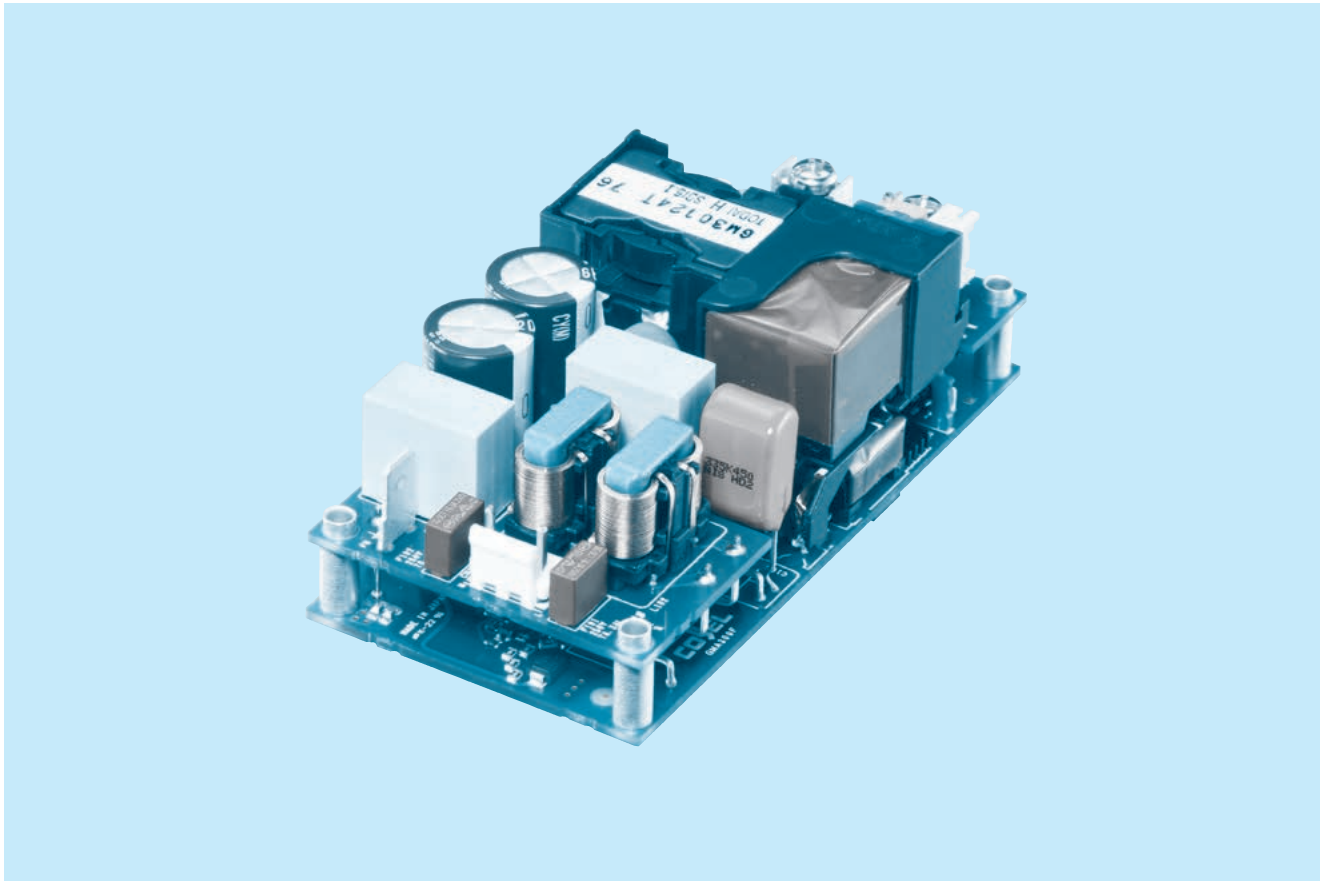
Medical electric equipment | Power Factor Correction | World wide | Safety Approvals | EMI | Inrush current limiting | OCP | OVP | Remote ON/OFF

GMA-series



Feature

Wattage 300Wmax
For medical electric equipment (ANSI/AAMI ES60601-1, EN60601-1 3rd, IEC60601-1-2 4th Ed.)
Suitable for BF application (Output-FG : 1MOPP, Input-Output : 2MOPP)
2"× 4" standard footprint
With Remote ON/OFF (Optional)
With AUX1 (12V 1A), AUX2 (5V 1A) (Optional)

Safety agency approvals

UL62368-1, ANSI/AAMI ES60601-1
C-UL (CSA62368-1, CAN/CSA60601-1)
EN62368-1, EN60601-1 3rd
Complies with IEC60601-1-2 4th Ed.

