e-Front runners

FUJI ELECTRIC

AC POWER REGULATORS

NOISE SUPPRESSION FILTERS

CONTROL POWER TRANSFORMERS

INDIVIDUAL CATALOG

from D&C CATALOG 19th Edition Revised

10

AC power regulators
APR-MX2 series

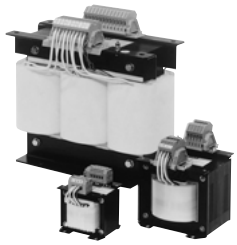
Noise suppression filters
RNFHA series

AC power regulators
APR-α series

Noise suppression filters
RNFTS, RNFMS series

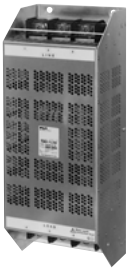
AC power regulators
PWM-APR series

Control power transformers



AC power regulators
APR-L series

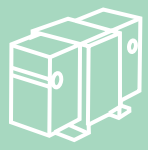
Noise suppression filters
RNFMC series



LOW VOLTAGE EQUIPMENT
Up to 600 Volts

D & C CATALOG DIGEST INDEX

10 AC Power Regulators Noise Suppression Filters Control Power Transformers



MINIMUM ORDERS

Orders amounting to **less than ¥10,000** net per order will be charged as ¥10,000 net per order plus freight and other charges.

WEIGHTS AND DIMENSIONS

Weights and dimensions appearing in this catalog are the best information available at the time of going to press. FUJI ELECTRIC FA has a policy of continuous product improvement, and design changes may make this information out of date.
Please confirm such details before planning actual construction.

INFORMATION IN THIS CATALOG IS SUBJECT TO CHANGE WITHOUT NOTICE.

AC power regulators

■ Quick selection guide

Series	APR-MX2		APR-α	PWM-APR	APR-L
Type	**RPXE**  AF97-279	**RPXD**  KK01-293	**RPAE, RPBE, PBCE**  N89-6169-1	**RPWE, RPWD**  AF96-119	**RPLD**  CP-1126
Phase	Single-phase	Three-phase	Single-phase	Single-phase Three-phase	Three-phase
Input voltage	100-110V AC 200-220V AC 380V AC 400-440V AC	200-220V AC 380V AC 400-440V AC	100-110/200-220VAC common	200-220V AC	200-220V AC 380V AC 400-440V AC
Feature	• Multi-function • Versatile feed-back control • Wide range of voltage and current • Cyclic control • Phase control		• Compact • Light-weight • Wide output current ratings, 10A to 200A	• Suppress higher harmonic currents • Sinusoidal output voltage	Flexible automatic control
Parameter setting	• 4-20mA DC 1-5V DC Gradient setting • Variable resistor • Two-point control	• 4-20mA DC 1-5V/0-5V DC Gradient setting • Variable resistor • Two-point control	• 4-20mA DC 1-5V DC Gradient setting • Variable resistor • Two-point control	• 4-20mA DC 1-5V DC Gradient setting • Variable resistor • Two-point control	• 4-20mA DC 1-5V DC Gradient setting • Variable resistor • Two-point control
Application	• Heater control • Incandescent lighting • Vibrator • DC power supply with rectifier diode			• Heater control • Lighting • Motor control • Voltage power supply	• Heater control • Incandescent lighting
Page	*10/2*	*10/9*	*10/14*	*10/22*	*10/26*

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Single-phase AC power regulators, APR-MX2 series

■ Description

The RPXE type is a compact, high-performance single-phase AC power regulator.
The RPXE type is an AC power regulator with superior functions suitable for a wide variety of applications in such fields as plastic molding, drying ovens, thermostatic ovens, and food processing.

■ Features

- Cyclic control of transformer loads
- Linear or functional output characteristic can be selected.
- Easy constant power control with a VT externally connected
- Compensating fluctuation of power supply voltage
- Heater burnout detection
- Flexible adjustments to soft start time


AF97-279


AF97-180

RPXE 20 to 100A **RPXE 150 to 600A**

- Cyclic control function to suppress power supply flickering
- Thyristor error detection (optional)

■ Types and ratings

Phase	Input voltage	Output current	Type
Single-phase	100-110V AC	20A	**RPXE1020-2■□-N**
		45A	**RPXE1045-2■□-N**
		60A	**RPXE1060-2■□-N**
		100A	**RPXE1100-2■□-N**
		150A	**RPXE1150-2■□-N**
		250A	**RPXE1250-2■□-N**
		350A	**RPXE1350-2■□-N**
		450A	**RPXE1450-2■□-N**
		600A	**RPXE1600-2■□-N**
	200-220V AC	20A	**RPXE2020-2■□-N**
		45A	**RPXE2045-2■□-N**
		60A	**RPXE2060-2■□-N**
		100A	**RPXE2100-2■□-N**
		150A	**RPXE2150-2■□-N**
		250A	**RPXE2250-2■□-N**
		350A	**RPXE2350-2■□-N**
		450A	**RPXE2450-2■□-N**
		600A	**RPXE2600-2■□-N**
	380V 400-440V AC others	20A	**RPXE0020-2■□-N**
		45A	**RPXE0045-2■□-N**
		60A	**RPXE0060-2■□-N**
		100A	**RPXE0100-2■□-N**
		150A	**RPXE0150-2■□-N**
		250A	**RPXE0250-2■□-N**
		350A	**RPXE0350-2■□-N**
		450A	**RPXE0450-2■□-N**

Notes: • Replace the ■ mark by the control code shown in the Table on the right.
• Replace the □ mark by the parameter setting code shown in the Table on the right.

● Control type code (■)

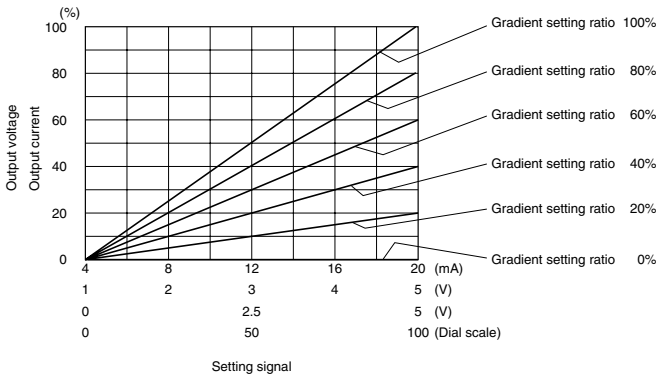
Code	Control type
T	No feedback function (without built-in CT)
A	AC CLR
B	AC ACR + AC CLR
C	AC AVR + AC CLR
G D	AC AWR + AC CLR
E	DC AVR + AC CLR
F	DC ACR + AC CLR
P	Single-phase transformer, cyclic control
Z	Special specification

CLR: Current limit control
ACR: Constant current control
AVR: Constant voltage control
AWR: Constant power control

● 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 A or C switchable
F	Code A or N switchable
Z	Non-standard current and voltage signals (custom spec.)

■ Output characteristics for resistive load



■ Specifications

Main circuit power supply	No. of phases	Single-phase								
	Voltage and frequency	100 to 110V, 200 to 220V, 380V, 400 to 440V AC 50/60Hz (automatically determined)								
	Allowable voltage and frequency fluctuation	Voltage: ±10% Frequency: ±1Hz								
Control circuit power supply		220/220V±10%								
Rated output current		20A	45A	60A	100A	150A	250A	350A	450A	600A
Rated input voltage	100 to 110V AC or 200 to 220V AC	●	●	●	●	●	●	●	●	●
	380V AC or 400 to 440V AC	●	●	●	●	●	●	●	●	—
Cooling		Self-cooled				Fan-cooled				
Applicable load	Phase control Cyclic control	Resistive load, inductive load, transformer primary circuit, rectifier primary circuit Resistive load, transformer primary circuit *1								
Control	Wave control	Phase control, cyclic control (selectable with dip switching)								
	Output voltage adjustment range *2	0% to 100% of input voltage (root-mean-square r.m.s.)								
	Power supply voltage compensation *3	Suppressing fluctuation rate of power supply voltage to1/3 (set signal is between 10% and 90%)								
	Set signal	Variable resistor: 1kΩ 1/2W min, Current signal: 4 to 20mA DC (Zin=250Ω) Voltage signal: 0 to 5V DC or 1 to 5V DC (Zin=10kΩ)								
	Time to soft-startup, soft-increase/ decrease *4	0.5 to 10s or 5 to 100s (selectable with dip switching)								
	Gradient setting range	0% to 100% of output voltage								
	Base load set range	0% to 100% of output voltage (optional)								
	Feedback control (Phase control type only)	• AC CLR control • AC AVR control + AC CLR control • DC AVR control + AC CLR control				• AC ACR control + AC CLR control • AC AWR control + AC CLR control • DC ACR control + AC CLR control				
	Heater burnout detection level	Approx. 3% to 100% of rated current (in phase control except T-type or P-type control)								
	Thyristor error detection range	20% to 90% of rated current (optional)								
Protection	Short-circuit	Operation stop with built-in super rapid fuse (yellow LED lights up)								
	Overcurrent	Operation stop with overcurrent (approx. 120% of rated current) detection of built-in CT (red LED lights up), T-type control is unavailable.*5								
	Overheat	Operation stop with built-in sensor (yellow LED lights up), optional with 20 to 100A types								
	Heater burnout *6	Detected with built-in CT (green LED lights up), T or P-type control is not possible.								
	Parallel operation error	Operation stop (yellow and green LEDs light up), alarm reset with normal restoration (LEDs remain lighting)								
	Thyristor error *6	Detection with built-in CT (yellow and green LEDs blink), optional								
	Excessive magnetic deflection	Operation stop with the built-in CT (yellow and red LEDs blink), P-type control only								
	Current limit setting over	Detected with built-in CT (red LED blink), P-type control only								
	CPU memory error	Operation stop with CPU detecting error (yellow and red LEDs light up)								
	Power supply error	Operation stop with power supply error detected (red and green LEDs light up) LEDs turned off with normal restoration								
	Alarm output	Non-voltage contact with error contact signal output (250V AC 1A), turn off power to reset.								
Environment	Environment	No corrosive gas, dust, or vibration								
	Ambient temperature Operating Storage	-5°C to +55°C (output current should be derated when used above 40°C.) -20°C to +60°C								
	Ambient humidity	30% to 90% RH (no condensation)								
Withstand voltage	Dielectric strength	2000V AC, 1 min. between input and grounding terminals (Main circuit: 100 to 110V, 200 to 220V) 2500V AC, 1 min. between input and grounding terminals (Main circuit: 380V, 400 to 440V)								
	Insulation resistance	10MΩ or more between input and grounding terminals (500V DC megger)								

Notes: *1 Applicable to P-type control.
*2 The output voltage adjustment range between 0% and 100% is given without considering the voltage drop of the thyristor.
*3 Applicable to T- and A-type control.
*4 The output current in P-type control will be output in a phase control waveform at the time of soft starting.
*5 T-type control with built-in CT is available on request.
*6 A detection error may result if the load is not a resistive load.

● Available
— Not available

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■ Alarm detection display

If an error occurs, the corresponding alarm indicator (LED) on the front panel will turn on or blinks while the internal alarm contact will turn on.

	Alarm indicator(LED)			Alarm contact	Operation after error detection
CPU error		Yellow	Red	ON	Operation stop
Power supply error	Green		Red	—	
Overcurrent			Red	ON	
Overheat or main fuse blowout		Yellow			
Parallel operation error	Green	Yellow			
Heater burnout	Green				Continues
• Blinking					
Excessive magnetic deflection		Yellow	Red	ON	Operation stop
Current limit setting over			Red		Continues
Thyristor error	Green	Yellow			

Note: The red, yellow and green LEDs will be all lif for a moment when the APR is turned on.

■ Type number nomenclature

RPX E □□ – 2 □□ – N

Series
APR-MX2 series

Phase
E: Single-phase

Main circuit input voltage
1: 100 to 110V
2: 200 to 220V
0: 380, 400 to 440V, others
An auxiliary transformer is provided when the main circuit input voltage is 100 to 110V AC, 380V AC, or 400 to 440V AC.

Rated output current
020: 20A
045: 45A
060: 60A
100: 100A
150: 150A
250: 250A
350: 350A
450: 450A
600: 600V (Except for 400V)

Parameter setting
N: Current signal 4 to 20mA DC, voltage signal 1 to 5V DC
A: Variable resistor
B: Two-point control (high-low)
C: Code N + gradient setting
E: Code A or C (switchable)
F: Code A or N (switchable)
Z: Non-standard current and voltage signals
Specify the special setting signals (such as allowable current and voltage load resistance or setting circuit type)

Control
T: No feedback function (without built-in CT)
A: AC CLR
B: AC ACR + AC CLR
C: AC AVR + AC CLR
G, D: AC AWR + AC CLR
E: DC AVR + AC CLR
F: DC ACR + AC CLR
P: Single-phase transformer, cyclic control
Z: Special specification
Specify the VT ratio, CT ratio, and insulating converter specifications (such as rated input and rated output)

CLR: Current limit control
ACR: Constant current control
AVR: Constant voltage control
AWR: Constant power control

■ Required optional devices for feedback control

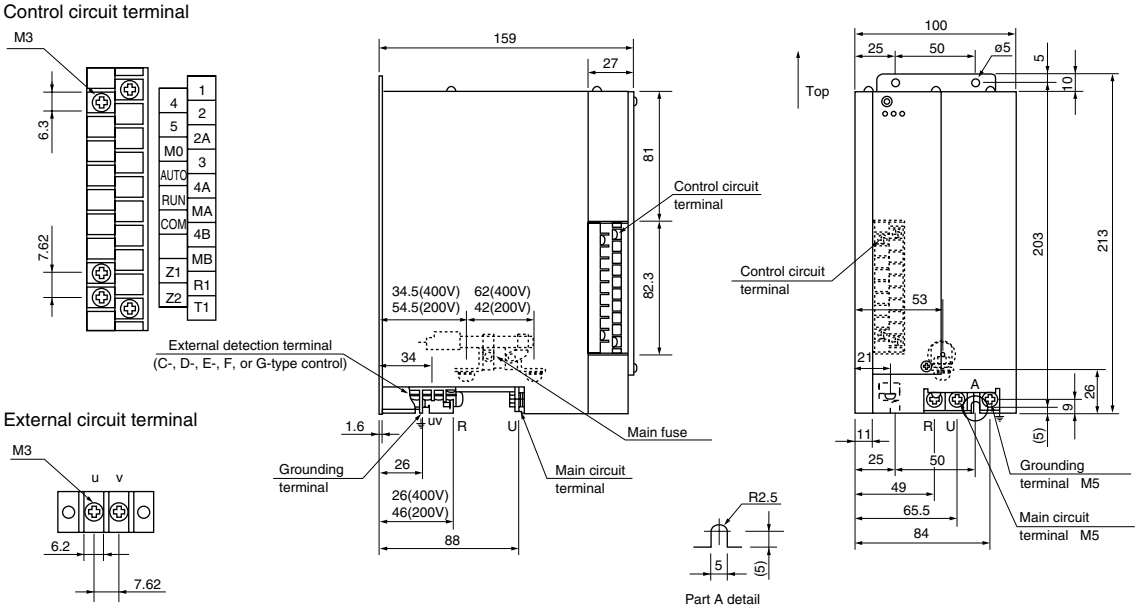
Code	Control type	Optional device
T	No feedback function	–
A	AC CLR	–
B	AC ACR + AC CLR	–
C	AC AVR + AC CLR	VT
G	AC AWR + AC CLR	VT
D	AC AWR + AC CLR	W converter, VT, CT
E	DC AVR + AC CLR	Insulating converter or VT, RMS converter
F	DC ACR + AC CLR	Insulating converter or VT, RMS converter
P	Single-phase transformer cyclic control	–

■ Ordering information

Specify the following:
1. Type number
2. Special specification

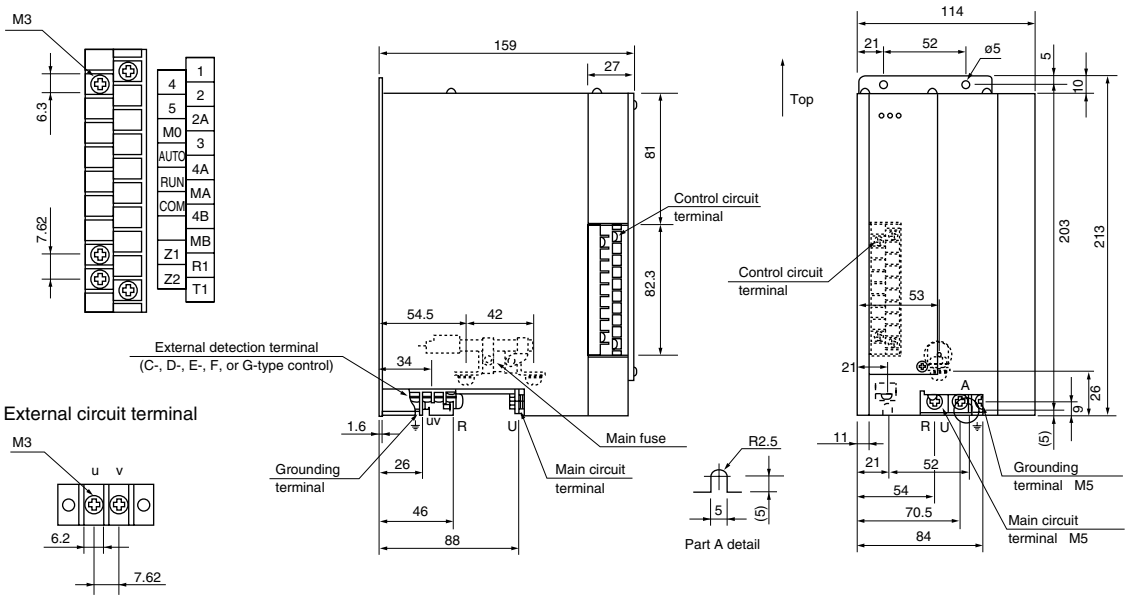
■ Dimensions, mm

● RPXE□020-2■□-N



Mass: 2.7kg

● RPXE1045, 2045, 1060, 2060-2■□-N

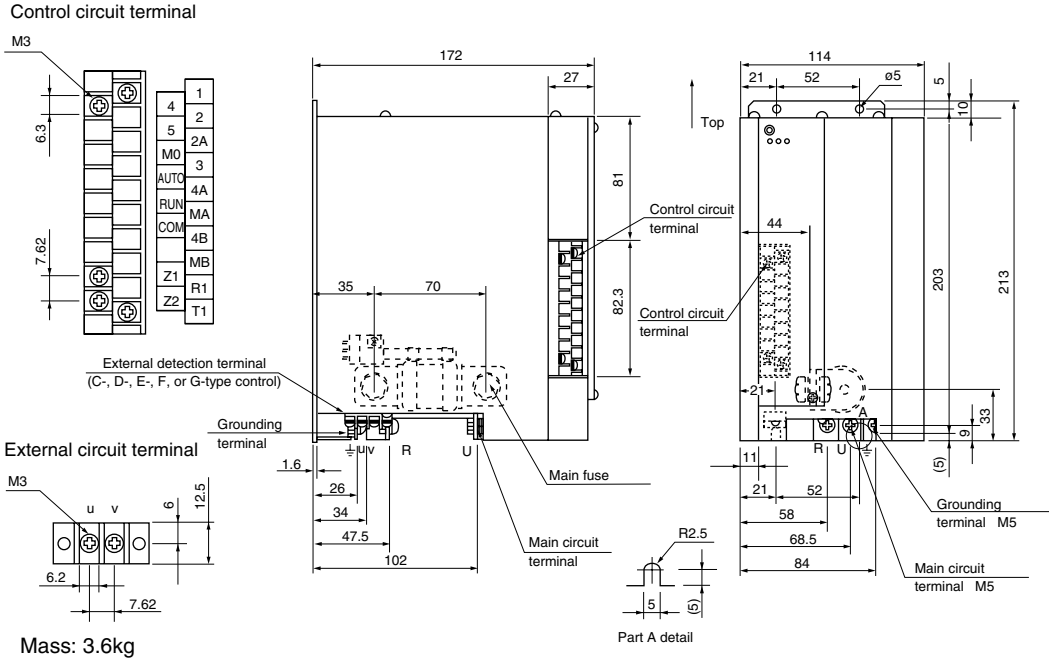


Mass: 3.3kg

Note: The bottom of the cover is exposed.

