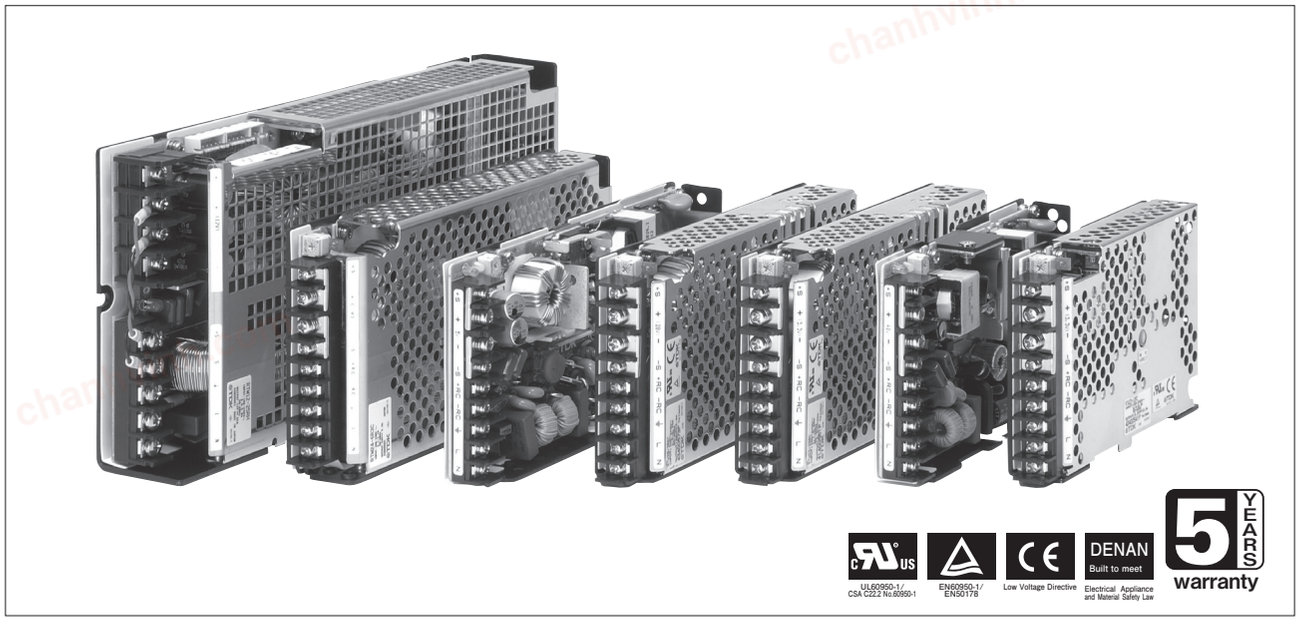
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RTW SERIES

Unit type power supply



■ Features

- Worldwide-applicable input, super-slim type (1U/2U rack size)
- Meeting the standard of the harmonics current limiter EN61000-3-2
- Approved by safety standards (UL, C-UL, TÜV), complying with Electrical Appliance and Material Safety Law, CE marking applicable
- EMS standard complying with EN61000-4-2/3/4/5/6/8/11
- Complying with radiation noise and conduction noise regulations FCC-B and VCCI-B
- Remote On/Off function incorporated (use and nonuse can be switched by the internal switch)
- Electrolytic capacitor lifetime: 60,000H or over

■ Model-naming method

RTW 05-60R □

- Symbol of shape/variation
  - 50W, 100W, 150W
  - None: without cover
  - C: with cover
  - L: type L (terminal block facing upward, without cover)
  - 300W
  - H: with cover (terminal block facing upward)
  - L: type L (terminal block facing upward, without cover)
- Maximum output current (examples)
  - 60R: 60A
  - 4R3: 4.3A
  - 2R1: 2.1A
- Nominal output voltage
  - 03: 3.3V
  - 05: 5V
  - 12: 12V
  - 15: 15V
  - 24: 24V
  - 48: 48V
- Series name

■ Applications



COMP COM MED MEASURE F A SEMI

■ 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.

■ Product Line up

	50W				100W			
Output voltage	Output current	Without cover	With cover	Type L	Output current	Without cover	With cover	Type L
3.3	12.5	RTW03-12R	RTW03-12RC	RTW03-12RL	25	RTW03-25R	RTW03-25RC	RTW03-25RL
5	10	RTW05-10R	RTW05-10RC	RTW05-10RL	20	RTW05-20R	RTW05-20RC	RTW05-20RL
12	4.3	RTW12-4R3	RTW12-4R3C	RTW12-4R3L	8.4	RTW12-8R4	RTW12-8R4C	RTW12-8R4L
15	3.5	RTW15-3R5	RTW15-3R5C	RTW15-3R5L	6.7	RTW15-6R7	RTW15-6R7C	RTW15-6R7L
24	2.2	RTW24-2R2	RTW24-2R2C	RTW24-2R2L	4.2	RTW24-4R2	RTW24-4R2C	RTW24-4R2L
28	1.8	RTW28-1R8	RTW28-1R8C	RTW28-1R8L	3.6	RTW28-3R6	RTW28-3R6C	RTW28-3R6L
48	1.1	RTW48-1R1	RTW48-1R1C	RTW48-1R1L	2.1	RTW48-2R1	RTW48-2R1C	RTW48-2R1L

