

WDA-series

カタログ、取扱説明書、製品仕様書は英語版のみとなります。



■ Feature

For DIN (35mm) Rail Products
Built in overcurrent protection, overvoltage protection circuits
Economical design

■ Safety agency approvals

UL62368-1
C-UL (equivalent to CAN/CSA-C22.2 No.62368-1)
EN62368-1

■ CE marking

Low Voltage Directive
RoHS Directive

■ UKCA marking

Electrical Equipment Safety Regulations
RoHS Regulations

■ 5-year warranty (See Instruction Manual)

■ EMI

Complies with CISPR11-B, CISPR32-B, EN55011-B,
EN55032-B, FCC Part 15-B, FCC Part 18-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

WDA30F

WD A 30 F -□ -□
 ① ② ③ ④ ⑤ ⑥



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Option : *6
- C : With Coating

*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	WDA30F-5	WDA30F-12	WDA30F-24	WDA30F-48
MAX OUTPUT WATTAGE[W]	30	30	31.2	33.6
DC OUTPUT	5V6A	12V2.5A	24V1.3A	48V0.7A

SPECIFICATIONS

	MODEL	WDA30F-5	WDA30F-12	WDA30F-24	WDA30F-48	
INPUT	VOLTAGE[V]	AC85 - 264 1φ				
	CURRENT[A]	ACIN 115V	0.6			
		ACIN 230V	0.3			
	FREQUENCY[Hz]	50/60 (47-63)				
	EFFICIENCY[%]	ACIN 115V	80typ	85typ	86typ	87typ
		ACIN 230V	82typ	86typ	87typ	88typ
	INRUSH CURRENT[A]	ACIN 115V	20typ Ta=25°C (at cold start)			
ACIN 230V		40typ Ta=25°C (at cold start)				
LEAKAGE CURRENT[mA]	ACIN115V	0.25max				
	ACIN240V	0.5max				
OUTPUT	VOLTAGE[V]	5	12	24	48	
	CURRENT[A]	6	2.5	1.3	0.7	
	WATTAGE[W]	30	30	31.2	33.6	
	LINE REGULATION[mV] *1	50max	120max	240max	480max	
	LOAD REGULATION[mV] *1	50max	120max	240max	480max	
	RIPPLE NOISE [mVp-p] *2 Io=100%	150(Bandwidth 20MHz)				
	TEMPERATURE REGULATION[mV]	0~+50°C	100max	180max	360max	720max
	START-UP TIME[ms]	ACIN 115V	100typ			
		ACIN 230V	100typ			
	HOLD-UP TIME[ms]	ACIN 115V	10typ			
		ACIN 230V	20typ			
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	4.50 to 5.50	10.8 to 13.2	21.6 to 26.4	43.2 to 52.8		
OUTPUT VOLTAGE SETTING[V]	4.90 to 5.30	11.75 to 12.25	23.5 to 24.5	47.0 to 49.0		
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION [A]	Works over 105% of rating and recovers automatically				
	OVERVOLTAGE PROTECTION[V]	5.75 to 7.00	13.8 to 16.8	27.6 to 33.6	54.0 to 67.2	
	OPERATING INDICATION	LED (Green)				
ISOLATION	INPUT-OUTPUT	AC3,000V 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 = 100mA, DC500V 50MΩ min (At Room Temperature)				
ENVIRONMENT	OPERATING TEMP.,HUMID. *3	-20 to +70°C, 20 - 90%RH (Non condensing)				
	STORAGE TEMP.,HUMID.	-30 to +85°C, 20 - 90%RH (Non condensing)				
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G) , 3minutes period, 60minutes each along Z axis (Non operating.mounted on DIN Rail)				
	IMPACT	196.1m/s ² (20G) , 11ms, once each X, Y and Z axis (Packing state)				
SAFETY AND EMC	AGENCY APPROVALS	UL62368-1, C-UL (equivalent to CAN/CSA-C22.2 No.62368-1) , EN62368-1				
	EMC EMISSION	Complies with CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part 15-B, FCC Part 18-B				
	EMC IMMUNITY	Complies with EN61000-4-2, 3, 4, 5, 6, 8, 11				
	HARMONIC ATTENUATOR*4	Complies with IEC61000-3-2 (Class A) No built-in active PFC				
OTHERS	CASE SIZE/WEIGHT	32×90×90mm (W×H×D) [1.26×3.54×3.54 inches] / 200g max				
	COOLING METHOD	Convection				
WARRANTY	WARRANTY *5	5 years (subject to the operating conditions)				

*1 Consult us about dynamic load and input response. Measure the output voltage by using the average mode of the tester to deal with the burst operation at low (Io=0~20%typ) load.

