

NEW

Most suitable for precise current load by setting output current in minimum span 10 μ A.

Ultra-low Noise Programmable DC Power Supplies

R4GT series

Control via
CC-Link and
EtherCAT is
available.

- ▶ Output Voltage : 10 V to 36 V
- ▶ Output Current : 0.01 A to 2 A
- ▶ Output Power : 0.1 W to 36 W



- ▶ The new function ; Pulse & Ramp sequence operation
- ▶ Stopping automatically is available if the value of output current reaches the preset accumulated value.
- ▶ It is possible to preset the output current value exactly by 0.01 mA or 0.1 mA.

R4GT series

High Resolution Programmable DC Power Supplies



Precise Setting of Current and Output is possible with High Resolution D / A and A / D Converter equipped.

R4GT series is DC power supplies for precision plating so that setting minute current and output are enabled as based on ultra-low noise DC power supplies R4G series which have gotten favorable reception. These are applicable to tests for luminous elements, LED, organic electroluminescence (OEL), etc. which handle minute current. Superior usability is realized with equipped FINE function which can set quickly voltage and current. Moreover, as these correspond to digital communication, applicable widely from experiments to automation line.

Voltage and Current Display with 4 digits Indicator

Both voltage and current are indicated with 4 digits. **Output control in finer unit than ever before, "0.01 mA to 10 mV"**, is possible. Minute setting and output are enabled without multimeters.

Ultra-low Ripple and High Speed Response

High speed response with ultra-low ripple and noise as linear regulator system is applied. These are best fit for usage which the fundamental performance is important.

Various Functions equipped as Standard

As analog remote control and various status signal output are equipped as standard, it is easy to build in them on automation line.

Applicable to Digital Interface (option)

They are applicable to various digital interfaces. These are able to fit in with your various automatic measuring and production facilities.

Superior Usability

These realize simple operation to be able to make various setting speedy and exactly.

Lineup

- Please avoid utilizing them under corrosive gas or plentiful moisture environment.
- All the models in the below table is positive common type power supply. Please contact our sales office for the negative-type power supply.

Output Voltage (V)	Output Current (A)	Output Power (W)	Model	Output Min. Setting Unit *1		Power Consump. (Approx.)(VA)	Weight (Approx.)(kg)
				Voltage	Current		
0 to 10	0 to 0.01	0.1	R4GT10-0.01	10 mV	0.01 mA	20	3
0 to 18	0 to 0.1	1.8	R4GT18-0.1	10 mV	0.1 mA	22	3
	0 to 0.2	3.6	R4GT18-0.2	10 mV	0.1 mA	27	3
	0 to 2	36	R4GT18-2	10 mV	1 mA	90	3
	0 to 5	90	R4GTS18-5 *2	10 mV	1 mA	220	6.5
0 to 36	0 to 0.1	3.6	R4GT36-0.1	10 mV	0.1 mA	30	3
	0 to 0.2	7.2	R4GT36-0.2	10 mV	0.1 mA	35	3
	0 to 1	36	R4GT36-1	10 mV	1 mA	90	3

*1 Values are ones at local control. It is possible to set more fine values at remote control by digital communication. (Refer to page 4 "Digital Control Function")

*2 R4GTS18-5 is coming soon. The lead time of this model is different with other models, so please contact our sales office for the lead time detail.

Specifications

R4GTS18-5 is coming soon. The lead time of this model is different with other models, so please contact our sales office for the lead time detail.

Input Voltage 115 Vac±10 %, 50 / 60 Hz, 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
 Constant Current External Control Voltage 0Vdc to 10Vdc
Stability 0.05 % / 8 H of maximum output voltage
Temp.Coefficient 0.01 % / °C of maximum output voltage typ. 0.02 % / °C of maximum output current

