

OPERATION MANUAL

PANASONIC INVERTER

DV552 SERIES

Industrial Motor Division
Matsushita Electric industrial Co., Ltd.

June ' 91

1. Before using our Inverter

1-1 When you open packing, please confirm the followings;

- (1) Right model number ?
- (2) Any damage found ?

Name plate identification

◀Ex: 750 Watt type▶

Rated Input Voltage/
Frequency

D	V	5	5	2	S	7	5	0	B
INPUT		AC200		~		230V		50/60Hz	
OUTPUT		CURRENT						5 A	
SER.		NO.							
Matsushita Electric Industrial Co., Ltd.									
Made in Japan					A 6 0 1 0 2				

Model Number

Rated Output CurrentFrequency

Serial Number

Model identification

◀Ex▶

D V 5 5 2 S 7 5 0 B

*

A : w/o Brake Discharge resistor

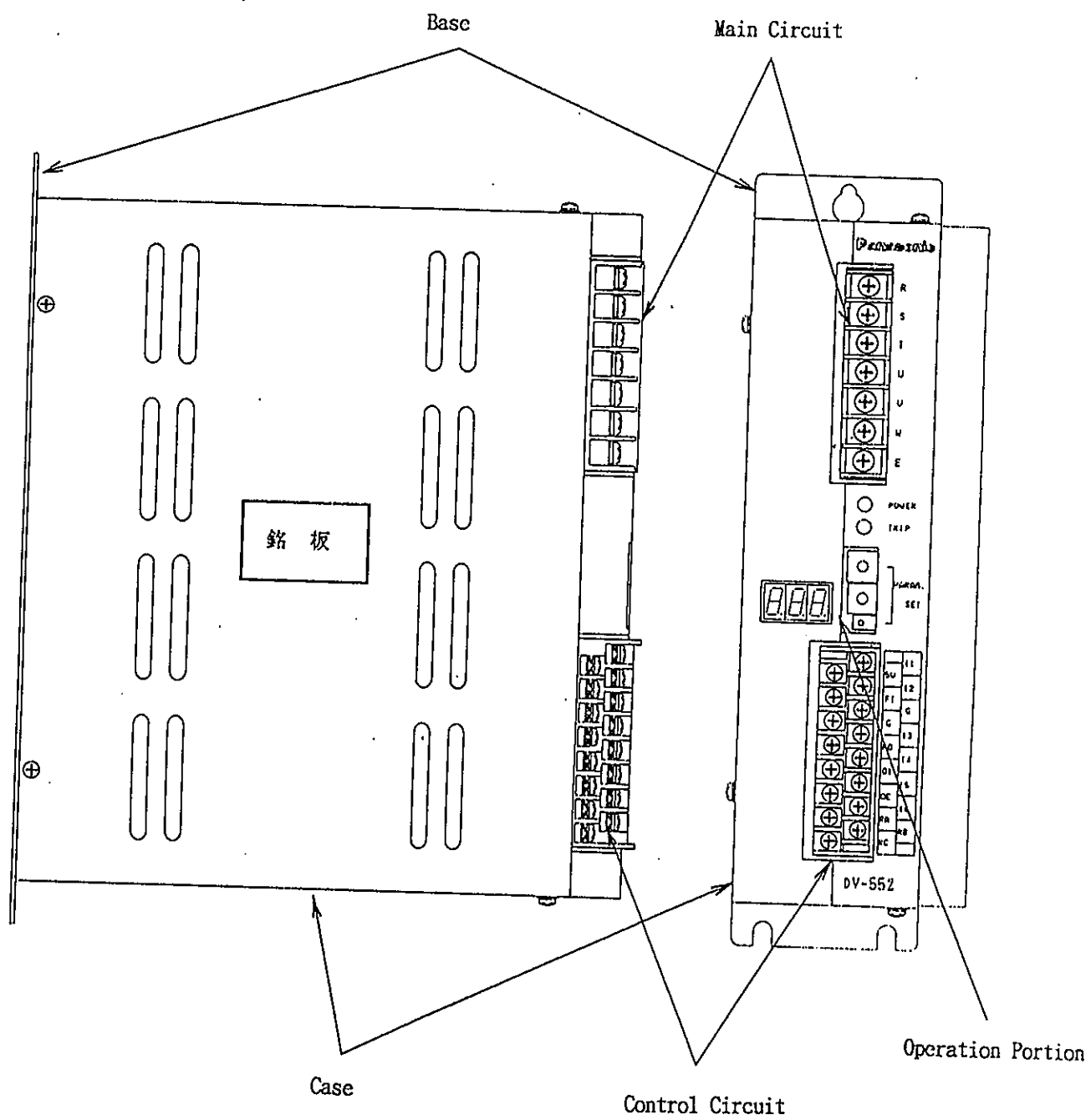
B : w/ Brake Discharge resistor

Applicable Motor output(W)

Series No.

