

NEW

Compact & High Resolution Stabilized DC Power Supplies

Realized Resolution of 1mV and 0.1mA

R4G
series

6V to 650V
0.1A to 10A

Control via
CC-Link and
EtherCAT is
available.



R4G series

Realized Ultra low Noise with Series Regulator System

Ultra-compact Programmable DC Power Supplies

R4G18-10
R4G36-5



R4G6-2
R4G8-5
R4G18-2
R4G36-1



R4G18-3
R4G18-5
R4G36-3
R4G60-1.2
R4G80-1



R4G120-0.3
R4G120-0.6
R4G160-0.45
R4G250-0.3
R4G360-0.2
R4G650-0.1

R4G series are series regulator system high accuracy and ultralow noise DC power supplies so that enabled setting and reading out more fine output with a 4 digits indicator and a high resolution D/A and A/D convertor adapted newly. Not only Overvoltage protection but also Overcurrent protection is included as standard equipment, and moreover digital communication function is available. They are applicable to wide range from experiment to automation line.

Voltage and / or Current displayed 4 digits indicator

Voltage or Current is indicated with 4 digits despite of its compact size. It has been possible to control output in more detailed unit as [0.1mA] and [1mV] than ever.

Ultralow Ripple and High Speed Response

High Speed Response with ultralow ripple and low noise by the series regulator system. It is best fit to application that fundamental performance is important as DC power supplies.

Ease of Formation of Automation Line or Measuring System

It is able to configure easily automation line or measuring system by utilizing options for analogue remote control, various status output, digital communication.

Standard Equipment of Various Function

Analogue Remote Control and Multi-set in addition to Overvoltage Protection, Overcurrent Protection and Key Lock are included as standard equipment.

Applicable to Digital Interface also

It is able to built-in digital interface despite of series regulator system. It is not required to buy more expensive communication unit than power supply.

Silent Naturally-cooling System (108W Model and Smaller)

Operation sound is silent as no cooling fan. It is best fit for usage that its operation sound hinders measuring like as test of fan motor. And it is the safety design so as not to expose the heatsink from the case.

Application as these...

- Various Research and Development
- As the Power Supply for System
- For Aging
- School Training Aid

Lineup

Max. Output			Model	Min. Set. Unit *1		Constant Volt. Characteristic			Constant Cur. Characteristic			Power consumption (VA)	Dimensions (page.6)
Voltage (V)	Current (A)	Power (W)		Output Voltage (mV)	Output Current (mA)	Ripple (mVrms)	Input regulation (mV) *2	Load regulation (mV) *3	Ripple (mVrms)	Input regulation (mV) *2	Load regulation (mV) *3		
6	2	12	R4G6-2	1	1	1	1	5	1	2	10	30	A
8	5	40	R4G8-5	1	1	1	1	5	4	4	20	90	A
18	2	36	R4G18-2	10	1	0.5	1	2	1	2	10	90	A
	3	54	R4G18-3	10	1	0.5	1	3	2	2	15	100	B
	5	90	R4G18-5	10	1	0.5	1	5	4	4	20	170	B
	10	180	R4G18-10	10	10	1	2	10	5	5	25	300	C
36	1	36	R4G36-1	10	1	0.5	2	2	1	2	10	90	A
	3	108	R4G36-3	10	1	0.5	2	4	2	2	15	200	B
	5	180	R4G36-5	10	1	1	2	4	5	5	20	300	C
60	1.2	72	R4G60-1.2	10	1	1	4	4	1	2	10	130	B
80	1	80	R4G80-1	10	1	1	4	4	1	2	10	130	B
120	0.3	36	R4G120-0.3	100	0.1	1	7	7	1	2	10	100	B
	0.6	72	R4G120-0.6	100	0.1	1	7	7	1	2	10	160	B
160	0.45	72	R4G160-0.45	100	0.1	3	10	10	1	2	10	160	B
250	0.3	75	R4G250-0.3	100	0.1	3	15	15	1	1	5	170	B
360	0.2	72	R4G360-0.2 *4	100	0.1	5	25	25	1	1	5	160	B
650	0.1	65	R4G650-0.1 *4	100	0.1	10	30	30	1	1	5	140	B

