

Thyristor regulators JU series



JU series small and lightweight thyristor regulators for single-phase loads are characterized with high panel installation density.

Two control systems, a phase control and a zero-cross control, are built in and can be changed by remote contacts signal.

In the phase control, feedback types of voltage, current and power, and no-feedback type are selectable depending on heating characteristics of heaters.

Three kinds of input signals, 4 to 20mADC, 1 to 5VDC and ON-OFF contact signal, can be changed by terminal connections. Options of heater disconnection alarm function and current limit function are available.

The fast-acting fuse is built in all models and the current transformer built-in type is also available.



By the option setting unit (with communication function), it can be connected to the higher instruments such as PC and PLC (signal converter may be required) and centralize control the setting value and data up to 31 units.

FEATURES

● Compact structure

Compact, lightweight and high panel installation density. As they are using the same pitch of old JS series, a replacement by an old version is easy.

● Options

The options of heater disconnection alarm function and current limit function are available.

● Phase control/zero-cross control

The phase control and the zero-cross control are switchable.*1 The running by the phase control at the initial stage and by the zero-cross control at the normal stage is possible.

● Zero-cross control

With the delta-sigma modulation, which controls every 1 cycle, the fine control like the phase control is possible.

*1 If the model is without setting unit and with heater disconnection alarm or heater is SiC heater then it is not applicable.

● Setting unit (option)

Display of various parameters, voltage/current/power, heater resistance value and change of the feedback type are possible. By using communication function, various setting value can be changed from the higher side instruments or send various data to the higher side.

● Various protections functions built-in

The thyristor element is protected by fast-acting fuse melting for short-circuit of load, and by gate-off for over-current. For models with a cooling fan built-in, alarm is activated and output is stopped for heat sink overheat.

● Self-diagnosis function built-in

The self-diagnosis function is built in for operation abnormality, thyristor element abnormality and power supply abnormality.

* Separate control power supply specifications are also available, please enquire.

JU SERIES

MODELS

JU	□	□	□	□	□	□	□	□	□	
	Power supply	10: 100V 11: 110V 12: 120V 20: 200 22: 220V 24: 240 38: 380V 40: 400V 44: 440V 99: Others								
	Rated current	010: 10A 020: 20A 030: 30A 050: 50A 075: 75A 100: 100A 150: 150A 200: 200A 250: 250A 300: 300A 400: 400A 500: 500A								
	Control system/feedback type	V: Phase control · voltage feedback / Zero-cross control A: Phase control · current feedback *5 / Zero-cross control W: Phase control · power feedback *5 / Zero-cross control N: Phase control · no-feedback *1 / Zero-cross control C: Zero-cross control								
	Fast-acting fuse	A: Built-in N: Not provided								
	Setting unit (option)	0: Not provided 1: Provided (installed to unit) 2: Provided (panel installation) *2								
	CT (current transformer) function (option)	0: Mounted externally (rated current 10 to 500A, standard) 1: Built-in (rated current 10 to 75A only)								
	Other functions (option)	0: Not provided 1: Heater disconnection alarm *3 *5 2: Current limit ** *5 3: Heater disconnection alarm + current limit (with setting unit only) *5								

* 1 For no-feedback types, then the heater disconnection alarm and current limit, setting unit and built-in CT cannot be added.

* 2 For the panel installation type setting unit, the exclusive cable SH-JUK3 (3m) or SH-JUK5 (5m) is required separately.

* 3 For models without setting unit and with heater disconnection alarm, or if the heater then the phase control and the zero-cross control cannot be swiched.

* 4 For models with current limit, the zero-cross control cannot be combined.

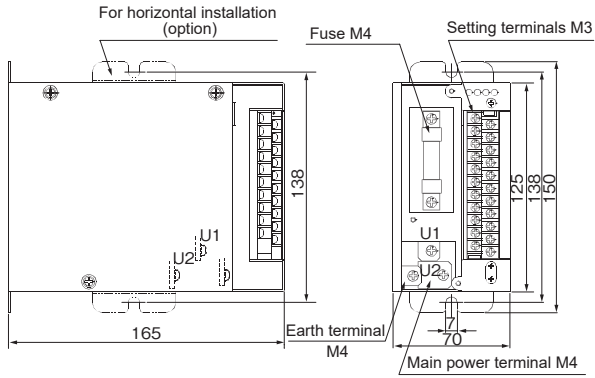
* 5 Built-in CT or external CT required.

