

°C
%RH
<b>SHIMADEN</b>

**Series PAC35**

# **THREE-PHASE POWER REGULATOR**

## **PAC35P/PAC35C**



**20A,30A**



**45A,60A**



**90A,135A**

## **PAC35Z**



**20A,30A,45A**



**60A,90A,135A**

**RoHS** compliance

## **BASIC FEATURES**

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

## SPECIFICATIONS

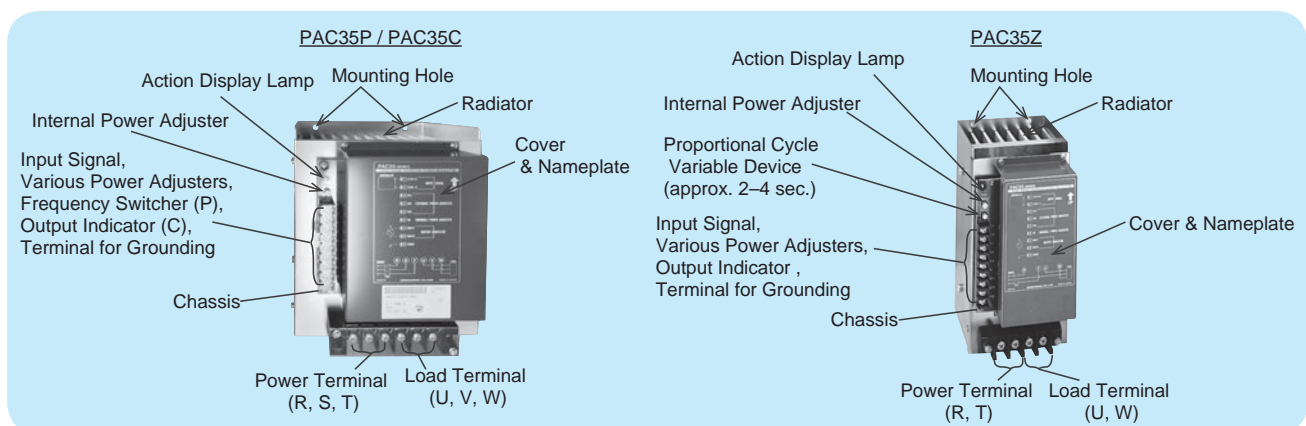
# SERIES PAC35

	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. (2 – 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 – 95% min. of Input Voltage	0 – 95% min. of Load Power	0 – 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 – 1 mA DC)	Output terminal for indicator is attached. (0 – 1 mA DC)

## COMMON SPECIFICATION

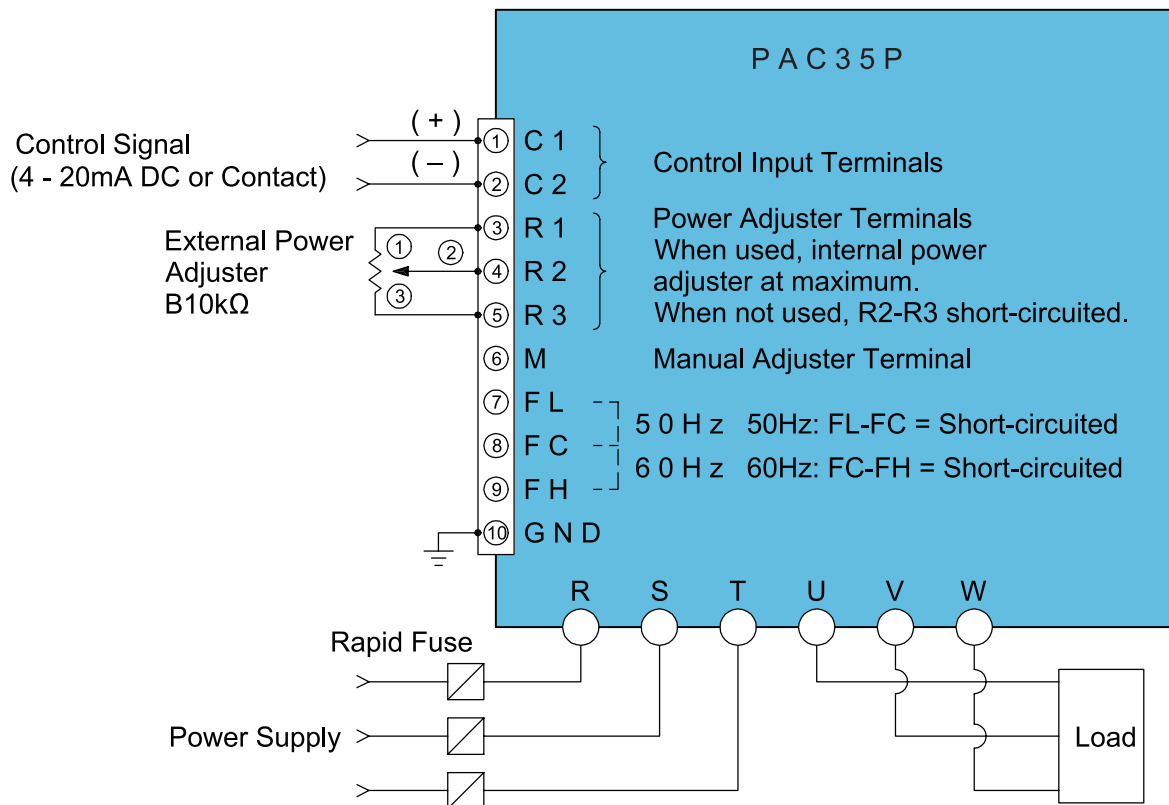
Current Capacity:	20, 30, 45, 60, 90, 135A	
Power Supply:	200 – 240V AC ±10%. 380 – 440V AC ±10%	
Control Input:	Current:	4–20mA DC/Receiving Resistance: 100Ω
	Contact:	Non-voltage contact signal
Power Adjuster:	Current input type:	Internal installation as standard (External installation available as 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 – 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 ~ +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



