

NEW

Compact/High Power Programmable DC Power Supply RKseries

400W: 6 V to 650 V/0.6 A to 65 A

800W: 6 V to 800 V/1 A to 1300 A

1200W: 6 V to 650 V/1.8 A to 180 A

CE

(Only for some models with option)

- Available for 400 W output while being small size of only 2.8-inch in the width.
- The optional sequence movement is available without a PC.
- Batch control up to 32-unit is possible via optical communication.



**MADE IN
JAPAN**



RK series



**A 2.76-inch(70 mm) wide,
this 400W compact size**

Low noise, multiple functions, and digital communication are highlights of supply which can be used from R&D to a variety of applications. All this convenience in a small DC power supply.

RK series is a small, programmable desktop 400 W, 800 W, 1200 W high output power supply. Our low noise switching method include several features such as a delay trigger, memory function, and a lock to prevent operator mistake. All this enables the user to operate the supply for a wide range of applications. Moreover, the sequence function enables the user to control the supply without a laptop. The digital interface is also standard, with LAN, USB, RS-232C, RS-485, or GPIB control, allowing the operator to use the system in many different production environments.*
(Only for some models with option are applied to CE.)

* Adaptors or options will be needed additionally.

RK series



Compact and high power
400 W, 800 W, 1200 W



Ideal for research and development with **low noise switching method**.



PFC circuit and universal input would not select the place of operation.



Various operations by connecting multiple power supplies, such as master/slave, is possible.



Sink-current/Disable sink-current function contribute to high speed response, and also good for applications which need constant voltage.



Operability and safety are improved with new features of key-lock function and acceleration rotary encoder, which accelerate the output ramp up with the speed of rotating the encoder.

Lineup

★ They are the models which can correspond to CE marking with -LCe option. Please refer to P.10 "Options".

Output Voltage [V]	Output Current [A]	Output Power [W]	MODEL	Ripple [rms]		Dim. [P.9]	Output Voltage [V]	Output Current [A]	Output Power [W]	MODEL	Ripple [rms]		Dim. [P.9]
				[mV]	[mA] ^{*1}						[mV]	[mA] ^{*1}	
0 to 6	0 to 65	390	RK6-65	8	130	A	0 to 80	0 to 5	400	RK80-5	10	8	A
	0 to 130	780	RK6-130	8	260	B		0 to 10	800	RK80-10	15	10	B
	0 to 180	1080	RK6-180	15	360	E		0 to 15	1200	RK80-15	30	20	E
0 to 10	0 to 40	400	RK10-40	10	80	A	0 to 120	0 to 3.3	396	RK120-3.3	15	6	A
	0 to 80	800	RK10-80	10	160	B		0 to 6.6	792	RK120-6.6	20	5	C
	0 to 120	1200	RK10-120	15	240	E		0 to 10	1200	RK120-10	20	8	F
0 to 15	0 to 26	390	RK15-26	10	60	A	0 to 160	0 to 2.5	400	RK160-2.5	20	4	A
	0 to 54	810	RK15-54	10	110	B		0 to 5	800	RK160-5	30	10	C
	0 to 80	1200	RK15-80	15	160	E		0 to 7.5	1200	RK160-7.5	30	20	F
0 to 20	0 to 20	400	RK20-20	8	32	A	0 to 250	0 to 1.6	400	RK250-1.6	25	3	A
	0 to 40	800	RK20-40	8	70	B		0 to 3.2	800	RK250-3.2	38	5	C
	0 to 60	1200	RK20-60	15	96	E		0 to 4.8	1200	RK250-4.8	27	5	F
0 to 30	0 to 13	390	RK30-13	4	10	A	0 to 350 ^{*2}	0 to 1.1	385	RK350-1.1	24	2	A
	0 to 27	810	RK30-27 ★	6	25	B		0 to 1.5	525	RK350-1.5 ^{*3}	35	5	C
	0 to 40	1200	RK30-40	15	30	E		0 to 2.2	770	RK350-2.2	40	5	C
0 to 11	396	RK36-11	4	10	A	0 to 3.2		1120	RK350-3.2	48	5	F	
0 to 36	0 to 22	792	RK36-22 ★	6	20	B	0 to 400 ^{*2}	0 to 2	800	RK400-2	40	5	C
	0 to 33	1188	RK36-33	15	30	E	0 to 500 ^{*2}	0 to 0.8	400	RK500-0.8	20	3	A
	0 to 9	405	RK45-9	4	8	A		0 to 0.9	450	RK500-0.9 ^{*3}	20	5	C
0 to 18	810	RK45-18 ★	8	15	B	0 to 1.6		800	RK500-1.6	30	5	C	
0 to 45	0 to 27	1215	RK45-27	18	20	E	0 to 2.4	1200	RK500-2.4	40	10	F	
	0 to 6.6	396	RK60-6.6	10	15	A	0 to 650 ^{*2}	0 to 0.6	390	RK650-0.6	22	5	A
	0 to 13.5	810	RK60-13.5★	12	25	B		0 to 0.8	520	RK650-0.8 ^{*3}	30	4	C
0 to 20	1200	RK60-20	18	20	E	0 to 1.2		780	RK650-1.2	80	4	C	
0 to 1.8	1170	RK650-1.8	100	5	F								
0 to 800 ^{*2}	0 to 1	800	RK800-1 ^{*4}	100	5	D							

*1: At 10% to 100% of rated output voltage and rated output current.

*2: Models 350 V or more have no output monitor terminals on front panel. Contact us when you need them.

