

Series PAC35 THREE-PHASE POWER REGULATOR

PAC35P/PAC35C



20A,30A



45A,60A



90A,135A

PAC35Z



20A,30A,45A



60A,90A,135A

BASIC FEATURES

- Phase Angle or Zero Voltage Switching*
- Current Capacity: 20, 30, 45, 60, 90, 135A*
- Power Supply: 200 to 240 or 380 to 440V AC*
- RoHS directive supported*

SPECIFICATIONS

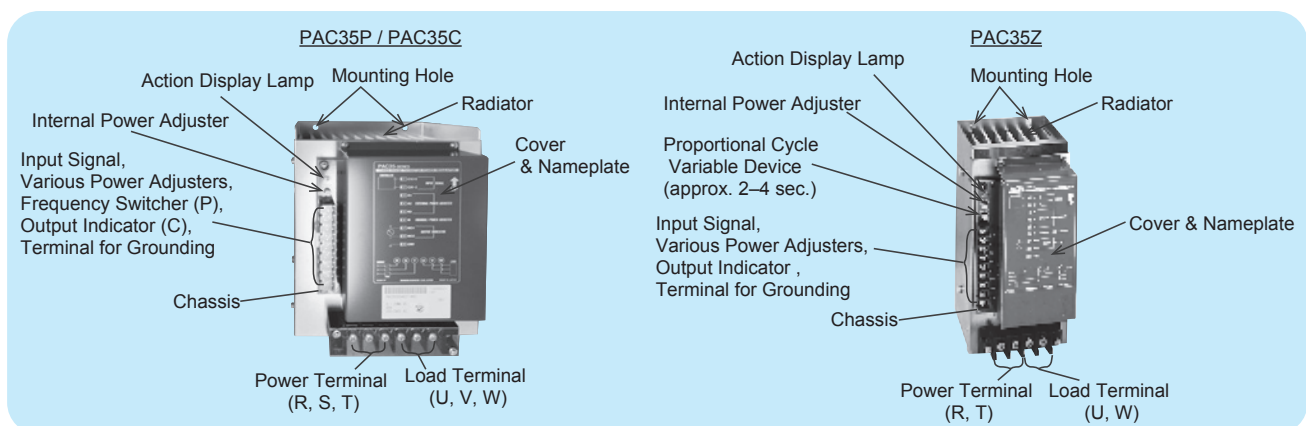
SERIES PAC35

	PAC35P	PAC35C	PAC35Z
Control System	Phase Control System (with soft-start)	Cycle Base Zero Voltage Switching Control System	Time Base Zero Voltage Switching Control System
Proportional Cycle (Z)	N/A	N/A	Approx. 3 sec. (2to 4 sec., internal variable)
Control Circuit Configuration/Element Configuration	3-Phase Anti-Parallel Configuration/ SCR × 3, Diode × 3	3-Phase Anti-Parallel Configuration/ SCR × 3, Diode × 3	2-Phase Anti-Parallel Configuration/ SCR × 2 × 2-Phase
Applicable Load	Resistance Load	Fixed Resistive Load	Fixed Resistive Load
Power Supply Frequency	50/60 Hz (switched at the terminal, factory setting: 50 Hz)	50/60Hz	50/60Hz
Output Voltage Control Range (P) Power Control Range (C/Z)	0 to 95% min. of Input Voltage	0 to 95% min. of Load Power	0 to 95% min. of Load Power
Power Lamp	Green LED	Green LED lamp lights when the load is applied.	Green LED lamp lights when the load is applied.
Manipulated Variable Output (optional) (C/Z)	N/A	Output terminal for indicator is attached. (0 to 1 mA DC)	Output terminal for indicator is attached. (0 to 1 mA DC)

