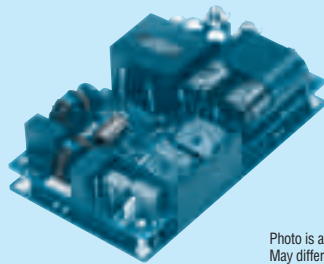
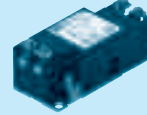


GHA300F

GH A 300 F -□□ -□
 ① ② ③ ④ ⑤ ⑥



Recommended EMI/EMC Filter
 EAC-10-472



High voltage pulse noise type : EAP series
 Low leakage current type : EAM series
 *The EMI/EMC Filter is recommended to connect with several devices.

- ① Series name
 - ② Single output
 - ③ Output wattage
 - ④ Universal input
 - ⑤ Output voltage
 - ⑥ Optional *6
- T3 : mounting hole M3
 J1 : VH(J.S.T.)connector type
 R3 : with Subfeatures (5VAUX,12VAUX,Remote, Power good)

Information the Home page is the latest.

Photo is an image of the appearance. May differ from the actual product.

Specification is changed at option, refer to Instruction manual.

[Cautions]

- * Forced air cooling is required for the maximum output power. Please see instruction manual.
 - * This power supply requires mounting on metal standoffs 5mm in height. Insulation sheet is required if standoff is not used or less than 5mm clearance is needed.
 - * Avoid applying stress to surface mount components.
 - * De-rating is required if the applied input voltage is 90-115VAC.
 - * The electrolytic capacitor has limited life span which is very much dependent on the actual operating conditions.
 - * Operating in the presence of chemical vapors or harsh environment can affect the power supply life expectancy.
 - * Please make sure to read the instruction manual carefully before using this product.
- It should be in the "Instruction Manual" not spec sheet.

| MODEL | GHA300F-12 | | GHA300F-24 | | GHA300F-48 | |
|-----------------------|------------|---------|------------|-----------|------------|--|
| MAX OUTPUT WATTAGE[W] | 300 | | 300 | | 302.4 | |
| DC OUTPUT | Forced air | at 50°C | 12V 25A | 24V 12.5A | 48V 6.3A | |
| | | at 40°C | 12V 8.4A | 24V 4.2A | 48V 2.1A | |
| | Convection | at 50°C | 12V 4.5A | 24V 2.2A | 48V 1.1A | |

