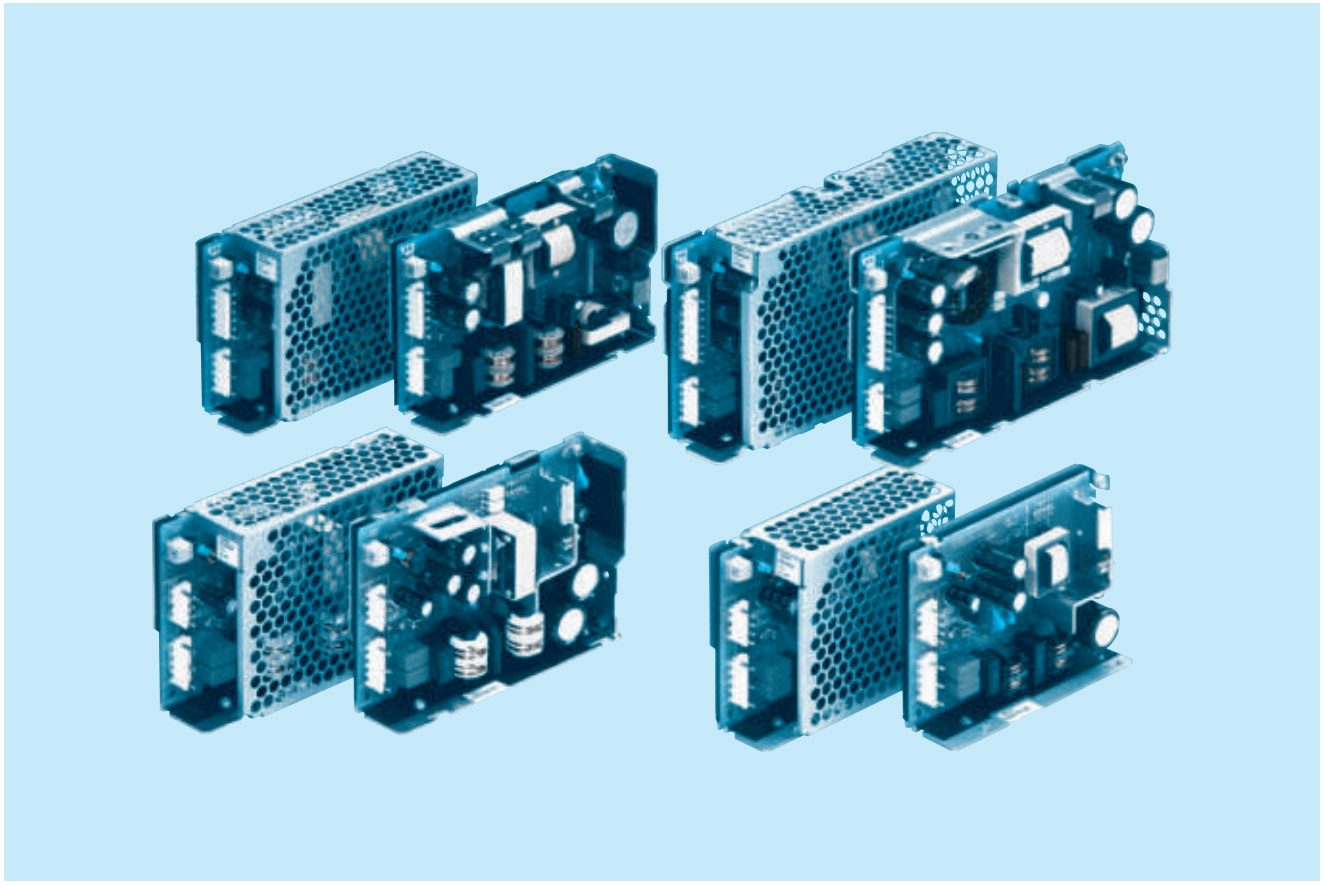
AC-DC Power Supplies Medical Type

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

PMA-series



Feature

For medical electric equipment
Internal dual fuses
Harmonic attenuator (Complies with IEC61000-3-2)
Universal input (AC85 - 264V)
Efficiency increased with synchronous rectification technology (PMA60F, PMA100F)
Variety of option

Safety agency approvals

UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1

EMI

FCC-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B, VCCI-B

5-year warranty (refer to Instruction Manual)

CE marking

Low Voltage Drective
RoHS Directive

UKCA marking

Electrical Equipment Safety Regulations
RoHS Regulations

EMS Compliance : EN61204-3, EN61000-6-2

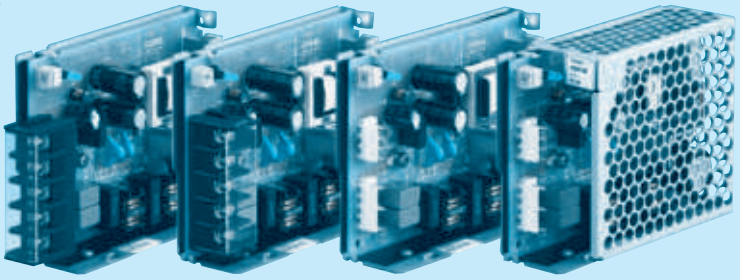
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5 (Common mode Level4, Differential mode Level2)
EN61000-4-6
EN61000-4-8
EN61000-4-11

COSEL AC-DC Power Supplies Medical Type

PMA15F

Ordering information

PM	A	15	F	-□	-□
①	②	③	④	⑤	⑥



Horizontal terminal block (option : -T1) | Vertical terminal block (option : -T) | Standard type | with Cover (option : -N)

Example recommended EMI/EMC filter
NAM-04-000



Low leakage current type : NAM 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 ＊5
T : Vertical terminal block
T1: Horizontal terminal block
N : with Cover
J1 : VH(J.S.T.)connector type

Specification is changed at option, refer to Instruction Manual.

＊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.