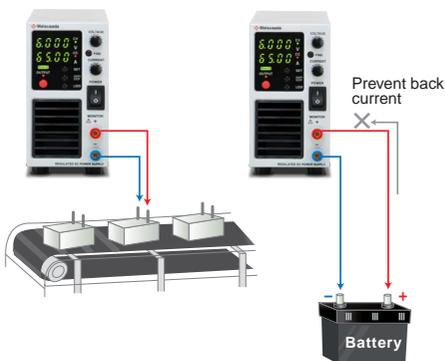
*3: Dimensions are different from other 400W models. P.9

*4: Dimensions are different from other 800W models. P.9

Features

SINK CURRENT/SINK CURRENT PREVENTION FUNCTION

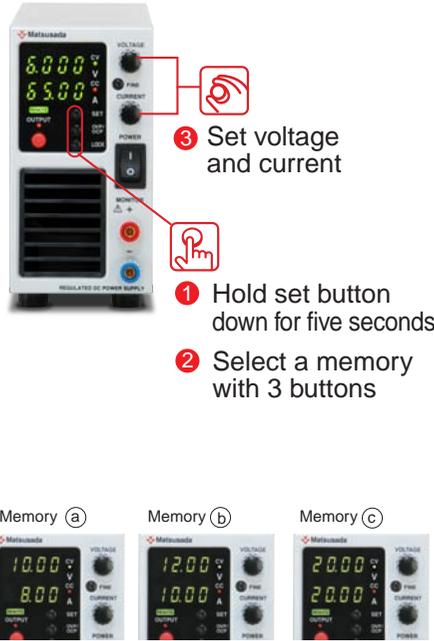
RK series features **function to sink current**, and enable to decrease the voltage quickly when turning off the output or when control the voltage down, which increase the safety of operation. In case that continuous aging test in short interval, quick voltage fall time increase the efficiency of process. 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.

MULTI SETTING FUNCTION

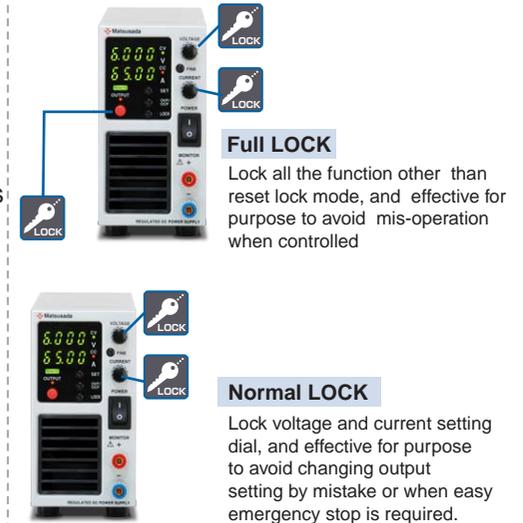
Function to **memorize three different voltage and current settings in addition to standard preset function**. No need to adjust the output when different setting, and convenient function for production inspection process or testing which require frequent data taking.



TWO MODE LOCK FUNCTION

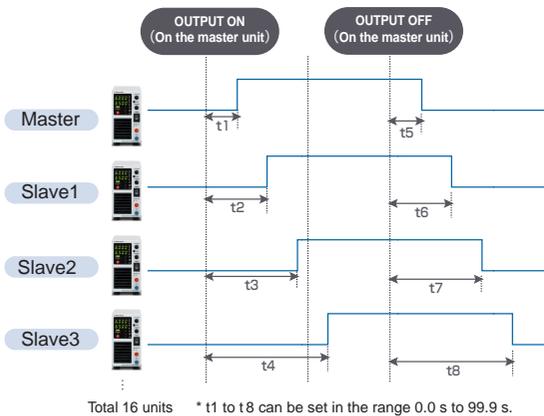
Function to select two different lock functions for two different purpose. "Full Lock" **locks all the functions** on front panel, and "Normal Lock" **locks all the functions except for ON/OFF**. "Full Lock" mode shall be good in case mis-operation have to be completely avoided, and "Normal Lock" mode 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".

(Each modes, emergency stop is possible with Power Switch.)



DELAY TRIGGER FUNCTION

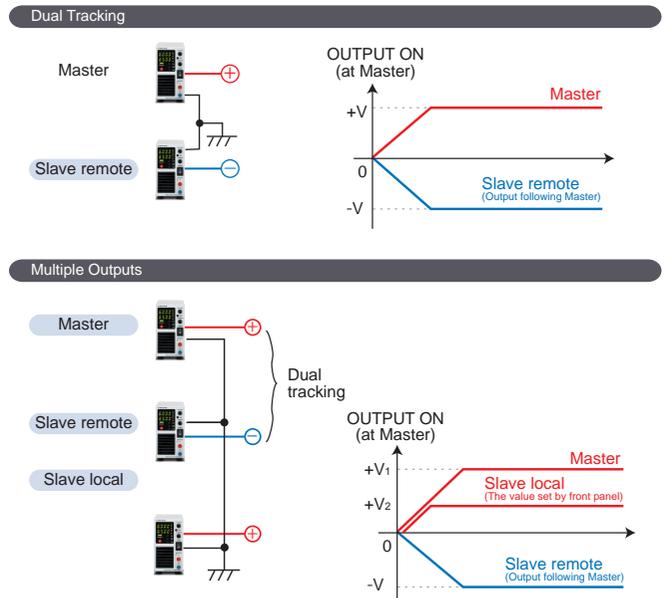
This function enables power supply to set to delay the output trigger timing. Either in case of single unit of RK series power supply or in case of multiple power supplies in Master/Slave connection *1, it is possible to use this feature among multiple DC power supplies *2 having individually different output voltage/current setting *3



*1: Can be connected up to 16 pcs.
 *2: R4K-36 series, R4K-80 series, RK-80 series, RKT series, TB series and REK series. Detail catalog for each model is available. Please contact nearby sales office.
 *3: Only for slave-local. In case of slave remote control, exact same model of power supply need to be used. Also, in case of slave-local, each output voltage and current can be set individually. In case of slave-remote, output voltage and current can be set with one-control function which each slave unit follows the master unit setting.

