush /Secondary inrush /Seco |             | INDIISH CHDDENTIAL              | ACIN 100V  | 15 / 30typ (I  | o=100%) (Pr  | imary inrush o   | current /Secor | ndary inrush d  | urrent) (More    | then 3 sec. to | re-start)       |               |  |  |
| VOLTAGE[V]   3.3   5   12   15   24   24   30   36   48   48   CURRENT[A]   8   Convection   40   40   17   14   12.5   12.5 (Peak19)   10   8.4   6.3   6.3   6.0   60   27   22   14   14 (Peak19)   11   9.4   7   7   7   7   7   7   7   7   7   |             |                                 |            | 71 \   |              |                  |                |                 |                  |                |                 |               |  |  |
| CURRENT[A]  |             |                                 | T[mA]      |  |              |                  |                |                 |                  | -1 and DEN-    | AN)             |               |  |  |
| CURRENT[A]   **   Forced air   60   60   27   22   14   14 ( Peak19]   11   9.4   7   |             | VOLTAGE[V]                      |            |  |              |                  |                |                 | 24               |                | 36              | -             |  |  |
| LINE REGULATION my   v1   20max   20max   48max   60max   150max   150max   144max   144max   192max   150max   150ma |             | CHDDENTIA1 *5                   | Convection | -  |              |                  |                |                 | 12.5 (Peak19)    | -              | _               |               |  |  |
| COAD REGULATION[mV]   40max   40max   100max   120max   150max   150max   240max   240max   240max   240max   240max   240max   150max   120max   120max  |             | CORRENT[A]                      | Forced air |  |              | _ ·              |                |                 | ,                |                |                 | 7             |  |  |
| Name  |             |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| OUTPUT   RIPPLE[mVp-p]  |             | LOAD REGULATION                 | [mV] *7    | 40max  | 40max        | 100max           | 120max         | 150max          | 150max           | 240max         | 240max          | 240max        |  |  |
| 10-10-22   140max   140max   160max   160max   150max   320max   220max   220max  |             | RIPPLE[mVn-n]                   |            |  |              |                  |                | -               |                  |                | -               |               |  |  |
| RIPPLE NOISE[mVp-p]   |             | <u>[</u> 6]                     |            |  |              |                  |                |                 |                  |                |                 | -             |  |  |
| TEMPERATURE REGULATION[MIV]   010 t-40°C   160 max   160 max   180 max   180 max   180 max   240 max   240 max   360 max    | OUTPUT      | RIPPI F NOISF[mVn-n]            |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| TEMPERATURE REGULATION(m)   -10 to +40°C   60 max   60 max   150 max   180 max   290 max   290 max   450 max   450 max   600 max   190 max   450 max   45 | 000.        | min ze moioe[iii vp p]          |            |  |              |                  |                | -               |                  |                |                 | -             |  |  |
| PROTECTION   CIRCUIT AND OTHERS   SOUND   CONTINUE   COUNTY   C |             | TEMPERATURE REGULATION(m//      |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| START-UP TIME[ms]   350typ (ACIN 100V, Io=100%)   |             | TEMPERATURE RESOLUTION [III7]   |            |  |              |                  |                | ł               |                  |                | <b>-</b>        |               |  |  |
| HOLD-UP TIME[ms]   20typ (ACIN 100V, Io=100%)   |             |                                 |            |  |              |                  | 60max          | 96max           | 96max            | 144max         | 144max          | 192max        |  |  |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V]   2.85 to 3.63   4.50 to 5.50   10.80 to 13.20   13.50 to 16.50   21.60 to 27.50   21.60 to 27.50   27.00 to 33.00   32.40 to 39.60   39.60 to 52.   |             |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| OUTPUT VOLTAGE SETTING[V]   3.30 to 3.40   5.00 to 5.15   12.00 to 12.48   15.00 to 15.60   24.00 to 24.96   24.00 to 24.96   30.00 to 31.20   36.00 to 37.44   48.00 to 49.  |             |                                 |            |  |              |                  | 1 40 50 40 50  | 104004 07.50    |                  |                | 00.404.00.00    |               |  |  |
| OVERCURRENT PROTECTION  |             |                                 |            |  |              |                  |                | <u> </u>        |                  |                |                 |               |  |  |
| PROTECTION   OVERVOLTAGE PROTECTION   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   27.60 to 33.60   34.50 to 42.00   41.40 to 50.40   55.20 to 67.  |             |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| CIRCUIT AND OPERATING INDICATION OTHERS         OPERATING INDICATION REMOTE SENSING Not provided         Not provided           ISOLATION         ISOLATION         INPUT-OUTPUT·RC ** AC3,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)           INPUT-FG         AC2,000V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)           OUTPUT-RC ** AC500V 1 minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)           OUTPUT-RC ** AC100V 1 minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)           OUPRATINGTEMP,HUMID.AND ALTITUDE ** OT 0 to +70°C, 20 - 90%RH (Non condensing) (Refer to Instruction Manual 3.2), 3,000m (10,000feet) max           STORAGE TEMP,HUMID.AND ALTITUDE ** OT 0 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max           VIBRATION 10 - 55Hz, 19.6m/s² (2GG), 3minutes period, 60minutes each along X, Y and Z axis           SAFETY AND NOISE CONDUCTED NOISE COMPLIES with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B           REGULATIONS         HARMONIC ATTENUATOR         Complies with IEC61000-3-2 (Class A) *8   |             |                                 |            |  |              |                  |                | ·               |                  |                |                 |               |  |  |
| REMOTE SENSING   Not provided   |             |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| INPUT-OUTPUT-RC   See AC3,000 V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)   |             |                                 | IION       | -  |              |                  |                |                 |                  |                |                 |               |  |  |
| INPUT-OUTPUT-RC   | OTTIERO     |                                 |            | '  |              |                  |                |                 |                  |                |                 |               |  |  |
| INPUT-FG   AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature)   |             |                                 | *6         |  |              |                  |                |                 |                  |                |                 |               |  |  |
| OUTPUT-RC-FG*6AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)OUTPUT-RC*6AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)OPERATINGTEMP,HUMID.AND ALTITUDE **-10 to +70°C, 20 - 90%RH (Non condensing) (Refer to Instruction Manual 3.2), 3,000m (10,000feet) maxSTORAGE TEMP,HUMID.AND ALTITUDE **-20 to +75°C, 20 - 90%RH (Non condensing), 9,000m (30,000feet) maxVIBRATION10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axisSAFETY AND NOISEAGENCY APPROVALSUL60950-1, C-UL (CSA60950-1), EN60950-1, EN60065, EN50178 Complies with DEN-ANNOISECONDUCTED NOISEComplies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-BREGULATIONSHARMONIC ATTENUATORComplies with IEC61000-3-2 (Class A) *8   |             |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| OUTPUT-RC   | ISOLATION   |                                 | *6         |  |              |                  |                |                 |                  |                |                 |               |  |  |
| ENVIRONMENT    OPERATING TEMP, HUMID.AND ALTITUDE **4   |             |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| 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           SAFETY AND NOISE         AGENCY APPROVALS         UL60950-1, C-UL (CSA60950-1), EN60950-1, EN60065, EN50178 Complies with DEN-AN           NOISE         CONDUCTED NOISE         Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B           REGULATIONS         HARMONIC ATTENUATOR         Complies with IEC61000-3-2 (Class A) *8  |             |                                 |            |  |              |                  |                |                 |                  |                | 0.000feet) m    | ax            |  |  |
| VIBRATION   |             | STORAGE TEMP HUMID AND ALTITUDE |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| IMPACT  | ENVIRONMENT |                                 |            | 57   |              |                  |                |                 |                  |                |                 |               |  |  |
| SAFETY AND NOISE CONDUCTED NOISE COMPLIes with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B  REGULATIONS HARMONIC ATTENUATOR COmplies with IEC61000-3-2 (Class A) *8  |             | IMPACT                          |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| NOISE CONDUCTED NOISE Complies with FCC-B, VCCI-B, CISPR-B, EN55011-B, EN55022-B REGULATIONS HARMONIC ATTENUATOR Complies with IEC61000-3-2 (Class A) *8  | SAFETY AND  |                                 | LS         |  |              |                  |                |                 |                  |                |                 |               |  |  |
| REGULATIONS HARMONIC ATTENUATOR Complies with IEC61000-3-2 (Class A) *8   |             |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| CASE SITEMATICALT   | REGULATIONS |                                 |            |  |              |                  |                |                 |                  |                |                 |               |  |  |
| OTLIERS   CASE SIZE/WEIGHT   93/52.3/22ZIIIII [3.74/2.07/8.74 Inches] (WAHAD) (Without terminal block) / 810g max (with chassis & cover : 1,270g max  | OTHERS      | CASE SIZE/WEIGHT                |            | 95×52.5×22   | 2mm [3.74×2  | .07 × 8.74 inche | es] (WXHXD)    | (without termin | nal block) / 810 | g max (with ch | assis & cover : | 1,270g max)   |  |  |
| COOLING METHOD  Convection / Forced air (Refer to Instruction Manual 3.1 and 3.2) *4  | OTHERS      | <b>COOLING METHOD</b>           |            |  |              |                  |                |                 |                  |                |                 |               |  |  |