COMMON SPECIFICATION

Current Capacity:	20, 30, 45, 60, 90, 135A	
Power Supply:	200 to 240V AC ±10%. 380 to 440V AC ±10%	
Control Input:	Current:	4 to 20mA DC/Receiving Resistance: 100Ω
	Contact:	Non-voltage contact signal
Power Adjuster:	Current input type:	Internal installation as standard (External installation available as option)
	Contact input type:	External installation as standard
Auto/Manual Adjustment	By using manual power adjuster (option), auto/manual switching control is possible.	
Thyristor Element Cooling:	20 to 90A (natural air), 135A (fan cooled)	
Over-Current Protection:	None available (Use fuse for semiconductor.)	
Minimum Loads:	10% min. of current capacity (no operation at no load)	
Temperature Range:	-10 to 50°C	
Operating Ambient Humidity:	90% RH max.	
Insulation Resistance:	20MΩ min. at 500V DC between control input and power supply terminals	
	20MΩ min. at 500V DC between power supply terminals and chassis	
Dielectric Strength:	1 min. at 1000V AC between control input and power supply terminals	
	1 min. at 2000V AC between power supply terminals and chassis	
External Dimensions	Please refer to external dimensions.	

Parts Name

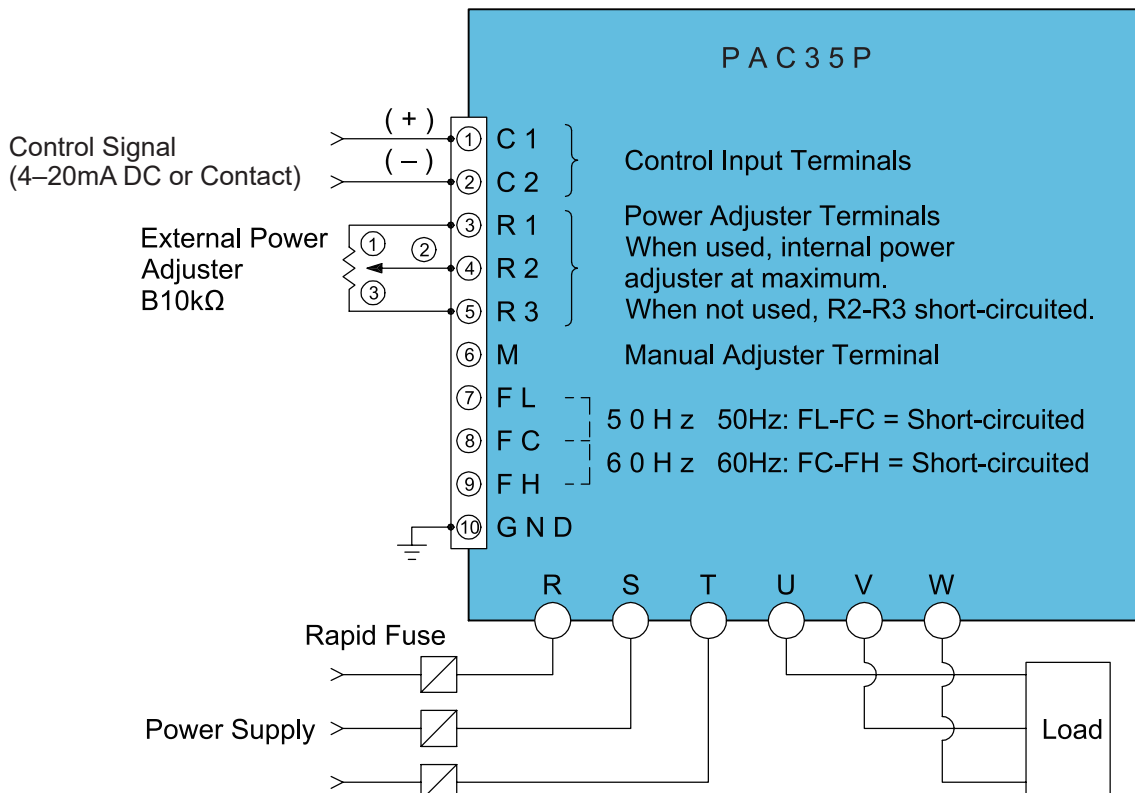


□ PAC35P (Phase Angle)