5-year warranty (Refer to Instruction Manual)

CE marking

Low Voltage Directive
RoHS Directive

UKCA marking

Electrical Equipment Safety Regulations
RoHS Regulations

EMI

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

EMS Compliance : EN61204-3, EN61000-6-2 IEC60601-1-2(2014), EN60601-1-2(2015)

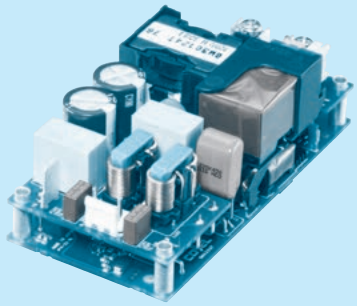
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

COSEL AC-DC Power Supplies Medical Type

GMA300F

Ordering information

GM ① A ② 300 ③ F ④ -□□ ⑤ -□ ⑥



Example recommended EMI/EMC filter
EAC-06-472

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

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

①Series name
②Single output
③Output wattage
④Universal input
⑤Output voltage
⑥Optional ＊6
C : with Coating
J1 : Input connector VH (J.S.T.) connector type
J3 : Horizontal input connector VH (J.S.T.) connector type
R3 : with Subfeatures (5V1A AUX, 12V1A AUX, Remote ON/OFF)

Specification changes when options are added. Please refer to the instruction manual for more detail.

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

MODEL	GMA300F-12	GMA300F-24	GMA300F-48	GMA300F-56
MAX OUTPUT WATTAGE[W]	300	300	302.4	302.4
DC OUTPUT	12V 25A	24V 12.5A	48V 6.3A	56V 5.4A