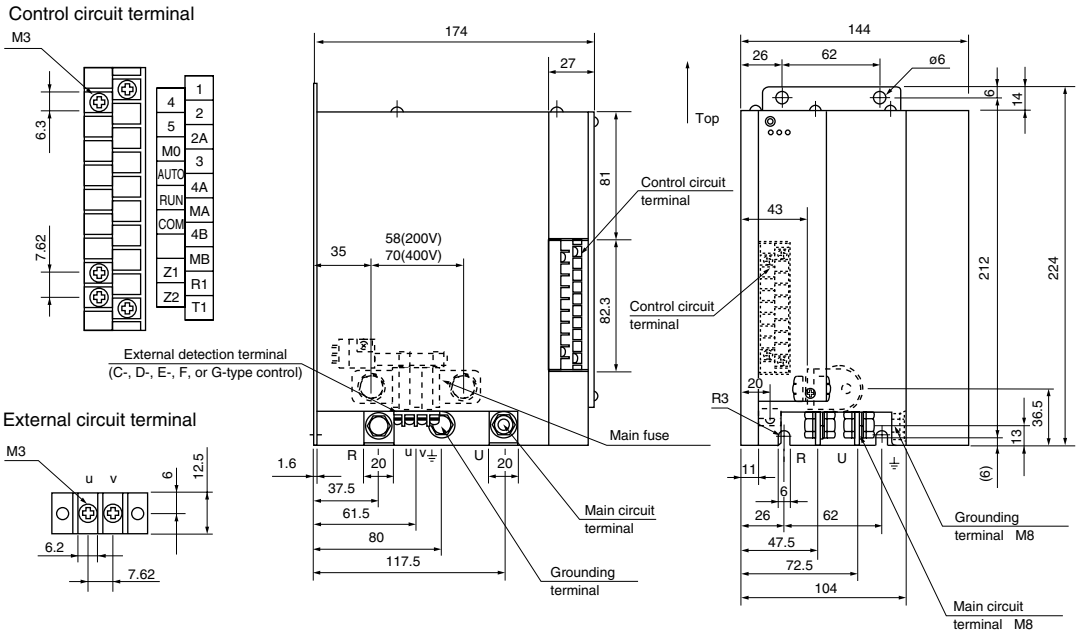
■ Dimensions, mm

● RPXE0045, 0060-2■ □-N



Mass: 3.6kg

● RPXE□100-2■ □-N

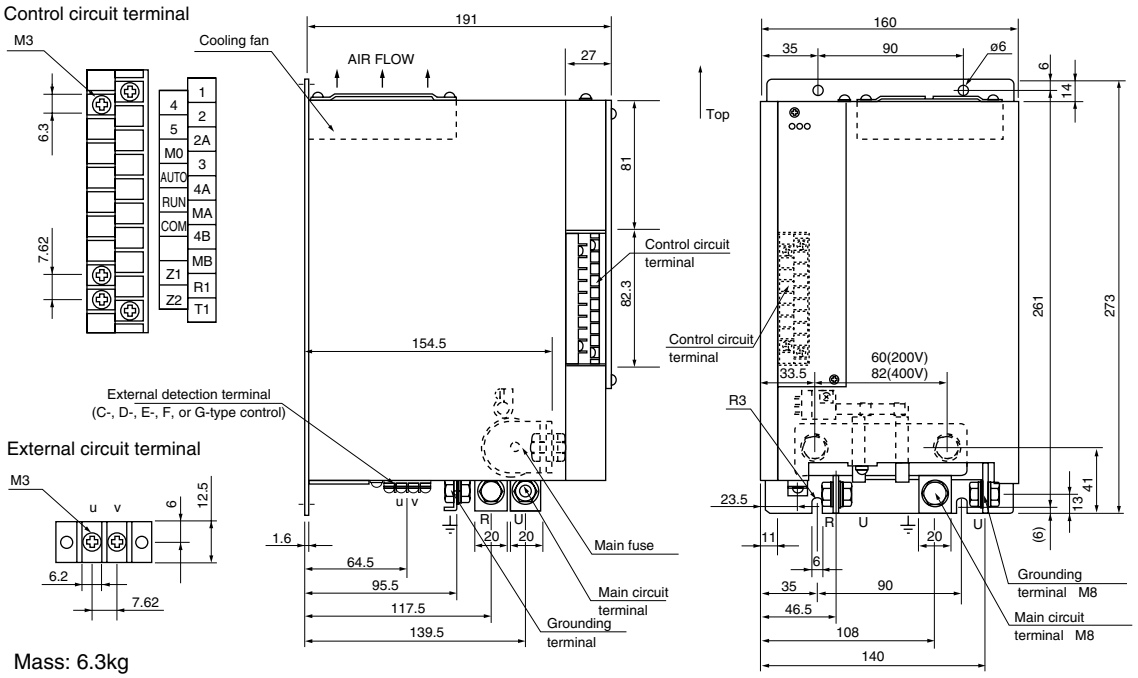


Mass: 4.3kg

Note: The bottom of the cover is exposed.

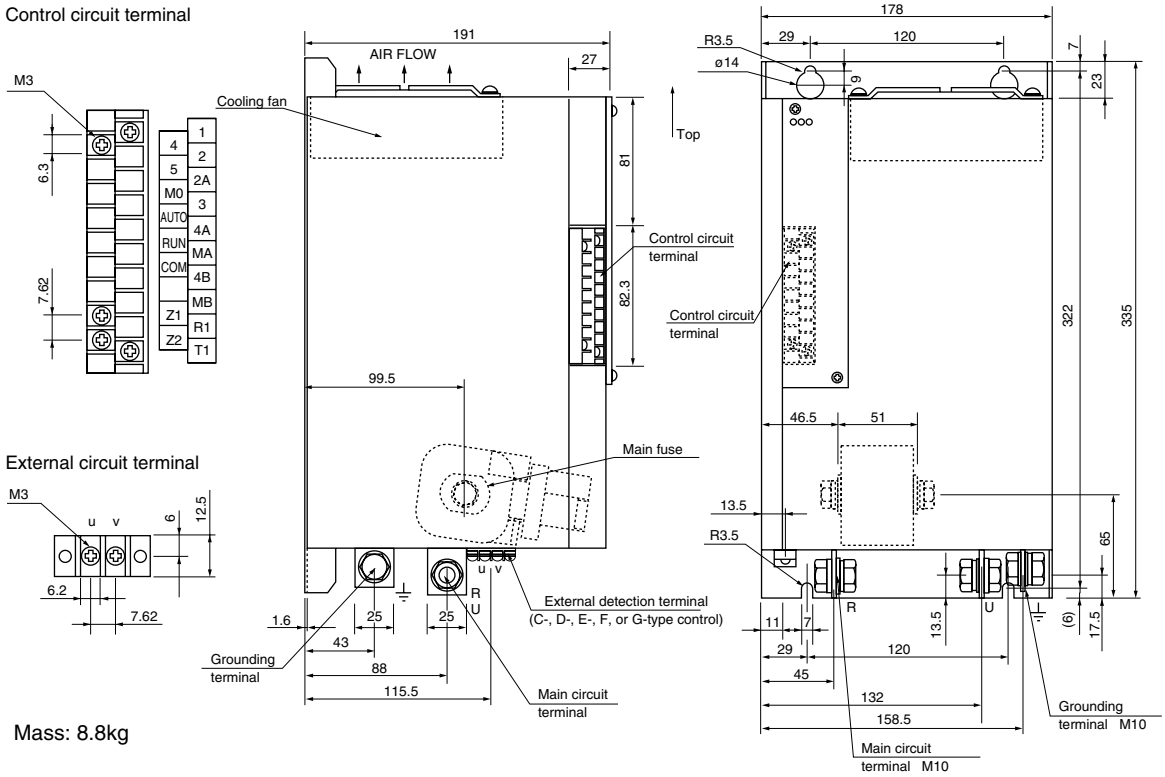
■ Dimensions, mm

● RPXE□150-2■□-N



Mass: 6.3kg

● RPXE□250-2■□-N



Mass: 8.8kg

Note: The bottom of the cover is exposed.

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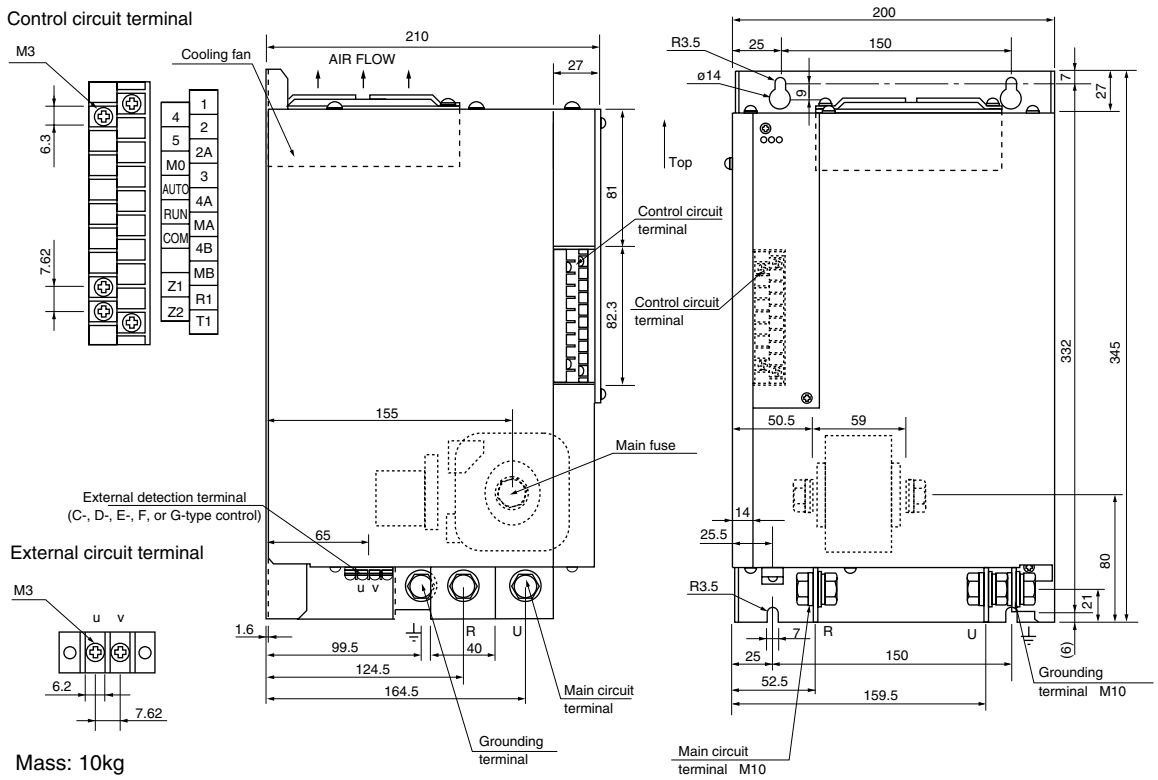
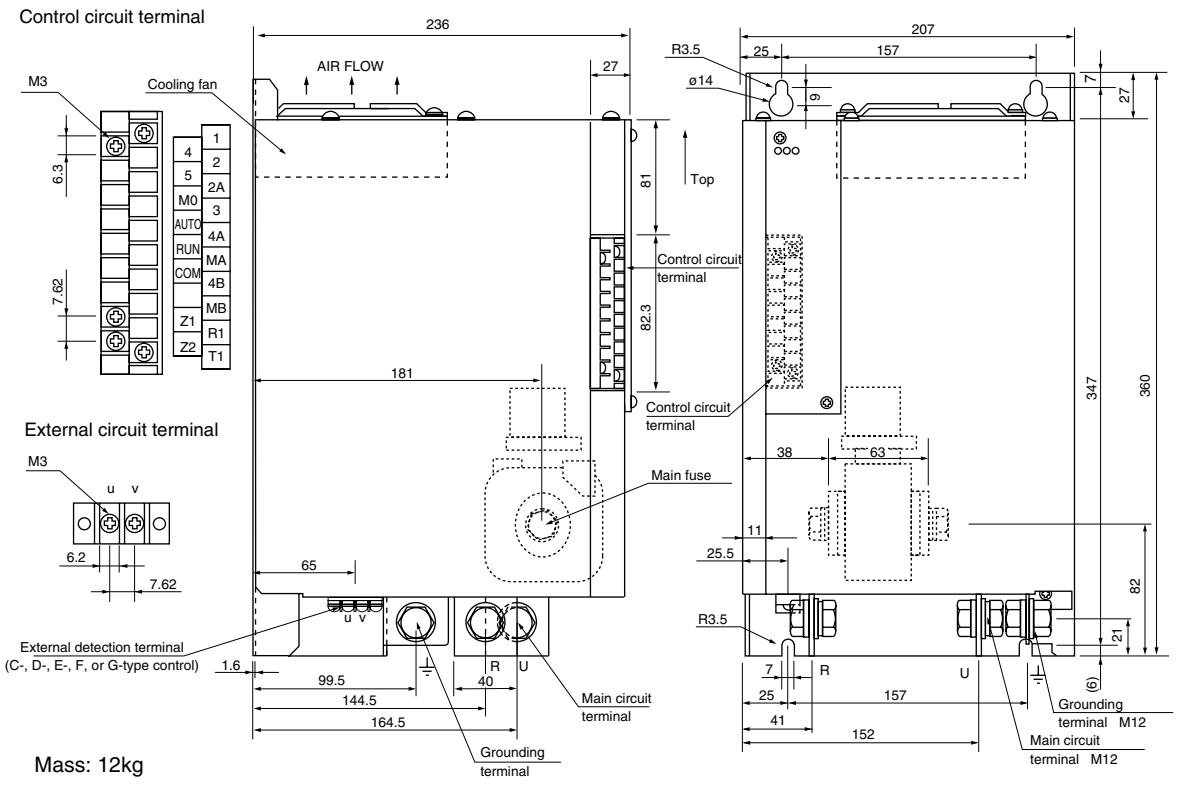
■ Dimensions, mm

● RPXE□350, □450-2■□-N



Mass: 10kg

● RPXE□600-2■□-N



Mass: 12kg

Note: The bottom of the cover is exposed.

Three-phase AC power regulators, APR-MX2 series

■ Description

The RPXD type is an improved multi-functional three-phase AC power regulator that is more compact than the conventional models.
It is used for heater control in fields such as plastic molding, rubber molding, glass processing and food processing, and as a dimmer for incandescent lighting. It also has various applications in the field of industrial equipment, serving, for example, as a DC power source when used in combination with a diode rectifier. It is useful in controlling all types of loads, either by cutting the power-on time of certain parts of the AC voltage sinusoidal wave (phase control), or by cutting the power-on time of each sinusoidal wave (cycle control).

■ Features

- Compact size
- Minimum arc angle of 0 degrees
- Resolution maintained under cycle control even in short duty cycles
- Supply-voltage flicker is reduced in parallel operation under cycle control.
- Up to 50 units can be used in parallel operation.
- Input/output characteristics can be set arbitrarily.
- Compensates for input voltage fluctuation
- Many optional accessories available
- Wide range of soft start, soft up, soft down time settings
- Improved function selection and set up features

■ Types and ratings

Phase	Input voltage	Output current	Type
Three-phase	200-220V AC	20A	**RPXD2020-2■□-N**
		45A	**RPXD2045-2■□-N**
		60A	**RPXD2060-2■□-N**
		100A	**RPXD2100-2■□-N**
		150A	**RPXD2150-2■□-N**
		250A	**RPXD2250-2■□-N**
		450A	**RPXD2450-2■□-N**
		600A	**RPXD2600-2■□-N**
	380V AC 400-440V AC others	20A	**RPXD0020-2■□-N**
		45A	**RPXD0045-2■□-N**
		60A	**RPXD0060-2■□-N**
		100A	**RPXD0100-2■□-N**
		150A	**RPXD0150-2■□-N**
		250A	**RPXD0250-2■□-N**
		450A	**RPXD0450-2■□-N**

Notes: *1 Replace the ■ mark by the control code shown in the Table at the right.
*2 Replace the □ mark by the parameter setting code shown in the Table at the right.

● Control type code (■)

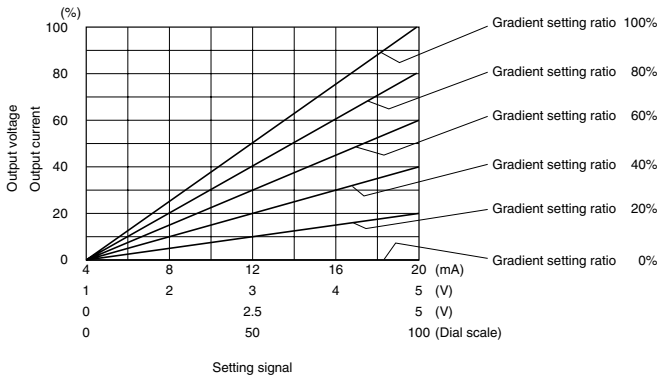
Code	Control type
T	No feedback function (without built-in CT)
A	AC CLR
B	AC ACR
C	AC AVR + AC CLR
D	AC AWR + AC CLR
E	DC AVR + AC CLR
F	DC ACR + AC CLR
Z	Special specification

CLR: Current limit control
ACR: Constant current control
AVR: Constant voltage control
AWR: Constant power control

● Parameter setting type code (□)

Code	Parameter setting type
N	Current signal: 4 to 20mA DC Voltage signal: 1 to 5V/ 0-5V DC
A	Variable resistor
B	Two-point control
C	Code N + gradient setting
E	Code A or C switchable
F	Code A or N switchable
Z	Non-standard current and voltage signals (custom spec.)

■ Voltage output characteristics for resistive load



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■ Specifications

Input voltage and frequency			200–220V AC, 380V AC, 400–440V AC 50/60Hz							
Rated output current	200–220V AC		20A	45A	60A	100A	150A	250A	450A	600A
	380V, 400–440V AC		20A	45A	60A	100A	150A	250A	450A	—
Cooling			Self-cooled				Fan-cooled			
Applicable load		Phase control	Resistive load, inductive load, transformer primary circuit, rectifier primary circuit							
		Cyclic control	Resistive load (temperature coefficient 10% or less)							
Output voltage adjustment range			0 to 100% of rated input voltage (not include the voltage drop of thyristors and diodes)							
Power supply voltage compensation			One-third or less of input voltage fluctuation							
Set signal	Manual setting		Variable resistor: 1kΩ, 1/2W min.							
	Automatic setting		Current signal: 4 to 20mA DC (Zin: 250Ω)							
			Voltage signal: 0 to 5V DC, 1 to 5V DC (Zin: 10kΩ)							
Input/output characteristic			r.m.s value linear characteristics, linearity: ±5% of FS or less							
Gradient setting range			0 to 100% of output voltages External variable resistor 1kΩ (supplied), built-in variable resistor 1kΩ (optional)							
Base load setting range			0 to 100% of output voltage							
Time of soft-start up, soft-increase/decrease			0.5 to 10s or 5 to 100s (selectable by DIP switch)							
Feedback control (phase control only)			AC CLR control, AC ACR control, AC AVR control, AC AWR control DC AVR control, DC ACR control *							
Protection	CPU error		Detects CPU memory errors at start-up							
	Power supply single-phasing or phase sequence error		Detects single-phasing in the 3-phase control power supply and phase sequence errors in the 3-wire							
	Fuse blowout		Interrupts output with the built-in fuse to protect the main element.							
	Overcurrent		Detects currents of at least 120% of the rated current with the built-in CT (This function is not provided with T-type control models.)							
	Overheating		Detects overheating errors with a temperature sensor (air-cooling type only)							
	Parallel operation error		Detects transmission errors between APRs in parallel operation							
	Instantaneous power supply failure detection		Detects instantaneous power failures in the control power supply voltage. Soft starts at power recovery.							
	Alarm contact output		Relay contact (1NO, 1A at 250V AC)							
Ambient temperature			–5 to +40˚C (Output current should be derated when used above 40˚C)							
Ambient humidity			30 to 90% RH (no condensation)							
Environment			Altitude: Up to 1000m. Free from corrosive gases, dust, vibration							
Withstand voltage (between input and ground terminals)			2000V AC, 1 minute (Main circuit: 200 to 220V) 2500V AC, 1 minute (Main circuit: 380V, 400 to 440V)							
Insulation resistance (between input and ground terminals)			10MΩ or more (500V DC megger)							

Notes: * CLR: Current limit control AVR: Constant voltage control
ACR: Constant current control AWR: Constant power control

■ Type number nomenclature

RPX D □□ – 2 □□ – N

Series
APR-MX2 series

Phase
D: Three-phase

Main circuit input voltage
2: 200 to 220V AC
0: 380V, 400 to 440V AC

Rated output current
020: 20A
045: 45A
060: 60A
100: 100A
150: 150A
250: 250A
450: 450A
600: 600A