Operating Characteristics

Model	Constant-Voltage Characteristics			Constant-Current characteristics		
	Ripple (mVrms)	Input Variation (mV) ^{*1}	Load Variation (mV) ^{*2}	Ripple (mArms)	Input Variation (mA) ^{*1}	Load Variation (mA) ^{*2}
R4GT10-0.01	0.5	1	2	0.5	1	2
R4GT18-0.1	0.5	1	2	0.5	1	3
R4GT18-0.2	0.5	1	2	0.5	1	5
R4GT18-2	0.5	1	2	1	2	10
R4GT36-0.1	0.5	2	2	0.5	1	3
R4GT36-0.2	0.5	2	2	0.5	1	5
R4GT36-1	0.5	2	2	1	2	10

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) --- for 36 W model
 ±(0.5 %rdg+4-digit) --- for other models

Monitor Output Protection Output Voltage Monitor : 10 V / max. output voltage Output Current Monitor : 10 V / max. output current
 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 : 0 % to 110 % of Rating
 Setting Method : Rotary Encoder on the Front Panel
 Reset : Manual reset with Output Switch or Remote Switch
 Blackout Protection : Return of power supply after power failure recovery is as follow
 At Blackout Protection (=Re-output Prevent.) : Manual return with OUTPUT switch or remote switch
 At Blackout Protection (=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
 Signal Output for Status (CV, CC, TROUBLE, OUTPUT, Power ON)
 Delayed Trigger Function : Individual setting for ON Delay / OFF Delay (0.0 to 99.9 sec)
 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 50 μs
 (for load change of 10 % to 100 %)
Operation Temperature 0 °C to +40 °C^{*3}

Storage Temperature -20 °C to +70 °C

Storage Humidity 0 % to 80 % RH(no condensation)

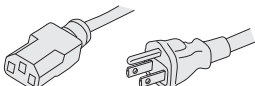
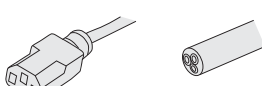
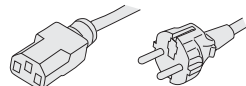
Dielectric Strength Voltage For 1minute at 1000 V between the input power supply and the output terminal and between the input power supply and the chassis

Grounding Withstand Volt. ±250 V-DC (Grounding plus and minas terminals are possible)

Accessories Instruction Manual : 1 AC input cable, 3 cores for single phase type : 1

*1 : For AC change ±10 %
 *2 : For load change from 10 % to 100 %
 *3 : When installed on a rack, 100 mm 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.

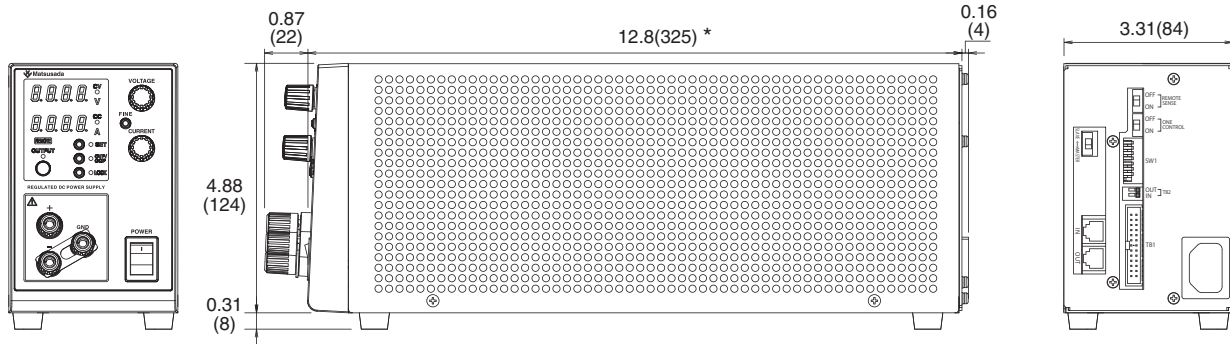
AC Input Cable

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

Dimensions inch (mm)

(Please contact our sales office for the dimensions' detail of R4GTS18-5.)

Digital interface on the rear panel is equipped only when optional -LGob, -LGmb, -LEt or -LUs1 is selected.



* The depth will be 14.76-inch(375 mm) when -L(220 V) option or -L(240 V)option are selected.