SPECIFICATIONS

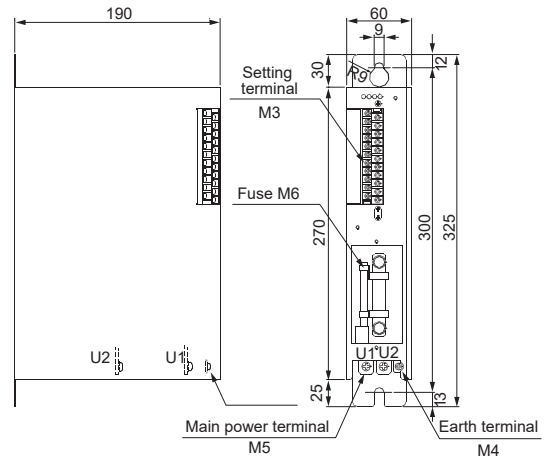
Phase:	Single-phase	Output accuracy:	No-feedback ... Within $\pm 10\%$ of rated voltage
Rated voltage:	100, 110, 120, 200, 220, 240, 380, 400, 440VAC (to be specified)	Voltage feedback ... Within $\pm 3\%$ of rated voltage (at $\pm 10\%$ fluctuation of rated voltage)	Current feedback ... Within $\pm 3\%$ of rated current (at 1 to 10 times variation of load resistance)
Rated current:	10, 20, 30, 50, 75, 100, 150, 200, 250, 300, 400, 500A (to be specified)	Power feedback ... Within $\pm 3\%$ of rated voltage (at 1 to 3 times variation of load resistance, at $\pm 10\%$ fluctuation of rated voltage)	* Performance guarantee is 0 to 50°C
Allowable voltage fluctuation range:	$\pm 10\%$ of rated voltage	Applicable load:	Resistive load, inductive load (primary side control of transformer, flux density 1.2T or lower, phase control only)
Rated frequency:	50/60Hz (automatic change)	Minimum load current:	0.5A or more (at 98% output of rated voltage)
Allowable frequency fluctuation:	$\pm 1\text{Hz}$ of rated frequency ($\pm 1\text{Hz}$ for performance guarantee)	Alarm:	Over-current (on built-in or external CT), fast-acting fuse melting (30A or more), Heat sink overheat (200A or more) ... LED lights and alarm contact output 1 is ON. Thyristor element abnormality, operation abnormality heater disconnection ... LED blinks and alarm contact output 2 is ON. * No-feedback types ... Only operation abnormality and power supply abnormality, no alarm contact
Working temperature range:	-10 to 55°C (load current will decrease if 50°C or higher)	Alarm contact output:	2 points, maximum 250VAC, 1A
Working humidity range:	30 to 90%rh (no dew condensation)	Over-current protection:	Thyristor gate-off (120% or more of rated current, on built-in or external CT) Heater disconnection is protected by built-in fast -acting fuse melting (built-in type only).
Insulation resistance:	50M Ω or larger at 500VDC (between power terminals and ground terminal)	Contact input signal (DI):	Input signal Non-voltage contact signal, External contact capacity 5V DC, 10mA
Dielectric strength:	1 minute at 2000VAC (rated voltage 100 to 240V) 1 minute at 2500VAC (rated voltage 380V or higher)	Cooling system:	Natural cooling for 150A or less of rated current Built-in cooling fan for 200A or more
Output control system:	Phase control and zero-cross control (selectable on models)	Other functions:	Soft-start, soft-up/down (1 to 20 seconds), soft -start at power failure recovery
Feedback type:	Voltage, current, power or no-feedback	Weight:	About 2kg for 10A, 20A, about 3kg for 30 to 75A about 7kg for 100 to 250A, about 12kg for 300 to 500A
Input signal:	Selectable on terminals of 4 to 20mADC (internal resistance 100 Ω), 1 to 5VDC (internal resistance 25k Ω), ON-OFF contact signal, and Resistance signal (10k Ω , manual)		
Slope setting:	By built-in variable resistor (0 to 100% of output range) or external variable resistor (10k Ω)		
Elevation setting:	By built-in variable resistor (0 to 100% of output range) or external variable resistor (10k Ω) Built-in variable resistor cannot be used for models without the setting unit and with optional heater disconnection alarm.		
Soft-start time setting:	1 to 20 seconds		
Running/stop selection:	By contact signal		
Phase control/zero-cross control selection:	By contact signal		
External CT input:	0 to 5A for full scale of rated current Models with built-in CT are available in 75A or lower.		
Output range:	No feedback.....0 to 98% of rated voltage Voltage feedback...0 to 98% of rated voltage Current feedback...0 to 100% of rated voltage Power feedback.....0 to 98% of rated voltage x 0 to 100% of rated voltage		

