



INVERTER

SF-520 series

SF-520 series : Simple and compact yet Powerful Inverter!

Powerful Inverter suitable for SUMITOMO Gearmotor

SF-520 series inverter is ideal to operate SUMITOMO Gearmotor because it has automatic torque boost function for high starting torque and high braking torque due to built-in regenerative braking circuit.

Easy Operation and Parameter Setting

Easy operation is achieved by 8 panel keys.
The parameter can be set easily by the setup mode.
The changed parameter can be confirmed easily by using the verification function.

Easy Parameter Management(Coming soon)

A copy of the parameter values settings by the LED operator can be used to transfer to other inverters.
Parameter setting file can be managed using PC setup tools.

Ecology Design

Corresponds to RoHS regulation.

Major Standards of the World

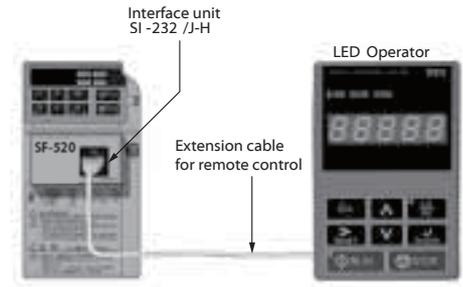


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Easy to use Peripheral Options

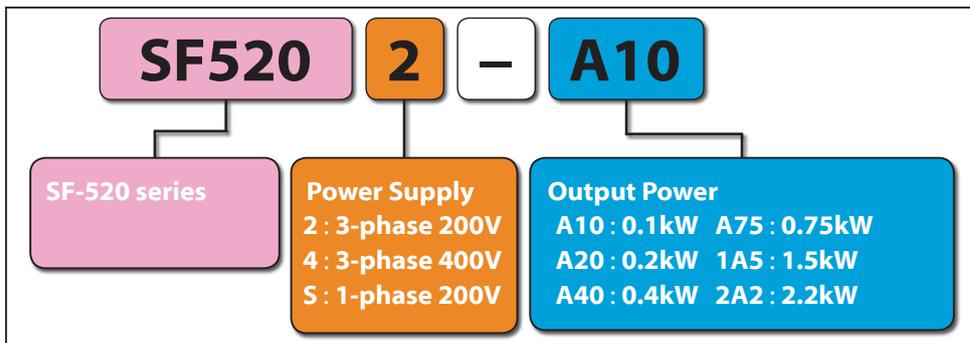
- LED Operator
- Frequency Reference Setting Unit
- RS-422 / 485 Interface Unit



Power Range

Voltage Class (Input / Rated output)	Applicable Motor(kW)					
	0.1	0.2	0.4	0.75	1.5	2.2
3-phase 200V / 3-phase 200V	[Shaded]					
3-phase 400V / 3-phase 400V		[Shaded]				
1-phase 200V / 3-phase 200V		[Shaded]				

Model No.



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Name and Functions

Data Display Area (5-digit)
Displays frequency, parameter number, and other data.

LO/RE Lamp
Light to indicate that the operator is set to LOCAL.

LO/RE Selection Key
Switch drive control between the operator (LOCAL) and the control terminals (REMOTE).

ESC Key
Return to the previous menu.

RESET & SHIFT Key
Resets to clear a fault situation. Move the cursor to the right.

Down Key
Scroll down to select parameter numbers, setting values, etc.

LED Display

RUN Lamp
Light while the inverter is running to drive.

RUN Key
Start the drive.

STOP Key
Stop the drive.

Up Key
Scroll up to select parameter numbers, setting values, etc.

ENTER Key
Select all modes, parameters, settings, etc. Select a menu item to move from one display screen to the next.

Communication Connector
Port used for LED Operator.

Panel Labels:
ALM, REV, DRV, FOUT, ESC, ↑, LO/RE, ↻, RUN, ↵, ↓, RESET, ENTER, STOP, SF-520

Parameter List:
1 Freq Reference : F6000 6 Monitor : Mon
2 FWD/REV Sel : For 7 Verify : ur-F9
3 Output Freq : 6000 8 Setup Guide : SFUP
4 Output Current : 000 9 Parameter Set : PR-
5 Output Voltage : 000

WARNING Risk of electric shock.
• Read manual before installing.
• Wait 1 minute for capacitor discharge after disconnecting power supply.
• To conform to CE requirements, make sure to ground the supply neutral for 400V class.

危険 けが、感電のおそれがあります。
• 据え付け、運転の前には必ず取扱説明書を読むこと。
• 通電中および電源遮断後1分以内はフロントカバーを外さないこと。
• 400V級インバータの場合は、電源の中性点が接地されていることを確認すること。(CE対応)

Sumitomo Heavy Industries, Ltd.

LED Display



LED	On	Flashing	Off
■	When the inverter detect the alarm.	• When an alarm occurs • OPE(Operation Error) detected	Normal state
REV	Motor is rotating in reverse Drive Mode.	—	Motor Forward rotation
DRV	Drive Mode	—	Programming mode
FOUT	Display output frequency (Hz)	—	Display except output frequency
RE	When the Run command is selected from the LED operator (LOCAL).	—	Run command is selected (REMOTE) other than LED operator.
RUN	During run	• During deceleration to stop • When the Run command is input and the frequency reference is 0.	During stop

LED Operator Screen Structure

Structure for LED Operator

Step	Key Operation	Display
1	Turn the power on	F 000
2	Drive Condition Setting • Local Mode • Frequency Reference Setting	LO Light F 000
3	Forward/Reverse	For
4	Output Frequency	000
5	Output Current	000A
6	Output Voltage	00V
7	Monitor Display	Flashing r7on
8	Verify Mode	Flashing urF4
9	Set Up Mode	Flashing STUP
10	Parameter Setting Mode	PAR
	Return Frequency Reference Setting	

When the parameter change is possible, display is flashing.

Drive Mode: Monitor the operation status of the drive
(Frequency reference, Output frequency, Output current, Output voltage, etc.)

<Frequency Reference Setting>

Step	Key Operation	Display
Frequency Reference	ENTER	F00.00
	RESET	F00.00
	↑ ↓	F06.00
Writing of Frequency Reference	ENTER	After "End" display F06.00
		DRV Green Light

Monitor Mode: Condition monitor, Alarm and Alarm history

Step	Key Operation	Display
Select the monitor item	ENTER	U1-01
Monitor UI-01 (Frequency Reference)	ENTER	6.00
Select another monitor item	ESC	U1-01
	↑	U1-02
	⋮	⋮
	↑	U1-26
Return the monitor mode display	ESC Push	r7on

Verify Mode: The Verify Menu lists edited parameters from the Programming Mode or as a result of Auto-Tuning.

Step	Key Operation	Display
Check the edited parameter	ENTER	C1-01
	ENTER	0003.0
check the value of the edited parameter	ESC	C1-01
	↑ ENTER	C1-02
	⋮	⋮
	↑	C6-02
Return to the verify menu	ESC Push	urF4

After pressing one more ESC Key, return to the initial display.

Setup Mode

The parameter necessary to inverter driving can be by Setup Mode.

<Change the parameter setting>

Step	Key Operation	Display
Check the parameter	ENTER	61-01
	↑	C1-01
Change the setting	ENTER	00100
	RESET	00100
	↑	00200
	ENTER	C1-01

After pressing ENTER Key, check the parameter.

Parameter Table for Setup Mode

No.	Name	No.	Name
b1-01	Frequency Reference Selection	d1-17	Jog Frequency Reference
b1-02	Run Command Selection	E1-01	Input Voltage Setting
b1-03	Stopping Method Selection	E1-04	Maximum Output Frequency
C1-01	Acceleration Time 1	E1-05	Maximum Output Voltage
C1-02	Deceleration Time 1	E1-06	Base Frequency
C6-01	Drive Duty(HD/ND)Selection	E1-09	Minimum Output Frequency
C6-02	Carrier Frequency Selection	E2-01	Motor Rated Current
d1-01	Frequency Reference 1	H4-02	Multi-Function Analog
d1-02	Frequency Reference 2	L1-01	Motor Overload Protection
d1-03	Frequency Reference 3	L3-04	Stall Prevention Selection
d1-04	Frequency Reference 4	-	-

Standard and Common Specifications

Standard Specifications

Item		Specifications						
Input Voltage Class		3-phase 200V/3-phase 400V/1-phase 200V						
Applicable Motor(kW)		0.1	0.2	0.4	0.75	1.5	2.2	
Rating	Input Voltage Class	No.	SF520 □ □ □ □					
	3-phase 200V	SF5202-	A10	A20	A40	A75	1A5	2A2
	3-phase 400V	SF5204-	-					
	1-phase 200V	SF5205-	-	-				
	Rated Output Capacity(kVA)	200V class	0.3	0.6	1.1	1.9	3.0	4.2
		400V class	-	0.9	1.4	2.6	3.7	4.2
	Rated Output Current(A)	Input 3-phase 200V	0.8	1.6	3.0	5.0	8.0	11.0
		Input 3-phase 400V	-	1.2	1.8	3.4	4.8	5.5
Input 1-phase 200V		-	1.6	3.0	5.0	8.0	-	
Output Voltage		3-phase 200V~240V(200V class)/3-phase 380~480V(400V class)						
Over Load Current Rating		150% 1minute						
Power Supply	Voltage Frequency	3-phase 200V	3-phase 200V~240V-50/60Hz					
		3-phase 400V	3-phase 380V~480V-50/60Hz					
		1-phase 200V	1-phase 200V~240V-50/60Hz					
	Allowable Fluctuation		Voltage+10%,-15%, Frequency±5%					
Protective Method		Enclosed Type IP20						
Cooling Method	3-phase 200V	Self-cooling			Cooling fan			
	3-phase 400V	-	Self-cooling			Cooling fan		
	1-phase 200V	-	Self-cooling			Cooling fan	-	