ITEMS	CODE	SPECIFICATIONS		
SERIES	PAC35P	Phase Angle 3-phase Power Regulator With Soft-Start		
CONTROL INPUT	0	4 to 20mA DC/Receiving Resistance: 100Ω		
	2	Non-voltage contact		
	9	Others (Please consult before ordering.)		
CURRENT CAPACITY		CURRENT CAPACITY	CODE 37 / POWER SUPPLY: 200 to 240V	CODE 35 / POWER SUPPLY: 380 to 440V
			Applicable load capacity	Applicable load capacity
	020	20A	6.9 to 8.3 kVA	13.2 to 15.2 kVA
	030	30A	10.4 to 12.5 kVA	19.7 to 22.9 kVA
	045	45A	15.6 to 18.7 kVA	29.6 to 34.3 kVA
	060	60A	20.8 to 24.9 kVA	39.5 to 45.7 kVA
	090	90A	31.2 to 37.4 kVA	59.2 to 68.6 kVA
POWER SUPPLY	37-	200 to 240V AC ±10% 50/60Hz		50/60Hz (Switched by terminals)
	35-	380 to 440V AC ±10% 50/60Hz		
	99-	Others (Please consult before ordering.)		
EXTERNAL POWER ADJUSTER	Current input	N	None (Internal standard)	
		P	External power adjuster	
		M	Manual power adjuster	
		B	Base power adjuster	
		W	External power adjuster + Manual power adjuster	
		Y	External power adjuster + Base power adjuster	
	Contact input	P	High power adjuster (standard)	
		B	High power adjuster (standard) + Low power adjuster	
		X	Others (Please consult before ordering.)	
REMARKS	0	Without		
	9	With (Please consult before ordering.)		

All external power adjusters are equipped with a B10kΩ (1W) scale plate, knob, and 1m lead wire.

TERMINAL ARRANGEMENT PAC35P (Phase Angle)

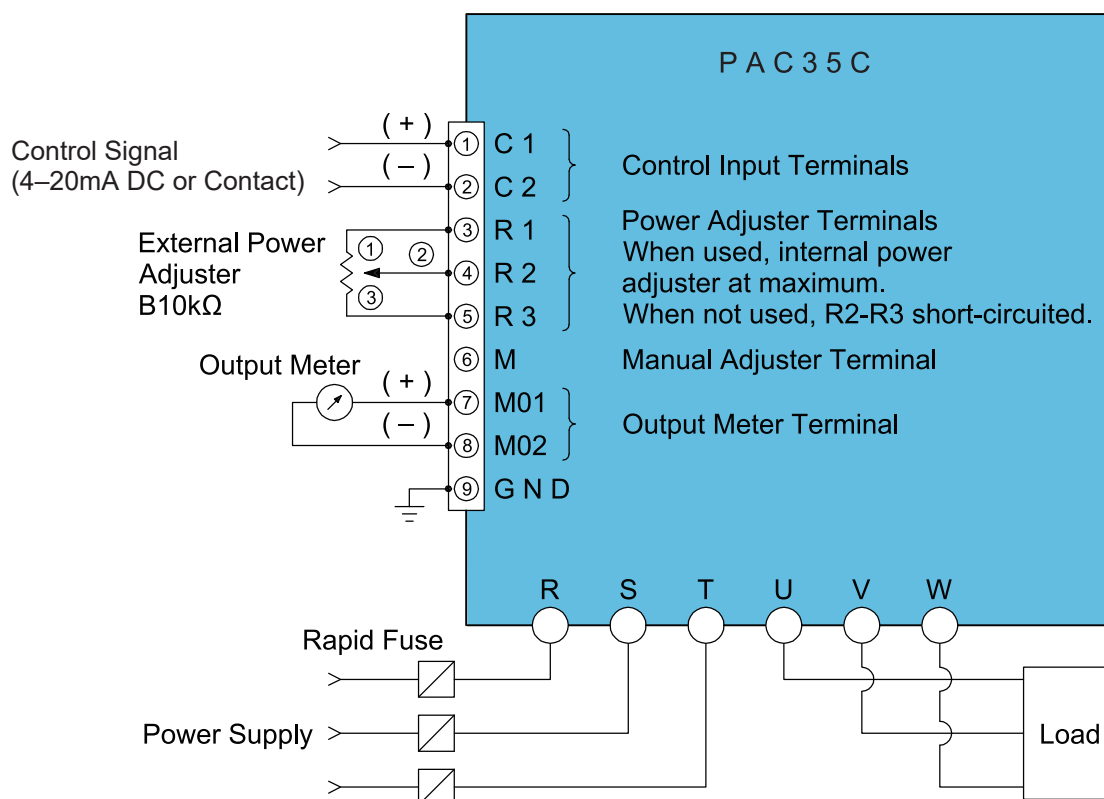


□ PAC35C (Cycle Base Zero Voltage Switching)

