

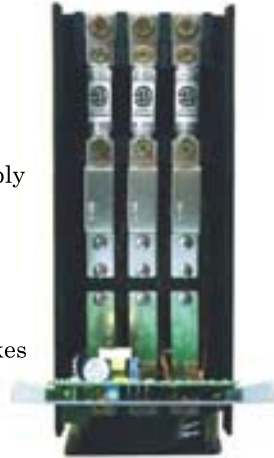
THYRISTOR POWER REGULATOR



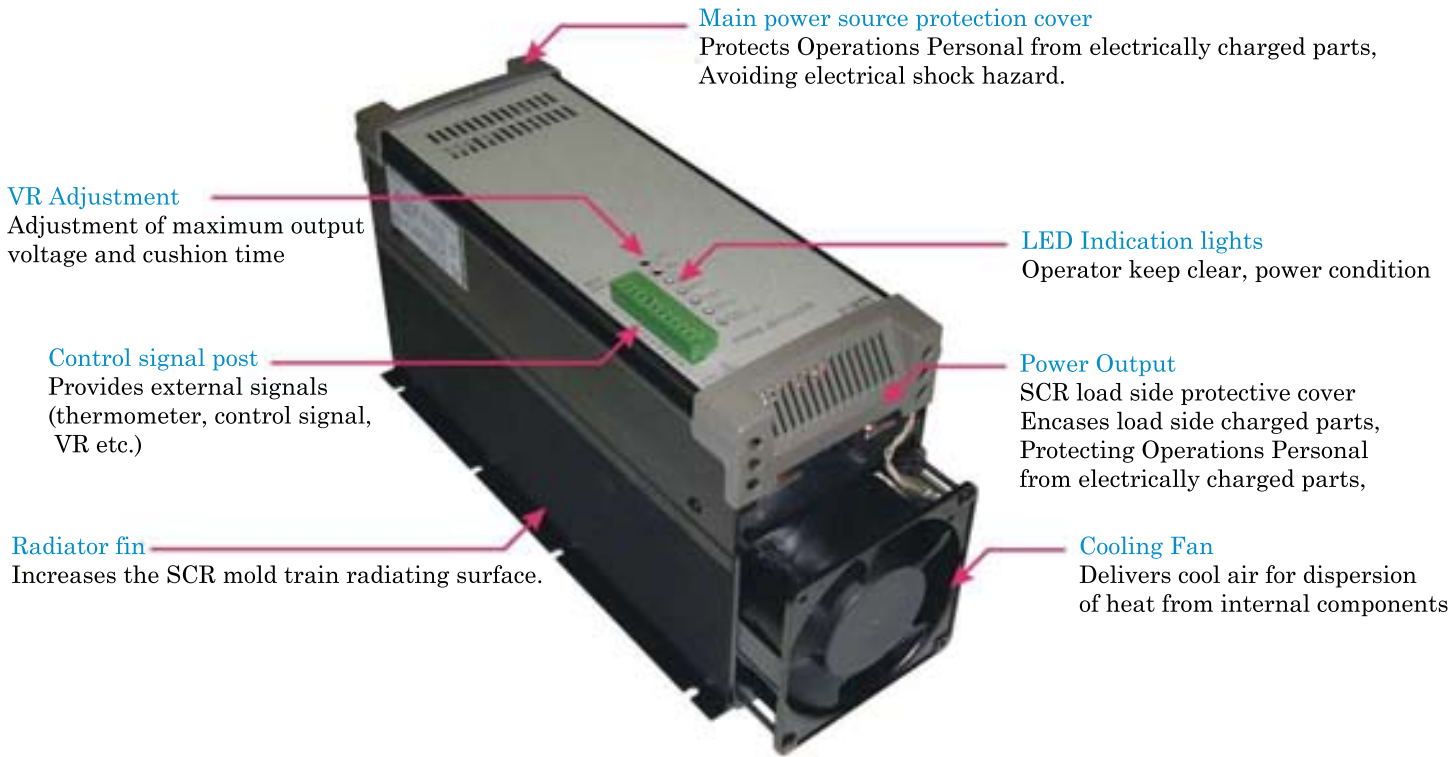
W5 SERIES

Product Characteristics

- Individual MAX and BIAS Adjustments
- Hinged information panel for easy fuse replacement
- Max, SFS and VR on information panel, facilitates adjustment.
- Many LED information panels only indicate running status.
- (AC1, AC2) may be controlled independently regardless of accessory power supply
- Built-in cushion regulation of output (SFS VR), adjustable range 1~22 seconds. (Available on phase control product only)
- Upper and Lower protective covers, notches allow safe placement of cables.
- Cuts power within 0.5Hz immediately stopping output, treating resultant spikes and cushioning output. (prevents swell voltage thus preserving the FUSE)
- The only design, able to handle a complete range of 200~480VAC applications.
- Supply frequency detected, 50~60Hz compatible, no frequency configuration required.
- Overheated SCR, Fuses will cut in and display a group of warnings to assist in trouble shooting.
- An overheated SCR or a blown FUSE stops the output immediately, should a spike or surge result, the output is once again cushioned.
- 4~20mA, 1~5VDC, 2~10VDC, 0~20mA, 0~5VDC, 0~10VDC, Jumpers can be arranged to select a range of controller inputs.
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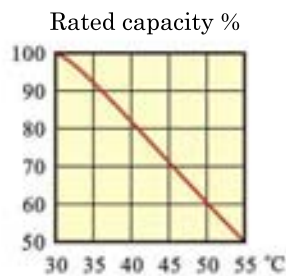


Component Overview



Installation and environment requirements