	150W				300W		
Output voltage	Output current	Without cover	With cover	Type L**	Output current	With cover	Type L
3.3	35	RTW03-35R	RTW03-35RC	RTW03-35RL	70	RTW03-70RH	RTW03-70RL
5	30	RTW05-30R	RTW05-30RC	RTW05-30RL	60	RTW05-60RH	RTW05-60RL
12	12.5	RTW12-12R	RTW12-12RC	RTW12-12RL	25	RTW12-25RH	RTW12-25RL
15	10	RTW15-10R	RTW15-10RC	RTW15-10RL	20	RTW15-20RH	RTW15-20RL
24	6.3	RTW24-6R3	RTW24-6R3C	RTW24-6R3L	13	RTW24-13RH	RTW24-13RL
28	5.4	RTW28-5R4	RTW28-5R4C	RTW28-5R4L	11	RTW28-11RH	RTW28-11RL
48	3.2	RTW48-3R2	RTW48-3R2C	RTW48-3R2L	6.5	RTW48-6R5H	RTW48-6R5L

* Contact us separately for coating variations. ** Planning to get approval of safety standards

* All specifications are subject to change without notice.

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RTW50W Specifications

ITEMS/UNITS		MODEL	RTW03-12R	RTW05-10R	RTW12-4R3	RTW15-3R5	RTW24-2R2	RTW28-1R8	RTW48-1R1
Input	Voltage Range (Nominal: 100-240VAC)	V	AC85-265						
	Frequency (Nominal: 50-60 single phase)	Hz	47-66						
	Power Factor (100/240VAC)(typ)		0.99/0.94						
	Efficiency (100VAC)(typ)	%	75	80	81	82			
	Efficiency (200VAC)(typ)	%	77	82	83	85			
	Current (100-120/200-240VAC) (max)	A	0.7/0.4 (3.3V: 0.6/0.3)						
	Inrush Current (100/200VAC)(typ) (*1)	A	14/28						
	Leakage Current (100/240VAC) (max)	mA	0.45/0.6						
Output	Nominal Voltage	VDC	3.3	5	12	15	24	28	48
	Maximum Current (*2)	A	12.5	10	4.3	3.5	2.2	1.8	1.1
	Maximum Power	W	41.2	50	51.6	52.5	52.8	50.4	52.8
	Maximum Line Regulation (Within input voltage range) (max/typ)		0.2%/0.1%						
	Maximum Load Regulation (0-100% load) (max/typ)		0.4%/0.2%						
	Temperature Coefficient (Ambient temperature -10℃ to +71℃) (max/typ)	%	1.0/0.5						
	Warm Up Drift (max/typ) (*3)	%	0.5/0.2						
	Max Power Total Regulation (max/typ)	%	± 1.8/ ± 0.9						
	Maximum Ripple Voltage (max) (*4)	mVp-p	80		100		150		200
	Maximum Ripple & Noise (max) (*4)	mVp-p	120		150		200		300
	Start Up Time (100/240VAC)(typ) (*5)	ms	400/200						
	Hold-up Time (100/240VAC)(typ)	ms	55	30				35	30
	Voltage Adjustable Range	VDC	2.6-4.0	4.0-5.8	9.6-13.2	12.0-16.5	19.2-26.4	22.4-30.8	38.4-52.8
Function	Over Current Protection (*6)	A	13.2-15.6	10.5-12.5	4.5-5.4	3.68-4.38	2.3-2.75	1.9-2.25	1.15-1.38
	Over Voltage Protection (*7)	VDC	4.2-5.2	6.0-6.9	13.7-15.7	17.0-19.0	27.0-30.5	32.0-35.0	55.0-60.0
	Over Temperature Protection		Not available						
	Remote Sensing		Available						
	Remote ON/OFF Control (*8)		Available						
	Parallel Operation		Not available						
	Series Operation		Applicable						
	Operation Indicator		Available (green LED)						
	Variable Output Voltage		Not available						
	Monitoring Signal		Not available						
Environment	Operating Temperature	℃	-10 to +71						
	Storage Temperature	℃	-30 to +75						
	Operating Humidity	% RH	10-95 (the conditions of maximum 35˚C in wet bulb temperature and non-condensation should be ensured.)						
	Storage Humidity	% RH	10-95 (the conditions of maximum 35˚C in wet bulb temperature and non-condensation should be ensured.)						
	Vibration		5-10Hz, 10 minutes sweep, 10mmp-p total amplitude, 3 directions, 1h for each, in non-operation 10-200Hz, 10 minutes sweep, 19.6m/s² (2G) acceleration, 3 directions, 1h for each, in non-operation						
	Shock		Mounting A: 196m/s² (20G), Mounting B/C: 588m/s² (60G), 11 ± 5ms, 3 directions, 3 times for each, in non-operation						
Isolation	Withstand Voltage		For 1 minute at ordinary temperature and humidity Between input terminal and ground terminal: 2.0kVAC, 10mA cutout current Between input terminal and output terminal: 3.0kVAC, 10mA cutout current Between output terminal and ground terminal: 500VAC, 20mA cutout current						
	Isolation Resistance		In 500VDC and 100MΩ or over at ordinary temperature and humidity Between input terminal and ground terminal, between input terminal and output terminal, and between output terminal and ground terminal						
Standards	Safety Standards		Approved by UL60950-1, CSA C22.2 No.60950-1 (C-UL), EN60950-1 (TÜV), complying with Electrical Appliance and Material Safety Law (meeting the regulations of creepage surface and spacial distance in item 8 of the appendix table)						
	PFHC		Complying with EN61000-3-2						
	EMI		Complying with FCC-Class B / VCCI-Class B / EN55011-B / EN55022-B						
	Immunity		Complying with EN61000-4-2 Level 4, -3 Level 3, -4 Level 3, -5 Level 4, -6 Level 3, -8 Level 4, -11						
Mechanical	Weight without cover / with cover / type L (max)	g	250/290/250						
	Size (W x H x D) without cover / with cover / type L	mm	22 x 82 x 124/22 x 82 x 124/22 x 82 x 134.5						
Models of different	Detailed product name1 with cover		RTW03-12RC	RTW05-10RC	RTW12-4R3C	RTW15-3R5C	RTW24-2R2C	RTW28-1R8C	RTW48-1R1C
	Detailed product name2 type L		RTW03-12RL	RTW05-10RL	RTW12-4R3L	RTW15-3R5L	RTW24-2R2L	RTW28-1R8L	RTW48-1R1L