SPECIFICATIONS

| | MODEL | GHA300F-12 | GHA300F-24 | GHA300F-48 | |
|-------------------------------|---|---|---|----------------|----------------|
| INPUT | VOLTAGE[V] | AC90 - 264 1φ (output derating is required at AC90V -115V *3) | | | |
| | CURRENT[A] | ACIN 120V | 3.3typ | | |
| | | ACIN 230V | 1.8typ | | |
| | FREQUENCY[Hz] | 50 / 60 (47 - 63) | | | |
| | EFFICIENCY[%] | ACIN 120V | 89typ | 90typ | 90typ |
| | | ACIN 230V | 91typ | 92typ | 92typ |
| | POWER FACTOR (Io=100%) | ACIN 120V | 0.95typ | | |
| | | ACIN 230V | 0.90typ | | |
| | INRUSH CURRENT[A] | ACIN 120V | 20typ (Io=100%) (At cold start) (Ta=25°C) | | |
| | | ACIN 230V | 40typ (Io=100%) (At cold start) (Ta=25°C) | | |
| LEAKAGE CURRENT[ma] | 0.125/0.250max (ACIN 120V/240V 60Hz,Io=100%, According to IEC60601-1) | | | | |
| OUTPUT | VOLTAGE[V] | 12 | 24 | 48 | |
| | CURRENT[A] | Forced air | 25 | 12.5 | 6.3 |
| | | Convection | 4.5 | 2.2 | 1.1 |
| | LINE REGULATION[mV] *4 | 48max | 96max | 192max | |
| | LOAD REGULATION[mV] *4 | 100max | 150max | 240max | |
| | RIPPLE[mVp-p] *1 | 0 to +50°C | 240max | 240max | 300max |
| | | -20 to 0°C | 320max | 320max | 400max |
| | RIPPLE NOISE[mVp-p]*1 | 0 to +50°C | 300max | 300max | 480max |
| | | -20 to 0°C | 360max | 360max | 500max |
| | TEMPERATURE REGULATION[mV] | 0 to +50°C | 120max | 240max | 480max |
| | | -20 to +50°C | 150max | 290max | 600max |
| | DRIFT[mV] *2 | 48max | 96max | 192max | |
| | START-UP TIME[ms] | 500typ (ACIN 120V, Io=100%) | | | |
| | HOLD-UP TIME[ms] | 16typ (ACIN 120V, Io=100%) | | | |
| | OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 10.80 to 13.20 | 21.60 to 26.40 | | 43.20 to 52.80 |
| OUTPUT VOLTAGE SETTING[V] | 12.00 to 12.48 | 24.00 to 24.96 | | 48.00 to 49.92 | |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION | Works over 105% of rating and recovers automatically | | | |
| | OVERVOLTAGE PROTECTION[V] | 13.80 to 16.80 | 27.60 to 33.60 | 55.20 to 67.20 | |
| | AUX1 (12V1A) | Optional | | | |
| | AUX2 (5V1A) | Optional | | | |
| | REMOTE ON/OFF | Optional | | | |
| PowerGood | Optional | | | | |
| ISOLATION | INPUT-OUTPUT · RC · AUX *7 | AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) | | | |
| | INPUT-FG | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) | | | |
| | OUTPUT · RC · AUX-FG *7 | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature) | | | |
| | OUTPUT-RC · AUX *7 | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature) | | | |
| ENVIRONMENT | OPERATING TEMP.,HUMID.AND ALTITUDE | -20 to +70°C, 20 - 90%RH (Non condensing) | | | |
| | STORAGE TEMP.,HUMID.AND ALTITUDE | -30 to +75°C, 20 - 90%RH (Non condensing) | | | |
| | VIBRATION | 10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis | | | |
| | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis | | | |
| SAFETY AND NOISE REGULATIONS | AGENCY APPROVALS | UL60950-1, ANSI/AMII ES60601-1, C-UL, EN60950-1, EN60601-1 Pending | | | |
| | CONDUCTED NOISE | Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B | | | |
| | HARMONIC ATTENUATOR | Complies with IEC61000-3-2 (class A) *5 | | | |
| OTHERS | CASE SIZE/WEIGHT | 76.2×35×127mm [3.0×1.4×5.0 inches] (W×H×D) / 400g max | | | |
| | COOLING METHOD | Convection, Forced air (Require external fan) | | | |

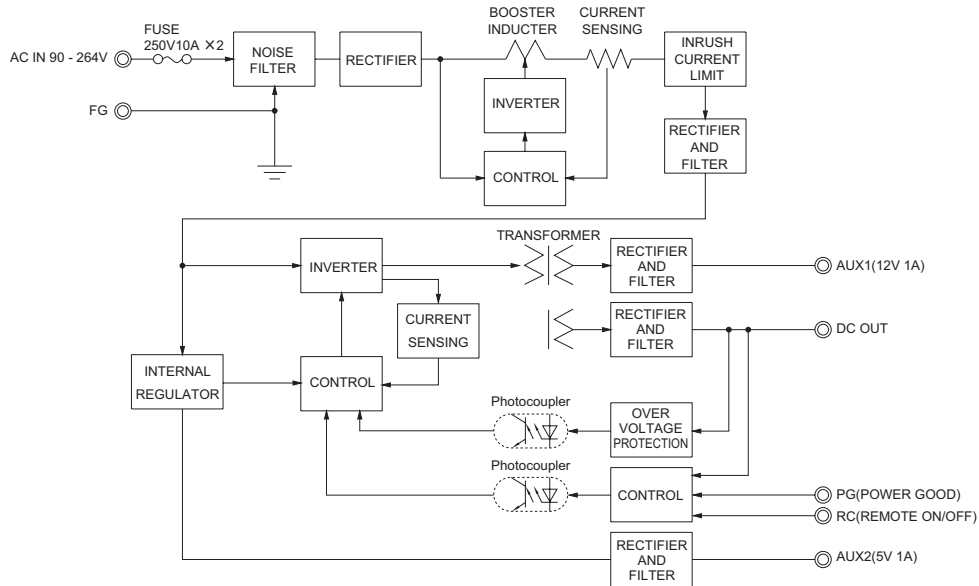
*1 This is the value that measured on measuring board with capacitor of 22μF at 150mm from output terminal.
 Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).
 *2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with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

*5 Please contact us about another class.
 *6 Specification is changed at option, refer to Instruction Manual.
 *7 Applicable when AUX and remote control (optional) is added.
 * To meet the specifications. Do not operate over-loaded condition.
 * Sound noise may be generated by power supply in case of pulse load.
 * Parallel operation is not possible.

