

AC Power Regulators

PWM-APR series

Single and three-phase AC power regulators PWM-APR series

■ Description

The PWM-APR series use IGBTs as switching elements and adopt FUJI's unique pulse-width modulation (PWM) system for power conversion, thus obtaining sinusoidal output voltages.

■ Features

● PWM power conversion system

FUJI's unique PWM system suppresses higher harmonics on both input and output circuits.

Sinusoidal output voltage is variable from 0 to 97% at single-phase and 0 to 95% at three-phase of the input voltage.

IGBTs used as switching elements realize high efficiency.

● Protection against output short-circuits

The protection feature detects output short-circuits and limits output current instantly.

● Applicable to many load types

Applicable to resistive, inductive, and capacitive loads. Usable as low cost capacitor banks in place of power capacitors for power factor correction.

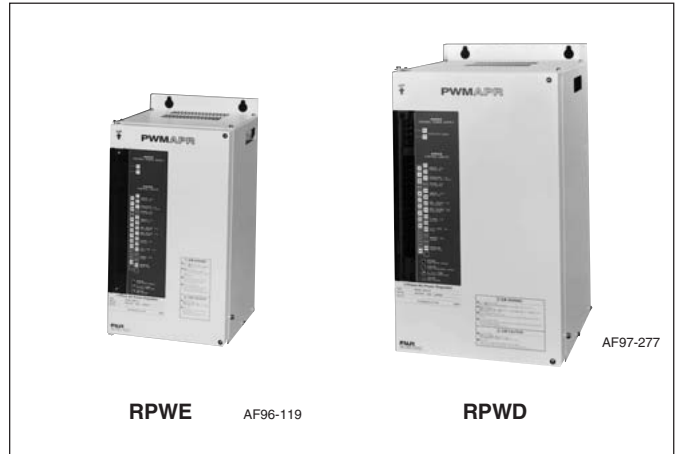
Conventional capacitor banks can only control lead currents stepwise. But, the PWM-APRs can vary lead currents continuously from zero to the maximum value.

■ Principle of operation

The PWM-APRs use the PWM system with the new main circuit configuration and high-frequency switching.

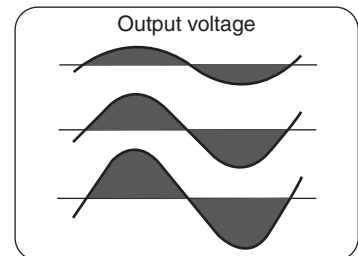
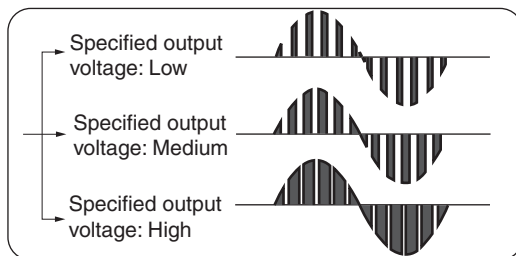
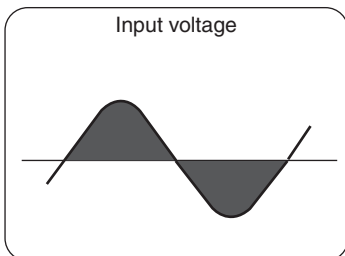
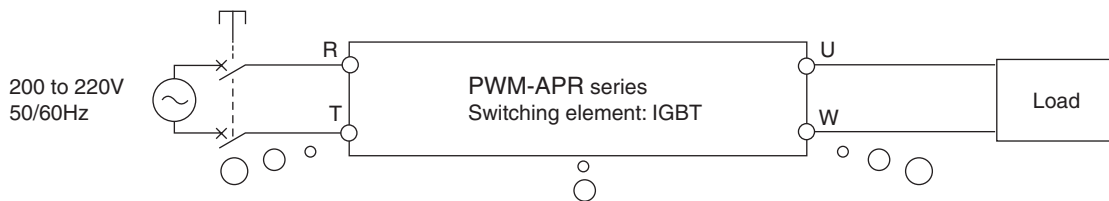
The PWM-APRs control output voltages to the specified level.

The output voltage waveform is made sinusoidal in order to suppress higher harmonics.



● No external higher-harmonics prevention measure required

The control system with a new main-circuit configuration and high-frequency switching outputs sinusoidal voltages to suppress higher harmonic currents.



