

POWER REGENERATIVE UNIT (VS-656RC5)

VARISPEED-656RC5

200V CLASS: 3.7 to 37kW

400V CLASS: 3.7 to 75kW



YASKAWA

Certified for
ISO9001 and
ISO14001



JQA-0422



JQA-EM0498

LITERATURE NO. KAE-S656-3B

Fully Supports Inverters VS-656RC5

VS-656RC5 can do Three jobs with One Unit

The VS-656RC5 is a power regenerative unit with both braking and regenerative functions. The VS-656RC5 shows great energy-saving performance in combination with an inverter. Because the VS-656RC5 does not require a braking resistor unit, it requires less space and enhances braking ability. The VS-656RC5 will dramatically affect applications with large minus loads such as cranes and elevators.



Applications

When power regeneration can be advantageous:
Cranes, elevators, centrifugal separators, winders, etc.

Applicable Inverters

Varispeed G7, Varispeed F7, VS-686SS5, VS-626MC5, etc.

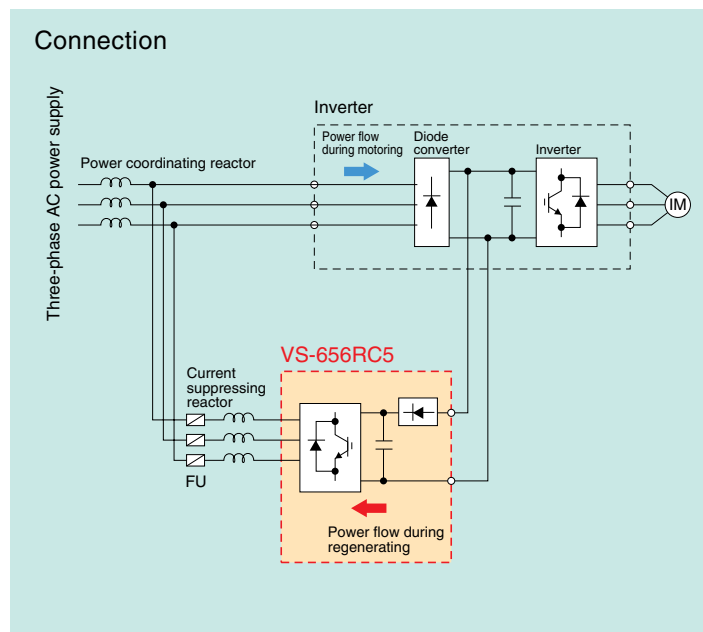
Safety Standards



UL/cUL Standard

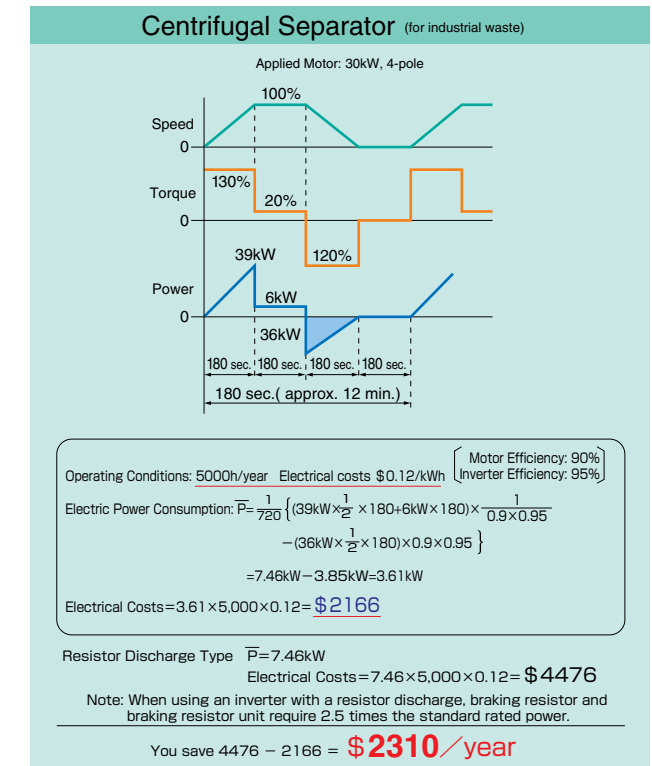
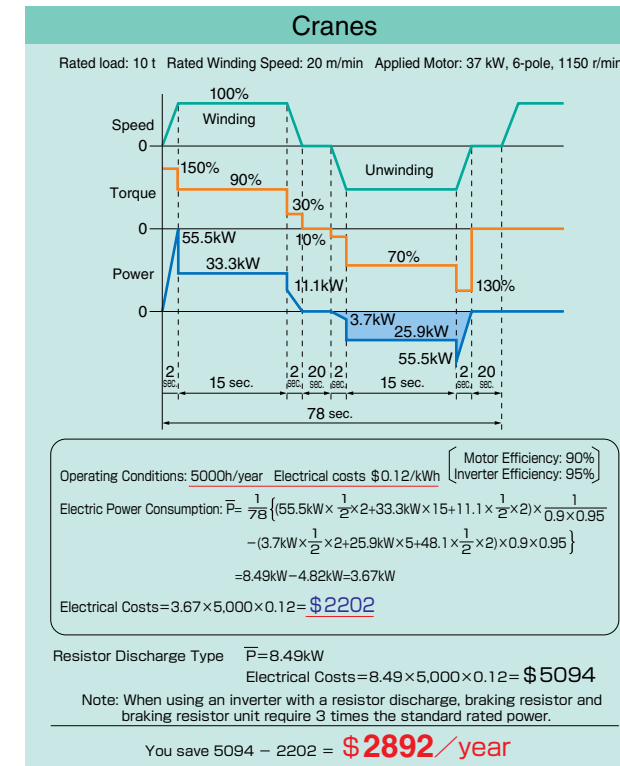


CE marking



Helps the Energy-Saving Drive

The VS-656RC5 operates only at power regeneration with 120° current conduction. It efficiently regenerates load energy to the power supply, which results in significant energy savings.

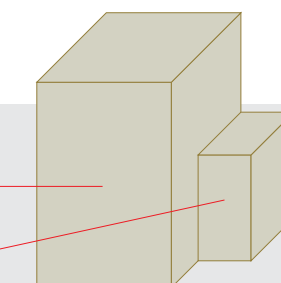


Requires Less Space

The VS-656RC5 requires less than half the area and is less than half the bulk of braking resistor systems that have a "braking unit + braking resistor". A magnetic contactor is not needed.

