TDK

AC Input
Single Output, General-Purpose, UL/C-UL/TÜV Approved

Conformity to RoHS Directive

R Series RTW(50 to 300W)

This is an ultra-thin, high-performance standard power supply that is both energy efficient and environmentally friendly. Utilizing TDK's unique material, mounting, noise reduction and thermal analysis simulation technologies, these products have been reduced by 50% and 60% in volume and weight respectively compared to existing TDK products. All components are lead-free and compatible with the environmental assessment program.

FEATURES

- Conforms to EN61000E-3-2 regulations for high harmonic currents.
- Wide input (AC.100-200) No toggling required.
- Conforms to EMS standards EN61000-4-2, 3, 4, 5, 6, 8 and 11.
- Conforms to FCC-B and VCCI-B regulations for radiating and transmission noise.
- CE certified.
- Approved by safety standards (UL, C-UL and TÜV). Conforms to the Electrical Appliance and Material Safety Law (Compliant with creepage surface and air clearance in Attachment 8).
- 5-year limited warrantee.
- Life span of electrolytic capacitor: 60,000hours or more.
- Lead-free.
- Does not use designated bromine flameproof material (PBPEs and PBBs).
- Available in 1U and 2U rack sizes.
  These are particularly suited for situations that call for thin products. They are designed so that they can be attached on both sides.
- The remote control feature (which was optional in previous products) is now standard and can be used by toggling an internal switch.
- It is a product conforming to RoHS directive.

APPLICATIONS

- Semiconductor fabrication equipment
- LED displays
- Wire and wireless communication equipment
- Other industrial equipment

PART NUMBERS AND RATINGS

50W TYPE

Output voltage (V)	Current (A)	Part No.		
		Without cover	With cover	L type*
3.3	12.5	RTW03-12R	RTW03-12RC	RTW03-12RL
5	10	RTW05-10R	RTW05-10RC	RTW05-10RL
12	4.3	RTW12-4R3	RTW12-4R3C	RTW12-4R3L
15	3.5	RTW15-3R5	RTW15-3R5C	RTW15-3R5L
24	2.2	RTW24-2R2	RTW24-2R2C	RTW24-2R2L
28	1.8	RTW28-1R8	RTW28-1R8C	RTW28-1R8L
48	1.1	RTW48-1R1	RTW48-1R1C	RTW48-1R1L

100W TYPE

Output voltage (V)	Current (A)	Part No.		
		Without cover	With cover	L type*
3.3	25	RTW03-25R	RTW03-25RC	RTW03-25RL
5	20	RTW05-20R	RTW05-20RC	RTW05-20RL
12	8.4	RTW12-8R4	RTW12-8R4C	RTW12-8R4L
15	6.7	RTW15-6R7	RTW15-6R7C	RTW15-6R7L
24	4.2	RTW24-4R2	RTW24-4R2C	RTW24-4R2L
28	3.6	RTW28-3R6	RTW28-3R6C	RTW28-3R6L
48	2.1	RTW48-2R1	RTW48-2R1C	RTW48-2R1L

* L-type product without top-facing terminal block cover.

150 • 300W TYPE

Output voltage (V)	150W	With cover	300W	With cover
	Current (A)	Part No.	Current (A)	Part No.
3.3	35	RTW03-35RC	70	RTW03-70RH
5	30	RTW05-30RC	60	RTW05-60RH
12	12.5	RTW12-12RC	25	RTW12-25RH
15	10	RTW15-10RC	20	RTW15-20RH
24	6.3(Peak 10)	RTW24-6R3C	13(Peak 20)	RTW24-13RH
28	5.4	RTW28-5R4C	11	RTW28-11RH
48	3.2	RTW48-3R2C	6.5	RTW48-6R5H

- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

RTW50W Type

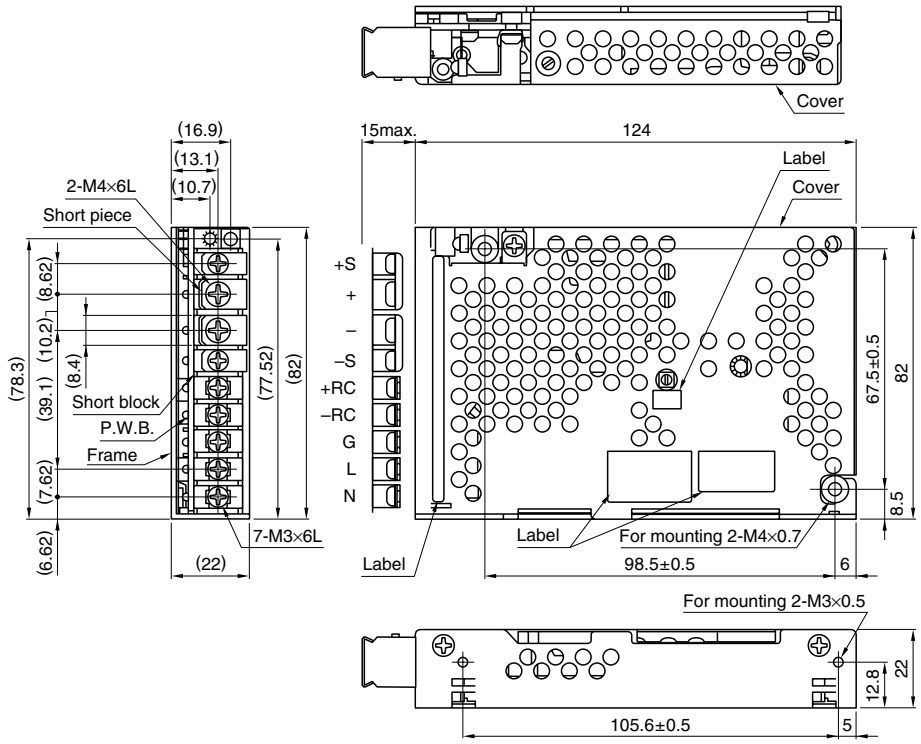
SPECIFICATIONS AND STANDARDS

Part No.	Without cover		RTW03-12R	RTW05-10R	RTW12-4R3	RTW15-3R5	RTW24-2R2	RTW28-1R8	RTW48-1R1
	With cover		RTW03-12RC	RTW05-10RC	RTW12-4R3C	RTW15-3R5C	RTW24-2R2C	RTW28-1R8C	RTW48-1R1C
	L type		RTW03-12RL	RTW05-10RL	RTW12-4R3L	RTW15-3R5L	RTW24-2R2L	RTW28-1R8L	RTW48-1R1L
Rated output voltage and current*1			3.3V • 12.5A	5V • 10A	12V • 4.3A	15V • 3.5A	24V • 2.2A	28V • 1.8A	48V • 1.1A
Maximum output power		W	41.2	50	51.6	52.5	52.8	50.4	52.8
Input conditions									
Input voltage Eac		V	85 to 265[Rated: 100-240]						
Input frequency		Hz	47 to 66[Rated: 50-60](Single phase)						
Input current		A	0.7max./0.4max.[AC.100-120/200-240V](3.3V: 0.6max./0.3max.)						
Fuse rating		A	2[Built-in]						
Surge current		A	14typ./28typ.[AC.100/200V, 1st surge current, 25°C, cold start]						
Leakage current		mA	0.45max./0.6max.[AC.100(Electrical Appliance and Material Safety Law)/240V(UL, IEC)]						
Power factor			0.99/0.94typ.[AC.100/240V]						
Efficiency	%	100V	75typ.	80typ.	81typ.	82typ.	82typ.	82typ.	82typ.
	%	200V	77typ.	82typ.	83typ.	85typ.	85typ.	85typ.	85typ.
Output characteristics									
Output voltage Edc		V	3.3	5	12	15	24	28	48
Voltage variable range Edc		V	2.6 to 4.0	4.0 to 5.8	9.6 to 13.2	12.0 to 16.5	19.2 to 26.4	22.4 to 30.8	38.4 to 52.8
Maximum output current		A	12.5	10	4.3	3.5	2.2	1.8	1.1
Minimum output current		A	0	0	0	0	0	0	0
Overvoltage threshold*2		V	4.2 to 5.2	6.0 to 6.9	13.7 to 15.7	17.0 to 19.0	27.0 to 30.5	32.0 to 35.0	55.0 to 60.0
Overcurrent threshold		A	13.2 to 15.6	10.5 to 12.5	4.5 to 5.4	3.68 to 4.38	2.3 to 2.75	1.9 to 2.25	1.15 to 1.38
Voltage stability	Source effect	%	0.2max.(0.1typ.)[Within the input voltage range]				Total effect±1.8max.(±0.9typ.)		
	Load effect	%	0.4max.(0.2typ.)[0 to 100% load]						
	Temperature effect	%	1.0max.(0.5typ.)[Ambient temperature: –10 to +71°C]						
	Drift(Time effect)	%	0.5max.(0.2typ.)[25°C, input and output ratings, after input voltage ON for 30min to 8h]						
	Recovery	%	±4max.[50 to 100% sudden load change, tr, tf ≧ 50μs]						
Ripple Ep-p*2		mV	80max.	80max.	100max.	100max.	150max.	150max.	200max.
Ripple noise Ep-p*2		mV	120max.	120max.	150max.	150max.	200max.	200max.	300max.
Start up time*3		ms	500max.(400typ.)/300max.(200typ.)[AC.100/240V]						
Hold up time		ms	20min.(30typ.)						
Maximum load capacitor		μF	10000						
Auxiliary functions									
Indicator display			LED(Green) indicates when voltage output is ON.						
Overvoltage protection			Output voltage shut-down type, recovers upon reset(interval approx.30s)						
Overcurrent protection			Rectangular type, automatic recovery.						
Remote ON-OFF			Yes (An internal switch for toggling between on and off is provided.)						
Remote sensing			Yes						
Parallel operation			Impossible						
Series operation			Possible						
Current balance			No						
Output voltage external variable function			No						
Master slave operation			No						
Standards									
Safety standards			UL60950-1, CSA 60950-1(C-UL), EN60950-1(TÜV) approved, Electrical Appliance and Material Safety Law ("DENAN") (Compliant with creepage surface and air clearance in Attachment 8) meet.						
Noise terminal voltage			FCC-Class B, VCCI-Class B, EN55011-B, EN55022-B meet.						
Immunity			EN50082-2, EN50082-2, EN61000-4-2, 3, 4, 5, 6, 8, 11 meet.						
Input harmonics current requirement			EN61000-3-2 meet.						
Radiation field intensity			FCC-Class FCC-Class B, VCCI-Class B, EN55011-B, EN55022-B meet.						
Constructions									
External dimensions		mm	82×22×124[H×W×L]						
Weight		g	290max.						
Mounting method			Can be attached to 2 sides, 3 directions						
Case material			Frame: Aluminum, circuit board: CEM-3						