Parameter setting
N: Current signal 4 to 20mA DC
Voltage signal 1 to 5V, 1-5V DC
A: Variable resistor
B: Two-point control (high-low)
C: Code N + gradient setting
E: Code A or C (switchable)
F: Code A or N (switchable)
Z: Non-standard current and voltage signals
Specify the VT ratio, CT ratio, and insulating converter specifications (such as rated input and rated output)

Control
T: No feedback function (without built-in CT)
A: AC CLR
B: AC ACR
C: AC AVR + AC CLR
D: AC AWR + AC CLR
E: DC (or AC) AVR + AC CLR
F: DC (or AC) ACR + AC CLR
Z: Special specification
Specify the special setting signals (such as allowable current and voltage load resistance or setting circuit type)

■ Required optional devieces for feedback control

Code	Control type	Optional device
T	No feedback function	–
A	AC CLR	–
B	AC ACR + AC CLR	–
C	AC AVR + AC CLR	VT
D	AC AWR + AC CLR	W converter, VT, CT
E	DC AVR + AC CLR	Insulating converter or VT, RMS converter
F	DC ACR + AC CLR	Insulating converter or VT, RMS converter

Feedback control type
CLR: Current limit control
ACR: Constant current control
AVR: Constant voltage control
AWR: Constant power control

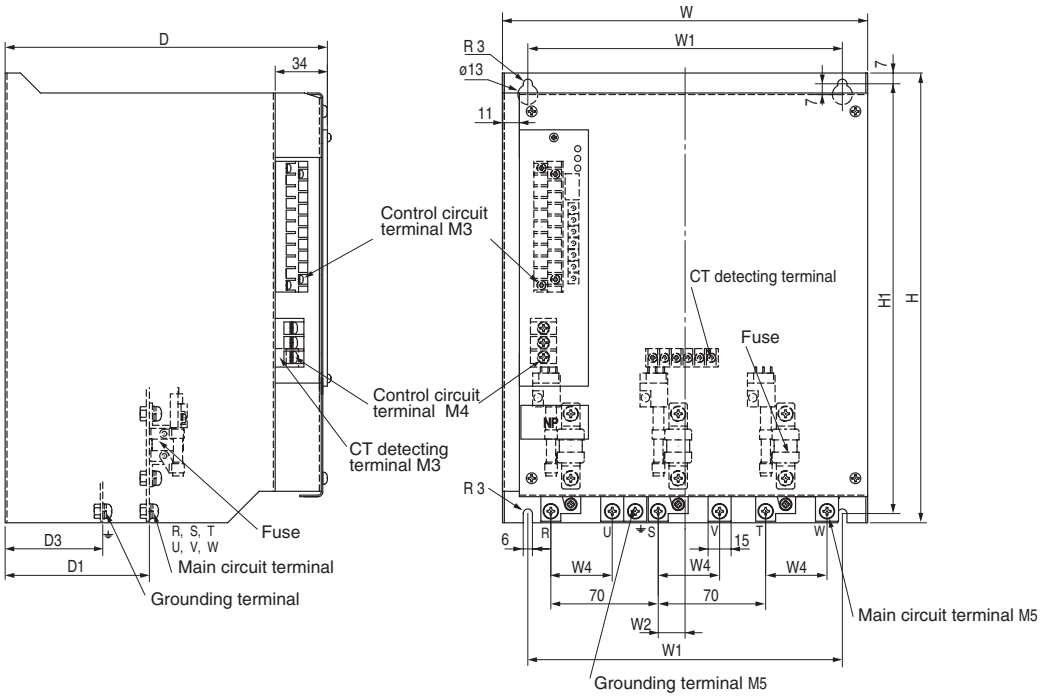
■ Ordering information

Specify the following:
1. Type number
2. Special specification

10

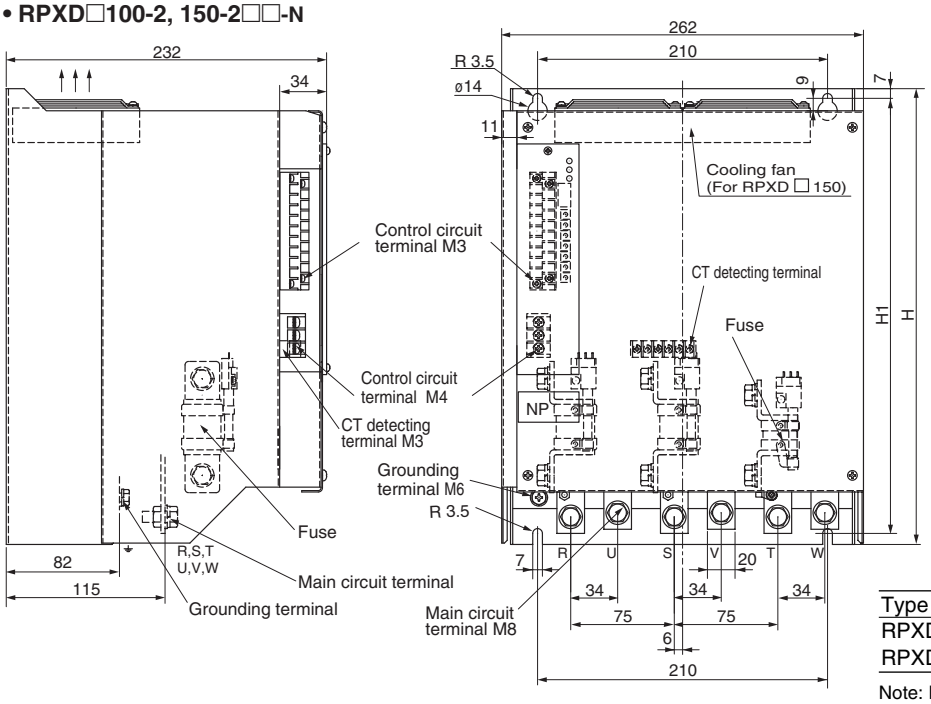
■ Dimensions, mm

• RPXD□020-2, 045-2, 060-2□□-N



Type	W	W1	W2	W4	H	H1	D	D1	D3	Mass
RPXD□020-2□□-N	230	200	20.5	40	273	260	160	45	13	6.9kg
RPXD2045-2□□-N	238	205	17.5	40	293	280	210	94	63.5	10.4kg
RPXD0045-2□□-N	238	205	4.5	27	293	280	210	94	63.5	10.9kg
RPXD2060-2□□-N	238	205	17.5	40	293	280	210	94	63.5	10.4kg
RPXD0060-2□□-N	238	205	4.5	27	293	280	210	94	63.5	10.9kg

• RPXD□100-2, 150-2□□-N

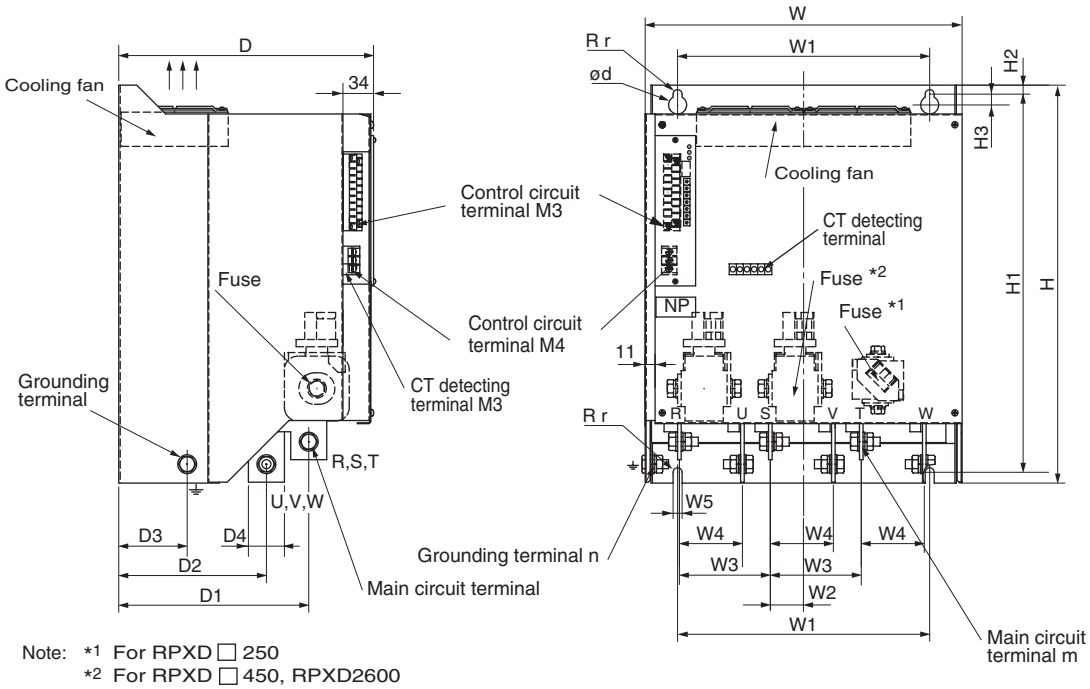


Type	H	H1	Mass
RPXD□100-2□□-N	330	315	14.7kg
RPXD□150-2□□-N	360	345	16.0kg

Note: R- and S-phase: For RPXD0100 and RPXD0150
T-phase : For RPXD2100 and RPXD2150

■ Dimensions, mm

• RPXD□250-2, 450-2, 2600-2□□-N

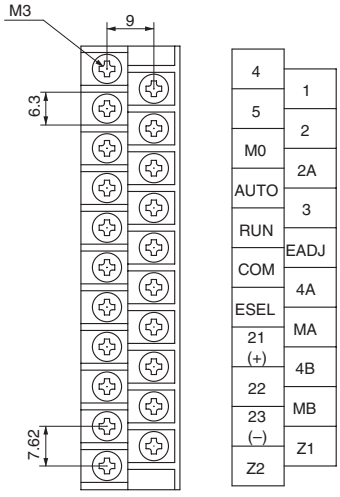


Note: *1 For RPXD □ 250
*2 For RPXD □ 450, RPXD2600

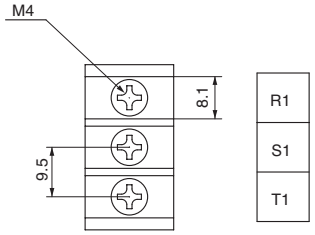
Type	W	W1	W2	W3	W4	W5	H	H1	H2	H3	D	D1	D2	D3	D4	r	d	m	n	Mass
RPXD□250-2□□-N	262	200	26	74	48	10	384	365	10	12	280	185.5	136.5	80	25	5	20	M10	M8	18.1kg
RPXD□450-2□□-N	352	280	37	101	70	10	442	420	10	12	283	211	164	76	40	5	20	M10	M10	27.8kg
RPXD2600-2□□-N	352	280	36.5	101	70	12	528	505	12	15	293	226	169	76	50	6	24	M12	M10	35.7kg

■ Termial diagrams

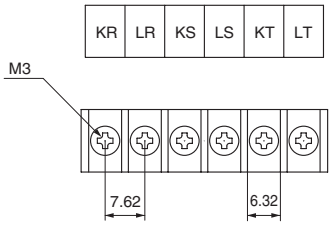
Control circuit terminals



Control power supply circuit termials



CT detecting termials

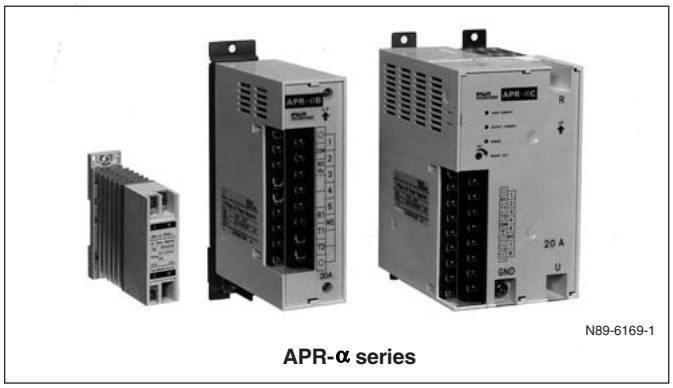


10

Single-phase AC power regulators, APR-α series

■ Description

The APR-α series is a compact, light-weight single-phase AC power regulator.
They have a wide variety of applications in such as resistive load, inductive load and transformer primary circuits.



APR-α series

■ Features

- Compact and light-weight product required only a small panel mounting space.
- Variety of models with output current ratings from 10 to 200A are available. Select optimum models for your applications.
- Fan error protection features are provided for 150 and 200A models.
- Overcurrent protection and low input voltage protection features are provided for the APR-α C series.
- The APR-α C series has LED indicators for overcurrent and fan error alarms and for load current and control power indications.

■ Types and ratings

Series	Input voltage	Output current	Type
APR-αA series	100V/200V common	10A	**RPAE2010**
		20A	**RPAE2020**
		30A	**RPAE2030**
		60A	**RPAE2060**
APR-αB series	100V/200V common	20A	**RPBE2020-□**
		40A	**RPBE2040-□**
		60A	**RPBE2060-□**
		100A	**RPBE2100-□**
	200V	150A	**RPBE2150-□**
		200A	**RPBE2200-□**
APR-αC series	100V/200V common	20A	**RPCE2020-□**
		40A	**RPCE2040-□**
		60A	**RPCE2060-□**
		100A	**RPCE2100-□**
	200V	150A	**RPCE2150-□**
		200A	**RPCE2200-□**

Note: Replace the □ mark by the parameter setting code shown in the Table.

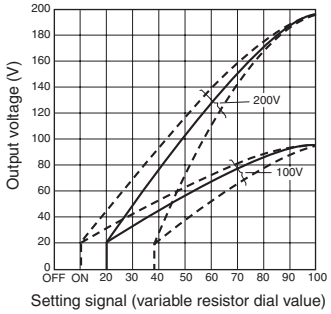
● Parameter setting type code For APR-αB and αC series

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 A or C switchable
F	Code A or N switchable
Z	Non-standard current and voltage signals (custom spec.)

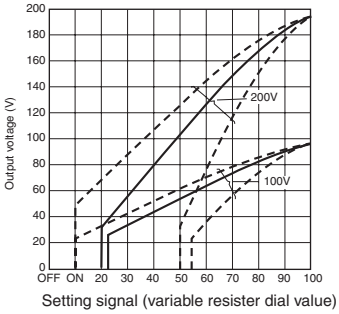
■ Voltage output characteristics for resistive load (typical)

αA series

• RPAE2010, RPAE2020, RPAE2030



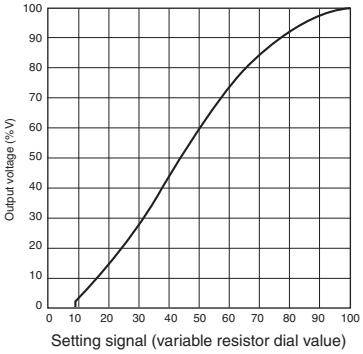
• RPAE2060



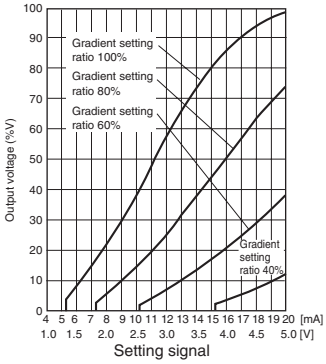
Note • Output characteristics are variable at input voltage and input frequency.
• Solid line shown typical example.
• Dotted line shown variable area.

αB series

• Variable resistor setting

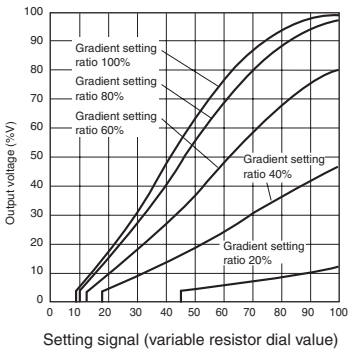


• Current signal setting
• Voltage signal setting

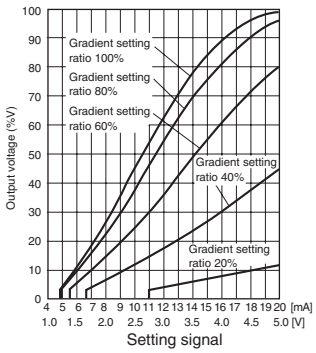


αC series

• Variable resistor setting



• Current signal setting
• Voltage signal setting



■ Specifications

Series		αA series		αB series	αC series
Type		**RPAE2**□		**RPBE2**□**-**□	**RPCE2**□**-**□
Applicable load		Resistive load		Resistive load	Resistive load, inductive load, transformer primary circuit, rectifier primary circuit
Rated output current		10A, 20A, 30A	60A	20A, 40A, 60A, 100A, 150A, 200A	
Minimum load current		0.8A (at 100V) 0.3A (at 200V)	0.3A	0.5A (at 98% output)	
Input voltage and frequency		100 to 110V AC, 200 to 220V AC ±10% 50/60Hz ±1Hz		Up to 100A: 100 to 110V AC/200 to 220V AC ±10%, 50/60Hz ±1Hz 150, 200A: 200 to 220V AC ±10%, 50/60Hz ±1Hz	
Minimum input voltage		–		10V AC	
Cooling		Self-cooled		Up to 100A: Self-cooled 150, 200A: Fan-cooled	
Wave control		Phase control			
Output voltage adjustment range		20 to 96% (100V) 10 to 98% (200V)	25 to 96% (100V) 25 to 98% (200V)	0 to 98% of input voltage	
Gradient setting range		–		0 to 100% of setting signal	
Output voltage setting		Variable resistor		Variable resistor Current signal: 4 to 20mA DC (Zin=250Ω) Voltage signal: 1 to 5V DC	
Time to soft-startup, soft-increase/decrease		–		1 second	
Protection	Short-circuit	Detected by super rapid fuse (externally mounted)			
	Overcurrent	–		–	Gate-off by built-in CT
	Fan-trouble	–		Gate-off by built-in sensor	
	Input voltage drop (control circuit)	–		–	Gate-off at voltage less than 15% of input voltage Reset at 15% or more of input voltage
Indication	Overcurrent/ fan trouble	–			Red LED lights up
	Load current	–			Yellow LED lights up
	Control supply	–			Green LED lights up
Ambient temperature		-15 to +55˚C*		-10 to +55˚C*	
Ambient humidity		30 to 90% RH (no condensation)			
Environment		Free from corrosive gases, dust and vibration			
Withstand voltage		2000V AC 1 minute between input and ground terminals (Variable resistor: 1000V AC 1 minute)			
Insulation resistance		20MΩ or more between input and ground terminals (500V DC megger)			

Note: * Output current should be derated when use above 40˚C

10

■ Type number nomenclature

RPB E 2 □ – □

Series
RPA: APR-αA series
RPB: APR-αB series
RPC: APR-αC series

Phase
E: Single-phase

Main circuit input voltage
2: 100-110V/200-220V AC common

Rated output current
010: 10A
020: 20A
030: 30A
040: 40A
060: 60A
100: 100A
150: 150A
200: 200A

Parameter setting
N: Current signal: 4 to 20mA DC, voltage signal: 1 to 5V DC
A: Variable resistor
B: Two-point control (high-low)
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