2. Construction

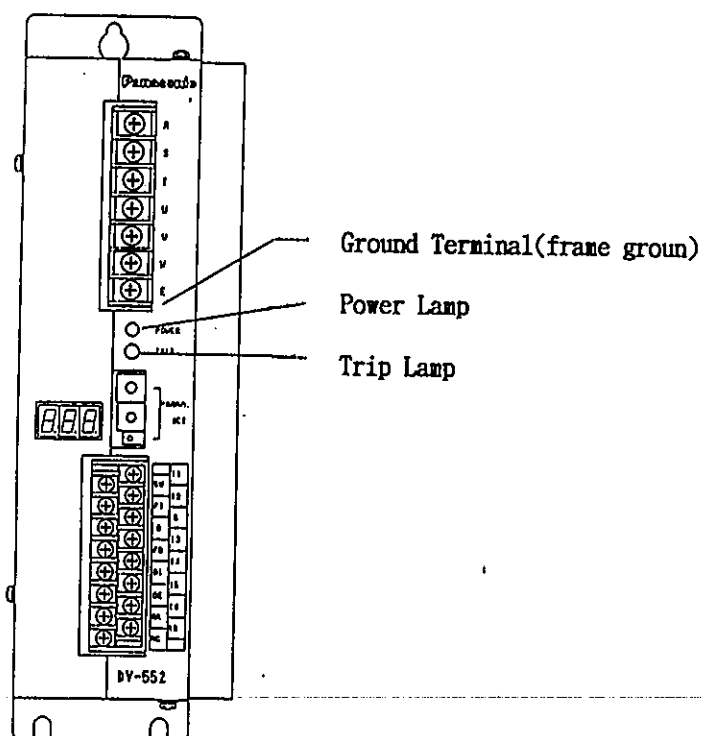
2-1 Cosmetics and name of each part



3. Caution

3-1 Safety Caution

- (1) Please do not touch PCB portion since High Voltage runs.
- (2) Please ground Terminal (E) of Inverter and Motor.
(Recommended grounding is 100 Ω or less , ϕ 1.6 MM or larger)
- (3) Circuit portion is still be kept charged for a while even after Power is turned off. Whenever you test or check the circuit, please turn off Power and make sure that [POWER] Lamp is off.
- (4) Please note that you can not turn off Power even if you stop Inverter through operation by Switch connected to Terminal Board.
- (5) Please turn off Power when you do not use Inverter for a long time.
- (6) When you operate Inverter at Output Frequency of more than 60 Hz, please take enough care about safety of Motor load.
- (7) Please install Inverter onto incombustible material such as metal, since temperature of Discharge Resistor attached to rear chassis will get high.
- (8) Please connect per section 5-2, [Standard Wiring Diagram] and use Non-Fuse Breaker and Thermal Relay which matches to Motor Rating
- (9) Please prevent any dust or iron particle from coming into Inverter.
- (10) If you select [Retry], please note that Inverter will resume operation after preset time even if Inverter trips.



3-2 In order to use Inverter properly

Misuse of Inverter leads you wrong operation or sometimes results in damage of Inverter. Please read the followings for proper use of Inverter.

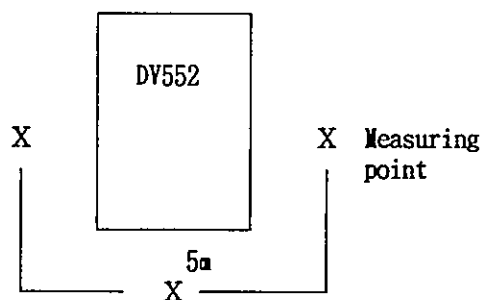
- (1) Please do not input higher Voltage than rating to Line Terminals(R, S, T). Please do not connect Line to other than R, S, and T Terminals.(refer Section 10-1 [Standard Specificaitotns])
- (2) Please avoid any such wiring, operation sequence as Input Voltage is applied to Inverter Output. Such wiring or sequence may result in damage to Inverter.
- (3) Higher ambient temperature may affect the life of Inverter. Please try to use at lower temperature as much as possible.
- (4) Please do not install Electromagnetic Contactor between Motor and Inverter in order to starat/stop Motor. Please start/stop Motor with RUN/STOP Switch on Operation Panel or with Input Terminals of Inverter (I1, I2).
- (5) If you operate Inverter under large capacity Power(10 times of Inverter capacity) directly, please install AC Reactor at input side of Inverter.
- (6) Please do not connect Phase-Leading Capacitor to Output side of Inverter.
- (7) When you perform "Megger test", please follow procedure as described in Section 8-3, [Megger Test].
- (8) Please avoid Overload operation which exceeds the capacity of Inverter.
- (9) When you use Lead-Braker, please use one which is Anti-High frequency.