*1 Current rating(maximum output current) is determined for –10 to +40°C. Derating is required when used outside this temperature range.
*2 Multiply by 1.5 for use at 100 MHz in a temperature range of –10 to 0°C.
*3 There will be a decrease in output voltage during cold starts in a temperature range of –20 to 0°C. It may take up to three seconds for the voltage to stabilize.

RTW50W Type

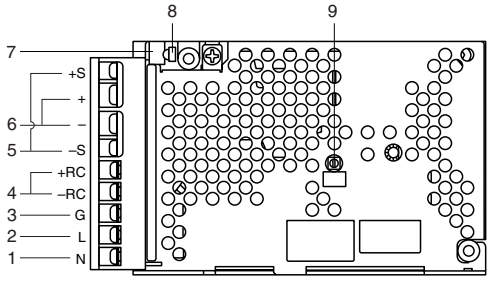
WITH COVER TYPE
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

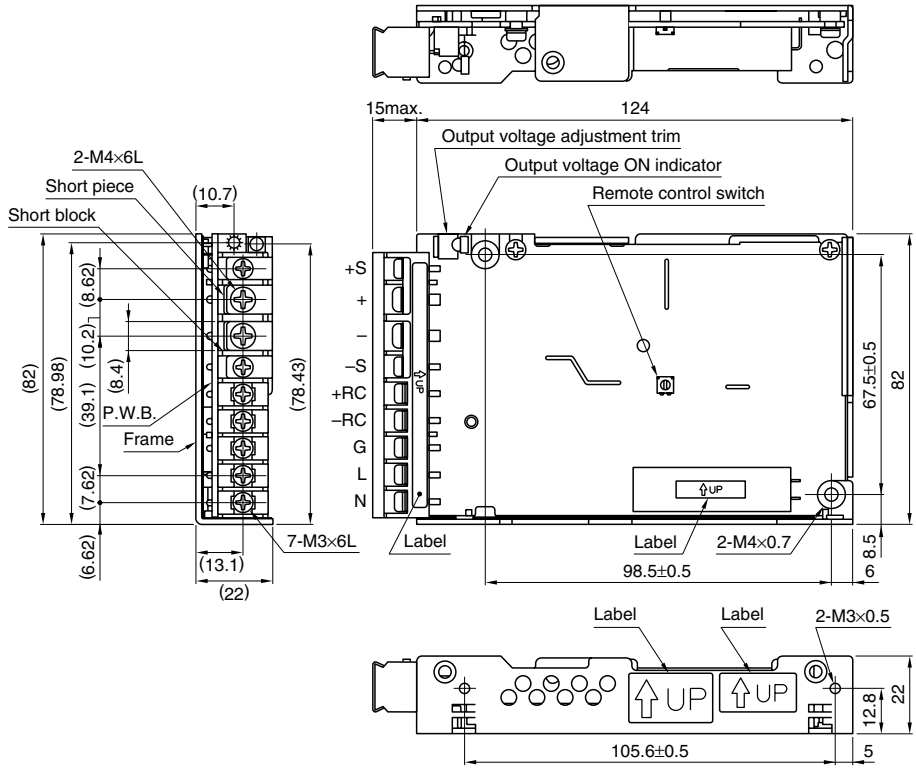
TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	AC input terminal(N)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
2	AC input terminal(L)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
3	Frame ground terminal(G)	Connect to earth ground. This is connected to the case.
4	Remote ON-OFF terminals(+RC, –RC)	The output voltage can be turned on and off from an external source by inputting the external signal between these terminals. RC terminals are floating.
5	Remote sensing terminals(+S, –S)	These terminals are used to compensate voltage loss from the output terminal to a load. DC output terminals are shorted with a metal bar.
6	DC output terminal(+, –)	Connect to load.
7	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage. Turn clockwise to increase the voltage.
8	Operation indicator LED(Green)	This Green LED becomes indicated when voltage is output.
9	Remote ON-OFF switch	Turn the remote on/off switch located at the center of the power supply to "Y" (clockwise) to enable the remote control.

RTW50W Type

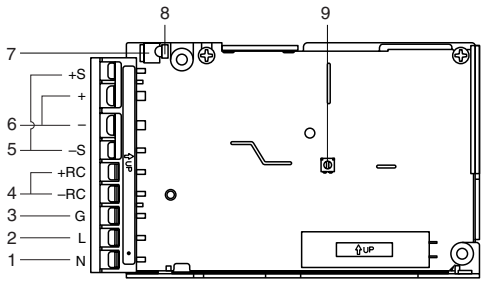
WITHOUT COVER TYPE
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

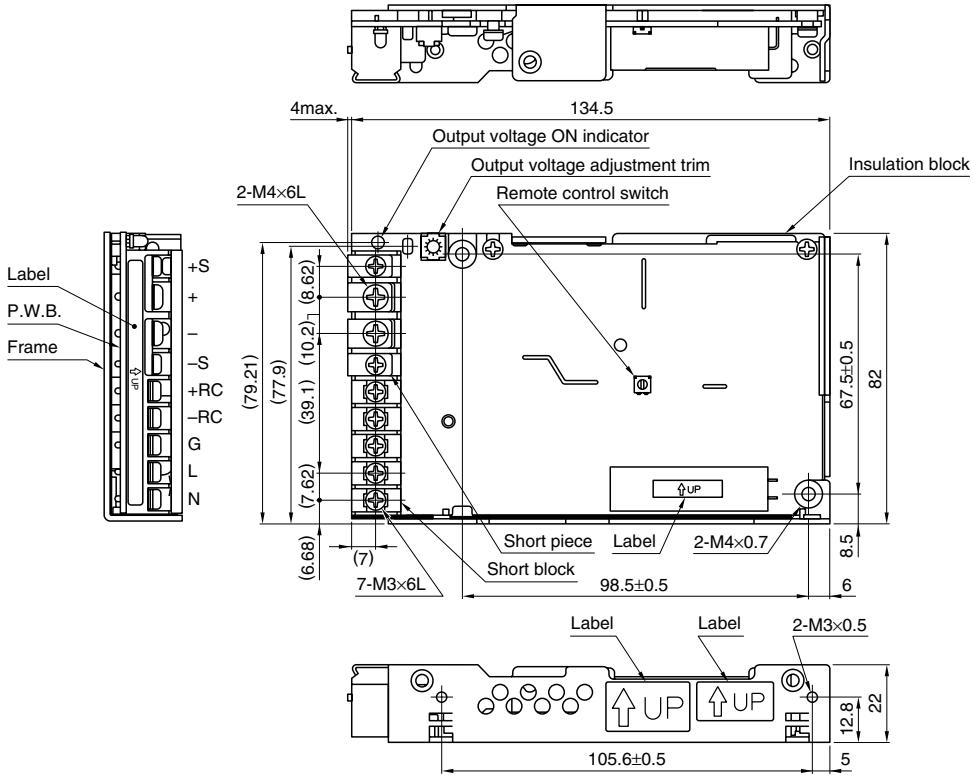
TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	AC input terminal(N)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
2	AC input terminal(L)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
3	Frame ground terminal(G)	Connect to earth ground. This is connected to the case.
4	Remote ON-OFF terminals(+RC, –RC)	The output voltage can be turned on and off from an external source by inputting the external signal between these terminals. RC terminals are floating.
5	Remote sensing terminals(+S, –S)	These terminals are used to compensate voltage loss from the output terminal to a load. DC output terminals are shorted with a metal bar.
6	DC output terminal(+, –)	Connect to load.
7	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage. Turn clockwise to increase the voltage.
8	Operation indicator LED(Green)	This Green LED becomes indicated when voltage is output.
9	Remote ON-OFF switch	Turn the remote on/off switch located at the center of the power supply to "Y" (clockwise) to enable the remote control.