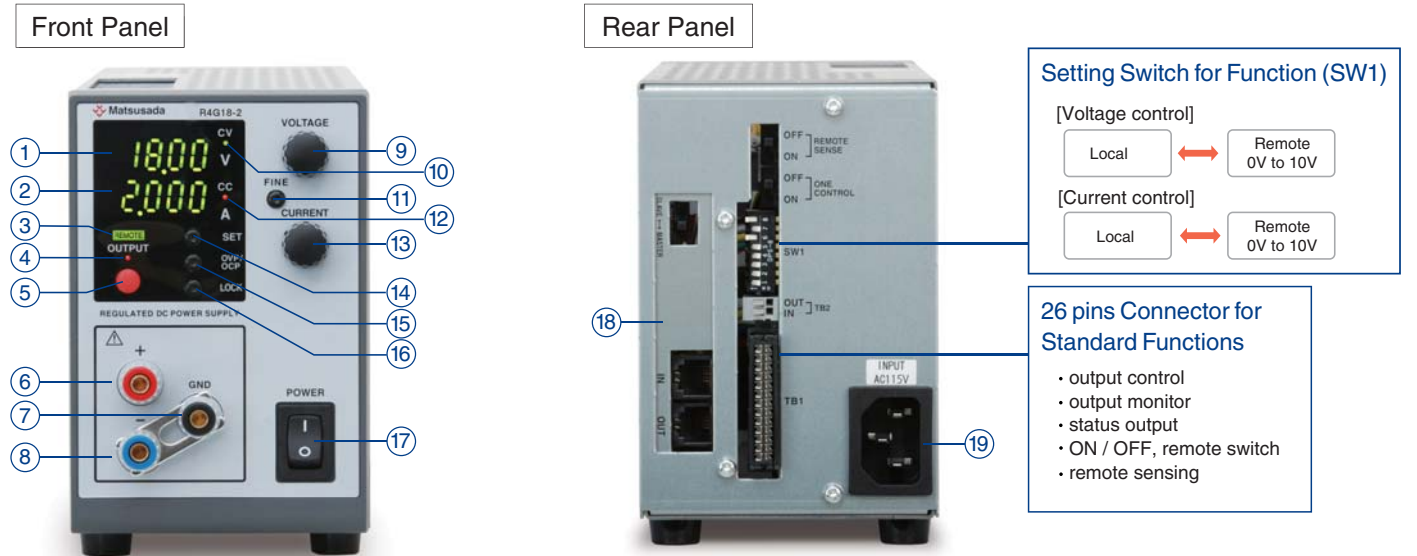
*1 : Values in local control. It is possible to set more fine values for remote control by digital communication. (Refer to page 7 [Digital Control Function])

*2 : For the AC variation $\pm 10\%$

*3 : For the load variation 10% to 100%

*4 : Available in the near future.

Explanation for Functions



- ① Indicate output voltage and OVP setting
- ② Indicate output current and OCP setting
- ③ Display remote programming
Lighten during remote control of voltage or current.
- ④ Display OUTPUT
Lighten during output ON.
- ⑤ ON / OFF Switch, output
This use for output ON / OFF at local and reset of protection functions.
- ⑥ + Output Terminal

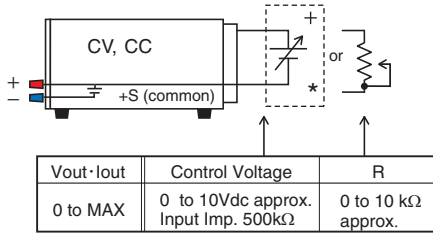
- ⑦ GND Terminal
- ⑧ - Output Terminal
- ⑨ Setting Dial for output voltage / OVP
- ⑩ Display Voltage Mode
- ⑪ FINE Switch
Changeover setting digits at setting output voltage / current.
- ⑫ Display Current Mode

- ⑬ Setting Dial for output current / OCP
- ⑭ Preset Switch, output
- ⑮ Setting Switch, OVP / OCP
- ⑯ Setting Switch, Key Lock
- ⑰ ON / OFF Switch, Power
- ⑱ Interface Board
Picture shows ones at optional -LGmb.
- ⑲ Input Terminal