With nominal input/output voltage, maximum output current, and Ta=25˚C, if not specified separately.
(*1) In primary surge current, 25˚C, and cold starting.
(*2) The maximum output current value is between -10˚C and +40˚C. For use in outside this temperature range, derating is needed.
(*3) 30min to 8h after the start of input voltage application.
(*4) 1.5 times the value in 100MHz and at between -10˚C and 0˚C.
(*5) In cold starting at between -20˚C and 0˚C, lowering of output voltage can occur. It may take 3 seconds or so until the voltage becomes stable.
(*6) Fixed current reduction system and automatically resumes when the causes are removed.
(*7) Output voltage shutdown system and resumes by restarting input (approximately 30s interval).
(*8) Use and nonuse can be switched by the internal switch.

●Recommended EMC Filter



RSEL-2003W

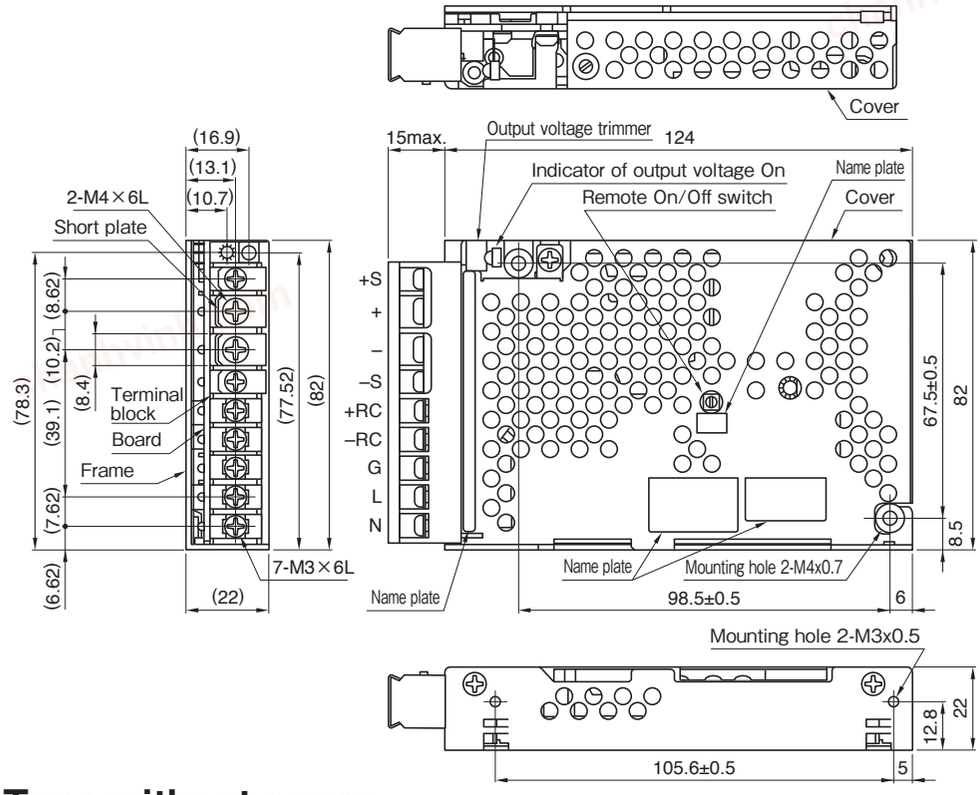
Please refer to "TDK-Lambda EMC Filters" catalog.

・All specifications are subject to change without notice.

