

NEW

Ultra Slim DC Power Supply

Palmtop size Variable DC Power Supply



Ultra Compact!

4.88-inch
(124 mm)



Compact and lightweight design by our original low noise switching technology.

Easy operation to set the output voltage and current.

Excellent quietness is achieved by natural air-cooling system.

R3K-36 series

R3K36-1

0 to 36 V, 0 to 1 A, 0 to 36 W

R3K18-2

0 to 18 V, 0 to 2 A, 0 to 36 W

R3K8-3

0 to 8 V, 0 to 3 A, 0 to 24 W



Ultra Slim DC Power Supply

R3K-36 series

R4K-36 series is ultra-compact, high-performance DC power supply that achieves **sufficient output of 36 W in the "palm-sized"**.

This ultra-slim, (1.4 inches, 35 mm), supply, has the output voltage / current meter integrated as a standard feature.

This allows for simpler and easier operation.

The supply is very suitable for a multi-set and anti-sink current feature, to do QA or production testing.



We pursue usability !

- Saving space by compact and light weight design
- Suitable for research application by it's ultra low noise feature
- Very quiet due to the adopting natural air-cooling system without cooling fan.
- Output voltage and current meter are equipped standardly.
- Output voltage and output current can be set speedily.

Ultra compact !



You can realize how small it is with comparison to a mouse.

Compared to stationeries...



Lineup

*1 The ripple is applied in the rated output from 10% to 100%.

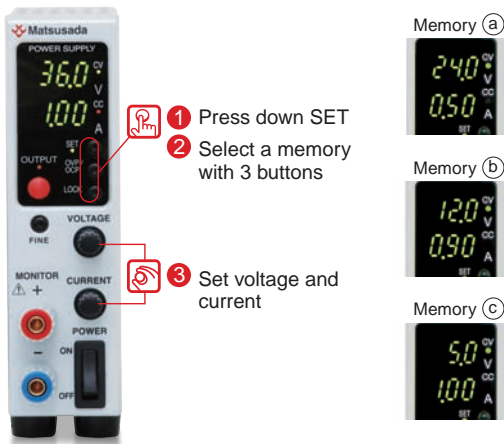
*2 You can change the input voltage, and refer to page 06.

Output voltage (V)	Output current (A)	Output Power (W)	MODEL	Ripple*1		Minimum setting unit		AC input		Weight (approx.)
				(mVrms)	(mA _{rms})	Output voltage (mV)	Output current (mA)	Input voltage*2	Input current (typ)	
0 to 36	0 to 1	36	R3K36-1	5	5	100	10	115 V ± 10 % 50 / 60 Hz single phase	1 A	500 g
0 to 18	0 to 2		R3K18-2	5	5	100	10			
0 to 8	0 to 3	24	R3K8-3	4	4	10	10			

Functions

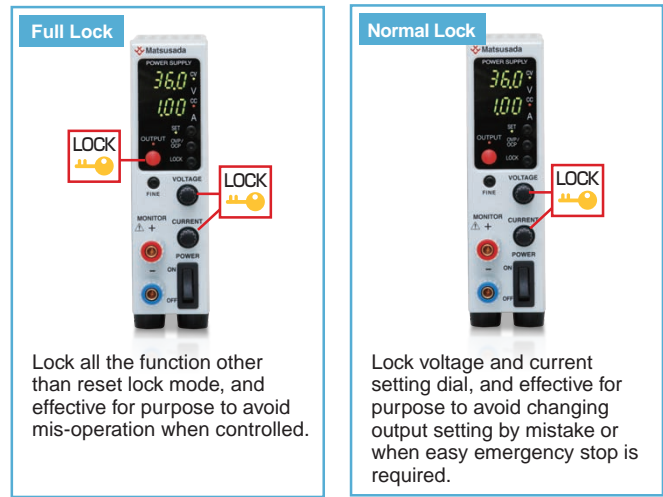
Multi Setting Function

Function to memorize 3 different voltage and current settings in addition to standard preset function. No need to adjust the output when different setting, and convenient function for production inspection process or testing which require frequent data sampling.