RTW50W Type

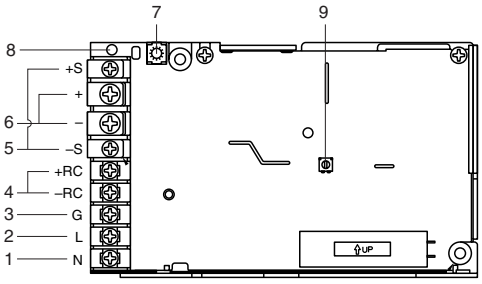
L TYPE(WITHOUT TOP-FACING TERMINAL BLOCK COVER)
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	AC input terminal(N)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
2	AC input terminal(L)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
3	Frame ground terminal(G)	Connect to earth ground. This is connected to the case.
4	Remote ON-OFF terminals(+RC, –RC)	The output voltage can be turned on and off from an external source by inputting the external signal between these terminals. RC terminals are floating.
5	Remote sensing terminals(+S, –S)	These terminals are used to compensate voltage loss from the output terminal to a load. DC output terminals are shorted with a metal bar.
6	DC output terminal(+, –)	Connect to load.
7	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage. Turn clockwise to increase the voltage.
8	Operation indicator LED(Green)	This Green LED becomes indicated when voltage is output.
9	Remote ON-OFF switch	Turn the remote on/off switch located at the center of the power supply to "Y" (clockwise) to enable the remote control.

RTW100W Type

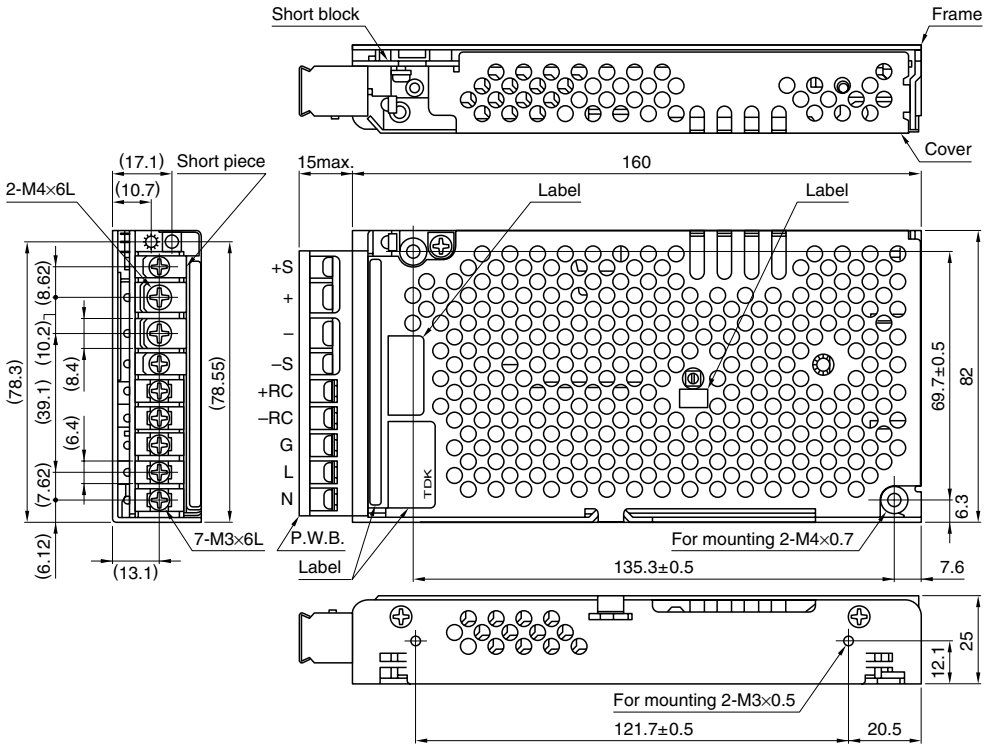
SPECIFICATIONS AND STANDARDS

Part No.	Without cover		RTW03-25R	RTW05-20R	RTW12-8R4	RTW15-6R7	RTW24-4R2	RTW28-3R6	RTW48-2R1
	With cover		RTW03-25RC	RTW05-20RC	RTW12-8R4C	RTW15-6R7C	RTW24-4R2C	RTW28-3R6C	RTW48-2R1C
	L type		RTW03-25RL	RTW05-20RL	RTW12-8R4L	RTW15-6R7L	RTW24-4R2L	RTW28-3R6L	RTW48-2R1L
Rated output voltage and current*1			3.3V • 25A	5V • 20A	12V • 8.4A	15V • 6.7A	24V • 4.2A	28V • 3.6A	48V • 2.1A
Maximum output power		W	82.5	100	100.8	100.5	100.8	100.8	100.8
Input conditions									
Input voltage Eac		V	85 to 265[Rated: 100-240](AC.90V max.: Derating is 90percent)						
Input frequency		Hz	47 to 66[Rated: 50-60](Single phase)						
Input current		A	1.5max./0.75max.[AC.100-120/200-240V](3.3V: 1.2max./0.6max.)						
Fuse rating		A	3.15[Built-in]						
Surge current		A	14typ./28typ.[AC.100/240V, 1st surge current, 25°C, cold start]						
Leakage current		mA	0.32max./0.45max.[AC.100(Electrical Appliance and Material Safety Law)/240V(UL, IEC)]						
Power factor			0.99typ./0.93typ.[AC.100/240V]						
Efficiency	%	100V	79typ.	83typ.	84typ.	85typ.	85typ.	85typ.	85typ.
	%	200V	81typ.	85typ.	86typ.	87typ.	87typ.	87typ.	88typ.
Output characteristics									
Output voltage Edc		V	3.3	5	12	15	24	28	48
Voltage variable range Edc		V	2.6 to 4.0	4.0 to 5.8	9.6 to 13.2	12.0 to 16.5	19.2 to 26.4	22.4 to 30.8	38.4 to 52.8
Maximum output current		A	25	20	8.4	6.7	4.2	3.6	2.1
Minimum output current		A	0	0	0	0	0	0	0
Overvoltage threshold		V	4.2 to 5.2	6.0 to 6.9	13.7 to 15.7	17.0 to 19.0	27.0 to 30.5	32.0 to 35.0	55.0 to 60.0
Overcurrent threshold		A	26.2 to 33.7	21 to 25	8.8 to 10.5	7.03 to 9.04	4.41 to 5.25	3.78 to 4.86	2.2 to 2.62
Voltage stability	Source effect	%	0.2max.(0.1typ.)[Within the input voltage range](3.3V: 10mV max./5mV typ.)					Total effect±1.8max.(±0.9typ.)	
	Load effect	%	0.4max.(0.2typ.)[0 to 100% load](3.3V: 20mV max./10mV typ.)						
	Temperature effect	%	1.0max.(0.5typ.)[Ambient temperature: –10 to +71°C]						
	Drift(Time effect)	%	0.5max.(0.2typ.)[25°C, input and output ratings, after input voltage ON for 30min to 8h]						
	Recovery	%	±4max.[50 to 100% sudden load change, tr, tf ≧ 50μs]						
Ripple Ep-p*2		mV	80max.	80max.	100max.	100max.	150max.	150max.	200max.
Ripple noise Ep-p*2		mV	120max.	120max.	150max.	150max.	200max.	200max.	300max.
Start up time*3		ms	500max.(400typ.)/300max.(200typ.)[AC.100/240V]						
Hold up time		ms	20min.(35typ.)						
Maximum load capacitor		μF	10000						
Auxiliary functions									
Indicator display			LED(Green) indicates when voltage output is ON.						
Overvoltage protection			Output voltage shut-down type, recovers upon reset(interval approx.30s)						
Overcurrent protection			Winker operation, automatic recovery.						
Overheat protection			No						
Remote ON-OFF			Yes (An internal switch for toggling between on and off is provided.)						
Remote sensing			Yes						
Parallel operation			Impossible						
Series operation			Possible						
Current balance			No						
Output voltage external variable function			No						
Master slave operation			No						
Standards									
Safety standards			UL60950-1, CSA 60950-1(C-UL), EN60950-1(TÜV) approved, Electrical Appliance and Material Safety Law ("DENAN") (Compliant with creepage surface and air clearance in Attachment 8) meet.						
Noise terminal voltage			FCC-Class B, VCCI-Class B, EN55011-B, EN55022-B meet.						
Immunity			EN50082-2, EN50082-2, EN61000-4-2, 3, 4, 5, 6, 8, 11 meet.						
Input harmonics current requirement			EN61000-3-2 meet.						
Radiation field intensity			FCC-Class FCC-Class B, VCCI-Class B, EN55011-B, EN55022-B meet.						
Constructions									
External dimensions		mm	82×25×160[H×W×L]						
Weight		g	450max.						
Mounting method			Can be attached to 2 sides, 3 directions						
Case material			Frame: Aluminum, circuit board: CEM-3						

*1 Current rating(maximum output current) is determined for –10 to +40°C. Derating is required when used outside this temperature range.
*2 Multiply by 1.5 for use at 100 MHz in a temperature range of –10 to 0°C.
*3 There will be a decrease in output voltage during cold starts in a temperature range of –20 to 0°C. It may take up to three seconds for the voltage to stabilize.