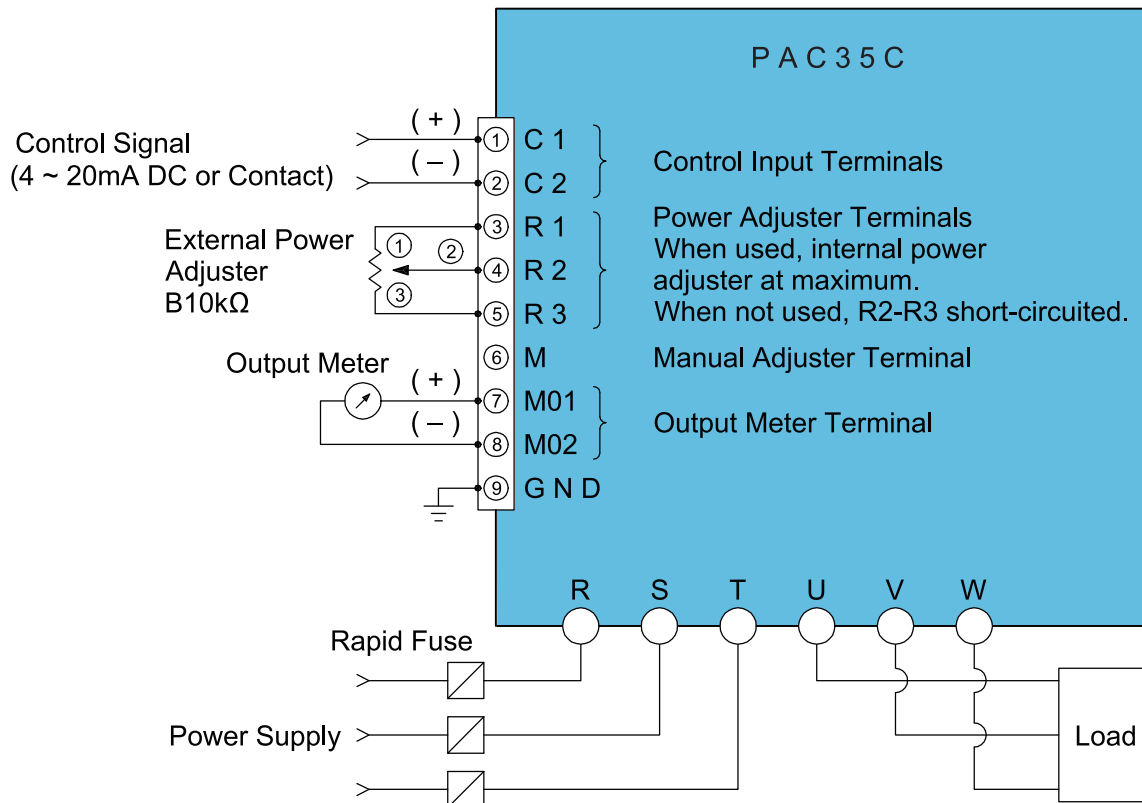
ITEMS	CODE	SPECIFICATIONS	
SERIES	PAC35P	Phase Angle 3-phase Power Regulator With Soft-Start	
CONTROL INPUT	0	4 - 20mA DC/Receiving Resistance: 100Ω	
	2	Non-voltage contact	
	9	Others (Please consult before ordering.)	
CURRENT CAPACITY	020	20A	
	030	30A	
	045	45A	
	060	60A	
	090	90A	
POWER SUPPLY	135	135A	
	37-	200 - 240V AC ±10% 50/60Hz	
	35-	380 - 440V AC ±10% 50/60Hz	
	99-	Others (Please consult before ordering.)	
EXTERNAL POWER ADJUSTER	N	None (Internal standard)	Current input
	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.)	