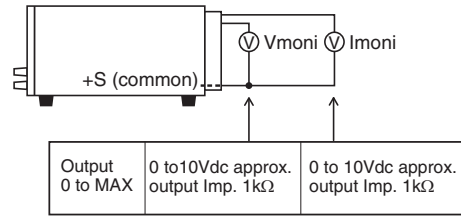
Standard Functions

Remote Control

Output Control

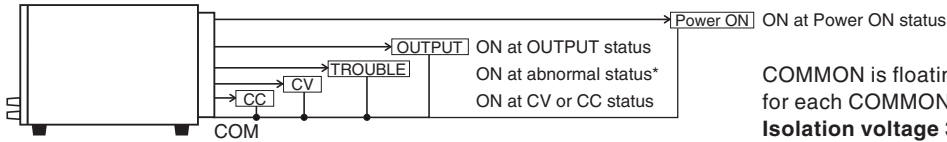


Output Monitor



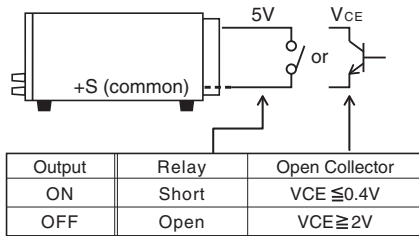
* Output control external signal should not be grounded but floating potential. + output terminal and common become same potential. Power supply can not be controlled or could be damaged if common is grounded via way of customer's equipment. Please be aware that external control voltage signal could accidentally be connected to the ground of other equipment in case, for example, multi-channel, non-isolated PLC is in use.

Output of Status



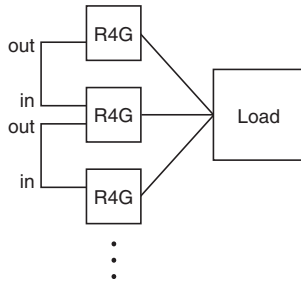
* ON for the status of OVP, OCP, OTP and Interlock (LD).

Remote Switch ON / OFF



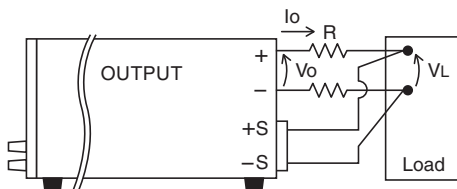
- Sink current 1mA
- Logic of OUTPUT can be made reverse.

Parallel Operation by One Control



One master unit can control several slave units that are parallel connected. It is possible to increase output current by connecting more than 2 units of the same model power supply in parallel.

Remote Sensing



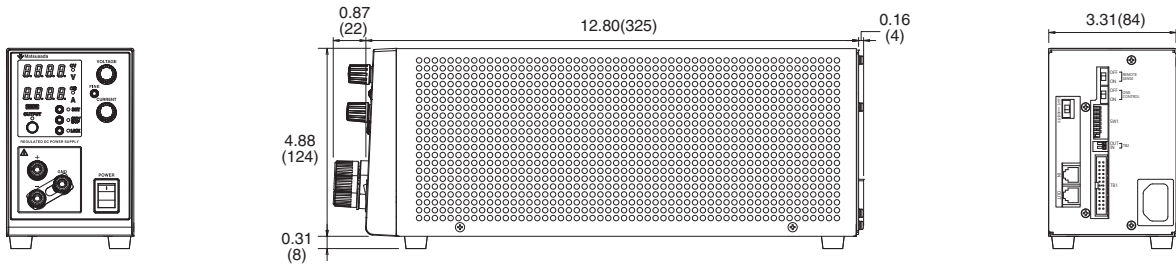
Prevent to degrade stability due to voltage drop (Vo-VL) by resistance (R) in output wiring or contact resistance. (up to 0.5V)
 (Except R4G360-0.2, R4G650-0.1)

