

Regulated DC Power Supplies

PA-A SERIES

18V/1.2A

PA18-1.2A

18V/3A

PA18-3A

36V/1.2A

PA36-1.2A

36V/3A

PA36-3A

70V/1A

PA70-1A

250V/0.42A

PA250-0.42A

OUTLINE

Designed to be both compact, and to provide high performance, the PA-A Series of series-regulated CV/CC power supplies have been developed to offer high reliability and stability, and to provide simultaneous digital display of both output voltage and current. The product line includes the 18V, 36V, 70V, and 250V models to allow selection according to individual needs. The output can be boosted by single-control series and parallel connections, and remote control enables easy use of these compact, lightweight power supplies in applications such as R&D, aging and as systems power supplies.

**GP-IB
OPTION**



PA-A SERIES

FEATURES

Low Ripple, Low Noise

Series regulation achieves extremely low ripple and noise, as well as a very low temperature coefficient and excellent electrical characteristics.

Simultaneous Digital Readout of Both Voltage and Current

Voltage is displayed on a 3-1/2 digit LED display (auto-ranging) and current is displayed on a 3-digit LED display, enabling checking and setting of both voltage and current simultaneously. Constant-voltage and constant-current operations are indicated by green and red LEDs, respectively.

Series Operation, Parallel Operation

Several power supplies can be connected in series to boost output voltage capability, or in parallel to boost output current capability. In addition, with either connection method, master-slave mode of operation enables you to control the output from just one of the connected supplies.

Floating Output Method

Because the output terminals are floating, operation is possible as either a positive or negative power supply. Output sensing terminals are provided on the front panel for precise setting of the voltage actually applied to the load terminals.

OUTPUT ON Fixing

By setting the LOCAL/REMOTE switch on the rear panel to REMOTE, the OUTPUT key is isolated so that the output can be fixed to on while the power is on. Usually, the output can be switched on and off using the switch on the front panel.

Wide Remote Control Capability

A remote control connector is provided on the rear panel, enabling external contact-closure signals to perform the output on/off control. In addition, the output voltage and current can also be controlled by either an external voltage or resistance.

GP-IB Capability (Optional)

By using the GP-610A GP-IB adaptor, GP-IB control of the output on/off status, the output voltage and the output current is possible. Also, by incorporating the OP-13A in a power supply of the PA-A Series, it is possible to control the output on/off status and SRQ function.

Applications

R&D.

Aging.

Systems.

Battery charging.

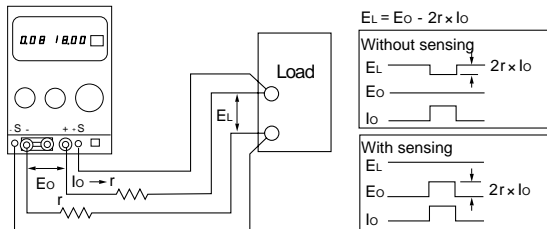
School and education.

REGULATED DC POWER SUPPLIES

Remote Control Operations

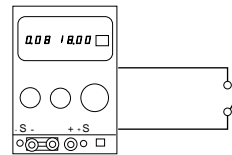
Remote Sensing

This function compensates for the voltage drop at the load terminals which is caused by resistance of leads between the PA-A Series supply output terminals and the load and by output terminal contact resistance. (The use of the provided sensor plug is required.)



OUTPUT ON/OFF Control

It is possible to on/off control the output using an external contact-closure signal.



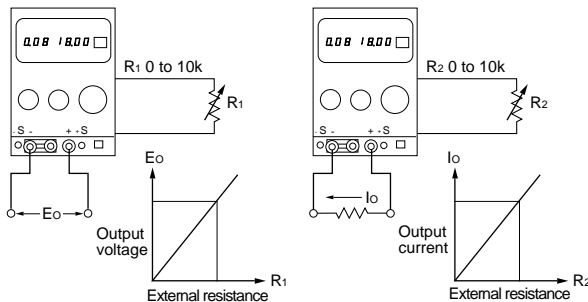
Contact signal	Output
SHORT	OFF
OPEN	ON

Control by an External Voltage

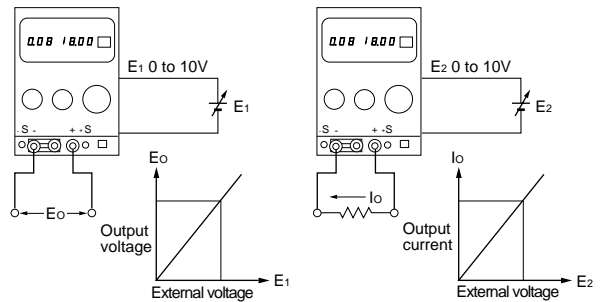
An externally-applied voltage (0 to 10 V) can be used to control the output voltage and current.