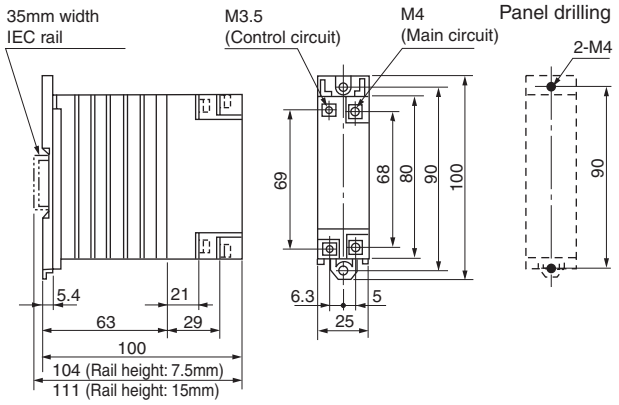
■ Ordering information

Specify the following:
1. Type number
2. Special specification

■ Dimensions, mm

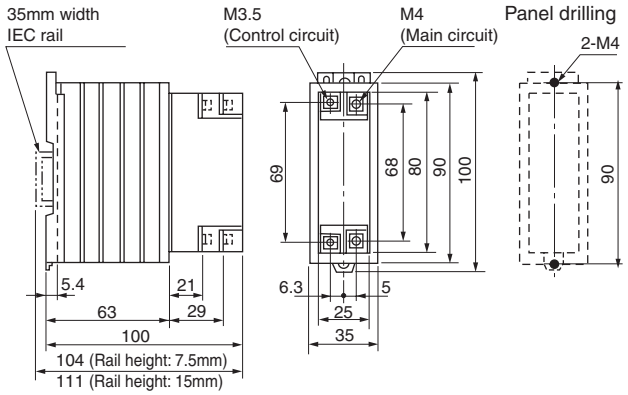
● APR-αA series

RPAE2010



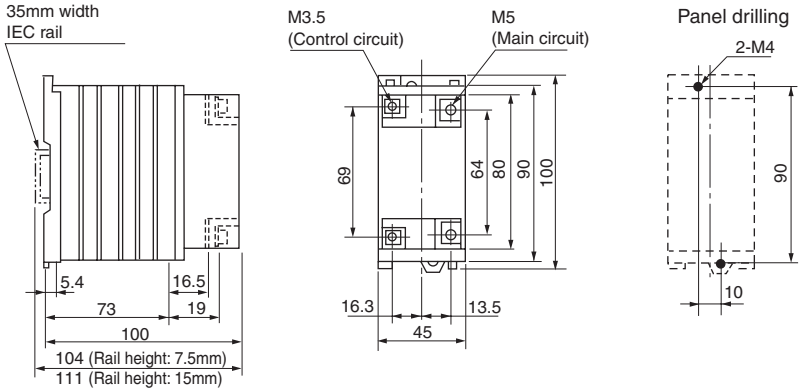
Mass : 200g

RPAE2020



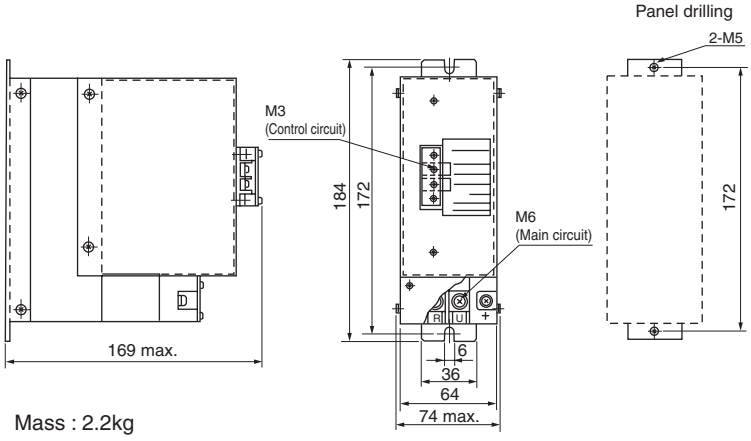
Mass : 230g

RPAE2030



Mass : 330g

RPAE2060



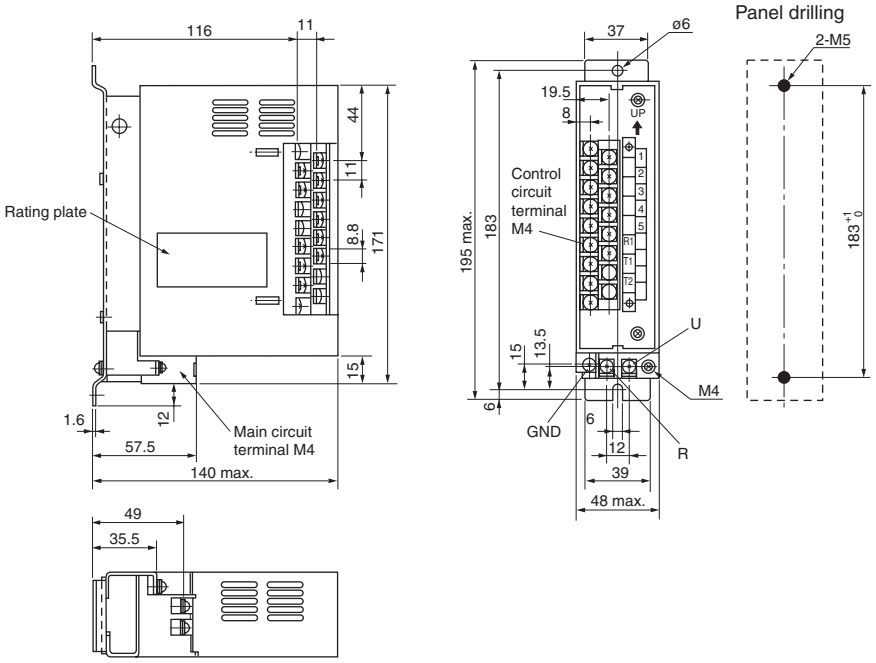
Mass : 2.2kg

10

■ Dimensions, mm

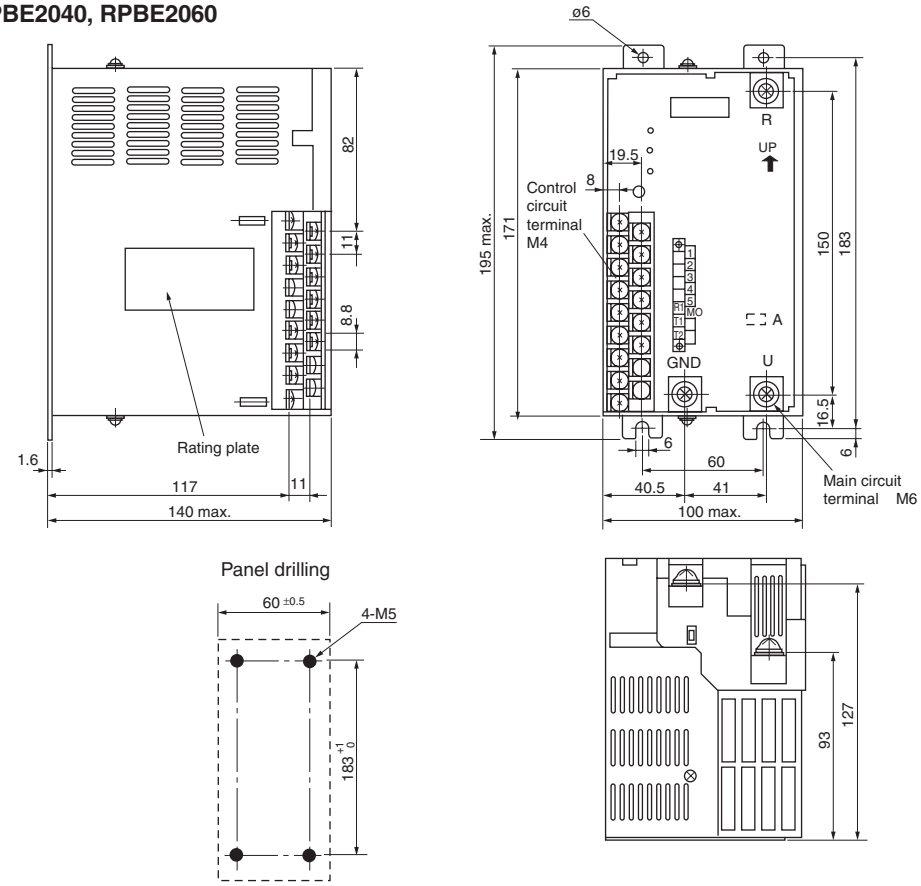
● APR-αB series

RPBE2020



Mass : 1.1kg

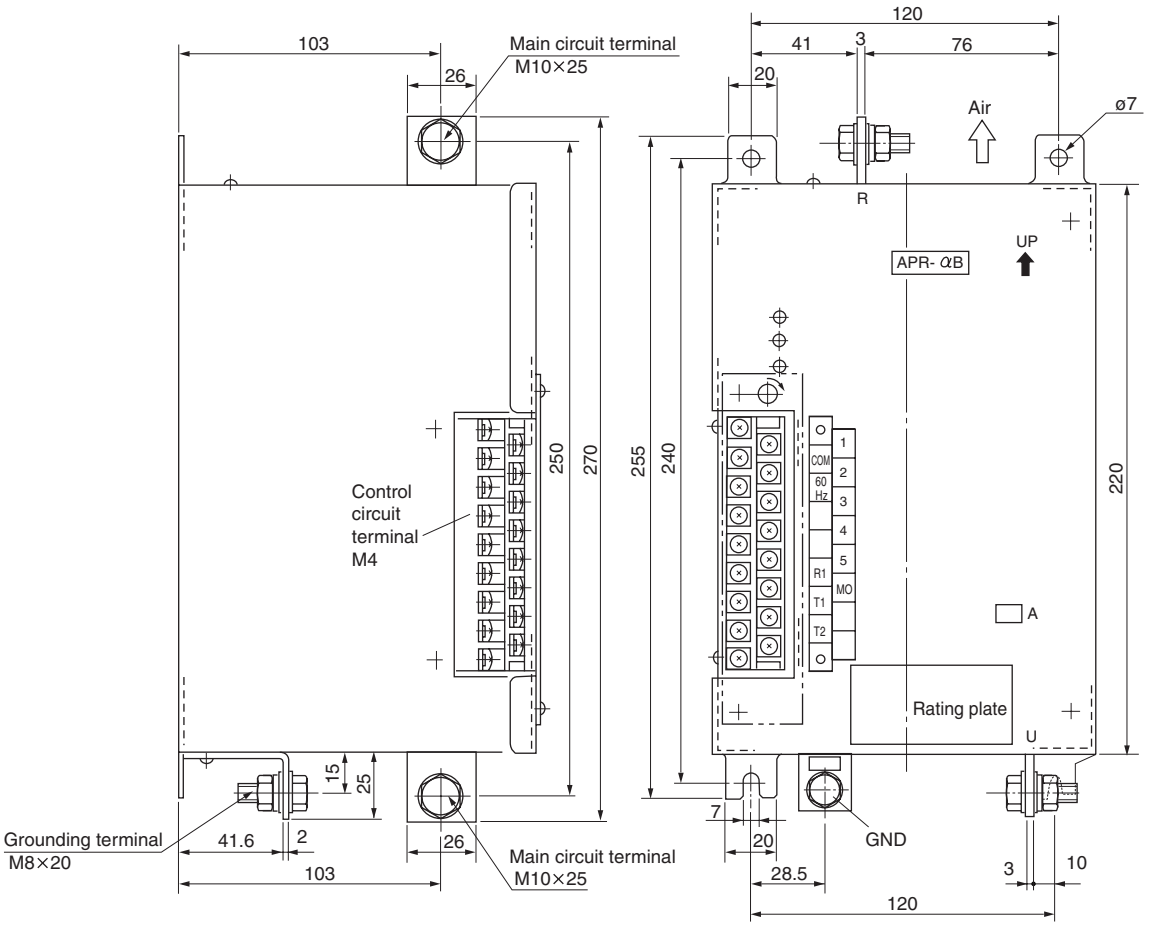
RPBE2040, RPBE2060



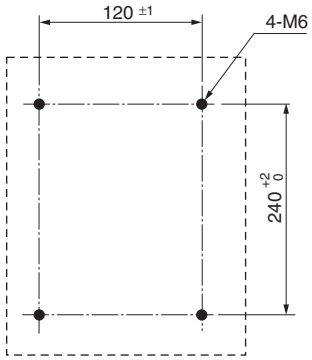
Mass : 1.8kg

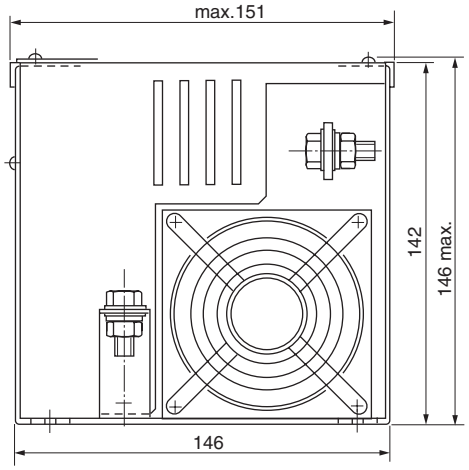
■ **Dimensions, mm**
● **APR-αB series**

RPBE2100, RPBE2150, RPBE2200



Panel drilling





Mass
100A : 4.1 kg
150A, 200A : 4.5 kg

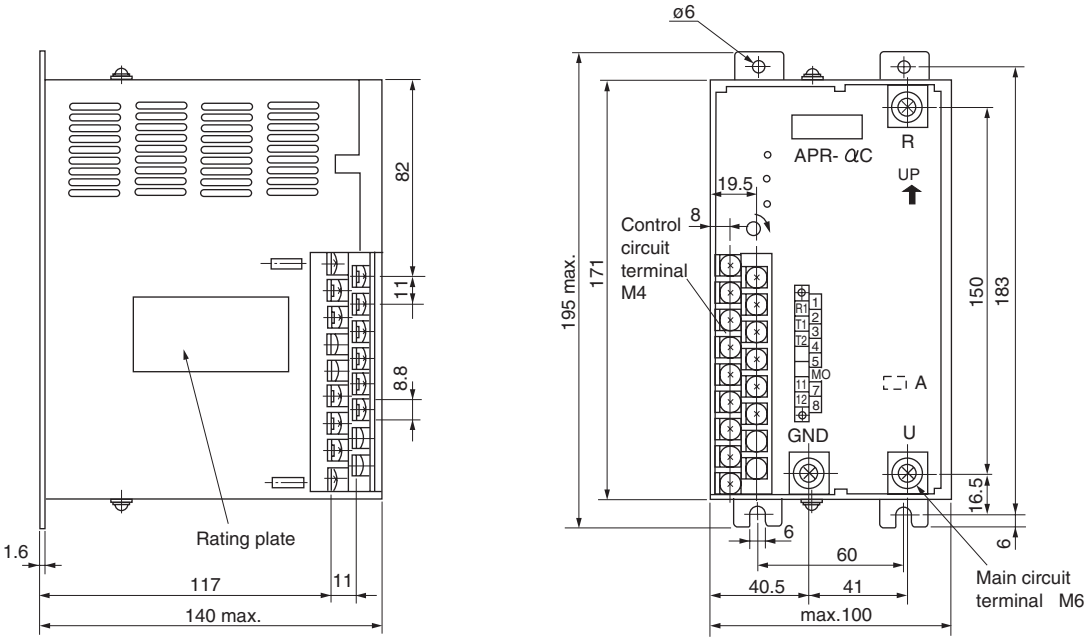
Notes: No fan is provided with 100A types.

10

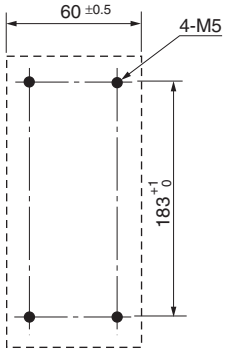
■ **Dimensions, mm**

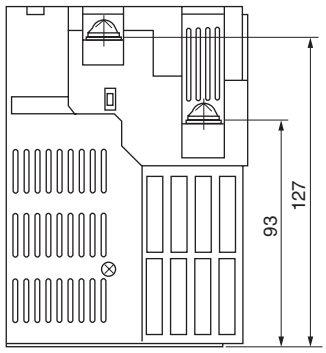
● **APR-αC series**

RPCE2020, RPCE2040, RPCE2060



Panel drilling



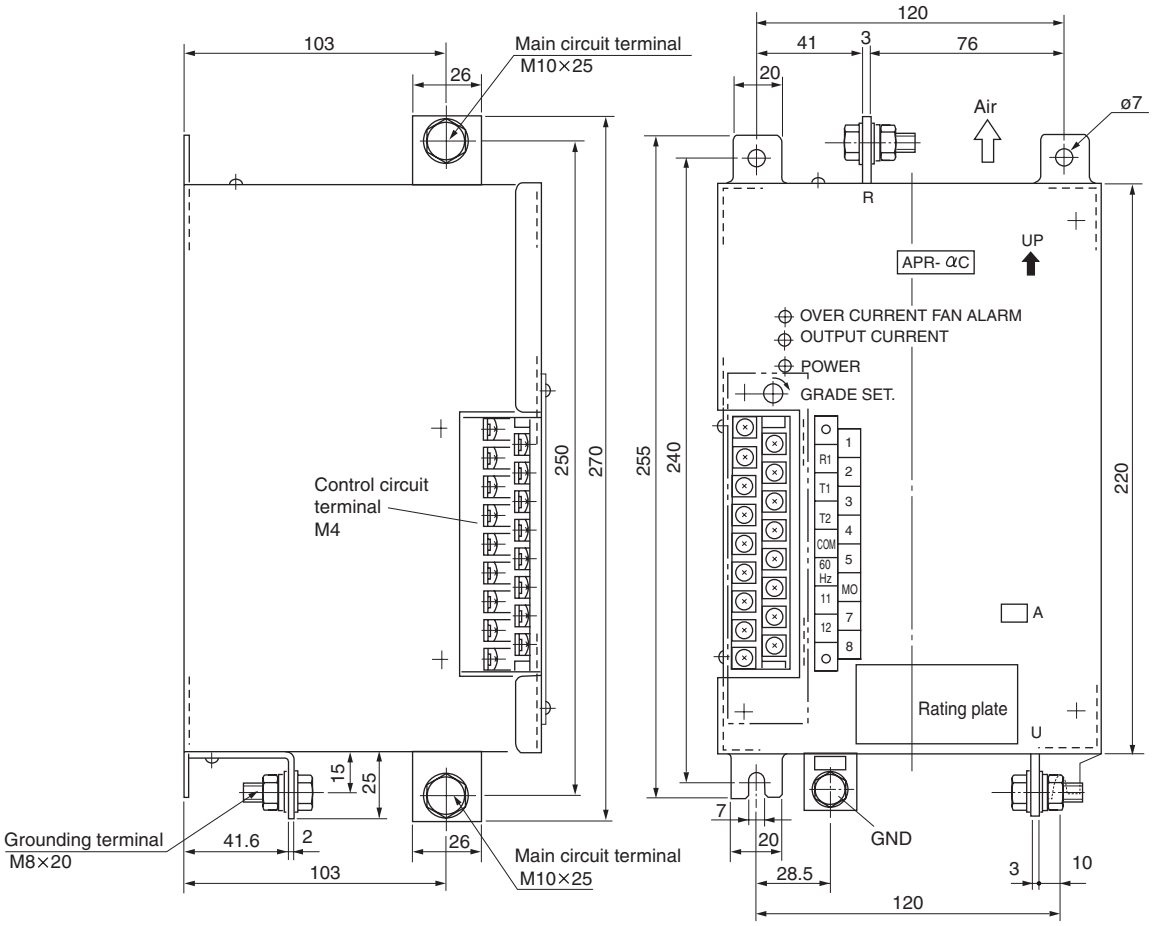


Mass : 2.2kg

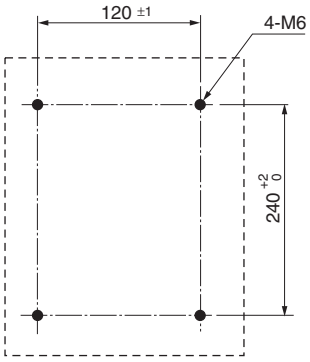
■ **Dimensions, mm**

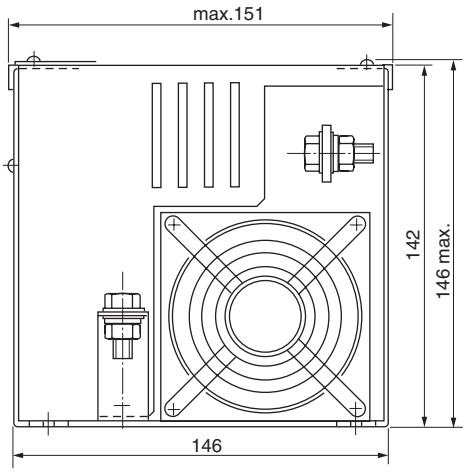
● **APR-αC series**

RPCE2100, RPCE2150, RPCE2200



Panel drilling





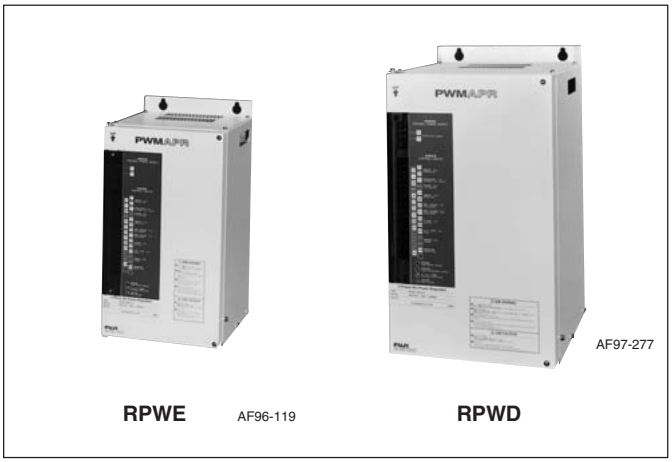
Mass:
100A : 4.5 kg
150A, 200A : 4.9 kg

Note: No fan is provided with 100A types.