Braking Resistor System

Braking resistor 356 (W) × 543 (H) × 260 (D)
Braking unit 140 (W) × 280 (H) × 160 (D)
Dimensions in mm



Example of 200V 15kW with standard options

VS-656RC5

Area: **-63%**
Bulk: **-72%**

VS-656RC5 200 (W) × 300 (H) × 265 (D)
Power coordinating reactor 180 (W) × 90 (H) × 100 (D)
Power suppressing reactor 120 (W) × 90 (H) × 71 (D)
Dimensions in mm

Example of 200V 15kW

Enhances Braking Ability

Dramatically improved braking ability. Calculations of torque, time, and frequency are not needed.

Braking Resistor System

• Without options: Approx. 10 to 20%/continuous rating
• With standard options: Approx. 100 to 130%/max. 10sec., 10%ED

* Except for conditions above, additional options will be required.

VS-656RC5

• 80%/continuous rating
• 100%/1min., 25%ED
• 150%/30 sec.

* Except for conditions above, apply a higher capacity unit.

STANDARD SPECIFICATIONS

200V Class

Model CIMR-R5A		23P7	25P5	27P5	2011	2015	2018	2022	2030	2037
Rating	Rated Capacity kW	3.7	5.5	7.5	11	15	18.5	22	30	37
	Rated DC Current A	13	19	26	37	51	64	77	102	126
	Rated Current on Power Side A	10	15	20	30	40	50	60	80	100
	Regenerative Torque	150 % for 30 sec. 100 % for 1 min., 25 % ED, 80 % continuous								
Input Power Supply	Voltage Frequency	200 to 220 VAC 50 Hz, 200 to 230 VAC 60 Hz								
	Allowable Voltage Fluctuation	-15 to +10 %								
	Allowable Frequency Fluctuation	±3 Hz/300 ms (Free phase rotation)								
	Imbalance Rate between Phases	Within 2 %*								

400V Class

Model CIMR-R5A		43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075
Rating	Rated Capacity kW	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
	Rated DC Current A	6	9	13	19	26	32	37	51	64	77	96	128
	Rated Current on Power Side A	5	7.5	10	15	20	25	30	40	50	60	75	100
	Regenerative Torque	150 % for 30 sec. 100 % for 1 min., 25 % ED, 80 % continuous											
Input Power Supply	Voltage Frequency	380 to 460 VAC 50/60 Hz											
	Allowable Voltage Fluctuation	-15 to +10 %											
	Allowable Frequency Fluctuation	±3 Hz/300 ms (Free phase rotation)											
	Imbalance Rate between Phases	Within 2 %*											

Common to 200V/400V Class

Control Characteristics	Control Method	120° current conduction											
	Input Power Factor	0.9 or more (Rated current)											
	Overload Capacity	30 sec. at approx. 150 % of rated current.											
Operation Input		External terminals 4 points (MANUAL RUN, AUTO RUN, EXFLT, RESET)											
Status Output	1C Contact Output	Fault (FAULT)											
	Photocoupler Output	Photocoupler output 2 points (CONV READY, RUN)											
	Analog Output	Analog output: 1 point can be released (Factory setting: current monitor)											
Protective Function	Instantaneous Overcurrent	Stops at approx. 200 % of the current on power side											
	Blown Fuse	Motor stops by blown fuse.											
	Overload	Stops after 30 sec. at 150 % of rated current											
	Undervoltage (DC Voltage)	200 V class: stops at approx. 190 VDC or less 400 V class: stops at approx. 380 VDC or less.											
	Undervoltage (Power Side Voltage)	200 V class: stops at approx. 150 VAC or less 400 V class: stops at approx. 300 VAC or less.											
	Overvoltage (DC Voltage)	200 V class: stops at approx. 406 VDC or more 400 V class: stops at approx. 812 VDC or more.											
	Fin Overheat	Protected by thermister											
	Power Supply Open Phase	Stops at power supply open phase detection.											
	Power Frequency Error	Stops by fluctuation more than ± 3 Hz of rated input frequency.											
Power Charge Indication	Indicated until main output voltage is approx. 50 V or less.												
Environmental Conditions	Location	Indoor (Protected from corrosive gases and dust)											
	Ambient Temperature	-10 to +40 °C (Closed wall-mounted) -10 to +45 °C (Open chassis type)											
	Humidity	90 % RH or less (non-condensing)											
	Vibration	Up to 9.8 m/s ² (1G) less than 20 Hz, up to 1.96 m/s ² (0.2G) at 20 to 50 Hz											

Notes: 1 Use 1:1 with an inverter. Do not connect more than one inverter to one VS-656RC5.

2 Use the VS-656RC5 whose capacity is equal to one exceeding the inverter capacity to be combined.

3 Make sure to use the specified AC reactor, fuse, and fuse holder.

4 Do not use this unit with single-phase power supply. Use three-phase power supply.

5 When the power supply is a generator, check the capacity of the generator. Contact your YASKAWA representative.

*Use the VS-656RC5 with larger output capacity if the imbalance rate between phases exceeds 2 %.

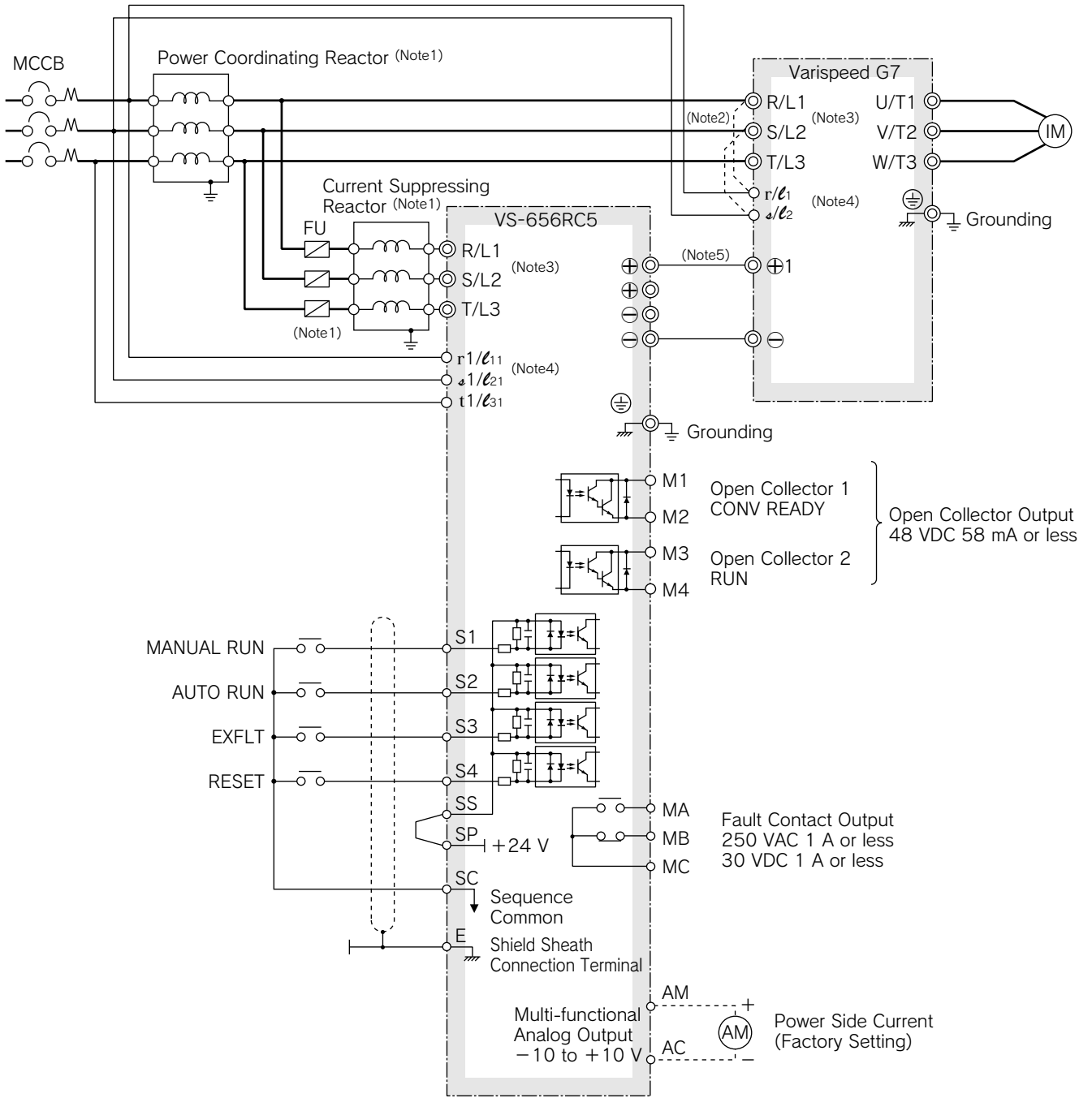
Imbalance rate between phases can be calculated using the following formula (Conforming to IEC1800-3).