- ❑ When installed in an enclosure, heat may tend to build up, ensure prefabrication maintains clearance around the unit and position spatially above and below vents, thus avoiding overheating.
- ❑ Avoid installation in areas where rising air streams from other heat generating equipment may exist.
- ❑ Do not install in environments heated for public comfort or areas of poor ventilation, Should this be unavoidable lower the rated capacity by 70%
- ❑ Avoid installing in locations with vapour steams containing acid or alkali gases.
- ❑ Surroundings: below 90%RH. (non condensing)
- ❑ Ambient temperature: -10°C~45°C.



The above data (corrosion free radiator fin, cover without greasy dirt, and situated according to the heat convection and directions of installation.)



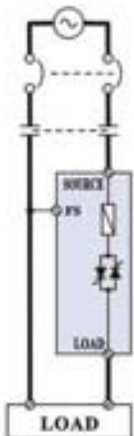
Control Mode and Suitable Load

Control mode \ Output	Output wave		
	10% Output	50% Output	90% Output
Phase angle control			
Zero crossing control	 1 cycle ON and 9 cycle OFF	 1 cycle ON and 1 cycle OFF	 9 cycle ON and 1 cycle OFF

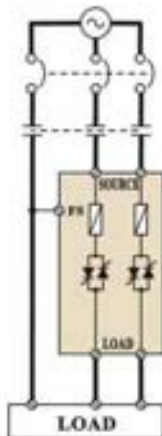
- Phase control: The continuous phase angle control, the output is stable, the ampere metre does not vibrate, but each half-wave will produce an overtone.
Is the load suitable: impedance load Dependent, Changing impedance load, inductive load, the IR tube
- Zero position control: The assignment type zero position control, smallest resolution that will not produce an overtone 1Hz, Output the ampere metre will present a vibration condition.
Is the load suitable: Impedance load dependant.