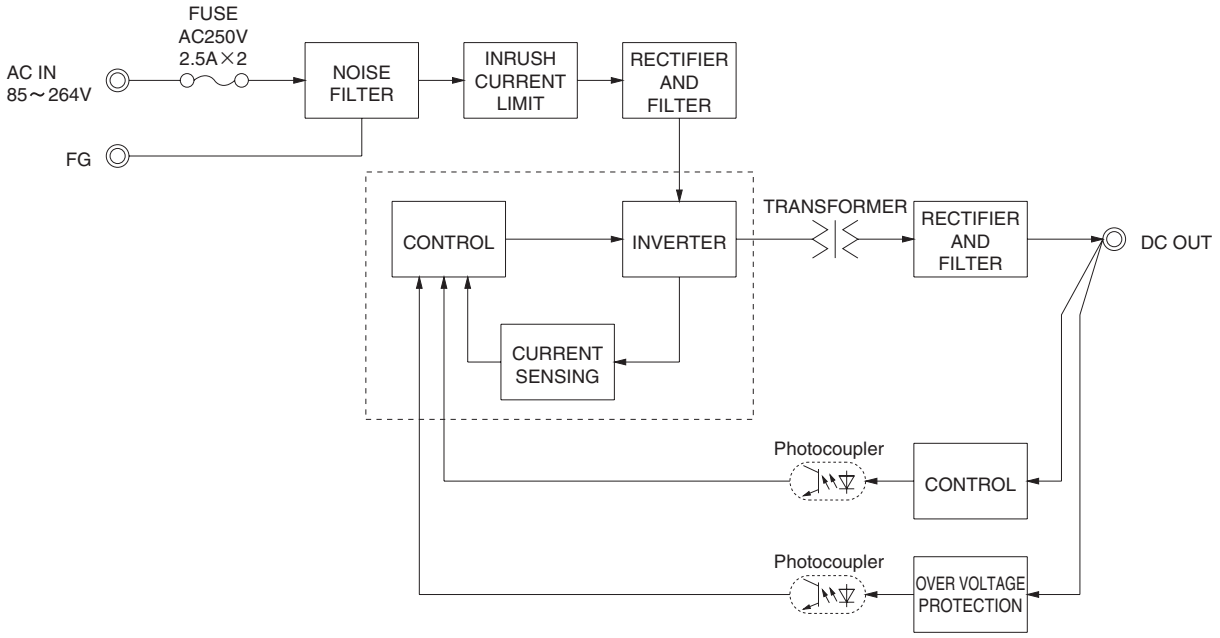
MODEL	PMA15F-3R3	PMA15F-5	PMA15F-12	PMA15F-15	PMA15F-24
MAX OUTPUT WATTAGE[W]	9.9	15	15.6	15	16.8
DC OUTPUT	3.3V 3A	5V 3A	12V 1.3A	15V 1A	24V 0.7A

SPECIFICATIONS

	MODEL		PMA15F-3R3	PMA15F-5	PMA15F-12	PMA15F-15	PMA15F-24
INPUT	VOLTAGE[V]		AC85 - 264 1φ (Refer to the Instruction Manual 1.1 and "Derating") ＊3				
	CURRENT[A]	ACIN 100V	0.30typ (Io=100%)	0.40typ (Io=100%)			
		ACIN 200V	0.15typ (Io=100%)	0.20typ (Io=100%)			
	FREQUENCY[Hz]		50 / 60 (47 - 440)				
	EFFICIENCY[%]	ACIN 100V	66typ	70typ	74typ	76typ	76typ
		ACIN 200V	67typ	74typ	78typ	79typ	79typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%) (At cold start)				
		ACIN 200V	30typ (Io=100%) (At cold start)				
	LEAKAGE CURRENT[mA]		0.05/0.10max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)				
OUTPUT	VOLTAGE[V]		3.3	5	12	15	24
	CURRENT[A]		3.0	3.0	1.3	1.0	0.7
	LINE REGULATION[mV]		20max	20max	48max	60max	96max
	LOAD REGULATION[mV]		40max	40max	100max	120max	150max
	RIPPLE[mVp-p] ＊1	0 to +50℃	80max	80max	120max	120max	120max
		-10 - 0℃	140max	140max	160max	160max	160max
	RIPPLE NOISE[mVp-p] ＊1	0 to +50℃	120max	120max	150max	150max	150max
		-10 - 0℃	160max	160max	180max	180max	180max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	120max	150max	240max
		-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 1minute of applying input again from turning off the input voltage.				
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)				
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		2.85 to 3.60	4.50 to 5.50	10.00 to 13.20	13.20 to 18.00	19.20 to 27.00
	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
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically				
	OVERVOLTAGE PROTECTION[V]		4.00 to 5.25	5.75 to 7.00	15.00 to 18.00	20.00 to 25.00	30.00 to 37.00
	OPERATING INDICATION		LED (Green)				
	REMOTE ON/OFF		Not provided				
ISOLATION	INPUT-OUTPUT		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-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)				
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-10 to +70℃, 20 - 90%RH (Non condensing), 3,000m (10,000 feet) max ＊3				
	STORAGE TEMP.,HUMID.AND ALTITUDE		-20 to +75℃, 20 - 90%RH (Non condensing), 9,000m (30,000 feet) 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		UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1				
	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) ＊6 (Not built-in to active filter ＊4)				
OTHERS	CASE SIZE/WEIGHT		31×78×103mm [1.22×3.07×4.06 inches] (W×H×D) / 230g max (with cover : 265g max)				
	COOLING METHOD		Convection				

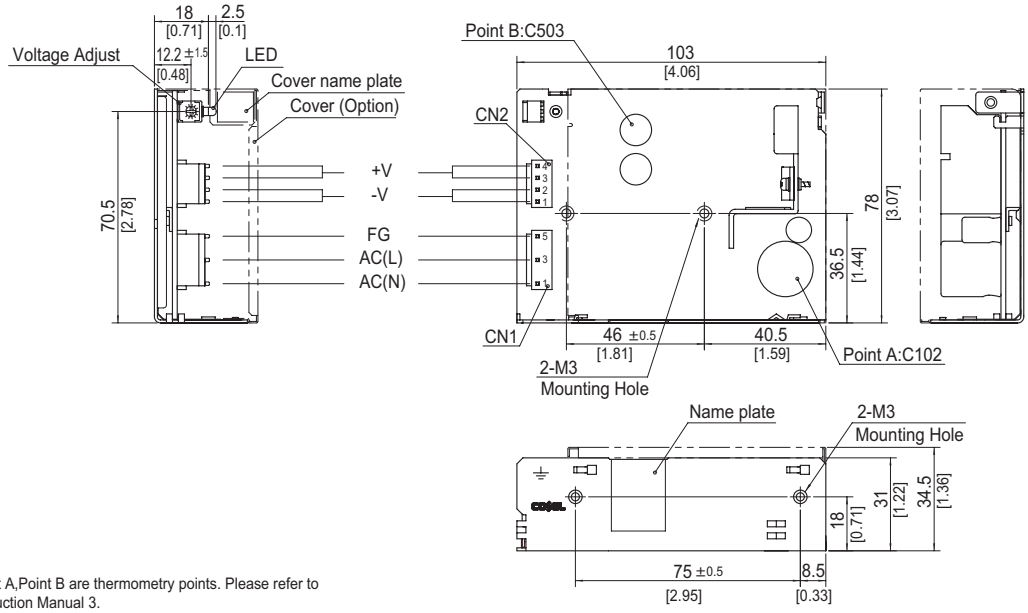
＊1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).
＊2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃.
＊3 Refer to "Derating".
＊4 When two or more units are used, they may not comply with the harmonic attenuator. Please contact us for details.
＊5 Please contact us about safety approvals for the model with option.
＊6 Please contact us about another class.
＊ Parallel operation with other model is not possible.
＊ Derating is required when operated with cover.
＊ A sound may occur from power supply at peak loading.