DIMENSIONS

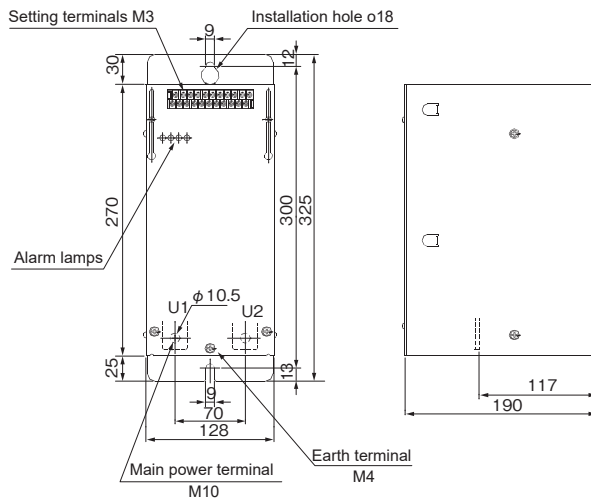
● 10A, 20A



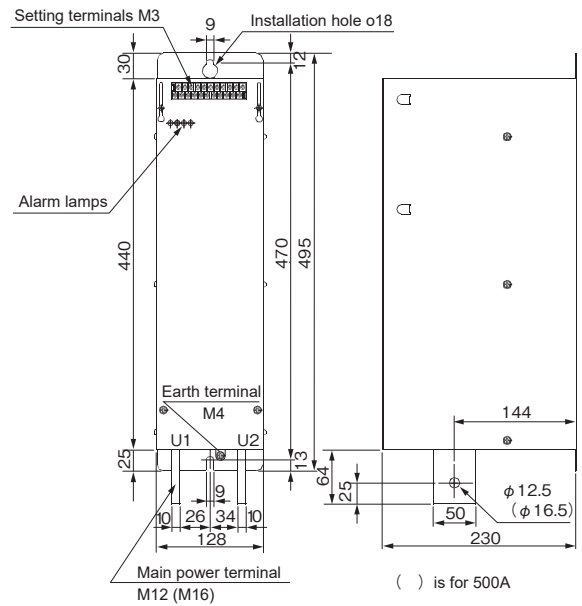
● 30A, 75A



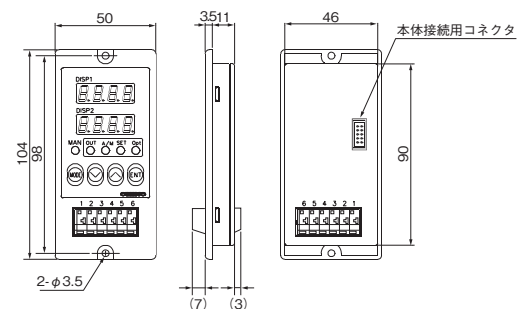
● 100A to 250A



● 300A to 500A



● Setting unit



Unit: mm

OPTIONS

●Setting unit

Setting: Output (0 to 100%), high/low limits (0 to 100%), slope setting (0 to 100%), soft-start time setting (1 to 20 seconds), heater disconnection alarm setting (load resistance 10 to 100%, available in models with heater disconnection alarm only), phase control/zero-cross control selection, feedback type selection, current limit)

Display: Output value (voltage, current, power), alarm, parameters

Installation: Installed to thyristor unit or panel [by exclusive cable of SH-JUK3 (3m) or SH-JUK5 (5m) between thyristor unit and setting unit]

Power supply: Supplied from thyristor unit
 Working temperature: -10 to 55°C
 Working humidity: 30 to 90%rh (no dew condensation)
 Weight: About 50g

●Heater disconnection alarm

Detects the heater disconnection by built-in or external CT. When disconnection is detected, LED blinks and alarm contact output becomes ON. The selection of phase control/zero-cross control is not possible.