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 moduration (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

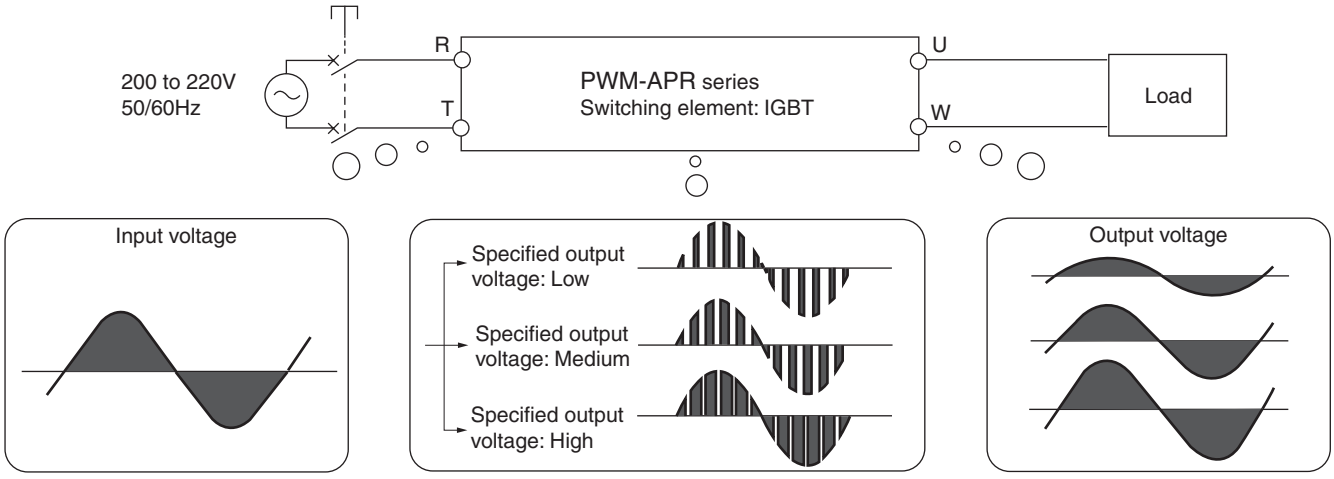
Applicable to resistive, inductive, and capacitive loads.
Usable as low cost capacitor banks in place of power capacitors for power factor correction.
Conventional capacitor banks can only control lead currents stepwise. But, the PWM-APRs can vary lead currents continuously from zero to the maximum value.

● 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.

■ 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.



■ 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		3-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	55.4/61.0kVA
Output current		80A	160A	40A	80A	160A
Cooling		Fan-cooled				
Applicable load		Resistive load, inductive load, transformer primary ciucuit (Contact FUJI for RPWD series), rectifier primary ciucuit 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 recoverd.				
	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 shoud 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.)

■ Type number nomenclature

RPW □ 2 □ – 1 C □ – N

Series
PWM-APR series

Phase
E: Single-phase
D: Three-phase

Main circuit input voltage
2: 200 to 220V AC

Rated output current
040: 40A
080: 80A
160: 160A

Parameter setting
N: Current signal 4 to 20mA DC, Voltage signal: 1 to 5V DC
A: Variable resistor
B: Two-point control (high-low)
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

Control
C: AC AVR control + AC CLR control
AVR: Constant voltage control CLR: Current limit control

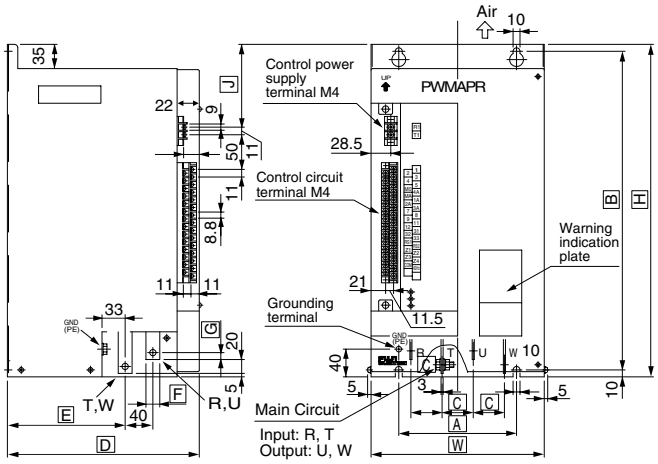
Circuit
1: No insulated deboost type

■ Ordering information

Specify the following:
1. Type number
2. Special specification

■ Dimensions, mm

● RPWE

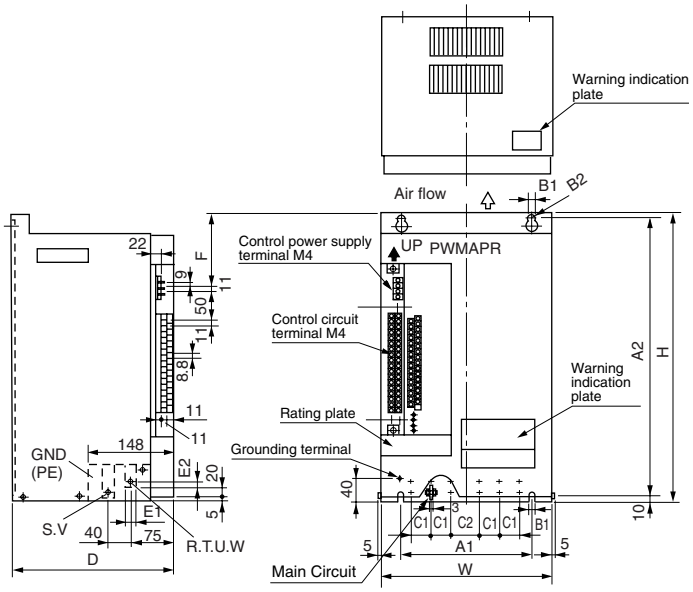


Single-phase 200 to 220V 50/60Hz 80A (Wall mounting)
Single-phase 200 to 220V 50/60Hz 160A (Wall mounting)

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

- **RPWD**



Three-phase 200 to 220V 50/60Hz 40A (Wall mounting)
Three-phase 200 to 220V 50/60Hz 80A (Wall mounting)
Three-phase 200 to 220V 50/60Hz 160A (Wall mounting)

Terminal	40A	80A	160A
Main circuit terminal	M6×16	M8×20	M10×25
Grounding terminal	M6×12	M8×14	M10×16

Rated output current	W	H	D	A1	A2	B1	B2	C1	C2	E1	E2	F	Mass
40A	300	540	335	220	520	10	R5	35	50	20	10	140	35kg
80A	470	600	285	370	578	12	R6	60	90	20	10	165	55kg
160A	620	660	285	520	638	12	R6	75	120	30	15	165	75kg

10

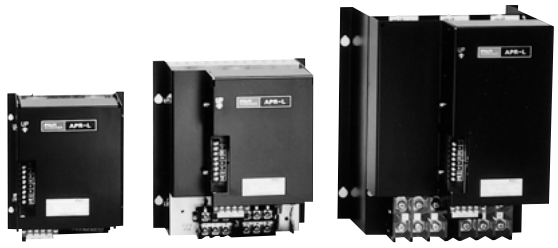
Three-phase AC power regulators, APR-L series

■ Description

The APR-L series is a compact, light-weight three-phase AC power regulator.
It has various parameter setting types, and it is suitable for automatic control of heater and incandescent lighting.

■ Features

- Very compact and light-weight.
- Highly reliable and long lasting (Uses solid-state components.) Suitable for use in quiet places (Generates little audible noise.)
- 10 types of operation parameters enable flexible automatic control.



RPLD

CP-1226

■ Types and ratings

Input voltage	Output current	Type
Three-phase 200V AC	20A	**RPLD2020-**□
	40A	**RPLD2040-**□
	60A	**RPLD2060-**□
	100A	**RPLD2100-**□
Three-phase 400V AC	20A	**RPLD0020-**□
	40A	**RPLD0040-**□
	60A	**RPLD0060-**□
	100A	**RPLD0100-**□

Note: Replace the □ mark by the parameter setting code shown in the Table at the right.

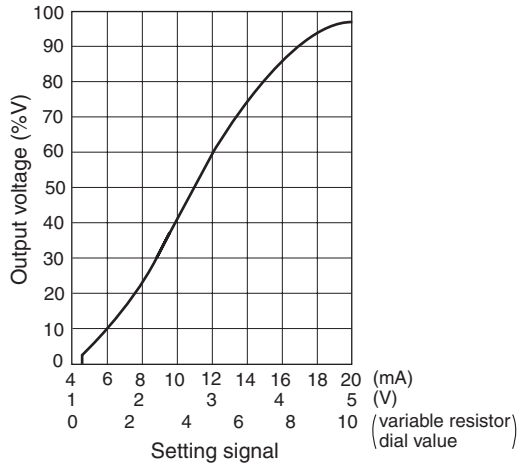
■ Specifications

Input	Voltage and frequency	200 to 220V, 380V, 400 to 440V 50/60Hz (selectable)
	Allowable voltage and freuqnecy fluctuation	Voltage: ±10% of input voltage Freuquency: ±1Hz
Output voltage adjustable range		0 to 98% of input voltage
Gradient setting range		0 to 100% of setting signal
H-L control range		0 to 100%
Ambient temperature		-10 to +55˚C (Output current should be derated when used above 40˚C)
Applicable load		Resistive load
Output voltage setting		Variable resistor: 1kΩ Current signal: 4 to 20mA (250Ω) Voltage signal: 1 to 5V
Cooling		Self-cooled
Withstand voltage (between input and ground terminals)		200/220V: 2000V, 1 minute 380V, 400/440V: 2500V, 1 minute
Insulation resistance		5MΩ or more (500V DC megger)
Short-circuit protection		Super rapid fuse (external mounting)
Time to soft-startup and soft-increase/decrease		0.5 seconds

● 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 A or C (switchable)
F	Code A or N (switchable)
Z	Non-standard current and voltage signals (custom spec.)

■ Voltage output characteristics for resistive load (typical)



■ Ordering information

Specify the following:
1. Type number
2. Special specification

■ Type number nomenclature

RPL D □ □ – □

Series
APR-L series

Phase
D: Three-phase

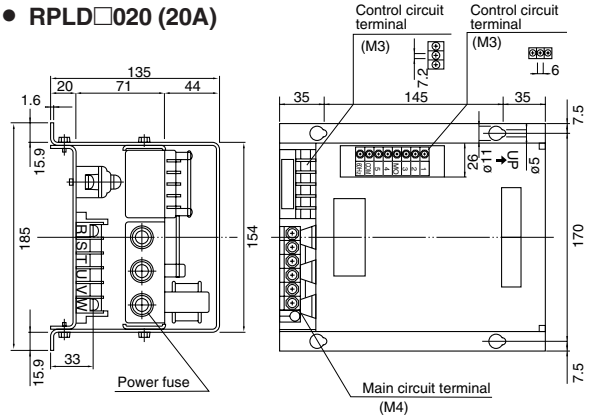
Main circuit input voltage
2: 200V AC
0: 400V AC

Rated output current
020: 20A
040: 40A
060: 60A
100: 100A

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

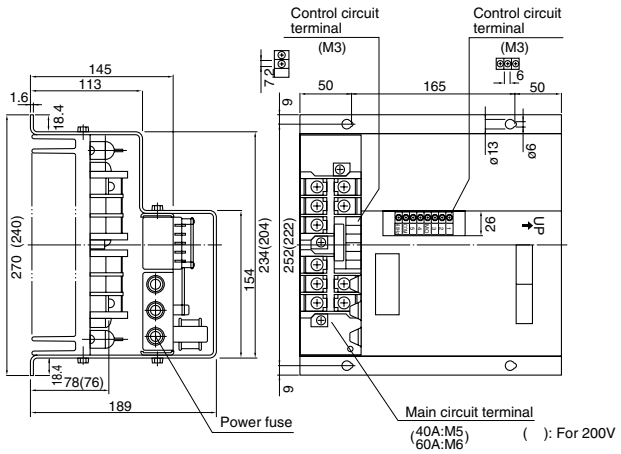
■ Dimensions, mm

● **RPLD□020 (20A)**



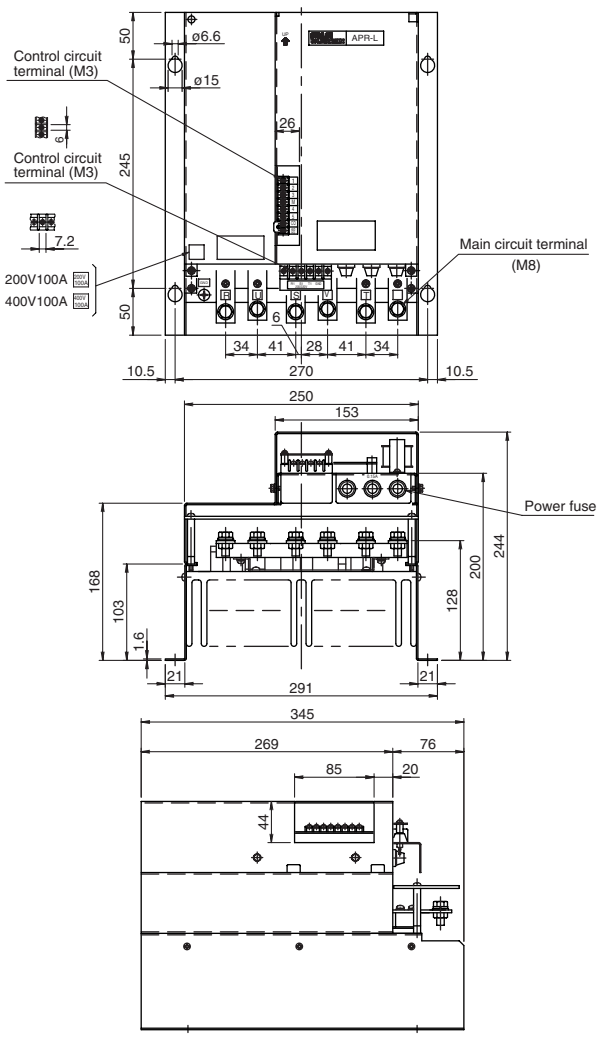
Mass: 3.4kg

● **RPLD□040, 060 (40A, 60A)**



Mass: 200V 7.7kg, 400V 8.4kg

● **RPLD□100 (100A)**



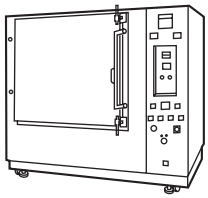
Mass: 11.5kg

■ Applications

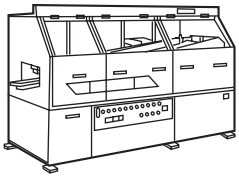
The FUJI APRs use semiconductor devices as main-circuit switching elements to realize long life and high reliablity. As such, they are suitable for applications in which frequent load switching is required. Typical applications is high-precision control of heater temperature.

The FUJI APRs have no mechanical contacts. This means that the FUJI APRs do not generate noise when switching loads and they are suitable for use in quiet places or at night.

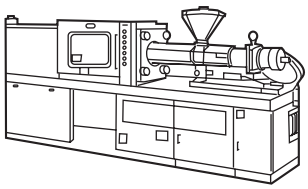
● Applications for heater control



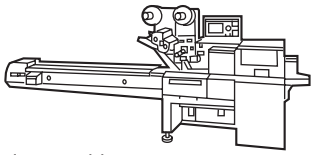
Constant temperature chamber



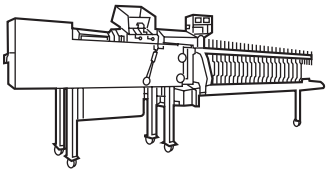
Soldering bath



Plastic injection-mold machine

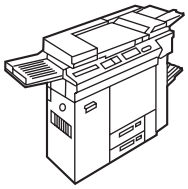


Pacing machine

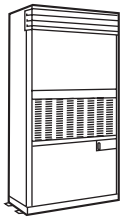


Filling machine

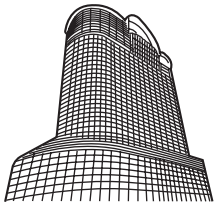
● Applications in quiet places



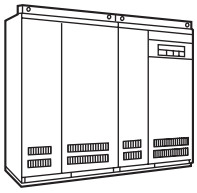
Copying machine



Air-conditttioning equipment



Swithchborad in a hotel

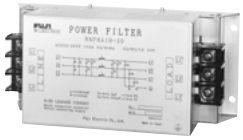


Power supply system for computers

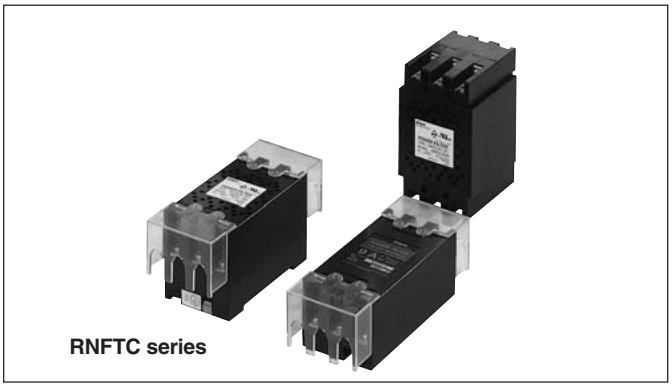
Power supply system for hospital

Power Filters

■ Quick selection guide

Series	**RNFTC**	**RNFMC**	**RNFHA**	**RNFTS** **RNFMS**
				
Circuit	Input circuit	Input circuit	Input circuit	Output circuit
Phase	3-phase	3-phase	3-phase	3-phase
Rated voltage	250/480V	250/480V	200-250V, 380-440V	250/480V
Rated current	6-50A	75-400A	5-100A	5-90A, 10-100A
Feature	• International safety standards • Resin case model with integrated terminal block construction • Simple wiring work	• International safety standards • Compact size and light weight	• High performance • Prevent noise emission from inverter output cables • Compact size and light weight	• Prevent noise emission from inverter output cables • Resin case model RNFTS series with integrated terminal block construction • Simple wiring work
Page	*10/30*	*10/33*	*10/36*	*10/40*

RNFTC series input circuit Power Filters


RNFTC series

■ Features
- Compliance with international safety standards (UL 1283, CSA C22.2 No. 8, EN 133200).
- Resin case model with integrated terminal block construction.
- External terminal construction equivalent to field-wiring terminal in durability.
- Identical terminal configuration with FUJI's MCCB, thus simplifying wiring work.
- Small leakage current minimizes ELCB (Earth Leakage Circuit Breaker) malfunctions.
- Combination with an RNFTS series output circuit Power Filter provides high damping characteristics.