ITEMS	CODE	SPECIFICATIONS	
SERIES	PAC35C	Cycle Base Zero Voltage Switching (3-Phase)	
CONTROL INPUT	0	4 to 20mA DC/Receiving Resistance: 100Ω	
	2	Non-voltage contact	
	9	Others (Please consult before ordering.)	
CURRENT CAPACITY		CURRENT CAPACITY	CODE 37 / POWER SUPPLY: 200 to 240V Applicable load capacity
	020	20A	6.9 to 8.3 kVA
	030	30A	10.4 to 12.5 kVA
	045	45A	15.6 to 18.7 kVA
	060	60A	20.8 to 24.9 kVA
	090	90A	31.2 to 37.4 kVA
	135	135A	46.8 to 56.1 kVA
POWER SUPPLY	37-	200 to 240V AC ±10% 50/60Hz	
	35-	200 to 240V AC ±10% 50/60Hz	
	99-	Others (Please consult before ordering.)	
EXTERNAL POWER ADJUSTER	Current input	N	None (Internal standard)
		P	External power adjuster
		M	Manual power adjuster
		B	Base power adjuster
		W	External power adjuster + Manual power adjuster
		Y	External power adjuster + Base power adjuster
	Contact input	P	High power adjuster (standard)
		B	High power adjuster (standard) + Low power adjuster
		X	Others (Please consult before ordering.)
MANIPULATED VARIABLE (POWER) OUTPUT AND/OR INDICATOR	0	None	
	1	Manipulated variable output	
	2	Manipulated variable + indicator, 60×60, 0 to 100% scale	
	3	Manipulated variable + indicator, 80×80, 0 to 100% scale	
REMARKS	0	Without	
	9	With (Please consult before ordering.)	

All external power adjusters are equipped with a B10kΩ (1W) scale plate, knob, and 1m lead wire.

□ TERMINAL ARRANGEMENT PAC35C (Cycle Base Zero Voltage Switching)