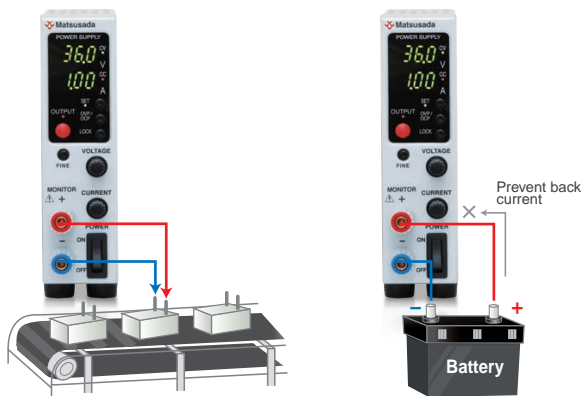
Two Mode Lock Function

"Full Lock" and "Normal Lock" are available in this function. "Full Lock" locks all the function on front panel, and "Normal Lock" locks all the function except for ON / OFF. "Full Lock" mode shall be good in case mis-operation have to be completely avoided, and "Normal Lock" mode shall be good in case to avoid mis-operation but secure the way for emergency stop of power supply. You can select the best mode according to your level of "Security", (in both modes, emergency stop is possible with Power Switch.)



Sink Current / Sink Current Prevention Function

R3K-36 series features function to sink current, and enable to decrease the voltage quickly when turning off the output or when control the voltage down, which increase the safety of operation. In case burn-in tests such as aging test are conducted one after another in short interval, connectors can be attached or removed quickly and go for the workexchange. which increases the efficiency of process after the output OFF operation. On the contrary by using sink current prevention function, it is possible to prevent voltage drop on the load by decreasing the current flow from load to power supply when turning off the power supply or when decrease the output voltage.

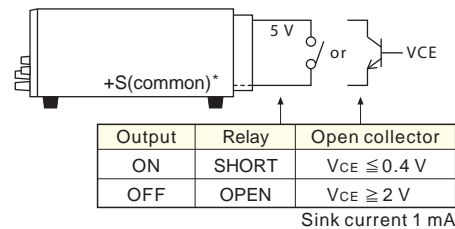


<NOTE> It is not possible to stabilize the output by controlling back current. In case of load which has inverse voltage or over rated voltage, such as inductive load or regenerative motor, protect the power supply by adding dummy resistor or diode to prevent back current.

Remote Control Functions

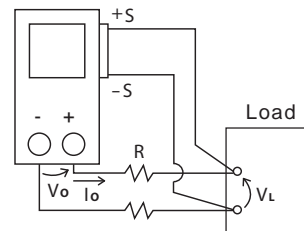
Remote switch ON / OFF

* +S is common. So external control voltage shall be input with +S as reference. Otherwise it can cause failure.