Note

■ Ambient temperature may affect the life of Inverter. Please make sure that ambient temperature will not exceed allowable temperature.

■ Make sure that temperature at X marked place will not exceed allowable temperature.

(Allowable temperature : - 10 ℃ ~ + 50 ℃)



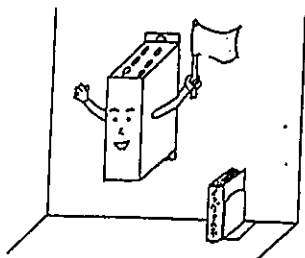
4. Installation

4-1 Caution on Handling

- Please handle Inverter carefully.
- Please do not apply force to Inverter Cover.

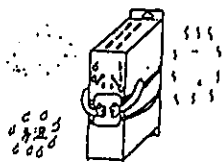
4-2 Installation

- DV552 Series are "Hang-On" type.
Please install vertically and allow enough open space(10 cm/vertical, 1 cm/horizontal) for better ventilation



- Note)
- ◇ Please use mounting plate of Inverter base with bolt or screw
 - ◇ Use M4 size bolt or screw
 - ◇ Please refer mounting dimension to our drawing
 - ◇ Please mount on incombustible material(metal) for better heat dissipation

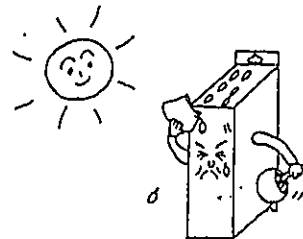
- Please avoid high temperature, humidity, or dusty place



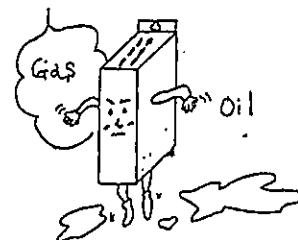
- Please make sure ambient temperature is within -10°C and $+50^{\circ}\text{C}$.



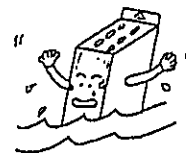
- Please avoid Direct Sun light



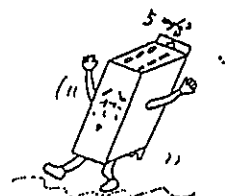
- Please don't let Inverter subject to erosive gas or oil



- This Inverter is not Water Proof
Please avoid using outside of building



- Please install at quite place(no vibration)

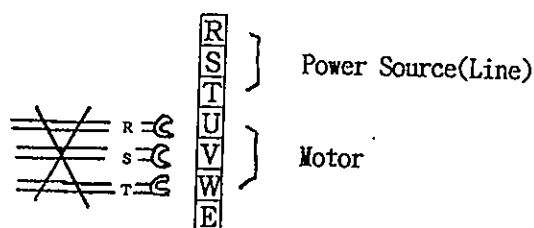


5. Wiring

5-1 Caution on wiring

Main Circuit

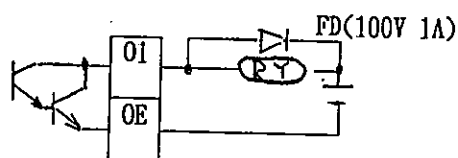
- (1) Please do not make reverse connectin between Line Terminals(R, S, T) and Motor Output Terminals(U, V, W).



- (2) Please do not ground Motor Output Terminals(U, V, W)
 (3) Please do not short-circuit each of Motor Output Terminal.
 (4) Please use NFB(Non Fuse Breaker) and TH-RY(Thermal Relay) per standard Wiring Diagram.
 Please select rating of NFB and TH-RY which conforms to Motor rating.
 (5) Please use Ground Terminal (E) for Inverter with 100 Ω or less
 (6) Please take off existing Phase-Leading Capacitor.
 (7) Please use pre-insulated, solderless, crimp-on terminal when you connect to Main Circuit Terminals(R, S, T, U, V, W).