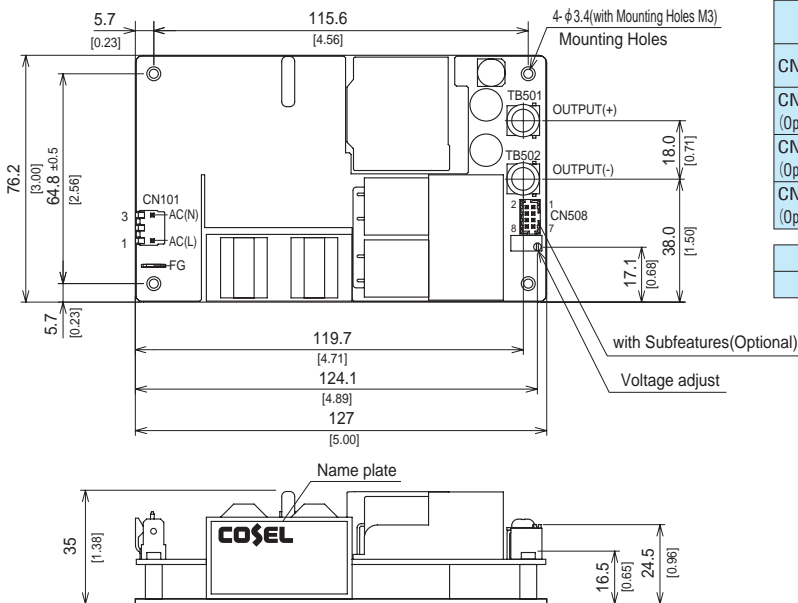
Features

- High Power density: 14.3W/inch³
- High efficiency 92% typ (Input Voltage 230V, Output Voltage 24V)
- 3" × 5" standard footprint
- Fits 1U applications
- Industrial and Medical safety approvals
- Low leakage current
- With Remote On/Off (Optional)
- With AUX1 (5V), AUX2 (12V) (Optional)
- No minimum load is required

Block diagram



External view



- ※ Tolerance ±1 [±0.04]
- ※ Weight : 400g max
- ※ There is a total of four attachment holes.
- ※ This power supply requires mounting on metal standoffs 8mm in height. (Insulating sheet is required if you do not use a spacer).
- ※ Dimensions in mm, []=inches
- ※ Screw tightening torque : (TB501, 502) : 1.5N · m max
- ※ Mounting torque : 0.6N · m max
- ※ Avoid contact between TB501 and 502 wiring with mounting parts.
- ※ Option : -J1 : (J.S.T) connector type. Refer to Instruction Manual 5.

| I/O Connector | Mating connector | Terminal | Mfr |
|------------------|-------------------|-----------------------------|--------|
| CN101 | A-41671-A03A197-2 | 08-50-0105 08-65-0114 | MOLEX |
| CN508 (Optional) | 087831-0820 | 51110-0851 50394-8051 | |
| CN101 (Optional) | B2P3-VH | VHR-3N SVH-21T-P1.1 | J.S.T. |
| CN508 (Optional) | B8B-PHDSS | PHDR-08VS SPHD-002T-P0.5 | |

| FG | Mating connector | Terminal | Mfr |
|----|------------------|----------|------------------|
| - | 250 Series | 170603-2 | Tyco Electronics |

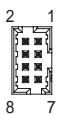
<Pin Assignments>

<CN101>

| Pin No. | Input |
|---------|-------|
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | |

<CN508(Optional)>

| Pin No. | Function |
|---------|---------------------------|
| 1 | AUX1 : AUX1 (12V1A) |
| 2 | AUX1G: AUX1 (GND) |
| 3 | RC1 : REMOTE ON/OFF |
| 4 | RCG : REMOTE ON/OFF (GND) |
| 5 | PG : Power good |
| 6 | PGG : Power good (GND) |
| 7 | AUX2 : AUX2 (5V1A) |
| 8 | AUX2G: AUX2 (GND) |



GHA500F

GH A 500 F -□□ -□
 ① ② ③ ④ ⑤ ⑥

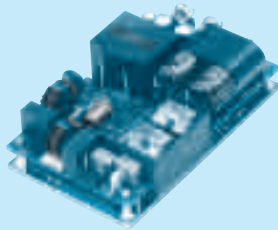


Photo is an image of the appearance. May differ from the actual product.