DUAL TRACKING, MULTIPLE OUTPUTS

Dual tracking control, which enables both positive and negative outputs simultaneously in master slave operation, is possible. Multi outputs and various versatile operations are also possible by combining above dual tracking control and slave local mode. Positive and negative output (+V, -V) of dual tracking control and set output voltage of slave local mode can be outputs simultaneously by turning on the master unit. (Please refer to P.11 for Operation example.)



New useful functions

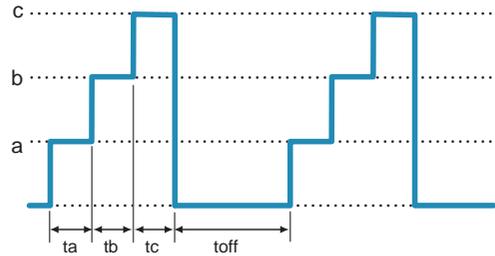
In addition to standard functions, these features offer many different usage and use in wide variety of applications.

■ Pulse/Ramp sequence, Master follow function (-LDe option)

above output control, between A to D is available.

A. Pulse Sequence

Using the stored voltage and current setting in each memory of a, b and c and multi set function, sequence operation is possible. The setting of repetition to say nothing of a continuous driving can be set. Various different operations, such as repetition of memory a and b or b ,c and off, are possible by setting the set time of memory a, b, c, and/or off to be 0.0. Thus, it makes this model suitable for evaluation test or other applications.

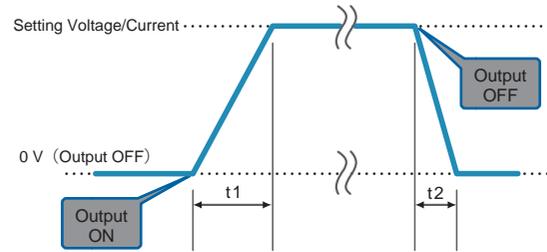


t_a, t_b, t_c and t_{off} can be set with range 1.0 s to 99.9 h respectively.

B. Ramp

This function controls the ramping up and down the voltage and current to the set value (or from set voltage and current value to 0V/0A). It is convenient to increase (decrease) the voltage and current value slowly.

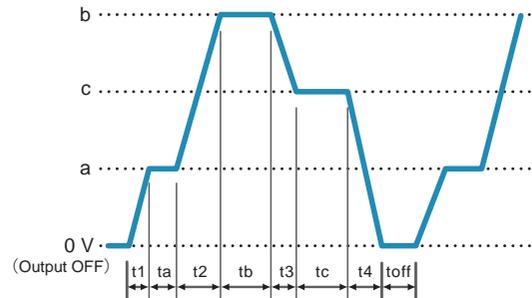
*The Ramp sequence can be selected from [both set voltage and current], [only set voltage], and [only set current].



t_1 and t_2 can be set with range 0 to 999 s respectively.

C. Combination of Pulse and Ramp Sequence

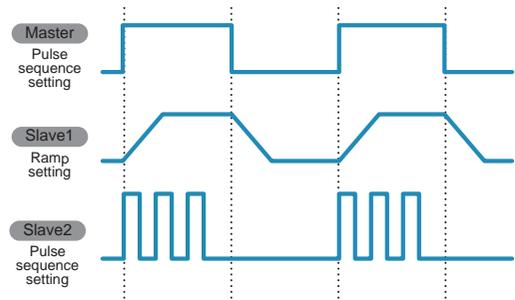
Features of pulse sequence operation and ramp sequence operation can be combined for more convenient operation. In addition, by adding multi set function, sequence operation can be operated using stored voltage and current settings in each memory. The setting of repetition to say nothing of a continuous driving can be set. For example it is possible to slowly ramp up and down the voltage and current to the three different settings, and so, it is useful on various scenes.



t_1, t_2, t_3 and t_4 can be set with range 0 to 999 s respectively.
 t_a, t_b, t_c and t_{off} can be set with range 0.0 s, 1.0 s to 99.9 h respectively.

D. Master follow

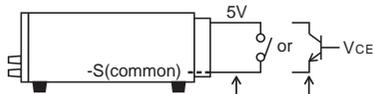
When the pulse sequence operation and the ramp work master-slave, the output signal to the slave unit is transmitted. The slave unit can be output in an output status different from the master unit.



Note: The operation accuracy of the timer when sequencing is 0.5%. Be careful when you use it by the long-term running operation.

Standard functions

Remote switch ON/OFF



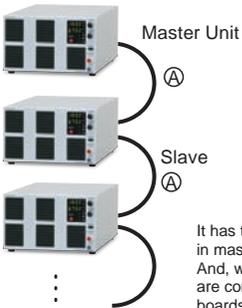
Output	Relay	Open collector
ON	SHORT	$V_{CE} \leq 0.4 \text{ V}$
OFF	OPEN	$V_{CE} \geq 2 \text{ V}$

Sink Current 1 mA
Logic of output can be reversed.

Master/Slave Control

Master unit can control multiple units connected as slave. Please refer to P.4 "Delayed Trigger Function", "Dual Tracking and Multi-Output", P.5 "D. Master Follow".

* This is not a function for parallelly connected power supplies to give out average output current.