$$\text{Imbalance rate between phases}[\%] = \frac{\text{Max. voltage} - \text{Min. voltage}}{\text{Three-phase average voltage}} \times 67$$

CONNECTION DIAGRAM

The figure below shows a typical connection diagram of the VS-656RC5 and the Varispeed G7.

The connection is the same for the Varispeed F7 and the Varispeed G7.



Notes: 1 Make sure to use the specified reactor, fuse and fuse holder.

2 Remove the wiring of terminals r/l₁ and s/l₂ since they were connected at the factory.

3 Connect Varispeed G7 AC power supply terminals R/L1, S/L2, and T/L3 to the secondary side of the power coordinating reactor.

4 Connect terminals r/l₁, and s/l₂ of Varispeed G7, and terminals r1/l₁₁, s1/l₂₁, and t1/l₃₁ of VS-656RC5 to the primary side of the power coordinating reactor.

5 DC bus wiring (+1 -1, +2 -2) between Varispeed G7 and VS-656RC5 should be 5 m or less.

6 Wiring between the power coordinating reactor and the Varispeed G7 or the VS-656RC5 should be 10 m or less.

EXTERNAL TERMINALS

Main Circuit Terminal Functions

Terminal Symbol		Description
R/L1 S/L2 T/L3	Main Circuit Input	AC power supply of the main circuit terminal for VS-656RC5.
⊕, ⊖		Connect to the DC voltage of the inverter power supply input terminals. · Two terminals are provided for both ⊕ and ⊖ .
r1/ℓ ₁₁ s1/ℓ ₂₁ t1/ℓ ₃₁	Power Supply Voltage Detection	Detects the phase sequence and the voltage level. · Connect to the power side of the power coordinating reactor.
	Power Input for FAN and MC	Supplies power for the cooling fan and inrush prevention MC of the VS-656RC5
⊕	Ground Terminal	For grounding (200 V class. 100 Ω or less, 400 V class. 10 Ω or less)

Control Circuit Terminal Functions (common to 200 V, and 400 V class)

Type	No.	Signal	Function	Signal Level
Sequence Input	S1	MANUAL RUN* ¹	Run when CLOSED, stop when OPEN	24 VDC 8 mA Photocoupler isolation
	S2	AUTO RUN* ²	Auto run (regenerative operation)when CLOSED	
	S3	EXFLT	External fault when CLOSED	
	S4	RESET	Fault reset when CLOSED	
	SC	Sequence Common		
	SS	Photocoupler Internal Common		
	SP	Sequence +24 V Power Supply		
Photocoupler Output	M1 – M2	CONV READY	Closed when VS-656RC5 is READY	48 VDC 50 mA or less
	M3 – M4	RUN	CLOSE during run	
Relay Output	MA – MC MB – MC	FAULT Output (Transfer Contact)	Outputs when a fault is detected. Terminal MA-MC : Closed during fault detection Terminal MB-MC : Open during fault detection	250 VAC 1 A or less 30 VDC 1 A or less
Multi-functional Analog Output	AM	Input Current	5 V : 100 % of rated input current	-10 to + 10 VDC 2 mA or less
	AC	Analog grand		

* 1 When the MANUAL RUN signal is input, the operation will be started regardless of the existence of regenerative energy.

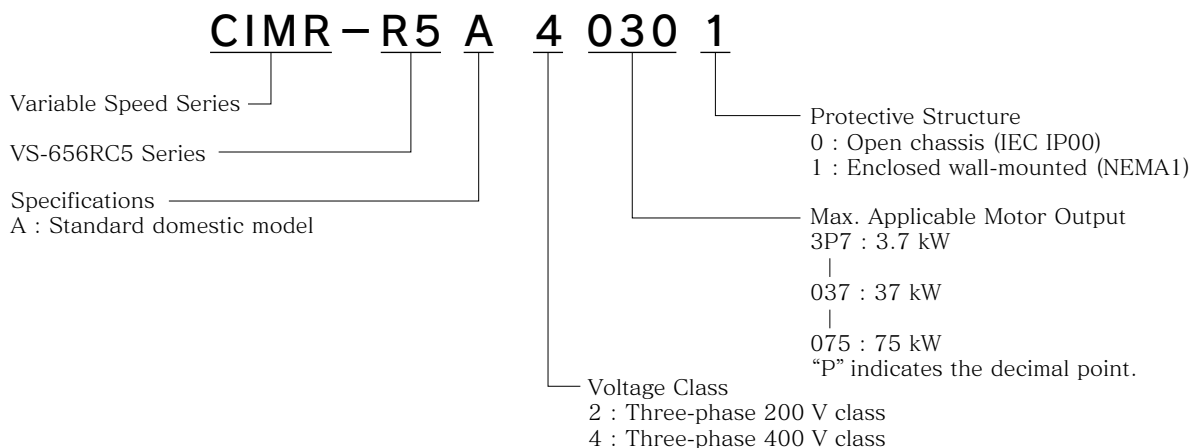
When the MANUAL RUN signal is turned OFF, the operation will stop after 1 second.