Recommended EMI/EMC Filter
EAC-10-472



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

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

- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Optional *6
- T3 : mounting hole M3
- J1 : VH(J.S.T.)connector type
- R3 : with Subfeatures (5VAUX,12VAUX, Remote, Power good)
- P : Pallarel Operation

[Cautions]

- Forced air cooling is required for the maximum output power. Please see instruction manual.
 - Avoid applying stress to surface mount components.
 - De-rating is required if the applied input voltage is 90-115VAC.
 - The electrolytic capacitor has limited life span which is very much dependent on the actual operating conditions.
 - Operating in the presence of chemical vapors or harsh environment can affect the power supply life expectancy.
 - Please make sure to read the instruction manual carefully before using this product.
- It should be in the "Instruction Manual" not spec sheet.

Specification is changed at option, refer to Instruction manual.

| MODEL | GHA500F-12 | GHA500F-15 | GHA500F-24 | GHA500F-48 |
|-----------------------|---------------------------|------------|------------|------------|
| MAX OUTPUT WATTAGE[W] | 500.8 | 501 | 504 | 504 |
| DC OUTPUT | Forced air at 50°C | 12V 41.7A | 15V 33.4A | 24V 21.0A |
| | Convection at 40°C | 12V 12.5A | 15V 10.0A | 24V 6.3A |
| | at 50°C | 12V 9.2A | 15V 7.4A | 24V 4.6A |
| | conduction cooling at 0°C | 12V 30.0A | 15V 24.0A | 24V 15.0A |
| | at 50°C | 12V 16.7A | 15V 13.4A | 24V 8.4A |

SPECIFICATIONS

| MODEL | GHA500F-12 | GHA500F-15 | GHA500F-24 | GHA500F-48 | | |
|------------------------------------|---|---|----------------|----------------|----------------|--------|
| INPUT | VOLTAGE[V] | AC90 - 264 1 φ (output derating is required at AC90V -115V *3) | | | | |
| | CURRENT[A] | ACIN 120V | 5.4typ | | | |
| | | ACIN 230V | 2.9typ | | | |
| | FREQUENCY[Hz] | 50 / 60 (47 - 63) | | | | |
| | EFFICIENCY[%] | ACIN 120V | 88typ | 90typ | 90typ | |
| | | ACIN 230V | 90typ | 92typ | 92typ | |
| | POWER FACTOR (Io=100%) | ACIN 120V | 0.95typ | | | |
| | | ACIN 230V | 0.90typ | | | |
| INRUSH CURRENT[A] | ACIN 120V | 20typ (Io=100%) (At cold start) (Ta=25°C) | | | | |
| | ACIN 230V | 40typ (Io=100%) (At cold start) (Ta=25°C) | | | | |
| LEAKAGE CURRENT[ma] | 0.125/0.250max (ACIN 120V/240V 60Hz,Io=100%, According to IEC60601-1) | | | | | |
| OUTPUT | VOLTAGE[V] | 12 | 15 | 24 | 48 | |
| | CURRENT[A] | Forced air | 41.7 | 33.4 | 21.0 | 10.5 |
| | | Convection | 9.2 | 7.4 | 4.6 | 2.3 |
| | | conduction cooling | 16.7 | 13.4 | 8.4 | 4.2 |
| | LINE REGULATION[mV] *4 | 48max | 60max | 96max | 192max | |
| | LOAD REGULATION[mV] *4 | 100max | 120max | 150max | 240max | |
| | RIPPLE[mVp-p] *1 | 0 to +50°C | 240max | 240max | 240max | 300max |
| | | -20 - 0°C | 320max | 320max | 320max | 400max |
| | RIPPLE NOISE[mVp-p]*1 | 0 to +50°C | 300max | 300max | 300max | 480max |
| | | -20 - 0°C | 360max | 360max | 360max | 500max |
| | TEMPERATURE REGULATION[mV] | 0 to +50°C | 120max | 120max | 240max | 480max |
| | | -20 to +50°C | 150max | 150max | 290max | 600max |
| | DRIFT[mV] *2 | 48max | 60max | 96max | 192max | |
| | START-UP TIME[ms] | 500typ (ACIN 120V, Io=100%) | | | | |
| HOLD-UP TIME[ms] | 16typ (ACIN 120V, Io=100%) | | | | | |
| OUTPUT VOLTAGE ADJUSTMENT RANGE[V] | 10.80 to 13.20 | 13.50 to 16.50 | 21.60 to 26.40 | 43.20 to 52.80 | | |
| OUTPUT VOLTAGE SETTING[V] | 12.00 to 12.48 | 15.00 to 15.30 | 24.00 to 24.96 | 48.00 to 49.92 | | |
| PROTECTION CIRCUIT AND OTHERS | OVERCURRENT PROTECTION | Works over 105% of rating and recovers automatically | | | | |
| | OVERVOLTAGE PROTECTION[V] | 13.80 to 16.80 | 17.25 to 21.00 | 27.60 to 33.60 | 55.20 to 67.20 | |
| | AUX1 (12V1A) | Optional | | | | |
| | AUX2 (5V1A) | Optional | | | | |
| | REMOTE ON/OFF | Optional | | | | |
| ISOLATION | PowerGood | Optional | | | | |
| | INPUT-OUTPUT · RC · AUX *7 | AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) | | | | |
| | INPUT-FG | AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) | | | | |
| | OUTPUT · RC · AUX-FG *7 | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature) | | | | |
| ENVIRONMENT | OUTPUT-RC · AUX *7 | AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature) | | | | |
| | OPERATING TEMP,HUMID.AND ALTITUDE | -20 to +80°C, 20 - 90%RH (Non condensing) | | | | |
| | STORAGE TEMP,HUMID.AND ALTITUDE | -30 to +80°C, 20 - 90%RH (Non condensing) | | | | |
| | VIBRATION | 10 - 55Hz, 19.6m/s ² (2G), 3minutes period, 60minutes each along X, Y and Z axis | | | | |
| SAFETY AND NOISE REGULATIONS | IMPACT | 196.1m/s ² (20G), 11ms, once each X, Y and Z axis | | | | |
| | AGENCY APPROVALS | UL60950-1, ANSI/AMII ES60601-1, C-UL, EN60950-1, EN60601-1 Pending | | | | |
| | CONDUCTED NOISE | Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B | | | | |
| OTHERS | HARMONIC ATTENUATOR | Complies with IEC61000-3-2 (class A) *5 | | | | |
| | CASE SIZE/WEIGHT | 76.2 X 35 X 127mm [3.0 X 1.4 X 5.0 inches] (W X H X D) / 420g max | | | | |
| | COOLING METHOD | Convection, Forced air (Require external fan), Conduction cooling | | | | |