Common Specifications

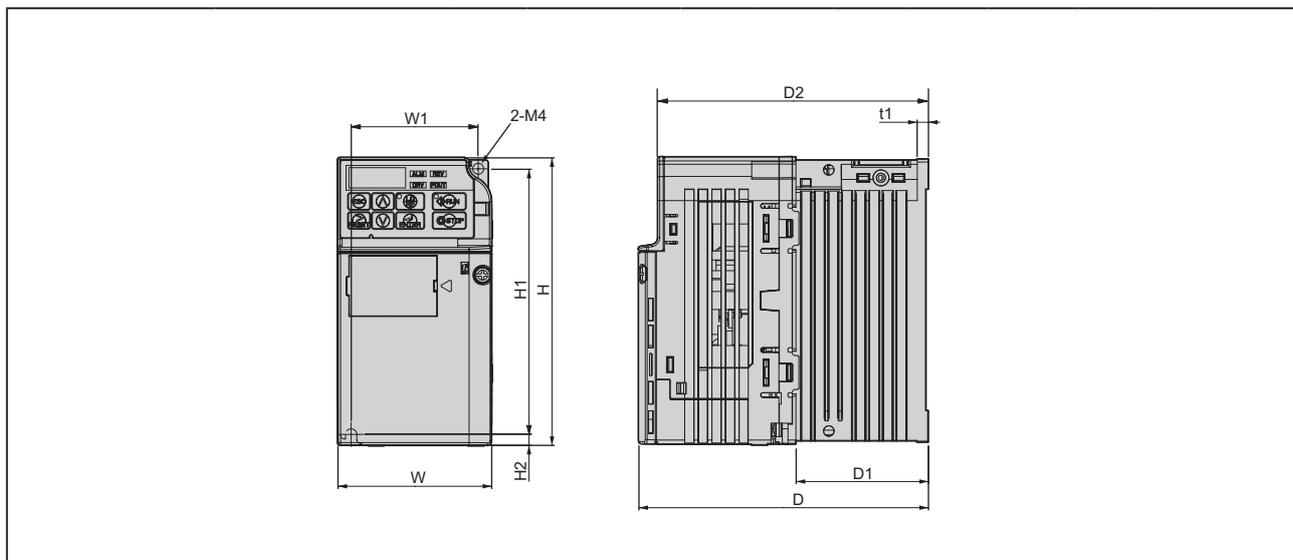
Item		Specifications
Control Characteristics	Control Method	V/f Control (Auto torque boost function)
	Frequency Control Range	0.01 to 400 Hz
	Frequency Accuracy	Digital input: within ±0.01% of the max output frequency (-10 to +50 °C) Analog input: within ±0.5% of the max output frequency (25 °C ±10 °C)
	Frequency Setting Resolution	Digital inputs: 0.01 Hz Analog inputs: 1/1000 of maximum output frequency
	Output Frequency Calculation Resolution	1/2 ²⁰ x Maximum output frequency
	Frequency Setting Signal	Main frequency reference: 0 to +10 Vdc (20 kΩ), 4 to 20 mA (250 Ω), 0 to 20 mA (250 Ω)
	Accel/Decel Time	0.00 to 6000.0 s (allows four separate settings for accel and decel)
	Braking Torque	Instantaneous Average Decel Torque ^{Note:1} : 0.1/0.2 kW: over 150%, 0.4/0.75 kW: over 100%, 1.5 kW: over 50%, 2.2 kW and above: over 20% Continuous Regenerative Torque: 20%, 100% with the Braking Resistor ^{Note:2} : (10% ED)
	V/f Characteristics	Preset V/f patterns and user-set program available.
	Functions	Momentary Power Loss Ride-Thru, Speed Search, Torque Limit, Multi-Step Speed (9 steps max) Accel/Decel Time Switch, S-Curve Accel/Decel, 3-Wire Sequence, Cooling Fan ON/OFF, Slip Compensation, Torque Compensation, Jump Frequencies Frequency Reference Upper/Lower Limit, DC Injection Braking (start and stop), High Slip Braking Energy Saving, Fault Restart
Carrier Frequency	5 kHz (user-adjustable from 2 to 15 kHz)	
Protection Functions	Motor Protection	Motor overheat protection via output current sensor
	Overcurrent Protection	Drives stops when output exceeds 200% of the rated current
	Overload Protection	A stop command will be entered after operating at 150% for 60 s ^{Note:3}
	Overvoltage Specification	200 V Class: Stops when DC bus voltage exceeds approx. 410 V 400 V Class: Stops when DC bus voltage exceeds approx. 820 V
	Low Voltage Protection	Drive stops when DC bus voltage falls below the levels indicated: 190 V (3-phase 200 V), 160 V (single-phase 200 V) 380 V (3-phase 400 V)
	Momentary Power Loss	Stops after 15 ms.
	Heatsink Overheat Protection	Protected by thermistor
	Stall Prevention	Stall prevention is available during acceleration, deceleration, and during run. Separate settings for each type of stall prevention determine the current level at which stall prevention is triggered
	Ground Fault Protection	Electronic circuit protection
	DC Bus Charge LED	Remains lit until DC bus voltage falls below 50 V
Environment	Storage/Installation Area	Indoors
	Ambient Temperature	-10 to +50 °C (IP20)
	Storage Temperature	-20 to +60 °C allowed for short-term transport of the product
	Humidity	95% RH or less with no condensation
	Altitude	Up to 1000 meters without derating; up to 3000 meters with output current and voltage derating.
	Shock, Impact	10 to 20 Hz: 9.8 m/s ² 20 to 55 Hz: 5.9 m/s ²

Note: 1. Instantaneous average deceleration torque refers to the torque required to decelerate the motor (uncoupled from the load) from 60Hz to zero in the shortest time.

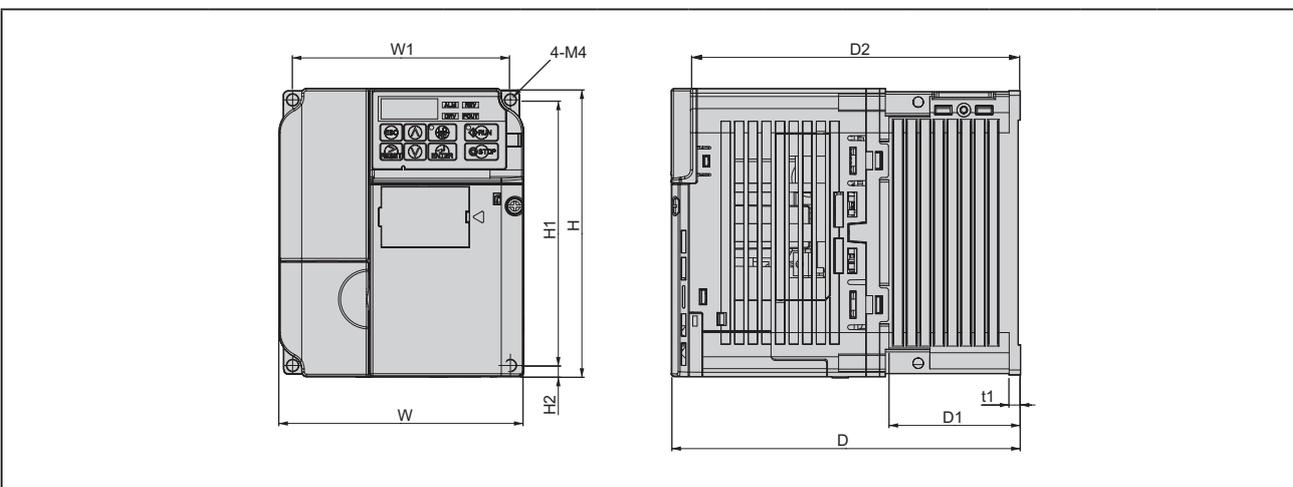
2. Ensure that Stall Prevention Selection during Deceleration is disabled (L3-04 = 0) when using the braking resistor.

3. Overload protection may be triggered when operating with 150% of the rated output current if the output frequency is less than 6 Hz.