* 2 Monitors DC voltage, and regenerates energy to the power supply automatically when the voltage exceeds the regeneration starting voltage.

When the voltage is lowered, regeneration will stop automatically.

Normally, use AUTO RUN. If vibration or noise occurs, use MANUAL RUN.

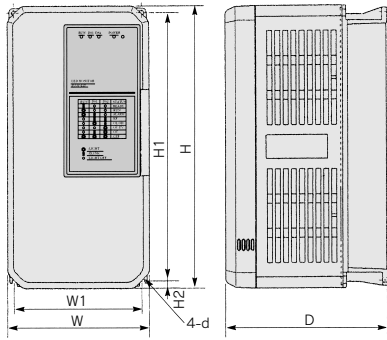
Model Designation



DIMENSIONS in mm

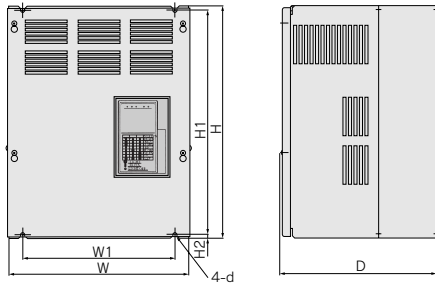
Models of 200/400 V 30 kW or Less

(The following figure shows a 200 V 3.7 kW model.)



Models of 200/400 V 37 kW or More

(The following figure shows a 200 V 37 kW model.)



Protective Structure

● Open Chassis Type (IEC IP00)

Protected so that parts of the human body cannot reach electrically charged parts from the front when the VS-656RC5 is mounted in a control panel.

● Enclosed Wall-mounted Type (NEMA 1)

Structured so that the VS-656RC5 is shielded from the exterior, and can thus be mounted to the interior wall of a standard building (not necessarily enclosed in a control panel). The protective structure conforms to the standards of NEMA 1 in the USA.

Voltage	Model CIMR-R5A	Open Chassis Type (IEC IP00)							Enclosed Wall-mounted (NEMA1)							Mounting Hole d
		Dimensions mm			Mounting Dimensions mm			Approx. Mass kg	Dimensions mm			Mounting Dimensions mm			Approx. Mass kg	
		W	H	D	W1	H1	H2		W	H	D	W1	H1	H2		
200 V Class	23P7	140	280	180	126	266	7.0	4.5	140	280	180	126	266	7.0	4.5	M5
	25P5															
	27P5															
	2011	200	300	205	186	285	8.0	5.5 6	200	300	205	186	285	8.0	5.5 6	M6
	2015															
	2022	250	380	225	236	365	7.5	11	250	380	225	236	365	7.5	11	M6
	2030									400						
	2037	325	450	285	275	435	7.5	23	330	610	285	275	435	87.5	27	M6
400 V Class	43P7	140	280	180	126	266	7.0	3.5	140	280	180	126	266	7.0	3.5	M5
	45P5							4							4	
	47P5															
	4011	200	300	205	186	285	8.0	6	200	300	205	186	285	8.0	6	M6
	4015															
	4018	250	380	225	236	365	7.5	11	250	380	225	236	365	7.5	11	M6
	4022															
	4030	325	450	285	275	435	7.5	25	330	610	285	275	435	87.5	28	M6
	4037							26.5							29.5	
	4045															
	4055	325	625	285	275	610	7.5	34	330	785	285	275	610	87.5	38	M6
4075	36							850						152.5	40	

Notes: 1. To use open chassis type unit models 30 kW or less (200/400 V), remove the top and the bottom covers.

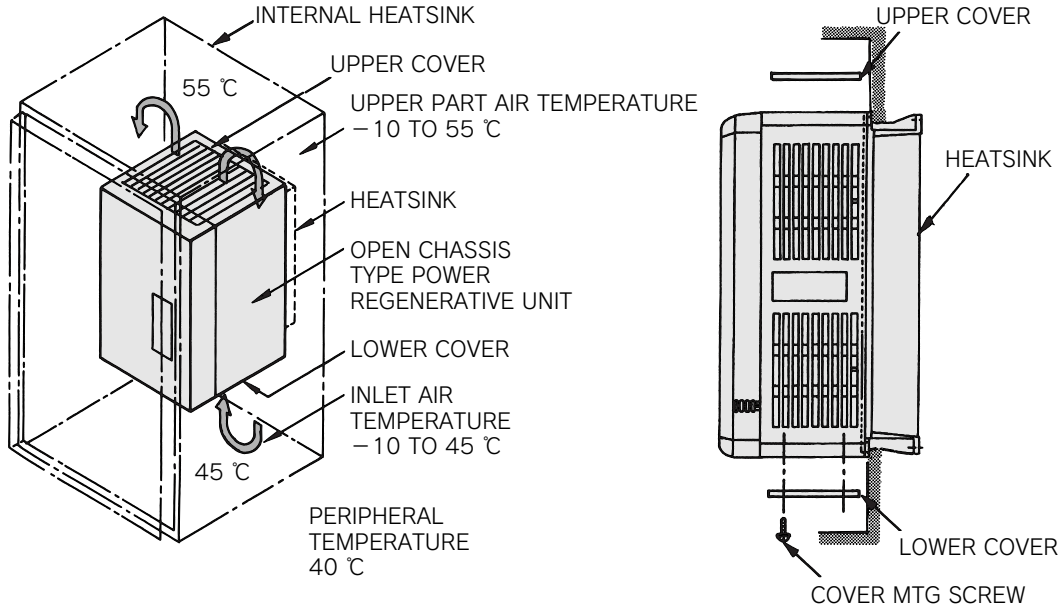
2. Mounting hole is common to both open chassis type and enclosed type.

3. An attachment is required when installing external heatsink in a cabinet. See p.13 for details.

Mounting to a Gasketed Cabinet (Internal Sink)

The standard enclosure (with the heatsink mounted internally) can be easily changed to an externally mounted heatsink arrangement, but the enclosure's mounting face must be gasketed.

Remove the upper and lower covers for the models of 30 kW or less in 200 V and 400V classes.



VS-656RC5 Heat Loss

200 V Class

Model CIMR-R5A		23P7	25P5	27P5	2011	2015	2018	2022	2030	2037
Rated Capacity	kW	3.7	5.5	7.5	11	15	18.5	22	30	37
Rated Current	A	13	19	26	37	51	64	77	102	126
Heat Loss W*	Fin	70	70	90	160	200	250	320	410	540
	Inside Unit	60	60	80	110	130	150	180	220	290
	Total Heat Loss	130	130	170	270	330	400	500	630	830
Fin Cooling		Fan cooled								

* Values are the regenerative torque at 80 % continuous rating.

