Multi Channel Tracking DC Power Supply
PMP Series

All the types of output have positive polarity (three-output models).
The four-output model provides an output of negative polarity.
The multi-channel tracking function allows all outputs to be varied concurrently.
The available delay function has the ability to change timing at which to turn on or off the output.
The supported memory function has the capability to store output settings. (This product has three memories.)
Voltage and current can be displayed under high resolution of four digits. Two common systems are available.
Communications interface (GPIB, RS232C or USB)

KIKUSUI

Multi Channel Tracking DC Power Supply

PMP SERIES

Multi-output power supply characterized by multi-channel tracking and positive polarity

The small-size PMP series DC power supplies support functions and performance necessary as testers for use by design, development, and quality assurance personnel, and provide constant multi-output voltage (CV) and current (CC). The past multi-output power supply can provide only two types of concurrently variable output. The PMP series, however, implements "Multi-channel Tracking" that allows all types of output to be varied concurrently. It also supports a "Delay Function" that can change output on/off timing, and a "Memory Function" that can store output settings. Moreover, the PMP series is equipped with an external contact that enables control over turning on and off output, and over calling the memory. All the types of output this product provides have positive polarity (three-output models), which allows the product to be used as a power supply for developing digital equipment and other devices not requiring a negative power supply circuit. Furthermore, this product, which supports two common systems, is well adapted to an application for one power supply unit to offer digital and analog signals that have different common potentials.

Features

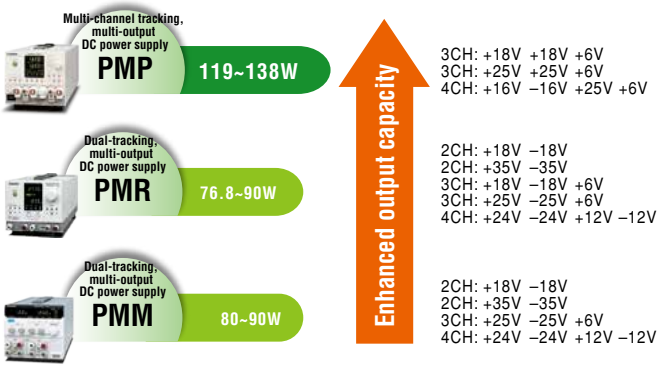
- All the types of output have positive polarity (three-output models).
  * The four-output model provides an output of negative polarity.
- The supported multi-channel tracking function allows all output to be varied concurrently in the same ratio or width (absolute value).
- The available delay function has the ability to change timing at which to turn on or off the output.
- The supported memory function has the capability to store output settings. (This product has three memories.)
- Voltage and current can be displayed under high resolution of four digits.
- Two common systems are available. (The three-output model supports CH1 and CH2/3, while the four-output model supports CH1/2 and CH3/4.)
- A remote sensing function is supported for all output.
- Control via an external contact (Memories 1, 2 and 3, as well as output on/off)
- Communications interface (GPIB, RS232C or USB) * Factory option.

Applications

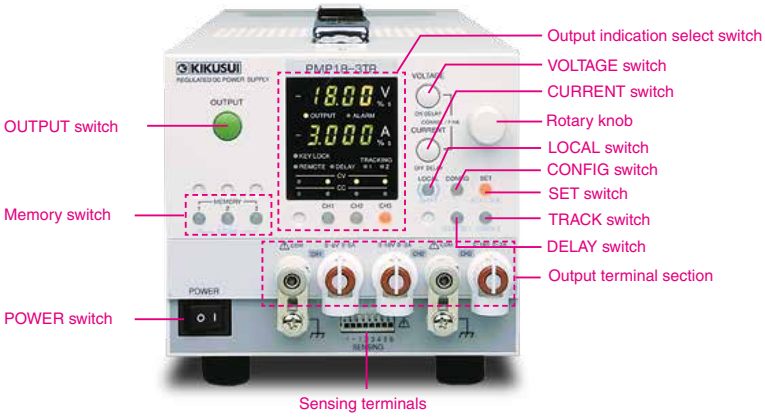
- Automobile-related devices: Car navigation systems, car stereos, ECUs
- Information-related devices, consumer devices: LCDs, CPUs, mobile terminals, RF modules for use in wireless LANs, DVD + RW drives, mobile device LSI chips, circuit evaluators for notebook PCs/DVD players/flat TV sets, D/D converter for use with notebook PCs, audio operational amplifiers, substitutes for D/D converters embedded in products
- Research institutes, educational institutes: Research facilities