Outline Drawing

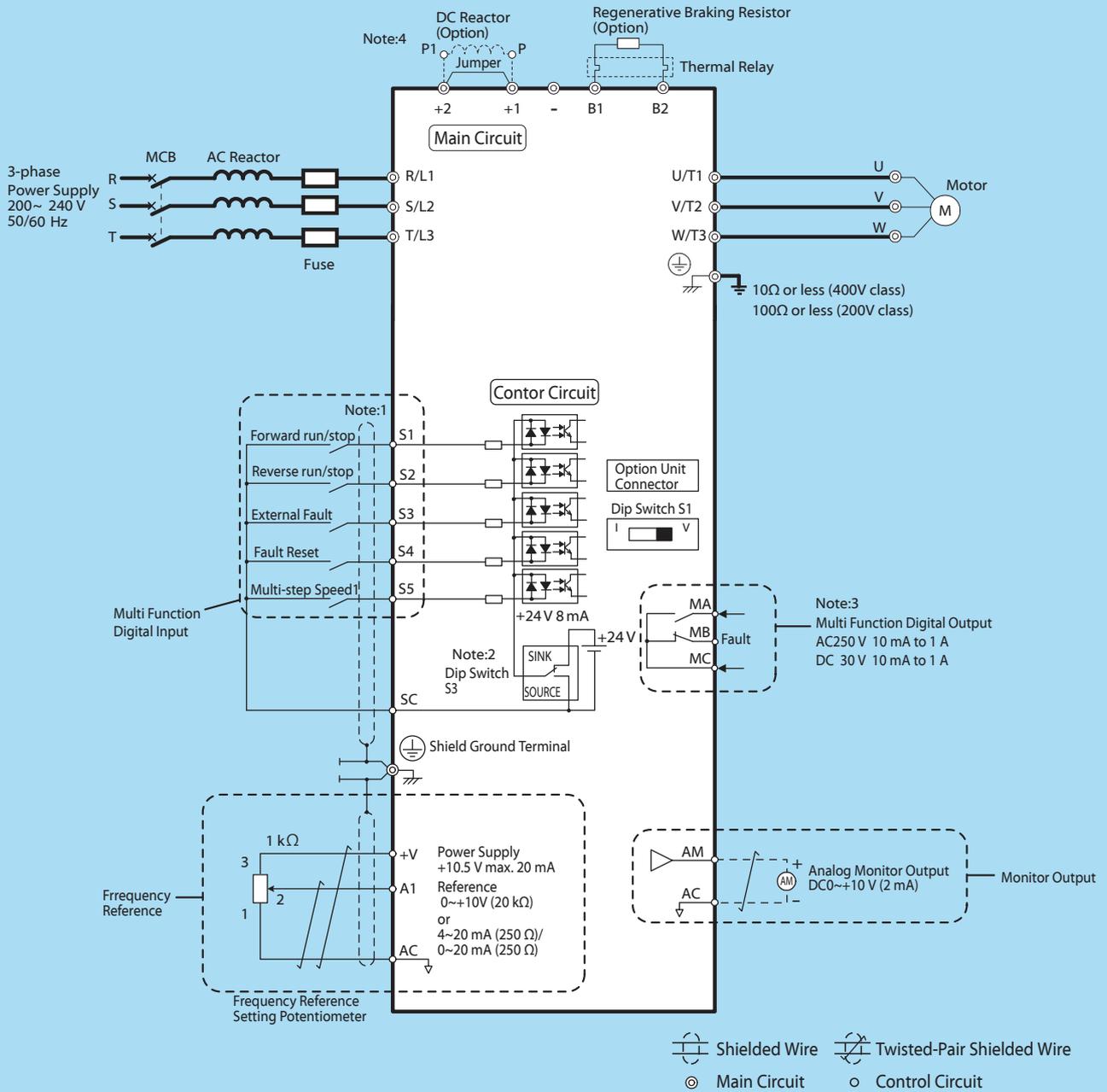


Input voltage	Inverter model	Dimensions (mm)									Approx. weight (kg)
		W	H	D	W1	H1	H2	D1	D2	t1	
1-phase 200V class	SF520S-A20	68	128	76	56	118	5	6.5	67.5	3	0.6
	SF520S-A40	68	128	118	56	118	5	38.5	109.5	5	1.0
3-phase 200V class	SF5202-A10	68	128	76	56	118	5	6.5	67.5	3	0.6
	SF5202-A20	68	128	76	56	118	5	6.5	67.5	3	0.6
	SF5202-A40	68	128	108	56	118	5	38.5	99.5	5	0.9
	SF5202-A75	68	128	128	56	118	5	58.5	119.5	5	1.1



Input voltage	Inverter model	Dimensions (mm)									Approx. weight (kg)
		W	H	D	W1	H1	H2	D1	D2	t1	
1-phase 200V class	SF520S-A75	108	128	137.5	96	118	5	58	129	5	1.7
	SF520S-1A5	108	128	154	96	118	5	58	145.5	5	1.8
3-phase 200V class	SF5202-1A5	108	128	129	96	118	5	58	120.5	5	1.7
	SF5202-2A2	108	128	137.5	96	118	5	58	129	5	1.7
3-phase 400V class	SF5204-A20	108	128	81	96	118	5	10	72.5	5	1.0
	SF5204-A40	108	128	99	96	118	5	28	90.5	5	1.2
	SF5204-A75	108	128	137.5	96	118	5	58	129	5	1.7
	SF5204-1A5	108	128	154	96	118	5	58	145.5	5	1.7
	SF5204-2A2	108	128	154	96	118	5	58	145.5	5	1.7

Standard Connection Diagram



- Note: 1. Connected using sequence input signal (S1 to S5) from NPN transistor; Default: sink mode (0 V com).
 2. Use only a +24 V internal power supply in the sink mode, the source mode requires an external power supply.
 3. Minimum load: 5 Vdc, 10 mA (reference value).
 4. Remove the jumper when installing an optional DC reactor.

Terminal Functions

Main Terminals

No.	Terminal Name	Function
R/L1	Main circuit power supply input	Connects line power to the drive. Drives with single-phase 200 V input power use terminals R/ L1 and S/L2 only. T/L3 must not be used.
S/L2		
T/L3		
U/T1	Drive output	Connects to the motor.
V/T2		
W/T3		
B1	Regenerative braking resistor	Available for connecting a regenerative braking resistor.
B2		
+1	DC reactor connection	These terminals are shorted at shipment. Remove the shorting bar between +1 and +2 when connecting a DC reactor to this terminal.
+2		
+1	DC power supply input	For connecting a DC power supply.
-		
⊕ (2 terminals)	Ground	Grounding Terminal 200V Class 100Ω or less 400V Class 10Ω or less

Control Terminals

Input Terminals

Type	No.	Terminal Name(Function)	Function(Signal Level)
Multi-Function Digital Input	S1	Multi-function input 1 (Closed: Forward run, Open: Stop)	Photocoupler 24 Vdc, 8 mA Note:Drive preset to sinking mode.When using source mode, set DIP switch S3 to allow for a 24 Vdc(±10%) external power supply.
	S2	Multi-function input 2 (Closed: Reverse run, Open: Stop)	
	S3	Multi-function input 3 (External fault(N.O.))	
	S4	Multi-function input 4 (Fault reset)	
	S5	Multi-function input 5 (Multi-step speed reference 1)	
	SC	Multi-function input common (Control common)	Sequence common
Frequency Reference Input	+V	Analog input power supply	+10.5 Vdc (max allowable current 20 mA)
	A1	Multi-function analog input (frequency reference)	Input voltage or input current (Selected by DIP switch S1) 0 to + 10 Vdc (20 kΩ), Resolution: 1/1000 4 to 20 mA (250Ω) or 0 to 20 mA(250Ω), Resolution: 1/500
	AC	Frequency reference common	0 V

Output Terminals

Type	No.	Terminal Name(Function)	Function(Signal Level)Default Setting
Multi-Function Digital Output	MA	N.O.(fault)	Digital output 30 Vdc, 10 mA to 1 A; 250 Vac, 10 mA to 1 A Minimum load: 5 Vdc, 10 mA(reference value)
	MB	N.C. output(fault)	
	MC	Digital output common	
Monitor Output	AM	Analog monitor output	0 to 10 Vdc (2 mA or less) Resolution: 1/256
	AC	Monitor common	0 V

Table of Parameters

Function	No.	Name	Range	Default Setting
Initialization Parameters	A1-01	Access Level Selection	0, 2	2
	A1-03	Initialize Parameters	0 ~ 3330	0
	A1-04	Password	0 ~ 9999	0
	A1-05	Password Setting	0 ~ 9999	0
Operation Mode Selection	b1-01	Frequency Reference Selection	0 ~ 3	1
	b1-02	Run Command Selection	0 ~ 2	1
	b1-03	Stopping Method Selection	0, 1	0
	b1-04	Reverse Operation Selection	0, 1	0
	b1-07	LOCAL/REMOTE Run Selection	0, 1	0
	b1-08	Run Command Selection	0 ~ 2	0
	b1-14	Phase Order Selection	0, 1	0
DC Injection Braking	b1-17	Run Command at Power Up	0, 1	1
	b2-02	DC Injection Braking Current	0 ~ 75	50%
	b2-03	DC Injection Braking Time	0.00 ~ 10.00	0.00 s
Acceleration and Deceleration Times	b2-04	DC Injection Braking Time	0.00 ~ 10.00	0.00 s
	C1-01	Acceleration Time 1	0.0 ~ 6000.0	10.0 s
	C1-02	Deceleration Time 1	0.0 ~ 6000.0	10.0 s
	C1-03	Acceleration Time 2	0.0 ~ 6000.0	10.0 s
	C1-04	Deceleration Time 2	0.0 ~ 6000.0	10.0 s
S-Curve	C1-09	Fast-Stop Time	0.0 ~ 6000.0	10.0 s
	C2-01	S-Curve Characteristic at Accel Start	0.00 ~ 10.00	0.00 s
	C2-02	S-Curve Characteristic at Accel End	0.00 ~ 10.00	0.00 s
	C2-03	S-Curve Characteristic at Decel Start	0.00 ~ 10.00	0.00 s
Slip Compensation	C2-04	S-Curve Characteristic at Decel End	0.00 ~ 10.00	0.00 s
	C3-01	Slip Compensation Gain	0.0 ~ 2.5	0.0
Torque Compensation	C3-02	Slip Compensation Primary	0 ~ 10000	2000 ms
	C4-01	Torque Compensation Gain	0.00 ~ 2.50	1.00
Carrier Frequency	C6-01	Drive Duty (HD/ND) Selection	0, 1	0
	C6-02	Carrier Frequency Selection	1 ~ F	2
	C6-03	Carrier Frequency Upper Limit	1.0 ~ 15.0	Note: 2
	C6-04	Carrier Frequency Lower Limit	1.0 ~ 15.0	Note: 2
	C6-05	Carrier Frequency Proportional Gain	00 ~ 99	Note: 2
Frequency Reference	d1-01	Frequency Reference 1	0.00 ~ 400.00	0.00 Hz
	d1-02	Frequency Reference 2		0.00 Hz
	d1-03	Frequency Reference 3		0.00 Hz
	d1-04	Frequency Reference 4		0.00 Hz
	d1-05	Frequency Reference 5		0.00 Hz
	d1-06	Frequency Reference 6		0.00 Hz
	d1-07	Frequency Reference 7		0.00 Hz
	d1-08	Frequency Reference 8		0.00 Hz
Frequency Limits	d1-17	Jog Frequency Reference		5.00 Hz
	d2-01	Frequency Reference Upper Limit	0.0 ~ 110.0	100.0%
Jump Frequency	d2-02	Frequency Reference Lower Limit	0.0 ~ 110.0	0.0%
	d3-01	Jump Frequency 1	0.0 ~ 400.0	0.0 Hz
	d3-02	Jump Frequency 2	0.0 ~ 400.0	0.0 Hz
Freq. Reference Hold	d3-04	Jump Frequency Width	0.0 ~ 20.0	1.0 Hz
	d4-01	Frequency Reference Hold Function Selection	0, 1	0
V/f Pattern Characteristics	E1-01	Input Voltage Setting	155 ~ 255 ^{Note: 1}	200 V ^{Note: 1}
	E1-03	V/f Pattern Selection	F	F ^{Note: 6}
	E1-04	Maximum Output Frequency	40.0 ~ 400.0	60.0 Hz
	E1-05	Maximum Output Voltage	0.0 ~ 255.0 ^{Note: 1}	200.0 V ^{Note: 1}
	E1-06	Base Frequency	0.0 ~ E1-04	60.0 Hz
	E1-07	Middle Output Frequency	0.0 ~ E1-04	3.0 Hz
	E1-08	Middle Output Frequency Voltage	0.0 ~ 255.0 ^{Note: 1}	16.0 V ^{Note: 1}
	E1-09	Minimum Output Frequency	0.0 ~ E1-04	1.5 Hz
	E1-10	Minimum Output Frequency Voltage	0.0 ~ 255.0 ^{Note: 1}	12.0 V ^{Note: 1}
	Motor Parameters	E2-01	Motor Rated Current	Rated current 10 ~ 200%
E2-02		Motor Rated Slip	0.00 ~ 20.00	Note: 7
E2-03		Motor No-Load Current	0 ~ [E2-01] Below	Note: 7
E2-05		Motor Line-to-Line Resistance	0.000 ~ 65.000 ^{Note: 3}	Note: 7
Multi-Function Digital Input	H1-01	Terminal S1 Function Selection	1 ~ 67	40
	H1-02	Terminal S2 Function Selection	1 ~ 67	41
	H1-03	Terminal S3 Function Selection	0 ~ 67	24
	H1-04	Terminal S4 Function Selection	0 ~ 67	14
	H1-05	Terminal S5 Function Selection	0 ~ 67	3(0) ^{Note: 4}