Block diagram



External view

※ External size of option T and T1 is different from standard model and refer to 5 Option of instruction manual for detalis.



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

I/O Connector		Mating Connector	Terminal	
CN1	1-1123724-3	1-1123722-5	Chain	1123721-1
			Loose	1318912-1
CN2	1-1123723-4	1-1123722-4	Chain	1123721-1
			Loose	1318912-1

(Mfr : Tyco Electronics AMP)

※ I/O Connector is Mfr.Tyco Electronics AMP
※ Option : -J1 : (J.S.T) connector type
-T : Vertical terminal block type
-T1 : Horizontal terminal block type
Refer to Instruction Manual 5.

<PIN CONNECTION>

CN1

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

CN2

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

※ Tolerance : ±1 [±0.04]
※ Weight : 230g max (with cover : 265g max)
※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]
※ Chassis material : Hot-dip galvanized steel plate
※ Keep drawing current per pin bellow 5A of CN2.
※ Dimensions in mm, [ ]=inches
※ Mounting torque : 0.6N・m (6.3kgf・cm) max
※ Please connect safety ground to the unit in 2-M3 holes.

COSEL AC-DC Power Supplies Medical Type

PMA30F

Ordering information

PM	A	30	F	-□	-□
①	②	③	④	⑤	⑧

RoHS



Horizontal terminal block (option : -T1) | Vertical terminal block (option : -T) | Standard type | with Cover (option : -N)

Example recommended EMI/EMC filter
NAM-04-000



Low leakage current type : NAM 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 ＊5
T : Vertical terminal block
T1: Horizontal terminal block
N : with Cover
J1 : VH(J.S.T.)connector type

Specification is changed at option, refer to Instruction Manual.

＊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.

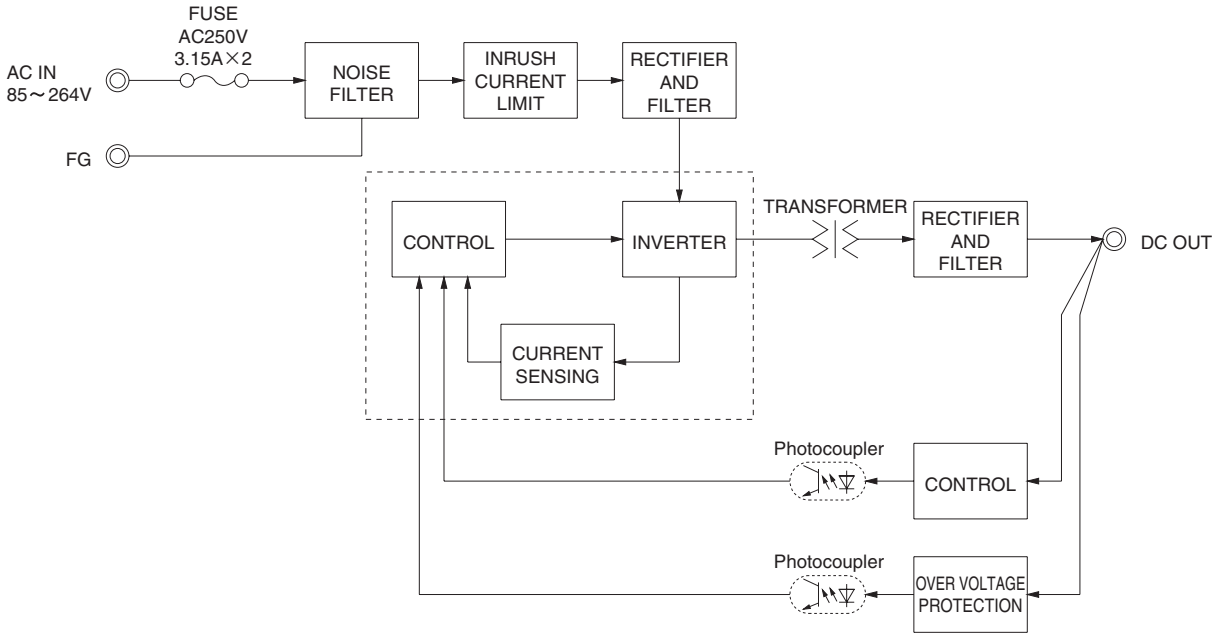
MODEL	PMA30F-3R3	PMA30F-5	PMA30F-12	PMA30F-15	PMA30F-24
MAX OUTPUT WATTAGE[W]	19.8	30	30	30	31.2
DC OUTPUT	3.3V 6A	5V 6A	12V 2.5A	15V 2A	24V 1.3A