**TERMINAL ARRANGEMENT PAC35P (Phase Angle)**



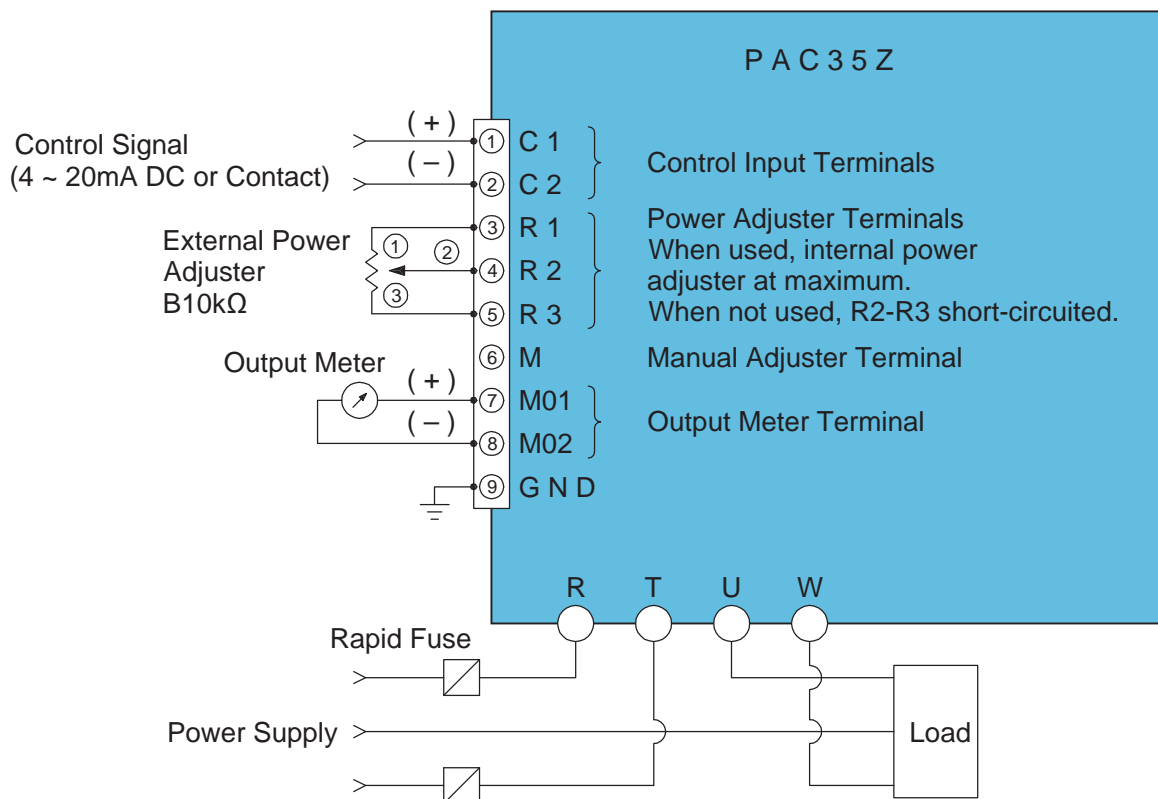
ITEMS	CODE	SPECIFICATIONS	
SERIES	PAC35C	Cycle Base Zero Voltage Switching (3-Phase)	
CONTROL INPUT	0	4 ~ 20mA DC/Receiving Resistance: 100Ω	
	2	Non-voltage contact	
	9	Others (Please consult before ordering.)	
CURRENT CAPACITY	020	20A	
	030	30A	
	045	45A	
	060	60A	
	090	90A	
	135	135A	
POWER SUPPLY	37-	200 ~ 240V AC ±10% 50/60Hz	
	35-	380 ~ 440V AC ±10% 50/60Hz	
	99-	Others (Please consult before ordering.)	
EXTERNAL POWER ADJUSTER	N	None (Internal standard)	Current input
	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	
	1	Manipulated variable output	
	2	Manipulated variable + indicator	
REMARKS	0	Without	
	9	With (Please consult before ordering.)	