■ Standards

c UL us	UL1283 CSA C22.2, No.8	File No. E210696
TÜV Rheinland	EN133200	R50023040, R50023039

■ Types and specifications

Type	Phase	Rated voltage(V)	Rated current (A)	Withstand voltage to grounding (V AC)	Leakage current (mA)	Voltage drop (V)	Operating ambient temperature (˚C)
RNFTC06-20	3-phase	250	6	2000, 1 minute	1.0 max. at one phase grounded	1.0 max.	-10 to +50
RNFTC10-20			10				
RNFTC20-20			20				
RNFTC30-20			30				
RNFTC50-20			50				
RNFTC06-40	3-phase	480	6	2500, 1 minute	• 1.0 max. at neutral phase grounded • 1.0 max. at one phase grounded	1.0 max.	-10 to +50
RNFTC10-40			10				
RNFTC20-40			20				
RNFTC30-40			30				
RNFTC50-40			50				

■ Type number nomenclature

RNFTC □ – □

Series
RNFTC series

Rated current
06: 6A
10: 10A
20: 20A
30: 30A
50: 50A

Rated voltage
20: 250V
40: 480V

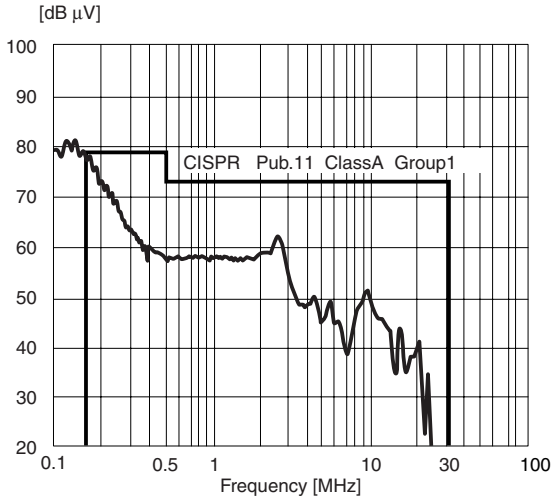
■ Ordering information
Specify the following:
1. Type number

■ Noise damping characteristics

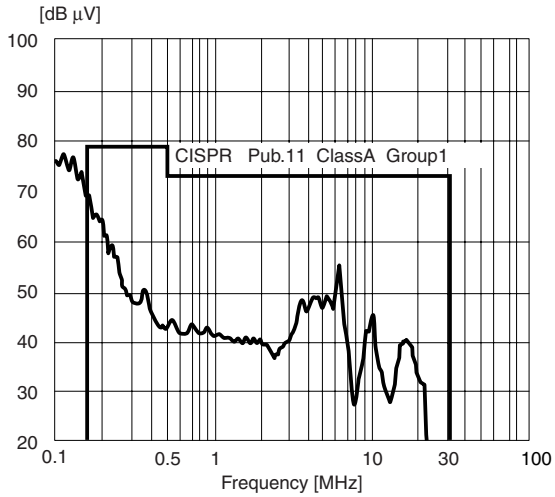
● Dynamic characteristics

Typical example: FUJI inverter combining an RNFTC06-20 input circuit Power Filter and an RNFTS05-20 series output circuit Power Filter.

• RNFTC06-20 only



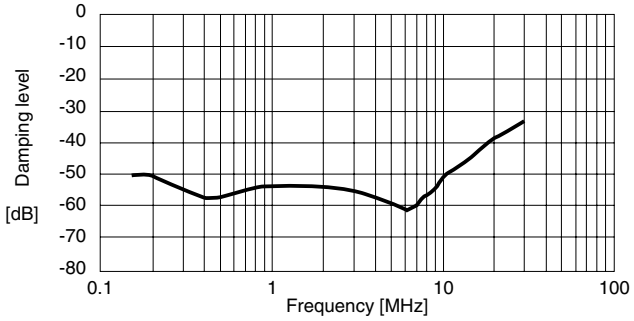
• RNFTC06-20 + RNFTS05-20



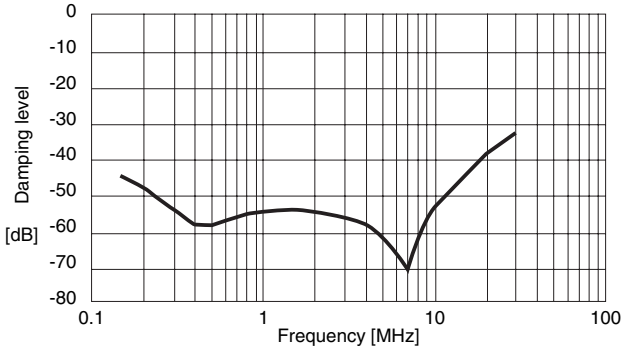
● Static characteristics

Typical example: RNFTC06-20

• Normal mode

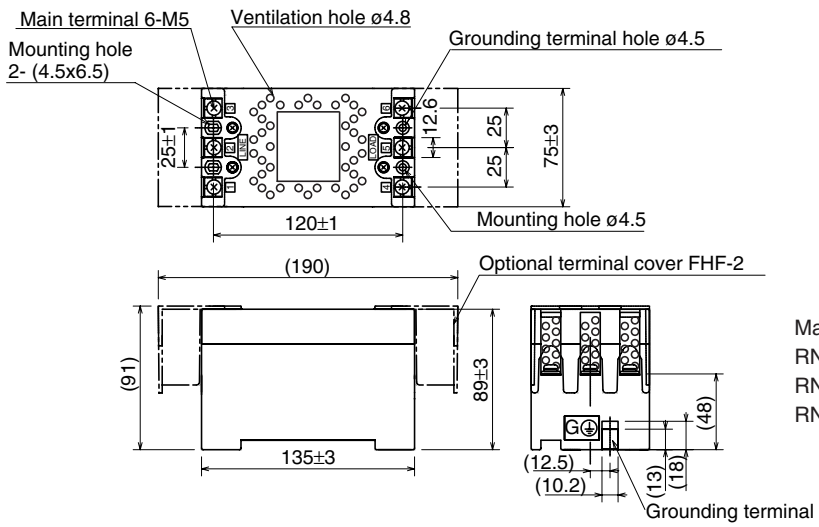


• Common mode



■ Dimensions, mm

RNFTC06-20, 06-40, 10-20, 10-40, 20-20, 20-40

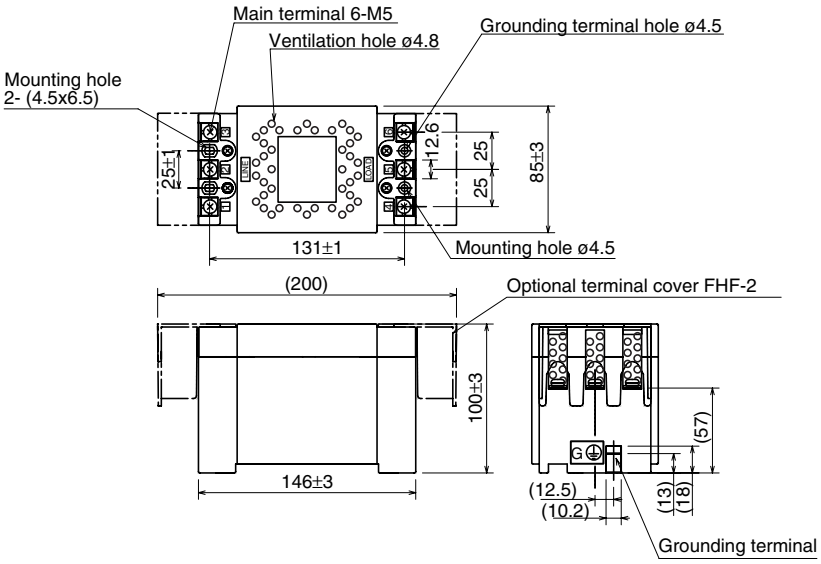


Mass:
RNFTC06-20, 10-20: 0.7kg
RNFTC20-20: 0.8kg
RNFTC06-40, 10-40, 20-40: 1.0kg

10

■ **Dimensions, mm**

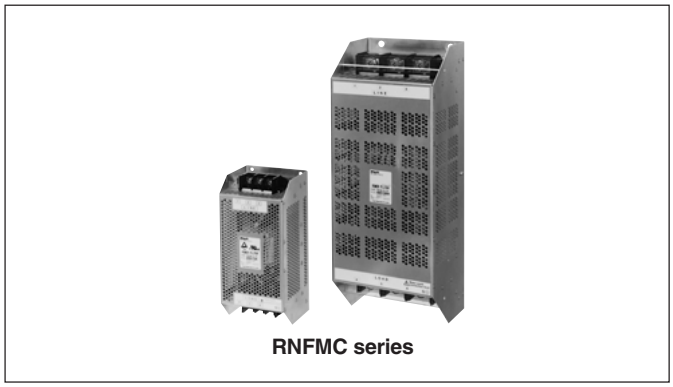
RNFTC30-20, 30-40, 50-20, 50-40



Mass:

RNFTC30-20: 1.0kg	RNFTC30-40: 1.4kg
RNFTC50-20: 1.1kg	RNFTC50-40: 1.6kg

RNFMC series input circuit Power Filters


RNFMC series

■ Features

- Compliance with international safety standards (UL 1283, CSA C22.2 No. 8, EN 133200), 75A and 100A types only.
- Types with rated current of 150A or more comply with international safety standards.
- External terminal construction equivalent to field-wiring terminal in durability.
- Compact size and light weight achieved with original FUJI technology.
- Small leakage current minimizes ELCB (Earth Leakage Circuit Breaker) malfunctions.
- Combination with an RNFTS or RNFMS series output circuit Power Filter provides high damping characteristics.

■ Standards

c UL us	UL1283 CSA C22.2, No.8	File No. E210696
TÜV Rheinland	EN133200	R50023040, R50023039

■ Types and specifications

Type	Phase	Rated voltage(V)	Rated current (A)	Withstand voltage to grounding (V AC)	Leakage current (mA)	Voltage drop (V)	Operating ambient temperature (˚C)
RNFMC75-20	3-phase	250	75	2000, 1 minute	1.5 max. at one phase grounded	1.0 max.	-10 to +50
RNFMC1H-20			100				
RNFMCH1-20			150		3 max. at one phase grounded		
RNFMC2H-20			200				
RNFMC3H-20			300				
RNFMC4H-20			400				
RNFMC75-40	3-phase	480	75	2500, 1 minute	• 1.0 max. at neutral phase grounded • 9.0 max. at one phase grounded	1.0 max.	-10 to +50
RNFMC1H-40			100				
RNFMCH1-40			150		• 2.1 max. at neutral phase grounded • 19.0 max. at one phase grounded		
RNFMC2H-40			200				
RNFMC3H-40			300				
RNFMC4H-40			400				

■ Type number nomenclature

RNFMC □ – □

Series
RNFMC series

Rated current
75: 75A
1H: 100A
H1: 150A
2H: 200A
3H: 300A
4H: 400A

Rated voltage
20: 250V
40: 480V

■ Ordering information

Specify the following:
1. Type number

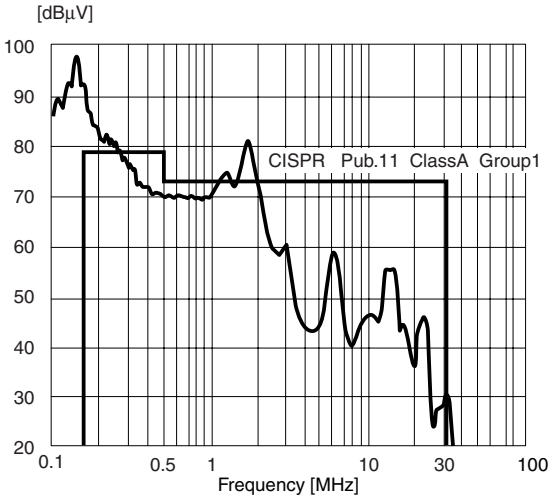
10

■ Noise damping characteristics

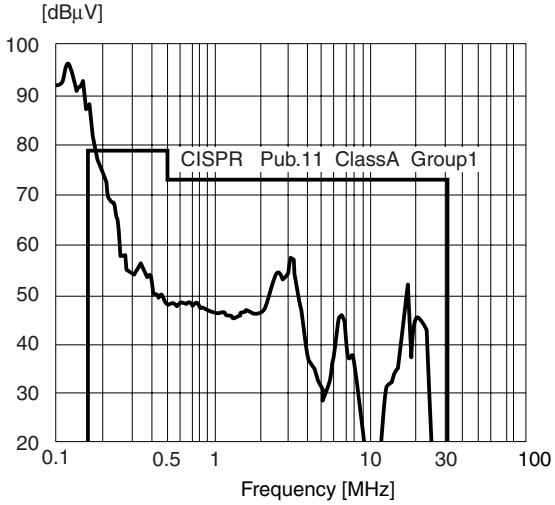
● Dynamic characteristics

Typical example: FUJI inverter combining an RNFMC75-20 input circuit Power Filter and an RNFMS75-20 series output circuit Power Filter.

• RNFMC75-20 only



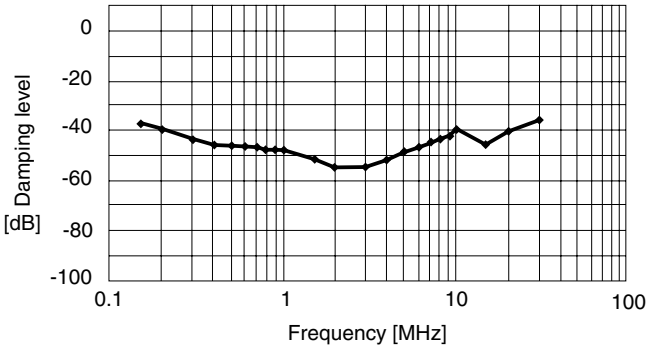
• RNFMC75-20 + RNFMS75-20



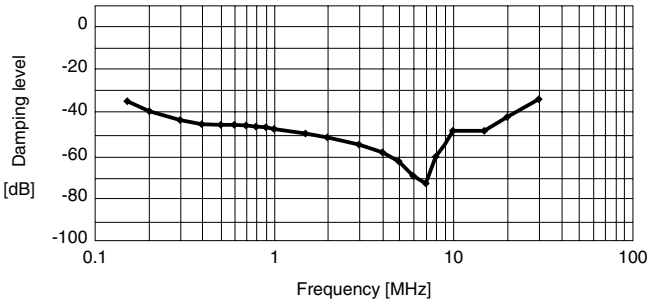
● Static characteristics

Typical example: RNFMC75-20

• Normal mode

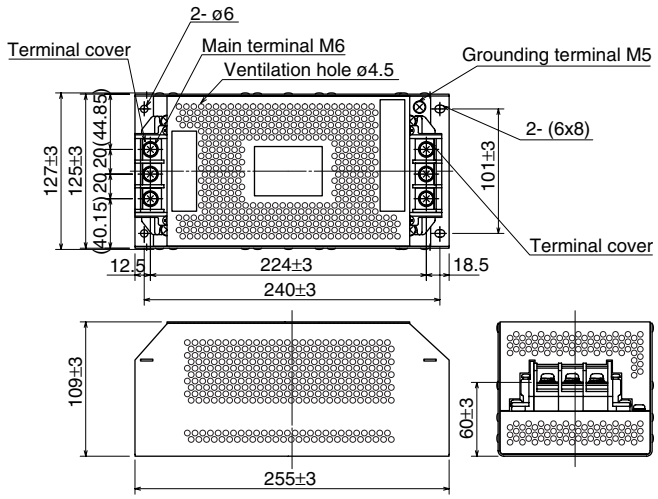


• Common mode



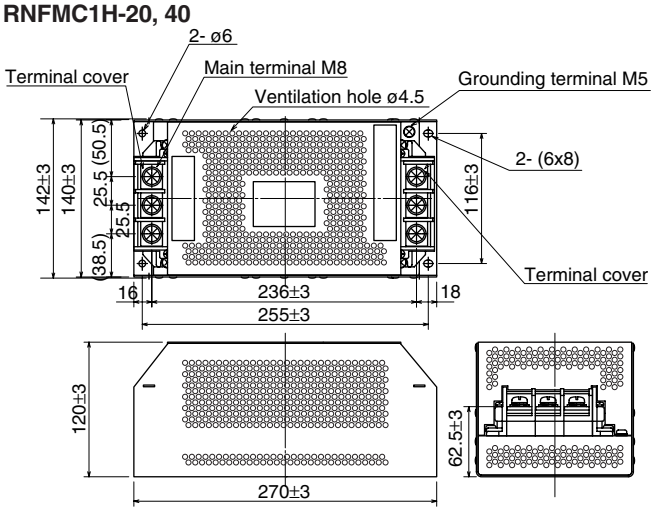
■ Dimensions, mm

RNFMC75-20, 40



Mass: 2.0kg

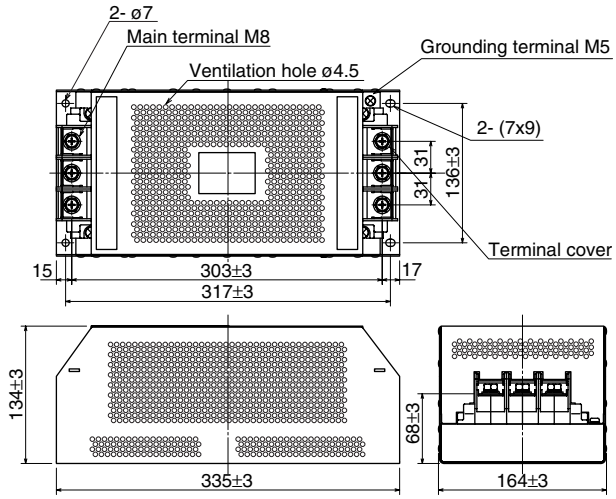
RNFMC1H-20, 40



Mass: 2.6kg

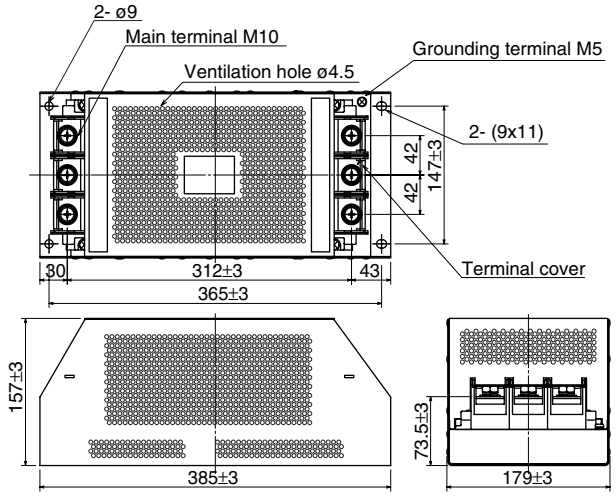
■ Dimensions, mm

RNFMCH1-20, 40



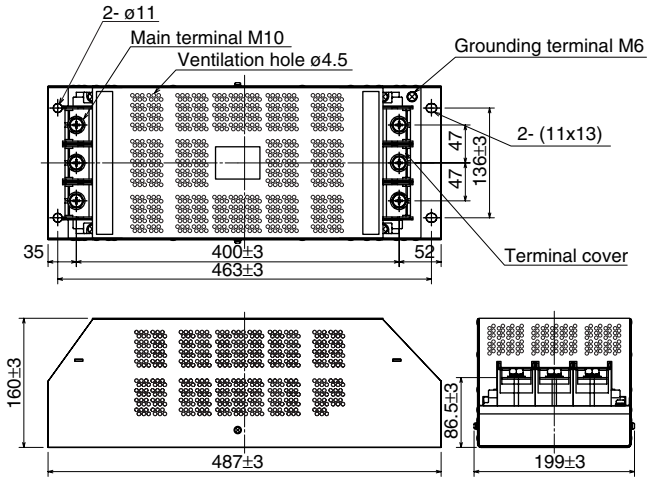
Mass: 4.1kg

RNFMC2H-20, 40



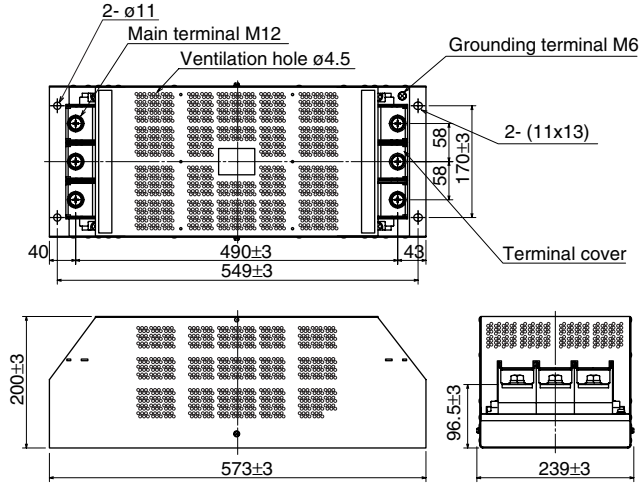
Mass: 6.5kg

RNFMC3H-20, 40



Mass: 11.0kg

RNFMC4H-20, 40



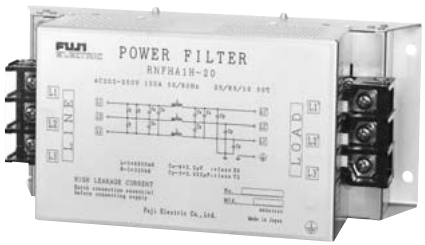
Mass: 19.5kg

10

RNFHA series input circuit Power Filters

■ Features

- Excellent noise-damping performance conforming to EMC Directive requirements (provided that certain installation conditions are satisfied).
- Reliable damping of noise generated from inverters. (Better noise damping-performance will be achieved by using the Power Filter in combination with the RNFTS or RNFMS-series Power Filter for the load line.)
- Compact size and light weight achieved with original FUJI technology.