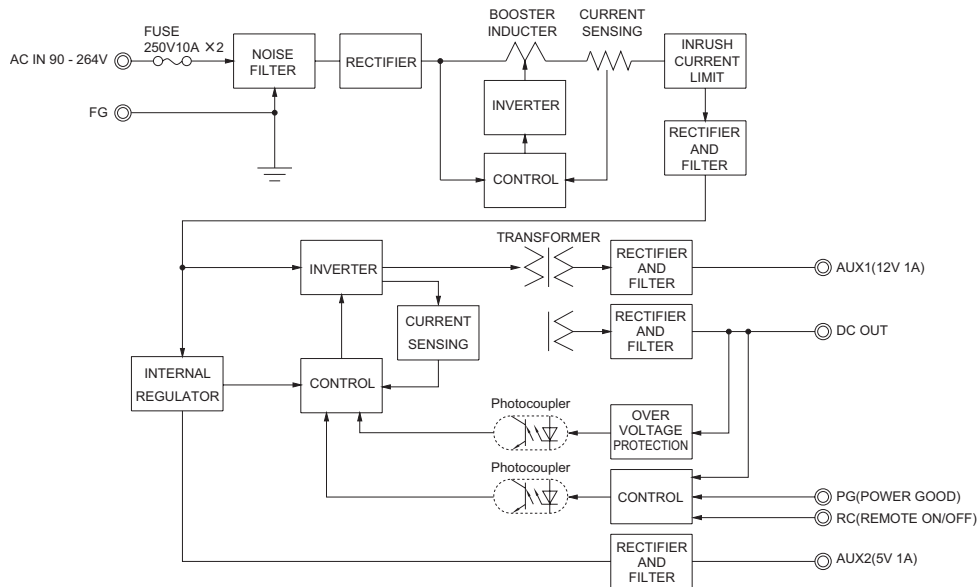
*1 This is the value that measured on measuring board with capacitor of 22 μF at 150mm from output terminal.
Measured by 20MHz oscilloscope or Ripple-Noise meter (Equivalent to KEISOKU-GIKEN: RM103).
*2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25°C, with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

*5 Please contact us about another class.
*6 Specification is changed at option, refer to Instruction Manual.
*7 Applicable when AUX and remote control (optional) is added.
* To meet the specifications. Do not operate over-loaded condition.
* Sound noise may be generated by power supply in case of pulse load.
* Parallel operation is not possible.