Table of Parameters

Function	No.	Name	Range	Default Setting
Multi-Function Digital Outputs	H2-01	Terminal MA, MB and MC Function Selection (relay)	0 ~ 13D	E
Analog Inputs	H3-01	Terminal A1 Signal Level Selection	0 ~ 3	0
	H3-03	Terminal A1 Gain Setting	-999.9 ~ 999.9	100.0%
	H3-04	Terminal A1 Bias Setting	-999.9 ~ 999.9	0.0%
	H3-13	Analog Input Filter Time Constant	0.00 ~ 2.00	0.03 s
Multi-Function Analog Outputs	H4-01	Multi-Function Analog Output Terminal AM	000 ~ 999	102
	H4-02	Multi-Function Analog Output Terminal AM Gain	-999.9 ~ 999.9	100.0%
	H4-03	Multi-Function Analog Output Terminal AM Bias	-999.9 ~ 999.9	0.0%
MEMOBUS Communications	H5-01	Drive Node Address	0 ~ FF	1F
	H5-02	Communication Speed Selection	0 ~ 5	3
	H5-03	Communication Parity Selection	0 ~ 2	0
	H5-04	Stopping Method After Communication Error	0 ~ 3	3
	H5-05	Communication Fault	0, 1	1
	H5-06	Drive Transmit Wait Time	10 ~ 65	10 ms
	H5-07	RTS Control Selection	0, 1	1
	H5-12	Run Command Method Selection	0, 1	0
Pulse Train Monitor Scaling	H5-13	MEMOBUS Freq. Reference and Freq. Monitor Unit	0 ~ 3	0
	L1-01	Motor Overload Protection Selection	0 ~ 2	1
	L1-02	Motor Overload Protection Time	0.1 ~ 5.0	1.0 min
	L1-08	Electrothermal Level Setting 1	Rated current 10 ~ 150%	Note: 7
Momentary Power Loss	L1-13	Continuous Electrothermal Operation Selection	0, 1	1
	L2-01	Momentary Power Loss Operation Selection	0 ~ 2	0
	Stall Prevention Function	L3-01	Stall Prevention Selection during Acceleration	0, 1
L3-02		Stall Prevention Level during Acceleration	0 ~ 150	Note: 5
L3-04		Stall Prevention Selection during Deceleration	0, 1, 4	1
L3-05		Stall Prevention Selection during Run	0 ~ 2	1
L3-06		Stall Prevention Level during Run	30 ~ 150	Note: 5
Frequency Detection		L4-01	Speed Agreement Detection Level	0.0 ~ 400.0
	L4-07	Frequency Detection Conditions	0, 1	0
Fault Reset	L5-01	Number of Auto Restart Attempts	0 ~ 10	0
Overtorque Detection	L6-01	Torque Detection Selection 1	0 ~ 4	0
	L6-02	Torque Detection Level 1	0 ~ 300	150%
	L6-03	Torque Detection Time 1	0.0 ~ 10.0	0.1 s
Hardware Protection	L8-05	Input Phase Loss Protection Selection	0, 1	0
	L8-10	Heatsink Cooling Fan Operation Selection	0, 1	0
	L8-12	Ambient Temperature Setting	-10 ~ 50	30°C
	L8-18	Soft Current Limit Selection	0, 1	0
	L8-35	Installation Method Selection	0 ~ 1	0
	L8-38	Carrier Frequency Reduction	0 ~ 2	1
Hunting Prevention	n1-02	Hunting Prevention Gain Setting	0.00 ~ 2.50	1.00
High-Slip Braking	n3-13	Overexcitation Deceleration Gain	1.00 ~ 1.40	1.10
Display Setting	o1-02	User Monitor Selection After Power Up	1 ~ 4	1
	o1-03	Digital Operator Display Selection	0, 1	0
Operator Keypad Functions	o2-02	STOP Key Function Selection	0, 1	1
	o2-04	Drive Model Selection	0 ~ FF	Note: 6, 7
	o2-05	Frequency Reference Setting Enter key Function	0, 1	0
	o2-06	Operation Selection when LED Operator is Disconnected	0, 1	0
Copy Function	o3-01	Copy Function Selection	0 ~ 3	0
	o3-02	Copy Allowed Selection	0, 1	0
Maintenance Period	o4-01	Accumulated Operation Time Setting	0 ~ 9999	0
	o4-02	Accumulated Operation Time Selection	0, 1	0
	o4-03	Cooling Fan Operation Time Setting	0 ~ 9999	0
	o4-05	Capacitor Maintenance Setting	0 ~ 150	0%
	o4-07	DC Bus Pre-Charge Relay Maintenance Setting	0 ~ 150	0%
	o4-09	IGBT Maintenance Setting	0 ~ 150	0%
	o4-11	U2, U3 Initialization	0, 1	0

Note: 1. Values shown here are for 200 V class drives. Double the value when using a 400 V class drive.

2. Default setting value is dependent on parameter C6-02, Carrier Frequency Selection.

3. 0.0 to 130.00 for drives less than 0.2 kW.

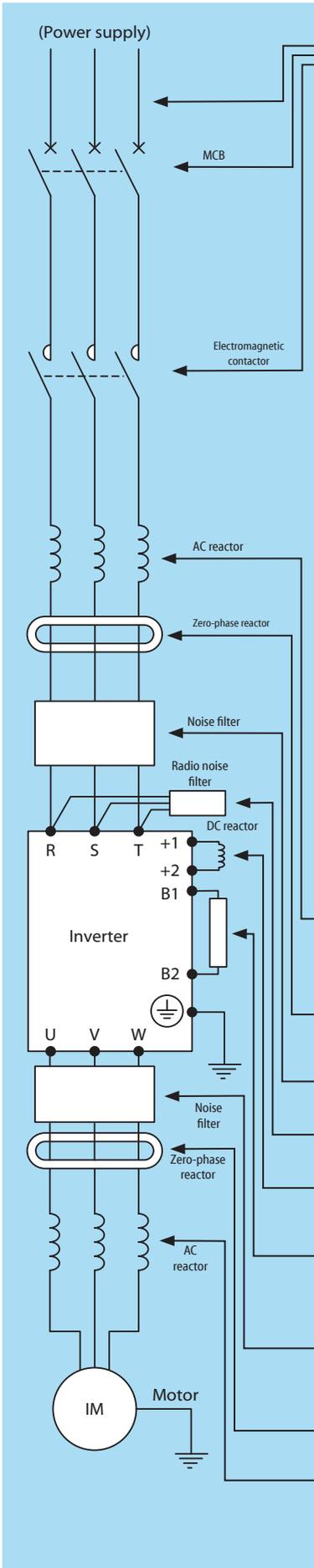
4. Value in brackets indicates default when 3-wire initialization is performed.

5. Default setting value is 150% when C6-01 is set to 0 (HD).

6. This value is not reset when the drive is initialized

7. Default setting value is dependent on parameter o2-04, Drive Model Selection.

Standard Accessories



Rated input voltage	Applicable motor(kW)	Inverter model	Circuit breaker (made by Mitsubishi Electric)		Electromagnetic contactor (made by Fuji Electric)	Cable size (mm ²) Length 30m
			Rated current(A)	Type	Type	
1-phase 200V class	0.2	SF520S-A20	5	NF-32SV	SC-03	2
	0.4	SF520S-A40	10	NF-32SV	SC-03	2
	0.75	SF520S-A75	20	NF-32SV	SC-4-0	2
	1.5	SF520S-1A5	30	NF-32SV	SC-N2	2
3-phase 200V class	0.1	SF5202-A10	5	NF-32SV	SC-03	2
	0.2	SF5202-A20	5	NF-32SV	SC-03	2
	0.4	SF5202-A40	5	NF-32SV	SC-03	2
	0.75	SF5202-A75	10	NF-32SV	SC-03	2
	1.5	SF5202-1A5	15	NF-32SV	SC-4-0	2
3-phase 400V class	0.2	SF5204-A20	5	NF-32SV	SC-03	2
	0.4	SF5204-A40	5	NF-32SV	SC-03	2
	0.75	SF5204-A75	5	NF-32SV	SC-03	2
	1.5	SF5204-1A5	10	NF-32SV	SC-03	2
	2.2	SF5204-2A2	15	NF-32SV	SC-4-0	2

- Note:
1. The shown accessories are for use with SUMITOMO 3-phase, 4-pole motors.
 2. Select the circuit breaker based on required capacity.
 3. Use thicker cables when wiring distance exceeds 30 m.
 4. The alarm output cable should be 0.75mm².

When using an earth leakage breaker (ELB), select the breaker's trip current from the table below based on the total wire distance (R) by summing the distance from the breaker to the inverter and the inverter to the motor.

ℓ	Trip current (mA)
100m or less	30
300m or less	100
600m or less	200

- Note:
1. When CV wiring is used in metal conduit, the leakage current is approximately 30mA/km.
 2. Leakage current will increase eightfold with IV type cable due to higher dielectric constant. In this case, use ELB with the next higher trip rating.

Input AC reactor for harmonic suppression/power smoothing/powerfactor improvement	This is useful in suppressing harmonics induced on the power supply lines, or when the main power voltage imbalance exceeds 3%. (and power source capacity is more than 600kVA), or to smooth out line fluctuations. It also improves the power factor.
Radio noise filter Zero-phase reactor	Electrical noise interference may occur on nearby equipment such as a radio receiver. This magnetic choke filter helps reduce radiated noise.
Input noise filter	This filter reduces the conducted noise in the power supply wiring between the inverter and the power distribution system. Connect it to the inverter primary (input side).
Input radio noise filter (XY filter)	This capacitive filter reduces radiated noise from the main power wires in the inverter input side.
DC reactor	The inductor or choke filter suppresses harmonics generated by the inverter.
Regenerative braking resistor	The regenerative braking resistor is useful for increasing the inverter's control torque for high duty-cycle (on-off) applications, and improving the decelerating capacity.
Output noise filter	This filter reduces radiated noise emitted on the inverter output cable that may interfere with radio or television reception and test equipment and sensor operation.
Radio noise filter Zero-phase reactor	Electrical noise interference may occur on nearby equipment such as a radio receiver. This magnetic choke filter helps reduce radiated noise.
Output AC reactor	Install it on the output side to reduce leakage current contributed by higher harmonics. Contact our company for details.