Specifications

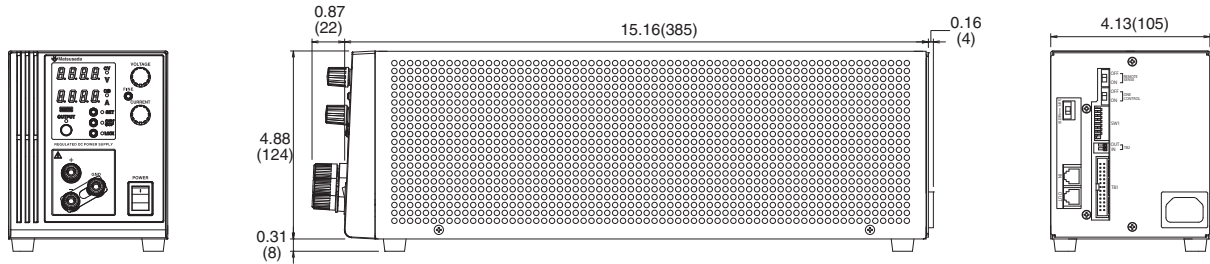
Input Voltage	115Vac±10% 50 / 60Hz, single phase
Output Control	Local : Constant Voltage Rotary Encoder on the Front Panel : Constant Current Rotary Encoder on the Front Panel Remote : Constant Voltage External Control Voltage 0Vdc to 10Vdc or External Variable Resistor 0Ω to approx. 10kΩ : Constant Current External Control Voltage 0Vdc to 10Vdc or External Variable Resistor 0Ω to approx. 10kΩ
Stability	0.05% / 8H of maximum output voltage
Temp.Coefficient	0.01% / °C typ. of maximum output voltage 0.02% / °C typ. of maximum output current
Output Display	Output Voltage : 4-digit digital indicator accuracy ±(0.3%rdg+2 digit) Output Current : 4-digit digital Indicator accuracy ±(0.5%rdg+3 digit)
Monitor Output	Output Voltage Monitor : 10V / max. output voltage Output Current Monitor : 10V / max. output current
Protection	Over Voltage Protection (OVP) : Cut off the output at the set point Over Current Protection (OCP) : Cut off the output at the set point Range of set : approx. 5% to 110% of rating Setting Method : Rotary Encoder on the Front Panel Reset : Manual reset with Output Switch or Remote Switch Power Failure Protection : Return of power supply after power failure recovery is as follow At Power Fail. Protec. (=Re-output Prevent.) : Manual return with OUTPUT switch or remote switch At Power Fail. Protec. (=Re-output Prevent.) canceled : Automatic return Interlock (LD)
Miscellaneous Functions	ON / OFF with Remote Switch (TTL or External Relay), Prevention of Miss Operation by Locked Key Last set Memory, Remote Sensing(up to 250V models), Signal Output for Status (CV, CC, TROUBLE, OUTPUT, Power ON) Delayed Trigger Function : Individual setting for ON Delay / OFF Delay (0.0 ~ 99.9sec) Multi Set Function : Memory "a" to "t" for voltage or current can be set separately with usual preset of voltage or current.
Transient Response Time	Recovery Time 50μs (at constant voltage operation, time returned to within 10% of set voltage for load change of 10% to 100%)
Operation Temperature	0°C to +40°C *
Storage Temperature	-20°C to +70°C
Storage Humidity	20% to 80%RH (no condensation)
Strength Voltage Dielectric	For 1minute at 1000V between the input power supply and the output terminal and between the input power supply and the chassis.
Grounding Withstand Voltage	80V or less models : ±250V-DC (Grounding + and - terminals are possible) 120V to 360V models : ±500V-DC (Grounding + and - terminals are possible) 650V model : ±650V-DC (Grounding + and - terminals are possible)
Accessories	Instruction Manual (1) AC input cable, 3-pin for single phase type (1)

* When installed on a rack, 3.94-inch (100mm) and larger space should be made up and down, but if it is not able, make forced cooling. As we have a rack mounting adapter equipped forced cooling fan, please inquire our sales staff about it. 180W output model is of forced cooling type. Ventilation hole for forced cooling is provided on the rear panel. If installed on a cabinet so that 11.81-inch (300mm) and larger space can not bet kept, make a measure like as forced ventilation.

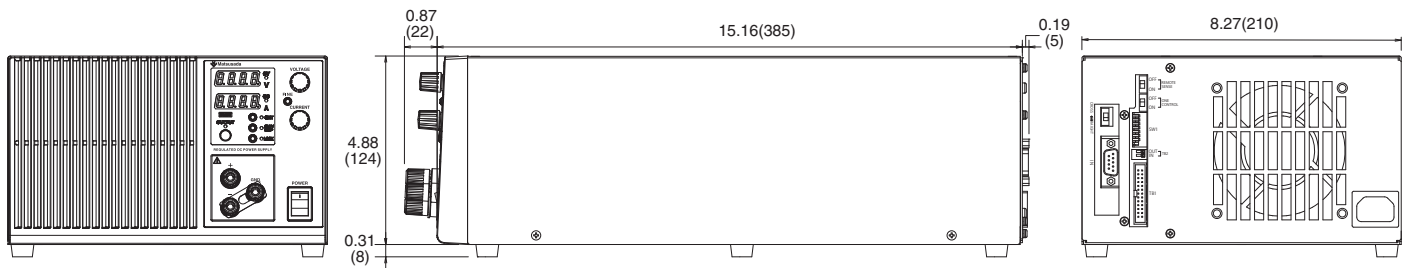
A Weight : 3kg approx.



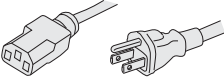
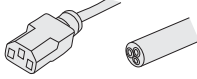
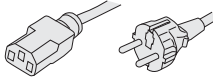
B Weight : 6.5kg approx.



C Weight : 8kg approx.