400 V Class

Model CIMR-R5A		43P7	45P5	47P5	4011	4015	4018	4022	4030	4037	4045	4055	4075
Rated Capacity	kW	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75
Rated Current	A	6	9	13	19	26	32	37	51	64	77	96	128
Heat Loss W*	Fin	30	40	60	80	110	120	140	210	290	360	470	550
	Inside Unit	50	60	60	70	90	100	110	140	160	190	260	310
	Total Heat Loss	80	100	120	150	200	220	250	350	450	550	730	860
Fin Cooling		Fan cooled											

* Values are the regenerative torque at 80 % continuous rating.

LED MONITOR (Standard Component)

Monitor Functions and Displays

Status Displays

Displays the status of the VS-656RC5 and operates the photocoupler outputs.

Status Displays

LED Display				Contents
RUN	DS1	DS2	Meaning	
	●	●	READY	Ready
	●	●	RUN	Running

Fault Displays

When the VS-656RC5 detects a fault, the LED monitor indicates the type of fault and the fault contact outputs are activated.

Fault Displays

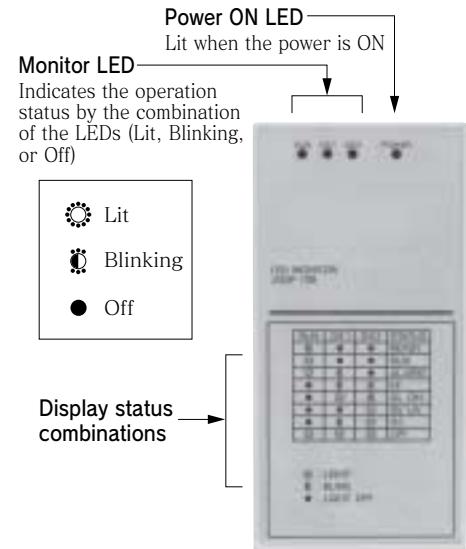
LED Display				Meaning	Contents
RUN	DS1	DS2	Meaning		
●			EF	External Fault: An external fault was input from the contact input terminal.	
●			OL	Overload: The load is too heavy.	
			OH	Heatsink Overheating: Heatsink was over 105 °C (factory setting).	
●	●		OV	Main Circuit Overvoltage: The DC voltage of the main circuit was over the overvoltage detection level. (200 V class: approx. 406 VDC or more, 400 V class: approx. 812 VDC or more)	
			UV	Main Circuit DC Undervoltage: The DC voltage of the main circuit was below the undervoltage detection level. (200 V class: approx. 190 VDC or less, 400V class: approx. 380 VDC or less)	
				Control Power Fault: The control power supply voltage dropped.	
				Inrush Prevention Circuit Fault: A fault occurred in the inrush prevention circuit.	
				Main Circuit AC Undervoltage: The AC voltage of the main circuit was below the undervoltage detection level during a run. (200 V class: approx. 150 VAC or less, 400 V class: approx. 300 VAC or less)	
OC	Overcurrent: The AC current of the power supply was over the overcurrent detection level. (Approx. 200% of the rated current)				
			CPF	Baseblock Circuit Error EEPROM Error CPU Internal A/D Converter Error	

Alarm Displays

An alarm is displayed when the VS-656RC5 detects a minor fault. The VS-656RC5 automatically returns to the original status when the cause of the fault has been removed.

Alarm Displays

LED Display				Meaning	Contents
RUN	DS1	DS2	Meaning		
		●	ALARM	EF	External Fault: An external fault was input from the contact input terminal.
				OL	Overload: The amount of the load was over 80 % of the overload capacity.
				OH	Heatsink Overheating: The temperature of the heatsink was over 90 °C (factory setting).
				OV	Overvoltage: The DC voltage of the main circuit was over the overvoltage detection level. (200 V class: approx. 406 VDC or more, 400 V class: approx. 812 VDC or more)
				UV	Main Circuit Undervoltage: The following conditions occurred during a stop. <ul style="list-style-type: none"> The main circuit DC voltage was below the undervoltage detection level. (200 V class: approx. 190 VDC or less, 400 V class: approx. 380 VDC or less) The surge current limiting contactor opened. The control power supply is below the undervoltage detection level. (200 V class: approx. 150 VAC or less, 400 V class: approx. 300 VAC or less) Frequency detection was over the allowable level. The voltage phase rotation on the input side changed.



PERIPHERAL DEVICES

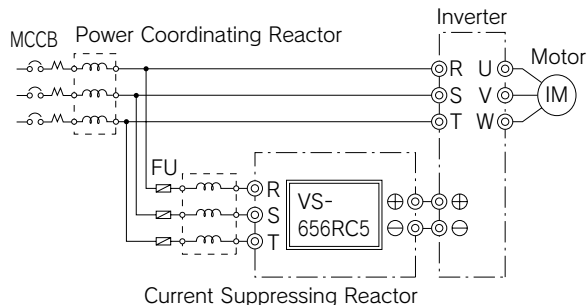
Connect the specified AC reactor and AC main circuit fuses when operating the VS-656RC5.

Input AC Reactor (Type UZBA-B, for 50/60 Hz)



An input three-phase reactor corresponding to each model is necessary when operating VS-656RC5. This input AC reactor is effective against saturated current and excessive heat. Check the table below and use a specified AC reactor.

[Connection Example]



Power Coordinating Reactor

200 V Class

VS-656RC5 CIMR-R5A	Current Value A	Inductance mH	Code No.	Fig.	Dimensions mm										Approx. Mass kg	Loss W		
					A	B	B1	C	D	E	F	H	J	K			L	M
23P7	20	0.53	X002491	2	130	88	114	105	50	65	130	22	M6	11.5	7	M5	3	35
25P5	30	0.35	X002492		130	88	119	105	50	70	130	22	M6	9	7	M5	3	45
27P5	40	0.265	X002493		130	98	139	105	50	75	130	22	M6	11.5	7	M6	4	50
2011	60	0.18	X002495		160	105	147.5	130	75	85	160	25	M6	10	7	M6	6	65
2015	80	0.13	X002497		180	100	155	150	75	80	180	25	M6	10	7	M8	8	75
2018	90	0.12	X002498		180	100	150	150	75	80	180	25	M6	10	7	M8	8	90
2022	120	0.09	X002555		180	100	155	150	75	80	180	25	M6	10	7	M10	8	90
2030	160	0.07	X002556		210	100	170	175	75	80	205	25	M6	10	7	M10	12	100
2037	200	0.05	X002557		210	115	182.8	175	75	95	205	25	M6	10	7	M10	15	100