Wiring and plan Reequirments

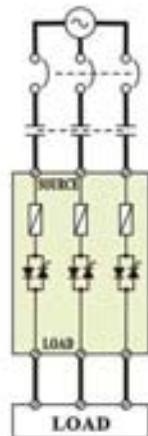
Single Phase



Three Phase
2 wire



Three Phase



- NFB → Common source of failure, can restore service quickly whilst reducing shock hazard
- MC → May cut electric power to the supplies load, if the silicon controlled rectifiers breaks down or the temperature is higher than acceptable, the power source, is cut in order to avoid the high temperature calls which may burn down equipment or cause a serious accident. (Must match temperature controller)
- Dependent on a control signal to adjust the output electric power, heat being generated to achieve this. (product interior has a high speed fuse, the fuse is not accessible)

- Flow diagram: The main power source -> NFB -> magnetic contactor -> thuristor -> load without fuse
- When wiring the screw locks you must by all means ensure excellent contact. Poor contact will result in high temperature.
- After completing wiring, you must close the indicator panel and the security protection covers, before activating. This may avoid receiving an electric shock or avoid conductive material from falling in, creating a short circuit.

Product model identification table

Product	W5	W5 series	
Controls	SP	Single-phase phase control	
	SZ	Single-phase zero position control	
	TP	Three Phase Three line type phase control	
	TZ	Three Phase Two line type zero position control	
	ZZ	Three Phase Three line type zero position control	
Main power source	1V	110 VAC (single-phase model only)	
	4V	200-480VAC	
Current Rating	030	30A	
	045	45A	
	060	60A	
	080	80A	
	100	100A	
	125	125A	
	150	150A	
	180	180A	
	230	230A	
	300	300A	
	380	380A	
	450	450A	
	580	580A	
720	720A		
Dash	-		
Accessory power generation	1	1 ϕ 110VAC	
	2	1 ϕ 220VAC	
Input Signal	0	0~ 5VDC	
	1	1~ 5VDC	
	2	2~10VDC	
	3	0~10VDC	
	4	4~20mA	
	5	0~20mA	
	M	Manual Adjustment	
*	Special		
Cushion	C	Cushion time 2 seconds (zero position product)	
	J	The cushion variable, 1-22 second (phase product)	
Special specification code	TF	Induction reactance load	
	CL	Limits power consumption flow pattern	
	CV	Voltage	

Input signal choice



S1 Input Signal 4~20mA · 0~20mA · MANUAL

S2 Input Signal 1~5VDC · 0~5VDC

S3 Input Signal 2~10VDC · 0~10VDC



VR1 BIAS : Datum output voltage adjustment
(anti-clockwise adjustment control signal input is less than output)

VR2 SFS : Cushion rising time adjustment
Setting range 1~22 seconds, adjust clockwise to increase the cushion time.
(The zero position product does not have this function)

VR3 Max : Maximum output voltage regulation
Setting range 0~100% 'anti-clockwise adjustment reduces output.

LED indicating lamp explanation and trouble shooting

L1 Power	<ul style="list-style-type: none"> Bright: The accessory power supply is utilised Dim: 1. Confirm AC1, AC2 accessory power supply connection. 2. Replace control panel using the same specification or repair the rectifier.
L2 Input	<ul style="list-style-type: none"> Bright: Receiving control signal. Dim: 1. Control signal input -> Check controller outputs and confirmed communication cable connection or alignment. 2. Controller polarities meet counter--> Check controls polarity for the clock. 3. MAXVR or exterior VR 3 control panel null -> Check whether either VR is set to null 4. Control panel breakdowns -> Replace control panel using the same specification or repair the rectifier.
L3 Output	<ul style="list-style-type: none"> Bright: Rectifier operational - phase control (along with output size, blinking) - zero position control (alternates with output size Bright) Dim: If 1. Indicating lamp L5 is bright (fuse blown or main power source down) -> refer to ERR (L5) explanation to make determination. 2. Ultra warm indicating lamp L4 has (rectifier ultra warm) -> refer to ERR (L4) explanation make determination. 3. Input lamp L2 bright (non-input signal) -> refer to (L2) to make determination. 4. Input lamp L2 bright (control panel breakdown) -> Replace control panel using the same specification or repair the rectifier.
L4 TH Err	<ul style="list-style-type: none"> Bright: <ul style="list-style-type: none"> 1. Rectifier overheated -> Fan is not revolving, confirm whether the fan has power, remove foreign matter from cooling fins or fan assembly. 2. Periphery hyperpyrexia -> Reposition Unit or improve the ventilation. Dim: Rectifier is operating within normal temperature range.
L5 FUSE/ Source Err	<ul style="list-style-type: none"> Bright: 1. Main power sources down -> Inspect the main power source or power transmission. 2. high speed fuses blown -> First inspect the load device for short-circuit or earthing. Replace the same specification high speed fuse. Dim: Normal Operation.