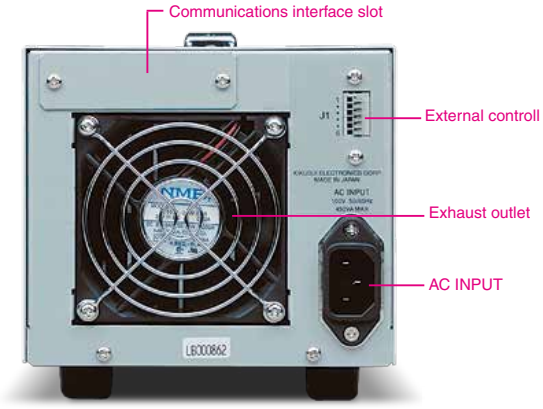
All the types of output have positive polarity (three-output models), and the output capacity (current rating) is enhanced!

These models meet the need for positive multi-output power supplies (same-polarity multi-output power supplies), and can be used as power supplies for developing digital equipment and other devices not requiring a negative power supply circuit. (The PMP16-1QU provides a negative output.) They are enhanced in output capacity beyond conventional multi-output power supplies, and are most suitable as power supplies for developing circuits for digital home electric appliances with increasing capacity. The PMM and PMR series are also available as multi-output power supplies that output positive and negative voltages.



●Description of the panel (PMP18-3TR)





Function

●Tracking function

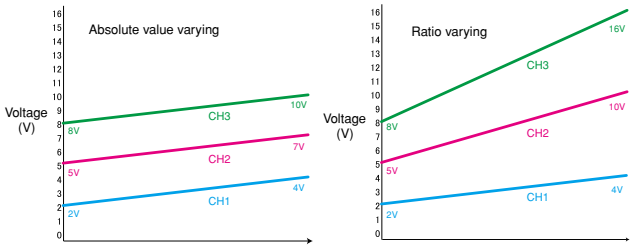
This function allows all outputs to be varied concurrently in the same ratio or width (absolute value). All outputs can be varied from 0 V (or 0 A) to the rated voltage (or the rated current) in the operational region. The channel subject to the tracking operation and the reference channel can be set freely. This is useful because it eliminates the need to vary the outputs for various circuit voltages on the board on a channel-by-channel basis, enabling the outputs on the individual channels to be varied concurrently. The tracking function provides two different methods below.

1. Absolute value varying

The channel subject to tracking varies in output voltage value (or current value) by the same value (absolute value) as the amount of variation in the output voltage value (or current value) of the reference channel.

2. Ratio varying

This function varies the value of output voltage (or current) of the specified channel in proportion (%) to the changes in the reference channel.
*Variable range : 0.0% to 200.0%



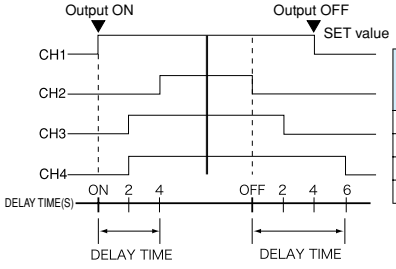
<Operation examples of the tracking function>

●Two common systems are available

The three-output models support CH1 and CH2/3, while the four-output model supports CH1/2 and CH3/4. A single unit can supply power to a circuit with different common potentials or a circuit in which the digital signal system is separated from the analog signal system.

●Delay function

This function allows timing for turning on or off each output to be varied. It allows setting of the period from the time the OUTPUT switch is pressed until each output is turned on (ON DELAY) or turned off (OFF DELAY).
Allowable delay period range: 0.1 s to 99.9 s



Item	ON DELAY SET value	OFF DELAY SET value
CH1	0 s	4 s
CH2	4 s	0 s
CH3	2 s	2 s
CH4	2 s	6 s

Note: The actual rise time after the output is turned on and the actual fall time after it is turned off differ depending on the output and load conditions. The conceptual drawing ignores the rise and fall times. Also, there is an internal processing time from the time the OUTPUT switch is pressed until the output is turned on or off, so that even if the time is set to 0 s, there will be an error of several tens of milliseconds.