*2 This is the result of measurement of the testing board with capacitors of 47μF and 0.1μF placed at 150 mm from the output terminals by a 20MHz oscilloscope or a ripple-noise meter equivalent to Keisoku-GikenRM104.
 When the load factor is low (Io=0~20%typ), the switching power loss is reduced by burst operation, which will cause ripple noise to go beyond the specifications.

*3 Output power derating is required. Refer to "Derating"

*4 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.

*5 Consult us about details.

*6 The listed options may affect the published standard specifications. Please contact us for detailed product specifications and safety approvals.

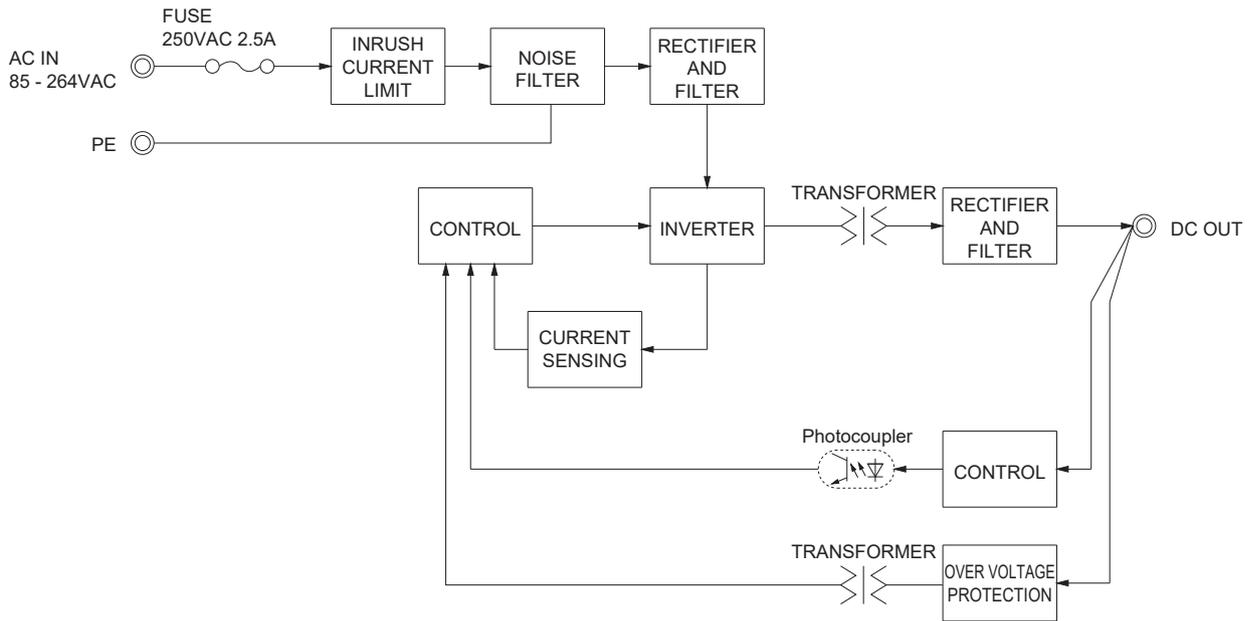
* All parameters not specially mentioned are measured at ACIN 230V, rated load and 25°C of ambient temperature.

* Do not use the power supply in overcurrent conditions or in unspecified input voltage ranges. Otherwise the internal components may be damaged.

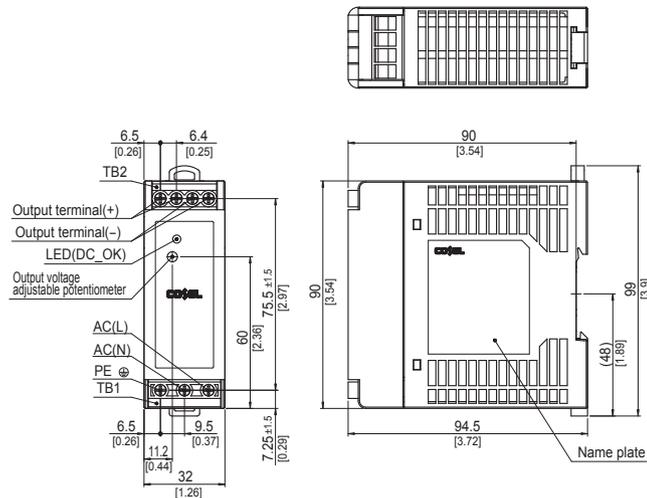
* Parallel operation is not possible with this model.