Post Connections

Single-phase phase, Single-phase zero position, Three-phase two-wire system zero position (SP - SZ - TZ)

Terminal	Signal	Description	Allocation
TB-01	FS	FUSE	Load active must meet FS
TB-02	M	+5VDC	Control panel supply ONLY!
TB-03	+	Control Signal Input	Default Specification for input signal value is 4-20mA
TB-04	-	Signal Ground	
TB-05	E3	Connects exterior potentiometer VR3	Output limit. 0~100% adjustment Potentiometer VR2(2~10Kohm) Short-circuit E3-E2 with Jumper
TB-06	E2	Connects exterior potentiometer VR2	
TB-07	E1	Connects exterior potentiometer VR1	
TB-08	NC	Warning Contact	Accommodates 227VAC 2A 125VAC 2A 30VAC 2A
TB-09	COM	Warning Contact	
TB-10	NO	Warning Contact	
TB-11	AC1	Auxiliary Power	Accessory power supply voltage: refer to the specification label
TB-12	AC2		

Three-phase three-wire, Three-phase three-wire zero position (TP - ZZ)

Terminal	Signal	Description	Allocation
TB-01	•	Special	Do not wire
TB-02	M	+5VDC	Control panel supply ONLY!
TB-03	+	Control Signal Input	Default Specification for input signal value is 4-20mA
TB-04	-	Signal Ground	
TB-05	E3	Connects exterior potentiometer VR3	Output limit. 0~100% adjustment Potentiometer VR2(2~10Kohm) Short-circuit E3-E2 with Jumper
TB-06	E2	Connects exterior potentiometer VR2	
TB-07	E1	Connects exterior potentiometer VR1	
TB-08	NC	Warning Contact	Accommodates 227VAC 2A 125VAC 2A 30VAC 2A
TB-09	COM	Warning Contact	
TB-10	NO	Warning Contact	
TB-11	AC1	Auxiliary Power	Accessory power supply voltage: refer to the specification label
TB-12	AC2		

Rectifier corresponding high speed fuse

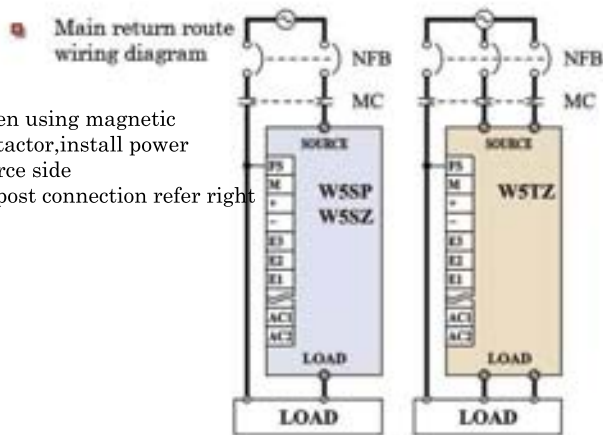
Rating	30A	45A	60A	80A	100A
Part	40FE	63FE	80FE	100FE	660GH-125
Manufacturer	Bussmann	Bussmann	Bussmann	Bussmann	HINODE