SPECIFICATIONS

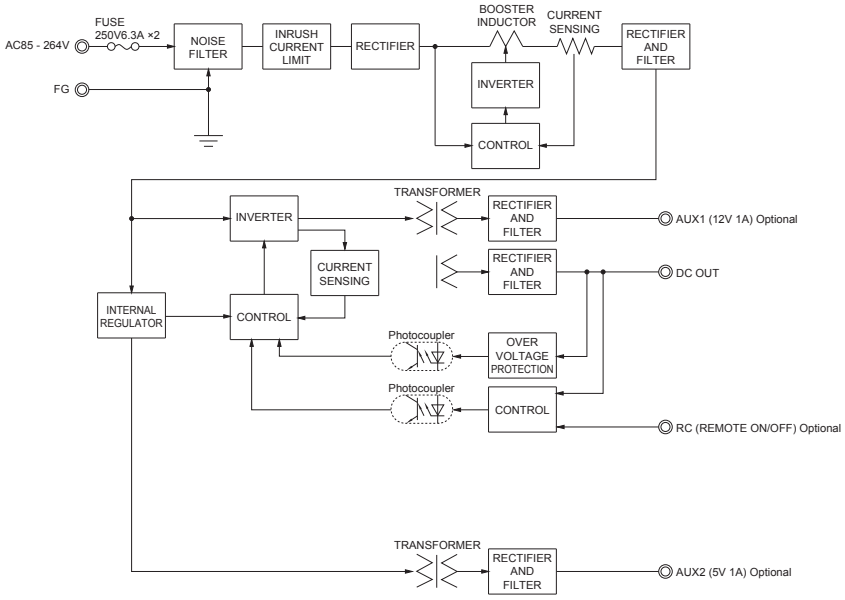
	MODEL		GMA300F-12	GMA300F-24	GMA300F-48	GMA300F-56
INPUT	VOLTAGE[V] ＊3		AC85 - 264 1φ (Output derating is required at AC85V - 115V. See "Derating")			
	CURRENT[A]	ACIN 115V	3.3typ			
		ACIN 230V	1.8typ			
	FREQUENCY[Hz]		50 / 60 (45 - 66)			
	EFFICIENCY[%]	ACIN 115V	90typ	91typ	91typ	91typ
		ACIN 230V	92typ	93typ	93typ	93typ
	POWER FACTOR (Io=100%)	ACIN 115V	0.95typ			
		ACIN 230V	0.90typ			
	INRUSH CURRENT[A]	ACIN 115V	30typ (Io=100%) (At cold start, Ta=25℃)			
		ACIN 230V	60typ (Io=100%) (At cold start, Ta=25℃)			
	LEAKAGE CURRENT[mA]		0.13 / 0.30max (ACIN 100/240V 60Hz, Io=100%, According to IEC60601-1)			
OUTPUT	VOLTAGE[V]		12	24	48	56
	CURRENT[A]		25	12.5	6.3	5.4
	LINE REGULATION[mV] ＊4		48max	96max	192max	192max
	LOAD REGULATION[mV] ＊4		100max	150max	240max	240max
	RIPPLE[mVp-p] ＊1	0 to +50℃	240max	240max	400max	400max
		-20 to 0℃	320max	320max	500max	500max
	RIPPLE NOISE[mVp-p] ＊1	0 to +50℃	300max	300max	500max	500max
		-20 to 0℃	360max	360max	580max	580max
	TEMPERATURE REGULATION[mV]	0 to +50℃	120max	240max	480max	480max
		-20 to +50℃	150max	290max	600max	600max
	DRIFT[mV] ＊2		48max	96max	192max	192max
	START-UP TIME[ms]		400typ (ACIN 115V, Io=100%) ＊Start-up time is 900ms typ for less than 1minute of applying input again from turning off the input voltage.			
	HOLD-UP TIME[ms]		16typ (ACIN 115V, Io=85%) / 12typ (ACIN 115V, Io=100%)			
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		11.40 ～ 13.20	22.80 ～ 26.40	45.60 ～ 52.80	52.00 ～ 56.00
	OUTPUT VOLTAGE SETTING[V]		12.00 ～ 12.48	24.00 ～ 24.96	48.00 ～ 49.92	55.00 ～ 56.00
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	60.00 to 70.50
	AUX1 (12V1A)		Optional			
	AUX2 (5V1A)		Optional			
	REMOTE ON/OFF		Optional			
ISOLATION	INPUT-OUTPUT · RC · AUX ＊7		AC4,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 2MOPP			
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 1MOPP			
	OUTPUT · RC · AUX-FG ＊7		AC1,500V 1minute, Cutoff current = 10mA, DC500V 50MΩ min (At Room Temperature) 1MOPP			
	OUTPUT-RC · AUX ＊7		AC100V 1minute, Cutoff current = 25mA, DC100V 10MΩ min (At Room Temperature)			
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-20 to +70℃, 20 - 90%RH (Non condensing), 5,000m (16,000feet) max ＊3 ＊8			
	STORAGE TEMP.,HUMID.AND ALTITUDE		-30 to +75℃, 20 - 90%RH (Non condensing), 9,000m (30,000feet) max			
	VIBRATION		10 - 55Hz, 19.6m/s² (2G), 3minutes period, 60minutes each along X, Y and Z axis			
	IMPACT		196.1m/s² (20G), 11ms, once each X, Y and Z axis			
SAFETY AND NOISE REGULATIONS	AGENCY APPROVALS		UL62368-1, ANSI/AAMI ES60601-1, C-UL, EN62368-1, EN60601-1 3rd, Complies with IEC60601-1-2 4th Ed.			
	CONDUCTED NOISE		Complies with FCC Part15 classB, VCCI-B, CISPR32-B, EN55011-B, EN55032-B			
	HARMONIC ATTENUATOR ＊5		Complies with IEC61000-3-2 (class A)			
OTHERS	CASE SIZE/WEIGHT		50.8×37×101.6mm [2.0×1.5×4.0 inches] (W×H×D) / 230g max			
	COOLING METHOD		Forced air (Requires 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℃ , with the input voltage held constant at the rated input/output.
＊3 Refer to "Derating"
＊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.
＊8 Please contact us about for more detail.
＊ To meet the specifications. Do not operate over-loaded condition.
＊ Parallel operation is not possible.
＊ Sound noise may be generated by power supply in case of pulse load.
＊ Substrate bottom has a Electric potential. Insulation is required.