SPECIFICATIONS

	MODEL		PMA30F-3R3	PMA30F-5	PMA30F-12	PMA30F-15	PMA30F-24
INPUT	VOLTAGE[V]		AC85 - 264 1φ (Refer to the Instruction Manual 1.1 and "Derating") ＊3				
	CURRENT[A]	ACIN 100V	0.50typ (Io=100%)	0.70typ (Io=100%)			
		ACIN 200V	0.30typ (Io=100%)	0.40typ (Io=100%)			
	FREQUENCY[Hz]		50 / 60 (47 - 440)				
	EFFICIENCY[%]	ACIN 100V	67typ	71typ	76typ	77typ	77typ
		ACIN 200V	69typ	74typ	78typ	80typ	80typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%) (At cold start)				
		ACIN 200V	30typ (Io=100%) (At cold start)				
	LEAKAGE CURRENT[mA]		0.05 / 0.10max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)				
OUTPUT	VOLTAGE[V]		3.3	5	12	15	24
	CURRENT[A]		6.0	6.0	2.5	2.0	1.3
	LINE REGULATION[mV]		20max	20max	48max	60max	96max
	LOAD REGULATION[mV]		40max	40max	100max	120max	150max
	RIPPLE[mVp-p] ＊1	0 to +50℃	80max	80max	120max	120max	120max
		-10 - 0℃	140max	140max	160max	160max	160max
	RIPPLE NOISE[mVp-p] ＊1	0 to +50℃	120max	120max	150max	150max	150max
		-10 - 0℃	160max	160max	180max	180max	180max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	120max	150max	240max
		-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 1minute of applying input again from turning off the input voltage.				
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)				
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		2.85 to 3.60	4.50 to 5.50	10.00 to 13.20	13.20 to 18.00	19.20 to 27.00
	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
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically				
	OVERVOLTAGE PROTECTION[V]		4.00 to 5.25	5.75 to 7.00	15.00 to 18.00	20.00 to 25.00	30.00 to 37.00
	OPERATING INDICATION		LED (Green)				
	REMOTE ON/OFF		Not provided				
ISOLATION	INPUT-OUTPUT		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-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)				
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-10 to +70℃, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max ＊3				
	STORAGE TEMP.,HUMID.AND ALTITUDE		-20 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		UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1				
	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) ＊6 (Not built-in to active filter ＊4)				
OTHERS	CASE SIZE/WEIGHT		31×82×120mm [1.22×3.23×4.72 inches] (W×H×D) / 240g max (with cover : 280g max)				
	COOLING METHOD		Convection				

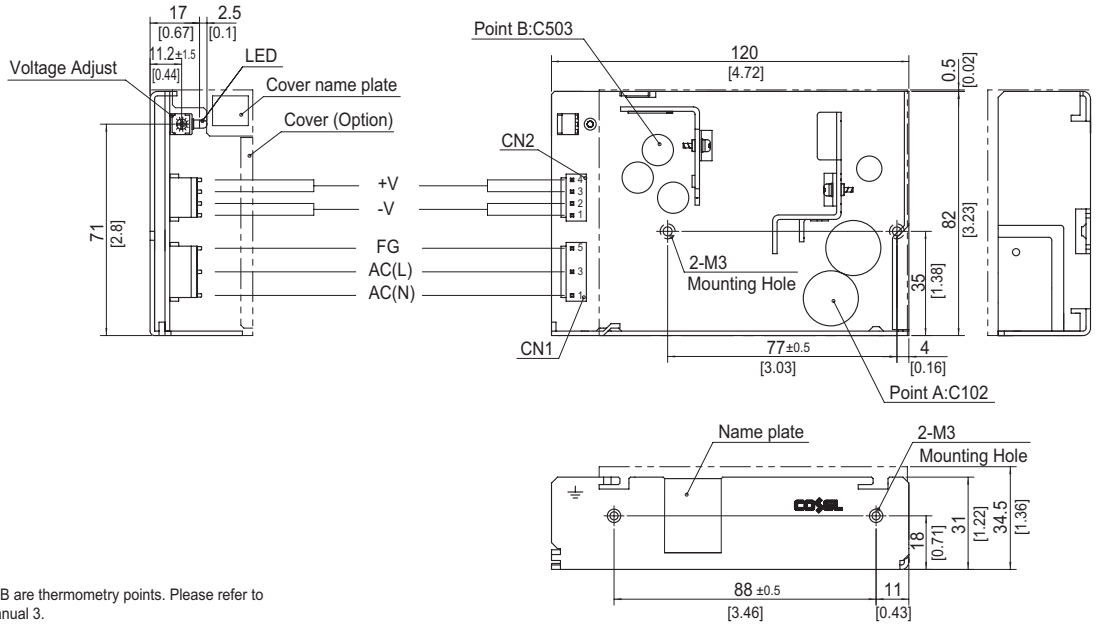
＊1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).
＊2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃.
＊3 Refer to "Derating".
＊4 When two or more units are used, they may not comply with the harmonic attenuator. Please contact us for details.
＊5 Please contact us about safety approvals for the model with option.
＊6 Please contact us about another class.
＊ Parallel operation with other model is not possible.
＊ Derating is required when operated with cover.
＊ A sound may occur from power supply at peak loading.

Block diagram



External view

※ External size of option T and T1 is different from standard model and refer to 5 Option of instruction manual for detalis.



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

I/O Connector		Mating Connector	Terminal	
CN1	1-1123724-3	1-1123722-5	Chain	1123721-1
			Loose	1318912-1
CN2	1-1123723-4	1-1123722-4	Chain	1123721-1
			Loose	1318912-1

(Mfr : Tyco Electronics AMP)

※ I/O Connector is Mfr.Tyco Electronics AMP
※ Option : -J1 : (J.S.T) connector type
-T : Vertical terminal block type
-T1 : Horizontal terminal block type
Refer to Instruction Manual 5.

<PIN CONNECTION>

CN1

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

CN2

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

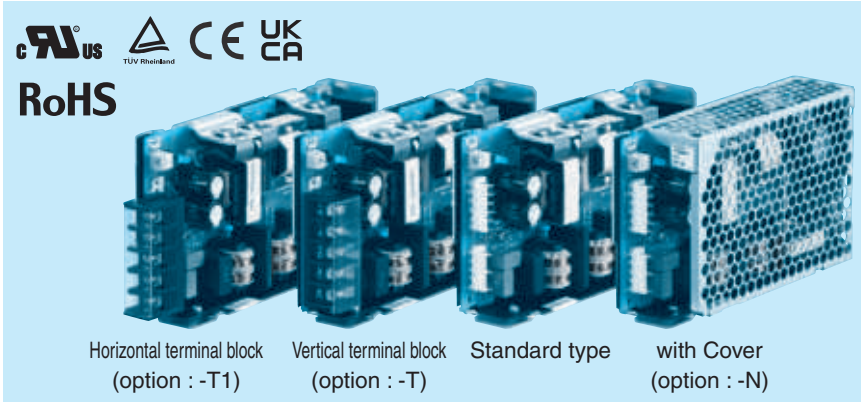
※ Tolerance : ±1 [±0.04]
※ Weight : 240g max (with cover : 280g max)
※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]
※ Chassis material : Aluminum
※ Keep drawing current per pin bellow 5A of CN2.
※ Dimensions in mm, [ ]=inches
※ Mounting torque : 0.49N・m (5kgf・cm) max
※ Please connect safety ground to the unit in 2-M3 holes.