* Acoustic noise may be heard from the power supply when used for pulse load.

Block diagram



External view



- ※ Tolerance : ± 1 [± 0.04]
- ※ Weight : 200g max
- ※ Chassis - Case material : PBT
- ※ Din rail attachment material : PC/ABS
- ※ Dimensions in mm, [] = inches
- ※ Screw tightening torque : 1N · m max

WDA60F

① **WD** ② **A** ③ **60** ④ **F** ⑤ **-□** ⑥ **-□**



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Option : *6
- C : With Coating

*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	WDA60F-12	WDA60F-24	WDA60F-48
MAX OUTPUT WATTAGE[W]	60	60	62.4
DC OUTPUT	12V 5A	24V 2.5A	48V 1.3A

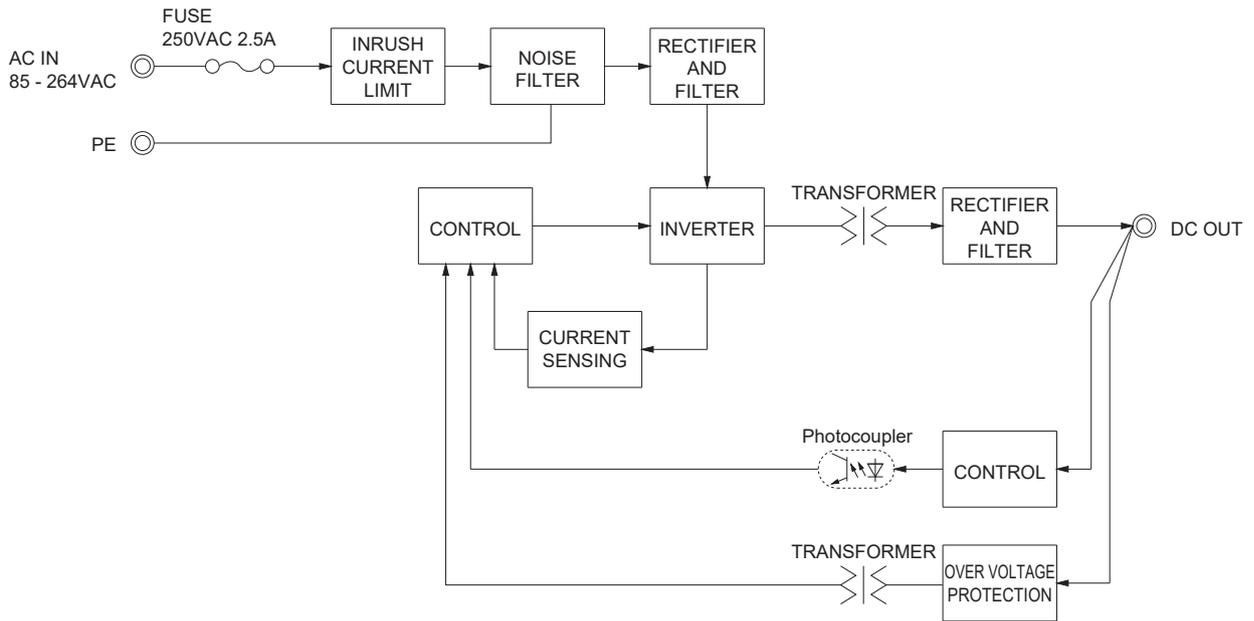
SPECIFICATIONS

	MODEL	WDA60F-12	WDA60F-24	WDA60F-48	
INPUT	VOLTAGE[V]	AC85 - 264 1φ			
	CURRENT[A]	ACIN 115V	1.2		
		ACIN 230V	0.6		
	FREQUENCY[Hz]	50/60 (47-63)			
	EFFICIENCY[%]	ACIN 115V	84typ	86typ	87typ
		ACIN 230V	86typ	88typ	89typ
	INRUSH CURRENT[A]	ACIN 115V	20typ Ta=25°C (at cold start)		
ACIN 230V		40typ Ta=25°C (at cold start)			
LEAKAGE CURRENT[mA]	ACIN 115V	0.25max			
	ACIN240V	0.5max			
OUTPUT	VOLTAGE[V]	12	24	48	
	CURRENT[A]	5	2.5	1.3	
	WATTAGE[W]	60	60	62.4	
	LINE REGULATION[mV] *1	120max	240max	480max	
	LOAD REGULATION[mV] *1	120max	240max	480max	
	RIPPLE NOISE [mVp-p] *2 lo=100%	150max (Bandwidth 20MHz)			
	TEMPERATURE REGULATION[mV]	0~+50°C	180max	360max	
	START-UP TIME[ms]	ACIN 115V	100typ		
		ACIN 230V	100typ		
	HOLD-UP TIME[ms]	ACIN 115V	10typ		
ACIN 230V		20typ			
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	10.8 to 13.2	21.6 to 26.4	43.2 to 52.8		
OUTPUT VOLTAGE SETTING[V]	11.75 to 12.25	23.5 to 24.5	47.0 to 49.0		
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION [A]	Works over 105% of rating and recovers automatically			
	OVERVOLTAGE PROTECTION[V]	13.8 to 16.8	27.6 to 33.6	54.0 to 67.2	
	OPERATING INDICATION	LED (Green)			
ISOLATION	INPUT-OUTPUT	AC3,000V 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 = 100mA, DC500V 50MΩ min (At Room Temperature)			
ENVIRONMENT	OPERATING TEMP.,HUMID. *3	-20 to +70°C, 20-90%RH (Non condensing)			