RTW100W Type

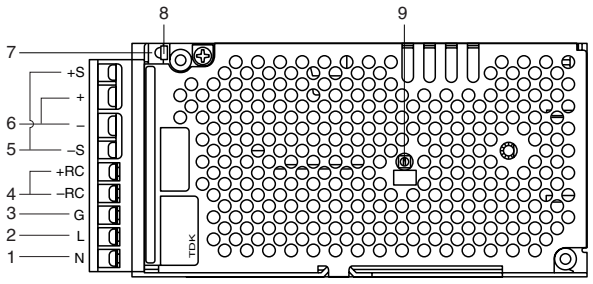
WITH COVER TYPE
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

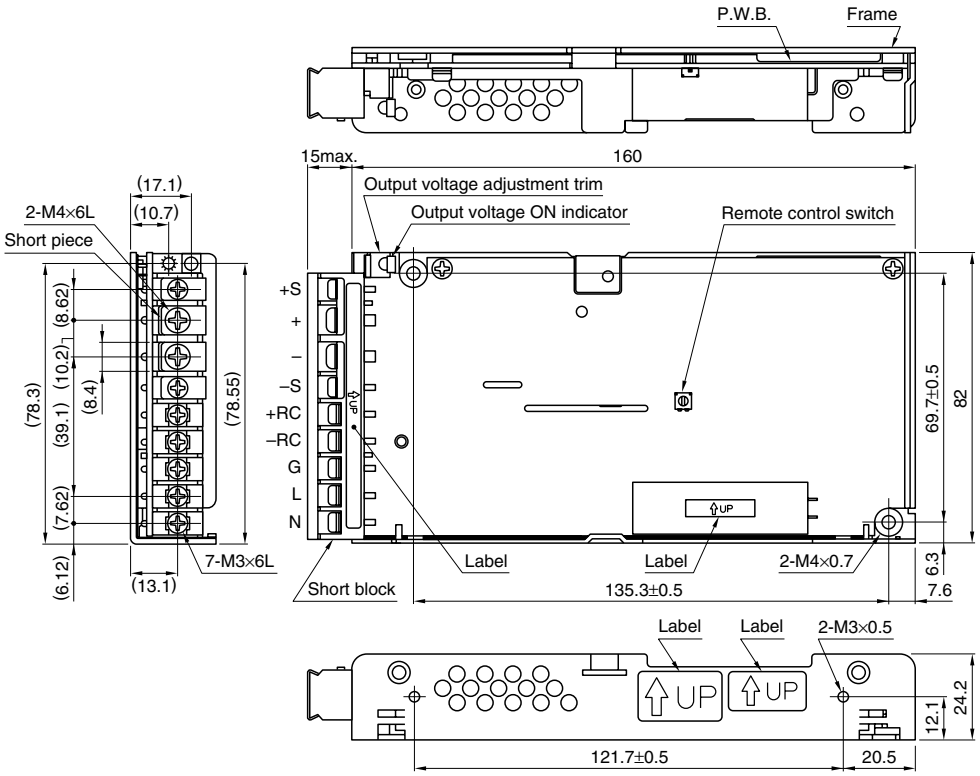
TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	AC input terminal(N)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
2	AC input terminal(L)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
3	Frame ground terminal(G)	Connect to earth ground. This is connected to the case.
4	Remote ON-OFF terminals(+RC, –RC)	The output voltage can be turned on and off from an external source by inputting the external signal between these terminals. RC terminals are floating.
5	Remote sensing terminals(+S, –S)	These terminals are used to compensate voltage loss from the output terminal to a load. DC output terminals are shorted with a metal bar.
6	DC output terminal(+, –)	Connect to load.
7	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage. Turn clockwise to increase the voltage.
8	Operation indicator LED(Green)	This Green LED becomes indicated when voltage is output.
9	Remote ON-OFF switch	Turn the remote on/off switch located at the center of the power supply to "Y" (clockwise) to enable the remote control.

RTW100W Type

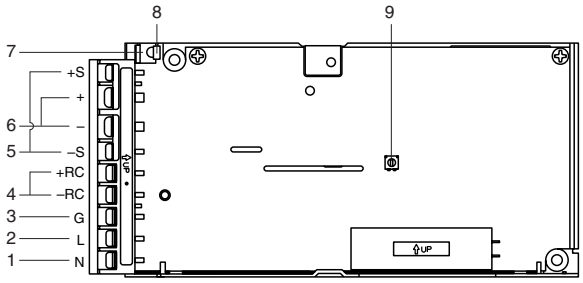
WITHOUT COVER TYPE
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	AC input terminal(N)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
2	AC input terminal(L)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
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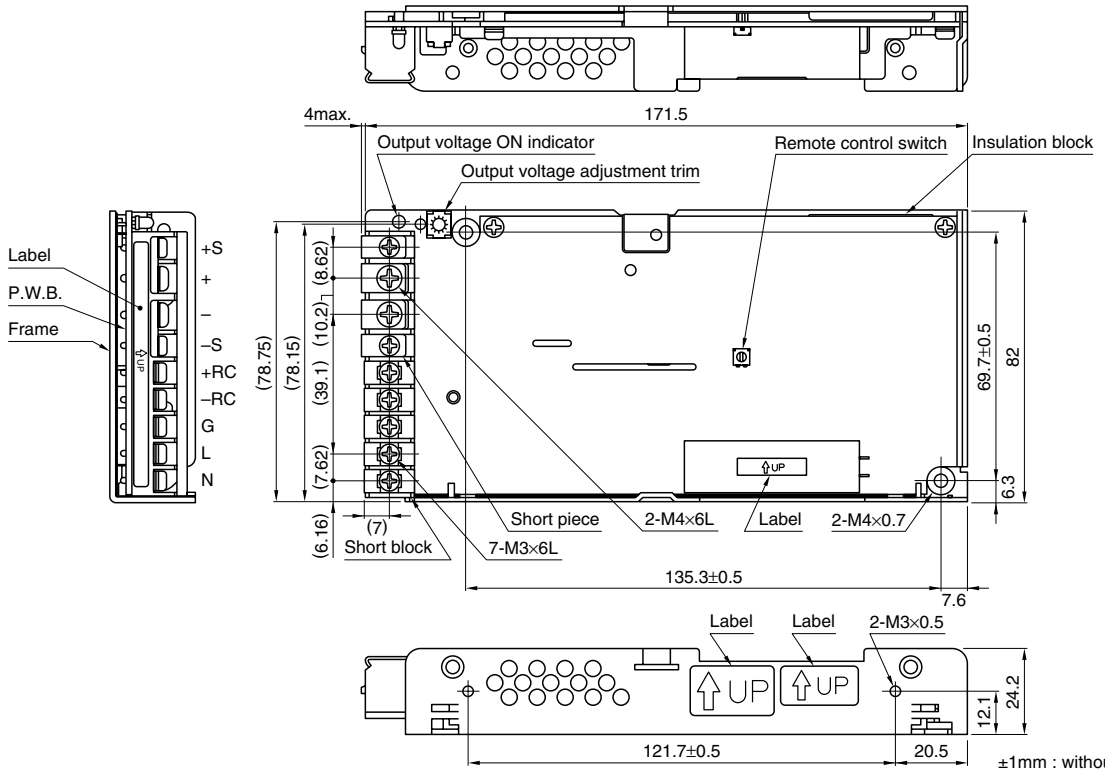
4	Remote ON-OFF terminals(+RC, –RC)	The output voltage can be turned on and off from an external source by inputting the external signal between these terminals. RC terminals are floating.
5	Remote sensing terminals(+S, –S)	These terminals are used to compensate voltage loss from the output terminal to a load. DC output terminals are shorted with a metal bar.
6	DC output terminal(+, –)	Connect to load.
7	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage. Turn clockwise to increase the voltage.
8	Operation indicator LED(Green)	This Green LED becomes indicated when voltage is output.
9	Remote ON-OFF switch	Turn the remote on/off switch located at the center of the power supply to "Y" (clockwise) to enable the remote control.

RTW100W Type

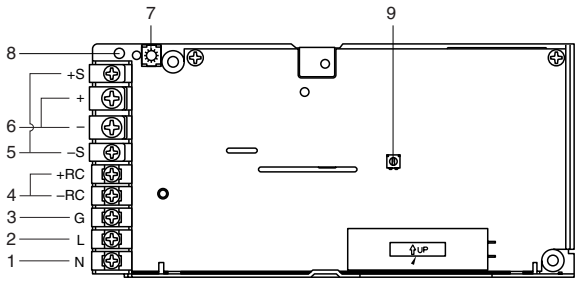
L TYPE(WITHOUT TOP-FACING TERMINAL BLOCK COVER)
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions	
1	AC input terminal(N)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
2	AC input terminal(L)	Connect to AC.100 to 120V or AC. 200 to 240V input line.
3	Frame ground terminal(G)	Connect to earth ground. This is connected to the case.
4	Remote ON-OFF terminals(+RC, –RC)	The output voltage can be turned on and off from an external source by inputting the external signal between these terminals. RC terminals are floating.
5	Remote sensing terminals(+S, –S)	These terminals are used to compensate voltage loss from the output terminal to a load. DC output terminals are shorted with a metal bar.
6	DC output terminal(+, –)	Connect to load.
7	Output voltage adjustment trim(V.ADJ)	Adjusts output voltage. Turn clockwise to increase the voltage.
8	Operation indicator LED(Green)	This Green LED becomes indicated when voltage is output.
9	Remote ON-OFF switch	Turn the remote on/off switch located at the center of the power supply to "Y" (clockwise) to enable the remote control.

