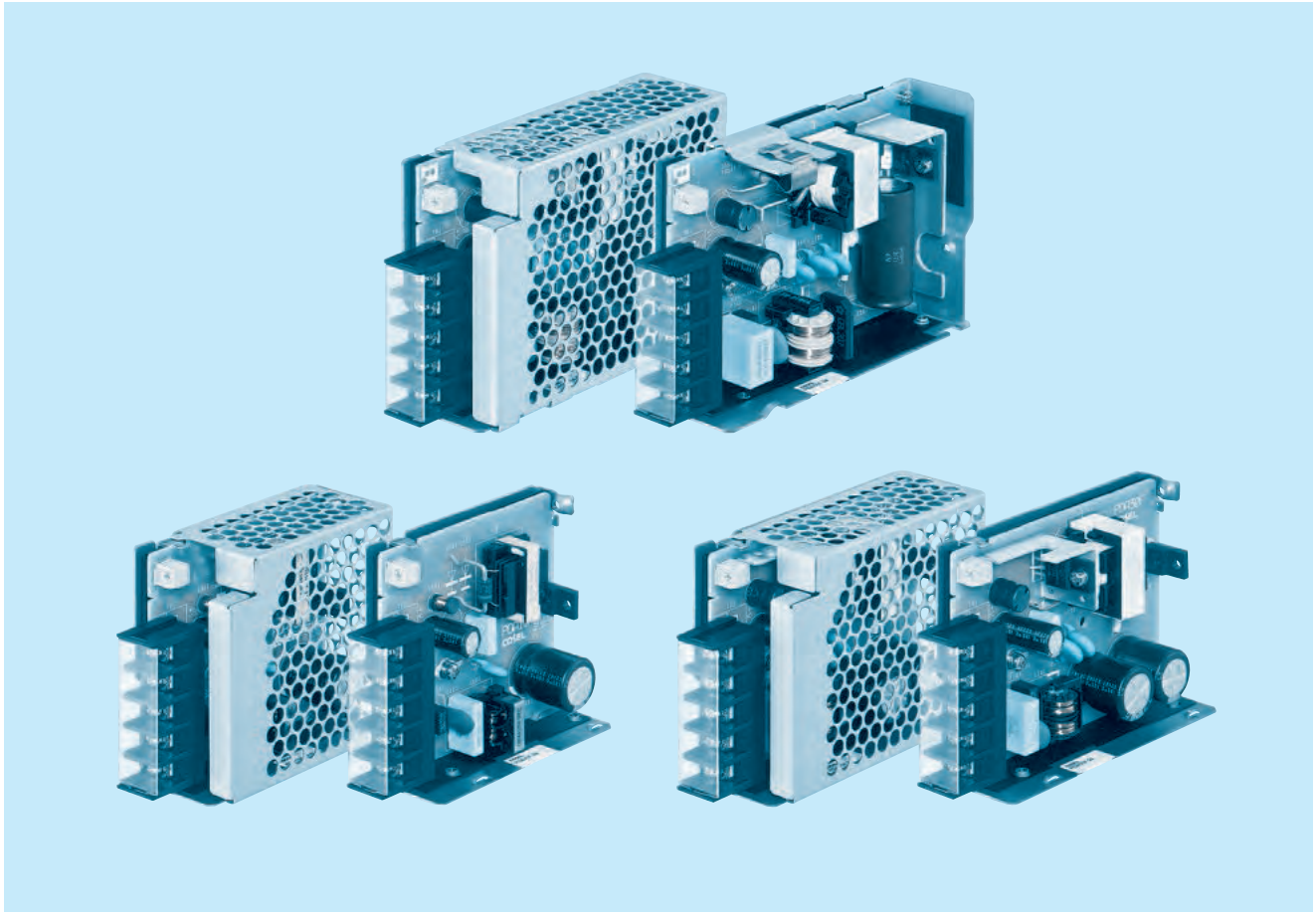
AC-DC Power Supplies Enclosed Type

World wide | Safety Approvals | EMI | Inrush current limiting | OCP | OVP

COSEL

PDA-series



Feature

High efficiency
Low noise
Complies with SEMI F47
Harmonic attenuator (Complies with IEC61000-3-2)
Universal input (85-264VAC)
Built-in inrush current, overcurrent and overvoltage protection circuits

Safety agency approvals

UL62368-1, C-UL (equivalent to CAN/CSA-C22.2 No.62368-1), EN62368-1
Complies with DEN-AN

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 CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part 15-B, FCC Part 18-B, VCCI-B

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

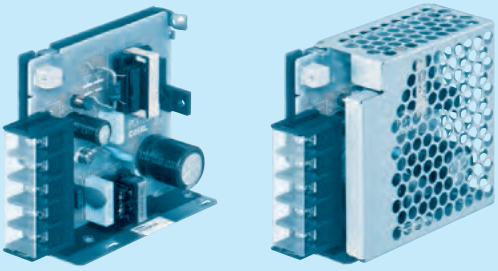
EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

COSEL AC-DC Power Supplies Enclosed Type

PDA15F

Ordering information

PD ① A ② 15 ③ F ④ -□ ⑤ -□ ⑥



Example recommended EMI/EMC filter
NAC-06-472

High voltage pulse noise type : NAP series
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 ＊1
N : with cover

For option details, refer to Instruction Manual 6.