	STORAGE TEMP.,HUMID.	-30 to +85°C, 20-90%RH (Non condensing)			
	VIBRATION	10-55Hz, 19.6m/s ² (2G) , 3minutes period, 60minutes each along Z axis (Non operating.mounted on DIN Rail)			
	IMPACT	196.1m/s ² (20G) , 11ms, once each X, Y and Z axis (Packing state)			
SAFETY AND EMC	AGENCY APPROVALS	UL62368-1, C-UL (equivalent to CAN/CSA-C22.2 No.62368-1) , EN62368-1			
	EMC EMISSION	Complies with CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part 15-B, FCC Part 18-B			
	EMC IMMUNITY	Complies with EN61000-4-2, 3, 4, 5, 6, 8, 11			
OTHERS	HARMONIC ATTENUATOR*4	Complies with IEC61000-3-2 (Class A) No built-in active PFC			
	CASE SIZE/WEIGHT	32X90X90mm (WXHXD) [1.26X3.54X3.54 inches] / 250g max			
WARRANTY	COOLING METHOD	Convection			
	WARRANTY	*5	5 years (subject to the operating conditions)		

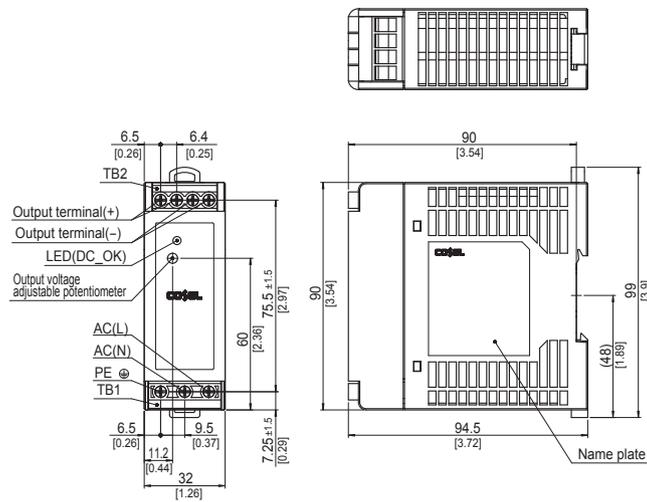
*1 Consult us about dynamic load and input response. Measure the output voltage by using the average mode of the tester to deal with the burst operation at low (lo=0~20%typ) load.
 *2 This is the result of measurement of the testing board with capacitors of 47μF and 0.1μF placed at 150 mm from the output terminals by a 20MHz oscilloscope or a ripple-noise meter equivalent to Keisoku-GikenRM104.
 When the load factor is low (lo=0~20%typ), the switching power loss is reduced by burst operation, which will cause ripple noise to go beyond the specifications.
 *3 Output power derating is required. Refer to "Derating"
 *4 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.
 *5 Consult us about details.
 *6 The listed options may affect the published standard specifications. Please contact us for detailed product specifications and safety approvals.
 * All parameters not specially mentioned are measured at ACIN 230V, rated load and 25°C of ambient temperature.
 * Do not use the power supply in overcurrent conditions or in unspecified input voltage ranges. Otherwise the internal components may be damaged.
 * Parallel operation is not possible with this model.
 * Acoustic noise may be heard from the power supply when used for pulse load.