RTW150W Type

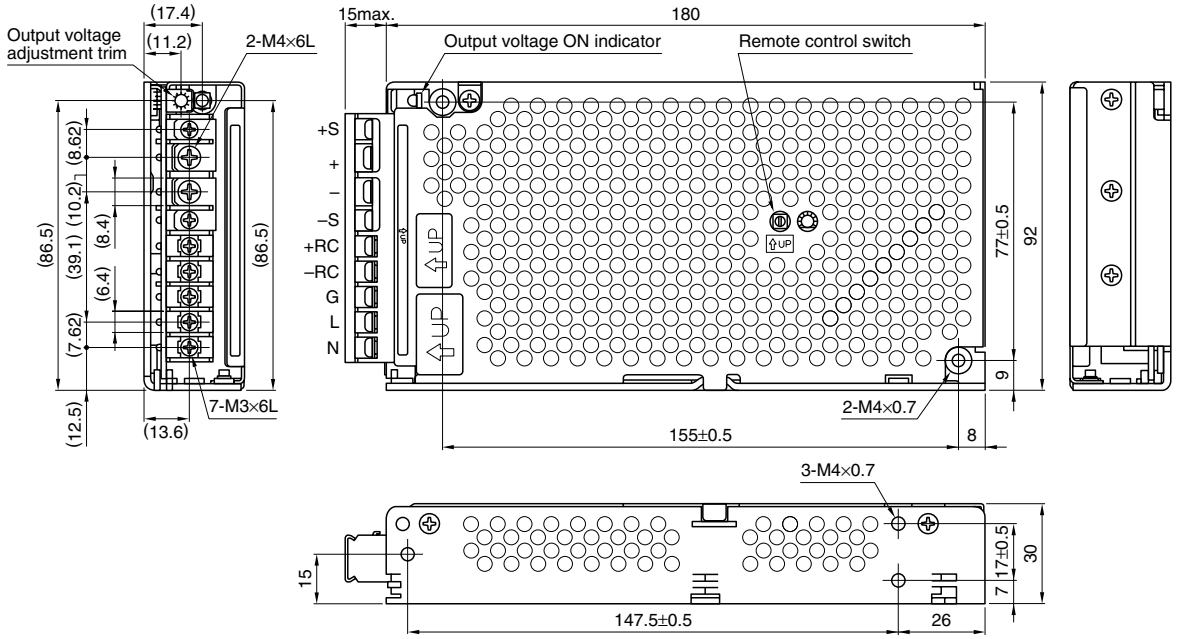
SPECIFICATIONS AND STANDARDS

Part No.	Without cover		RTW03-35R	RTW05-30R	RTW12-12R	RTW15-10R	RTW24-6R3	RTW28-5R4	RTW48-3R2
	With cover		RTW03-35RC	RTW05-30RC	RTW12-12RC	RTW15-10RC	RTW24-6R3C	RTW28-5R4C	RTW48-3R2C
	L type		RTW03-35RL	RTW05-30RL	RTW12-12RL	RTW15-10RL	RTW24-6R3L	RTW28-5R4L	RTW48-3R2L
Rated output voltage and current			3.3V • 35A	5V • 30A	12V • 12.5A	15V • 10A	24V • 6.3A	28V • 5.4A	48V • 3.2A
Maximum output power		W	115.5	150	150	150	151.2	151.2	153.6
Input conditions									
Input voltage Eac		V	85 to 265[Rated: 100-240]						
Input frequency		Hz	47 to 66[Rated: 50-60](Single phase)						
Input current		A	1.9/1max.[AC.100-120/200-240V](3.3V: 1.6max./0.85max.)						
Surge current		A	14/28typ.[100/240V]						
Fuse rating		A	5[Built-in]						
Leakage current		mA	0.45max./0.65max.[AC.100/240V]						
Power factor			0.99/0.96typ.[100/240V]						
Efficiency	%	100V	80typ.	83typ.	84typ.	84typ.	86typ.	86typ.	86typ.
	%	240V	83typ.	86typ.	87typ.	87typ.	88typ.	88typ.	89typ.
Output characteristics									
Output voltage Edc		V	3.3	5	12	15	24	28	48
Voltage variable range Edc		V	2.6 to 4.0	4.0 to 5.8	9.6 to 13.2	12.0 to 16.5	19.2 to 26.4	22.4 to 30.8	38.4 to 52.8
Maximum output current		A	35	30	12.5	10	6.3(Peak 10)	5.4	3.2
Ripple Ep-p		mV	80max.	80max.	100max.	100max.	100max.	100max.	130max.
Ripple noise Ep-p		mV	120max.	120max.	150max.	150max.	150max.	150max.	200max.
Start up time		ms	300max.(220typ.)/200max.(120typ.)[100/240V]						
Hold up time		ms	20min.(35typ.)/25min.(40typ.)[100/240V]						
Auxiliary functions									
Indicator display			Yes (LED green)						
Overvoltage protection			Yes (Output voltage shut-down type)						
Overcurrent protection			Yes (Rectangular type, winker operation)						
Remote ON-OFF			Yes (Be switching with internal switch, a method to impress in outside voltage)						
Remote sensing			Yes						
Parallel operation			Impossible						
Current balance			No						
Output voltage external variable function			No						
Master slave operation			No						
Standards									
Safety standards			UL60950-1, CSA 60950-1(C-UL), EN60950-1(TÜV) approved, Electrical Appliance and Material Safety Law ("DENAN") (Compliant with creepage surface and air clearance in Attachment 8) meet.						
Noise terminal voltage			EN55011-B, EN55022-B meet.						
Electrostatic discharge immunity			EN61000-4-2 Level4, without operation abnormality.						
Discharge magnetic field immunity			EN61000-4-3 Level3, without operation abnormality.						
Burst immunity			EN61000-4-4 Level3, without operation abnormality.						
Surge immunity			EN61000-4-5 Level4, without operation abnormality.						
Conductive immunity			EN61000-4-4 Level3, without operation abnormality.						
Input harmonics current requirement			EN61000-3-2 meet.						
Radiation field intensity			EN55011-B, EN55022-B meet.						
Constructions									
External dimensions		mm	92×30×180[H×W×L]						
Weight		g	600max.						
Mounting method			Can be attached to 2 sides.						
Circuit board material			CEM3						

* After an input cutoff, recovers upon reset(Recovering time: 1 min max.). Does not shut down in OC.

RTW150W Type

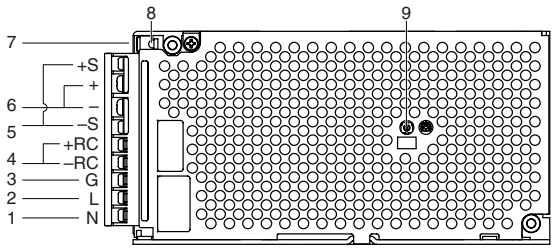
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

TERMINAL DESIGNATIONS AND FUNCTIONS



Terminal No.	Designations and functions
1	AC input terminal(N)
2	AC input terminal(L)
3	Frame ground terminal(G)
4	Remote ON-OFF terminals(+RC, –RC)
5	Remote sensing terminals(+S, –S)
6	DC output terminal(+, –)
7	Output voltage adjustment trim(V.ADJ)
8	Operation indicator LED(Green)
9	Remote ON-OFF switch