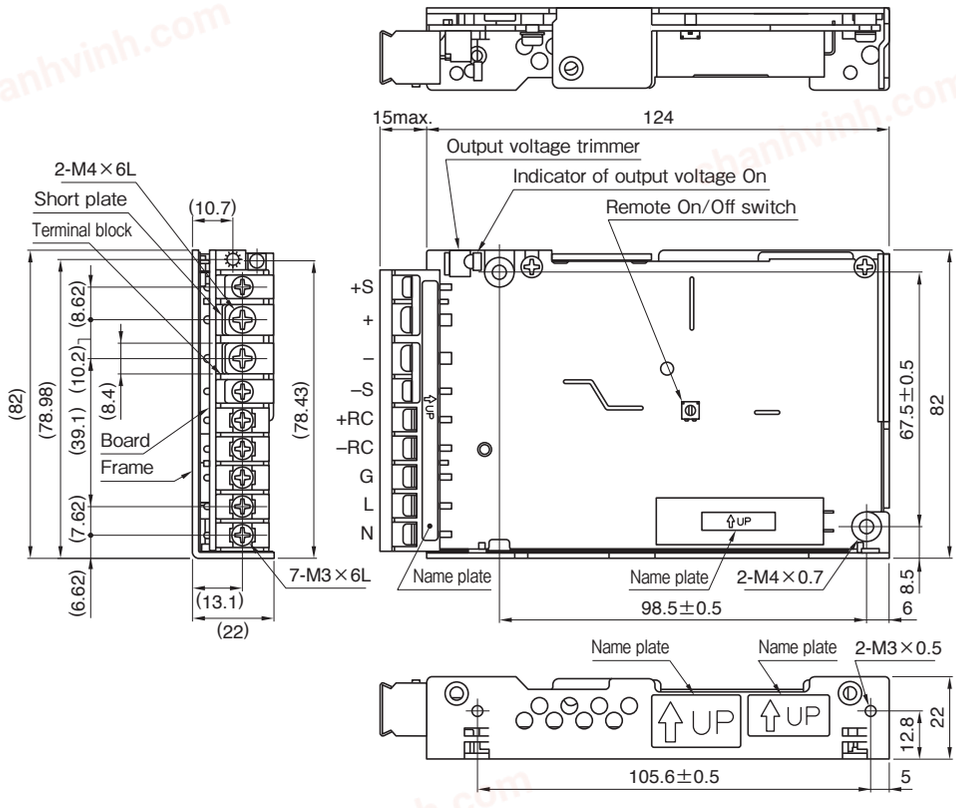
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Outline Drawing

Type with cover



Type without cover



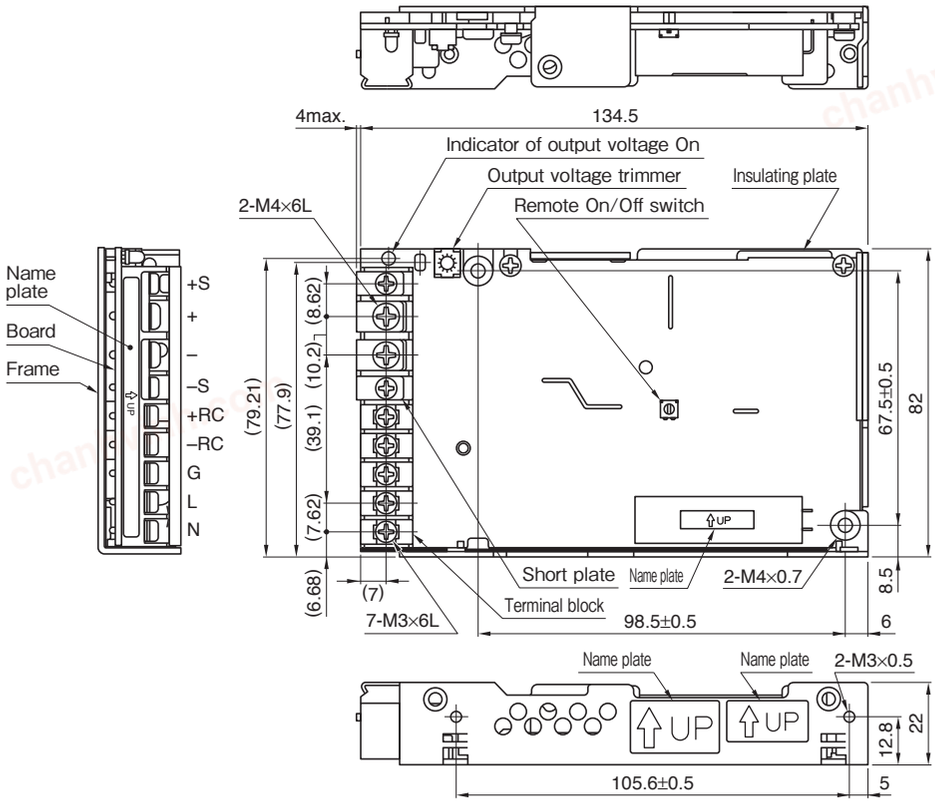
Unit: mm

* The insertion length of screws used for mounting the power supply should be within 6mm from the product surface.