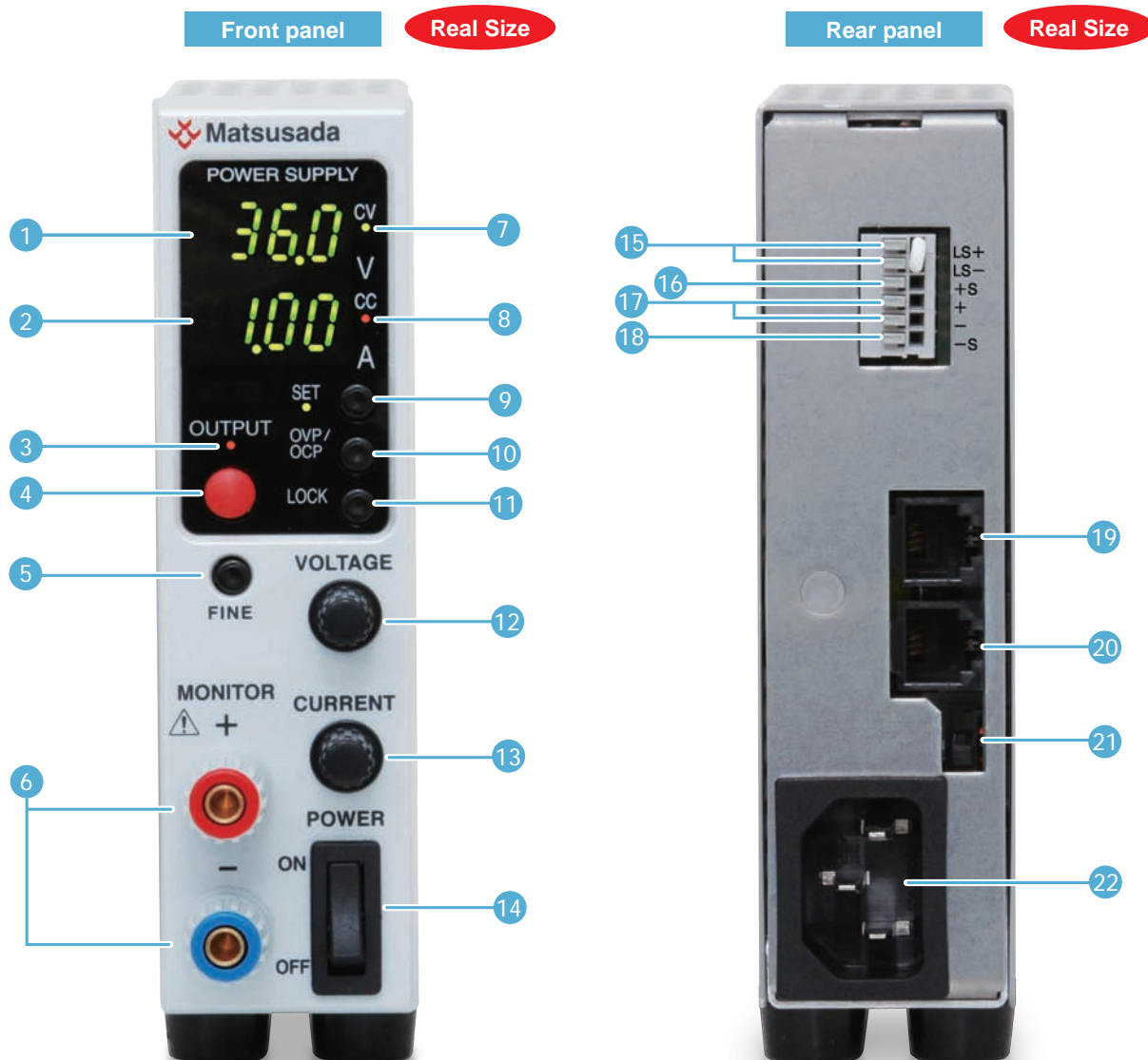


Remote sensing

Compensate the voltage drop ($V_0 - V_L$) due to resistance of output lead or drop of stability by contact resistance. (maximum 0.5 V)



Functions



- | | | |
|--|---|----------------------------------|
| 1 Output voltage and OVP setting display | 7 Constant voltage operation mode display | 15 Remote output ON / OFF switch |
| 2 Output current and OCP setting display | 8 Constant current operation mode display | 16 +Sense |
| 3 Output display
Light up when output is on. | 9 Output PRESET switch | 17 OUTPUT terminal (up to 3A) |
| 4 OUTPUT ON / OFF switch
To be used to turn output on / off as well resetting protection functions. | 10 OVP / OCP switch | 18 -Sense |
| 5 FINE switch
Switching setting digit when setting output voltage and current. | 11 LOCK switch | 19 Port for maintenance |
| 6 Monitor terminal and Output terminal | 12 OUTPUT voltage · OVP setting dial | 20 Switch for maintenance |
| | 13 OUTPUT current · OCP setting dial | 22 AC inlet |
| | 14 Power ON / OFF switch
This has priority over all operations for safety reason | |