RTW300W Type

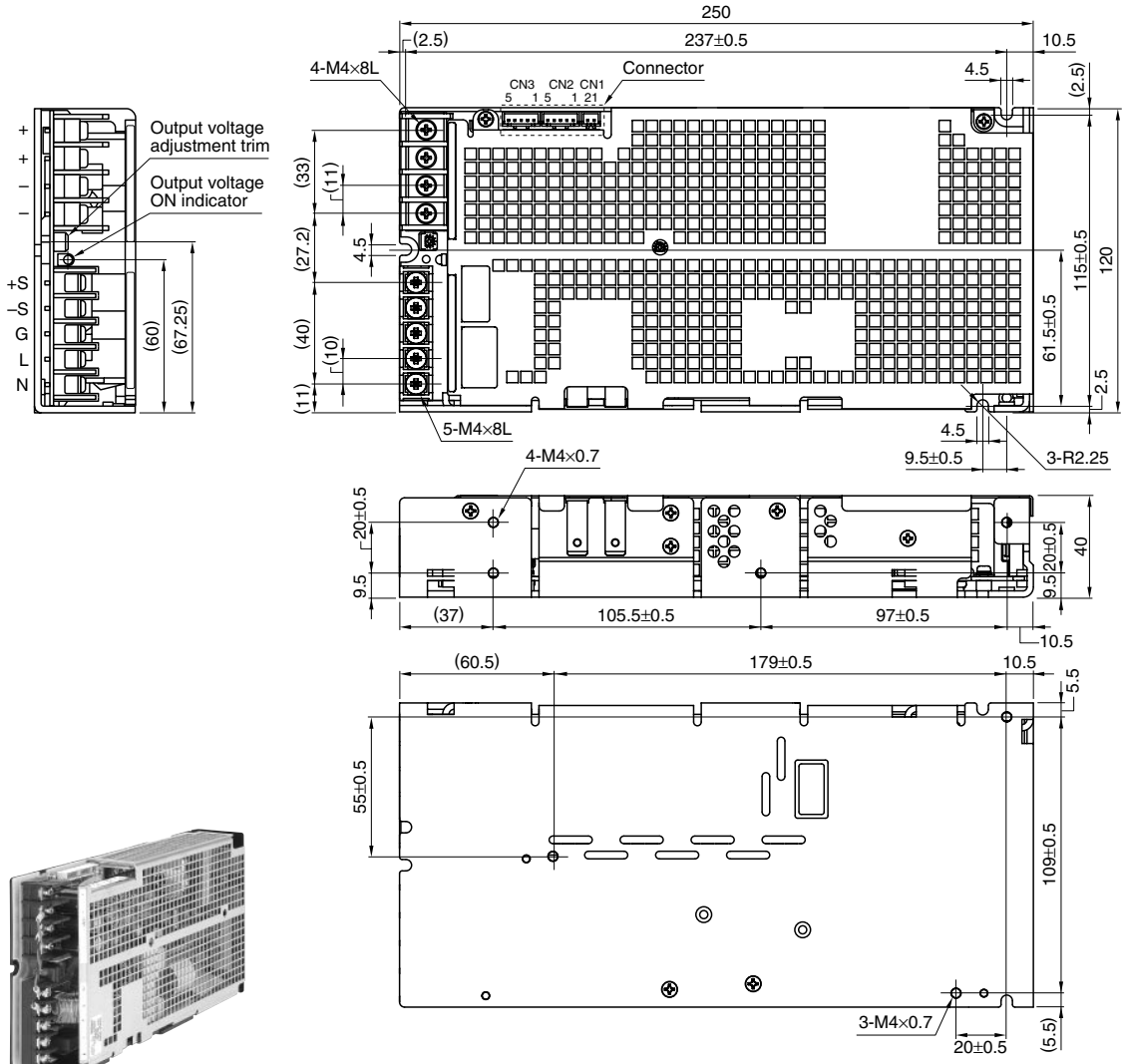
SPECIFICATIONS AND STANDARDS

Part No.	Without cover L type	RTW03-70RL	RTW05-60RL	RTW12-25RL	RTW15-20RL	RTW24-13RL	RTW28-11RL	RTW48-6R5L
	With cover L type	RTW03-70RH	RTW05-60RH	RTW12-25RH	RTW15-20RH	RTW24-13RH	RTW28-11RH	RTW48-6R5H
Rated output voltage and current		3.3V • 70A	5V • 60A	12V • 25A	15V • 20A	24V • 13A	28V • 11A	48V • 6.5A
Maximum output power	W	231	300	300	300	312	308	312
Input conditions								
Input voltage Eac	V	85 to 265[Rated: 100-240]						
Input frequency	Hz	47 to 66[Rated: 50-60](Single phase)						
Input current	A	4/2max.[100/240V]						
Fuse rating	A	10[Built-in]						
Surge current	A	15/30typ.[100/240V]						
Leakage current	mA	0.75max.[240V(UL, IEC)]						
Power factor		0.99/0.93typ.[100/240V]						
Efficiency %	100V	83typ.	84typ.	83typ.	83typ.	85typ.	85typ.	86typ.
Efficiency %	240V	86typ.	87typ.	86typ.	86typ.	88typ.	88typ.	89typ.
Output characteristics								
Output voltage Edc	V	3.3	5	12	15	24	28	48
Voltage variable range Edc	V	1.8 to 3.6	3.5 to 5.6	7.2 to 14.4	10.5 to 18.0	16.8 to 26.4	19.6 to 33.6	33.6 to 55.0
Maximum output current	A	70	60	25	20	13(Peak 20)	11	6.5
Ripple Ep-p	mV	80max.	80max.	100max.	100max.	150max.	150max.	200max.
Ripple noise Ep-p	mV	120max.	120max.	150max.	150max.	200max.	200max.	300max.
Start up time	ms	350max.(220typ.)/200max.(120typ.)[100/240V]						
Hold up time	ms	20min.(25typ.)/25min.(30typ.)[100/240V]						
Auxiliary functions								
Indicator display		Yes (LED green)						
Output low voltage detection		Yes (Output is reduced by more than 60% of the rated voltage for the 3.3 and 5V models. Output is reduced by 20% of the rated voltage for the 28V model. There are no other models.)						
Overvoltage protection*2		Yes (Output voltage shut-down type)						
Overcurrent protection*2		Yes (Rectangular type, 12, 15, 24, 48V output models are output cutoffs in continuation, 3, 5, 28V output models are output cutoffs in UV.)						
Remote ON-OFF		Yes (Reset of a protection circuit is available)						
Remote sensing		Yes						
Parallel operation		Possible						
Current balance		Yes						
Output voltage external variable function		Yes						
Master slave operation		Possible						
Standards								
Safety standards		UL60950-1, CSA 60950-1(C-UL), EN60950-1(TÜV) approved, Electrical Appliance and Material Safety Law ("DENAN") (Compliant with creepage surface and air clearance in Attachment 8) meet.						
Noise terminal voltage		EN55011-B, EN55022-B meet.						
Electrostatic discharge immunity		EN61000-4-2 Level4, without operation abnormality.						
Discharge magnetic field immunity		EN61000-4-3 Level3, without operation abnormality.						
Burst immunity		EN61000-4-4 Level3, without operation abnormality.						
Surge immunity		EN61000-4-5 Level4, without operation abnormality.						
Conductive immunity		EN61000-4-4 Level3, without operation abnormality.						
Input harmonics current requirement		EN61000-3-2 meet.						
Radiation field intensity		EN55011-B, EN55022-B meet.						
Constructions								
External dimensions	mm	120×40×250[H×W×L]						
Weight	g	1300max.						
Mounting method		Can be attached to 2 sides.						
Circuit board material		CEM3						

* After an input cutoff, recovers upon reset(Recovering time: 1 min max.).

RTW300W Type

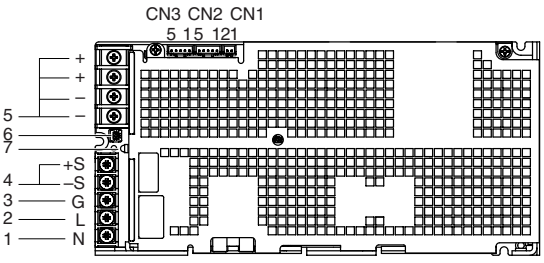
SHAPES AND DIMENSIONS



Dimensions in mm
±1mm : without specified dimensions

• Do not insert installation screws more than 6mm into the power supply.

TERMINAL DESIGNATIONS AND FUNCTIONS



CN1		CN2		CN3	
1	–PF	1	–RC	1	–RC
2	+PF	2	+RC	2	+RC
		3	CB	3	CB
		4	RV	4	RV
		5	–S	5	–S

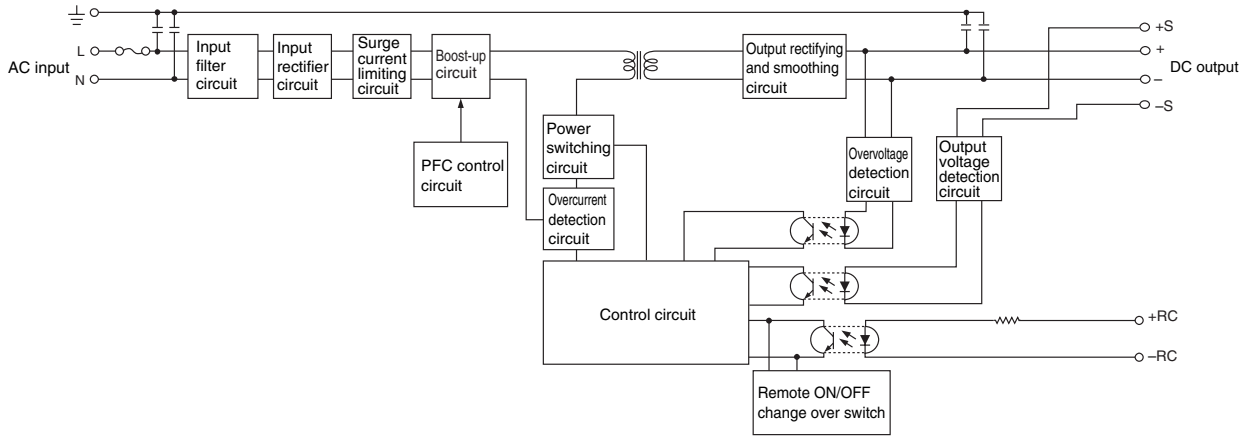
Terminal No.	Designations and functions
1	AC input terminal(N)
2	AC input terminal(L)
3	Frame ground terminal(G)
4	Remote sensing terminals(+S, –S)
5	DC output terminal(+, –)
6	Output voltage adjustment trim(V.ADJ)
7	Operation indicator LED(Green)

Connector made by	Power supply side connector	Cable Side	
		Housing	Terminal
Japan Solderless Terminal Co., Ltd.			
CN1	B2B-XH-2	XHP-2	SXH-001T-P0.6
CN2	B5B-XH-2	XHP-5	SXH-001T-P0.6
CN3	B5B-XH-2	XHP-5	SXH-001T-P0.6

• All specifications are subject to change without notice.

Characteristics, Functions, and Applications

BLOCK DIAGRAM



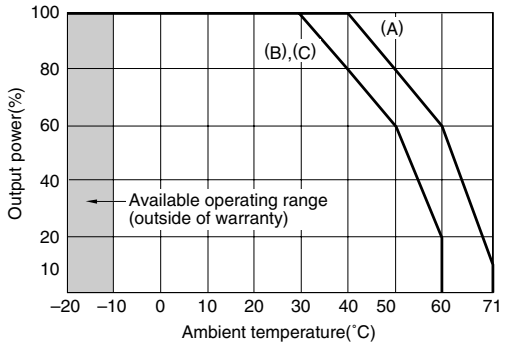
COMMON SPECIFICATIONS

Temperature and humidity		
Temperature range	Operating(°C)	–10 to +71
	Operating available(°C)	–20 to –10
	Storage(°C)	–30 to +75
Humidity range	Operating(%)RH	10 to 95[Maximum wet-bulb temperature: 35°C, without dewing]
	Storage(%)RH	
Vibration and shock		
Vibration	5 to 10Hz	All amplitude 10mm[3 directions, each 1h, Sweep time 10min]
	10 to 200Hz	Acceleration 19.6m/s^2(2G)[3 directions, each 1h, Sweep time 10min]
Shock	Acceleration	50W: 392m/s^2(40G)[A instllation] 588m/s^2(60G)[B, C instllation]
		100W: 196m/s^2(20G)[A instllation] 588m/s^2(60G)[B, C instllation]
		150, 300W: 588m/s^2(60G)
	Pulse duration	11±5ms
Withstand voltage and insulation resistance		
Withstand voltage	Input terminal to ground(G)	Eac: 2.0kV, 1min[Normal temperature, normal humidity, cutout current 10mA]
	Input terminal to output terminal	Eac: 3.0kV, 1min[Normal temperature, normal humidity, cutout current 10mA]
	Output terminal to ground(G)	Eac: 500V, 1min[Normal temperature, normal humidity, cutout current 20mA]
Insulation resistance	Input terminal to ground(G)	Edc: 500V, 100MW min. [Normal temperature, normal humidity]
	Input terminal to output terminal	
	Output terminal to ground(G)	