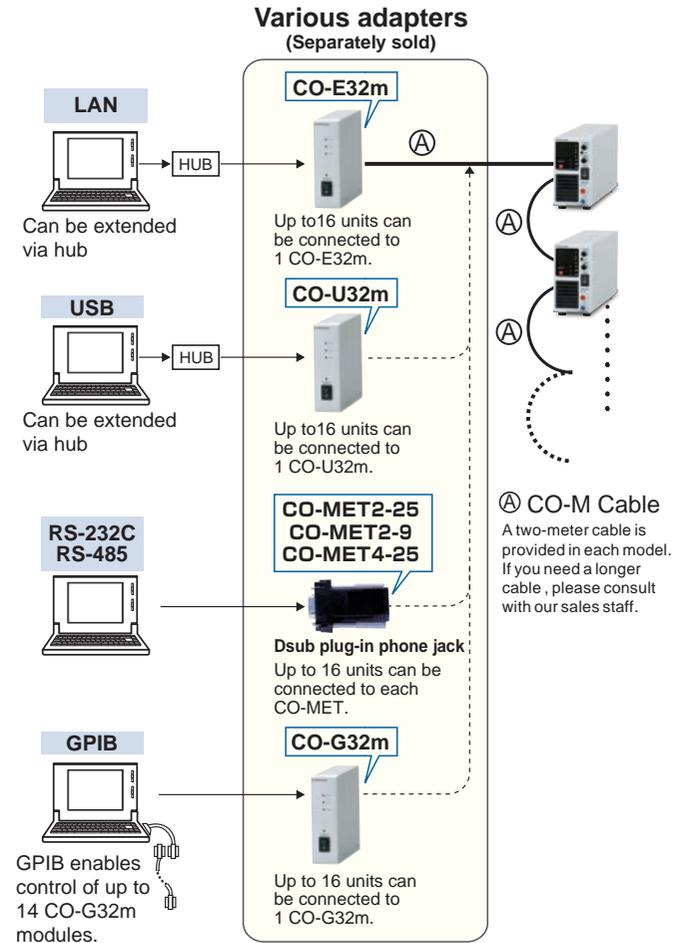
Ⓐ CO-M cable
A two-meter cable is provided in each model. If you need a longer cable, please consult with our sales staff.

It has to hook with each same model in the same series in master-slave. And, when the models equipped with optional I/F board are controlled in Master/Slave connection, standard I/F boards are used. Optional I/F boards are not used.

Up to 16 units

Digital interface

Able to one control master-slave operation in addition to digital control by USB/LAN/RS-232C/RS-485/GPIB

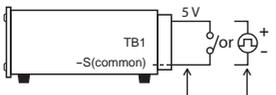


Ⓐ CO-M Cable
A two-meter cable is provided in each model. If you need a longer cable, please consult with our sales staff.

-L Gob option will be needed if it will be used under noisy condition. Please see P.10 for detail.

Remote Control

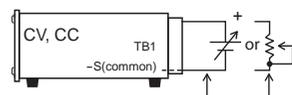
Remote/Local change



Mode	External relay	TTL
Remote	Short	Low
Local	Open	High

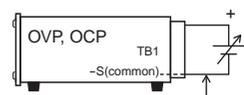
Each mode of voltage, current, OVP, OCP can be switched by relay or TTL signal.

Output control



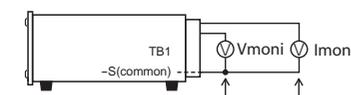
Vout · Iout	Control voltage	R *
0 to MAX	0 to approx. 10 Vdc input imp. 500 kΩ	0 to approx. 10 kΩ

★ Possible to change 10 kΩ to 0 Ω for fail safe



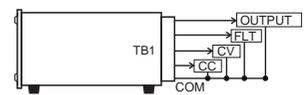
Vout · Iout	Control voltage
Max x5 to 110%	0 to approx. 10 Vdc input imp. 20 kΩ

Output Monitor



Output	0 to approx. 10 Vdc Output imp. 1 kΩ	0 to approx. 10 Vdc Output imp. 1 kΩ
0 to MAX		

Status Output



OUTPUT ON when OUTPUT
FLT ON when fault *
CV CC ON when each mode

* On when OVP, OCP, OTP, ACF, reverse connection of sensing or interlock (LD) status.

Common is floating in open collector output of common. Withstand voltage 30 Vdc, sink current 5 mA or less.

Please have the remote connector (TB1) isolated in order to prevent the damages to power supply in case it is connected to an electrical load which gives out high energy pulsive output.

Specifications

Input Voltage	85 to 264 VAC 50 Hz / 60 Hz Single Phase (Rated input voltage range is between 100 V to 240 VAC (50 Hz / 60 HZ) while applying CE marking.)
Input Current (at 115VAC)	400W Models : 5.2 A max 800W Models : 11 A max 1200W Models : 16 A max Power factor at max. output : 0.99 typ.
Output control	Local: Constant voltage : rotary encoder on front panel Constant current : rotary encoder on front panel Remote: Constant voltage : external control voltage 0Vdc to 10 Vdc or external variable resistor 0Ω to approx. 10 kΩ Constant current : external control voltage 0Vdc to 10 Vdc or external variable resistor 0Ω to approx. 10 kΩ
Voltage regulation*	Line: 0.05% of maximum output (for AC±10% input change) Load: 0.1% of maximum output (for 10% to 100% load change)
Current regulation*	Line: 0.05% of maximum output (for AC±10% input change) Load: 0.1% of maximum output (for 10% to 100% load change)
Stability*	0.05%/8 H of maximum output voltage
Temperature coefficient*	0.01%/°C of maximum output voltage 0.02%/°C of maximum output current
Output display*	Output voltage: 4-digit digital meter (±0.5%rdg±5 digit at 23°C±5°C) Output current: 4-digit digital meter (±0.5%rdg±5 digit at 23°C±5°C)
Monitor output	Output voltage monitor: 10 V/maximum output voltage Output current monitor: 10 V/maximum output current
Protection	Over voltage protection (OVP): Output is cut off at a set value. Over current protection(OCP): Output is cut off at a set value. Setting range: approx.5% to 110% of rated output Local setting: Rotary encoder on front panel Reset: Manual recovery by OUTPUT switch or remote switch. Over temperature protection (OTP) Output is cut off when internal part is heated abnormally. Reset (after the temperature has gone down to normal): Manual recovery by OUTPUT switch or remote switch. Input brownout(ACF) - Blackout protection Output is cut off when input voltage decreased. Reset (when normal voltage value or recovery from blackout) : Manual recovery by OUTPUT switch or remote switch for blackout protection (re-output protection function). Automatic recovery when blackout protection is canceled. Sense reverse connection Interlock (LD) Fail-safe system