Rating	125A	150A	180A	230A	300A
Part	80FE*2	100FE*2	660GH-125*2	250FM	315FM
Manufacturer	Bussmann	Bussmann	HINODE	Bussmann	Bussmann

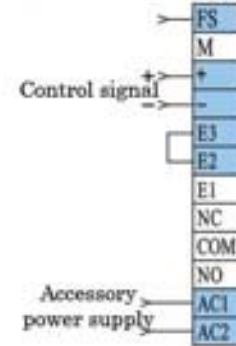
Rating	380A	450A	580A	720A
Part	660GH-400	250FM*2	315FM*2	660GH-400*2
Manufacturer	HINODE	Bussmann	Bussmann	HINODE

Single-phase phase control, single-phase zero position control, two-wire system zero position control wiring model

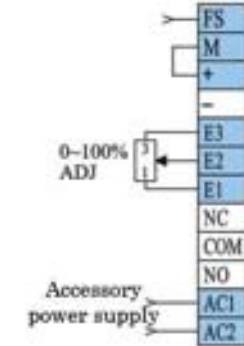
* When using magnetic contactor, install power source side
 * FS post connection refer right



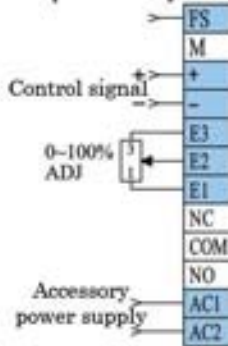
1. Control signal input



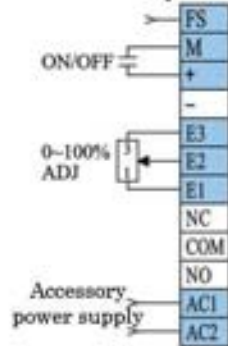
2. Manual Control



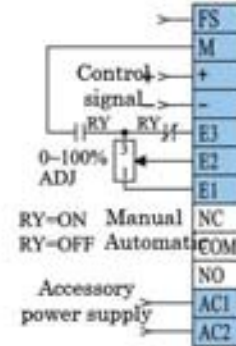
3. Control signal input, output limit adjustment



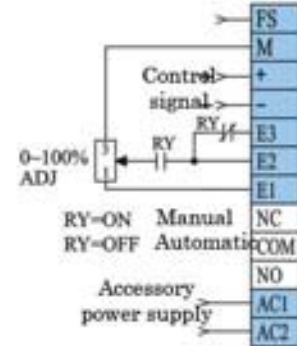
4. Contact signal input, exterior VR adjustment



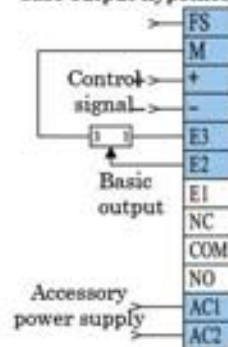
5. Exterior VR adjustment in automatic RELAY cut



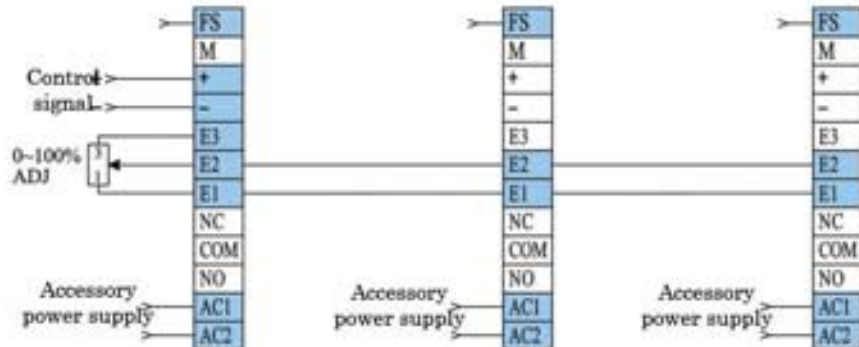
6. Automatic RELAY cut



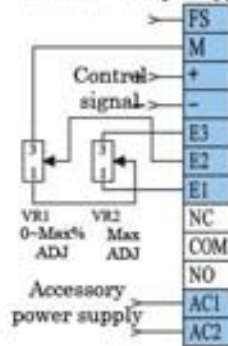
7. Control signal input, base output hypothesis