Features

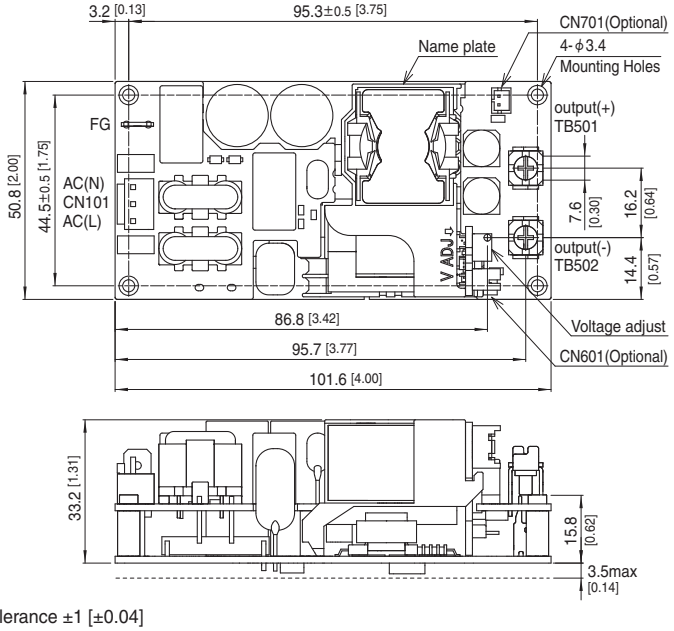
- High power density : 25.7W/inch³
- High efficiency : 93% typ (Input Voltage 230V, Output Voltage 24V)
- For medical electric equipment (ANSI/AAMI ES60601-1, EN60601-1 3rd, IEC60601-1-2 4th Ed.)
- Suitable for BF application (Output-FG : 1MOPP, Input-Output : 2MOPP)
- 2"× 4"standard footprint
- With Remote ON/OFF (Optional)
- With AUX1 (12V 1A), AUX2 (5V 1A) (Optional)

Block diagram



External view

✻ External size of option J3 is different from standard model and refer to 6 Option and Others of instruction manual for details.



✻ Tolerance ±1 [±0.04]
✻ Weight : 230g max
✻ There is a total of four attachment holes.
✻ Dimensions in mm, [ ]=inches
✻ Screw tightening torque : (TB501, 502) : 1.25N・m max
✻ Mounting toque : 0.6N・m max
✻ Avoid contact between TB501 and 502 wiring with mounting parts.

I/O Connector			Mating connector	Terminal	Mfr
Standard	CN101	1-1123724-2	1-1123722-3	1123721-1 1318912-1	Tyco Electronics
R3	CN101				
	CN601	B8B-PHDSS	PHDR-08VS	SPHD-002T-P0.5	J.S.T.
	CN701	B2B-PH	PHR-2	SPH-002T-P0.5S	
J1	CN101	B2P3-VH	VHR-3N	SVH-21T-P1.1	
J1R3	CN101				
	CN601	B8B-PHDSS	PHDR-08VS	SPHD-002T-P0.5	
	CN701	B2B-PH	PHR-2	SPH-002T-P0.5S	

FG	Mating connector	Terminal	Mfr
250 (62409-1)	-	170603-2	Tyco Electronics

<Pin Assignments>

<CN101>

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

<CN601(Optional)>

Pin No.	Function
1	RC : REMOTE ON/OFF
2	RCG : REMOTE ON/OFF(GND)
3	N.C. : No connection
4	N.C. : No connection
5	N.C. : No connection
6	N.C. : No connection
7	AUX2 : AUX2 (5V 1A)
8	AUX2G : AUX2 (GND)

CN601

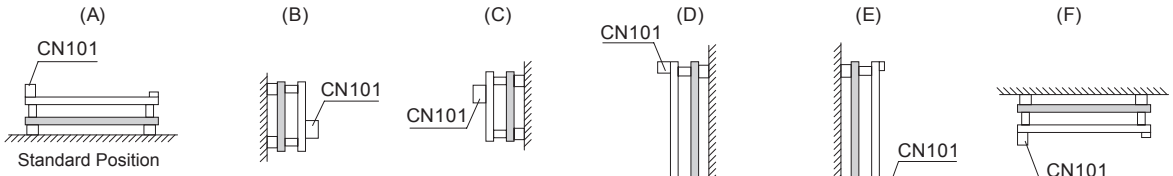
<CN701(Optional)>

Pin No.	Function
1	AUX1G : AUX1 (GND)
2	AUX1 : AUX1 (12V 1A)

CN701

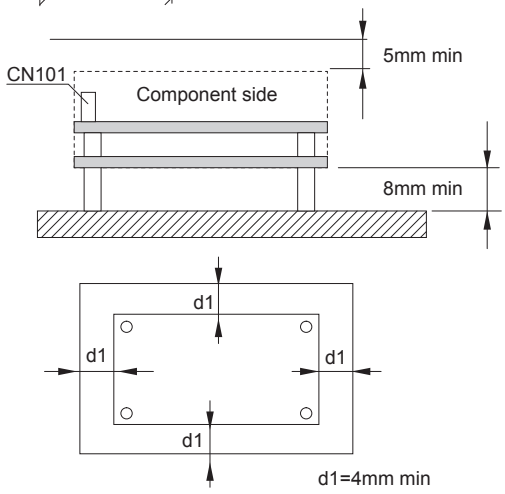
Assembling and Installation Method

■Mounting method



■AC voltage exists on the primary side. Therefore, in order to prevent electric shock, or to meet the leakage current requirements of the safety standard, you need to ensure the proper insulation distance. Therefore, in order to prevent electric shock, or to meet the leakage current requirements of the safety standard, you need to ensure the proper insulation distance.