Allowable tolerance is ±1mm if not specified separately.

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Type L (terminal block facing upward, without cover)



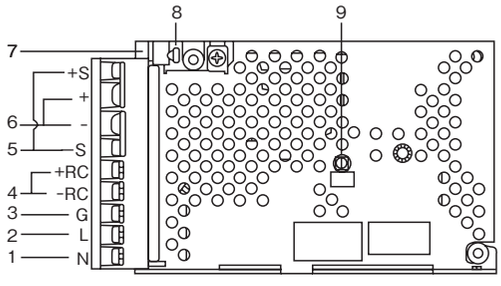
Unit: mm

* The insertion length of screws used for mounting the power supply should be within 6mm from the product surface.

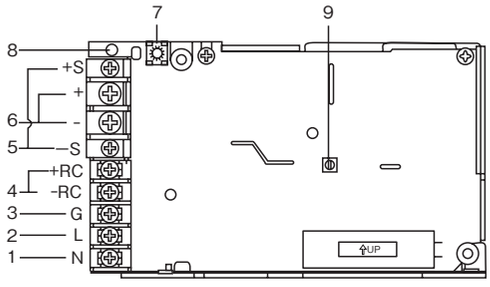
Allowable tolerance is ±1mm if not specified separately.

Terminals

Type with cover/without cover



Type L



Terminal No.	Name and function	
1	AC input terminal (N)	Connects to AC.100-120V or AC.200-240V input line.
2	AC input terminal (L)	Connects to AC.100-120V or AC.200-240V input line.
3	Ground terminal (G)	Connects to the ground line. This is connected to the case.
4	Remote On/Off terminal (+RC, -RC)	By inputting external signals between terminals, the output voltage can be switched on and off from outside the power supply. Output is not generated if voltage is not applied to RC terminal. The RC terminal is floated.
5	Remote sensing terminal (+S, -S)	Used to compensate for a voltage drop to load. The line between the remote sensing terminal and DC output terminal is short-circuited with a short piece.
6	DC output terminal (+, -)	Connects to the load line.
7	Output voltage trimmer ($V._{ADJ}$)	Output voltage can be varied. Voltage increases by turning the trimmer in a clockwise direction.
8	LED output indicator (green)	The LED is lit green when output voltage is generated.
9	Switch for use/nonuse of Remote On/Off function	Remote On/Off function is activated by setting the switch for use/nonuse of Remote On/Off function, located in the center of the power supply, to Y (turning in a clockwise direction).

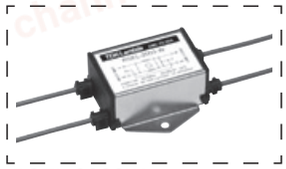
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RTW100W Specifications