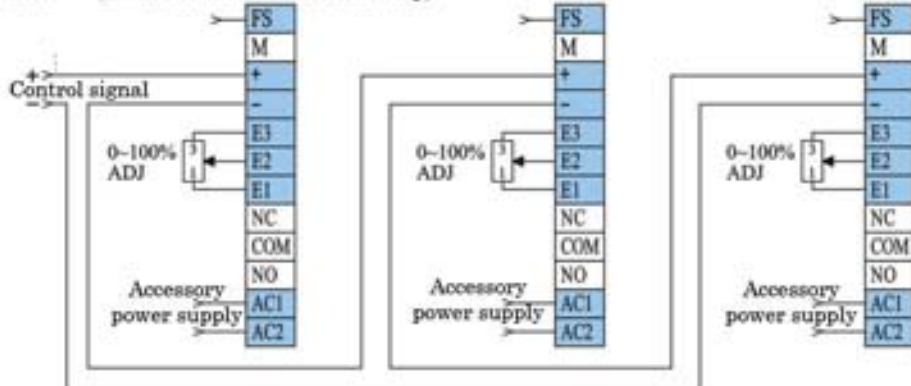
8. Multiple connections, an exterior VR hypothesis



9. Basic output and maximum output hypothesis

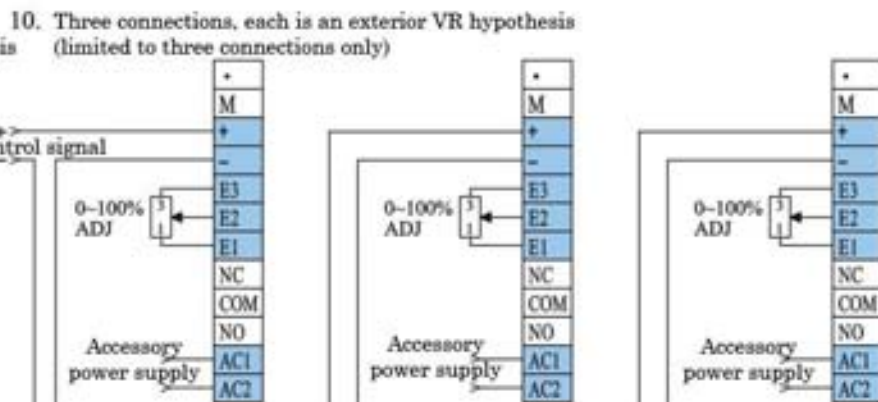
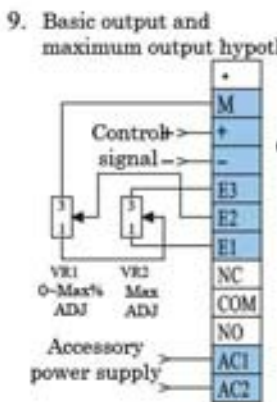
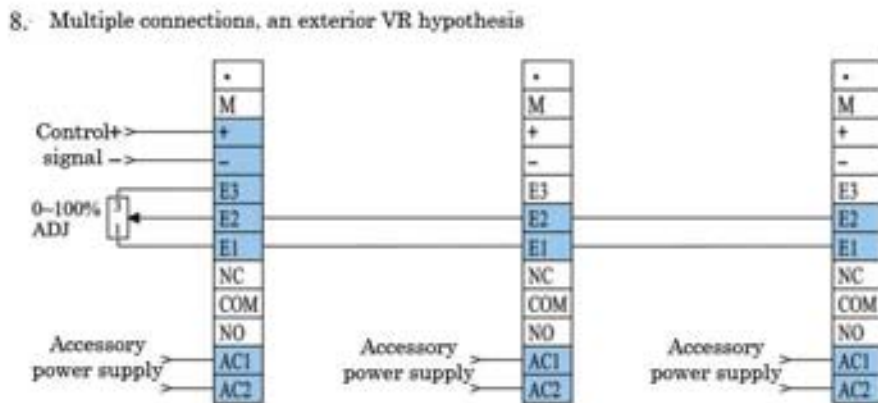
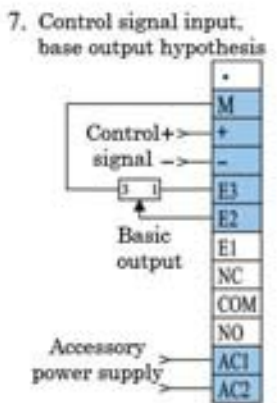
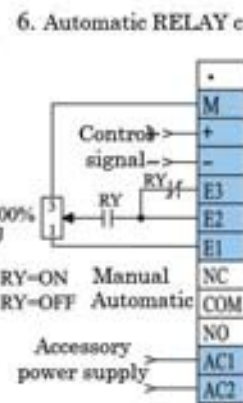
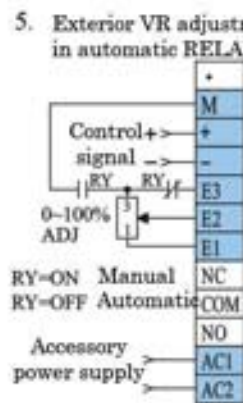
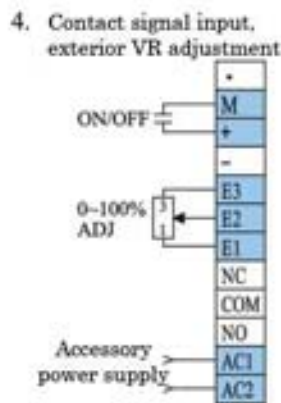