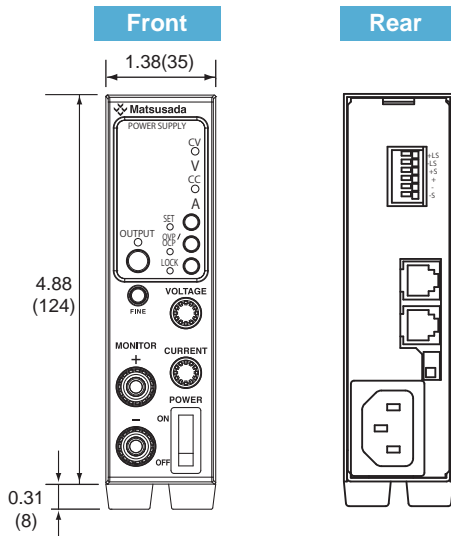
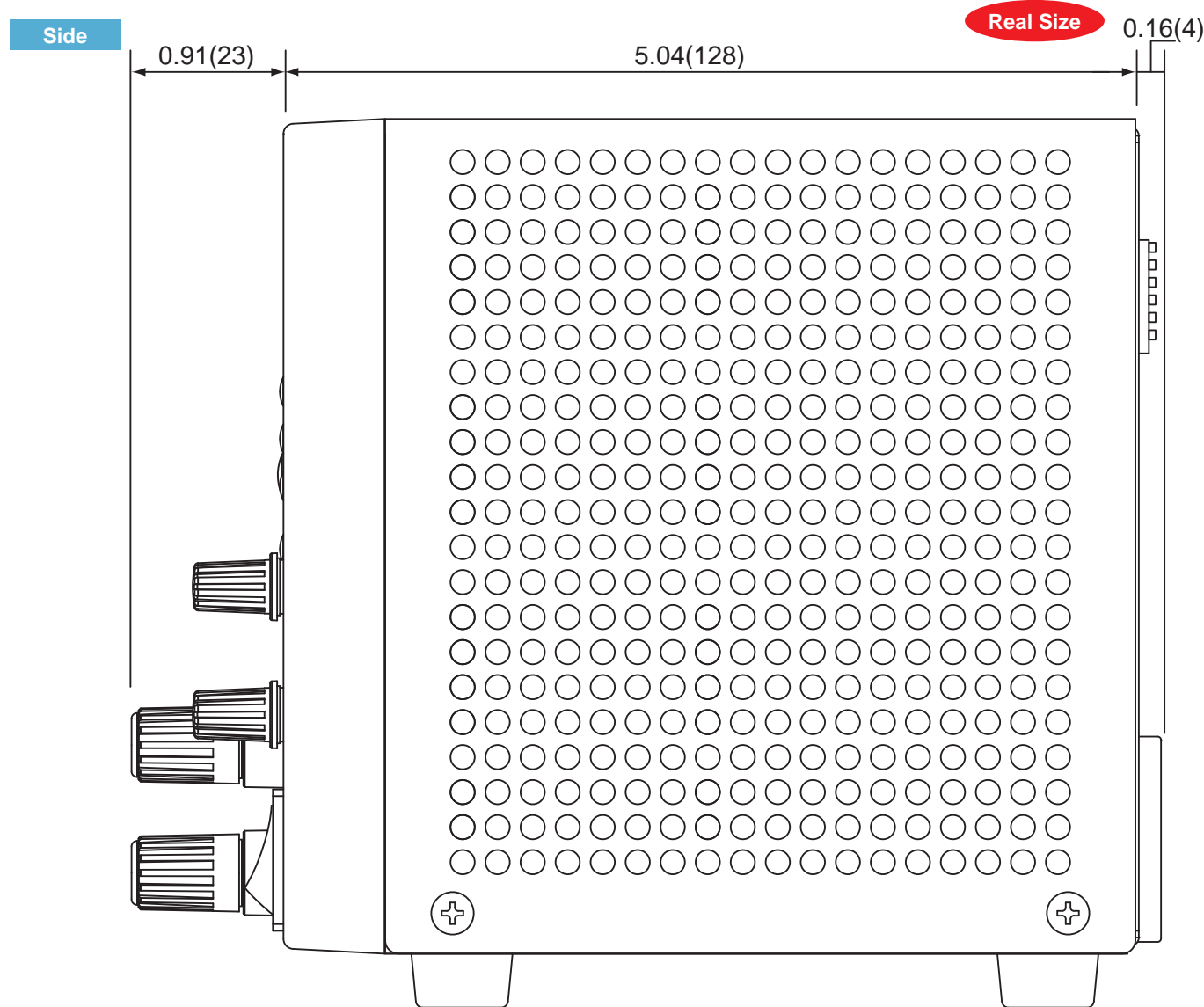
Specifications of cables to use