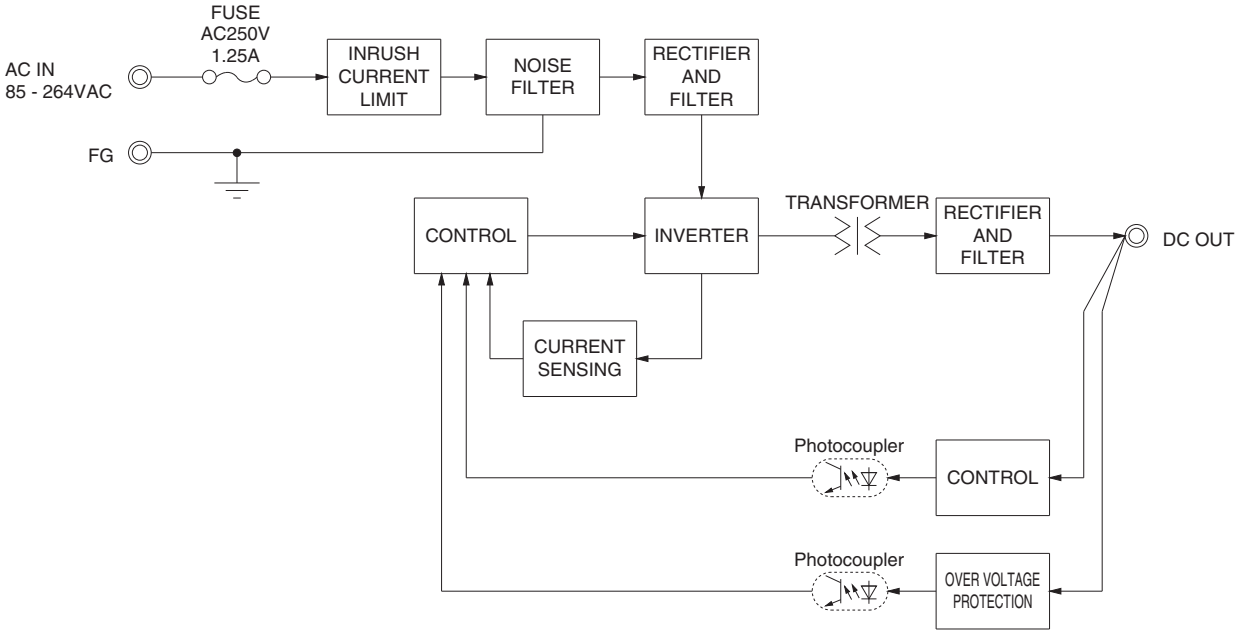
MODEL		PDA15F-5	PDA15F-12	PDA15F-24
MAX OUTPUT WATTAGE[W]	＊2	15	15.6	16.8
DC OUTPUT	＊2	5V 3A	12V 1.3A	24V 0.7A

SPECIFICATIONS

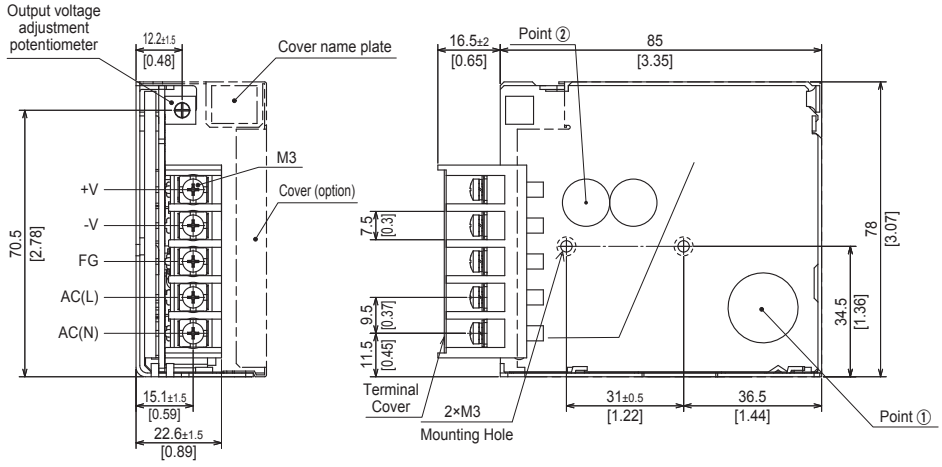
	MODEL		PDA15F-5	PDA15F-12	PDA15F-24
INPUT	VOLTAGE[VAC]	＊2	85 - 264 1 φ (Refer to “Derating” and Instruction Manual 1.1)		
	CURRENT[A]	ACIN 100V	0.35typ		
		ACIN 230V	0.19typ		
	FREQUENCY[Hz]		50 / 60 (45 - 440)		
	EFFICIENCY[%]	ACIN 100V	75.0typ	78.5typ	81.0typ
		ACIN 230V	78.5typ	81.5typ	83.5typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%)		
		ACIN 230V	35typ (Io=100%)		
	LEAKAGE CURRENT[mA]		0.15 / 0.30max (ACIN 100V / 240V, 60Hz, Io=100%, According to IEC62368-1, and DEN-AN)		
OUTPUT	VOLTAGE[V]		5	12	24
	CURRENT[A]	＊2	3.0	1.3	0.7
	LINE REGULATION[mV]	＊3	20max	48max	96max
	LOAD REGULATION[mV]	＊3	40max	100max	150max
	RIPPLE[mVp-p] ＊4	0 to +55℃	80max	120max	120max
		-20 to 0℃	140max	160max	160max
		Io=0 to 15%	300max	300max	300max
	RIPPLE NOISE[mVp-p] ＊4	0 to +55℃	120max	150max	150max
		-20 to 0℃	160max	180max	180max
		Io=0 to 15%	360max	360max	360max
	TEMPERATURE REGULATION[mV]	0 to +55℃	50max	120max	240max
		-20 to +55℃	60max	150max	290max
	DRIFT[mV]	＊5	20max	48max	96max
	START-UP TIME[ms]		80typ (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%) / 150typ (ACIN 230V, Io=100%)		
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		4.50 to 5.50	10.0 to 13.2	19.2 to 27.0
	OUTPUT VOLTAGE SETTING[V]		5.00 to 5.15	12.00 to 12.48	24.00 to 24.96
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically		
	OVERVOLTAGE PROTECTION		5.75 to 7.00	15.0 to 18.0	30.0 to 37.0
	REMOTE SENSING		Not provided		
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)		
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)		
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 100MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	＊2	-20 to +70℃, 20 - 90%RH (Non condensing), 5,000m (16,500feet) max		
	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		UL62368-1, C-UL (equivalent to CAN/CSA-C22.2No.62368-1), EN62368-1, Complies with DEN-AN		
	CONDUCTED NOISE		Complies with CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part15-B, FCC Part18-B, VCCI-B		
	HARMONIC ATTENUATOR	＊6	Complies with IEC61000-3-2 (Class A) (No built-in power factor correction)		
OTHERS	CASE SIZE/WEIGHT		31×78×85mm [1.22×3.07×3.35 inches] (without terminal block) (W×H×D) / 180g max (with cover : 210g max)		
	COOLING METHOD	＊2	Convection/Forced air (Requires external fan) (Refer to “Derating”)		