AC Input Cable

CABLE TYPE 1 (included as standard) 125V / 10A	CABLE TYPE 3 -L(200V), -L(220V), -L(240V) attached as option 250V / 10A	CABLE TYPE 4 (to be sold separately) 250V / 10A
		

Digital Control Function (at selected various optional digital interface)

Control Function	Output ON / OFF setting	
	Display of various Status (Output/Input / OVP / OCP / Door Switch)	
Write Function	Setting Output Voltage / Current	Percent Mode *1, Voltage or Current Mode *2
	Setting OVP / OCP	Percent Mode *1, Voltage or Current Mode *2
	Measured Output Voltage / Current	Percent Mode *1, Voltage or Current Mode *2
Read Function	Setting Output Voltage / Current	Percent Mode *1, Voltage or Current Mode *2
	Setting OVP / OCP	Percent Mode *1, Voltage or Current Mode *2
	Setting OVP / OCP	Percent Mode *1, Voltage or Current Mode *2

*1 : Minimum setting unit for each model is one ten-thousandth (100.00%).

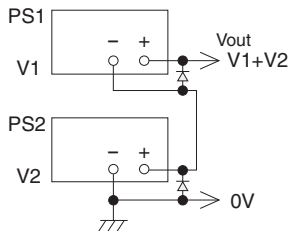
*2 : Minimum setting unit for each model is one count of the indicator.

Examples of Applied Operation

R4G can be enhanced in its output voltage or current by hooking the same type of units in series or parallel.

And one control parallel operation or digital master-slave with optional -LGmb is possible. Do not connect together COMMON of two and more units because the COMMON of the connector for external input and output control (TB1) is connected to +output (in case of optional -LNCn selected, -output).

Series Operation

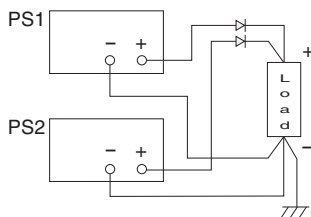


Sum total of output voltage is 250V.

Accordingly, ones of exceeding 250V its output voltage can not operate in series.

Output current is one of the smallest power supply.

Parallel Operation

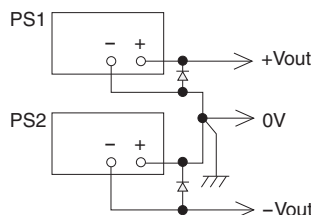


Make all setting voltage the same value.

Output current is sum total of one of each unit.

Then, make OVP level of all power supplies the maximum to prevent damage.

Split Operation

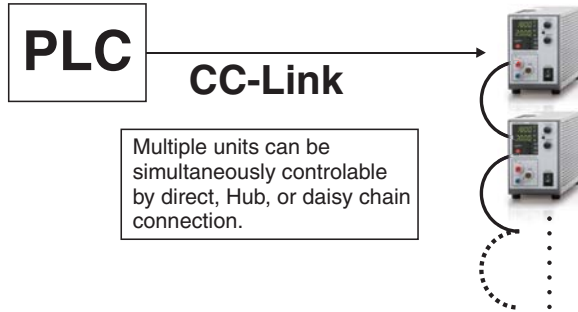


+ and - output are possible.

NEW

-LCK : CC-Link Interface Board *1

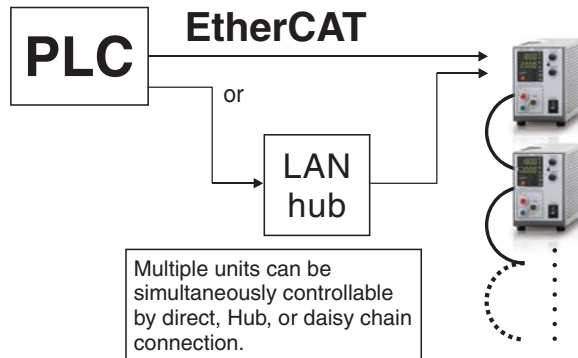
CC-Link master unit such as PLC can control power supplies with CC-Link compatible with CC-Link ver1.10, possible to operate as CC-Link device station. One unit occupies 2 stations, maximum 32 units can be controllable. Please refer to CC-Link association web for CC-Link detail.



NEW

-LEc : EtherCAT Interface Board *1

EtherCAT master unit such as PLC can control power supplies with EtherCAT. EtherCAT can be directly connected, star connection via Hub, or daisy chain connection is also possible.