■In case of metal chassis, keep the distance shown as right figure between component and metal chassis for insulation, use the spacer of 8mm or more between bottom of power supply and metalchassis. If it is less than reqired distance, insert the insulation sheet between power supply and metal chassis. The following distance is not satisfactory for cooling condition.
Please refer to “Derating”.

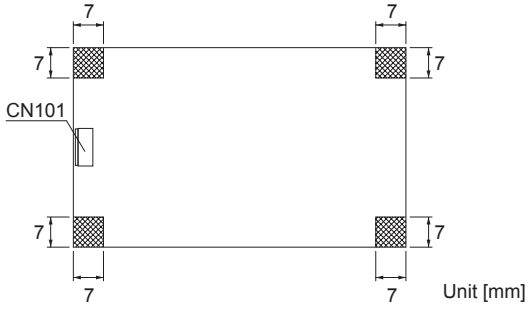


Mounting screw

■The mounting screw should be M3. The hatched area shows the allowance of metal parts for mounting.

■If metallic fittings are used on the component side of the board, ensure there is no contact with surface mounted components.

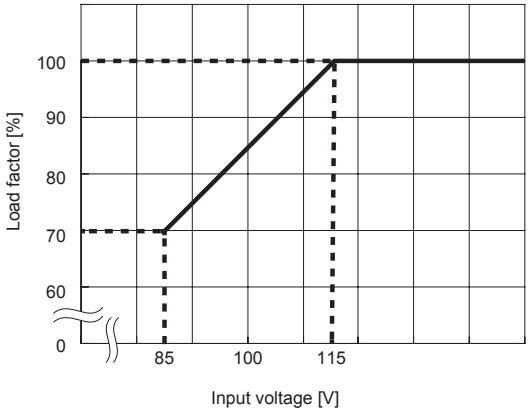
■This product uses SMD technology.
Please avoid the PCB installation method which includes the twisting stress or the bending stress.



Derating

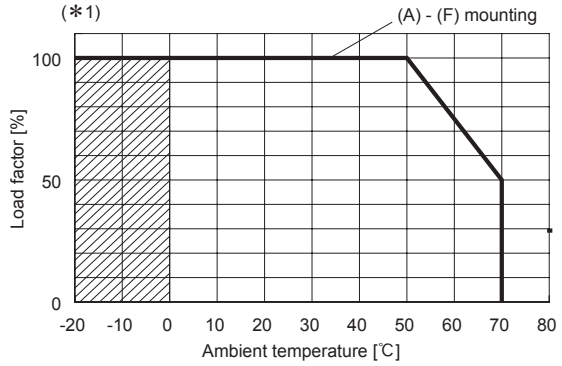
■Cooling method
Conduction cooling are available.Please see instruction manual 3 for details.Please make sure the maximum component temperature rise given in instruction manual 3 is not exceeded.

●Derating curve for input voltage

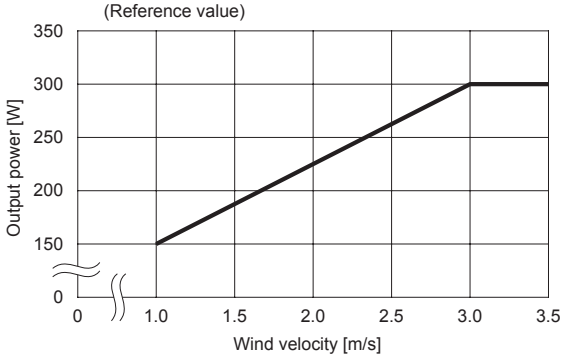


Derating

●Ambient temperature derating curve at forced air (Reference value)



∗1 The maximum output power by wind speed conditions
(Reference value)



■Specifications for ripple and ripple noise changes in the shaded area.
■Please see instruction manual 3 for recommended cooling condition.

Instruction Manual

◆ It is neccessary to read the “Instruction Manual” and “Before using our product” before you use our product.

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

GMA NOTICE

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current ∗1 [A]	Inrush current protection	PCB/Pattern			Series/Parallel operation availability	
					Material	Single sided	Double sided	Series operation	Parallel operation
GMA300F	Active filter	40 - 120	3.3	Thermistor	FR-4	-	Yes	Yes	No
	LLC resonant converters	90 - 180							

∗1 The value of input current is at ACIN 115V and rated load.