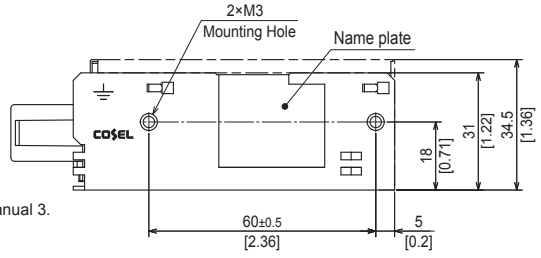
＊1 The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
＊2 Derating is required.Please contact us for DC input.
＊3 At low load conditions, the burst mode operation will start. To check load regulation, you will need to measure the characteristics at average mode with instruments.
＊4 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:RM104).
Ripple and ripple noise spec is change at Io=0 to 15% by burst operation.
＊5 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.
＊6 Please contact us about another class. When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
＊ To meet the specification, do not operate overload condition.
＊ Parallel operation is not possible.
＊ Sound noise may be generated by power supply in case of pulse load.

Block diagram



External view





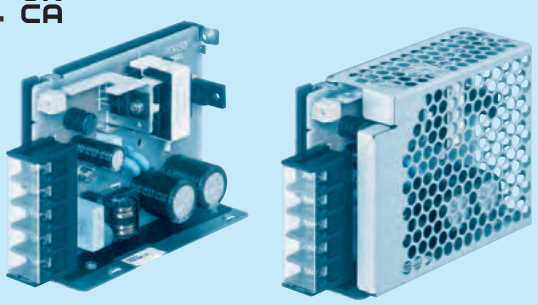
* Tolerance : ±1 [±0.04]
* Weight : 180g max (with cover : 210g max)
* PCB Material / thickness : CEM3 / 1.6mm [0.06]
* Chassis material : Galvanized steel plate
* Dimensions in mm, [ ]= inches
* Mounting torque : 0.6N・m max
* Screw tightening torque : M3 0.8N・m max
* Please connect safety ground to the unit in 2-M3 holes
* Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

COSEL AC-DC Power Supplies Enclosed Type

PDA30F

Ordering information

PD ① A ② 30 ③ F ④ -□ ⑤ -□ ⑧



Example recommended EMI/EMC filter
NAC-06-472

High voltage pulse noise type : NAP series
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 ＊1
N : with cover

For option details, refer to Instruction Manual 6.