Digital Control Function (at selected various optional digital interface)

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

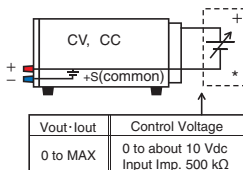
*1 : Minimum setting unit for each model is one ten-thousandth (100.00 %).

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

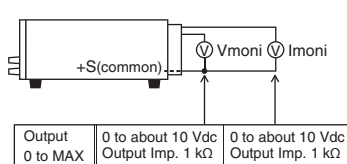
Standard Functions

Remote Control

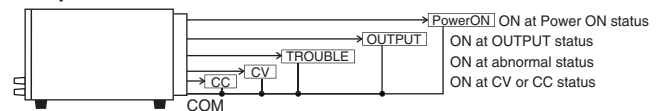
Output Control



Output Monitor



Output of Status



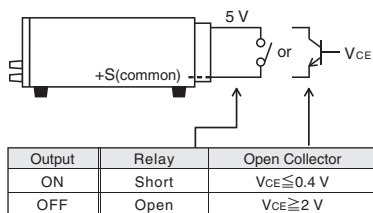
★ON for the status of OVP, OCP and Interlock (LD).

COMMON is floating with the output of Open Collector for each COMMON.

Voltage Resistance 30 Vdc, Sink Current ≤5 mA

* Use control voltage as floating but not grounding. Potential on COMMON is the same one of + output terminal. If COMMON in customer's equipment is grounded, not only power supply can not be controlled, but also damage of equipment may be caused. And if multi-channel and non-isolated sequencer is utilized, please take care that ground of other equipment is connected through the sequencer in a certain case.

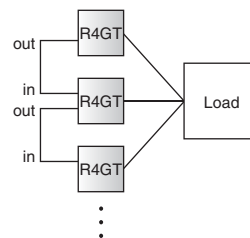
Remote Switch ON / OFF



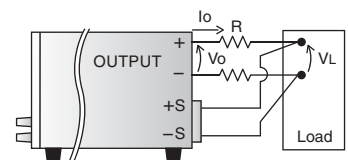
- Sink current 1 mA
- Logic of OUTPUT can be made reverse.

Parallel Operation by One Control (only at local control)

Slave units hooked in parallel can be controlled with one master unit. It is possible to enhance output current by hooking in parallel 2 same units and more.

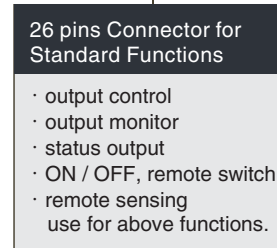
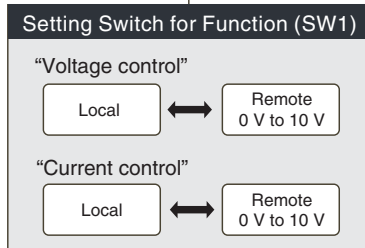
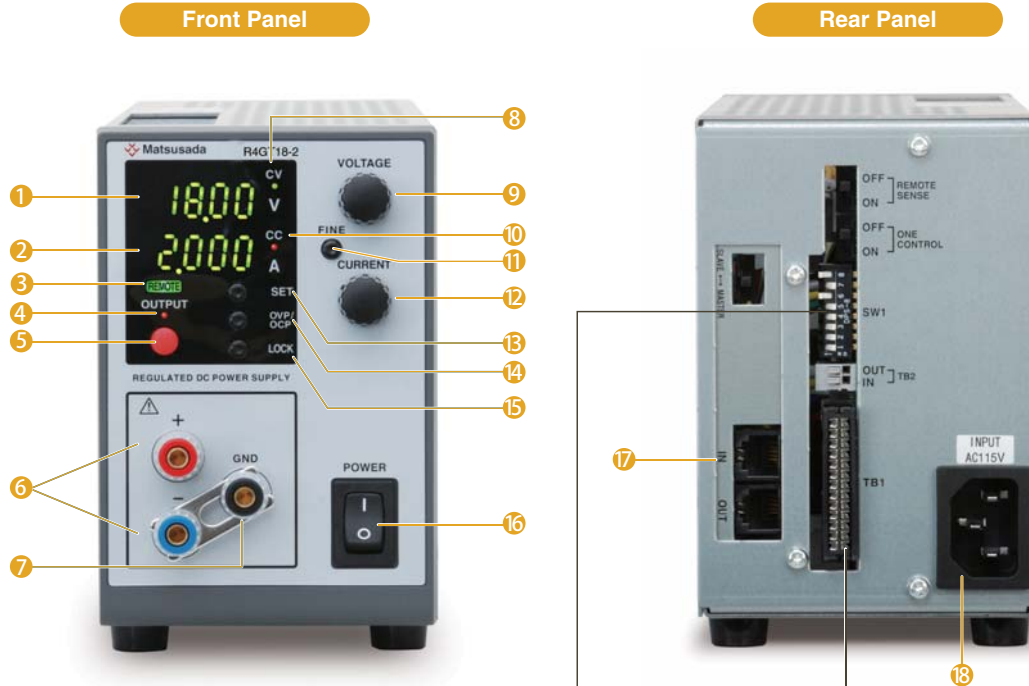