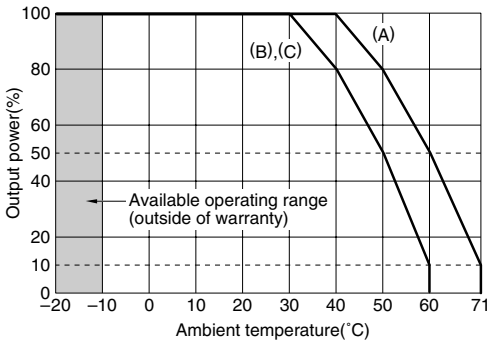
Characteristics, Functions, and Applications

OUTPUT POWER-AMBIENT TEMPERATURE(DERATINGS)

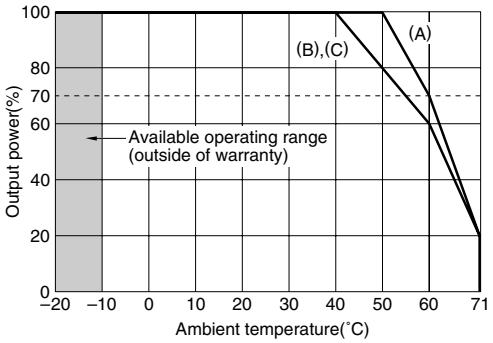
50W WITH COVER TYPE



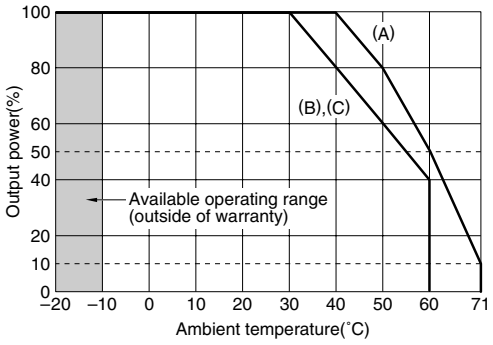
150W WITH COVER TYPE



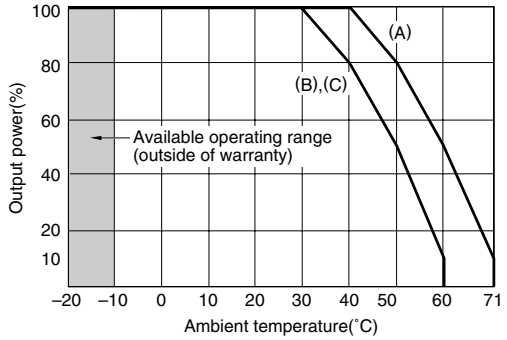
50W WITHOUT COVER, L TYPE



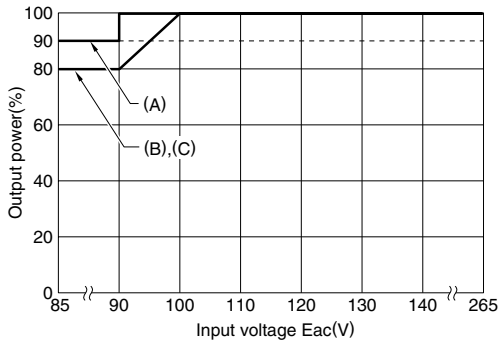
300W WITH COVER TYPE



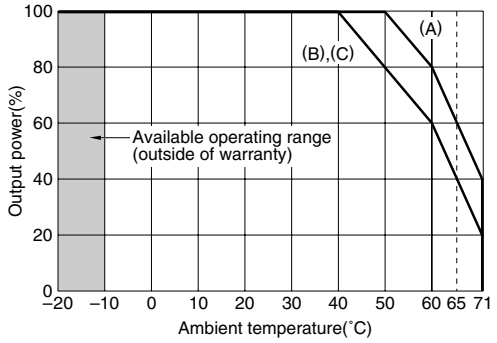
100W WITH COVER TYPE



INPUT VOLTAGE DERATING(100W WITH COVER)



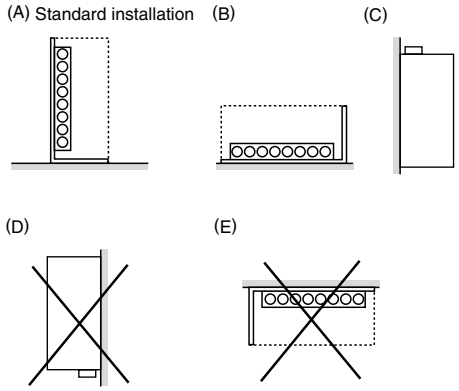
100W WITHOUT COVER, L TYPE



• All specifications are subject to change without notice.

Characteristics, Functions, and Applications

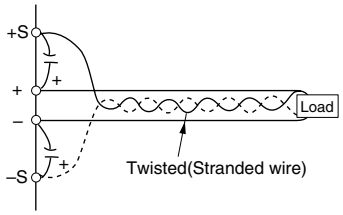
INSTALLATIONS



There are (B), (C), (D), and (E) besides standard installation method (A) when the power supply is mounted on the device.
Because heat shuts oneself up internally in the power supply, the installation of (D) and (E) cannot be used.
Please use the installation of (A), (B), and (C) within the range of DERATING CURVE.

REMOTE SENSING

Remote Sensing compensates to provide stability at the load terminal when voltage drop in the line between the power supply and the load causes instability. Remote sensing is possible if the voltage drop per wire between the output and load terminals is 0.25V max. for 5.0V models, 0.15V max. for 3.3V models and 0.4V max. for 12 to 48V models.
Make sure that the power supply's output voltage and power remains within the range of the output specifications. Pulse loads and other situations where sudden changes in the load can occur may not conform to the dynamic load change specifications.
Take out the short-circuit plates of the +S/+ terminal and the –S/– terminal and wire them as shown in the figure below. The sensing lines must be either shielded or twisted (The recommended length is 5m max.).
In case of parasitic oscillation or overvoltage protection malfunction too easily, install an external electrolytic capacitor, rated 470µF min. between the +OUT, +S and OUT, –S terminals.

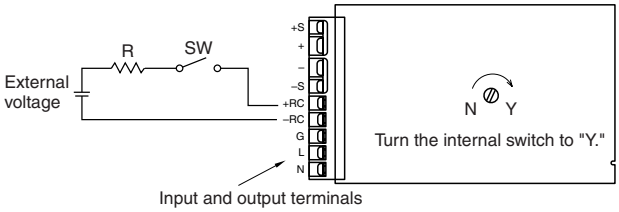


REMOTE CONTROL(50 to 100W)

Turn the remote on/off switch located at the center of the power supply to "Y" (clockwise) to enable the remote control.
The output voltage can be turned on and off from an external source by inputting the signal indicated below between the remote on/off terminals (+RC and –RC).
Output voltage is turned on when the level is high between the +RC and –RC terminals (external voltage application of 4.5 to 24.5V).*
Output voltage is turned off when the level is low between the +RC and –RC terminals (short or terminal voltage of 0 to 0.8V).

* Use an external resistor (1.5kΩ) when applying an external voltage of 12.5 to 24.5V.

±RC terminals are insulated from AC input terminals and the DC output terminals.
Insulation between the ±RC terminals and the output conforms to the common specifications (Output to case). Withstand voltage between AC input terminals and ±RC terminals conforms to the common specifications (Input to case).



REMOTE ON-OFF(300W)

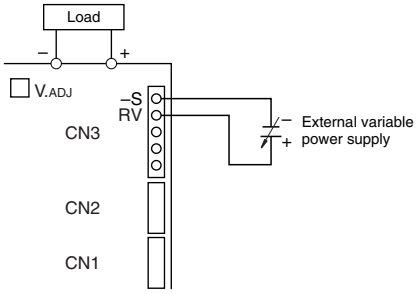
Output voltage On-Off can be controlled externally by inputting the following signals to the (+RC, –RC) pins of function connectors CN2 and CN3. The +RC pins are connected by a cable kit during shipping remove the cable kit when using the Remote Control Function.
Output voltage is turned off when the level is high between the +RC and –RC terminals (open or external voltage application of 2.4 to 24V: input current 1.0mA max.).
Output voltage is turned on when the level is low between the +RC and –RC terminals (short or terminal voltage of 0 to 0.4V: output current 1.6mA max.).
±RC terminals are insulated from AC input terminals and the DC output terminals.
Insulation between the ±RC terminals and the output conforms to the common specifications (Output to case). Withstand voltage between AC input terminals and ±RC terminals conforms to the common specifications (Input to output).

Characteristics, Functions, and Applications

OUTPUT VOLTAGE VARIABLE FUNCTION(300W)

The output voltage can be adjusted by an external voltage source by using the Output Voltage External Adjustment Function(RV) of connectors CN2 and CN3. An RV voltage of approx.5V can produce the rated output voltage. When using this function, it is recommended to twist or burdle the wire between RV and –S (Recommended length: 2m max.).