COSEL AC-DC Power Supplies Medical Type

PMA60F

Ordering information

PM	A	60	F	-□	-□
①	②	③	④	⑤	⑧



Horizontal terminal block (option : -T1) | Vertical terminal block (option : -T) | Standard type | with Cover (option : -N)

Example recommended EMI/EMC filter
NAM-04-000



Low leakage current type : NAM 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 ＊5
T : Vertical terminal block
T1: Horizontal terminal block
N : with Cover
J1 : VH(J.S.T.)connector type
R : with Remote ON/OFF

Specification is changed at option, refer to Instruction Manual.

＊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.

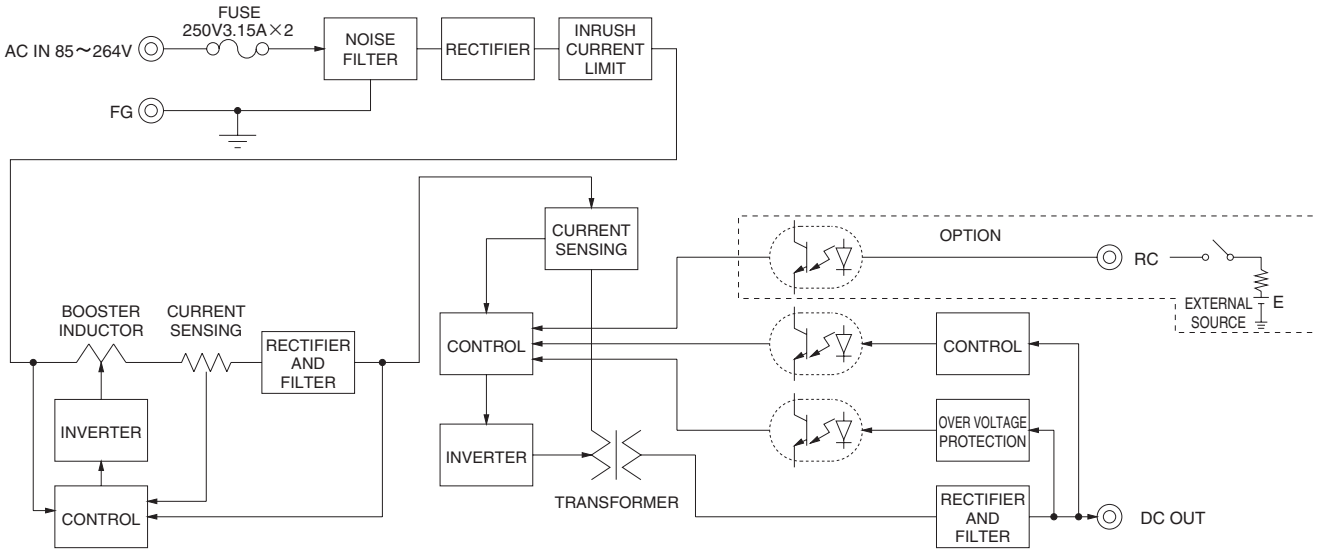
MODEL	PMA60F-3R3	PMA60F-5	PMA60F-12	PMA60F-15	PMA60F-24
MAX OUTPUT WATTAGE[W]	39.6	60	60	60	60
DC OUTPUT	3.3V 12A	5V 12A	12V 5A	15V 4A	24V 2.5A

SPECIFICATIONS

	MODEL		PMA60F-3R3	PMA60F-5	PMA60F-12	PMA60F-15	PMA60F-24
INPUT	VOLTAGE[V]		AC85 - 264 1φ (Refer to the Instruction Manual 1.1)				
	CURRENT[A]	ACIN 100V	0.7typ (Io=100%)	0.8typ (Io=100%)			
		ACIN 200V	0.4typ (Io=100%)	0.5typ (Io=100%)			
	FREQUENCY[Hz]		50 / 60 (47 - 63)				
	EFFICIENCY[%]	ACIN 100V	77typ	80typ	80typ	81typ	81typ
		ACIN 200V	78typ	83typ	82typ	83typ	83typ
	POWER FACTOR (Io=100%)	ACIN 100V	0.98typ				
		ACIN 200V	0.85typ	0.90typ			
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%) (At cold start)				
		ACIN 200V	30typ (Io=100%) (At cold start)				
	LEAKAGE CURRENT[mA]		0.09 / 0.18max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)				
OUTPUT	VOLTAGE[V]		3.3	5	12	15	24
	CURRENT[A]		12.0	12.0	5.0	4.0	2.5
	LINE REGULATION[mV]		20max	20max	48max	60max	96max
	LOAD REGULATION[mV]		40max	40max	100max	120max	150max
	RIPPLE[mVp-p] ＊1	0 to +50℃	80max	80max	120max	120max	120max
		-10 - 0℃	140max	140max	160max	160max	160max
	RIPPLE NOISE[mVp-p] ＊1	0 to +50℃	120max	120max	150max	150max	150max
		-10 - 0℃	160max	160max	180max	180max	180max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	120max	150max	240max
		-10 to +50℃	60max	60max	150max	180max	290max
	DRIFT[mV] ＊2		20max	20max	48max	60max	96max
	START-UP TIME[ms]		250typ (ACIN 100V, Io=100%)				
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)				
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		2.85 to 3.60	4.50 to 5.50	10.00 to 13.20	13.20 to 18.00	19.20 to 27.00
	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
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically				
	OVERVOLTAGE PROTECTION[V]		4.00 to 5.25	5.75 to 7.00	15.00 to 18.00	20.00 to 25.00	30.00 to 37.00
	OPERATING INDICATION		LED (Green)				
	REMOTE ON/OFF		Optional (Required external power source)				
ISOLATION	INPUT-OUTPUT-RC ＊3		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-FG ＊3		AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)				
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-10 to +70℃, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max ＊4				
	STORAGE TEMP.,HUMID.AND ALTITUDE		-20 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		UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1				
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B				
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 ＊6				
OTHERS	CASE SIZE/WEIGHT		32×82×135mm [1.26×3.23×5.31 inches] (W×H×D) / 350g max (with cover : 395g max)				
	COOLING METHOD		Convection				