Other functions	Keylock to avoid misoperation. Digital master slave operation. (Up to 250 V for series operation.) (Max 32 units for parallel or series connection.) (Combination of parallel and series is not possible.) Setting memory function Quiet forced air cooling Remote sensing Remote switch ON / OFF (TTL or external relay) Status signal output (CV, CC, FLT, OUTPUT) Delay trigger : Individual setting of ON delay and OFF delay (0.0 to 99.9 sec) Multi setting function: Voltage and current memory "a" "b" and "c" setting in addition to standard voltage and current preset
Transient response time	Recovery time 1ms (the time before returning to less than 10% of the setting voltage for 70% to 100% load change at the time of CV operating)
Operation temperature	0°C to +50°C (for 800 W and 1200 W models, when the input voltage is below 100 VAC, the output power is to be derated at 10%.)
Storage temperature	-20°C to +70°C
Storage humidity	20% to 8% RH (no condensation)
Isolation Voltage	±250 VDC (Positive or Negative grounding)
Dielectric voltage	Between input power supply and output terminal, and between input terminal and chassis is AC1000 V : 1 minute
Accessories	-Instruction manual x 1 -Output terminal cover x 1 only 800W, 1200W Models (up to 80 V) -Remote connector cover x 1 -CO-M cable 2 m x 1 -Input AC cable 2.5 m x 1 (P.9)

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

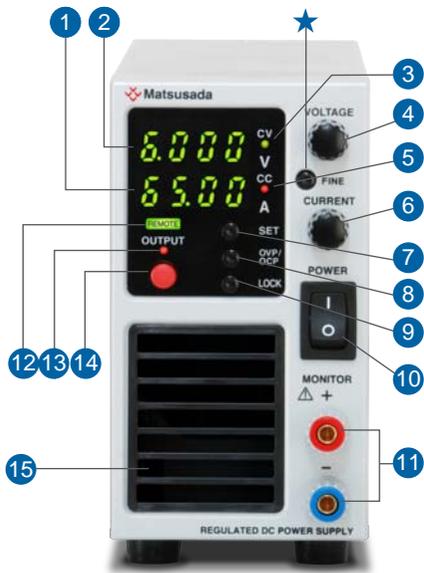
Various Digital Control Functions

Control function	Output ON/OFF setting	
	Status output (fault/output/OVP/OCP/OTP/ACF/reversible sense connection/interlock)	
	Maximum 16 units (-LGob option models: 32 units) digital control	
	One control function for multiple units	
Write function	Output voltage setting/Output current setting	Percent mode (100.00%), *voltage current value mode(maximum rated voltage and current value)
	OVP setting/OCP setting	Percent mode (100.0%), voltage current value mode(maximum over voltage / over current protection value)
Reading function	Output voltage reading/Output current reading	Percent mode (100.00%), *voltage current value mode(maximum rated voltage and current value)
	Output voltage setting/Output current setting	Percent mode (100.00%), *voltage current value mode(maximum rated voltage and current value)
	OVP setting/OCP setting	Percent mode (100.0%), voltage current value mode(maximum over voltage / over current protection value)

* Minimum value of each model is same as minimum display of front panel meter.

Functions

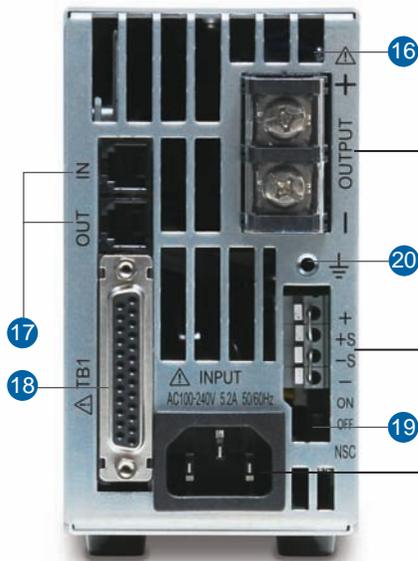
Front Panel



- 1 Output current, OCP setting display
- 2 Output voltage, OVP setting display
- 3 Constant voltage mode
- 4 Output voltage, OVP setting dial
- 5 Constant current mode
- 6 Output current, OCP setting dial
- 7 Output preset switch
- 8 OVP/OCF setting switch
- 9 Keylock setting switch
- 10 Power ON/OFF switch
(This has priority over all operations for safety reason.)
- 11 Monitor terminal (20 Amax, M6)
(Only for lower models than 250V.)
- 12 Remote programming display
(Light on when voltage/current remote control.)
- 13 OUTPUT (Light on when output is ON.)
- 14 Output ON/OFF switch (To be used to turn output on/off when local mode as well resetting protection functions.)
- 15 Air intake
- 16 Exhaust hole
- 17 Digital interface (Master Slave connect on)
- 18 Connector for remote control (TB1)
- 19 Not Sink Current switch
- 20 Earth terminal

★ FINE switch only 400W models except RK350-1.5, RK500-0.9 and RK650-0.8
Switching setting digit when setting output voltage or current.