If the power is not applied in a predetermined sequence, the entire system may run out of control and, in the worse case, may cause damage. Thus, delay control is necessary for the ON times of power outputs. It is also necessary for the OFF times of power outputs. This function is very useful for driving circuits requiring such control.

●Communications interface

(Factory option): GPIB, USB, or RS232C

Three types of interface for controlling a PMP series power supply from a personal computer will be available as a factory option.
By mounting the interface, the power supply can be started up without an external controller, and can be used as a system power supply for use in manufacturing processes.

●Memory function

The memory function allows storing of the settings of each output (three memories).
It allows storing of up to three combinations of the voltage and current settings and delay set time for each output and recalling of them when needed.

Specifications

Specifications		Output		Ripple		Line Regulation		Load Regulation		Input Voltage	Power consumption	Weight
Model		CV	CC	CV	CC	CV	CC	CV	CC	AC	Approx.	Approx.
		V	A	mVrms	mArms	mV	mA	mV	mA	V±10%	VA	kg
PMP18-3TR	Output 1	0 to +6	0 to +5	0.5	4	±2	±4	±5	±10	100 (120/220/240: optional)	400	9
	Output 2	0 to +18	0 to +3		3	±1	±3	±3	±5			
	Output 3	0 to +18	0 to +3		3	±1	±3	±3	±5			
PMP25-2TR	Output 1	0 to +6	0 to +5		4	±2	±4	±5	±10		380	
	Output 2	0 to +25	0 to +2		3	±2	±2	±3	±5			
	Output 3	0 to +25	0 to +2		3	±2	±2	±3	±5			
PMP16-1QU	Output 1	0 to +25	0 to +3		3	±2	±4	±5	±10		370	
	Output 2	0 to +6	0 to +2		3	±2	±3	±3	±10			
	Output 3	0 to −16	0 to −1		2	±1	±2	±3	±5			
	Output 4	0 to +16	0 to +1		2	±1	±2	±3	±5			

- With resistive load.
- The COM terminal is connected to the chassis terminal.
- The product is warmed up for 30 minutes (current application).
- After the completion of the warm-up, the product is placed under an environment of a temperature of 23 +/– 5°C and relative humidity of 10 to 80 percent.
- The TYP value is a typical one, and does not assure required performance.
- ** % of rtg refers to ** % of the rated output voltage or current. (rtg: rating)
- ** % of rdng refers to ** % of an output voltage or current reading. (rdng: reading)

■Common specifications

Output setting resolution: PMP16-1QU: 1 mV for CH2, 10 mV for CH1, CH3 and CH4
PMP18-3TR: 1 mV for CH1, 10 mV for CH2 and CH3
PMP25-2TR: 1 mV for CH1, 10 mV for CH2 and CH3

Temperature coefficient for the constant voltage (TYP value): 100ppm/°C

Temperature coefficient for the constant current (TYP value):
PMP16-1QU: 300 ppm/°C for CH1 and CH2, 200 ppm/°C for CH3 and CH4
PMP18-3TR: 300 ppm/°C
PMP25-2TR: 300 ppm/°C for CH1, 200 ppm/°C for CH2 and CH3

Transient response: 50µs (TYP)

Meter reading: Both of voltage and current are indicated in four digits.

Voltmeter:
When the rated output voltage is not lower than 10 V: Accuracy: ± (0.2 percent of rdng + 20 mV)
Accuracy: ± (0.5 percent of rdng + 80 mV) * At temperatures of 0 to 40°C
Resolution: 10 mV
When the rated output voltage is lower than 10 V: Accuracy: ± (0.3 percent of rdng + 5 mV)
Accuracy: ± (0.5 percent of rdng + 60 mV) * At temperatures of 0 to 40°C
Resolution: 1 mV

Ampere meter:
When the rated output current is not lower than 3A: Accuracy: ± (0.5 percent of rdng + 10 mA)
Accuracy: ± (0.8 percent of rdng + 50 mA) * At temperatures of 0 to 40°C
Resolution: 1 mA
When the rated output current is lower than 3A: Accuracy: ± (0.5 percent of rdng + 5 mA)
Accuracy: ± (0.8 percent of rdng + 30 mA) * At temperatures of 0 to 40°C
Resolution: 1 mA

Protection: Overheat protection (OHP): Detects the internal heat sink temperature.
Over-voltage protection (OVP): Activated by 110 to 130 percent of the rated channel voltage.
Input fuse

Output on/off: All output can be concurrently turned on and off.