ITEMS/UNITS		MODEL	RTW03-25R	RTW05-20R	RTW12-8R4	RTW15-6R7	RTW24-4R2	RTW28-3R6	RTW48-2R1
Input	Voltage Range (Nominal: 100-240VAC)	V	AC85-265 (90% load derating in 90VAC or lower)						
	Frequency (Nominal: 50-60 single phase)	Hz	47-66						
	Power Factor (100/240VAC)(typ)		0.99/0.93						
	Efficiency (100VAC)(typ)	%	79	83	84	85			
	Efficiency (200VAC)(typ)	%	81	85	86	87			88
	Current (100-120/200-240VAC) (max)	A	1.5/0.75 (3.3V: 1.2/0.6)						
	Inrush Current (100/200VAC)(typ) (*1)	A	14/28						
	Leakage Current (100/240VAC) (max)	mA	0.45/0.6 (100VAC (Electrical Appliance and Material Safety Law) / 240VAC (UL, IEC))						
Output	Nominal Voltage	VDC	3.3	5	12	15	24	28	48
	Maximum Current (*2)	A	25	20	8.4	6.7	4.2	3.6	2.1
	Maximum Power	W	82.5	100	100.8	100.5	100.8		
	Maximum Line Regulation (Within input voltage range) (max/typ)		0.2%/0.1% (3.3V: 10mV/5mV)						
	Maximum Load Regulation (0-100% load) (max/typ)		0.4%/0.2% (3.3V: 20mV/10mV)						
	Temperature Coefficient (Ambient temperature -10℃ to +71℃) (max/typ)	%	1.0/0.5						
	Warm Up Drift (max/typ) (*3)	%	0.5/0.2						
	Max Power Total Regulation (max/typ)	%	± 1.8/ ± 0.9						
	Maximum Ripple Voltage (max) (*4)	mVp-p	80		100		150		200
	Maximum Ripple & Noise (max) (*4)	mVp-p	120		150		200		300
	Start Up Time (100/240VAC)(typ) (*5)	ms	400/200						
	Hold-up Time (100/240VAC)(typ)	ms	35						
	Voltage Adjustable Range	VDC	2.6-4.0	4.0-5.8	9.6-13.2	12.0-16.5	19.2-26.4	22.4-30.8	38.4-52.8
Function	Over Current Protection (*6)	A	26.2-33.7	21-25	8.82-10.5	7.03-9.04	4.41-5.25	3.78-4.86	2.2-2.62
	Over Voltage Protection (*7)	VDC	4.2-5.2	6.0-6.9	13.7-15.7	17.0-19.0	27.0-30.5	32.0-35.0	55.0-60.0
	Over Temperature Protection		Not available						
	Remote Sensing		Available						
	Remote ON/OFF Control (*8)		Available						
	Parallel Operation		Not available						
	Series Operation		Applicable						
	Operation Indicator		Available (green LED)						
	Variable Output Voltage		Not available						
	Monitoring Signal		Not available						
Environment	Operating Temperature	℃	-10 to +71						
	Storage Temperature	℃	-30 to +75						
	Operating Humidity	% RH	10-95 (the conditions of maximum 35°C in wet bulb temperature and non-condensation should be ensured.)						
	Storage Humidity	% RH	10-95 (the conditions of maximum 35°C in wet bulb temperature and non-condensation should be ensured.)						
	Vibration		5-10Hz, 10 minutes sweep, 10mmp-p total amplitude, 3 directions, 1h for each, in non-operation 10-200Hz, 10 minutes sweep, 19.6m/s² (2G) acceleration, 3 directions, 1h for each, in non-operation						
	Shock		Mounting A: 196m/s² (20G), Mounting B/C: 588m/s² (60G), 11 ± 5ms, 3 directions, 3 times for each, in non-operation						
Isolation	Withstand Voltage		For 1 minute at ordinary temperature and humidity Between input terminal and ground terminal: 2.0kVAC, 10mA cutout current Between input terminal and output terminal: 3.0kVAC, 10mA cutout current Between output terminal and ground terminal: 500VAC, 20mA cutout current						
	Isolation Resistance		In 500VDC and 100MΩ or over at ordinary temperature and humidity Between input terminal and ground terminal, between input terminal and output terminal, and between output terminal and ground terminal						
Standards	Safety Standards		Approved by UL60950-1, CSA C22.2 No.60950-1 (C-UL), EN60950-1 (TÜV), complying with Electrical Appliance and Material Safety Law (meeting the regulations of creepage surface and spacial distance in item 8 of the appendix table)						
	PFHC		Complying with EN61000-3-2						
	EMI		Complying with FCC-Class B / VCCI-Class B / EN55011-B / EN55022-B						
	Immunity		Complying with EN61000-4-2 Level 4, -3 Level 3, -4 Level 3, -5 Level 4, -6 Level 3, -8 Level 4, -11						
Mechanical	Weight without cover / with cover / type L (max)	g	380/450/380						
	Size (W x H x D) without cover / with cover / type L	mm	25 x 82 x 160/25 x 82 x 160/25 x 82 x 171.5						
Models of different	Detailed product name1 with cover		RTW03-25RC	RTW05-20RC	RTW12-8R4C	RTW15-6R7C	RTW24-4R2C	RTW28-3R6C	RTW48-2R1C
	Detailed product name2 type L		RTW03-25RL	RTW05-20RL	RTW12-8R4L	RTW15-6R7L	RTW24-4R2L	RTW28-3R6L	RTW48-2R1L

With nominal input/output voltage, maximum output current, and Ta=25°C, if not specified separately.
(*1) In primary surge current, 25°C, and cold starting.
(*2) The maximum output current value is between -10°C and +40°C. For use in outside this temperature range, Derating is needed.
(*3) 30min to 8h after the start of input voltage application.
(*4) 1.5 times the value in 100MHz and at between -10°C and 0°C.
(*5) In cold starting at between -20°C and 0°C, lowering of output voltage can occur. It may take 3 seconds or so until the voltage becomes stable.
(*6) Intermittent operation system and automatically resumes when the causes are removed.
(*7) Output voltage shutdown system and resumes by restarting input (approximately 30s interval).
(*8) Use and nonuse can be switched by the internal switch.