●Current limit

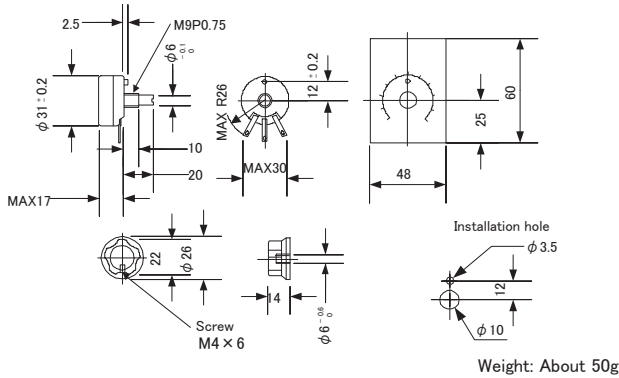
Sets the maximum limit of the load current (detected by built-in or external CT. The combination with zero-cross control is not possible.

ACCESSORIES

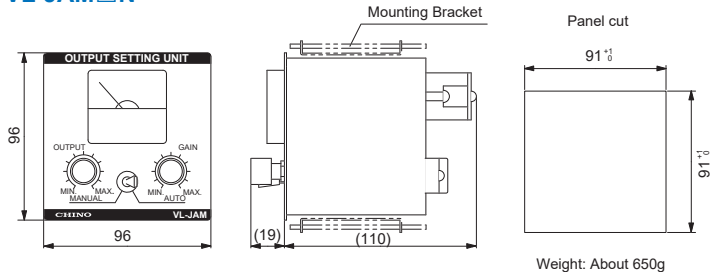
Model	Purpose	Specifications
VL-JAL	Slope setting Manual setting High/low limits setting Elevation setting Current limit setting	Variable resistor 10kΩ
VL-JAM1: 0 to 150V	Output indicator Slope/manual setting Combined with selector switch	1: Voltage indicator 0 to 150V
VL-JAM2: 0 to 250V		2: Voltage indicator 0 to 250V
VL-JAM3: 0 to 500V		4: Voltage indicator 0 to 500V
		Variable resistor 10kΩ, 2kΩ

VL-JAL is consisted of variable resistor, scale and knob.
 VL-JAL series output indicator can be used for phase control only.

●VL-JAL



●VL-JAM□N



Unit: mm

FAST-ACTING FUSE

Rated current	Model	
	100/200V line	400V line
10A	350KH - 15	600KH - 15
20A	350KH - 30	600KH - 30
30A	250GH - 050S	660GH - 050S
50A	250GH - 075S	660GH - 080S
75A	250GH - 100S	660GH - 100S
100A	250GH - 160S	660GH - 160S
150A	250GH - 200S	660GH - 200S
200A	250GH - 315S	660GH - 315S
250A	250GH - 350S	660GH - 350S
300A	250GH - 450S	660GH - 450S
400A	250GHW630S	660GH - 630S
500A	250GHW710S	660GH - 710S

EXCLUSIVE CABLE

(between thyristor unit and setting unit)

Model	Specification
SH-JUK3	Length: 3m
SH-JUK5	Length: 5m

TERMINAL COVER

(for main circuit)

Model	Specification
SH-JUR500	For 300 to 500A

Note:

The terminal cover is attached for 10 to 75A.
 The thyristor unit cover serves as the terminal cover concurrently for 100 to 250A.
 The thyristor unit cover serves as the setting terminal cover concurrently for 300 to 500A.

Specifications subject to change without notice. Printed in Japan (I) 2024. 9

CHINO CORPORATION

32-8 KUMANO-CHO, ITABASHI-KU, TOKYO 173-8632
 Telephone : +81-3-3956-2171
 Facsimile : +81-3-3956-0915
 E-mail : inter@chino.co.jp
 Website : www.chino.co.jp/