400 V Class

VS-656RC5 CIMR-R5A	Current Value A	Inductance mH	Code No.	Fig.	Dimensions mm										Approx. Mass kg	Loss W		
					A	B	B1	C	D	E	F	H	J	K			L	M
43P7	10	2.2	X002500	1	130	88	-	130	50	65	130	22	M6	11.5	7	M4	3	43
45P5	15	1.42	X002501		130	98	-	130	50	75	130	22	M6	11.5	7	M4	4	50
47P5	20	1.06	X002502	2	160	90	115	130	75	70	160	25	M6	10	7	M5	5	50
4011	30	0.7	X002503		160	105	132.5	130	75	85	160	25	M6	10	7	M5	6	65
4015	40	0.53	X002504		180	100	140	150	75	80	180	25	M6	10	7	M6	8	90
4018	50	0.42	X002505		180	100	145	150	75	80	180	25	M6	10	7	M6	8	90
4022	60	0.36	X002506		180	100	150	150	75	75	180	25	M6	10	7	M6	8.5	90
4030	80	0.26	X002508		210	100	150	175	75	80	205	25	M6	10	7	M8	12	95
4037	90	0.24	X002509		210	115	177.5	175	75	95	205	25	M6	10	7	M8	15	110
4045	120	0.18	X002566		240	126	193	205	150	110	240	25	M8	8	10	M10	23	130
4055	150	0.15	X002567		240	126	198	205	150	110	240	25	M8	8	10	M10	23	150
4075	200	0.11	X002568		270	162	231	230	150	130	260	40	M8	16	10	M10	32	135

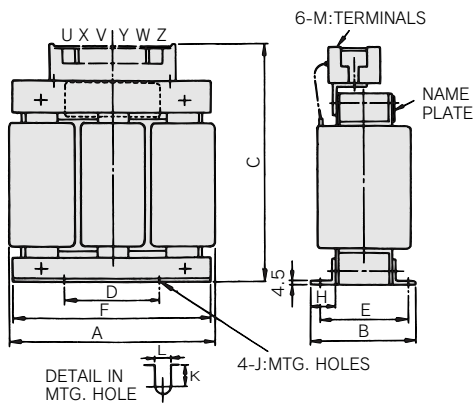


Fig. 1

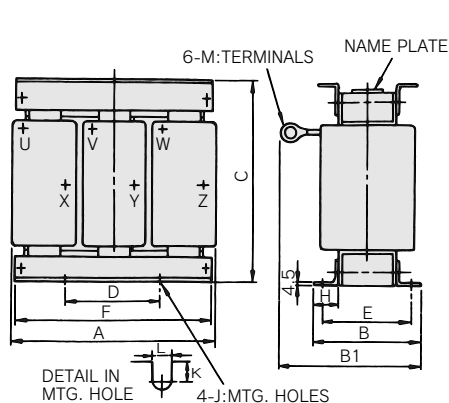


Fig. 2

Power Suppressing Reactor

200 V Class

VS-656RC5 CIMR-R5A	Current Value A	Inductance mH	Code No.	Fig.	Dimensions mm										Approx. Mass kg	Loss W
					X	Y	Y1	Z	B	H	G	A	1 DIA.	2 DIA.		
23P7	15	0.31	X010121	1	85	61	-	70	40	40	20	105	M4	M5	1.5	22
25P5	15	0.31	X010121		85	61	-	70	40	40	20	105	M4	M5	1.5	22
27P5	20	0.15	X010122		85	61	-	70	40	40	20	105	M4	M5	1.5	21
2011	40	0.1	X010123	2	105	71	120	90	40	50	20	120	M5	M6	2.5	32
2015	40	0.1	X010123		105	71	120	90	40	50	20	120	M5	M6	2.5	32
2018	50	0.06	X010124		105	71	120	90	40	50	20	120	M5	M6	2.5	31
2022	60	0.05	X010125		105	71	125	90	40	50	20	120	M6	M6	2.5	35
2030	80	0.04	X010126	3	130	88	140	105	50	70	22	130	M8	M6	3	48
2037	100	0.03	X010127		130	88	145	105	50	70	22	130	M8	M6	3	46

400 V Class

VS-656RC5 CIMR-R5A	Current Value A	Inductance mH	Code No.	Fig.	Dimensions mm										Approx. Mass kg	Loss W
					X	Y	Y1	Z	B	H	G	A	1 DIA.	2 DIA.		
43P7	7.5	1.2	X010128	1	85	61	-	70	40	40	20	105	M4	M5	1.5	21
45P5	7.5	1.2	X010128		85	61	-	70	40	40	20	105	M4	M5	1.5	21
47P5	10	0.6	X010129		85	61	-	70	40	40	20	105	M4	M5	1.5	19
4011	15	0.4	X010130		85	61	-	70	40	40	20	105	M4	M5	1.5	23
4015	25	0.3	X010131	2	105	71	110	90	40	50	20	120	M5	M6	2.5	36
4018	25	0.3	X010131		105	71	110	90	40	50	20	120	M5	M6	2.5	36
4022	30	0.2	X010132		105	71	115	90	40	50	20	120	M5	M6	2.5	33
4030	40	0.15	X010133		105	71	115	90	40	50	20	120	M6	M6	2.5	40
4037	50	0.12	X010134		130	88	135	105	50	70	22	130	M6	M6	3	46
4045	60	0.1	X010135	3	130	98	145	105	50	80	22	130	M6	M6	4	56
4055	75	0.08	X010136		160	90	145	125	75	70	25	160	M8	M6	5	81
4075	100	0.06	X010137		160	90	145	125	75	70	25	160	M8	M6	5	72