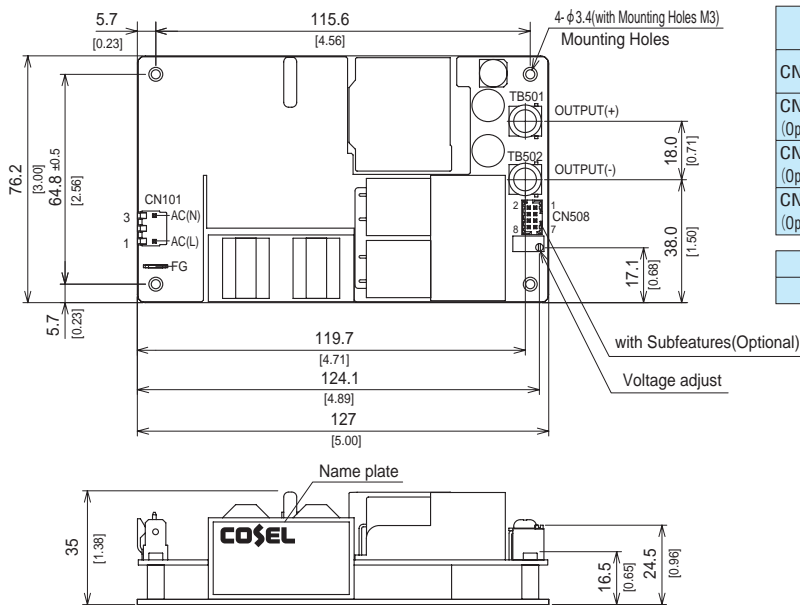
Features

- **Wattage 500W max**
- **High Power density:24.1W/inch³**
- **High efficiency 92% typ (Input Voltage 230V,Output Voltage 24V)**
- **Conduction cooling**
- **3" X 5" standard footprint**
- **Fits 1U applications**
- **Industrial and Medical safety approvals**
- **Low leakage current**
- **With Remote On/Off (Optional)**
- **With AUX1 (5V), AUX2 (12V) (Optional)**
- **No minimum load is required**

Block diagram



External view



| I/O Connector | Mating connector | Terminal | Mfr | |
|------------------|-------------------|--------------------------|----------------|------------|
| CN101 | A-41671-A03A197-2 | 08-50-0105 08-65-0114 | MOLEX | |
| CN508 (Optional) | 087831-0820 | 51110-0851 | | 50394-8051 |
| CN101 (Optional) | B2P3-VH | VHR-3N | SVH-21T-P1.1 | J.S.T. |
| CN508 (Optional) | B8B-PHDSS | PHDR-08VS | SPHD-002T-P0.5 | |

| FG | Mating connector | Terminal | Mfr |
|----|------------------|----------|---------------------------|
| - | 250 Series | - | 170603-2 Tyco Electronics |

<Pin Assignments>

<CN101>

| Pin No. | Input |
|---------|-------|
| 1 | AC(L) |
| 2 | |
| 3 | AC(N) |

<CN508(Optional)>

| Pin No. | Function |
|---------|---------------------------|
| 1 | AUX1 : AUX1 (12V1A) |
| 2 | AUX1G: AUX1 (GND) |
| 3 | RC1 : REMOTE ON/OFF |
| 4 | RCG : REMOTE ON/OFF (GND) |
| 5 | PG : Power good |
| 6 | PGG : Power good (GND) |
| 7 | AUX2 : AUX2 (5V1A) |
| 8 | AUX2G: AUX2 (GND) |



- ※ Tolerance ± 1 [± 0.04]
- ※ Weight : 420g max
- ※ There is a total of four attachment holes.
- ※ Base Plate : Aluminum
- ※ Dimensions in mm, []=inches
- ※ Screw tightening torque : (TB501, 502) : 1.5N · m max
- ※ Mounting torque : 0.6N · m max
- ※ Avoid contact between TB501 and 502 wiring with mounting parts.
- ※ Option : -J1 (J.S.T) connector type. Refer to Instruction Manual 5.