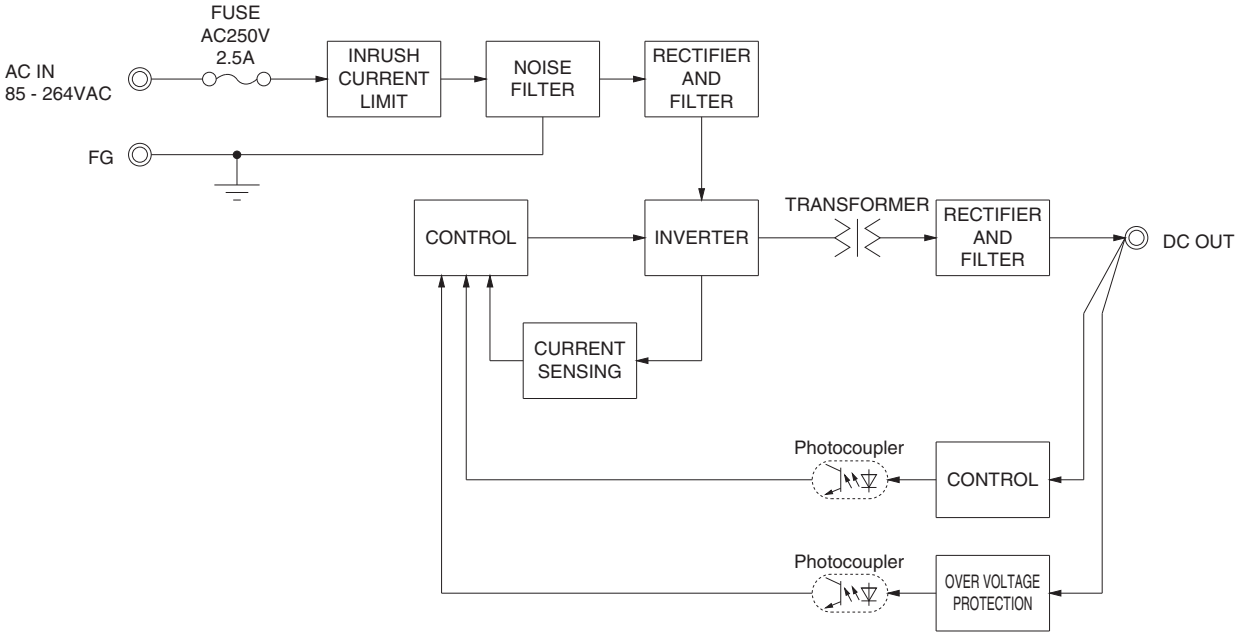
MODEL		PDA30F-5	PDA30F-12	PDA30F-24
MAX OUTPUT WATTAGE[W]	＊2	30	30	31.2
DC OUTPUT	＊2	5V 6A	12V 2.5A	24V 1.3A

SPECIFICATIONS

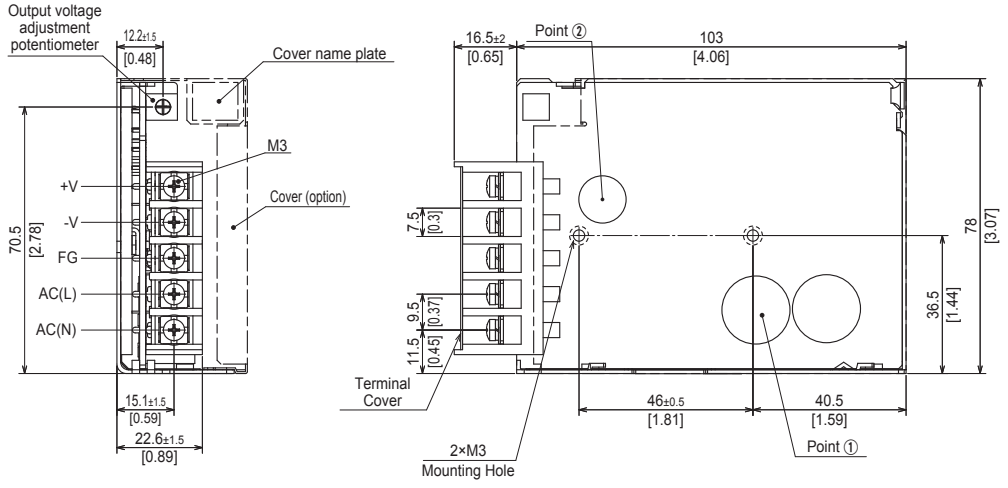
	MODEL		PDA30F-5	PDA30F-12	PDA30F-24
INPUT	VOLTAGE[VAC]	＊2	85 - 264 1 φ (Refer to “Derating” and Instruction Manual 1.1)		
	CURRENT[A]	ACIN 100V	0.62typ		
		ACIN 230V	0.32typ		
	FREQUENCY[Hz]		50 / 60 (45 - 440)		
	EFFICIENCY[%]	ACIN 100V	83.0typ	82.0typ	83.5typ
		ACIN 230V	87.0typ	85.5typ	86.5typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%)		
		ACIN 230V	35typ (Io=100%)		
	LEAKAGE CURRENT[mA]		0.25 / 0.55 max (ACIN 100V / 240V, 60Hz, Io=100%, According to IEC62368-1, and DEN-AN)		
OUTPUT	VOLTAGE[V]		5	12	24
	CURRENT[A]	＊2	6.0	2.5	1.3
	LINE REGULATION[mV]	＊3	20max	48max	96max
	LOAD REGULATION[mV]	＊3	40max	100max	150max
	RIPPLE[mVp-p]	0 to +55℃	80max	120max	120max
		-20 to 0℃ ＊4	140max	160max	160max
		Io=0 to 15%	300max	300max	300max
	RIPPLE NOISE[mVp-p]	0 to +55℃	120max	150max	150max
		-20 to 0℃ ＊4	160max	180max	180max
		Io=0 to 15%	360max	360max	360max
	TEMPERATURE REGULATION[mV]	0 to +55℃	50max	120max	240max
		-20 to +55℃	60max	150max	290max
	DRIFT[mV]	＊5	20max	48max	96max
	START-UP TIME[ms]		80typ (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%) / 150typ (ACIN 230V, Io=100%)		
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		4.50 to 5.50	10.0 to 13.2	20.4 to 27.0
	OUTPUT VOLTAGE SETTING[V]		5.00 to 5.15	12.00 to 12.48	24.00 to 24.96
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically		
	OVERVOLTAGE PROTECTION		5.75 to 7.00	15.0 to 18.0	30.0 to 37.0
	REMOTE SENSING		Not provided		
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)		
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)		
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 100MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	＊2	-20 to +70℃, 20 - 90%RH (Non condensing), 5,000m (16,500feet) max		
	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		UL62368-1, C-UL (equivalent to CAN/CSA-C22.2No.62368-1), EN62368-1, Complies with DEN-AN		
	CONDUCTED NOISE		Complies with CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part15-B, FCC Part18-B, VCCI-B		
	HARMONIC ATTENUATOR	＊6	Complies with IEC61000-3-2 (Class A) (No built-in power factor correction)		
OTHERS	CASE SIZE/WEIGHT		31×78×103mm [1.22×3.07×4.06 inches] (without terminal block) (W×H×D) / 250g max (with cover : 280g max)		
	COOLING METHOD	＊2	Convection/Forced air (Requires external fan) (Refer to “Derating”)		