RNFHA series

■ Types and specifications

Type	Phase	Rated voltage (V)	Rated current (A)	Withstand voltage to grounding (V AC)	Leakage current (mA)	Voltage drop (V)	Operating ambient temperature (˚C)
RNFHA05-20	3-phase	200 to 250	5	2000, 1 minute	4.5 max. at one phase grounded	1.5 max.	–25 to +50
RNFHA10-20			10				
RNFHA20-20			20				
RNFHA30-20			30				
RNFHA50-20			50				
RNFHA75-20			75				
RNFHA1H-20			100				
RNFHA05-40	3-phase	380 to 440	5	2000, 1 minute	• 3.5 max. at neutral phase grounded • 24 max. at one phase grounded	1.5 max.	–25 to +50
RNFHA10-40			10				
RNFHA20-40			20				
RNFHA30-40			30				
RNFHA50-40			50				
RNFHA75-40			75				
RNFHA1H-40			100				

■ Type number nomenclature

RNFHA □ – □

Series
RNFHA series

Rated current
05: 5A
10: 10A
20: 20A
30: 30A
50: 50A
75: 75A
1H: 100A

Rated voltage
20: 200 to 250V
40: 380 to 440V

■ Ordering information

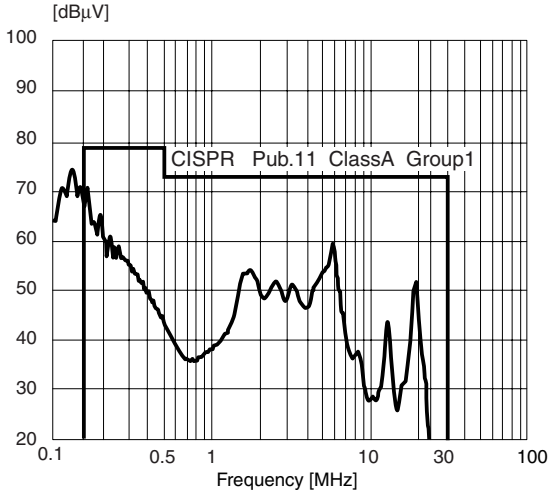
Specify the following:
1. Type number

■ Noise damping characteristics

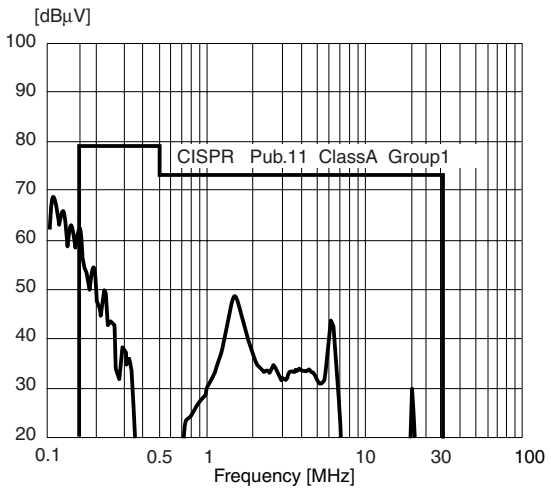
● Dynamic characteristics

Typical example: FUJI inverter combining an RNFHA05-20 input circuit Power Filter and an RNFTS05-20 series output circuit Power Filter.

• RNFHA05-20 only



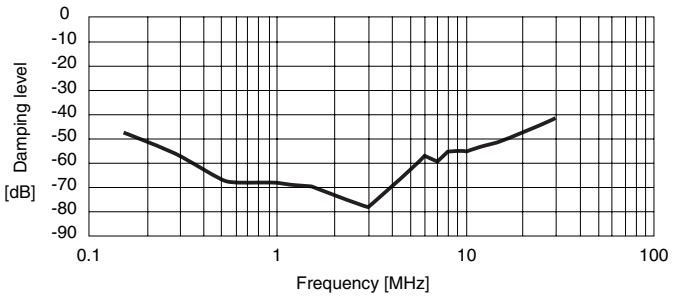
• RNFHA05-20 + RNFTS05-20



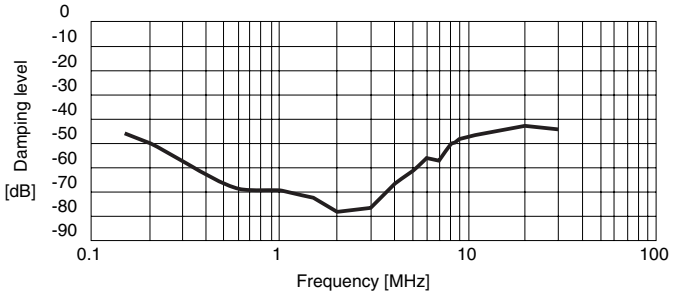
● Static characteristics

Typical example: RNFHA05-20

• Normal mode



• Common mode



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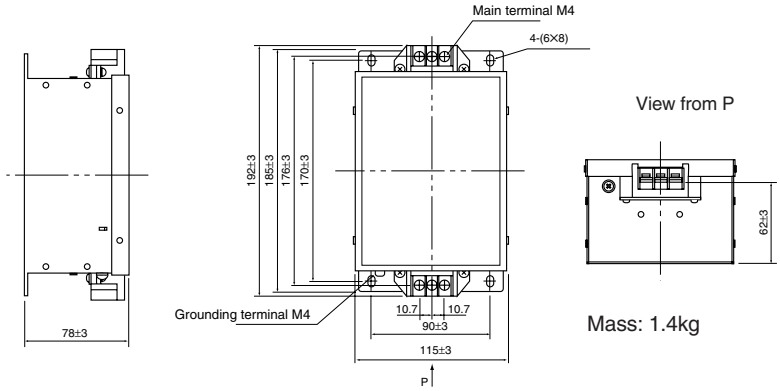
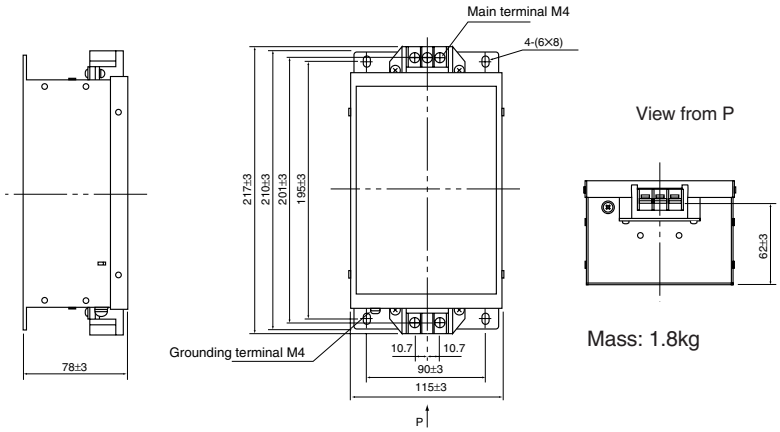
■ Dimensions, mm

RNFHA05-20
RNFHA05-40



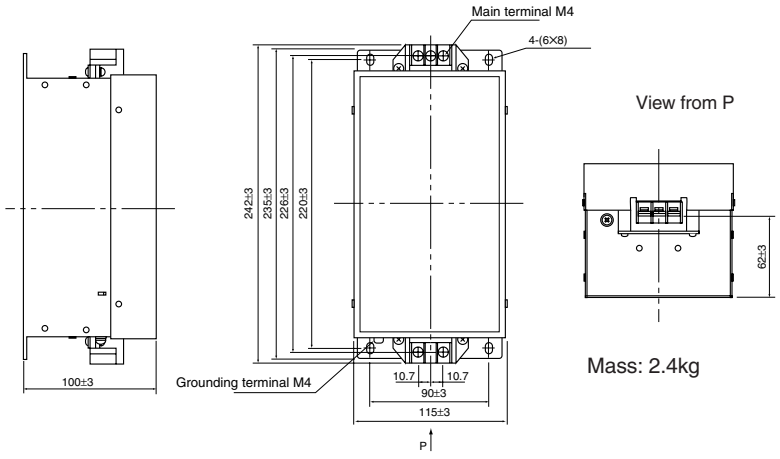
Mass: 1.4kg

RNFHA10-20
RNFHA10-40



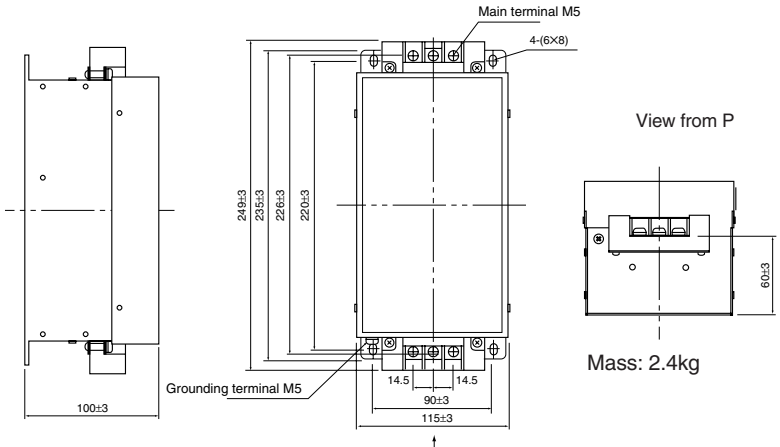
Mass: 1.8kg

RNFHA20-20
RNFHA20-40



Mass: 2.4kg

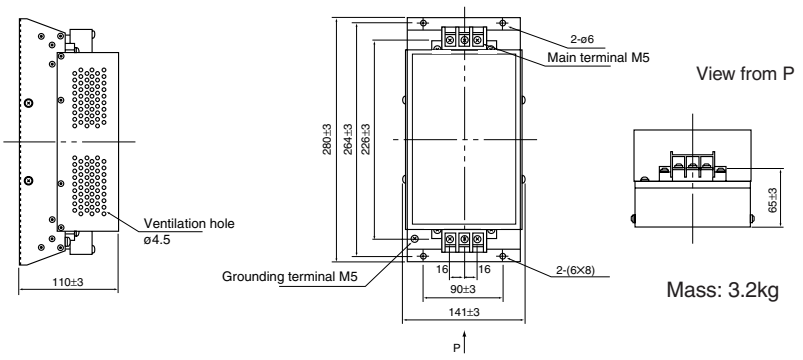
RNFHA30-20
RNFHA30-40



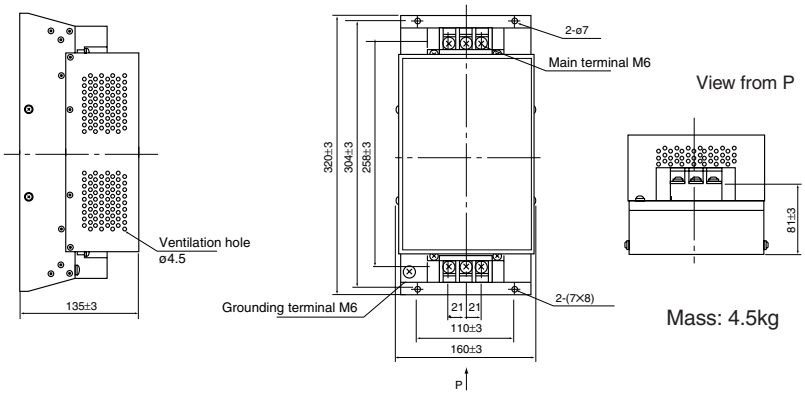
Mass: 2.4kg

■ Dimensions, mm

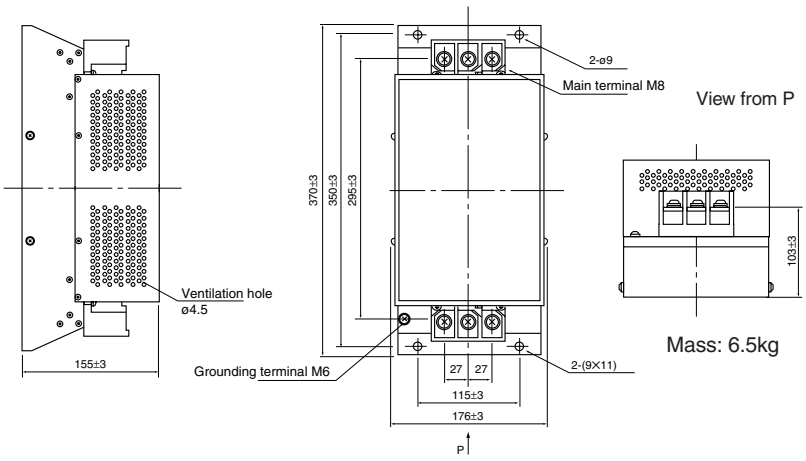
RNFHA50-20
RNFHA50-40



RNFHA75-20
RNFHA75-40



RNFHA1H-20
RNFHA1H-40



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RNFTS and RNFMS series output circuit Power Filters

■ **Features**
- Prevent noise emission from inverter output cables.
- Combination with an RNFTC or RNFMC or RNFHA series input circuit power filter provides high damping characteristics.
- External terminal construction equivalent to field-wiring terminal in durability.
- For resin case model RNFTS series, identical terminal configuration with FUJI's MCCB, thus simplifying wiring work.

AF96-29

RNFTS, RNFMS series

■ **Types and specifications**

Type	Phase	Rated voltage(V)	Rated current (A)	Withstand voltage to grounding (V AC)	Voltage drop (V)	Operating ambient temperature (˚C)
RNFTS05-20	3-phase	250	5	2000, 1 minute	1.0 max.	-10 to +50
RNFTS10-20			10			
RNFTS20-20			20			
RNFTS30-20			30			
RNFTS50-20			50			
RNFMS60-20			60			
RNFMS75-20			75			
RNFMS90-20			90			
RNFTS10-40	3-phase	480	10	2500, 1 minute	1.0 max.	-10 to +50
RNFTS20-40			20			
RNFTS25-40			25			
RNFTS30-40			30			
RNFTS40-40			40			
RNFTS45-40			45			
RNFMS75-40			75			
RNFMS1H-40			100			

■ **Type number nomenclature**

RNFTS □ – □

Series
RNFTS series: Resin case model
RNFMS series: Metal case model

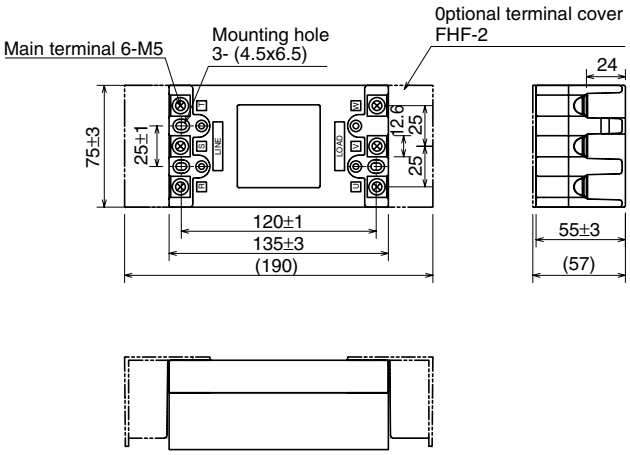
Rated current
5: 5A
10: 10A
20: 20A
25: 25A
30: 30A
40: 40A
45: 45A
50: 50A
60: 60A
75: 75A
90: 90A
1H: 100A

Rated voltage
20: 250V
40: 480V

■ **Ordering information**
Specify the following:
1. Type number

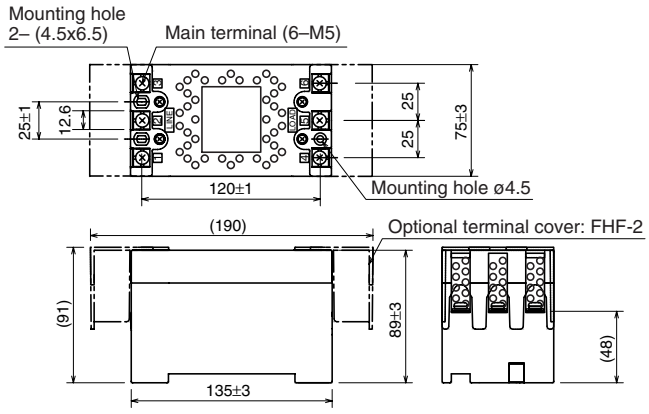
■ Dimensions, mm

RNFTS05-20, 10-20, 20-20, 10-40



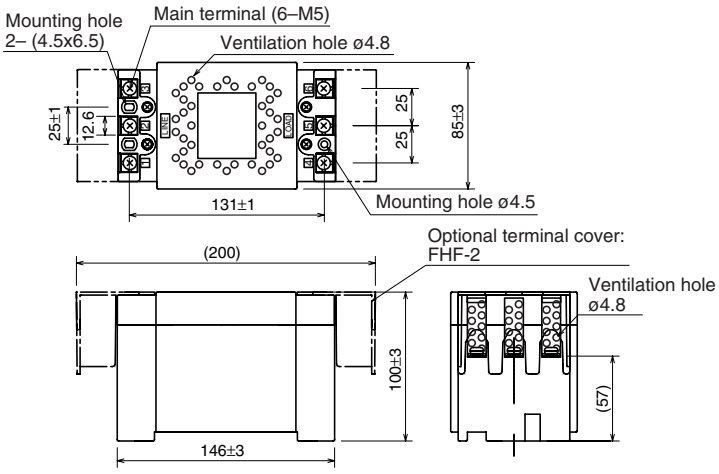
Mass:
RNFTS05-20, 10-20: 0.5kg
RNFTS20-20: 0.6kg
RNFTS10-40: 0.7kg

RNFTS30-20, 20-40



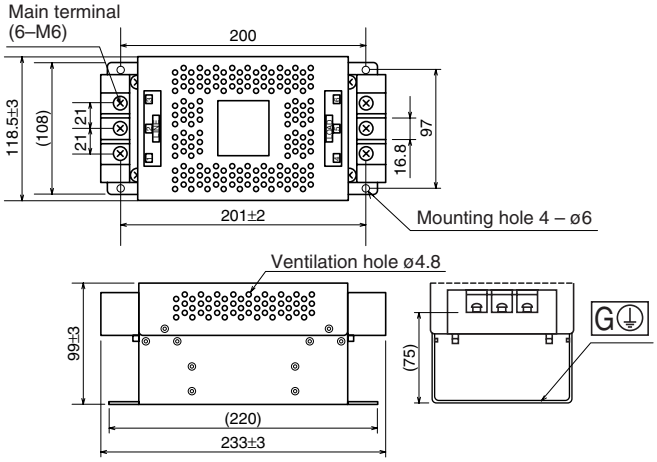
Mass:
RNFTS30-20: 0.8kg
RNFTS20-40: 1.0kg

RNFTS50-20, 25-40, 30-40, 40-40, 45-40



Mass:
RNFTS50-20: 1.6kg
RNFTS25-40, 30-40: 1.4kg
RNFTS40-40, 45-40: 1.6kg

RNFMS60-20, 75-20, 90-20, 75-40, 1H-40



Mass:
RNFMS60-20, 75-20, 90-20: 2.2kg
RNFMS75-40, 1H-40: 2.6kg

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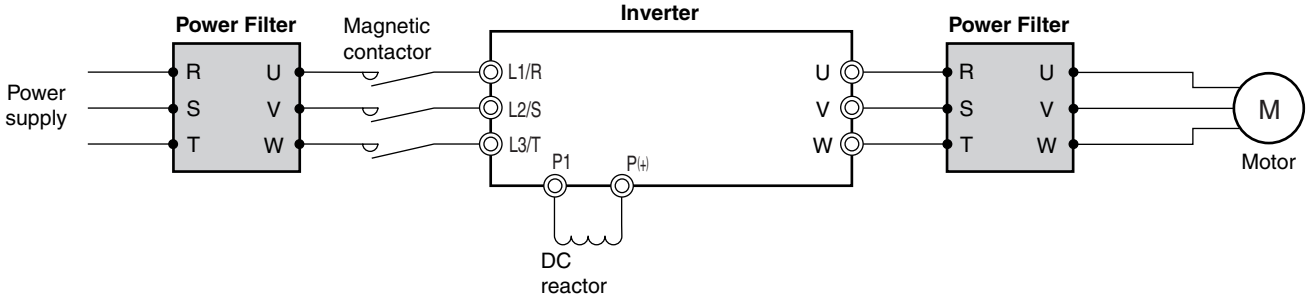
■ **Application to inverters/Standard types**