Block diagram



External view



- ※ Tolerance : ± 1 [± 0.04]
- ※ Weight : 250g max
- ※ Chassis · Case material : PBT
- ※ Din rail attachment material : PC/ABS
- ※ Dimensions in mm, [] = inches
- ※ Screw tightening torque : 1N · m max

WDA90F

① **WD** ② **A** ③ **90** ④ **F** ⑤ **-** □ ⑥ **-** □



- ① Series name
- ② Single output
- ③ Output wattage
- ④ Universal input
- ⑤ Output voltage
- ⑥ Option : *6
- C : With Coating

*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	WDA90F-12	WDA90F-24	WDA90F-48
MAX OUTPUT WATTAGE[W]	90	91.2	91.2
DC OUTPUT	12V 7.5A	24V 3.8A	48V 1.9A

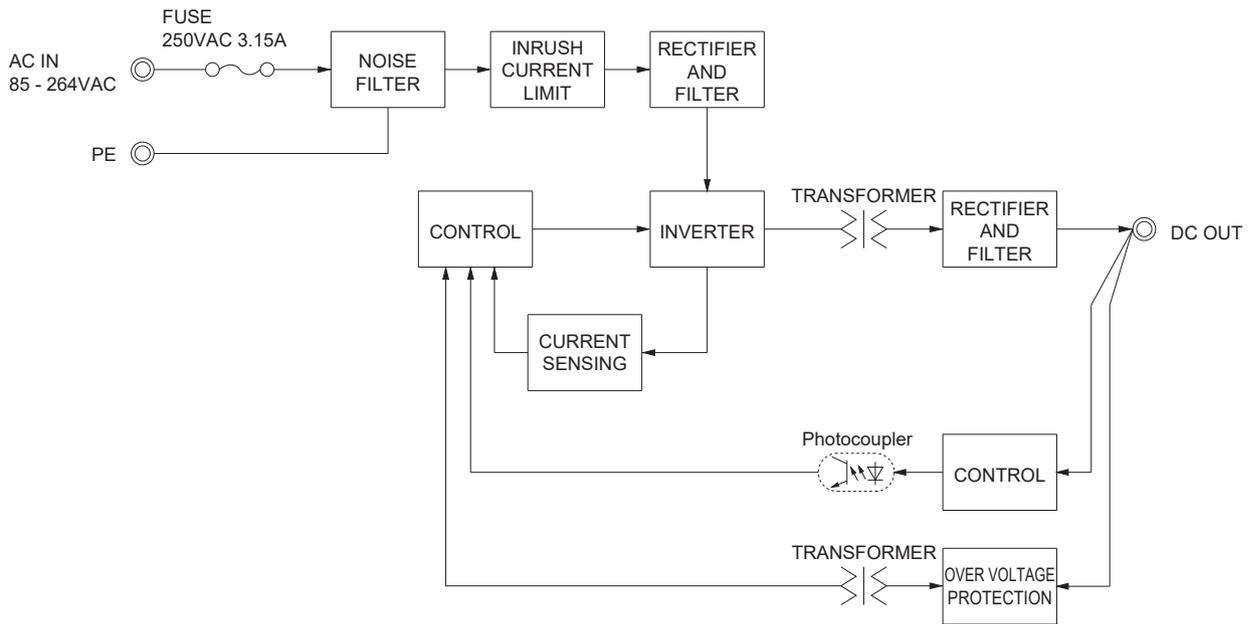
SPECIFICATIONS

	MODEL	WDA90F-12	WDA90F-24	WDA90F-48	
INPUT	VOLTAGE[V]	AC85 - 264 1φ			
	CURRENT[A]	ACIN 115V	1.8		
		ACIN 230V	0.9		
	FREQUENCY[Hz]	50/60 (47-63)			
	EFFICIENCY[%]	ACIN 115V	84	87	88
		ACIN 230V	86	89	90
	INRUSH CURRENT[A]	ACIN 115V	20typ Ta=25°C (at cold start)		
ACIN 230V		40typ Ta=25°C (at cold start)			
LEAKAGE CURRENT[mA]	ACIN 115V	0.4max			
	ACIN 240V	0.75max			
OUTPUT	VOLTAGE[V]	12	24	48	
	CURRENT[A]	7.5	3.8	1.9	
	WATTAGE[W]	90	91.2	91.2	
	LINE REGULATION[mV] *1	120max	240max	480max	
	LOAD REGULATION[mV] *1	120max	240max	480max	
	RIPPLE NOISE [mVp-p] *2 Io=100%	150max (Bandwidth 20MHz)			
	TEMPERATURE REGULATION[mV]	0~+50°C	180max	360max	
	START-UP TIME[ms]	ACIN 115V	100typ		
		ACIN 230V	100typ		
	HOLD-UP TIME[ms]	ACIN 115V	10typ		
ACIN 230V		20typ			
OUTPUT VOLTAGE ADJUSTMENT RANGE[V]	10.8 to 13.2	21.6 to 26.4	43.2 to 52.8		
OUTPUT VOLTAGE SETTING[V]	11.75 to 12.25	23.5 to 24.5	47.0 to 49.0		
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION [A]	Works over 105% of rating and recovers automatically			
	OVERVOLTAGE PROTECTION[V]	13.8 to 16.8	27.6 to 33.6	54.0 to 67.2	
	OPERATING INDICATION	LED (Green)			
ISOLATION	INPUT-OUTPUT	AC3,000V 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 = 100mA, DC500V 50MΩ min (At Room Temperature)			
ENVIRONMENT	OPERATING TEMP., HUMID. *3	-20 to +70°C, 20-90%RH (Non condensing)			
	STORAGE TEMP., HUMID.	-30 to +85°C, 20-90%RH (Non condensing)			