＊1 The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
＊2 Derating is required.Please contact us for DC input.
＊3 At low load conditions, the burst mode operation will start. To check load regulation, you will need to measure the characteristics at average mode with instruments.
＊4 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:RM104).
Ripple and ripple noise spec is change at Io=0 to 15% by burst operation.
＊5 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.
＊6 Please contact us about another class. When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
＊ To meet the specification, do not operate overload condition.
＊ Parallel operation is not possible.
＊ Sound noise may be generated by power supply in case of pulse load.

Block diagram



External view



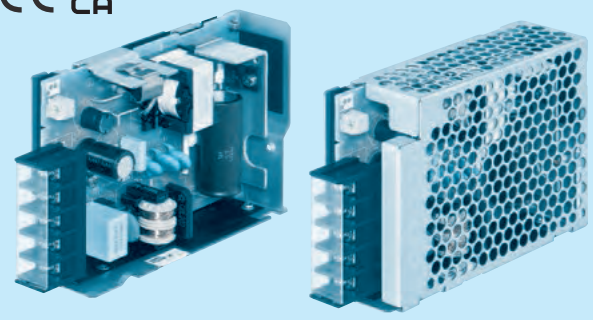
* Tolerance : ±1 [±0.04]
* Weight : 250g max (with cover : 280g max)
* PCB Material / thickness : CEM3 / 1.6mm [0.06]
* Chassis material : Galvanized steel plate
* Dimensions in mm, [ ]= inches
* Mounting torque : 0.6N・m max
* Screw tightening torque : M3 0.8N・m max
* Please connect safety ground to the unit in 2-M3 holes
* Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

COSEL AC-DC Power Supplies Enclosed Type

PDA50F

Ordering information

PD	A	50	F	-□	-□
①	②	③	④	⑤	⑥



Example recommended EMI/EMC filter
NAC-06-472

High voltage pulse noise type : NAP series
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 ＊1
N : with cover

For option details, refer to Instruction Manual 6.

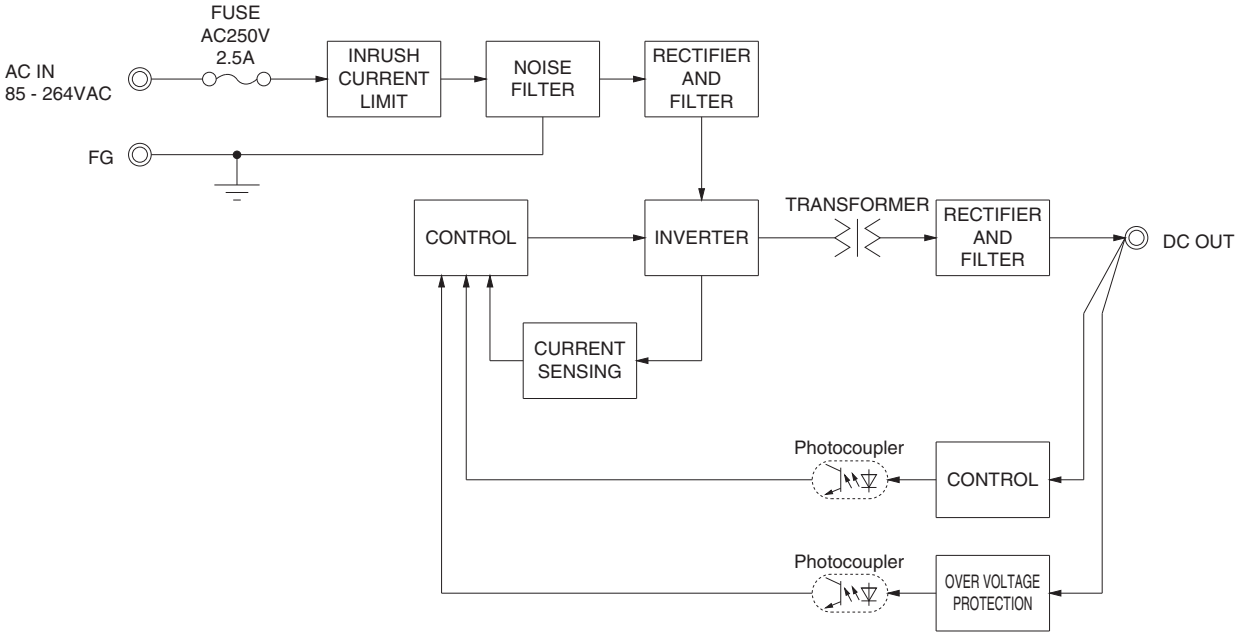
MODEL		PDA50F-5	PDA50F-12	PDA50F-24
MAX OUTPUT WATTAGE[W]	＊2	50	51.6	52.8
DC OUTPUT	＊2	5V 10A	12V 4.3A	24V 2.2A