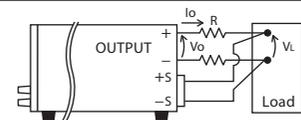
Rear Panel



Output Terminal

·Terminal board for 400W models.
·Busbars for 800W, 1200W models.
* Output terminal for high voltage models (≥ 120 V) of RK800W and RK1200W (except RK800-1) and the model corresponding to CE marking.

Remote sensing



Prevents voltage drop down ($V_o - V_L$) due to resistance (R) or deterioration of stability by contact resistance (Max compensation 0.5 V)

Input Terminal

·AC Inlet for 400W,800W models.
·Terminal board for 1200W models.

AC Input Cables

When you use RK series in Europe, please contact our sales office.

CABLE TYPE 1 (RK400W standard)	CABLE TYPE 8 (RK800W standard)	CABLE TYPE 3 (RK400W, RK800W)	CABLE TYPE 4 (RK400W, RK800W)	CABLE TYPE 5 (RK1200W standard)
125 V/10 A	125 V/15 A	250 V/10 A	250 V/10 A	250 V/25 A

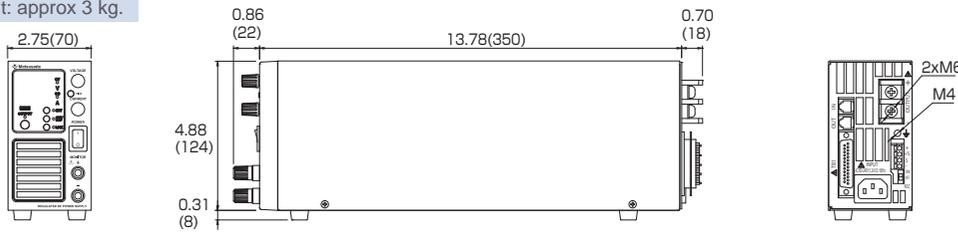
Please use the AC cable suitable for use environment and the area. CABLE TYPE3 and 4 correspond to CE marking.

Dimensions inch (mm)

A

400W models (except RK350-1.5, RK500-0.9 and RK650-0.8) (More than 350V models don't have output monitor terminal on the front panel.)

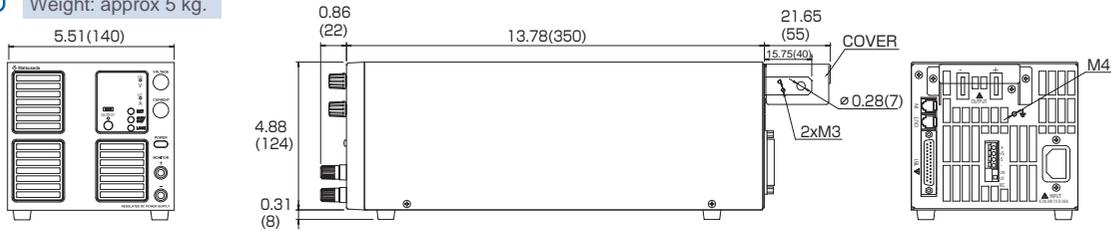
Weight: approx 3 kg.



B

800W models [up to 80V models] (the appearance and dimension of -LCe optional model are **C**.)

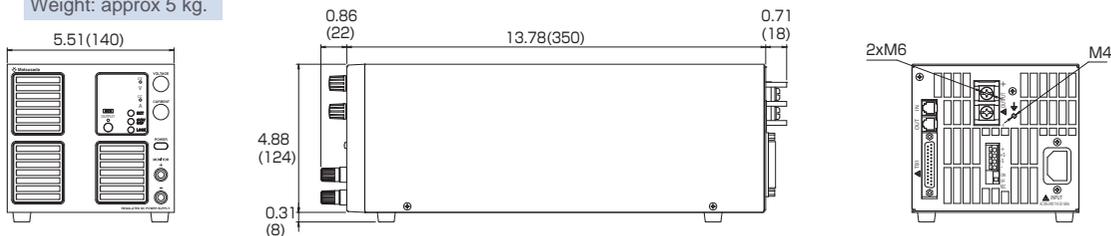
Weight: approx 5 kg.



C

400W models (only RK350-1.5, RK500-0.9 and RK650-0.8) (They do not have output monitor terminal on the front panel.)
800W models [more than 120V models] (More than 350V models don't have output monitor terminal on the front panel.)
800W models [-LCe optional models]

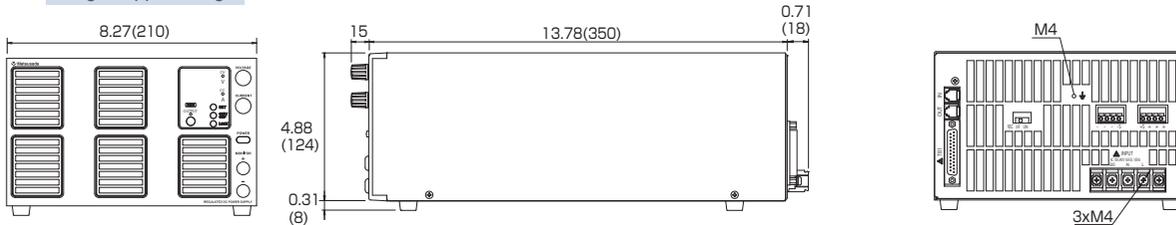
Weight: approx 5 kg.