Appropriate wire	Single wire : 0.65 mm in diameter (AWG22) Twisted wire : 0.32 mm ² (AWG22) Diameter of strand : more than 0.12 mm
Usable wire	Single wire : 0.32 mm to 0.65 mm (AWG28 to 22) Twisted wire : 0.08 to 0.32 mm ² (AWG28 to 22) Diameter of strand : more than 0.12 mm
Standard length of the part which peeled coating	9 to 10 mm
Suitable tool for pulling / connecting the wire	Flat-blade screwdriver (Axial diameter : 3 mm, the width of the edge of a blade : 2.6 mm)

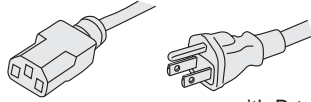
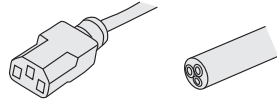
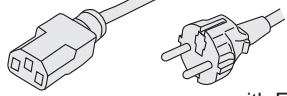
Caution about the diameter or a cross-section of wire mentioned above

When the dimensions that are prescribed by AWG do not conform to the value of cross-section, please apply the latter.

Dimensions inch (mm)



AC input cable

CABLE TYPE 1 125 V / 10 A (Standard)	 with B-type plug
CABLE TYPE 3 250 V / 10 A for -L(230V)option	 Flying lead
CABLE TYPE 4 250 V / 10 A (Separate)	 with F-type plug

- R3K-36 does not have air cooling fan inside, therefore please ensure to have the following.
- 1) A cooling space of 0.8 inches (20 mm) on top, and also 0.3 inches (8 mm) at the bottom of the chassis.
 - 2) A cooling space of 2 inches (50 mm) for both lateral sides if air is more restricted, or 0.4 inches (10 mm) if there is additional air flow by fan, etc.

Specifications

Output Control	CV Mode : By rotary encoder on front panel CC Mode : By rotary encoder on front panel
Stability*	0.05 % of maximum output voltage / 8 Hr
Temperature coeff*	± 0.01 % / $^{\circ}\text{C}$ (CV), ± 0.02 % / $^{\circ}\text{C}$ (CC),
Lock Function	Lock function locks the output voltage and current setting
Output Display*	Voltage : 3-digit digital meter. Accuracy is ± 0.2 % rdg ± 2 digits Accuracy of preset setting is ± 0.2 % Setting ± 200 mV Current : 3-digit digital meter. Accuracy is ± 0.4 % rdg ± 2 digits Accuracy of preset setting is ± 0.4 % Setting ± 20 mA
Protections	Over voltage protection (OVP) : Cut off the output at set value Setting range : appx. 5 % to 110 % of rated maximum voltage Setting : By front panel rotary encoder Reset : By OUTPUT ON / OFF switch or remote switch (manual control) Over current protection (OCP) : Cut off the output at set value Setting range : appx. 5 % to 110 % of rated maximum current Setting : By front panel rotary encoder Reset : By OUTPUT ON / OFF switch or remote switch (manual control) Over temperature protection (OTP) : Cut off the output at abnormal internal temperature. Reset (after temperature go down to normal) : Output switch or Remote switch (manual control) Input brownout (ACF)-Blackout protection : The output is cut off when input voltage decreased. Reset (when normal voltage value or recovery from blackout) : Manual recovery by Output ON / OFF switch or Remote switch for blackout protection Automatic recovery when blackout protection is canceled. Remote sense reverse connection
Other Functions	Remote sensing, Remote switch ON / OFF(TTL or external relay), Multi setting function : Voltage and current memory "a", "b" and "c" setting in addition to standard voltage and current preset
Operation Temp.	0 $^{\circ}\text{C}$ to +40 $^{\circ}\text{C}$
Storage Temp.	-20 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$
Storage humidity	20 to 80 %RH (no condensation)
Dielectric voltage	Between input power supply and output terminal : AC1000 V 1 min. Between input power supply and chassis : AC1000 V 1 min.
Isolation voltage	± 250 VDC (Positive or Negative terminal grounding)
Accessories	AC Input cable 2.5 m single phase 3-pin type(1) Instruction manual(1) Ground plate(1)