	VIBRATION	10 - 55Hz, 19.6m/s ² (2G) , 3minutes period, 60minutes each along Z axis (Non operating, mounted on DIN Rail)			
	IMPACT	196.1m/s ² (20G) , 11ms, once each X, Y and Z axis (Packing state)			
SAFETY AND EMC	AGENCY APPROVALS	UL62368-1, C-UL (equivalent to CAN/CSA-C22.2 No.62368-1) , EN62368-1			
	EMC EMISSION	Complies with CISPR11-B, CISPR32-B, EN55011-B, EN55032-B, FCC Part 15-B, FCC Part 18-B			
	EMC IMMUNITY	Complies with EN61000-4-2, 3, 4, 5, 6, 8, 11			
OTHERS	HARMONIC ATTENUATOR*4	Complies with IEC61000-3-2 (Class A) No built-in active PFC			
	CASE SIZE/WEIGHT	50X90X90mm (W X H X D) [1.97X3.54X3.54 inches] / 350g max			
	COOLING METHOD	Convection			
WARRANTY	WARRANTY	*5	5 years (subject to the operating conditions)		

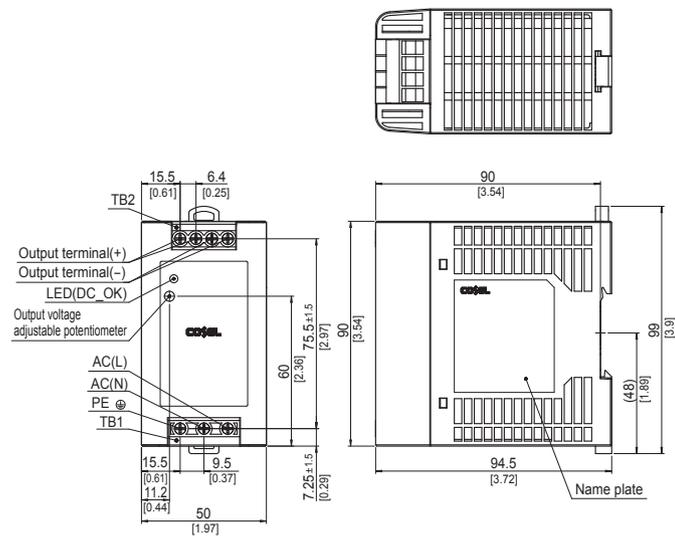
*1 Consult us about dynamic load and input response. Measure the output voltage by using the average mode of the tester to deal with the burst operation at low (Io=0~20%typ) load.
 *2 This is the result of measurement of the testing board with capacitors of 47μF and 0.1μF placed at 150 mm from the output terminals by a 20MHz oscilloscope or a ripple-noise meter equivalent to Keisoku-GikenRM104.
 When the load factor is low (Io=0~20%typ), the switching power loss is reduced by burst operation, which will cause ripple noise to go beyond the specifications.
 *3 Output power derating is required. Refer to "Derating"
 *4 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.
 *5 Consult us about details.
 *6 The listed options may affect the published standard specifications. Please contact us for detailed product specifications and safety approvals.
 * All parameters not specially mentioned are measured at ACIN 230V, rated load and 25°C of ambient temperature.
 * Do not use the power supply in overcurrent conditions or in unspecified input voltage ranges. Otherwise the internal components may be damaged.
 * Parallel operation is not possible with this model.
 * Acoustic noise may be heard from the power supply when used for pulse load.