D

800W models (only RK800-1)

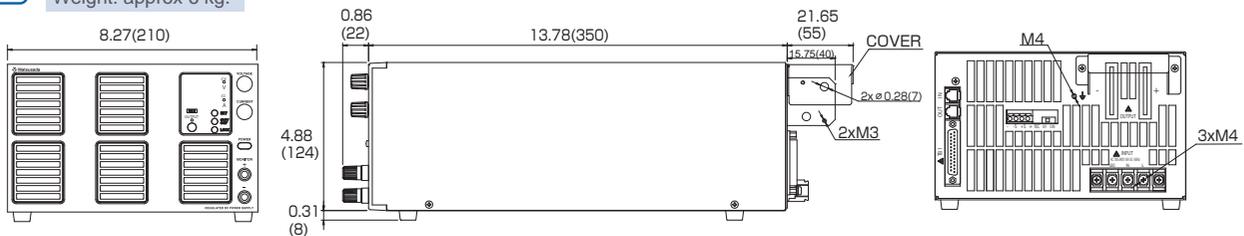
Weight: approx 6 kg.



E

1200W models [up to 80V models]

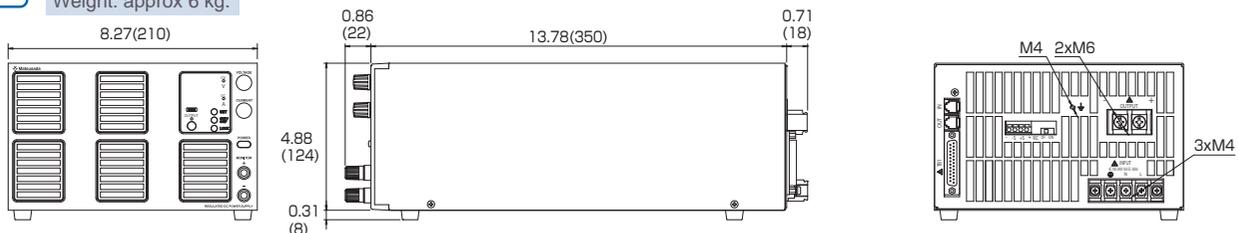
Weight: approx 6 kg.



F

1200W models [more than 120V models] (More than 350V models don't have output monitor terminal on the front panel.)

Weight: approx 6 kg.



Options

NEW

-LCK: CC-Link Interface Board^{*1}

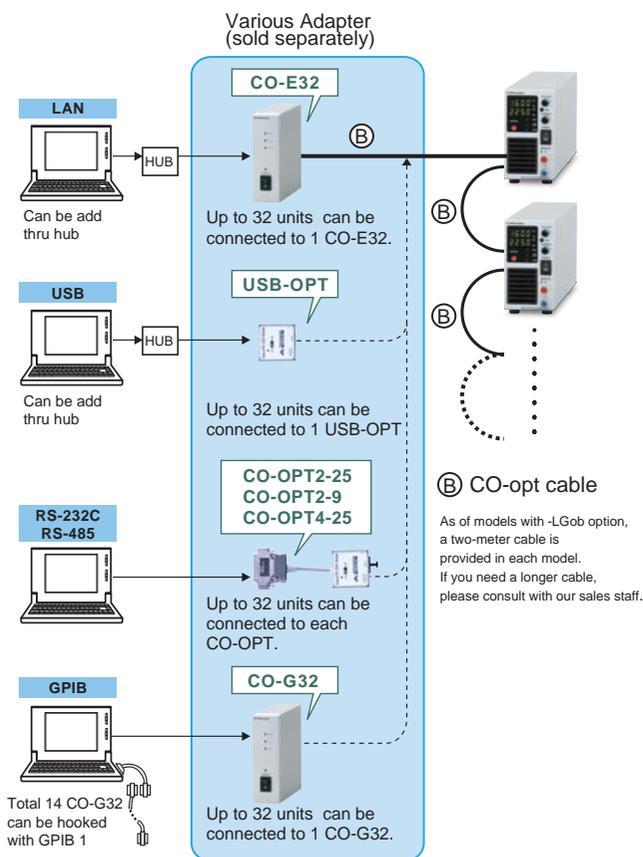
CC-Link master unit such as PLC can control power supplies with CC-Link compatible with CC-Link ver1.10, possible to operate as CC-Link device station. One unit occupies 2 stations, maximum 32 units can be controllable. Please refer to CC-Link association web for CC-Link detail.

Multiple units can be simultaneously controllable by direct, Hub, or daisy chain connection.

-LGob: Optical Interface Board^{*2 *3}

-LGob	Optical Interface Board + 2 meters long optical cable
-LGob (Fc5)	Optical Interface Board + 5 meters long optical cable
-LGob (Fc10)	Optical Interface Board + 10 meters long optical cable
-LGob (Fc20)	Optical Interface Board + 20 meters long optical cable
-LGob (Fc40)	Optical Interface Board + 40 meters long optical cable

It is isolated by optical communication. It makes it possible to prevent malfunction caused by transient phenomenon such as surge, lightning, induction, and external noise due to perfectly isolated by optical fiber. Total 32 units can be hooked with 1 adapter.



- ★ In case power supply will be use following condition, make sure this options selected.
 - Noisy environment such as factories. (ex. usage of motor and coil around load or power supply)
 - Usage on high voltage floating (more than 250 V)
 - In case the distance between power supply and controller (PC or PLC) is longer than 2-meter long.