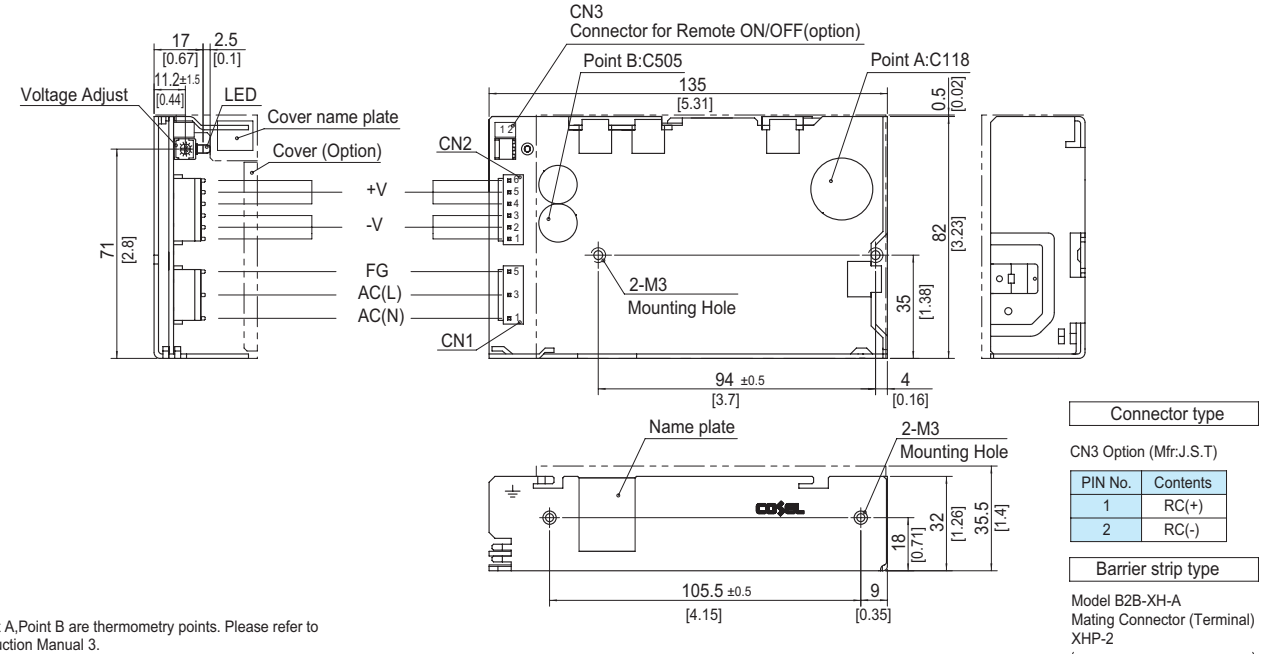
＊1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).
＊2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃.
＊3 Applicable when Remote ON/OFF (optional) is added. RC is insulated with input, output and FG.
＊4 Refer to "Derating".
＊5 Please contact us about safety approvals for the model with option.
＊6 Please contact us about class C.
＊ Parallel operation with other model is not possible.
＊ Derating is required when operated with cover.
＊ A sound may occur from power supply at peak loading.

Block diagram



External view

※ External size of option T and T1 is different from standard model and refer to 5 Option of instruction manual for detalis.



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

I/O Connector		Mating Connector	Terminal	
CN1	1-1123724-3	1-1123722-5	Chain	1123721-1
			Loose	1318912-1
CN2	1-1123723-6	1-1123722-6	Chain	1123721-1
			Loose	1318912-1

(Mfr : Tyco Electronics AMP)

※ I/O Connector is Mfr.Tyco Electronics AMP
※ Option : -J1 : (J.S.T) connector type
-T : Vertical terminal block type
-T1 : Horizontal terminal block type
Refer to Instruction Manual 5.

<PIN CONNECTION>

CN1

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

CN2

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

Connector type

CN3 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)

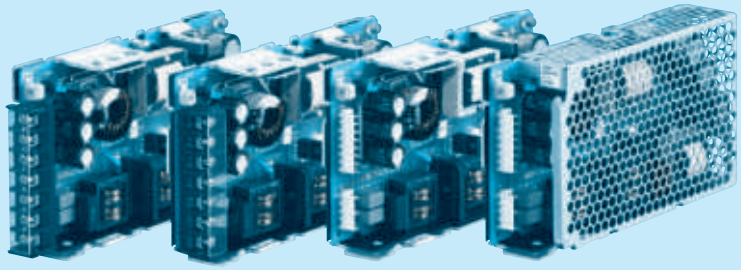
※ Tolerance : ±1 [±0.04]
※ Weight : 350g max (with cover : 395g max)
※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]
※ Chassis material : Aluminum
※ Keep drawing current per pin bellow 5A of CN2.
※ Dimensions in mm, [ ]=inches
※ Mounting torque : 0.49N・m (5kgf・cm) max
※ Please connect safety ground to the unit in 2-M3 holes.

COSEL AC-DC Power Supplies Medical Type

PMA100F

Ordering information

PM	A	100	F	-□	-□
①	②	③	④	⑤	⑧



Horizontal terminal block (option : -T1) | Vertical terminal block (option : -T) | Standard type | with Cover (option : -N)

Example recommended EMI/EMC filter
NAM-06-000



Low leakage current type : NAM 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 ＊5
T : Vertical terminal block
T1: Horizontal terminal block
N : with Cover
J1 : VH(J.S.T.)connector type
R : with Remote ON/OFF

Specification is changed at option, refer to Instruction Manual.

＊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.

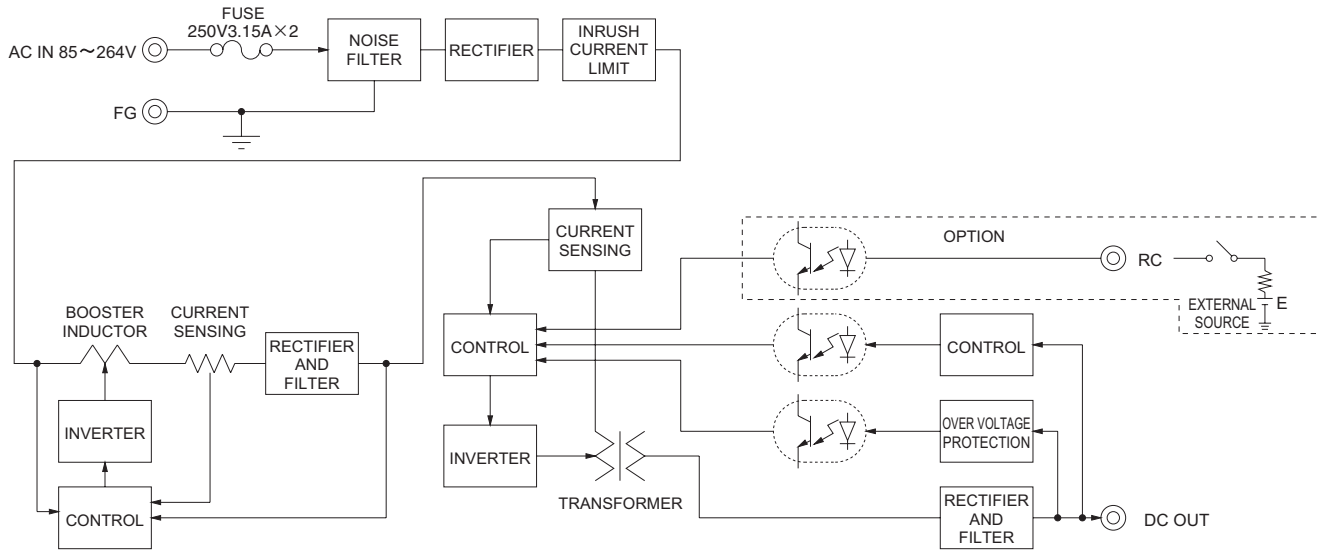
MODEL	PMA100F-3R3	PMA100F-5	PMA100F-12	PMA100F-24	PMA100F-48
MAX OUTPUT WATTAGE[W]	66	100	102	108	100.8
DC OUTPUT	3.3V 20A	5V 20A	12V 8.5A	24V 4.5A	48V 2.1A