Block diagram



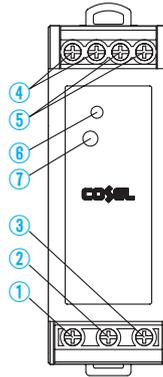
External view



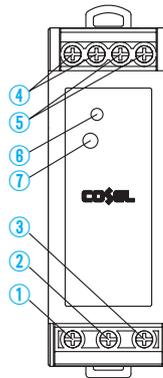
- ※ Tolerance : ±1 [±0.04]
- ※ Weight : 350g max
- ※ Chassis · Case material : PBT
- ※ Din rail attachment material : PC/ABS
- ※ Dimensions in mm, [] = inches
- ※ Screw tightening torque : 1N · m max

Terminal Blocks

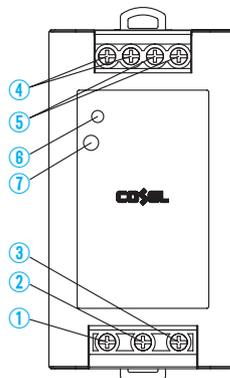
● **WDA30F**



● **WDA60F**



● **WDA90F**

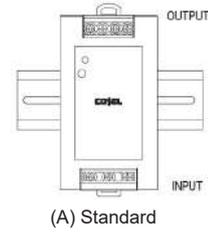


Terminal Number	Terminal Name	Function
①	PE	Protective earth Terminal
②	AC (N)	Input Terminals
③	AC (L)	
④	+VOUT	+Output Terminals
⑤	-VOUT	-Output Terminals
⑥	DC_OK	LED for output voltage confirmation
⑦	TRM	Adjustment of output voltage

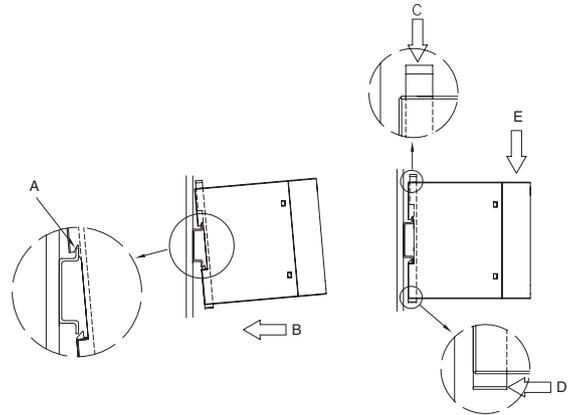
Assembling and Installation Method

Installation method

- About DIN-Rail Attachment available with DIN EN60715 TH 35 (35×7.5mm or 35×15mm) (Top hat shaped DIN rail)
- Below shows mounting orientation.
If install other than standard mounting orientation (A), please fix the power supply for withstand the impact and vibration.

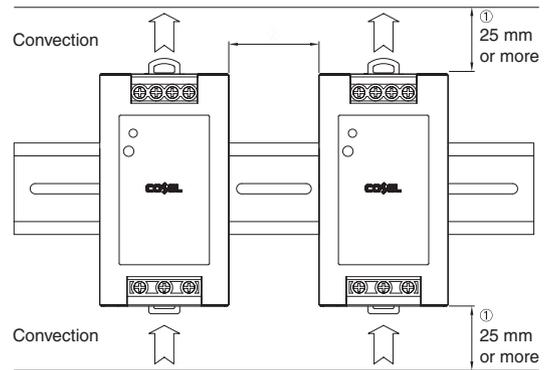


- When you mount a power supply on a DIN rail, have the area marked A catch one side of the rail and push the unit to the direction of B. To remove the power supply from the rail, either push down the area marked C or insert a tool such as driver to the area marked D and pull the unit apart from the rail. When you couldn't remove the unit easily, push down the area marked C while lightly pushing the unit to the direction of E.