●Recommended EMC Filter



RSEL-2002W

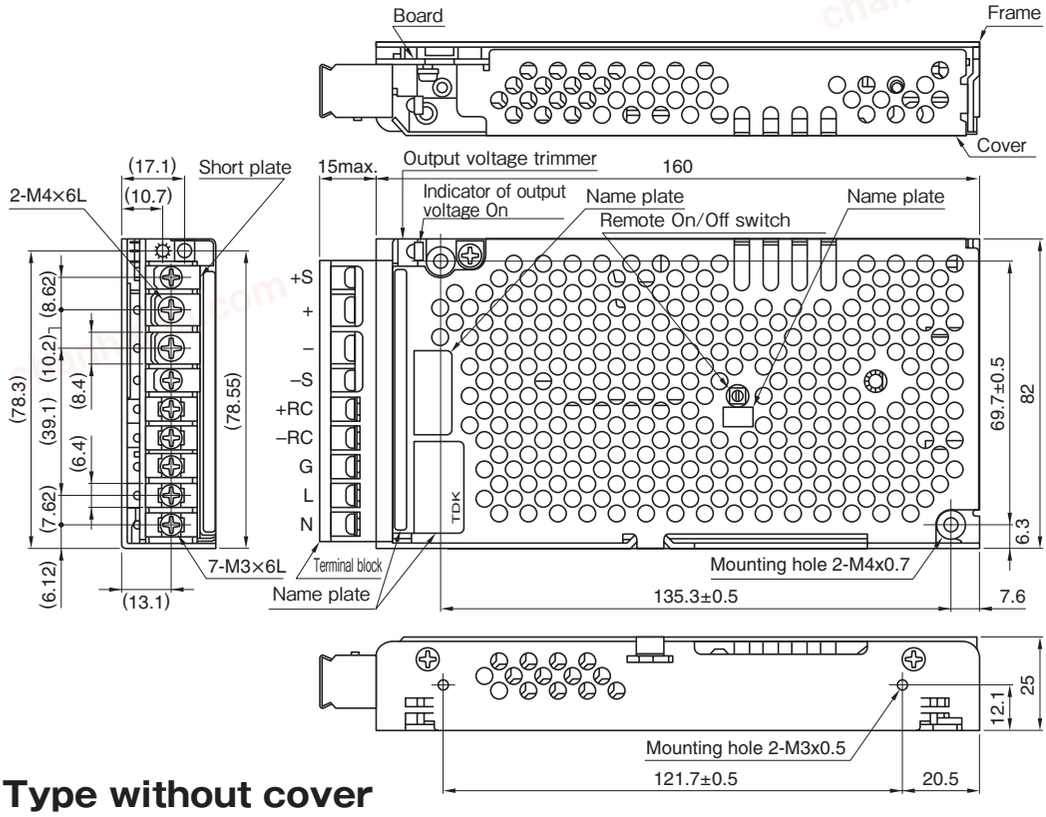
Please refer to "TDK-Lambda EMC Filters" catalog.

・All specifications are subject to change without notice.

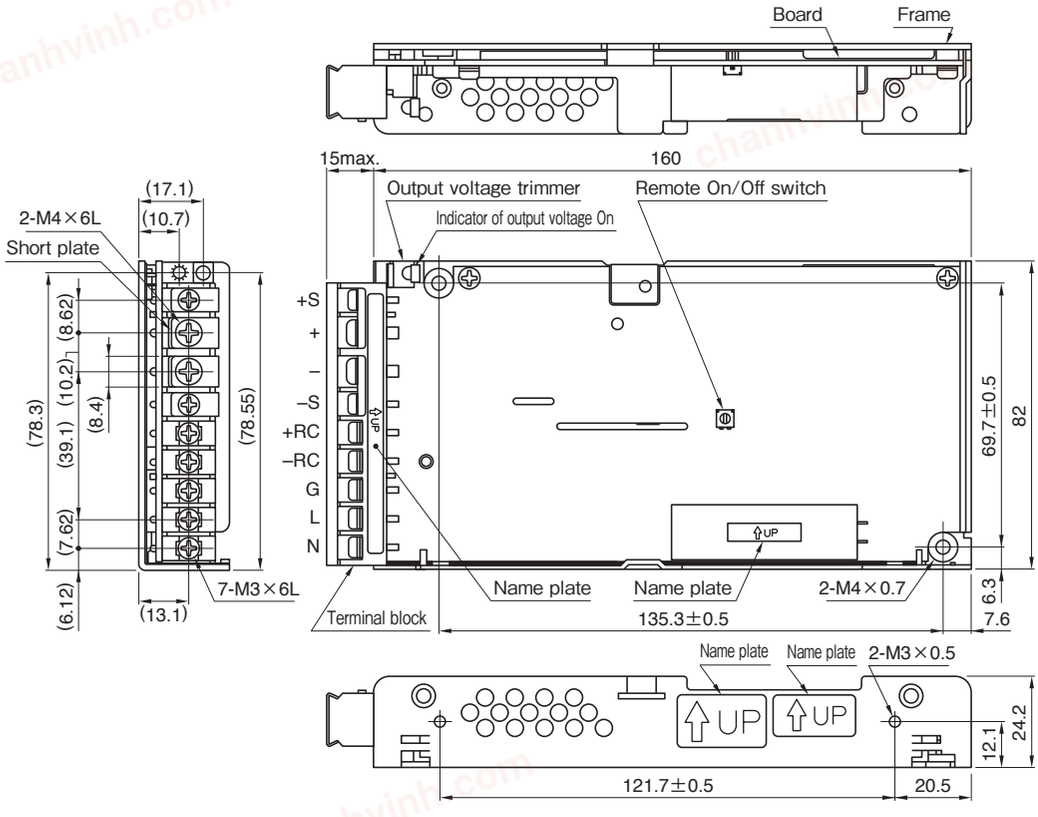
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Outline Drawing