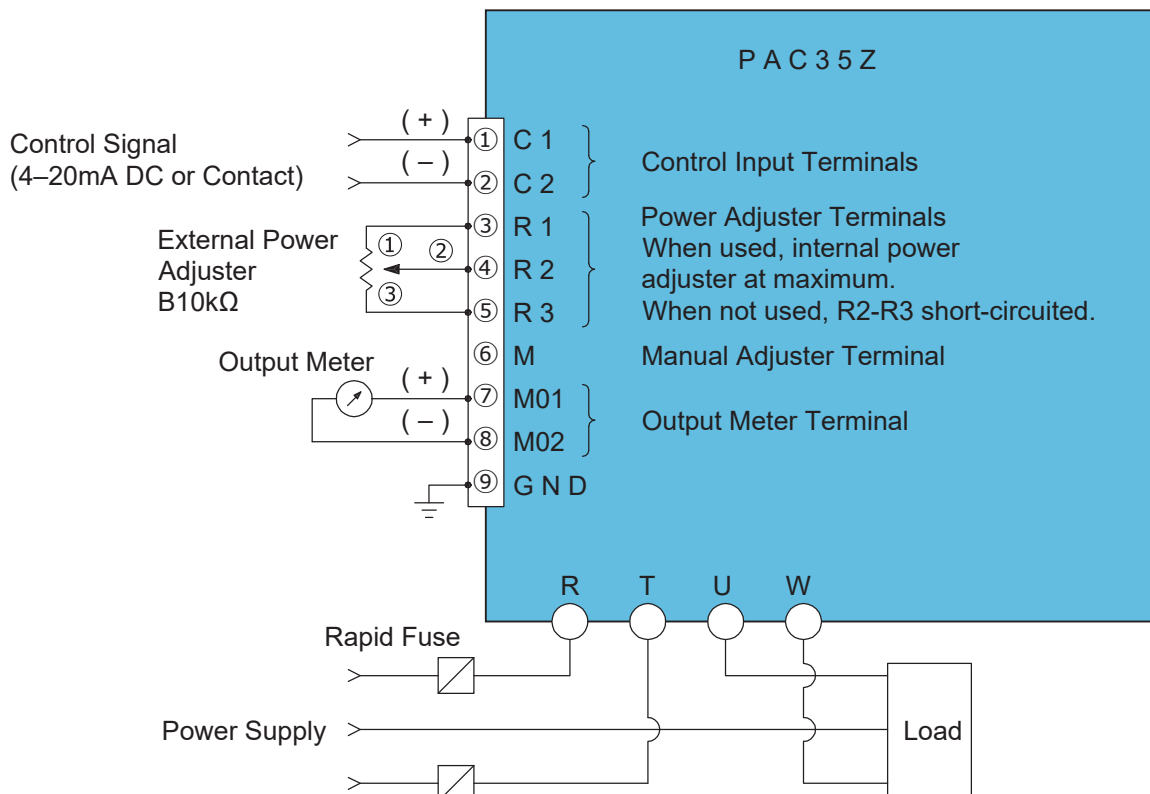


□ PAC35Z (Time Base Zero Voltage Switching)

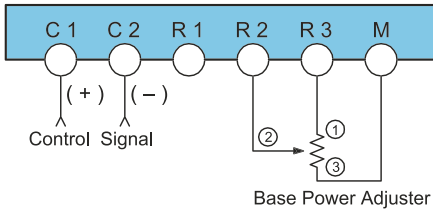
ITEMS	CODE	SPECIFICATIONS	
SERIES	PAC35Z	Time Base Zero Voltage Switching (3-Phase)	
CONTROL INPUT	0	4 to 20mA DC/Receiving Resistance: 100Ω	
	2	Non-voltage contact	
	9	Others (Please consult before ordering.)	
CURRENT CAPACITY		CURRENT CAPACITY	CODE 37 / POWER SUPPLY: 200 to 240V Applicable load capacity
			CODE 35 / POWER SUPPLY: 380 to 440V Applicable load capacity
	020	20A	6.9 to 8.3 kVA
	030	30A	10.4 to 12.5 kVA
	045	45A	15.6 to 18.7 kVA
	060	60A	20.8 to 24.9 kVA
	090	90A	31.2 to 37.4 kVA
	135	135A	46.8 to 56.1 kVA
POWER SUPPLY	37-	200 to 240V AC ±10% 50/60Hz	
	35-	380 to 440V AC ±10% 50/60Hz	
	99-	Others (Please consult before ordering.)	
EXTERNAL POWER ADJUSTER	Current input	N	None (Internal standard)
		P	External power adjuster
		M	Manual power adjuster
		B	Base power adjuster
		W	External power adjuster + Manual power adjuster
		Y	External power adjuster + Base power adjuster
	Current input	P	High power adjuster (standard)
		B	High power adjuster (standard) + Low power adjuster
		X	Others (Please consult before ordering.)
MANIPULATED VARIABLE (POWER) OUTPUT AND/OR INDICATOR	0	None	
	1	Manipulated variable output	
	2	Manipulated variable + indicator, 60×60, 0 to 100% scale	
	3	Manipulated variable + indicator, 80×80, 0 to 100% scale	
REMARKS	0	Without	
	9	With (Please consult before ordering.)	

All external power adjusters are equipped with a B10kΩ (1W) scale plate, knob, and 1m lead wire.