- Shown below the notes about installation clearance of a unit.

- ① Installation clearance at above and below the unit.
Please have clearance of at least 25mm above and below the unit to avoid heat accumulation.
- ② Installation clearance at the side of the unit.
Please have clearance of at least 5mm side the unit to insulating the internal components. However, refer to right figure, if adjacent device of the unit (including power supply) is a heat source.

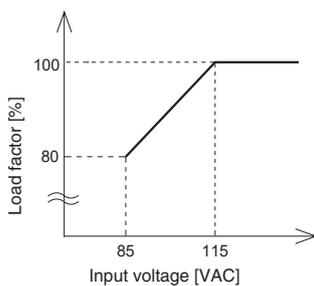


No.	Model	Adjacent device of the unit	
		Non-heat source	Heat source (*)
1	WDA30F/60F/90F	5mm or more	15mm or more

* Reference value when same power units are adjacent.

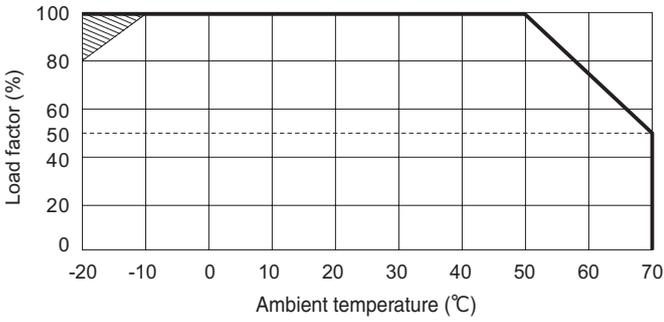
Derating

● Derating curve for input voltage

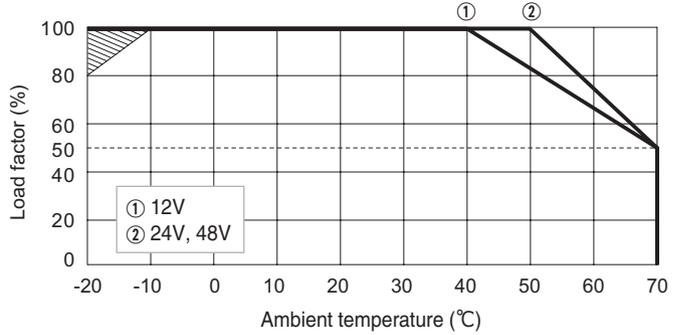


Derating Curve

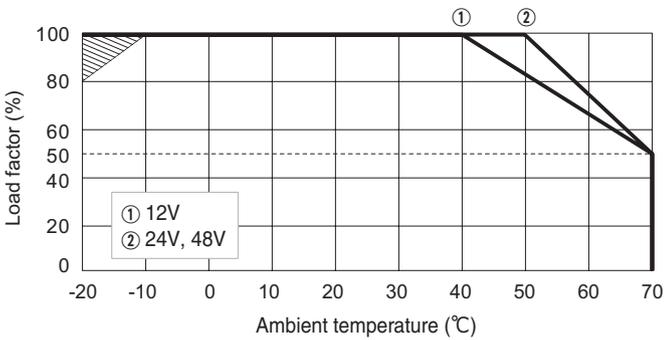
- **WDA30F**
Ambient temperature derating curve at rated input



- **WDA60F**
Ambient temperature derating curve at rated input



- **WDA90F**
Ambient temperature derating curve at rated input



- 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.
- The shaded area is the derating required at start-up.

Instruction Manual

- ◆ It is necessary 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]	Rated input fuse	Inrush current protection circuit	PCB/Pattern			Parallel operation
						Material	Single sided	Double sided	
WDA30F	Flyback converter	50 to 120	0.6	250V 2.5A	Thermistor	CEM-3/FR4	Yes	Yes	No
WDA60F	Flyback converter	50 to 120	1.2	250V 2.5A	Thermistor	CEM-3/FR4	Yes	Yes	No
WDA90F	Flyback converter	50 to 120	1.8	250V 3.15A	Thermistor	CEM-3/FR4	Yes	Yes	No

- * The value of input current is at ACIN 115V and 100%.
- * Burst operation at light loading, frequency is change by use condition. Please contact us about detail.