NEW

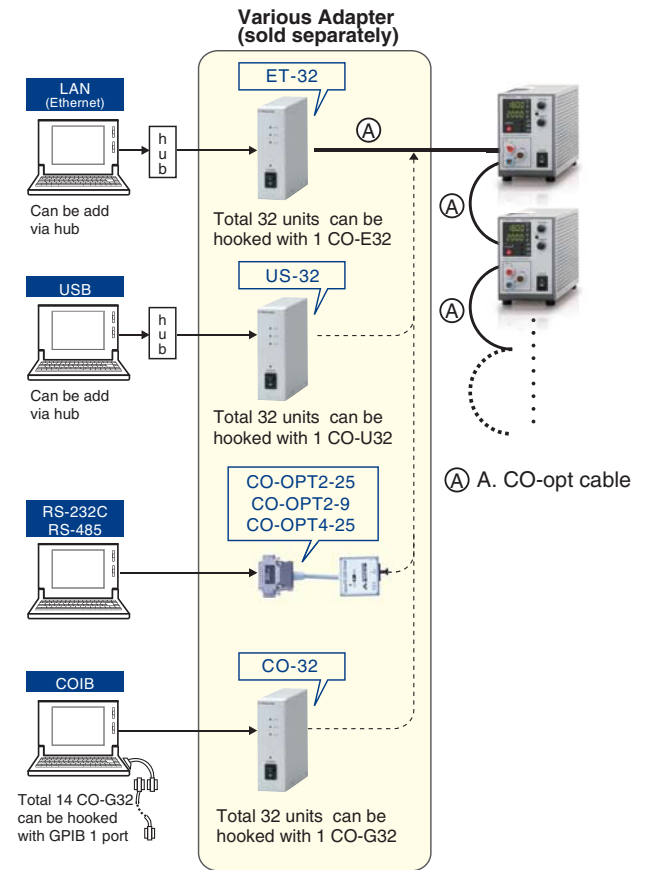
-LMi : Multi digital interface (coming soon) *1

Digital control by LAN(Ethernet), USB(USBTMC) and RS-485 (Multidrop) is available. (These simultaneous use is impossible. And, RS-485 supports only FULL DUPLEX communications.) This option includes -L(SCPI) option, and attaches I/O driver corresponding to SCPI command. It makes it easy for control program development with various programming languages such as LabView, VisualBasic and C# etc.

-LGob : Optical Interface Board *1 *2

- LGob : Optical Interface board + Optical cable 2m
- LGob(Fc5) : Optical Interface board + Optical cable 5m
- LGob(Fc10) : Optical Interface board + Optical cable 10m
- LGob(Fc20) : Optical Interface board + Optical cable 20m
- LGob(Fc40) : Optical Interface board + Optical cable 40m

Insulation control is made with optical communication. As perfect insulation is made by optical fiber it is able to forestall miss operation as transient phenomenon caused by surge, dielectric thunder or foreign noise, etc.



It is highly encouraged to select -LGob option for use under following conditions.

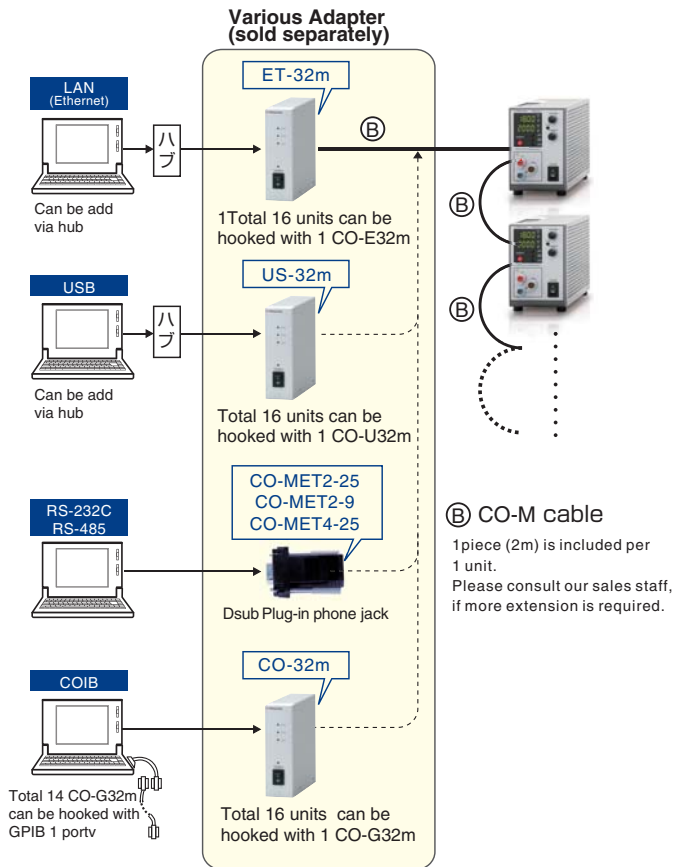
- Environment with much electrical noise. (Ex. Motors or coils are used nearby power supply or load)
- Used in high voltage floating. (250V and higher)
- Our power supply and controller (PC or PLC) can not be installed within 2m.