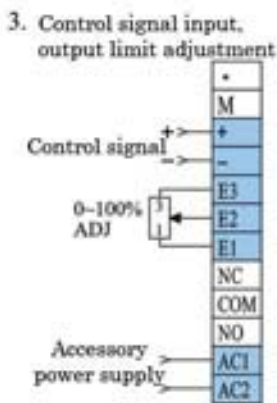
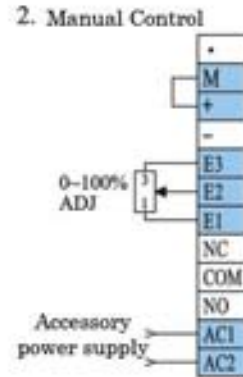
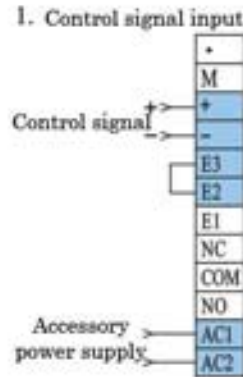
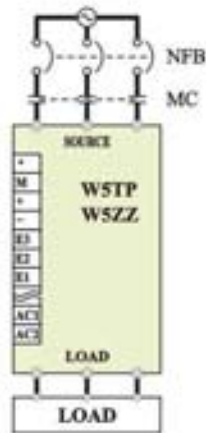


10. Three connections, each is an exterior VR hypothesis (limited to three connections only)



Three-phase phase control, three-phase three zero position control wiring model

■ Main return route wiring diagram
 * when using magnetic contactor please install inline with power source