SPECIFICATIONS

	MODEL		PMA100F-3R3	PMA100F-5	PMA100F-12	PMA100F-24	PMA100F-48
INPUT	VOLTAGE[V]		AC85 - 264 1φ (Refer to the Instruction Manual 1.1)				
	CURRENT[A]	ACIN 100V	0.9typ (Io=100%)	1.3typ (Io=100%)			
		ACIN 200V	0.5typ (Io=100%)	0.7typ (Io=100%)			
	FREQUENCY[Hz]		50 / 60 (47 - 63)				
	EFFICIENCY[%]	ACIN 100V	77typ	81typ	82typ	84typ	84typ
		ACIN 200V	78typ	83typ	83typ	86typ	86typ
	POWER FACTOR (Io=100%)	ACIN 100V	0.98typ				
		ACIN 200V	0.85typ	0.90typ			
	INRUSH CURRENT[A]	ACIN 100V	20typ (Io=100%) (At cold start)				
		ACIN 200V	40typ (Io=100%) (At cold start)				
	LEAKAGE CURRENT[mA]		0.09 / 0.18max (ACIN 100V / 240V 60Hz, Io=100%, According to IEC60601-1)				
OUTPUT	VOLTAGE[V]		3.3	5	12	24	48
	CURRENT[A]		20.0	20.0	8.5	4.5	2.1
	LINE REGULATION[mV]		20max	20max	48max	96max	192max
	LOAD REGULATION[mV]		40max	40max	100max	150max	240max
	RIPPLE[mVp-p] ＊1	0 to +50℃	80max	80max	120max	120max	150max
		-10 - 0℃	140max	140max	160max	160max	200max
	RIPPLE NOISE[mVp-p] ＊1	0 to +50℃	120max	120max	150max	150max	250max
		-10 - 0℃	160max	160max	180max	180max	300max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	50max	120max	240max	480max
		-10 to +50℃	60max	60max	150max	290max	600max
	DRIFT[mV] ＊2		20max	20max	48max	96max	192max
	START-UP TIME[ms]		250typ (ACIN 100V, Io=100%)				
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%)				
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		2.85 to 3.60	4.50 to 5.50	10.00 to 13.20	19.20 to 27.00	39.00 to 53.00
	OUTPUT VOLTAGE SETTING[V]		3.30 to 3.40	5.00 to 5.15	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]		4.00 to 5.25	5.75 to 7.00	15.00 to 18.00	30.00 to 37.00	58.00 to 65.00
	OPERATING INDICATION		LED (Green)				
	REMOTE ON/OFF		Optional (Required external power source)				
ISOLATION	INPUT-OUTPUT·RC ＊3		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-FG ＊3		AC500V 1minute, Cutoff current = 25mA, DC500V 50MΩ min (At Room Temperature)				
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE		-10 to +70℃, 20 - 90%RH (Non condensing), 3,000m (10,000feet) max ＊4				
	STORAGE TEMP.,HUMID.AND ALTITUDE		-20 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		UL60601-1, C-UL (CSA-C22.2 No.601.1), EN60601-1				
	CONDUCTED NOISE		Complies with FCC-B, VCCI-B, CISPR11-B, CISPR22-B, EN55011-B, EN55022-B				
	HARMONIC ATTENUATOR		Complies with IEC61000-3-2 ＊6				
OTHERS	CASE SIZE/WEIGHT		34×93×168mm [1.34×3.66×6.61 inches] (W×H×D) / 560g max (with cover : 625g max)				
	COOLING METHOD		Convection				

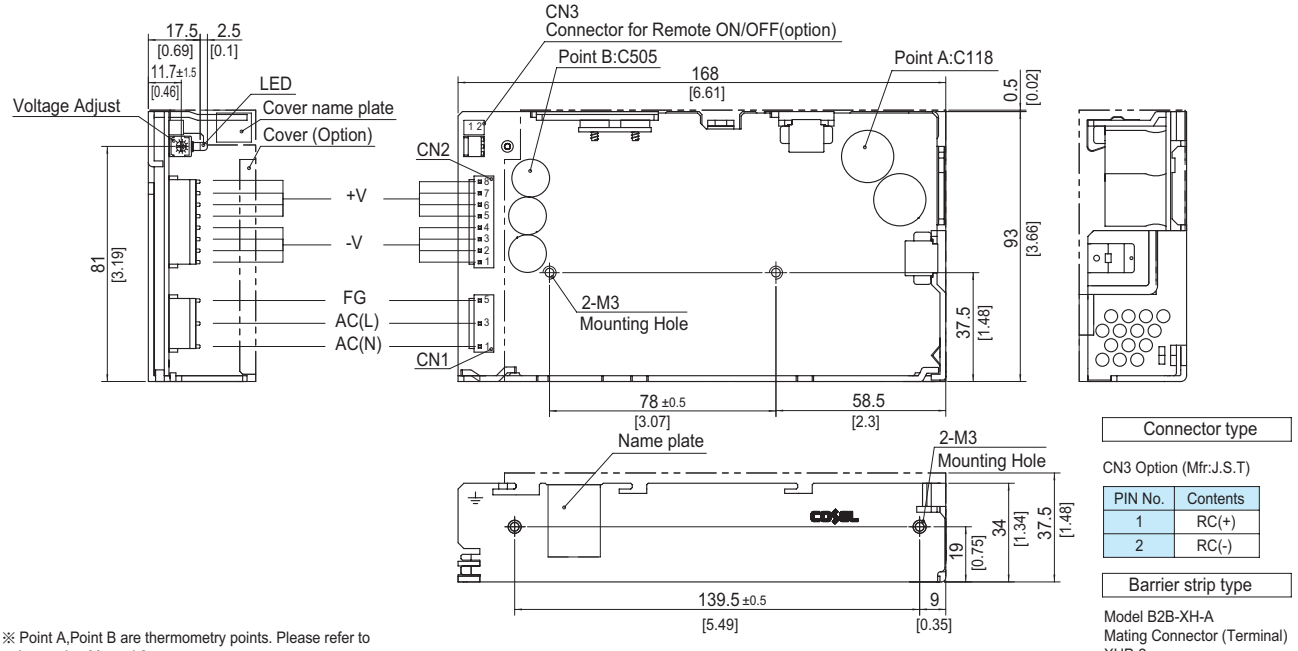
＊1 Measured by 20MHz oscilloscope or Ripple-Noise meter (equivalent to KEISOKU-GIKEN: RM101).
＊2 Drift is the change in DC output for an eight hour period after a half-hour warm-up at 25℃.
＊3 Applicable when Remote ON/OFF (optional) is added. RC is insulated with input, output and FG.
＊4 Refer to "Derating".
＊5 Please contact us about safety approvals for the model with option.
＊6 Please contact us about class C.
＊ Parallel operation with other model is not possible.
＊ Derating is required when operated with cover.
＊ A sound may occur from power supply at peak loading.