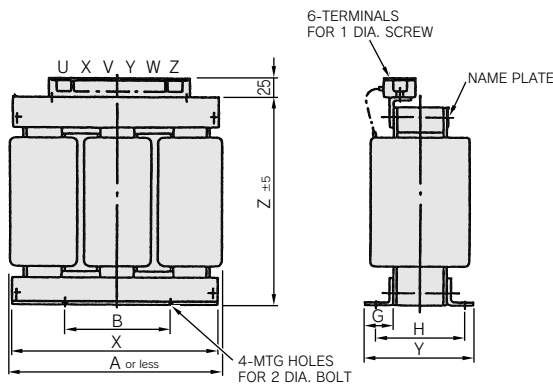


Fig. 1

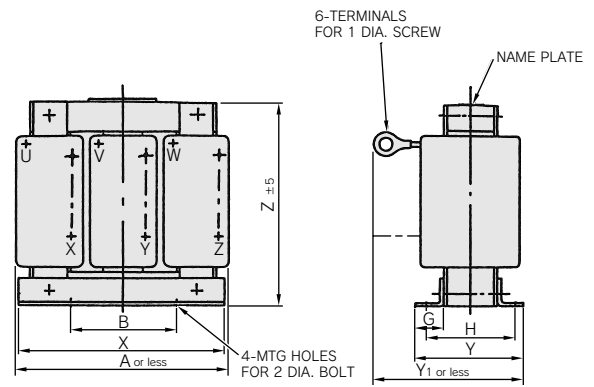


Fig. 2

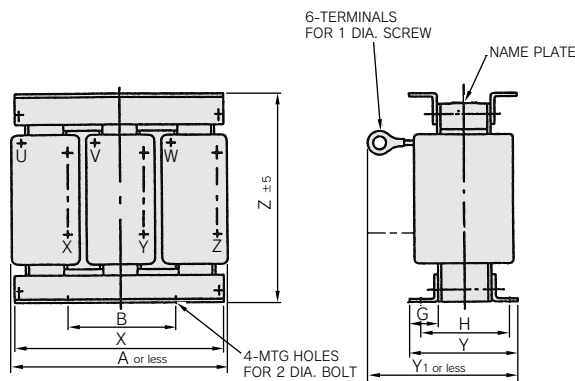
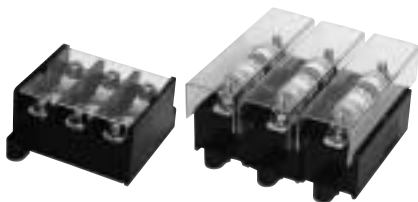


Fig. 3

AC Main Circuit Fuse



Connect a fuse at the primary side of the current suppressing reactor.
Recommended fuses are shown in Tables below.

200 V Class

VS-656RC5 CIMR-R5A □	Fuse			Fuse Holder			
	Model	Code No.	Amount per Unit	Model	Code No.	Fig.	Amount per Unit
23P7	CR2LS-20/UL	FU000799	3	CM-1A	FU002014	1	1
25P5	CR2LS-30/UL	FU000791	3				
27P5							
2011	CR2LS-50/UL	FU002107	3				
2015	CR2LS-75/UL	FU002108	3				
2018	CR2LS-100/UL	FU002109	3				
2022							
2030	CR2L-150/UL	FU002110	3	CM-2A	FU002090	2	1
2037							

Note: These fuses and fuse holders are made by FUJI ELECTRIC CO., LTD.

400 V Class

VS-656RC5 CIMR-R5A □	Fuse			Fuse Holder			
	Model	Code No.	Amount per Unit	Model	Code No.	Fig.	Amount per Unit
43P7	CR6L-20/UL	FU002087	3	CMS-4	FU002091	3	3
45P5							
47P5							
4011							
4015	CR6L-30/UL	FU002088	3				
4018	CR6L-50/UL	FU000935	3				
4022							
4030	CR6L-75/UL	FU002089	3	CMS-5	FU002092	4	3
4037							
4045	CR6L-100/UL	FU000927	3				
4055	CR6L-150/UL	FU000928	3				
4075							

Note: These fuses and fuse holders are made by FUJI ELECTRIC CO., LTD.

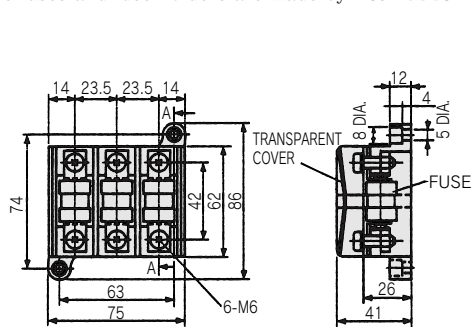


Fig. 1

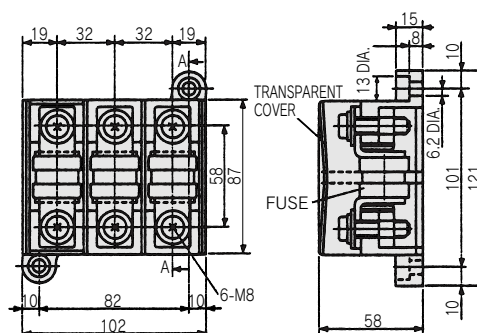


Fig. 2

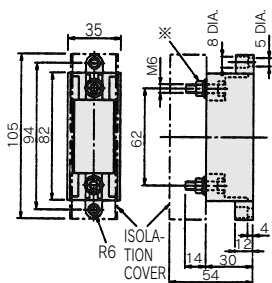


Fig. 3

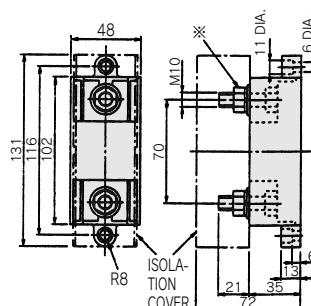


Fig. 4

Dimensions in mm

*Fuse link mounting nuts and related parts (nuts, washers, spring washers, etc.) will be delivered separately.
When installing fuse links, tighten the bolts.

Attachments

VS-656RC5 models 30 kW and less (200/400 V class) need this attachment for mounting the heatsink externally.

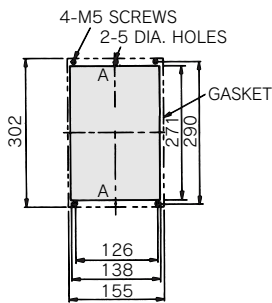
This attachment expands the outer dimensions of the width and height of the VS-656RC5 (See p.7).

VS-656RC5 CIMR-R5A□	Attachment Order Code
23P7 to 27P5	DACT32174 - AD
2011 to 2015	DACT32174 - BD
2018 to 2030	DACT32174 - CD
43P7 to 47P5	DACT32174 - AD
4011 to 4015	DACT32174 - BD
4018 to 4030	DACT32174 - CD

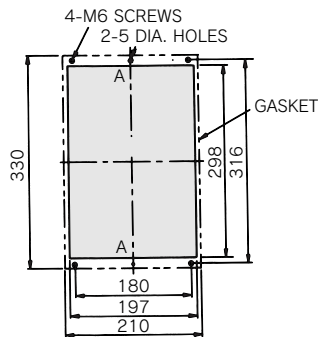
Panel Cut for External Mounting of Cooling Fin (For Open Chassis)