Control by an External Resistance

An externally applied resistance (0 to 10 kohm) can be used to control the output voltage and current.

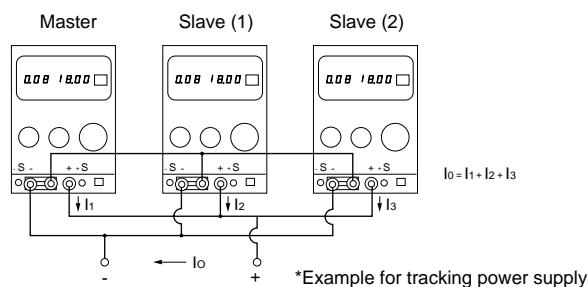


*Inversely-proportional control of output voltage is also possible by applying an external resistance (0 to).



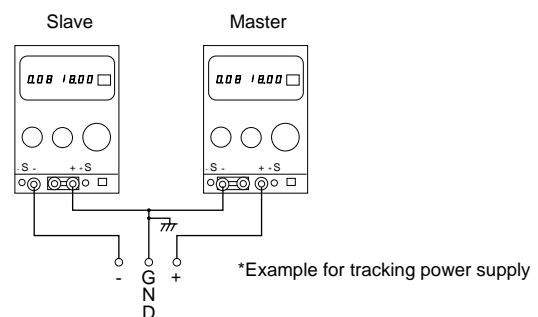
Single-Controlled Parallel Operation

It is possible to connect power supplies of the same model of the PA-A Series in parallel to increase the output current capacity. One unit (the master) can be used to control all other units (slaves) in a master-slave setup.



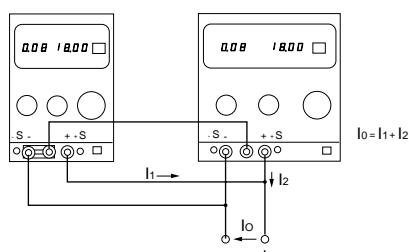
Single-Controlled Series Operation

It is possible to connect power supplies of the same model of the PA-A Series in series to increase the output voltage capacity. One unit (the master) can be used to control all other units (slaves) in a master-slave mode of operation.



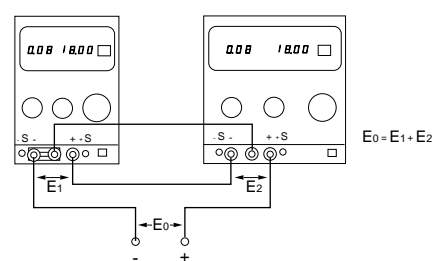
Parallel Connection

Any power supplies of the PA-A Series can be connected in parallel by setting their output voltage to the same value.



Series Connection

Series connection of any members of the PA-A Series is possible, up to the groundable voltage limit of ± 250 V.

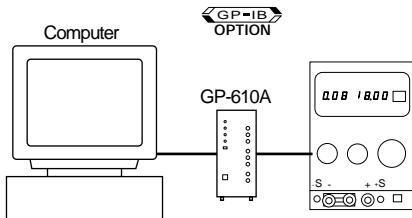


PA-A SERIES

GP-IB Control

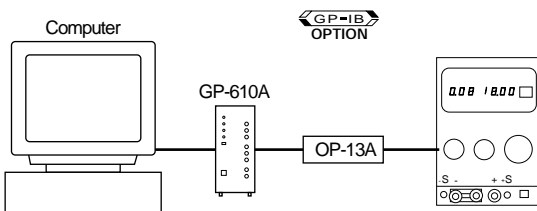
Used in combination with the optional GP-610A GP-IB adaptor, the PA Series can be GP-IB controlled from a computer.

Without the OP-13A (optional)



Control of the current and voltage.

With the OP-13A (optional)



Control of the current and voltage.
OUTPUT ON/OFF control.
Service request (SRQ) function.

Options for the PA-A Series

GP-IB Adaptor GP-610A



Because of an interface function that complies with IEEE488-1978 and an SRQ (service request) function, trouble in the power supply being controlled can be detected, so safer control is possible.

With mutually-insulated 12-bit D/A outputs (CHs A, B) and 8-bit D/A output (CH V), the GP-610A can control the voltage or current of up to 3 power supplies.

[SPECIFICATIONS]

Electrical specifications conform to IEEE488-1978

Mechanical specifications conform to IEEE488-1978

Interface function SH1, AH1, T6, L3, SR1, RL1, PP0, DC1, DT1, C0

Address Any address from 0 - 30 can be set with the address switch

Listen-only mode Remote-local function Service request function Analog output

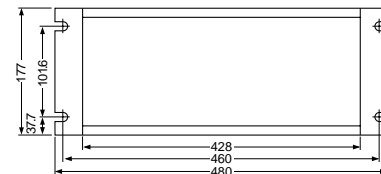
EXT I/O Unit (Factory-installed option)

OP-13A



By combining the OP-13A in the power supply of the PA-A/AL Series power supply, it is possible to control the output on/off status and the SRQ function (CV/CC interrupt, power off interrupt.)