Remote Sensing



Prevent to degrade stability due to voltage drop ($V_o - V_L$) by resistance (R) in output wiring or contact resistance. (up to max. 0.5 V)

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 for output
This use for output ON / OFF at local and reset of protection functions.
- ⑥ Output Terminal
- ⑦ GND Terminal
- ⑧ Display Constant Voltage (CV) operation mode
- ⑨ Knob to set output voltage(double as to set OVP)

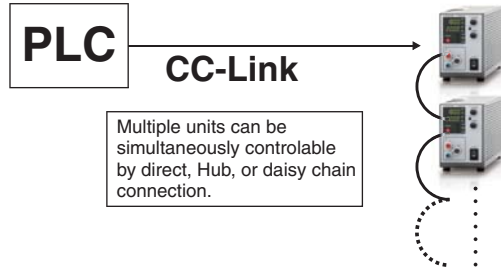
- ⑩ Display Constant Current (CC) operation mode
- ⑪ FINE Switch
Changeover setting digits at setting output voltage / current
- ⑫ Knob to set output current (double as to set OCP)
- ⑬ Preset Switch for output
- ⑭ Setting Switch for OVP / OCP
- ⑮ Setting Switch for Key Lock
- ⑯ ON / OFF Switch for Power
This has priority over all actions for safety.
- ⑰ Interface Board
Picture shows ones at optional -LGmb.
- ⑱ Input Terminal

Options

-LCK : CC-Link Interface Board *1

NEW

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.

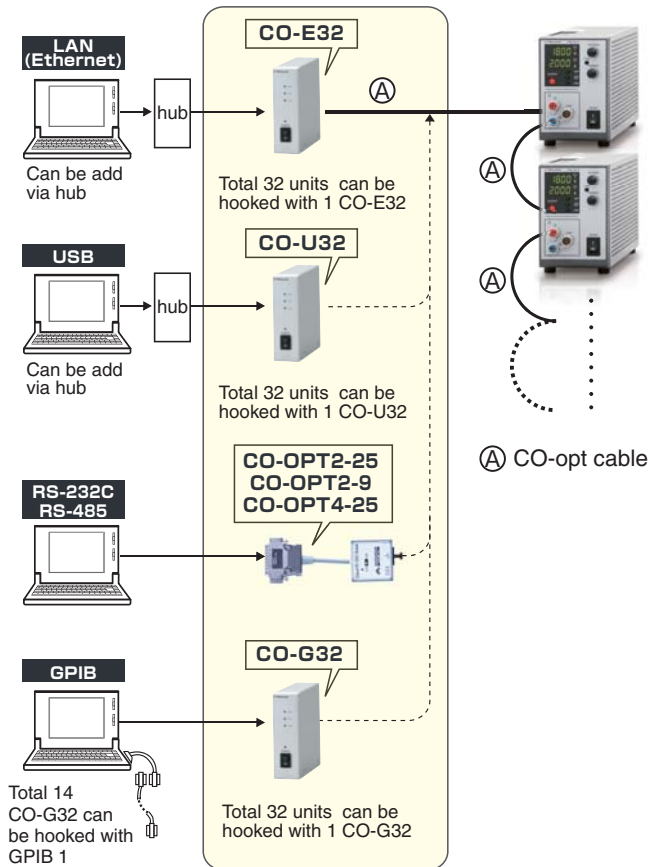


-LGob : Optical Interface Board *1 *2

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

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

Various Adapters (sold separately)