Type with cover



Type without cover



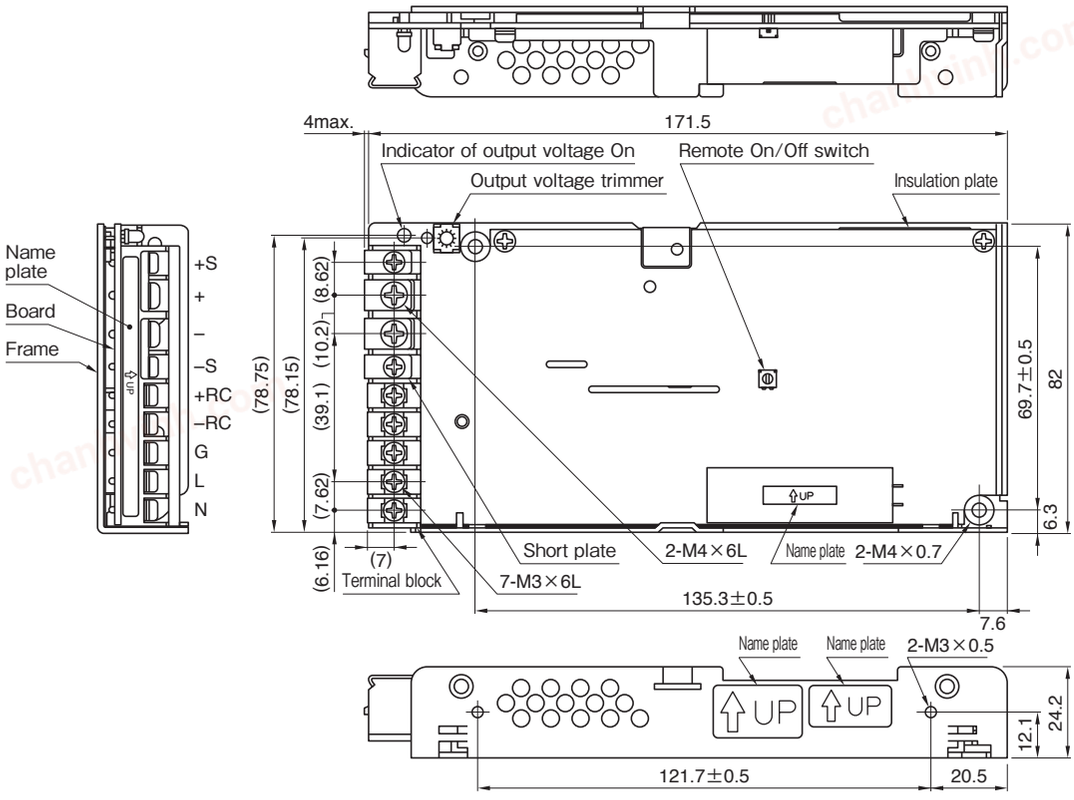
Unit: mm

* The insertion length of screws used for mounting the power supply should be within 6mm from the product surface.

Allowable tolerance is ±1mm if not specified separately.

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Type L (terminal block facing upward, without cover)



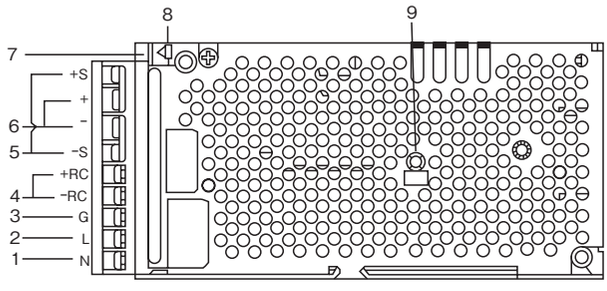
Unit: mm

* The insertion length of screws used for mounting the power supply should be within 6mm from the product surface.

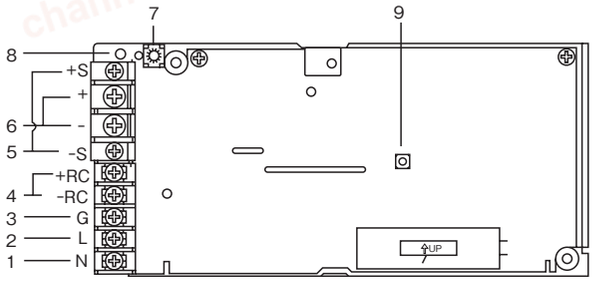
Allowable tolerance is ±1mm if not specified separately.

Terminals

Type with cover/without cover



Type L



Terminal No.	Name and function	
1	AC input terminal (N)	Connects to AC.100-120V or AC.200-240V input line.
2	AC input terminal (L)	Connects to AC.100-120V or AC.200-240V input line.
3	Ground terminal (G)	Connects to the ground line. This is connected to the case.
4	Remote On/Off terminal (+RC, -RC)	By inputting external signals between terminals, the output voltage can be switched on and off from outside the power supply. Output is not generated if voltage is not applied to RC terminal. The RC terminal is floated.
5	Remote sensing terminal (+S, -S)	Used to compensate for a voltage drop to load. The line between the remote sensing terminal and DC output terminal is short-circuited with a short piece.
6	DC output terminal (+, -)	Connects to the load line.
7	Output voltage trimmer ($V._{ADJ}$)	Output voltage can be varied. Voltage increases by turning the trimmer in a clockwise direction.
8	LED output indicator (green)	The LED is lit green when output voltage is generated.
9	Switch for use/nonuse of Remote On/Off function	Remote On/Off function is activated by setting the switch for use/nonuse of Remote On/Off function, located in the center of the power supply, to Y (turning in a clockwise deirection).