**TERMINAL ARRANGEMENT PAC35C (Cycle Base Zero Voltage Switching)**

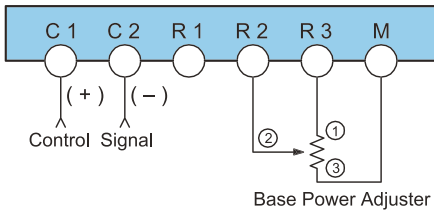


ITEMS	CODE	SPECIFICATIONS	
SERIES	PAC35Z	Time Base Zero Voltage Switching (3-Phase)	
CONTROL INPUT	0	4 – 20mA DC/Receiving Resistance: 100Ω	
	2	Non-voltage contact	
	9	Others (Please consult before ordering.)	
CURRENT CAPACITY	020	20A	
	030	30A	
	045	45A	
	060	60A	
	090	90A	
	135	135A	
POWER SUPPLY	37–	200 – 240V AC ± 10% 50/60Hz	
	35–	380 – 440V AC ± 10% 50/60Hz	
	99–	Others (Please consult before ordering.)	
EXTERNAL POWER ADJUSTER	N	None (Internal standard)	Current input
	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	
	P	High power adjuster (standard)	Contact input
	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	
REMARKS	0	Without	
	9	With (Please consult before ordering.)	

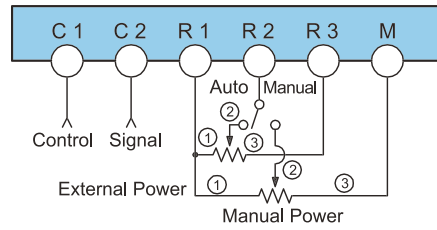
**TERMINAL ARRANGEMENT PAC35Z (Time Base Zero Voltage Switching)**



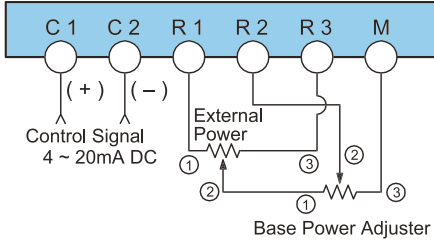
**Base Power Control (Current Input Type)**



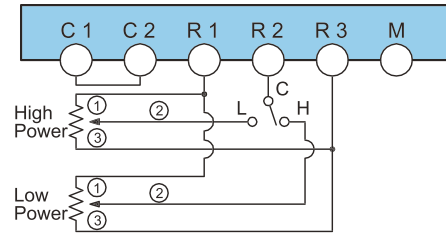
**Auto / Manual Selectable (Current / Contact Type)**



**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.

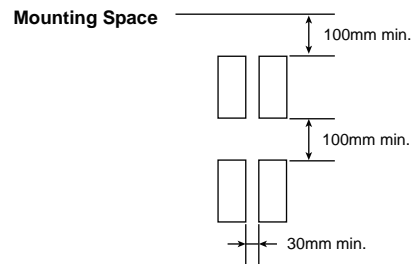
**CONTROL MODE & WAVE FORM**

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

**Mounting & Operating Environment**

Capacity (A)		20	30	45	60	90	135
Heating Value (W)	PAC35P/C	69	105	141	172	270	445
	PAC35Z	45	69	93	125	175	300

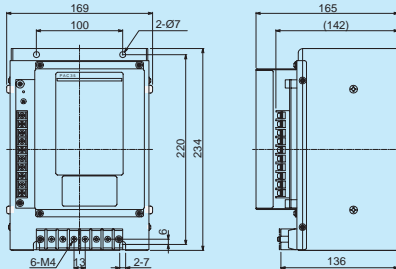
\* Care must be taken for air ventilation.  
 \* Vertical mounting is recommended. Refer to the mounting space diagram.  
 When mounting horizontally, use at 60% maximum of the capacity.