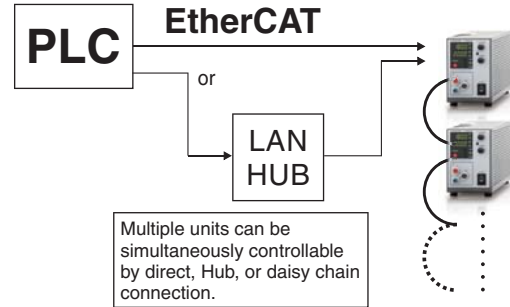


- When use them under following conditions, select -LGob always.
- Noisy environment as in a factory. (Ex. Motors or coils are used near to the load or the power supply)
 - Used in high voltage floating. (250 V and higher)
 - Our power supply and controller (PC or PLC) can not be installed within 2m.

-LEc : EtherCAT Interface Board *1

NEW

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.

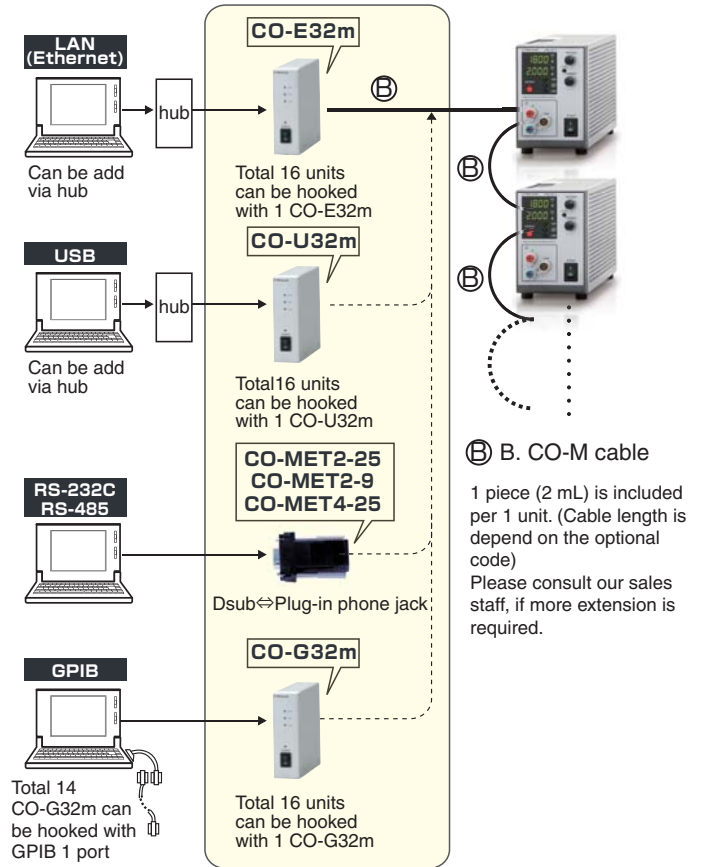


-LGmb : Digital Interface Board *1 *2

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

In addition to digital control via LAN (Ethernet*), USB, RS-232C, RS-485 and GPIB are possible, one control in master-slave operation is enabled. *Ethernet is the registered band of Xerox CO., Ltd.

Various Adapters (sold separately)



Please select -LGob, if use them under a noisy environment.

Up to 16 units can be hooked on Master-slave function. (Same model units are hooked.)

-LEt : LAN (Ethernet) Interface Board *1 *2

Digital control is applicable via LAN (Ethernet)



If control plural R4GT with Ethernet, a hub is required between the personal computer and R4GT.

-LU51: USB Interface Board *1 *2

Digital Control via USB is enabled.