-LGmb : Digital Interface Board

*1 *2

- LGmb : Digital Interface board + CO-M cable 2m
- LGmb(Mc0.15) : Digital Interface board + CO-M cable 0.15m
- LGmb(Mc0.5) : Digital Interface board + CO-M cable 0.5m

Digital control via LAN (Ethernet), USB, RS-232C, RS-485 and GPIB are possible. And, one control in master-slave operation is enabled. (Ethernet is the registered trademark of Xerox CO., Ltd.)



Please select -LGob, if use them under environment with much electrical noise.

Up to 16 units can be hooked on Master-slave function. (Same model units are hooked. No adapter is required.)

-LU1: USB Interface Board

*1 *2

Digital Control is enabled via USB.

It is possible to hook 1 unit per 1 USB port equipped on a personal computer. If number of USB ports equipped on the PC to be used is lacking, use a USB hub. But there is a case that the hub is not operated correctly.

OS for Personal Computers : Microsoft Windows Xp / Vista / 7 / 8
Both of 32 bits and 64 bits are applicable

Microsoft and Windows are registered brands of Microsoft Corp. in USA and other.

-LRs : RS-232C Interface Board

*1 *2

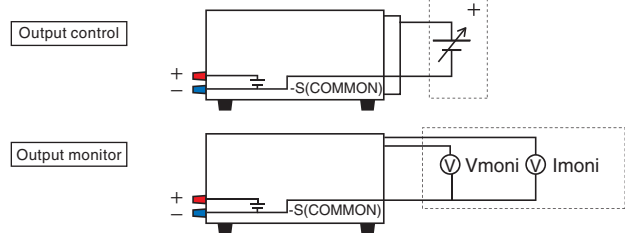
Digital Control is enabled via RS-232C.

It is possible to hook 1 unit per 1 COM port equipped on a personal computer.

-LNcn : -COMMON

*3

It changes +COMMON for control and monitor voltage to -COMMON. Potential of -COMMON is the same one of output terminals.



-L(120V), -L(200V), -L(220V), -L(240V)

It is applicable to above input voltages other than standard 115VAC.

*1 : Either one of these options is selectable.

*2 : For the detail function of optical interface, USB interface, RS-232C interface and digital interface, please refer to the catalogue of digital controller CO series.

*3 : Only for models of its maximum output voltage 120V and lower.

How to Order Please suffix above optional codes on the tail of Model NO.
<Ex.> R4G18-2-LGob(Fc10)(220V)
R4G120-0.6-LEcNcn(240V)
AC input volt. is to be the tail.



Connection and Application Operation

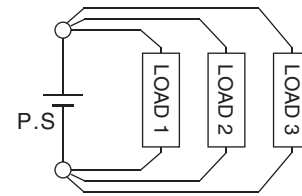
■ Connection of Loads

- Connect short with leads of sufficient thickness.
- Use PVC wire (105°C) which endure enough to applied voltage. Consideration of ampacity and limitation for lead wire length by sensing (0.5V) requires for wiring to the load.

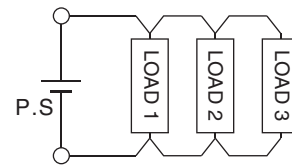
AWG	mm ²	Max. current (A)
18	1.1	2
16	1.3	7
14	2.1	11
12	3.3	18
10	5.3	23
8	8.4	39
6	13	67

■ Paralleling of Loads

○ Good Connection



✗ Wrong Connection

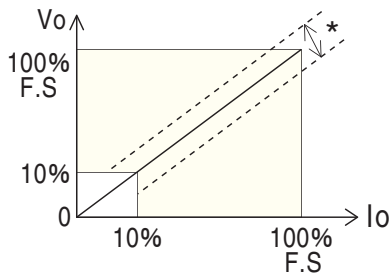


Conception of Specification

Unless other wise specified, specifications on this catalogue are of values at max. rated output (full scale) after 2 hours warming-up.

Applied range of specifications

Ripple, Stability, Variations and Temp. coefficient are applied "F.S x Catalogue Value" and Linearity of output, Linearity of monitor, Linearity of indications are applied "F.S x value of ±0.5% (*)" at the applied range of 10100% of maximum rated output.



Ripple

Indication is in rms includhigh-frequency noise.

Preset

Preset value does not indicate exactly actual output state. If require exact setting, set voltage value by making actually output in no-load.

For current, set current value by making gradually current rise in shorted terminals of output.

When Select Direct-Current Power Supplies

▶ Please Read Surely

Products on this catalogue are manufactured on consideration for safety fully as direct current power supplies, but please observe the Instruction Manual for operation and earth always grounding terminals for safety.