SCR model size and weight

Single Phase Phase Control, Single Phase Zero Position Control (W5SP - W5SZ)															
Rating	Case	Dimensions (mm)			Weight (kg)	Packaged Size (mm)			Gross Weight (kg)	Mounting Points (mm)				Main Power Connector	Cooling
		L	W	H		L	W	H		L1	L2	L3	W		
30A	A	162	98	133	1.3	225	127	166	1.5	122	○	○	90	M6	Self
45A	A	200	98	133	1.5	262	127	166	1.7	122	○	○	90	M6	Self
60, 80A	B	162	112	183	1.7	225	140	220	2.0	122	○	○	104	M6	Fan
100A	C	189	112	183	2.0	250	140	220	2.3	122	○	○	104	M6	Fan
125, 150, 180A	C	275	112	183	3.0	336	140	220	3.4	122	86	○	104	M8	Fan
230A	C	287	112	188	3.4	345	140	220	3.8	122	86	○	132	M10	Fan
300, 380A	I	390	140	248	6.4	450	168	277	7.0	122	86	94	132	M10	Fan
450A	I	390	140	248						122	86	94	132	M10*2	Fan
580A	I	460	140	248						122	86	94	132	M10*2	Fan
720A	I	560	140	248						122	86	239	132	M10*2	Fan

Three Phase Two Wire Zero Position Control (W5TZ)															
Rating	Case	Dimensions (mm)			Weight (kg)	Packaged Size (mm)			Gross Weight (kg)	Mounting Points (mm)				Main Power Connector	Cooling
		L	W	H		L	W	H		L1	L2	L3	W		
30A	A	162	98	133	1.5	225	127	166	1.7	122	○	○	90	M6	Self
45A	B	162	112	183	1.9	225	140	220	2.2	122	○	○	104	M6	Self
60, 80, 100A	C	189	112	183	2.2	250	140	220	2.5	122	○	○	104	M6	Fan
125A	C	275	112	183	3.1	336	140	220	3.5	122	86	○	104	M8	Fan
150A	F	326	140	205	4.5	388	168	245	5.0	122	86	○	132	M8	Fan
180A	F	382	140	205	5.6	443	168	245	6.1	122	86	94	132	M8	Fan
230A	G	310	155	265	10.4	445	260	420	12.0	250	○	○	143	M10	Fan
300, 380A	G	390	155	265	14.3	525	260	420	16.3	230	80	○	143	M10	Fan
450A	J	390	260	248						122	86	94	252	M10*2	Fan
580A	J	460	260	248						122	86	94	252	M10*2	Fan
720A	J	560	260	248						122	86	239	252	M10*2	Fan

Three Phase Three Wire Phase Control, Three Phase Three Wire Zero Position Control (W5TP - W5ZZ)															
Rating	Case	Dimensions (mm)			Weight (kg)	Packaged Size (mm)			Gross Weight (kg)	Mounting Points (mm)				Main Power Connector	Cooling
		L	W	H		L	W	H		L1	L2	L3	W		
30A	D	200	140	145	2.5	262	168	182	2.9	122	○	○	104	M6	Self
45A	E	200	140	205	3.0	262	168	245	3.4	122	○	○	104	M6	Self
60, 80, 100A	F	202	140	205	3.1	262	168	245	3.5	122	○	○	104	M6	Fan
125A	F	288	140	205	4.4	350	168	245	5.0	122	86	○	104	M8	Fan
150A	F	326	140	205	4.8	388	168	245	5.4	122	86	○	104	M8	Fan
180A	F	382	140	205	5.8	443	168	245	6.3	122	86	94	104	M8	Fan
230A	H	322	215	265	15.3	450	313	420	17.3	250	○	○	203	M10	Fan
300, 380A	H	402	215	265	21.1	540	313	420	23.4	230	80	○	203	M10	Fan
450A	K	390	380	248						122	86	94	372	M10*2	Fan
580A	K	460	380	248						122	86	94	372	M10*2	Fan
720A	K	560	380	248						122	86	239	372	M10*2	Fan