SPECIFICATIONS

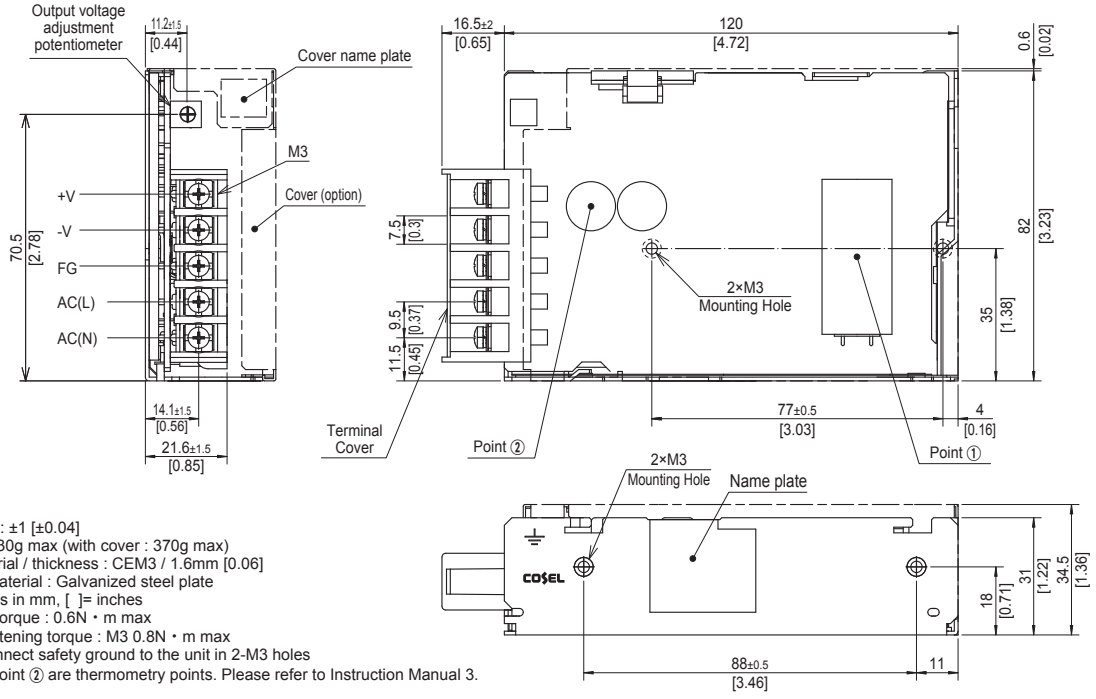
	MODEL		PDA50F-5	PDA50F-12	PDA50F-24
INPUT	VOLTAGE[VAC]	＊2	85 - 264 1 ϕ (Refer to Instruction Manual 1.1)		
	CURRENT[A]	ACIN 100V	1.05typ		
		ACIN 230V	0.52typ		
	FREQUENCY[Hz]		50 / 60 (45 - 440)		
	EFFICIENCY[%]	ACIN 100V	81.5typ	82.5typ	85.0typ
		ACIN 230V	85.0typ	85.0typ	87.5typ
	INRUSH CURRENT[A]	ACIN 100V	15typ (Io=100%)		
		ACIN 230V	35typ (Io=100%)		
	LEAKAGE CURRENT[mA]		0.3 / 0.65 max (ACIN 100V / 240V, 60Hz, Io=100%, According to IEC62368-1, and DEN-AN)		
OUTPUT	VOLTAGE[V]		5	12	24
	CURRENT[A]	＊2	10	4.3	2.2
	LINE REGULATION[mV]	＊3	20max	48max	96max
	LOAD REGULATION[mV]	＊3	40max	100max	150max
	RIPPLE[mVp-p]	0 to +50℃	80max	120max	120max
		-20 to 0℃	140max	160max	160max
		Io=0 to 15%	300max	300max	300max
	RIPPLE NOISE[mVp-p] ＊4	0 to +50℃	120max	150max	150max
		-20 to 0℃	160max	180max	180max
		Io=0 to 15%	360max	360max	360max
	TEMPERATURE REGULATION[mV]	0 to +50℃	50max	120max	240max
		-20 to +50℃	60max	150max	290max
	DRIFT[mV]	＊5	20max	48max	96max
	START-UP TIME[ms]		80typ (ACIN 100V, Io=100%)		
	HOLD-UP TIME[ms]		20typ (ACIN 100V, Io=100%) / 140typ (ACIN 230V, Io=100%)		
	OUTPUT VOLTAGE ADJUSTMENT RANGE[V]		4.00 to 5.50	10.0 to 13.2	19.2 to 27.0
	OUTPUT VOLTAGE SETTING[V]		5.00 to 5.15	12.00 to 12.48	24.00 to 24.96
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically		
	OVERVOLTAGE PROTECTION		5.75 to 7.00	15.0 to 18.0	30.0 to 37.0
	REMOTE SENSING		Not provided		
ISOLATION	INPUT-OUTPUT		AC3,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)		
	INPUT-FG		AC2,000V 1minute, Cutoff current = 10mA, DC500V 100MΩ min (At Room Temperature)		
	OUTPUT-FG		AC500V 1minute, Cutoff current = 25mA, DC500V 100MΩ min (At Room Temperature)		
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	＊2	-20 to +70℃, 20 - 90%RH (Non condensing), 5,000m (16,500feet) max		
	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		UL62368-1, C-UL (equivalent to CAN/CSA-C22.2No.62368-1), EN62368-1, Complies with DEN-AN		
	CONDUCTED NOISE		Complies with CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part15-B, FCC Part18-B, VCCI-B		
	HARMONIC ATTENUATOR	＊6	Complies with IEC61000-3-2 (Class A) (No built-in power factor correction)		
OTHERS	CASE SIZE/WEIGHT		31×82×120mm [1.22×3.23×4.72 inches] (without terminal block) (W×H×D) / 330g max (with cover : 370g max)		
	COOLING METHOD	＊2	Convection/Forced air (Requires external fan) (Refer to "Derating")		