■ Types and specifications

Type	RPWE2080-1C□-N	RPWE2160-1C□-N	RPWD2040-1C□-N	RPWD2080-1C□-N	RPWD2160-1C□-N	
Input	Voltage and frequency		Single-phase, 200 to 220V 50/60Hz			
	Allowable voltage and frequency fluctuation		Voltage: ±10% of input voltage Frequency: ±1Hz			
	Power required 200/220V		16/17.6kVA	32/35.2kVA	13.9/15.2kVA	27.7/30.5kVA
Output current		80A	160A	40A	80A	160A
Cooling		Fan-cooled				
Applicable load		Resistive load, inductive load, transformer primary circuit (Contact FUJI for RPWD series), rectifier primary circuit and capacitive load				
Waveform control		PWM				
Output voltage adjustment range		0 to 97% of input voltage		0 to 95% of input voltage		
Output voltage setting		Variable resistor: 1kΩ, 2.5W Current signal: 4 to 20mA DC (Zin=250Ω) Voltage signal: 1 to 5V DC (Zin=1kΩ)				
Time to soft-startup, soft-increase/decrease		1 second				
Gradient setting		0 to 100% of setting signal				
Feedback control		AC AVR control + AC CLR control *				
Protection	Short-circuit	Detects short-circuits and limits output current instantly.				
	Overcurrent	AC CLR detects and limits overcurrent to the range below output rating.				
	Switching element overheat	Abnormal heat-sink temperature rise is detected in time to allow shutdown of APR operation. Operation resumes when temperature becomes normal.				
	Input voltage drop	Input voltage drop of 15% or more of rated voltage is detected in time to allow shutdown of APR operation. Operation resumes when the normal input voltage is recovered.				
	IGBT abnormal	Abnormal IGBT status is detected in time to allow shutdown of APR operation.				
Environment		Altitude: Up to 1000m. Free from corrosive gases, dust, vibration				
Ambient temperature		0 to +55°C (Output current should be derated when used above 40°C)				
Humidity		30 to 90% RH (no condensation)				
Withstand voltage (main circuit)		2000V AC, 1 minute				
Insulation resistance (main circuit)		20MΩ or more (500V DC megger)				

Notes: * AVR: Constant voltage control CLR: Current limit control
• Replace the □ mark by the parameter setting type shown in the Table below.

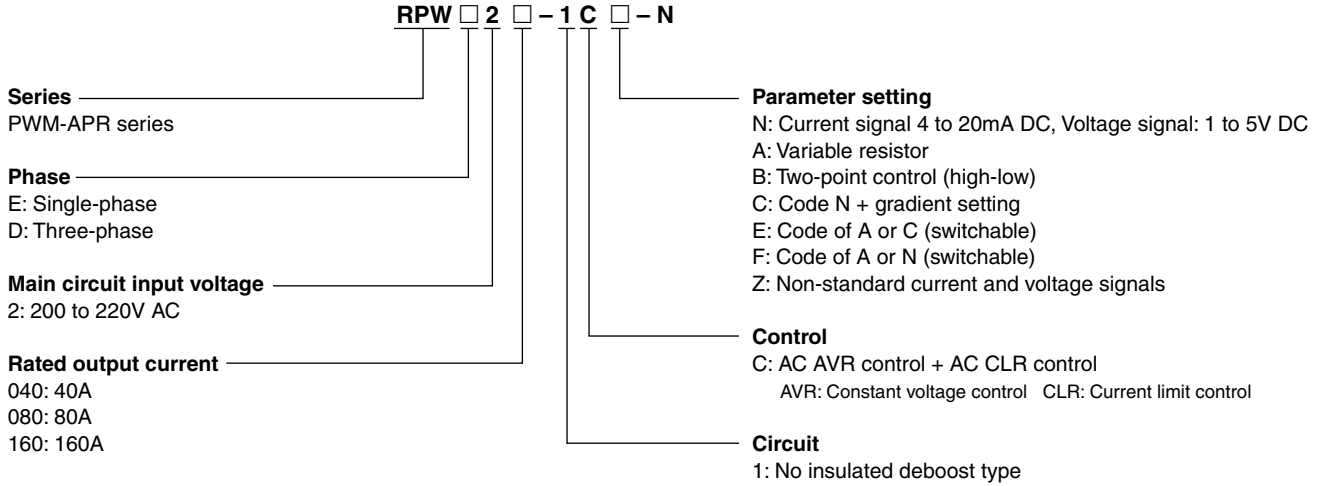
● Parameter setting type code (□)

Code	Parameter setting type
N	Current signal: 4 to 20mA DC, voltage signal: 1 to 5V DC
A	Variable resistor
B	Two-point control
C	Code N + gradient setting
E	Code of A or C (switchable)
F	Code of A or N (switchable)
Z	Non-standard current and voltage signals (custom spec.)

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■ Type number nomenclature



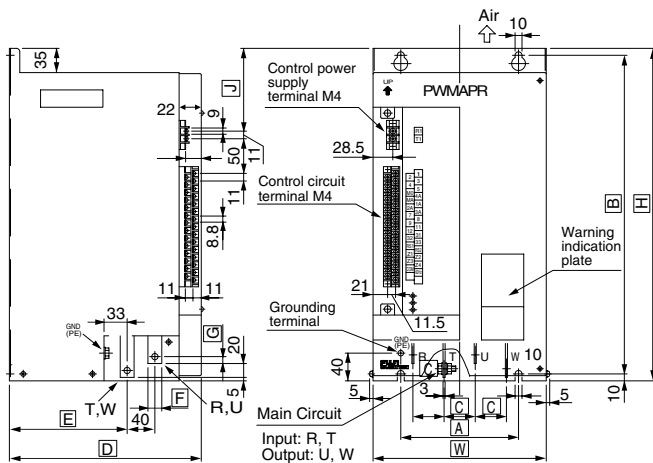
■ Ordering information

Specify the following:

1. Type number
2. Special specification

■ Dimensions, mm

● RPWE



Single-phase 200 to 220V 50/60Hz 80A (Wall mounting)
Single-phase 200 to 220V 50/60Hz 160A (Wall mounting)

Terminal	80A	160A
Main circuit terminal	M8×20	M10×25
Grounding terminal	M8×14	M10×16

Rated output current	W	D	H	A	B	C	E	F	G	J	Mass
80A	250	277	480	170	460	45	170	20	10	120	25kg
160A	330	277	540	250	520	60	170	30	15	100	36kg