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

-LIc : Integrating Function of Output Current

Output current is integrated and that is displayed. (Up to Max. 100 AH)
Integrated value is kept during output is OFF. It is very useful to manage plating solution as maximum integrated current to stop the output can be preset.

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

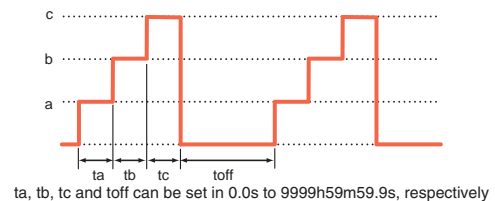
It is applicable to other input voltage than 115 V AC.

-LDe : Pulse / Ramp Sequence (This Option can be selected only on R4GT10-0.01, R4GT18-0.1, R4GT18-0.2, R4GT36-0.1, R4GT36-0.2.)

Following output controls of A ~ E are applicable.

A. Pulse Sequence

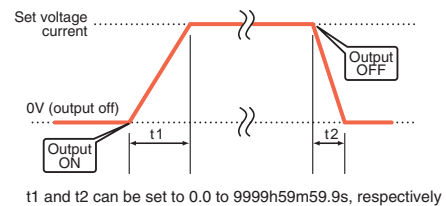
Sequential operation is possible by using voltage and current set on each memory a, b and c in combination with multi-set function. Not only continuous operation, but also it is possible to specify the times. It is best fit to evaluation tests for products as various operations, like as repeat of a and b only or repeat of b, c and off only, are enabled by setting time of memory a, b, c or off to 0.0.



B. Ramp

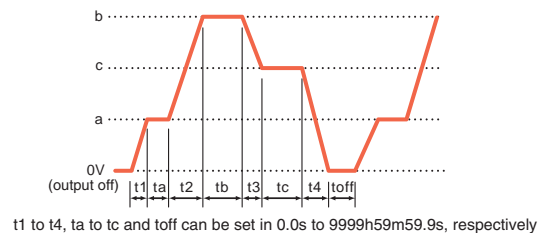
It enables to make ramp action up to set voltage or current (or from the set voltage or current to 0 V or 0 A). It is useful to like to rise (reduce) voltage or current slowly.

* For ramp action, it is possible to select [both of set voltage and current], [only set voltage] or [only set current].



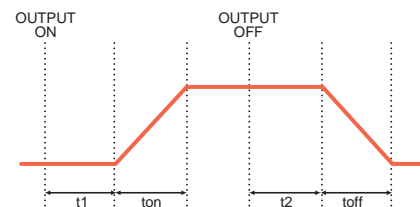
C. Pulse Sequence + Ramp

It is also possible to use pulse sequence combined with ramp action. If multi-set function is combined with the too, it is able to make sequence action by using voltage or current set on memory a, b and c. Not only continuous operation, but also it is possible to specify the times. It is useful in various aspects as it is possible to rise (reduce) voltage or current slowly up to 20 set value.



D. Delayed Trigger Ramp

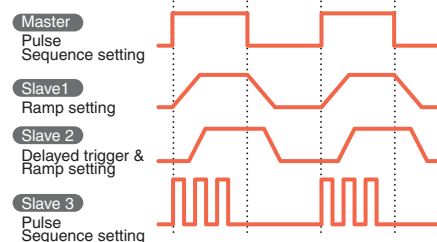
This is one of the combinations with Delayed Trigger Function and Ramp Function, after OUTPUT is made ON, ramp output is started in time delayed.



* t1 and t2 can be set in 0.0s to 99.9s, respectively.
* ton can be set in 0.1s to 9999h59m59.9s and toff can be set in 0.0s to 9999h59m59.9s

E. Master Follow

Pulse sequence actions at master-slave and output signal to slave units at ramp action are transmitted. By this function, it is possible to make slave units to output on different output condition from the master unit. (Only for -LGmb models)



Note : Accuracy of the timer during sequence operation ± 0.1 %. Please take care of usage at long running operation.

*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.

How to Order

Please suffix above optional codes on the tail of Model NO.

<Ex.> R4GT18-0.2-LDeGob(Fc10)(120 V) AC input voltage is to be the tail.