Block diagram



External view

※ External size of option T and T1 is different from standard model and refer to 5 Option of instruction manual for detalis.



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

I/O Connector		Mating Connector	Terminal	
CN1	1-1123724-3	1-1123722-5	Chain	1123721-1
			Loose	1318912-1
CN2	1-1123723-8	1-1123722-8	Chain	1123721-1
			Loose	1318912-1

(Mfr : Tyco Electronics AMP)

※ I/O Connector is Mfr.Tyco Electronics AMP
※ Option : -J1 : (J.S.T) connector type
-T : Vertical terminal block type
-T1 : Horizontal terminal block type
Refer to Instruction Manual 5.

<PIN CONNECTION>

CN1

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

CN2

Pin No.	Output
1 - 4	-V
5 - 8	+V

Connector type

CN3 Option (Mfr:J.S.T)

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

Barrier strip type

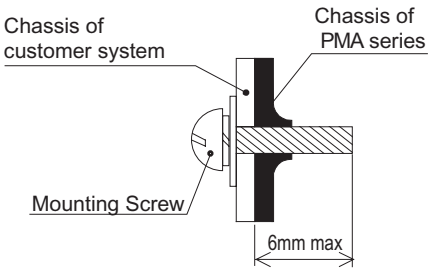
Model B2B-XH-A
Mating Connector (Terminal) XHP-2
(BXH-001T-P0.6 or SXH-001T-P0.6)

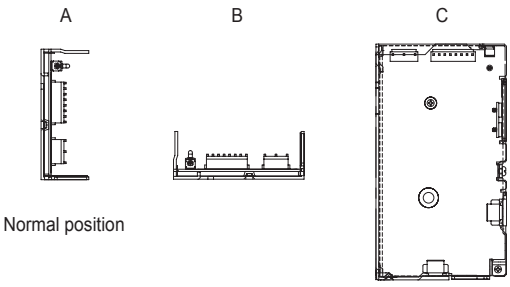
※ Tolerance : ±1 [±0.04]
※ Weight : 560g max (with cover : 625g max)
※ PCB Material/thickness : CEM-3 / 1.6mm [0.06inches]
※ Chassis material : Aluminum
※ Keep drawing current per pin bellow 5A of CN2.
※ Dimensions in mm, [ ]=inches
※ Mounting torque : 0.49N・m (5kgf・cm) max
※ Please connect safety ground to the unit in 2-M3 holes.

Assembling and Installation Method

Installation method

■Do not insert a screw more than 6mm from the outside of a power supply to keep enough insulation distance between the screw and internal components.



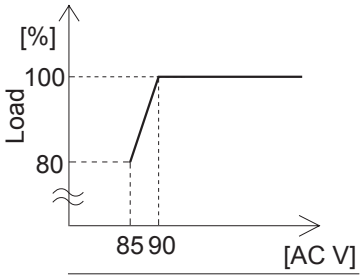


■If you use two or more power supplies side by side, please keep a sufficient distance between them to allow enough air ventilation.

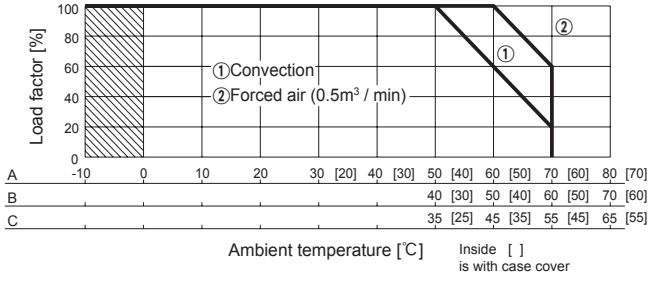
■Ambient temperature around each power supply should not exceed the temperature range shown in “Derating”.

Derating

● PMA15F,PMA30F Input voltage Derating Curve



● Ambient temperature Derating Curve (Reference value)



■In the hatched area, the specification of Ripple, Ripple Noise is different from other area.

■The ambient temperature should be measured 5 to 10 cm away from the power supply so that it won’t be influenced by the heat from the power supply. Please consult us for more details.

■Make sure the temperature at point A and point B is less than the temperatures shown in Instruction Manual 3.

Instruction Manual

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

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz]	Input current [A]*1	Inrush current protection	PCB/Pattern			Series/Parallel operation availability *2	
					Material	Single sided	Double sided	Series operation	Parallel operation
PMA15F	Flyback converter	100	0.4	Thermistor	CEM-3	Yes		Yes	No
PMA30F	Flyback converter	100	0.7	Thermistor	CEM-3	Yes		Yes	No
PMA60F	Active filter	60 - 550	0.8	Thermistor	CEM-3	Yes		Yes	No
	Forward converter	120							
PMA100F	Active filter	60 - 550	1.3	Thermistor	CEM-3	Yes		Yes	No
	Forward converter	120							

*1 The value of input current is at ACIN 100V and rated load.
*2 Refer to Instruction Manual 2.