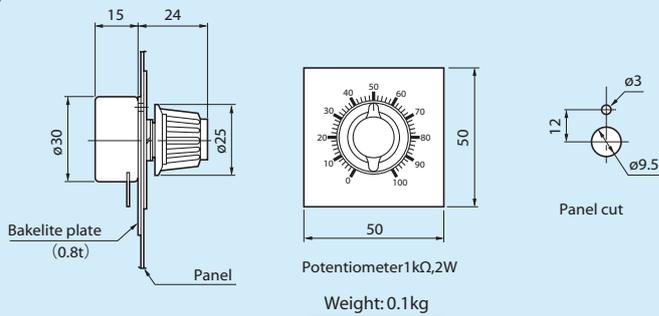
■ Caution in Selecting Peripheral Equipment

Wiring and connection		<ol style="list-style-type: none"> Be sure to connect the power supply to RST (input terminals) and the motor to U, V, W (output terminals). Be sure to connect the grounding terminal. (⊕ mark) Inverters generate high frequency, increasing leakage current. Be sure to ground the inverter and motor.
Wiring between inverter and motor	Electromagnetic contactor	When using an electromagnetic contactor between the inverter and motor, do not turn the contactor ON or OFF during inverter operation.
	Thermal relay	<p>Install a thermal relay that matches the motor in the following cases:</p> <ul style="list-style-type: none"> *Install a thermal relay for each motor when operating more than one motor with one inverter. *Set the current of the thermal relay at the rated motor current x 1.1. When the wiring length is long (more than 10 m), the thermal relay may be activated too quickly. Install an AC reactor or current sensor on the output side. *When motors are to be operated with the rated current exceeding the adjustable level of the built-in electronic thermal relay.
Earth leakage breaker		<p>Install an earth leakage breaker on the input side for protection of the inverter wiring and operators.</p> <p>Conventional earth leakage breakers may malfunction because of high harmonics from the inverter; therefore use an earth leakage breaker that is applicable to the inverter. The leakage current differs according to the cable length. Refer to p.14.</p>
Wiring distance		<p>The wiring distance between the inverter and operation panel should be less than 30m. If it exceeds 30m, use a current/voltage converter, etc. Use shielded cable for wiring.</p> <p>When the wiring distance between the motor and inverter is long, the leakage current from high harmonics may cause the protective function of the inverter and peripheral equipment to be activated.</p> <p>The situation will be improved by an AC reactor installed on the output side of the inverter.</p> <p>Select appropriate cable to prevent voltage drop. (Large voltage drop lowers the torque.)</p>
Phase-advanced capacitor		<p>Do not use a phase-advanced capacitor.</p> <p>When a power factor improving capacitor is connected between the inverter and motor, the capacitor may be heated or broken by the higher harmonics in the inverter output.</p>

External Options

Frequency Reference Setting Unit

No. VR07

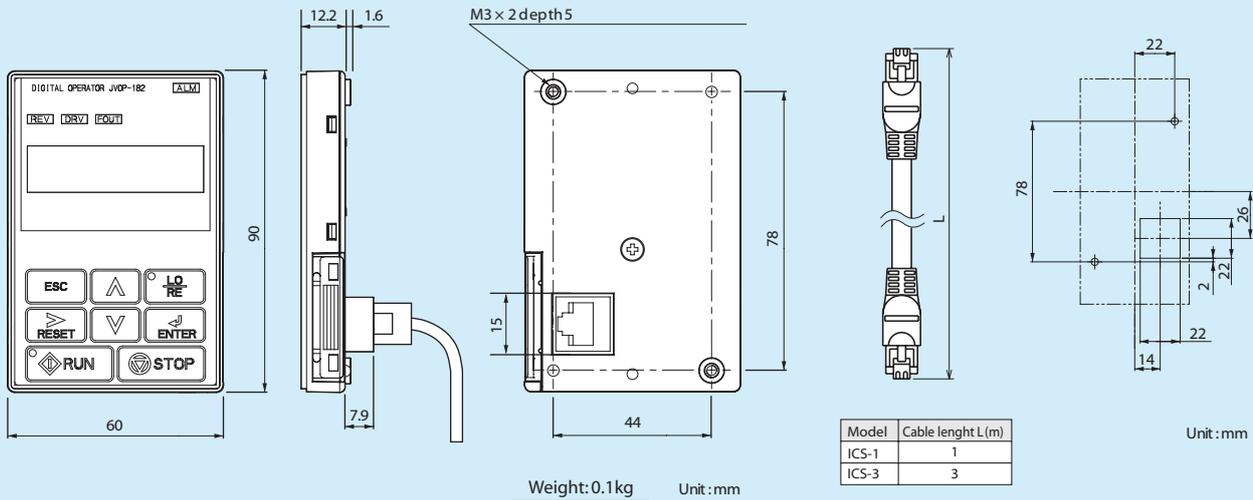


Unit : mm

LED operator

●JVOP-182-H

●ICS-1, 3 ●Dimensions for the panel cut

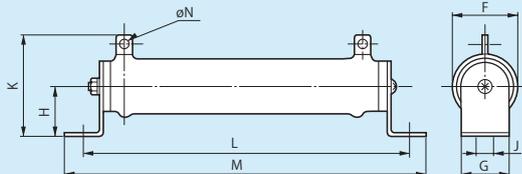


Unit : mm

Regenerative Braking Resistor

Raated Power (W)	Dimensions								Weight (g)
	F	G	H	J	K	L	M	N	
200	28	26	22	6	53	287	306	4	340
300	44	40	40	10	78	309	335	5	840
400	44	40	40	10	78	385	411	5	1000

100% braking torque 10sec 10%ED



Unit:mm

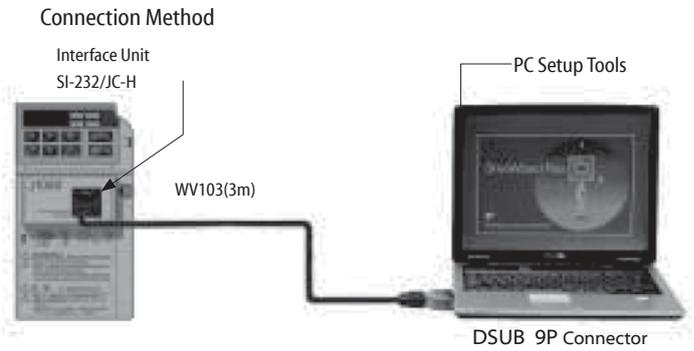
Voltage (V)	Capacity (kW)	Braking resistor				Thermal relay set value(A)
		Model No.	Rated power	Resistance	Qty	
200V	0.1,0.2	Y135AA201	200W	400Ω	1	0.83
	0.4	Y135AA200	200W	200Ω	1	0.83
	0.75	Y135AA205	300W	200Ω	1	1.25
	1.5	Y135AA204	300W	80Ω	1	1.25
	2.2	Y135AA208	400W	70Ω	1	1.7
400V	0.2,0.4	Y135AA202	200W	750Ω	1	0.42
	0.75	Y135AA207	300W	750Ω	1	0.63
	1.5	Y135AA206	300W	400Ω	1	0.63
	2.2	Y135AA209	400W	250Ω	1	0.83

Type of thermal relay:TR-ONH

■ Cable for PC Setup Tools (Model No.WV103)(Coming Soon)

Item	Specitication
Connector	DSUB 9P
Cable Length	3m

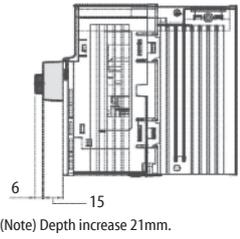
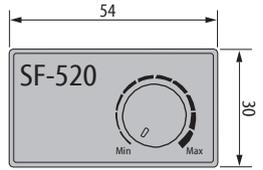
Note: Pc tool for drive setup and parameter management
The installation files can be obtained at no
Charge from : <http://cycro.shi.co.jp>



■ Frequency Setting Potentiometer Unit (Model No.AI-V3/J-H)

Allows for easier frequency control.

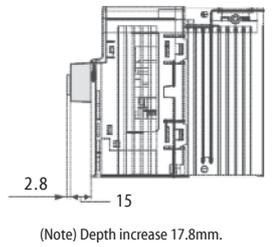
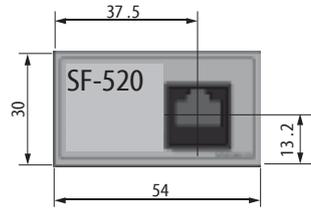
Outline Drawing (mm)



■ RS-232C Interface Unit (Model No.SI-232/JC-H)

Allows the user to connect an extension cable for remote operation and engineering software tools.

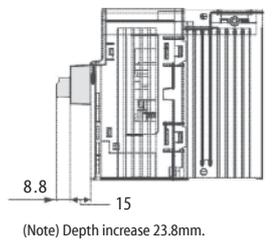
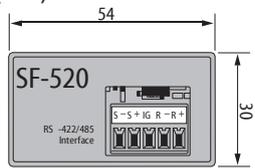
Outline Drawing (mm)



■ RS-422/485 Interface Unit for MEMOBUS Communication (Model No.SI-485/J-H)

Allows the drive to connect to a network using MEMOBUS protocol. Communication cable connector included.

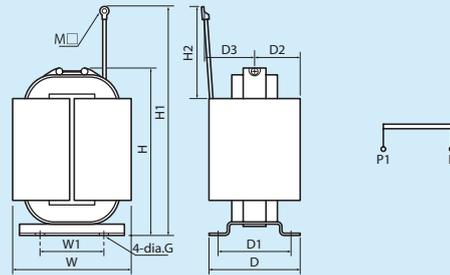
Outline Drawing (mm)



External Options

DC Reactor for Power Factor Improvement and Higher Harmonics Control

A DC reactor is available for improvement of the power factor of the inverter, ensuring power line impedance, and control of higher harmonics.