Tracking function: For all output (Running mode: Variable absolute value and ratio)

Tracking on/off: Control Enabled

Delay function: For all output, you can set the appropriate period from when the output switch is turned on or off to when the output is turned on or off. (Setting range: 0.1 to 99.9 seconds/Setting resolution: 0.1 seconds)

Memory function: Three memories (An output voltage and current, and a delay period are stored for all output.)

Key lock function: Disables the switches other than the output and output indication selection switches.

Sensing function: For all output, a voltage of 0.3 V is compensated for one side.

External control function: Uses an external contact signal to turn on and off output.
Uses an external contact signal to call memories 1, 2 and 3.
Uses an external contact signal for alarm input. (Output interruption function)

Ground: The positive, COM or negative terminal can be grounded.

Common: PMP16-1QU: Common CH1 and CH2, Common CH3 and CH4
PMP18-3TR: Independent CH1, Common CH2 and CH3
PMP25-2TR: Independent CH1, Common CH2 and CH3
Inter-common withstand voltage: 30 VDC

Voltage to ground: DC ±250V

Insulation resistance:
Between the primary side and the cabinet: 30 or higher MΩ under a voltage of 500 VDC
Between the primary and the secondary sides: 30 or higher MΩ under a voltage of 500 VDC
Between the secondary side and the cabinet: 30 or higher MΩ under a voltage of 500 VDC

Withstand voltage:
Between the primary side and the cabinet: 1,500 VAC. No fault is detected for one minute.
Between the primary and the secondary sides: 1,500 VAC. No fault is detected for one minute.

Environment:
Operating environment: In room, Over-voltage category II
Operating temperature and humidity: 0 to 40°C, 10 to 80 %rh (There must be no dew.)
Storage temperature and relative humidity: –10 to 60°C, Up to 90 %rh (There must be no dew.)
Altitude: Up to 2,000 meters

Safety: Requirements of IEC 61010-1, Class 1, Pollution Degree 2 are satisfied.

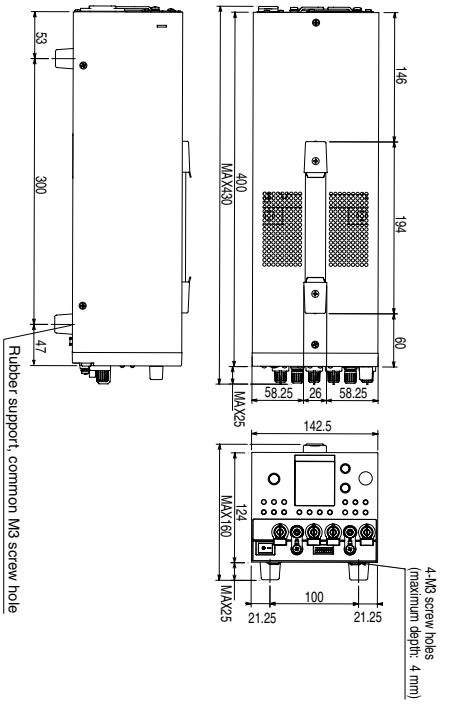
Cooling: Forcible air cooling by a fan motor (under sensed heat control)

Maximum dimensions: 142.5W × 124 (160) H × 400 (430) Dmm

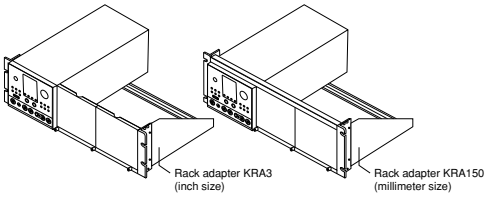
Attachments: Instruction manual, input power cord, binding post cover, and output terminal shorting bar

■Dimensions (units: mm)

Dimensions (maximum): 142.5 W x 124 (160) H x 400 (430) D mm



■Rack adapter options



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