Products on this catalogue are manufactured under the premise that applied on ground potential or in the range of series operation. Please consult our sales staff when use them on high potential floating.

Products on this catalogue are manufactured on consideration for protection against electric discharge from loads fully, but when use them for some of continuous discharge like as spattering or for special withstand voltage test, please consult our sales staff in advance.

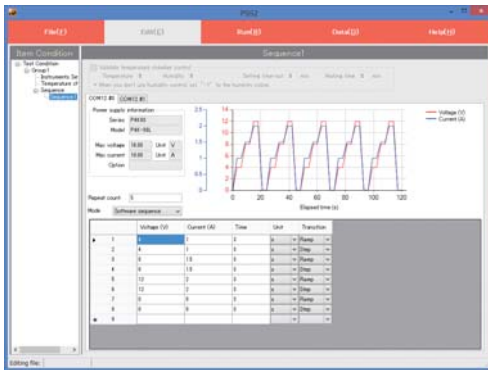
We recommend contact our sales staff and inform them your requirement prior to your selection in order to secure safety as power supply equipment and make your best fit selection.

PSS2en

The sequence software for power supplies and electronic loads

PSS2en is the dedicated software which can actuate various power supplies, electronic loads and digital controller for power supplies manufactured by Matsusada Precision Inc. with simple set up. It is the perfect for the aging test, the burn-in test and the withstand voltage test for electronic parts, and for the endurance test, intermittent / continuous operation test or various simulation test for electric component of automobile.

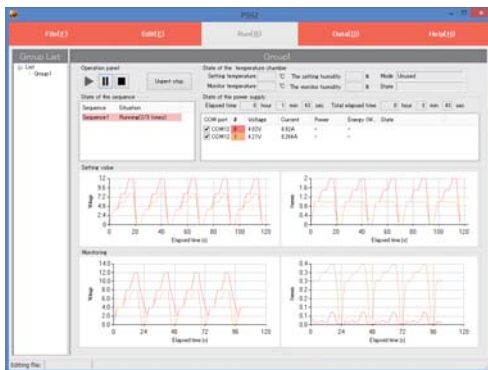
EXAMPLES FOR OPERATION OF PSS2en



1

Set-up test condition

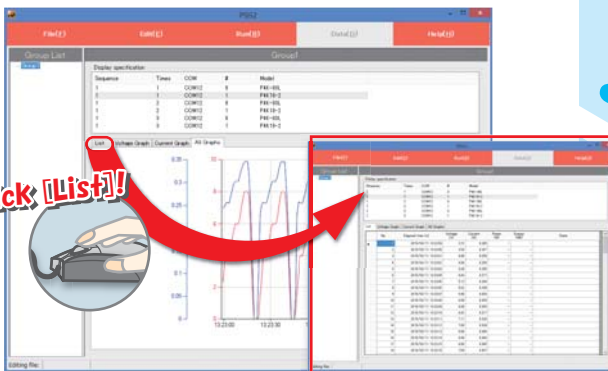
Make-up test conditions like as setting the power supplies or action sequence and so on. Number of settable sequence pattern is max.16, it is possible to set various test conditions fitted the target like as selection of the action mode and setting of any protection function, etc.



2

Execution of Test

It is possible to test each group setup. On the operation display, it is possible to monitor on the one screen required information like as sequence, the status of the thermostatic chamber and the power supply, and voltage / current at testing. Also when execute in parallel plural group, it is possible to monitor these status together.



3

Confirmation of Measured Data

It is possible the test data completed. It is possible to confirm values of each sequence, the individual graph or the packaged graph. Also it is possible to output measured data with CSV style and then to sum up or analyze them with the spreadsheet software.



USA/Canada : +1-888-652-8651
other countries : +81-6-6150-5089

Customer Inquiry Sheet (R4G series)
 Please copy this page and above fax number after filling out form below.

■ I would like

- A quotation
 An explanation of product
 A demonstration
 To purchase
 Other ()

■ Give us your requirement / comment

■ Please fill in below.

Address:	
Company:	
Dept.:	Title:
Name:	
Tel:	Fax:
E-mail:	

Warranty

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. If any Product is showed to be defective as satisfactory to us, 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. Regarding RoHS compliance, Matsusada Precision Inc. does not intentionally use objectionable substances in the products listed within this catalog. Matsusada Precision Inc. manufactures products using components which, according to our suppliers, are "RoHS compliant parts". However, Matsusada Precision does not analyze each and every unit to confirm. Therefore, there may be some customized products which do not comply to RoHS. Please contact your nearby sales office for confirmation.



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