Circuit voltage	Applicable inverter capacity (kW)	Input circuit Power Filter		Output circuit Power Filter
		With DC reactor	Without DC reactor	
3-phase 200V 50/60Hz	0.2	RNFTC06-20	RNFTC06-20	RNFTS05-20
	0.4			
	0.75		RNFTC10-20	
	1.5		RNFTC20-20	RNFTS10-20
	2.2	RNFTC10-20		RNFTS20-20
	3.7	RNFTC20-20	RNFTC30-20	
	5.5		RNFTC50-20	RNFTS30-20
	7.5	RNFTC30-20	RNFMC75-20	RNFTS50-20
	11	RNFTC50-20	RNFMC1H-20	
	15	RNFMC75-20		RNFMS60-20
	18.5		RNFMCH1-20	RNFMS75-20
	22	RNFMC1H-20		RNFMS90-20
	30	RNFMCH1-20	RNFMC2H-20	–
	37		RNFMC3H-20	
	45	RNFMC2H-20		
	55			
	75	RNFMC3H-20	–	
	90	RNFMC4H-20		
	110	–		
3-phase 400V 50/60Hz	0.4	RNFTC06-40	RNFTC06-40	RNFTS10-40
	0.75			
	1.5		RNFTC10-40	
	2.2			
	3.7	RNFTC10-40	RNFTC20-40	
	5.5		RNFTC30-40	RNFTS20-40
	7.5	RNFTC20-40		
	11		RNFTC50-40	RNFTS25-40
	15	RNFTC30-40	RNFMC75-40	RNFTS30-40
	18.5	RNFTC50-40		RNFTS40-40
	22			RNFTS45-40
	30	RNFMC75-40	RNFMC1H-40	RNFMS75-40
	37		RNFMCH1-40	
	45	RNFMC1H-40		RNFMS1H-40
	55			
	75	RNFMCH1-40	–	–
	90	RNFMC2H-40		
	110			
	132	RNFMC3H-40		
	160			
	200	RNFMC4H-40		
	220			



■ Application to inverters/High performance types

Circuit voltage	Applicable inverter capacity (kW)	Input circuit Power Filter		Output circuit Power Filter
		With DC reactor	Without DC reactor	
3-phase 200V 50/60Hz	0.2	RNFHA05-20	RNFHA05-20	RNFTS05-20
	0.4			
	0.75		RNFHA10-20	
	1.5	RNFHA10-20	RNFHA20-20	RNFTS10-20
	2.2			RNFTS20-20
	3.7	RNFHA20-20	RNFHA30-20	
	5.5		RNFHA50-20	RNFTS30-20
	7.5	RNFHA30-20	RNFHA75-20	RNFTS50-20
	11	RNFHA50-20	RNFHA1H-20	
	15	RNFHA75-20		RNFMS60-20
	18.5		–	RNFMS75-20
	22	RNFHA1H-20		RNFMS90-20
3-phase 400V 50/60Hz	0.4	RNFHA05-40	RNFHA05-40	RNFTS10-40
	0.75			
	1.5		RNFHA10-40	
	2.2			
	3.7	RNFHA10-40	RNFHA20-40	
	5.5		RNFHA30-40	RNFTS20-40
	7.5	RNFHA20-40		
	11		RNFHA50-40	RNFTS25-40
	15	RNFHA30-40	RNFHA75-40	RNFTS30-40
	18.5	RNFHA50-40		RNFTS40-40
	22			RNFTS45-40
	30	RNFHA75-40	RNFHA1H-40	RNFMS75-40
	37		–	
	45	RNFHA1H-40		RNFMS1H-40
	55			–

■ Applicable to servo systems/Input circuit standard types

Circuit voltage	FALDIC series servo amplifier			Power Filter
	Capacity (kW)	FALDIC-α	FALDIC-β	
3-phase 200V	0.05	RYS500S3	RYB500S3-VBC	**RNFTC06-20**
	0.1	RYS101S3	RYB101S3-VBC	
	0.2	RYS201S3	RYB201S3-VBC	
	0.4	RYS401S3	RYB401S3-VBC	**RNFTC10-20**
	0.75	RYS751S3	RYB751S3-VBC	**RNFTC20-20**
	1.0	RYS102S3	–	
	1.5	RYS152S3		
	2.0	RYS202S3		
	3.0	RYS302S3	–	**RNFTC30-20**
	4.0	RYS402S3	–	**RNFTC50-20**
	5.0	RYS502S3		
Single-phase 100V	0.05	RYS500S3	RYB500S3-VBC6	**RNFTC06-20**
	0.1	RYS101S3	RYB101S3-VBC6	
	0.2	RYS201S3	RYB201S3-VBC6	**RNFTC10-20**
	0.375	RYS371S3-VVX6	–	**RNFTC20-20**

Circuit voltage	Digital ES servo amplifier		Power Filter
	Capacity (kW)	RYE series	
3-phase 200V	0.05	RYE.05D	**RNFTC06-20**
	0.1	RYE.10D	
	0.2	RYE.20D	
	0.4	RYE.40D	
	0.75	RYE.75D	**RNFTC10-20**
	1.5	RYE1.5D	**RNFTC20-20**
	2.2	RYE2.2D	**RNFTC30-20**
	3.0	RYE3.0D	
	3.7	RYE3.7D	

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■ **Applicable to servo systems/Input circuit high performance types**

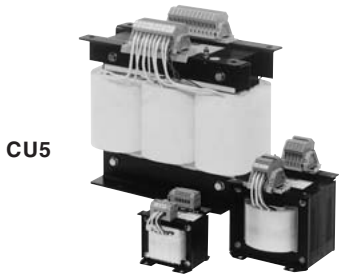
Circuit voltage	FALDIC series servo amplifier			Power Filter
	Capacity (kW)	FALDIC-α	FALDIC-β	
3-phase 200V	0.05	RYS500S3	RYB500S3-VBC	**RNFHA05-20**
	0.1	RYS101S3	RYB101S3-VBC	
	0.2	RYS201S3	RYB201S3-VBC	
	0.4	RYS401S3	RYB401S3-VBC	**RNFHA10-20**
	0.75	RYS751S3	RYB751S3-VBC	**RNFHA20-20**
	1.0	RYS102S3	–	
	1.5	RYS152S3		
	2.0	RYS202S3		
	3.0	RYS302S3	–	**RNFHA30-20**
	4.0	RYS402S3	–	**RNFHA50-20**
	5.0	RYS502S3		
Single phase 100V	0.05	RYS500S3	RYB500S3-VBC6	**RNFHA05-20**
	0.1	RYS101S3	RYB101S3-VBC6	
	0.2	RYS201S3	RYB201S3-VBC6	**RNFHA10-20**
	0.375	RYS371S3-VVX6	–	**RNFHA20-20**

Circuit voltage	Digital ES servo amplifilter		Power Filter
	Capacity (kW)	RYE series	
3-phase 200V	0.05	RYE.05D	**RNFHA05-20**
	0.1	RYE.10D	
	0.2	RYE.20D	
	0.4	RYE.40D	
	0.75	RYE.75D	**RNFHA10-20**
	1.5	RYE1.5D	**RNFHA20-20**
	2.2	RYE2.2D	**RNFHA30-20**
	3.0	RYE3.0D	
	3.7	RYE3.7D	

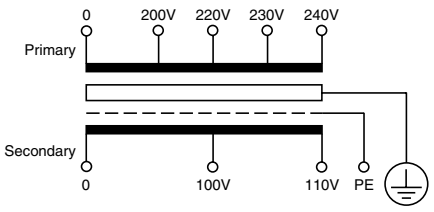
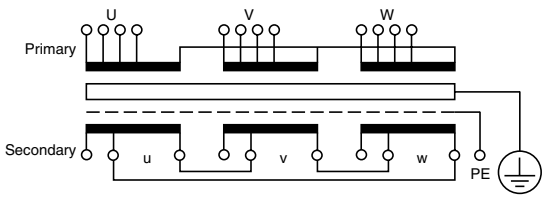
For further information related to FUJI inverter and servo system, contact FUJI.

Low-voltage control power transformers

■ Features
- Conformance to EN standards (EN61558-2-4:1997, EN61558-1:1997+A1) certified by TÜV
- Wide line-up includes 12 single-phase types, from 100VA to 5kVA, and 7 three-phase types, from 5kVA to 30kVA



■ Specifications

Type	Single-phase transformer **CU4**	Three-phase transformer **CU5**
Capacity	100VA, 150VA, 200VA, 300VA, 500VA, 750VA 1kVA, 1.5kVA, 2kVA, 3kVA, 4kVA, 5kVA	5kVA, 7.5kVA,10kVA,15kVA, 20kVA, 25kVA, 30kVA
Frequency	50/60Hz	50/60Hz
Primary voltage	200/220/230/240V	380/400/415/440V
Secondary voltage	100/110V	200/220V
Insulation class	100 to 200VA E Class 300 to 3kVA B Class 4kVA, 5kVA H Class	H Class
Degree of protection	IP20	IP20
Shield	Electrostatic shield	Electrostatic shield
Connection and terminal layout		人−△ Yd1 

■ Type number nomenclature

CU4 10 – E 20 10 T

Basic type
CU4: For single-phase
CU5: For three-phase

Rated capacity

10: 100VA	A1: 1kVA	A7: 7.5kVA
15: 150VA	AY: 1.5kVA	B1: 10kVA
20: 200VA	A2: 2kVA	BY: 15kVA
30: 300VA	A3: 3kVA	B2: 20kVA
50: 500VA	A4: 4kVA	BR: 25kVA
75: 750VA	A5: 5kVA	B3: 30kVA

Insulation class
E: E class, B: B class, H: H class

Primary voltage
20 : 200/220/230/240V
40 : 380/400/415/440V

Secondary voltage
10 : 100/110V
20 : 200/220V

Standard
Certified by TÜV

■ Ordering information
Specify the following:
1. Type number

■ Type and ratings

Single-phase Primary voltage: 200/220/230/240, Secondary voltage: 100/110V

Type	Rated capacity	Insulation class	Dimensions (mm)								Terminal diameter (mm)		Mass (kg)
			Fig. No.	A	D	E	F	X	H	J	Grounding	Others	
CU410-E2010T	100VA	E	Fig. 1	90	62	68	85	120	110	4.5×9	4	3	2.2
CU415-E2010T	150VA	E		100	69	84	105	130	115	4.5×9	4	3	3.2
CU420-E2010T	200VA	E		100	69	90	110	135	115	4.5×9	4	3	3.6
CU430-B2010T	300VA	B		135	88	70	90	120	150	6×10	4	3	5.3
CU450-B2010T	500VA	B		135	88	110	130	180	180	6×10	4	3	9.2
CU475-B2010T	750VA	B		160	110	109	140	180	195	8×12	4	4	12
CU4A1-B2010T	1kVA	B		160	110	119	150	190	195	8×12	4	4	14
CU4AY-B2010T	1.5kVA	B		185	115	116	150	190	220	8×12	4	4	19
CU4A2-B2010T	2kVA	B		185	115	144	175	210	220	8×12	4	4	24
CU4A3-B2010T	3kVA	B	Fig. 2	230	130	160	195	260	250	8×12	5	4	39
CU4A4-H2010T	4kVA	H		250	180	170	215	300	280	10×15	5	6	47
CU4A5-H2010T	5kVA	H		250	180	180	230	310	280	10×15	5	6	51

Three-phase Primary voltage: 380/400/415/440, Secondary voltage: 200/220V

Type	Rated capacity	Insulation class	Dimensions (mm)								Terminal diameter (mm)		Mass (kg)
			Fig. No.	A	D	E	F	X	H	J	Grounding	Others	
CU5A5-H4020T	5kVA	H	Fig. 3	330	160	138	166	210	330	10×15	5	4	46
CU5A7-H4020T	7.5kVA	H		400	200	146	174	250	380	10×15	5	4	69
CU5B1-H4020T	10kVA	H	Fig. 4	400	200	161	189	280	400	10×15	5	6	83
CU5BY-H4020T	15kVA	H		450	200	198	230	330	440	10×18	5	6	108
CU5B2-H4020T	20kVA	H		450	200	208	240	340	440	12×18	6	6	119
CU5BR-H4020T	25kVA	H		500	300	200	240	350	480	14×21	6	6	143
CU5B3-H4020T	30kVA	H		500	300	220	260	390	480	14×21	6	6	167

■ Dimensions, mm

Fig. 1

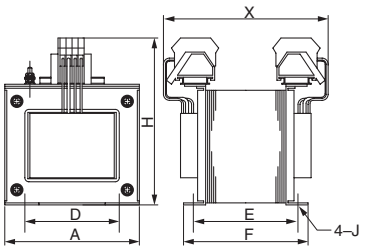


Fig. 2

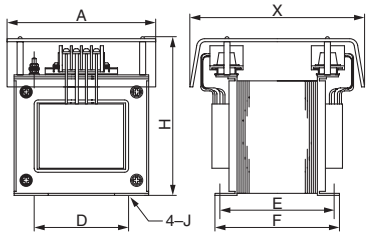


Fig. 3

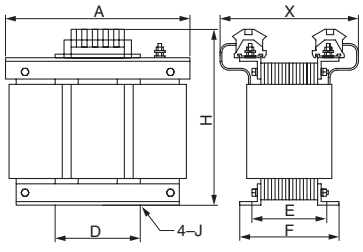
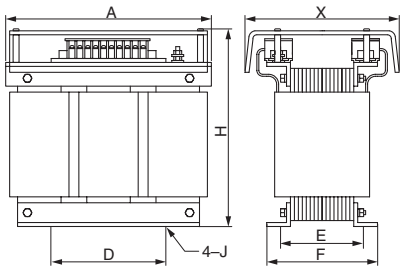


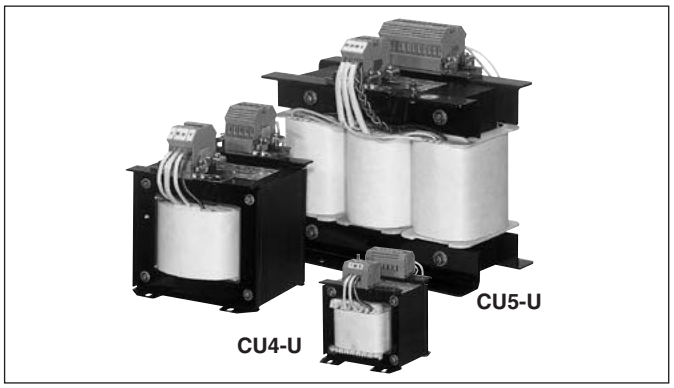
Fig. 4



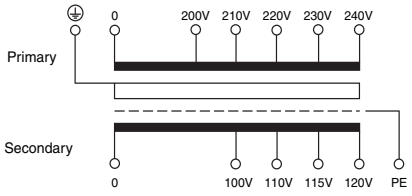
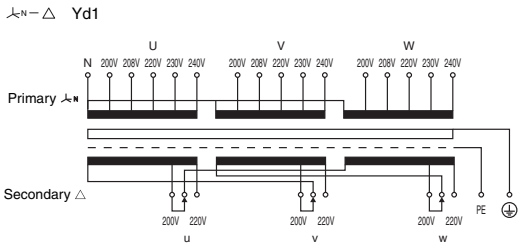
UL506 and UL1446 approved low-voltage control power transformers

■ Features

- Approval for UL506 (Specialty Transformer) and UL1446 (System of Insulating Materials — General)
  UL506: File No. E243896
  UL1446: File No. E243895
- All products have UL, c-UL, and CE marking.
- A wide product range is available.



■ Specifications

Type	Single-phase transformer **CU4-U**	Three-phase transformer **CU5-U**
Capacity	100VA, 200VA, 300VA, 500VA, 750VA 1kVA, 1.5kVA, 2kVA, 3kVA, 5kVA	5kVA, 7.5kVA,10kVA,15kVA, 20kVA, 25kVA, 30kVA
Frequency	50/60Hz	50/60Hz
Primary voltage	200/210/220/230/240V 380/400/415/440/460/480V	200/208/220/230/240V 380/400/415/440/460/480V
Secondary voltage	100/110/115/120V 200/208/220/230/240V	200/220V
Insulation class	100 to 200VA A Class 300VA to 3kVA B Class 5kVA H Class	H Class
Degree of protection	IP00	IP00
Shield	Electrostatic shield	Electrostatic shield
Connection and terminal layout		

10

■ Type number nomenclature

CU4 10 – A 20 10 U

Basic type
CU4: For single-phase
CU5: For three-phase

Rated capacity

10: 100VA	A1: 1kVA	A7: 7.5kVA
20: 200VA	AY: 1.5kVA	B1: 10kVA
30: 300VA	A2: 2kVA	BY: 15kVA
50: 500VA	A3: 3kVA	B2: 20kVA
75: 750VA	A5: 5kVA	BR: 25kVA
		B3: 30kVA

Insulation class
A: A class, B: B class, H: H class

Primary voltage
20 : 200V system (Refer to the above specifications)
40 : 400V system (Refer to the above specifications)

Secondary voltage
10 : 100V system (Refer to the above specifications)
20 : 200V system (Refer to the above specifications)

Standard
UL approved

■ Ordering information

Specify the following:
1. Type number

■ Type and ratings

Single-phase

Type	Rated capacity	Insulation class	Dimensions (mm)							Terminal diameter (mm)		Mass (kg)
			Fig.	A	D	E	X	H	Mounting hole J	Grounding	Others	
CU410-A 2010U	100VA	A	Fig. 1	90	62	68	120	120	4.5×9	4	3	2.2
CU420-A 2010U	200VA	A		100	69	90	135	125	4.5×9	4	3	3.6
CU430-B 2010U	300VA	B		135	88	70	120	160	6×10	4	3	5.3
CU450-B 2010U	500VA	B		135	88	110	180	180	6×10	4	3	9.2
CU475-B 2010U	750VA	B		160	110	109	180	195	8×12	4	4	12
CU4A1-B 2010U	1kVA	B		160	110	119	190	195	8×12	4	4	14
CU4AY-B 2010U	1.5kVA	B		185	115	116	190	220	8×12	4	4	19
CU4A2-B 2010U	2kVA	B		185	115	144	230	220	8×12	4	4	24
CU4A3-B 2010U	3kVA	B	Fig. 2	230	130	160	260	260	8×12	5	4	39
CU4A5-H 2010U	5kVA	H		250	180	180	310	290	10×15	5	6	51

Three-phase

Type	Rated capacity	Insulation class	Dimensions (mm)							Terminal diameter (mm)		Mass (kg)
			Fig.	A	D	E	X	H	Mounting hole J	Grounding	Others	
CU5A5-H 4020U	5kVA	H	Fig. 3	330	160	138	210	330	10×15	5	4	46
CU5A7-H 4020U	7.5kVA	H		400	200	146	250	380	10×15	5	4	69
CU5B1-H 4020U	10kVA	H	Fig. 4	400	200	161	280	400	10×15	5	6	83
CU5BY-H 4020U	15kVA	H		450	200	198	330	450	12×18	5	6	108
CU5B2-H 4020U	20kVA	H		450	200	208	340	450	12×18	6	6	119
CU5BR-H 4020U	25kVA	H		500	300	200	350	490	14×21	6	6	143
CU5B3-H 4020U	30kVA	H		500	300	220	390	490	14×21	6	6	167

■ Dimensions, mm

Fig. 1

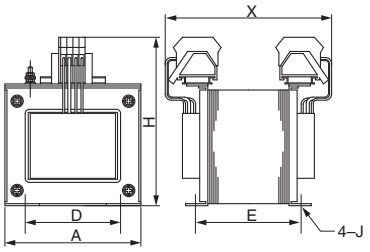


Fig. 2

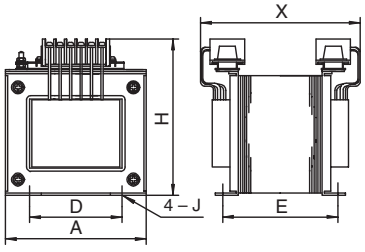


Fig. 3

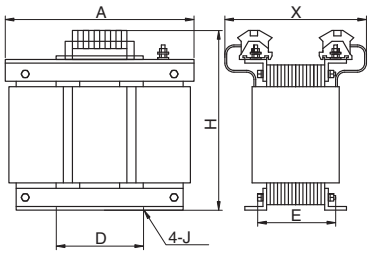
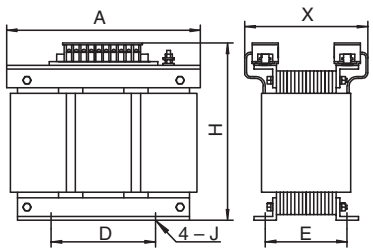


Fig. 4



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from D&C CATALOG 19th Edition Revised

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5-7, Nihonbashi Odemma-cho, Chuo-ku, Tokyo, 103-0011, Japan

URL http://www.fujielectric.co.jp/fcs/eng

Printed in Japan 2006-3 FIS DEC1910a