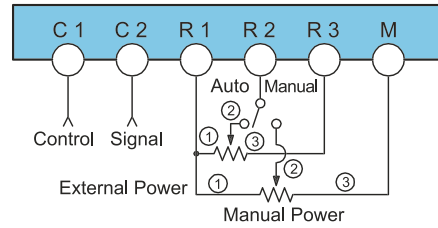
□ TERMINAL ARRANGEMENT PAC35Z (Time Base Zero Voltage Switching)



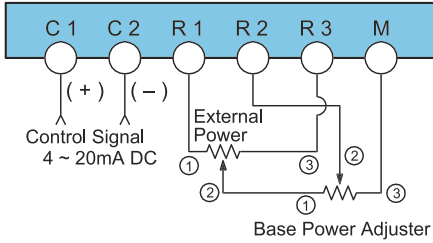
Base Power Control (Current Input Type)



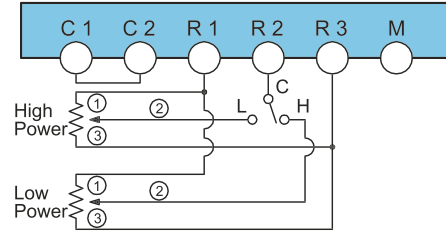
Auto / Manual Selectable (Current / Contact Type)



External Power Adjust / Base Power Adjust (Current Input Type)



High / Low Adjust (Contact Input Type)



*External power adjuster and base power adjuster correspond with each other.
 *Internal power adjuster = at maximum

0~100% output adjustment is available with high and low power adjusters.

CONTROL MODE & WAVE FORM

Control Mode	Noise	Output Voltmeter Deflection	Output Wave Form		
			10% Output	50% Output	90% Output
Phase angle control (P)	Little	Continuous			
Cycle base zero voltage switching (C)	None	Large deflection (with low output) Almost continuous (with mid & high output)	 1 cycle ON and 9 cycles OFF	 1 cycle ON and 1 cycle OFF	 9 cycles ON and 1 cycle OFF
Time base zero voltage switching (Z)	None	intermittent	 T	 T=3 sec.	 T=Proportional Cycle

INTERNAL HEAT GENERATED

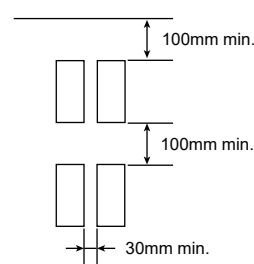
Voltage (0.9to1.3V) is produced between terminals by current flowing to the thyristor. Voltage between terminals and accumulation of current (W) turn into Joule heat resulting in a rise in temperature of the thyristor elements. Take radiation and ventilation into account.

■ PAC35 Rated current and heat value (Heat value conversion formula: 860kcal=1000W)

Current capacity (A)		20	30	45	60	90	135
Internal heat value (W)	PAC35P/C	69	105	141	172	270	445
	PAC35Z	45	69	93	125	175	300

* Care must be taken for air ventilation.
 * Vertical mounting is recommended. Refer to the mounting space diagram.
 When mounting horizontally, use at 60% maximum of the capacity.

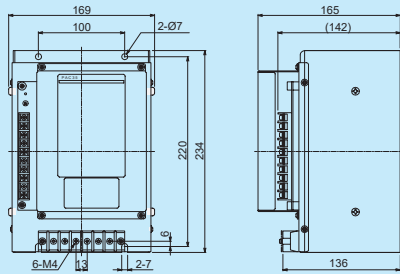
Mounting Space



PAC35P (Phase Angle)

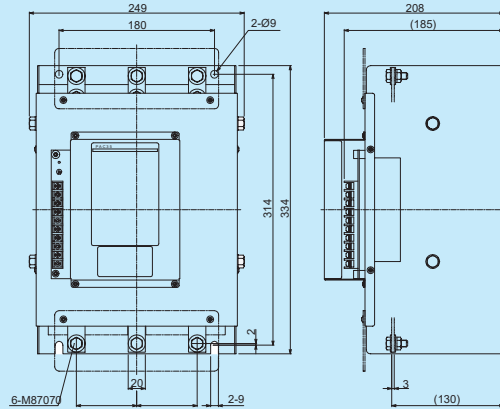
PAC35C (Cycle Base Zero Voltage Switching)