＊1 The listed options may affect the published standard specifications. Please contact us for detailed product specifications.
＊2 Derating is required.Please contact us for DC input.
＊3 At low load conditions, the burst mode operation will start. To check load regulation, you will need to measure the characteristics at average mode with instruments.
＊4 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:RM104).
Ripple and ripple noise spec is change at Io=0 to 15% by burst operation.
＊5 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.
＊6 Please contact us about another class. When two or more units are operating it may not comply with the IEC61000-3-2. Please contact us for details.
＊ To meet the specification, do not operate overload condition.
＊ Parallel operation is not possible.
＊ Sound noise may be generated by power supply in case of pulse load.

Block diagram



External view

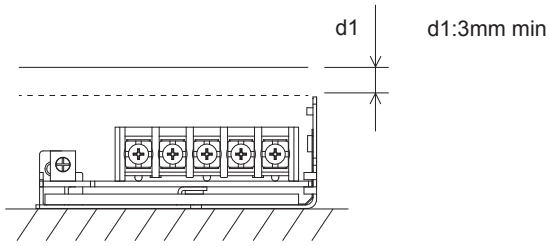


* Tolerance : ±1 [±0.04]
* Weight : 330g max (with cover : 370g max)
* PCB Material / thickness : CEM3 / 1.6mm [0.06]
* Chassis material : Galvanized steel plate
* Dimensions in mm, [ ]= inches
* Mounting torque : 0.6N・m max
* Screw tightening torque : M3 0.8N・m max
* Please connect safety ground to the unit in 2-M3 holes
* Point ①, Point ② are thermometry points. Please refer to Instruction Manual 3.

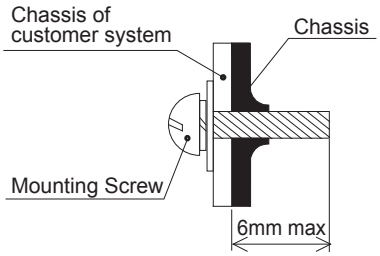
Assembling and Installation Method

Installation method

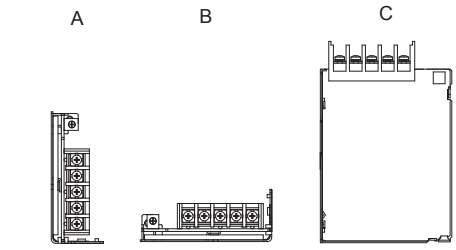
■For the metal chassis, keep the distance d1 for isolation between component and metal chassis.
The d1 dimension is the distance required for insulation and does not satisfy cooling conditions. For cooling conditions, please refer to “Derating” and section 3 of the instruction manual.



■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.

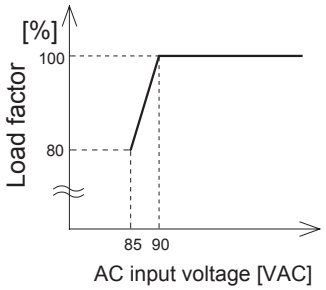


■If you use two or more power supplies side by side, please keep a sufficient distance between them to allow enough air ventilation.
■Ambient temperature around each power supply should not exceed the temperature range shown in “derating”.

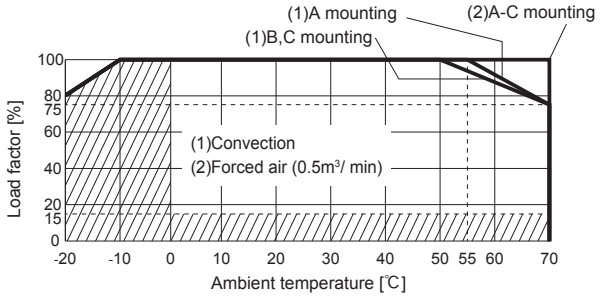


Derating

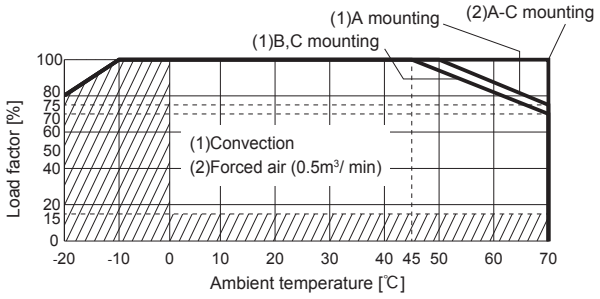
● Derating curve for input voltage PDA15F, PDA30F