- Turn the output voltage adjustment trimmer(V.ADJ) and set the lower limit of the output voltage adjustment desired.
- The output voltage decreases when the trimmer is turned counterclockwise.
- Connect the + of the external voltage source to the RV pin, and the – to the –S pin.
- By adjusting the external voltage source the output voltage can be adjusted

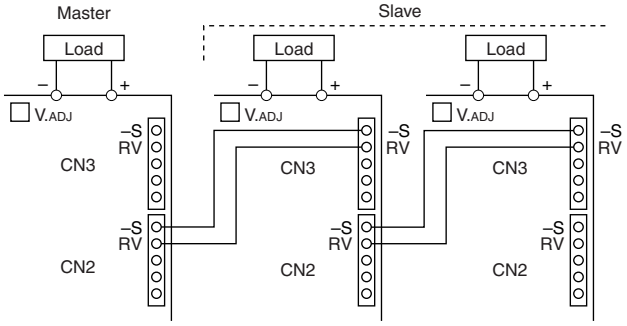


- If the output voltage is abruptly dropped under load, the over voltage protection may operate.

MASTER SLAVE FUNCTION(300W)

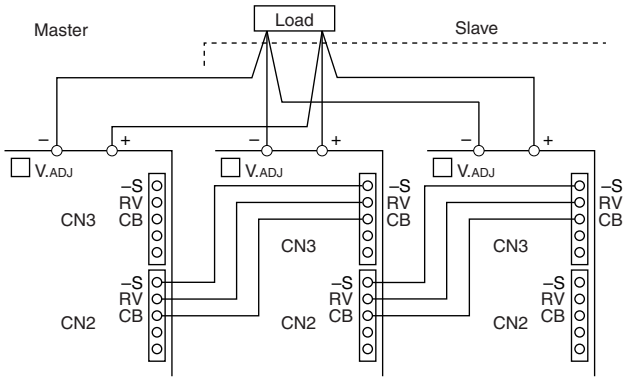
A use of the RV terminal enables the master slave operation. Using connectors CN2 and CN3, connect the respective RV and –S terminals of each power supply as shown in the diagram below. Turn the voltage adjustment trimmer (V.ADJ) of the slave power supply counterclockwise as far as it will go. Then, output voltages of all the power supplies can be simultaneously adjusted with following V.ADJ of the master power supply. Use twisted or bundled wire for the RV, –S connections.

- For two or more output loads



- For a single output load

  Equalize the impedance of the load wires coming from each power supply.



CURRENT BALANCE (CB TERMINAL) (300W)

Equalize the output current of power supplies connected in parallel by mutually connecting the respective CB terminals and the –S terminals of each power supply. The maximum four power supplies are connected in parallel.

(1)Conditions for current balance

The variation in output voltage between the respective power supplies cannot exceed 2%

(Highest voltage–lowest voltage) ÷ rated voltage=2% max.

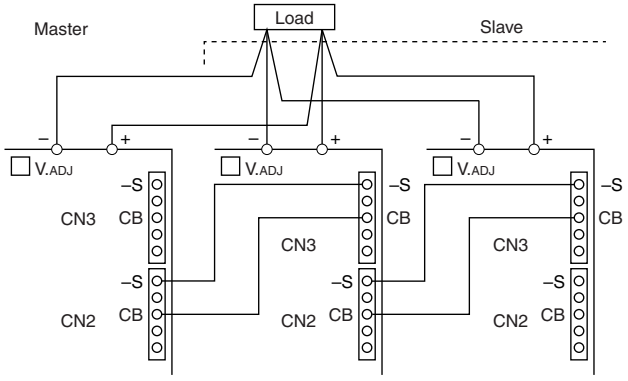
The output current is 20 to 90% of the total output rated current.

(2) Uniform performance

The variation in output current between the respective power supplies does not exceed 10%

(3) CB Terminal Connection Diagram

Use a twisted wire or a shielded wire for the wiring from CB and –S (shielded wire for –S).

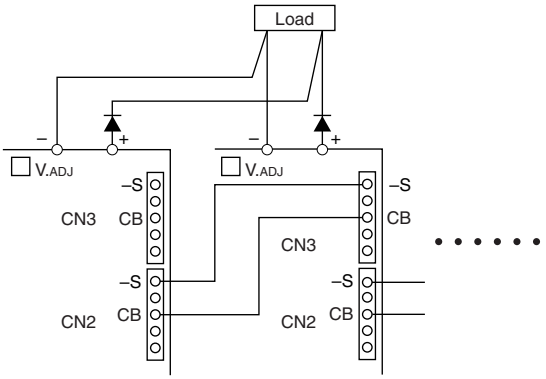


Equalize the impedance of the load wires coming from each power supply.

Characteristics, Functions, and Applications

REDUNDANT (N+1) OPERATION(300W)

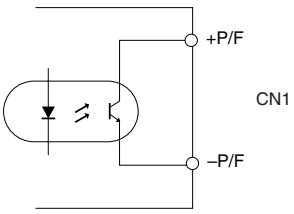
Connect diodes to output terminals of the power supplies before their redundant operation. Equalize the impedance of the load wires coming from each power supply. Use a twisted wire or a shielded wire for the wiring from CB and –S (shielded wire for –S).



POWER FAILURE SIGNAL (300W)

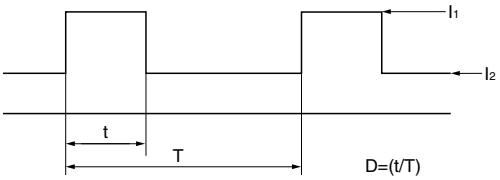
When the output voltage becomes less than approx. 80% of the selected voltage, the output signal is open.
Sink current: 50mA max.
Collector emitter voltage: 40V max.
±P/F terminals are insulated from AC input terminals and the DC output terminals.
Insulation between the ±P/F terminals and the output conforms to an insulation resistance for an output to the ground of the common specifications. Insulation between AC input terminals and ±P/F terminals conforms to an insulation resistance for an input terminal to an output terminal of the common specifications.

OUTPUT FORMAT



OTHER INSTRUCTIONS

24V output models of 150W and 300W types are correspondent to peak current.
Peak current on RTW24-6R3C(150W)
Peak current available for RTW24-6R3C. The conditions shown below applied for more than rated output current.



(1) Conditions of time
$t \leqq 10s$

(2) Conditions of peak current
$I_1 \leqq 10A$

(3) Conditions of effective current
$\sqrt{DI_1^2+(1-D)I_2^2} \leqq 6.3A$

(4) Conditions of effective power
$P \leqq 151.2W$
(output RMS current×output voltage)

CE MARKING

This product conforms to Standard EN60950-1 following the provisions of Low Voltage Directive 73/23/EEC and 93/68/EEC. However, if this power supply has been slightly modified per customer order and is a variation version of the original model, this product will not have the CE Mark attached to it unless it is clearly stated as applicable in the Product Specifications.

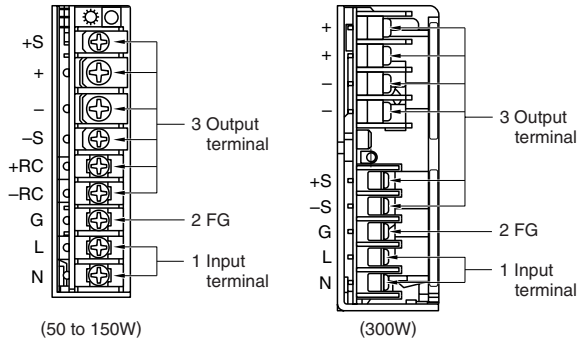
INSULATION AND WITHSTAND VOLTAGE TESTS

The insulation and withstand voltage tests may cause deterioration. Care must be taken for execution of the tests. The potential must be equal among input, output, and FG (frame ground) terminals. It is preferable to use testers which gently start up at the test-ON and automatically discharge charging energy at the test-OFF. Manual discharging after the tests should be through a resistor around 100kΩ to 1MΩ (Do not perform discharging at low impedance. It may cause deterioration.).
In any case, take full countermeasures for electric-shock prevention.

Characteristics, Functions, and Applications

POWER SUPPLY TERMINAL CONNECTION AT INSULATION AND WITHSTAND VOLTAGE TESTS

Short output or input terminals.



CONNECTIONS BETWEEN TESTERS AND POWER SUPPLY AT INSULATION AND WITHSTAND VOLTAGE TESTS

For connections between the testers and the power supply body, couple the tester terminals at the corresponding locations listed below before executing the tests.

Test conditions	Withstand voltage tester		Insulation tester	
	+ terminal	–terminal	+ terminal	–terminal
Input-to-output withstand voltage	1	3	—	—
Input-to-FG withstand voltage	1	2	—	—
Output-to-FG withstand voltage	3	2	—	—
Input-to-FG insulation	—	—	1	2
Input-to-output insulation	—	—	1	3
Output-to-FG insulation	—	—	3	2

PRECAUTIONS

- When using this unit, make sure that the ambient temperature of the power supply is within the operating temperature range. The "ambient temperature of the power supply" refers to the temperature near the power supply inside the device in which the unit is installed.
- If natural cooling is used, install the unit in such a way that a thermal convection is created. Additionally, space the power supply at least 10 mm away from other components on all sides.
- Make sure to choose input/output wiring and noise filters that can safely accommodate their respective current capacities.
- If the power supply is not used for extended periods of time, we recommend that you apply input voltage for about one hour every two years to maintain the capacitor's performance.
- When power supplies are used serially, the rated current will be limited by the power supply with the lowest rated current. Also make sure to connect a reverse voltage protection diode (Withstand voltage: twice that of the combined output voltage. Forward current: twice that of the output current. Forward voltage drop: as small as possible) to prevent damage to the interior components caused by reverse voltage.
- The materials used in these products are free of designated bromine flameproof materials (PBDPEs and PBBs).
- Specific ODS has not been used in the production of these products.