For safer operation, connect ground plate to output terminal.

* Unless otherwise specified, the scope of the specifications applies from 10% to 100% of the rated output after two hours warm-up.

Options

-L(120V) : 120 VAC ± 10 % input
-L(200V) : 200 VAC ± 10 % input
-L(220V) : 220 VAC ± 10 % input
-L(230V) : 230 VAC ± 10 % input

These options cannot be equipped together.

-LH : Higher isolation voltage

This option make the isolation voltage to be ± 1 kV, which enable extended capability of series operation.

How to order When ordering, suffix the above option number to the model number. <Example> R3K18-2-LH(200V) alphabetical, AC input order

Operation example

R3K-36 power supply of same model number can be connected in series or parallel to increase output voltage or current.

Series operation	Parallel operation	Split operation
<p>Total output voltage is to be up to 250V (-LH option models : 1kV). Output current is to be the smallest current of those.</p>	<p>Please keep all the settings of voltage the same. Output current will be the summation of each current. Please keep OVP level of power supply maximum to prevent any damage.</p>	<p>Positive output and negative output are available.</p>

R3K-36 series Accessory Kit

*Power supply is not included in the accessories.

Various accessories are available for convenient use of the unit.

NEW Quintette case (R4K-36QC)



Special designed case to bind 5-unit of R3K-36 or R4K-36 series. Power ON / OFF switch will be consolidated, and also AC input line on rear panel will be bundled to one. Also, handle on the top makes easy to carry.

Accessories

- One set of translator for AC cable of five R3K-36 or R4K-36
- Input AC cable 2.5m single phase (3-pin type) (1)
- Instruction manual (1)

* R3K-36 is sold separately.

*The R3K-36 installation in the case is conducted by customers.

*Use the power supply in appropriate service environments where the ambient temperature is within its operating temperature range so as to maintain the inside of the unit within the operating temperature (see page 06),

*(In general, the service life of power supplies could be shortened by half whenever the temperature increases by 10 degrees.) It is your responsibility to monitor the temperature during the operation.

*AC input of R4K-36QC is 115V. When using five units of R3K-36 series with -L(200V) option in the case, specify the model number as R4K-36QC-L(230V) to order.

Rack mount holder [RMO series]

10 Units/1 rack holder, and can be placed in a cabinet. Easy to take one unit out. Best suitable for a system operation. With fan unit.



Power Supply stand

For one unit operation...