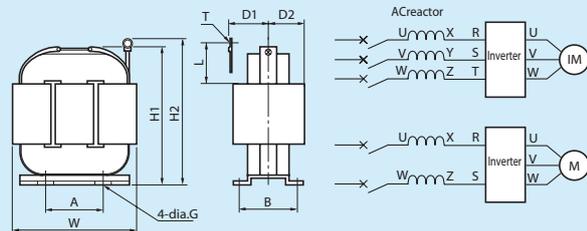


	Applicable capacity (kW)	Specification		Model No. Y220DA	W	W1	D	D1	D2	D3	H	H1	H2	G	Connection Terminal	Weight (kg)	Insulation
		Current (A)	L (mH)														
200V Series	0.1,0.2	1.0	29.7	032	52	35	40	32	20	22	65	-	300	dia.4	M4	0.3	B
	0.4	2.0	14.8	033	52	35	40	32	20	22	75	-	300	dia.4	M4	0.4	B
	0.75	3.75	9.72	034	52	35	50	42	25	27	85	-	300	dia.4	M4	0.6	B
	1.5	7.5	4.83	035	74	50	45	37	-	-	120	145	-	dia.5	M5	1.0	B
	2.2	11.0	3.41	036	74	50	45	37	-	-	120	145	-	dia.5	M5	1.1	B
400V Series	0.2	0.5	116	002	52	35	40	32	20	22	65	-	300	dia.4	M4	0.3	B
	0.4	1.0	59.3	003	52	35	40	32	20	22	75	-	300	dia.4	M4	0.4	B
	0.75	1.88	38.9	004	52	35	50	42	25	27	85	-	300	dia.4	M4	0.6	B
	1.5	3.75	19.3	005	59	40	60	47	30	35	100	-	300	dia.4	M4	0.9	B
	2.2	5.5	13.7	006	74	50	45	37	-	-	120	140	-	dia.5	M5	1.1	B

AC Reactor for Power Factor Improvement and Higher Harmonics Control

An AC reactor is available for improvement of the power factor of the inverter, ensuring proper power line impedance, and control of higher harmonics.

Note: The AC reactor is for 3-phase input.

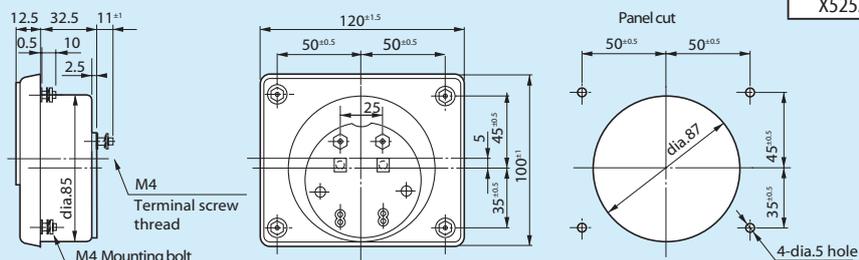


	Applicable capacity (kW)		Specification		Model No. Y220CA	W	D1	D2	H1	H2	A	B	G	L	T	Weight (kg)	Insulation
	3-Phase	1-Phase	Current (A)	L (mH)													
200V Series	0.1~0.4	0.2	2.1	5.8	053	87	26	23	95	-	50	38	4	310	M4	1.0	B
	0.75	0.4	4.0	3.1	054	87	26	23	95	-	50	38	4	310	M4	1.1	B
	1.5	0.75	8.0	1.6	055	90	33	30	100	120	55	48	4	-	M4	1.6	B
	2.2	-	11	1.2	056	113	35	30	116	140	55	43	4	-	M4	2.1	B
	-	1.5	17	0.7	057	113	35	30	116	140	55	43	4	-	M4	2.4	B
400V Series	0.2~0.4	-	1.2	22	080	87	26	23	95	-	50	38	4	310	M4	1.0	B
	0.75	-	2.1	12	081	90	26	23	96	-	50	38	4	310	M4	1.1	B
	1.5	-	4.0	6.5	082	90	33	30	100	-	55	48	4	310	M4	1.7	B
	2.2	-	5.5	4.6	083	113	33	30	115	-	55	43	4	310	M4	2.5	B

% Speed Meter: DCF-12N

Unit : mm

0~100% 50 divisions

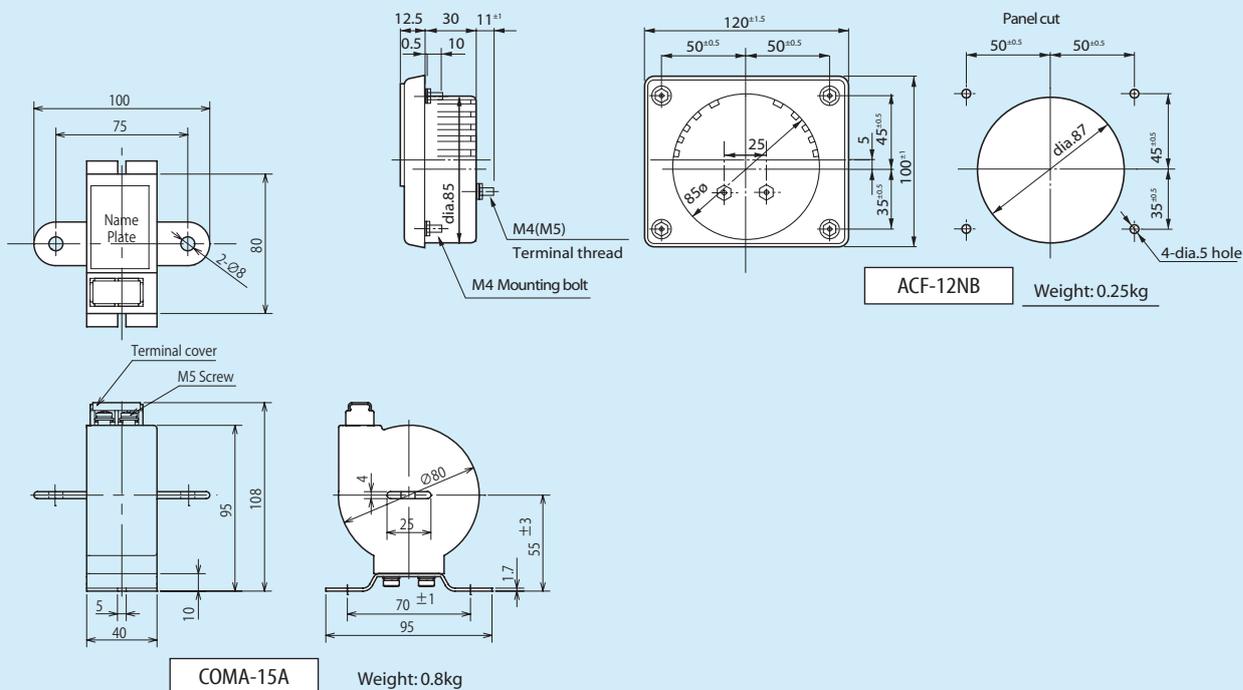


Part No.	
X525AA048	10V F.S.

Weight: 0.15kg

AC Ammeter: ACF-12NB

The current transformer (CT) directly the current of the secondary side of the inverter



ACF-12NB Weight: 0.25kg

COMA-15A Weight: 0.8kg

Table of combination of AC ammeter(ACF-12NB) and current transformer(CT)

Motor capacity (kW)	200V class				400V class			
	Model No.	Meter		CT Type	Model No.	Meter		CT Type
		Rated current [A]	Max. scale [A]			Rated current [A]	Max. scale [A]	
0.1, 0.2	CT002AW	3	3	COMA-15A 5/5A	CT001AW	2	2	COMA-15A 5/5A
0.4	CT003AW	5	5	COMA-15A 5/5A	CT002AW	3	3	COMA-15A 5/5A
0.75	CT004AW	5	10	COMA-15A 10/5A	CT003AW	5	5	COMA-15A 5/5A
1.5	CT005AW	5	15	COMA-15A 15/5A	CT004AW	5	10	COMA-15A 10/5A
2.2	CT006AW	5	20	COMA-15A 20/5A	CT004AW	5	10	COMA-15A 10/5A

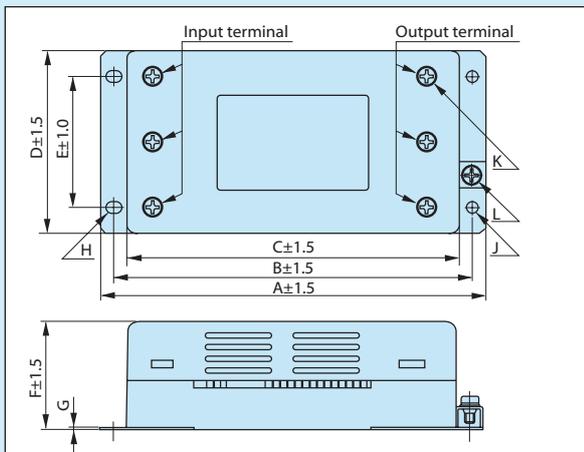
Construction of current transformer(CT) COMA-15A type: Totally molded current transformer with primary winding
Install the current transformer(CT) on the output side of the inverter

External Options

Noise Filter

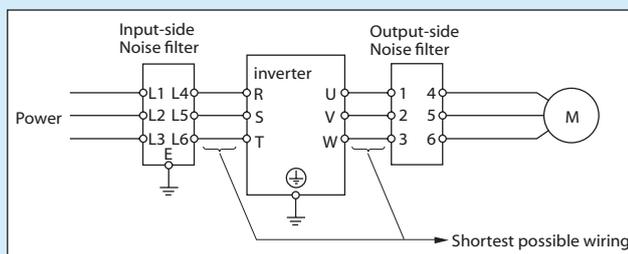
Voltage Class	Applicable Motor (kW)	Input side			Output side		
		Model No.	Type	Weight (kg)	Model No.	Type	Weight (kg)
3-phase 200V	0.1~0.4	X480AC289	NF3010A-VZ	0.5	X480AC163	CC3005C-P	1
	0.75, 1.5				X480AC164	CC3010C-P	
	2.2				X480AC290	NF3020A-VZ	
3-phase 400V	0.2~1.5	X480AC296	NF3010C-VZ		X480AC163	CC3005C-P	
	2.2				X480AC164	CC3010C-P	
1-phase 200V	0.2, 0.4	X480AC289	NF3010A-VZ		X480AC163	CC3005C-P	
	0.75				X480AC164	CC3010C-P	
	1.5				X480AC290	NF3020A-VZ	

Input-side Noise Filter

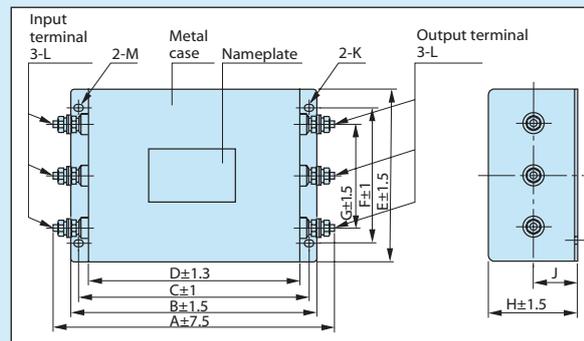


Input side	dimensions(Unit:mm)										
Model No.	A	B	C	D	E	F	G	H	J	K	L
X480AC289								R4.5			
X480AC290	128	118	108	63	43	42	1.0	length 6	dia.4.5	M4	M4
X480AC296											

1. Connect the input-side filter between the power supply and inverter input terminal, and the output-side filter between the inverter output terminal and motor. Make the connection cable as short as possible.
2. Use grounding cable as thick as possible. Correctly ground the equipment.
3. The input and output cables of the filter should be sufficiently separated.
4. Do not connect the input-side filter to the inverter output (motor) side.