- ★ If you use plural RK in optical communication, please use them according to either way below.
 - Connecting all RK which have optical I/F board serially.
 - Connecting all RK serially; the first RK is optical I/F board type, and all RK after the 2nd are standard I/F board type.

-LDe: Pulse/Ramp sequence, Master follow function

Please see page 5.

-L(SCPI): SCPI command

Enable control via SCPI command.

-LCE: Corresponding to CE marking^{*1}

Object : Models with ★ mark on P.3 "Lineup".

-LUs1: USB Interface Board^{*2 *3}

Enable digital control via USB

When controlling several RK power supplies via USB, a USB hub will be required between the PC and RK power supplies.

Corresponding OS : Microsoft Windows XP / Vista / 7 / 8 / 8.1 / 10
(All can correspond to both the 32-bit version and the 64-bit version.)
(Microsoft and Windows are registered trademarks of Microsoft Corporation.)

-LEt: LAN Interface Board^{*1 *2 *3}

Enable digital control via Ethernet

Hub shall be required between RK and personal computer when control multiple RK via LAN.

If this option is taken, CE certification becomes void.

-L(Mc0.5), -L(Mc0.15) Communication cable extension

The length of CO-M cable will be 0.5-meter long 0.15-meter long. (You can choose only either.)

-LZ: The handle for carrying^{*1}

It can attach with all the models. (Height rises by 8 mm.)

If this option is taken, CE certification becomes void.

-LIc: Output current accumulation function^{*4}

Accumulate the output current and display its value (up to 100 Ah). The accumulated value is stored even when output is off. Because, the accumulated value which stop the output can be set preliminarily, it is very suitable to the application such as controlling plating solution.

*1: Please ask to our sales office about the update status of the CE marking acquisition. -LCE option can not be selected with -LCK, -LEt or -LZ option.

*2: These options cannot be selected together. Only one of each can be selected.

*3: Please see the CO series catalog for detail of digital interface function.

*4: Please consider the location of usage. Environment humid and corrosive gas occurs typified by plating line can cause failure.

How to order

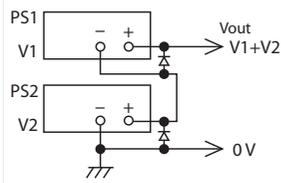
When ordering, add Option No. to Model No.

<Example> RK30-27-LCeDeGob(Fc5)(SCPI), RK650-1.8-LDe(Mc0.5)(SCPI)Z

Operation example

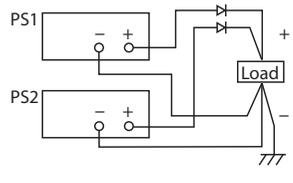
With RK series of the same model, output voltage and current can be increased by connecting power supplies in series or parallel. Control must be set on each individual unit. Do not connect together COMMON of 2 units or more as the COMMON of connector for external input and output control (TB1) is connected with output.

Series operation



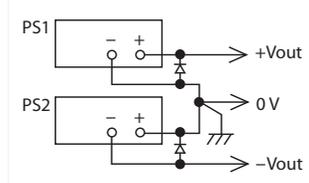
Sum of output is up to 250 V.
It is impossible to series operation for one exceeds 250 V in output volt.
Output current is of the min. one of power supply among them.

Parallel operation



Make all setting voltage samevalue. Output current is sum of each current. In addition, make OVP level for all power supplies maximum to prevent damage.

Split operation



Possible to output on positive(+) or negative (-).



TECHNICAL NOTE

Connection · Operation

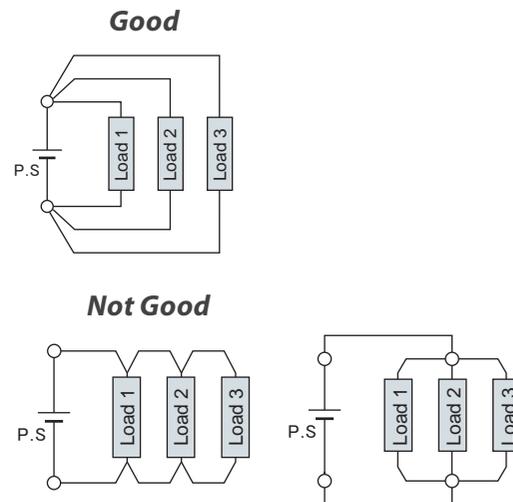
■ Connection of load

- 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 (0.5 V / 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
4	21	106
2	33	170
1	42	209
1/0	53	270
2/0	67	330
3/0	85	350

Use several cables or copper bar for model over 350 A.

■ 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.

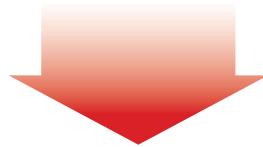
We recommend that you contact our sales staff with your requirement before choosing a product so that you can get the best product and the safety as high-voltage equipment is assured.

Contact us for various kinds of Power supplies

As a pioneer of power supply manufacturing,
Matsusada Precision offers solutions to meet various
needs with its expertise through direct sales.
Please visit our website and contact us for more information.

Contact Us www.matsusada.com

Contact with phone or fax



USA	Other country or region
<p>North Carolina office</p> <p>TEL(704)496-2644</p> <p>FAX(704)496-2643</p>	<p>International office in Japan</p> <p>TEL+81-6-6150-5088</p> <p>FAX+81-6-6150-5089</p>

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.

Make sure you read the specification in the latest catalog before you order. Contact nearby sales office for the latest catalog.

PLEASE SEE THE LINK BELOW FOR THE COMPLETE WARRANTY TERMS

https://www.matsusada.com/support/manufacturer_warranty.html

Copyright © 2019 Matsusada Precision Inc. All rights reserved.