TECHNICAL NOTE

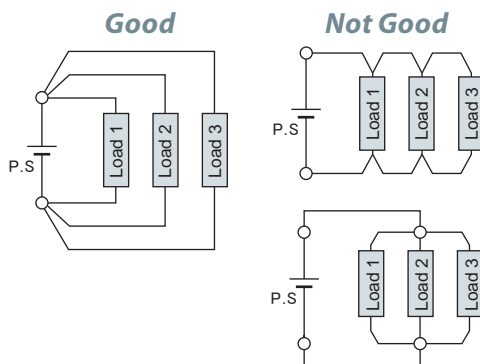
Connection Operation

■ Connection of load

- Please use a short lead wire that is sufficiently thick for the connection.
- Please use PVC electric cable (105°C) that can fully tolerate the voltage used. It is necessary to consider current capacity, length limit of output wire by sensing (0.5V/lead) and so on for wiring with load. Please refer to the following diagram to determine the thickness of cable.

AWG	mm ²	Max current(A)
18	1.1	2
16	1.3	7
14	2.1	11
12	3.3	18
10	5.3	23
8	8.4	39
6	13	67

■ Parallel connection of load



A power supply has no direct branching, but the load is branched using cables.

When selecting DC power supply

► Important Notice

Products on this catalog have been manufactured with consideration of safety as DC power supply, however please follow instruction manual for operation and make sure to ground the ground terminal for your safety.

Products on this catalog have been manufactured on the precondition that they are used in ground electric potential or within the range of the above series operation. Please contact our sales staff when using the product for floating of high electric potential, etc.

Products on this catalog are manufactured with consideration for protection against load discharge. However for specific experiment or continuous discharge such as sputtering, product may need discharge resistance between power supply and load or could not be used at all. Please consult with our sales staff in advance.

We recommend that you contact our sales staff with your requirement before choosing a product so that you can get the best product and the safety as high-voltage equipment is assured.

Contact us for various kinds of Power supplies

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Matsusada Precision offers solutions to meet various
needs with its expertise through direct sales.
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Manufacturer warranty

We warrant the specification, unless otherwise specified, at max. rated output after warm up, and scope of application is between 10% and 100% of max. rated output. We warrant that products contained in this catalog (hereinafter, the "Products") are free from defects in material and workmanship under normal use for a period of one (1) year from the date of shipment thereof. However, the warranty period for X-ray detectors and X-ray source shall be either one (1) year from the date of shipment or 1,000 hours, whichever shorter. The above warranty shall not apply to any Product which, at our sole judgment, has been: i) Repaired or altered by persons unauthorized by us; or ii) Connected, installed, adjusted or used otherwise than in accordance with the instructions furnished by us (including being used in an inappropriate installation environment, such as in corrosive gas, high temperature and humidity). We are not liable for any loss, damage or failure of the Products after the shipment thereof caused by external factors such as disasters. We will not inspect, adjust or repair any of our power supply products in the field or at any customer site. If you suspect that there has been a power supply failure in the field, please inspect your whole unit by yourself in an effort to determine that the problem is, in fact, arising out of our power supply products. If it is found that the problem is arising out of such power supply product after inspection, please contact your local sales office for additional troubleshooting. A "Return Merchandise Authorization" is required in case the power supply must be sent back to the factory in Japan for inspection and repair. We, at our sole discretion repair or replace such defective products at no cost to the purchaser. We assume no liability to the purchaser or any third party for special, incidental, consequential, or other damages resulting from a breach of the foregoing warranty. This warranty excludes any and all other warranties not set forth herein, express or implied, including without limitation the implied warranties of merchantability or fitness for a particular purpose. The Products are not designed and produced for such applications as requiring extremely high reliability and safety, or involving human lives (such as nuclear power, aerospace, social infrastructure facility, medical equipment, etc.). The use under such environment is not covered by this warranty and may require additional design and manufacturing processes. No modification or supplement of this warranty shall be binding unless in writing and signed by a duly authorized officer of Matsusada. Matsusada reserves the right to make any changes in the contents of catalogs or specifications at any time without advance notice. Due to compelling reason such as unavailability of components used, products might be unavailable or unable to repair. The products specified in catalogs or specifications are designed for use by the person who has enough expertise or under the control of such person, and not for general consumers. Schematics of products shall not be submitted to users. Test result or test data for the products shall be available upon request with charge.

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