Output-side Noise Filter

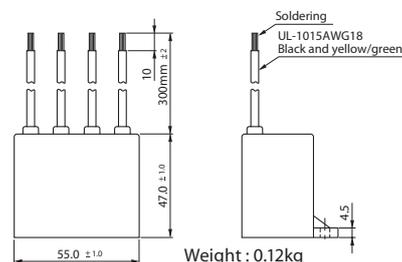
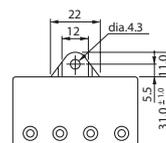
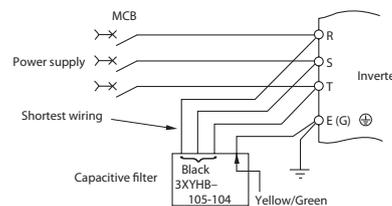


Output side	Dimensions(Unit:mm)											
Model No.	A	B	C	D	E	F	G	H	J	K	L	M
X480AC163												R2.25
X480AC164	147	140	125	110	95	70	50	50	25	dia.4.5	M4	length 6
X480AC165												

Capacitive filter(XY filter)

Model No. X480AC185, Type: 3XYHB-105-104
 Applicable to all models for HF-430NEO: rated voltage 500VAC

- [Method of connection]
- (1) Connect it directly to the inverter input (power supply) terminal. Make the connection line as short as possible.
 - (2) Ensure correct grounding. (Grounding resistance: 100 Ω or less)
 - (3) Do not use on the inverter output (motor) side.



Weight : 0.12kg

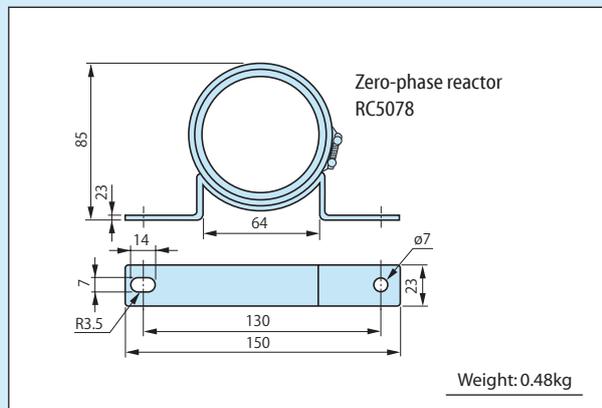
Zero-phase Reactor (Inductive Filter)

Common to 200 V and 400 V classes, as well as input and output sides

0.1~2.2 kW

Model No. X480AC188

Type RC5078



Winding turns	More than 3 times(4T)
Qty used	1pc
Winding	

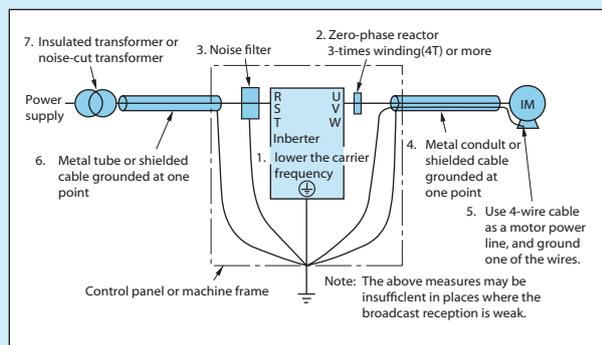
Method of connection

1. It can be used on both input (power supply) side and output (motor) side of the inverter.
2. Wind the cables of the three phases respectively on the input or output side more than three times (4 turns) in the same direction. If cables are too thick to wind more than three times (4 turns), arrange two or more zero-phase reactors to reduce the number of winding turns.
3. Make the gap between the cable and the inside of the core as small as possible.

When AM Radio Picks Up Noise

1. When noise level is high

Take possible measures among the following in the order of 1 to 7. Each measure will improve noise reduction.

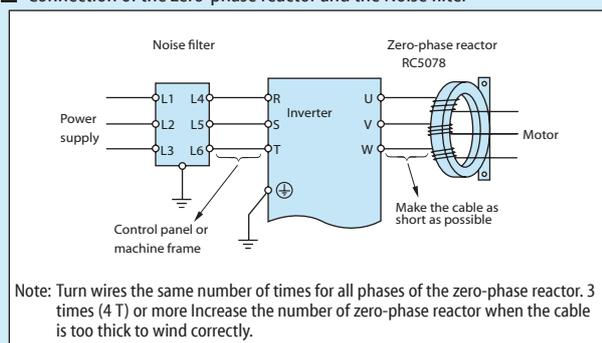


Corrective measures

1. Lower the carrier frequency as much as possible. Up to approx. 10 kHz when low-noise operation is necessary.
2. Install a zero-phase reactor on the output side of the inverter. (Type: RC5078)
3. Install a Noise filter on the input side of the inverter.
4. Connect the inverter and motor with a metal conduit or shielded cable.
5. Use 4-wire cable as a motor power line, and ground one of the wires.
6. Connect the inverter and power with a metal conduit or shielded cable.
7. Install a drive isolation or noise reduction transformer for the power supply.

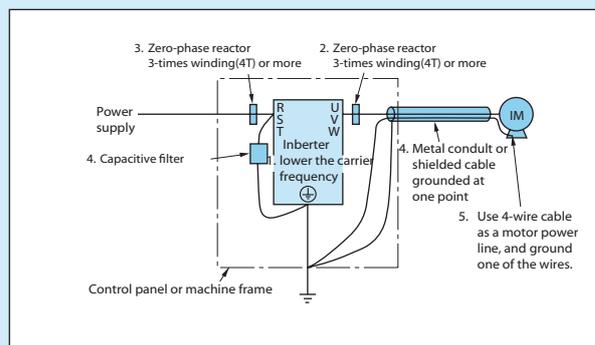
The transformer capacity differs according to the inverter capacity and voltage.

Connection of the zero-phase reactor and the Noise filter



2. When noise level is low

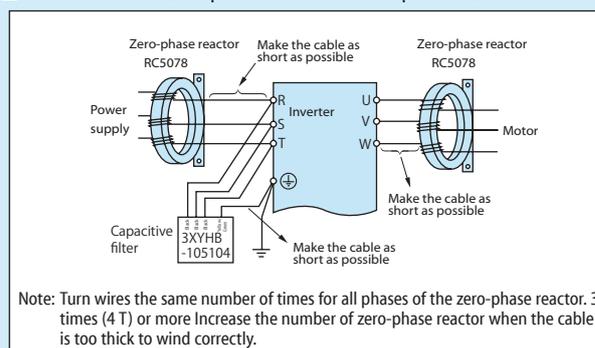
Take possible measures among the following in the order of 1 to 6. Each measure will improve noise reduction.



Corrective measures

1. Lower the carrier frequency as much as possible. Up to approx. 10 kHz when low-noise operation is necessary.
2. Install a zero-phase reactor on the output side of the inverter. (Type: RC5078)
3. Install a zero-phase reactor on the input side the inverter. (Type: RC5078)
4. Install a capacitive filter on the input side of the inverter. (Type: 3XYHB-105104)
5. Connect the inverter and motor with a metal conduit or shielded cable.
6. Use 4-wire cable as a motor power line, and ground one of the wires.

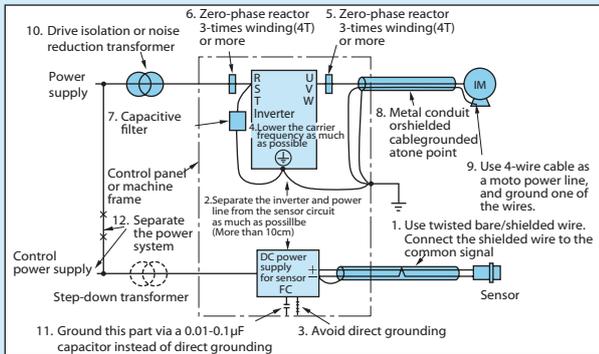
Connection of the zero-phase reactor and the capacitive filter



External Options/Motor Operating Characteristics

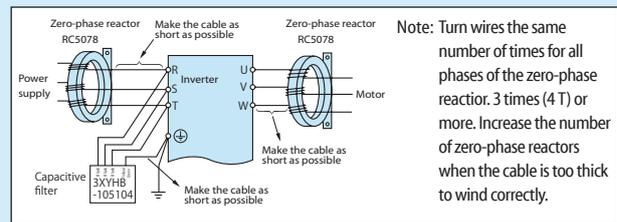
Measures to Take When Proximity Switch/photoelectric Switch, etc.Malfunction

Take possible measures among the following in the order of 1 to 12. Each measure will improve noise reduction.



5. Install a zero-phase reactor on the output side of the inverter. (Type: RC5078)
6. Install an LC filter on the input side of the inverter. (Type: FS)
7. Install a capacitive filter on the input side of the inverter. (Type: 3XYHB-105104)
8. Use a metal conduit or shielded cable for power supply wiring.
9. Use 4-wire cable as a motor power line, and ground one of the wires.
10. Install a drive isolation or noise reduction transformer for the inverter power supply.
11. Ground the power supply for the sensor via a 0.01-0.1 μ F \rightarrow (630V 0.1 μ F)
12. Separate the inverter power supply from the sensor power supply system.