PAC35P / PAC35C 20A, 30A



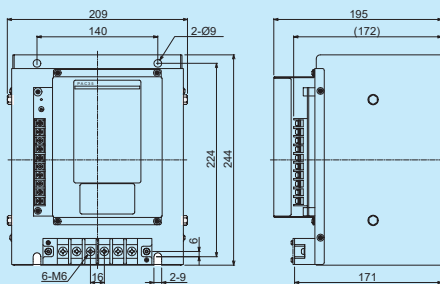
Weight: Approx. 3.0kg / 20A
Approx. 5.2kg / 30A

PAC35P / PAC35C 90A, 135A



Weight: Approx. 12kg / 90A
Approx. 13kg / 135A

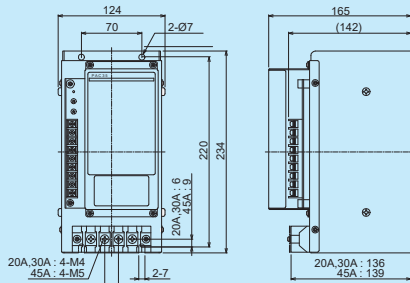
PAC35P / PAC35C 45A, 60A



Weight: Approx. 7.6kg

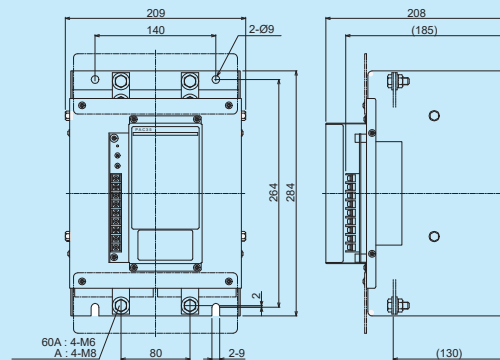
PAC35C (Cycle Base Zero Voltage Switching)

PAC35Z 20A, 30A, 45A



Weight: Approx. 2.5kg / 20A
Approx. 3.8kg / 30A, 45A

PAC35Z 60A, 90A, 135A

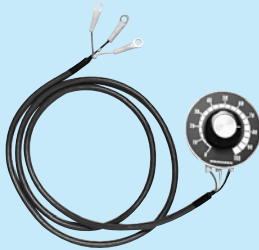


Weight: Approx. 8.4kg / 60A, 90A
Approx. 9.4kg / 135A

Model : QSV002

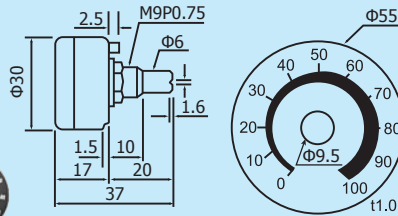
- External (High) Power Adjuster (0–100%)
- Base (Low) Power Adjuster (0–100%)
- Manual Power Adjuster (0–100%)

External Power adjuster

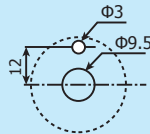


- Resistance: B10kΩ 1W
- Lead wire length: 1m

Power Adjuster Dimensions



Panel cutout



Manipulated Variable Output Indicator (Zero Voltage Switching Models Only)

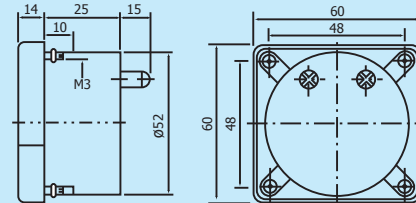
Output Indicator



Model : QSM001

- Range: 0–100%
- Sensitivity: 1mA FS

Indicator Dimensions



Unit: mm

Warning

* The PAC35 Series is designed for the control of temperature, humidity and other physical values of general industrial equipment. It is not to be used for any purpose which regulates the prevention of the serious effect on human life or safety.

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* The possibility of loss or damage to your system or property as a result of failure of any part of the process exists, proper safety measures must be made before the instrument is put into use so as to prevent the occurrence of trouble.

Head Office & Saitama Factory
ISO 9001/ISO 14001 Certification Obtained

(The contents of this brochure are subject to change without notice.)

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