Rack Mount Adaptor RK-604E (EIA)



Blank Panel

PB-604A (1/2 rack width)

PB-604B (1/3 rack width)

PB-604C (1/4 rack width)

PB-604D (1/6 rack width)

PB-604E (1/12 rack width)

REGULATED DC POWER SUPPLIES

SPECIFICATIONS

Model	PA18-1.2A	PA18-3A	PA36-1.2A	PA36-3A
Output voltage (continuously variable, with coarse and fine adjustments)	0 to 18V		0 to 36V	
Output current (continuously variable)	0 to 1.2A	0 to 3A	0 to 1.2A	0 to 3A
Voltage regulation characteristics (CV)				
Line regulation (with respect to $\pm 10\%$ variation in AC)	1mV		2mV	
Load regulation (with respect to change from 0 to 100%)	2mV	3mV	2mV	4mV
Ripple/noise (10Hz to 1MHz)	0.5mVrms			
Transient response (output current : 5 % to 100 %)	50 μ s Typ			
Temperature coefficient	100ppm/ Typ			
Remote control (External voltage/output voltage ratio)	Approx. 10V/18V		Approx. 10V/36V	
Remote control (External resistance/output voltage ratio)	Approx. 10k Ω /18V		Approx. 10k Ω /36V	
Current regulation characteristics (CC)				
Line regulation (with respect to $\pm 10\%$ variation in AC)	2mA			
Load regulation (with respect to change from 0 to 100%)	10mA			15mA
Ripple/noise (10Hz to 1MHz)	1mArms			2mArms
Remote control (External voltage/output current ratio)	Approx. 10V/1.2A	Approx. 10V/3A	Approx. 10V/1.2A	Approx. 10V/3A
Remote control (External resistance/output current ratio)	Approx. 10k Ω /1.2A	Approx. 10k Ω /3A	Approx. 10k Ω /1.2A	Approx. 10k Ω /3A
Constant-voltage operation display	Green LED lights for CV			
Constant-current operation display	Red LED lights for CC			
Digital meter display				
Voltmeter display (3-1/2 digits, red LED)	Maximum 19.99V display, fixed range		Maximum 19.99V/99.9V display, autorange	
Accuracy (output ON 23 ± 5 , 80 %RH or less)	$\pm (0.2 \% \text{rdg} + 1 \text{digit})$			
Ammeter display (3 digits, red LED)	Maximum 9.99A display, fixed range			
Accuracy (output ON 23 ± 5 , 80 %RH or less)	$\pm (1.0 \% \text{rdg} + 2 \text{digit})$			
Sampling rate	2.5 times/1 sec.			
Functions				
Output switch (ON/OFF)	Red LED lights when output on			
Remote sensing	Front panel (+S) and (-S) terminals provided			
Series operation (master-slave)	Single-control series operation (with in groundable voltage limits)			
Parallel operation (master-slave)	Single-control parallel operation (only for power supplies of the same model)			
Output				
Polarity	Positive or negative side groundable			
Output terminals	+ (red), - (white), and GND (black)			
Groundable voltage	$\pm 500\text{V}$ DC			
Operating environment				
Temperature/humidity for characteristics in spec.	0 to 40 , 10 to 85 %RH			
Cooling system	Natural draft			
Power consumption :VA/W (at 100V AC, with rated load)	Approx. 60VA/45W	Approx. 125VA/100W	Approx. 105VA/73W	Approx. 225VA/175W
Power requirement	100V $\pm 10\%$ AC, 50/60Hz, 120V/240V $\pm 10\%$ (MAX AC250V) internally switchable			
Case dimensions (W \times H \times D) mm	104 \times 147 \times 186	104 \times 147 \times 224	104 \times 147 \times 186	138 \times 147 \times 239
Maximum dimensions (W \times H \times D) mm	108 \times 161 \times 200	108 \times 167 \times 265	108 \times 161 \times 200	142 \times 167 \times 290
Weight	Approx. 4.0kg	Approx. 5.6kg	Approx. 4.6kg	Approx. 7.3kg
Accessories	Instruction manual \times 1, Sensor plug \times 2			

Case dimensions (Unit : mm)

Model	A	B	C	D	E	Size
PA18-1.2A	104	161	-	108	200	S
PA18-3A	104	167	8	108	265	M
PA36-1.2A	104	161	-	108	200	S
PA36-3A	138	167	8	142	290	L
PA70-1A	104	167	8	108	265	M
PA250-0.42A	138	167	8	142	290	L