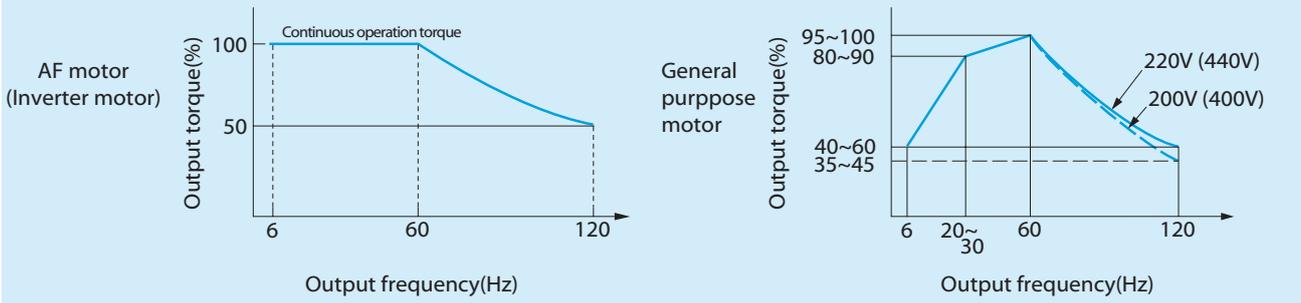
Connection of the reactors and the capacitive filter



Corrective measures

1. Use twisted pair/shielded wire as a sensor signal line, and connect the shielded wire to common.
2. Separate the inverter and power line from the sensor circuit as much as possible. (More than 10 cm desirable)
3. Remove the grounding wire when the power supply for the sensor is grounded.
4. Lower the carrier frequency as much as possible. Up to approx. 10 kHz when low-noise operation is necessary.

Motor Operating Characteristics



Motor Temperature Rise

When a general-purpose motor is used in variable-speed operation with an inverter, the temperature rise of the motor will be slightly greater than in cases where commercial power is used. The causes are shown below:

- Influence of output waveform** Unlike commercial power, the output waveform of an inverter is not a perfect sine wave, and contains higher harmonics. Therefore, the motor loss increases and the temperature is slightly higher.
- Reduction in the motor cooling effect during slow-speed operation** Motors are cooled by the fan on the motor itself. When the motor speed is reduced by an inverter, the cooling effect will decrease.

Therefore, lower the load torque or use an inverter motor to control temperature rise when the frequency is below the frequency of commercial power.

■ Precautions for Application of Inverter

● Power supply

1. When the inverter is connected directly to a large-capacity power supply (especially in a 400 V line), excessively large peak will flow in, breaking the inverter unit. In such a case, install an AC reactor (option) on the input side of the inverter unit.
2. Install an AC reactor in the following cases as well.
 - 1) There is a possibility of surge voltage generated in the power supply system: When surge energy flows into the inverter, OV tripping may result.
 - 2) When a large-capacity thyristor Leonard or other phase control units are installed
3. When the inverter is operated by a private power generator, secure a sufficiently large generation capacity for the inverter kVA in consideration of the influence of higher harmonic current on the generator.

● Installation

1. Do not install the inverter in places with poor environmental conditions subjected to dust, oil mist, corrosive gas, or inflammable gas.
2. In places where there is suspended matter in the air, install the inverter inside a "closed-type" panel to prevent entry of suspended matter. Determine the cooling method and dimensions of the panel so that the ambient temperature around the inverter will be lower than the allowable temperature.
3. Vertically install the inverter on a wall. Do not install it on wood or other inflammable products.

● Handling

1. Do not connect the output terminal UVW of the inverter to the power supply; otherwise the inverter will be broken. Carefully check the wiring for correct arrangement before turning on the power.
2. It takes some time for the internal capacitors to discharge completely after the power is turned off. Check that the charge lamp on the printed circuit board is OFF before inspection.

● Operation

1. Do not start and stop the inverter frequently by means of an electromagnetic contactor (MC) installed on the input side of the inverter; otherwise failure of the inverter will result.
2. When more than one motor is operated by one inverter, select the inverter capacity so that 1.1 times the total rated current of the motors will not exceed the rated output current of the inverter.
3. When an error occurs, the protective function is activated and the inverter trips and stops operation. In that case, motors will not stop immediately. When emergency stop is desired, use mechanical brakes as well.
4. The acceleration time of the motor is subject to the inertial moment of the motor and load, motor torque, and load torque.
 - 1) When the acceleration time setting is too short, the stall prevention function is activated, and the setting time is elongated automatically. For stable acceleration and deceleration, set longer time so that the stall prevention function will not be activated.
 - 2) When the deceleration time is too short, the stall prevention function is activated or OV tripping will result. Set longer deceleration time or install a braking unit/braking resistor.

■ When Operating 400 V Class Standard Motor

When the inverter is used to drive a standard motor (general-purpose motor), a high carrier frequency type inverter (e.g. IGBT) requiring high input voltage (more than 400 V) is necessary. When the wiring distance is long, the withstand voltage of the motor must be taken into consideration. Contact us in such cases.

■ Life of Major Parts

The electrolytic capacitor, cooling fan, and other parts used for inverters are consumables. Their life substantially depends on the operating condition of inverters. When replacement of the cooling fan is necessary, contact our dealer or service center.

Notes to Inverter Users

The inverter described in this brochure is used for variable-speed operation of 3-phase induction motors for general industry use.

CAUTION

- ▼ This product is designed and manufactured for use in industrial applications.
When this product is applied to the following applications that have a significant impact on the human, and public functions (nuclear power, aerospace, public transportation, medical instrument and related applications), contact our agency at each time.
- ▼ Our products are manufactured under stringent quality control. However, install a safety device on the equipment side in order to prevent serious accidents or loss when our products are applied to equipment that may cause serious accidents or loss due to failure or malfunction.
- ▼ Do not use the inverter for any load other than 3-phase induction motors.
- ▼ When an explosion-proof motor is selected, pay attention to the installation environment, because the inverter is not an explosion-proof type.
- ▼ Carefully read the "Operation Manual" before use for correct operation.
Read the manual carefully also for long-term storage.
- ▼ Electrical work is necessary for installation of the inverter. Leave the electric work to specialists.

The cautions to special motor application

<Pole change motor>

When controlling a pole-change motor with the inverter, select the inverter with current rating higher than the maximum current of the motor.

After stopping the motor, please change poles of the motor.

When poles of the motor is changed during the motor running, the alarm of overvoltage or overcurrent occurs.

<Motor with the brake>

The power supply for the brake must be certainly connected to the primary side of an inverter.

The inverter must be "OFF" when the brake is "ON" (the motor is stopped).

<Single-phase motor>

The inverter is not suitable to operate a single phase motor.

If the inverter is used with a single phase motor, there's a possibility of capacitor damage, phase-splitting, or even fire hazard.

1. Warranty Policy on Inverter

Warranty period	The warranty shall be 18 months from date of shipment or 12 months after initial operation, whichever is shorter.
Warranty condition	In the event that any problem or damage to the Product arises during the "Warranty Period" from defects in the Product whenever the Product is properly installed and combined with the Buyer's equipment or machines maintained as specified in the maintenance manual, and properly operated under the conditions described in the catalog or as otherwise agreed upon in writing between the Seller and the Buyer or its customers; the Seller will provide, at its sole discretion, appropriate repair or replacement of the Product without charge at a designated facility, except as stipulated in the "Warranty Exclusions" as described below. However, if the Product is installed or integrated into the Buyer's equipment or machines, the Seller shall not reimburse the cost of: removal or re-installation of the Product or other incidental costs related thereto, any lost opportunity, any profit loss or other incidental or consequential losses or damages incurred by the Buyer or its customers.
Warranty exclusion	Notwithstanding the above warranty, the warranty as set forth herein shall not apply to any problem or damage to the Product that is caused by: <ol style="list-style-type: none"> 1. Installation, connection, combination or integration of the Product in or to the other equipment or machine that rendered by any person or entity other than the Seller; 2. Insufficient maintenance or improper operation by the Buyer or its customers such that the Product is not maintained in accordance with the maintenance manual provided or designated by the Seller; 3. Improper use or operation of the Product by the Buyer or its customers that is not informed to the Seller, including, without limitation, the Buyer's or its customers' operation of the Product not in conformity with the specifications; 4. Any problem or damage on any equipment or machine to which the Product is installed, connected or combined or any specifications particular to the Buyer or its customers; 5. Any changes, modifications, improvements or alterations to the Product or those functions that are rendered on the Product by any person or entity other than the Seller; 6. Any parts in the Product that are supplied or designated by the Buyer or its customers; 7. Earthquake, fire, flood, salt air, gas, lightning, acts of God or any other reasons beyond the control of the Seller; 8. Normal wear and tear, or deterioration of the Product's parts, such as the cooling fan bearings; 9. Any other troubles, problems or damage to the Product that are not attributable to the Seller.
Others	The Seller will not be responsible for the installation and removal of the inverter. Any inverter transportation cost shall be born by both Seller and Buyer.

2. Warranty Policy on Repaired and Returned Products

Warranty period	The warranty shall be 6 months from date of repair and shipment.
Warranty condition	Warranty on repaired Product will apply only on the replacement parts used in the repair done or authorized by the Seller. All other aspects conform to the Warranty Conditions described in item 1.
Warranty exclusion	Please refer to Warranty Exclusions described in item 1.
Others	Please refer to Others described in item 1.

Worldwide Locations

U.S.A Sumitomo Machinery Corporation of America (SMA) 1453 Cornwall Blvd. Chesapeake, VA 23323, U.S.A. TEL (1)757-485-3355 FAX (1)757-485-7490	Austria Sumitomo (SHI) Cyclo Drive Germany GmbH (SCG) SCG Branch Austria Office Gruentalerstraße 30A, 4020 Linz, Austria TEL (43)732-330958 FAX (43)732-331978	Korea Sumitomo (SHI) Cyclo Drive Korea, Ltd. (SCK) Room #913, Royal Bldg, Saemun-ro 5 gil 19, Jongro-gu, Seoul, Korea 03173 TEL (82)2-730-0151 FAX (82)2-730-0156
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Specifications, dimensions, and other items are subject to change without prior notice.



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No.D2201E-2.0

EA13 Printed 2021.10