□ PAC35P (Phase Angle)

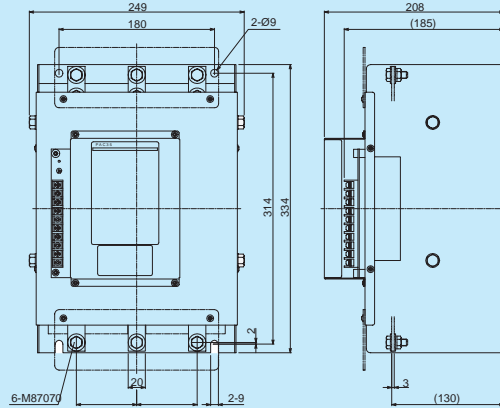
□ PAC35C (Cycle Base Zero Voltage Switching)

① PAC35P / PAC35C 20A, 30A



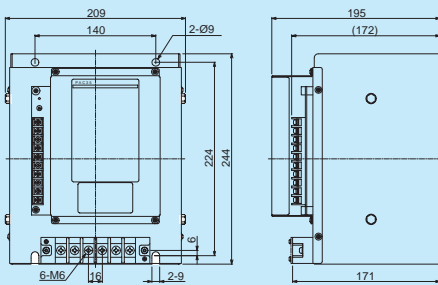
Weight: Approx. 3.0kg / 20A  
Approx. 5.2kg / 30A

③ PAC35P / PAC35C 90A, 135A



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

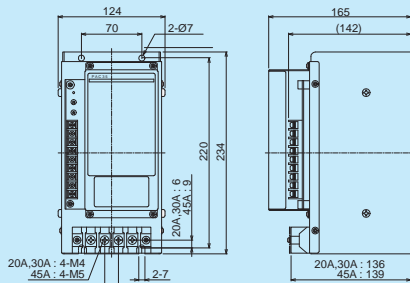
② PAC35P / PAC35C 45A, 60A



Weight: Approx. 7.6kg

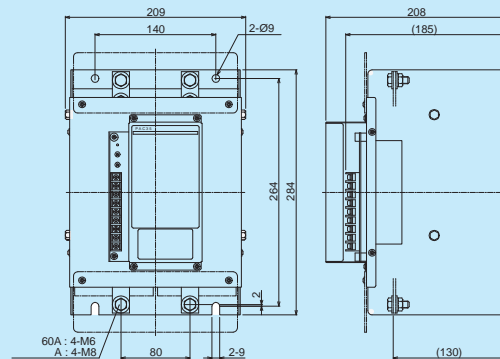
□ PAC35C (Cycle Base Zero Voltage Switching)

④ PAC35Z 20A, 30A, 45A



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

⑤ PAC35Z 60A, 90A, 135A



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

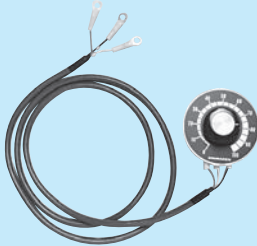
## EXTERNAL OPTIONS

# SERIES PAC35

### Model : QSV002

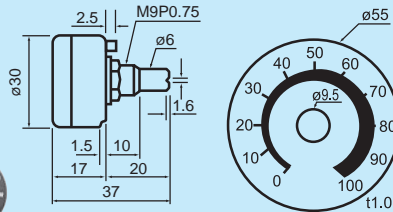
- External (High) Power Adjuster (0~100%)
- Base (Low) Power Adjuster (0~100%)
- Manual Power Adjuster (0~100%)

#### External Power adjuster

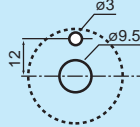


- Resistance: B10kΩ 1W
- Lead wire length: 1m

#### Power Adjuster Dimensions



#### Panel cutout



### Manipulated Variable Output Indicator (Zero Voltage Switching Models Only)

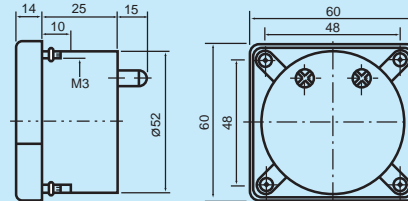
#### Output Indicator



#### Model : QSM001

- Range: 0~100%
- Sensitivity: 1mA FS

#### Indicator Dimensions



Unit: mm

#### Warning

- \* The T71A/H71A/TH71A 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.

#### Warning

- \* 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.



The contents of this manual are subject to change without notice.

### Temperature and Humidity Control Specialists **SHIMADEN CO., LTD.**

Head Office: 2-30-10 Kitamachi, Nerima-ku, Tokyo 179-0081 Japan  
Phone: +81-3-3931-7891 Fax: +81-3-3931-3089  
E-MAIL: exp-dept@shimaden.co.jp URL: <http://www.shimaden.co.jp>

Distributed in New Zealand by:

### **Intech** INSTRUMENTS LTD

Christchurch Auckland [www.intech.co.nz](http://www.intech.co.nz)  
Ph: +6433430646 098271930 [sales@intech.co.nz](mailto:sales@intech.co.nz)  
Fx: +6433430649 098271931