200 V Class

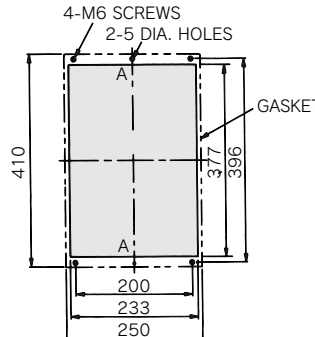
■ 3.7 to 7.5 kW



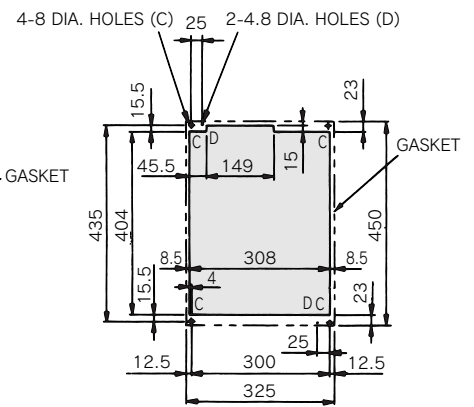
■ 11/15 kW



■ 18.5 to 30 kW

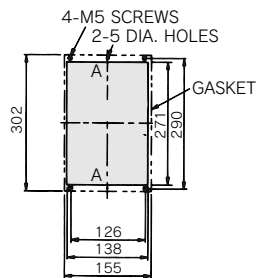


■ 37 kW

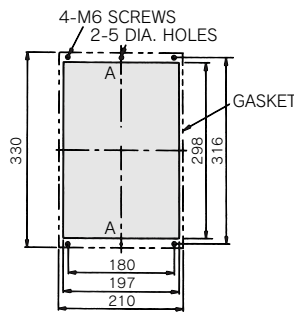


400 V Class

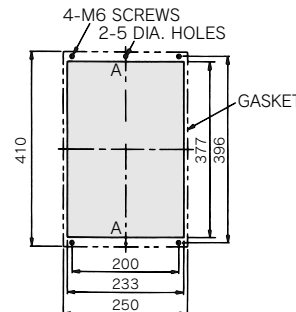
■ 3.7 to 7.5 kW



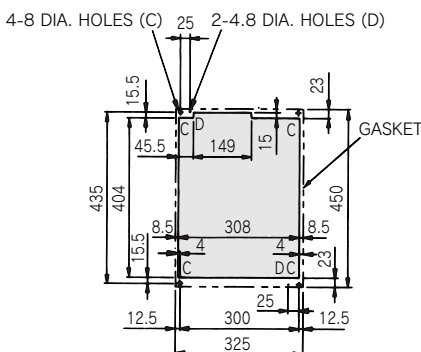
■ 11/15 kW



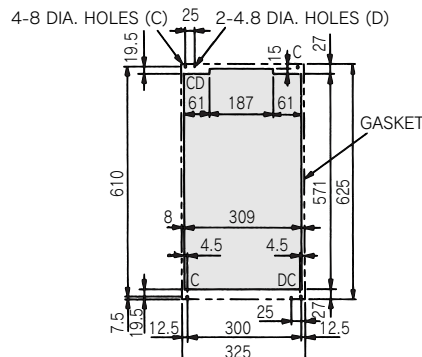
■ 18.5 to 30 kW



■ 37/45 kW



■ 55/75 kW



Note : C : Unit mounting screw hole
D : Base temporarily mounting screw hole

Dimensions in mm

OPTION

LED Monitor/Digital Operator

Name	Model	Explanation		Installation Method
LED Monitor	JVOP-139	Standard		Installed
Digital Operator	JVOP-130	LCD monitor specifications		Installed
LED Monitor Digital Operator Extension Cable	W5001	1 m	Used when monitoring and operating the VS-656RC5 on the control board.	—
	W5003	3 m		

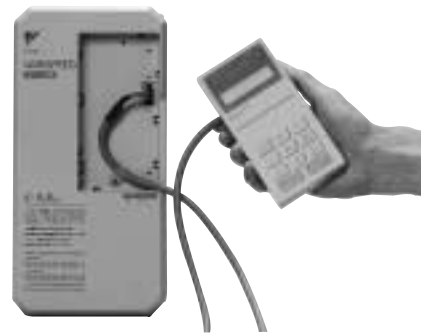
LED Monitor
(Model JVOP-139)



Digital Operator
(Model JVOP-130)

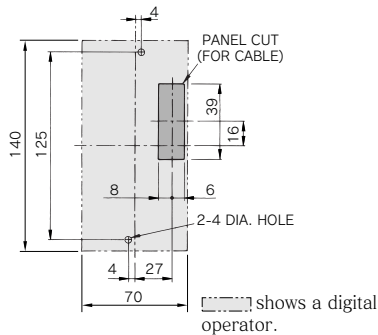


LED Monitor/Digital Operator
Extension Cable

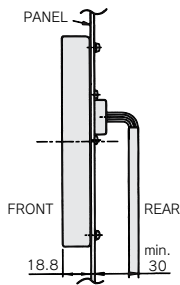


Panel Cutout

(Viewed from the front of panel)



Mounted Panel



Note: Contact your YASKAWA representative for mounting on a panel.

Dimensions in mm

Common to both JVOP-130/139 models

NOTES

Applications of the VS-656RC5

Selection

- Use 1:1 with an inverter. Do not connect more than one inverter to one VS-656RC5.
- Use a VS-656RC5 whose capacity is equal to one exceeding the capacity of the inverter to be connected.
- Do not connect the VS-656RC5 in parallel with another power regenerative unit.
- When power regeneration is executed continuously using ⊕ 3 terminal of the VS-686SS5, set the maximum to 80%. If more regeneration is necessary, use a larger capacity VS-656RC5 and inverter.

Installation

- Avoid oil mist or dust. Place the inverter in a clean area or house it in a totally-enclosed case so that no contamination enters. To use the totally-enclosed case, select the cooling method and panel dimensions so the VS-656RC5 ambient temperature will be within the allowable range.
- Do not install the VS-656RC5 on flammable material, such as wood.
- Install the VS-656RC5 on a wall with the longer side in the vertical position.
- Do not subject the inverter to halogen gases, such as fluorine, chlorine, bromine, and iodine, at any time even during transportation or installation.

Operation

- Applying power to the VS-656RC5, DOUBLE CHECK WIRING AND SEQUENCE BEFORE TURNING THE POWER ON.
- After turning the power of the VS-656RC5 OFF, electric charges in the internal capacitors are retained temporarily. Wait until the change LED goes off before touching the inside of the VS-656RC5.
- Use round pressure terminal when wiring UL and c-UL listed VS-656RC5. Caulking should be done by the caulking tools specified by terminal manufactures.
- The VS-656RC5 cannot be used with a single-phase power supply. Make sure to use a three-phase power supply.

Applications of the Peripheral Devices

- Installation and selection of an AC reactor
An input three-phase reactor corresponding to each model is necessary when operating the VS-656RC5. For selection of a reactor, see p.10 and 11. This input AC reactor is effective against saturated currents and excessive heat.
- Installation and selection of fuses
Connect a fuse on the primary side of the power suppressing reactor. For selection of a fuse, see p.12.
- Installation of a noise filter
When adding an input noise filter to the inverter, connect it to the primary side of the power coordinating reactor.

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YASKAWA

YASKAWA ELECTRIC CORPORATION



In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply.

Specifications are subject to change without notice for ongoing product modifications and improvements.

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