● PDA15F Ambient temperature derating curve (Reference value)

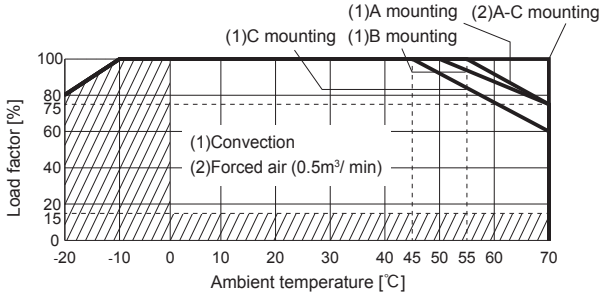


● PDA15F-☐-N Ambient temperature derating curve (Reference value)

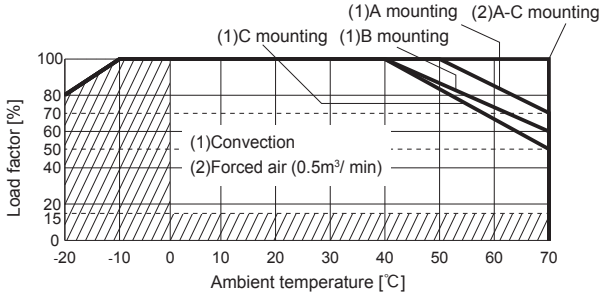


Derating

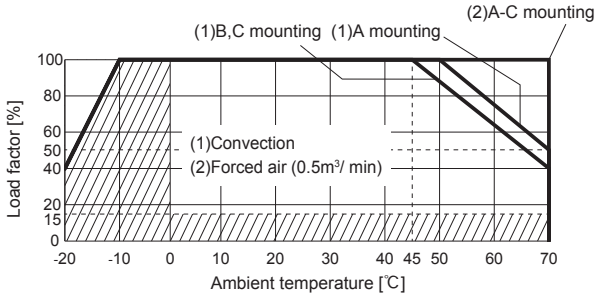
● PDA30F
Ambient temperature derating curve (Reference value)



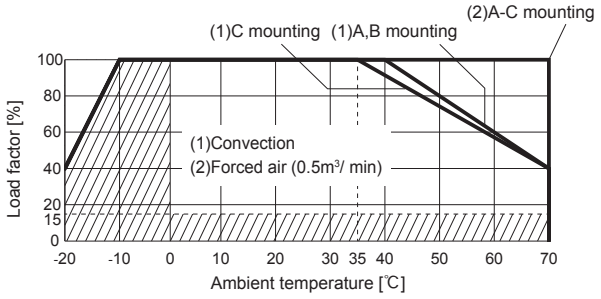
● PDA30F-□-N
Ambient temperature derating curve (Reference value)



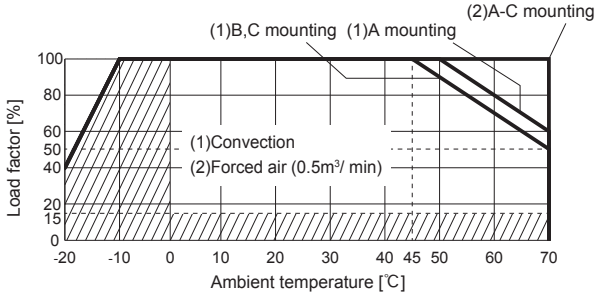
● PDA50F-5
Ambient temperature derating curve (Reference value)



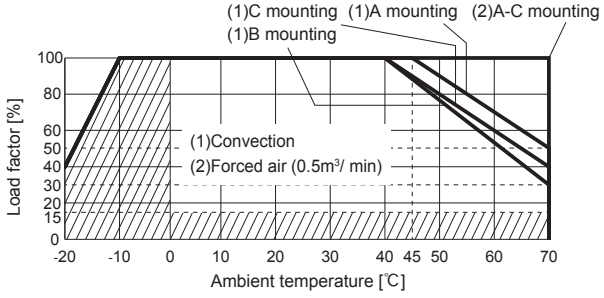
● PDA50F-5-N
Ambient temperature derating curve (Reference value)



● PDA50F-12, -24
Ambient temperature derating curve (Reference value)



● PDA50F-12-N, -24-N
Ambient temperature derating curve (Reference value)



Instruction Manuals

◆ Please see catalog and instructionmanual before you use.

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

PDA NOTICE

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz] ＊1 ＊2	Input current ＊3 [A]	Inrush current protection	PCB/Pattern			Series/Parallel operation availability	
					Material	Single sided	Double sided	Series operation	Parallel operation
PDA15F	Flyback converter	20 to 125	0.35	Thermistor	CEM-3	Yes	-	Yes	No
PDA30F	Flyback converter	30 to 130	0.62	Thermistor	CEM-3	Yes	-	Yes	No
PDA50F	Flyback converter	25 to 130	1.05	Thermistor	CEM-3	Yes	-	Yes	No

＊1 The value changes depending on input and load.
＊2 At light load, burst operation is performed to reduce input power. The switching frequency is changed by using condition. Please contact us for more details.
＊3 The value of input current is at ACIN 100V and rated load.