- \*1 Specification is changeed at option, refer to Instruction Manual.
- \*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).
- \*3 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. ( ) means peak current. There is a possibility that an internal device is damaged when the specification is exceeded. Please contact us about the detail.
- Applicable when remote control (optional) is added.
- \*7 Please contact us about dynamic load and input response.
- \*8 Please contact us about another class.
- 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.

# LFA300F | COSEL

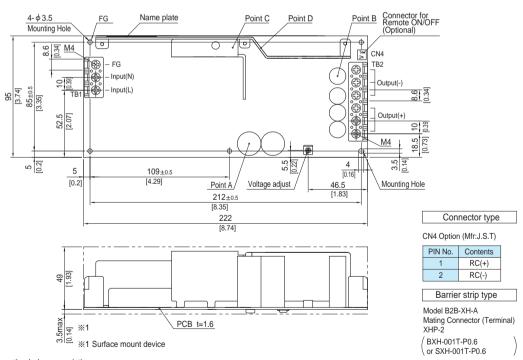
# Block diagram



#### **External view**

\* External size of option is different from standard model.

### Standard type



- $\ensuremath{\ensuremath{\%}}$  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, Point C, Point D are thermometry points. Please refer to Instruction Manual 3.
- % Keep drawing current per pin below 20A for TB2.

- ※ Tolerance: ±1 [±0.04]
- Weight: 810g max (with chassis & cover: 1,270g max)
  PCB material: CEM3
- ※ Dimensions in mm, [ ]=inches
- \* Screw tightening torque: M4 1.6N · m (16.9kgf · cm) max