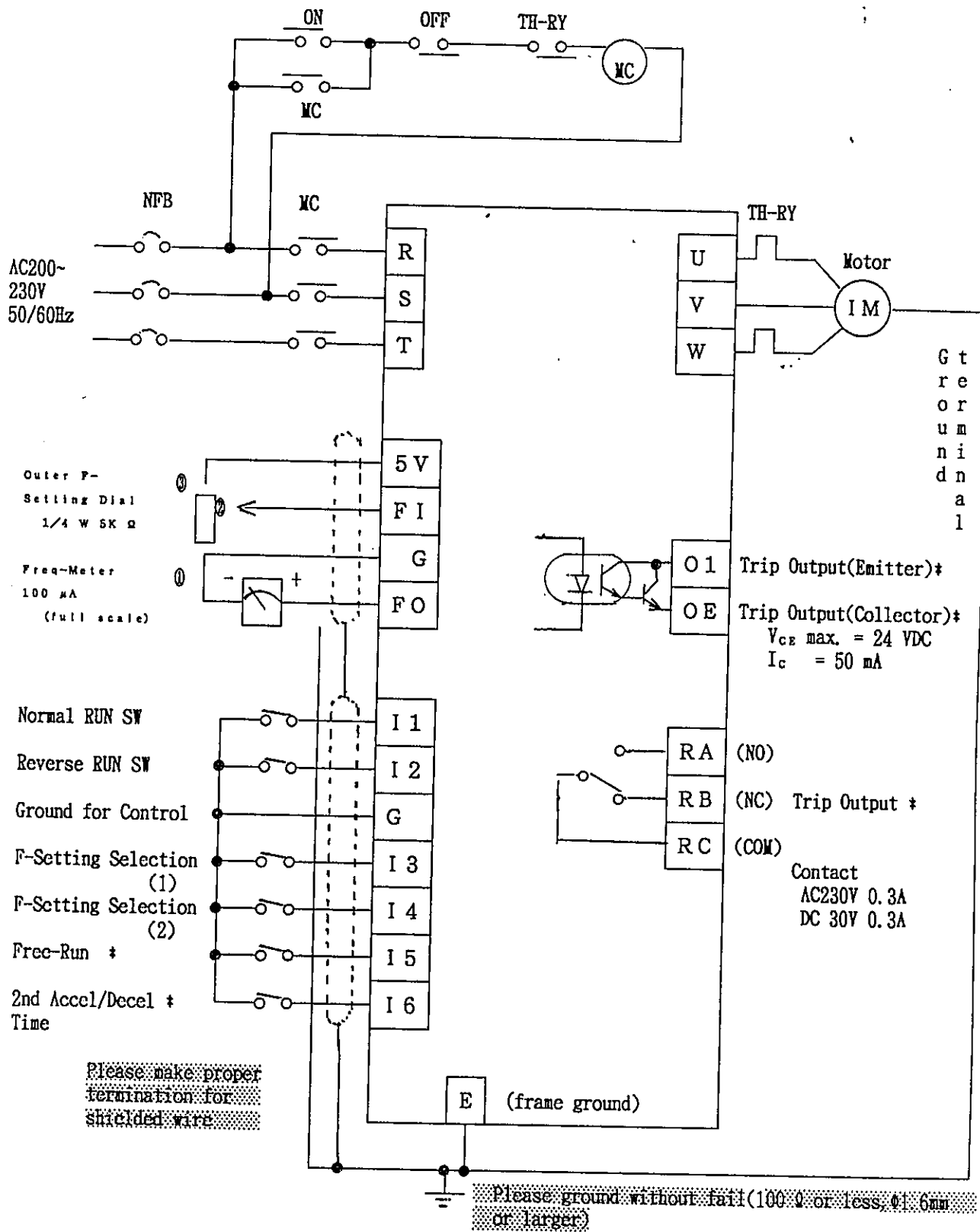
Control Circuit

- (1) Please do not apply more than DC 24 V, 50 mA to Output Terminals(O1, OE) or do not apply reversed polarity voltage.
 (2) Please do not apply voltage to Input Terminals (I1 ~ I6)
 (3) Please do not short-circuit Frequency Setting Power Terminal(5 V) and Control Ground Terminal (G).
 (4) Please install FD (Flywheel Diode), when you directly drive relay from Output Terminals (O1, OE).



- (5) Please use twisted wire or shielded wire when you connect to Control Circuit.
 (6) Please ground the shielded wire.
 (7) Please separate the connecting wire to Control Circuit from Power Line.

5-2 Standard Wiring Diagram



* Factory Setting function

6. Operation

6-1 Prior to Operation

After you install and finish wiring, please check the following points before operation.

- (1) Right Wiring ? (Especially Line Input Terminals, R, S, and T and Output Terminals, U, V, and W)
- (2) Right Input ?
- (3) Any Short-Circuit portion ?
- (4) Any loose screw or termination ?
- (5) Any Short Circuit or Grounding at load side ?

6-2 How to operate

You can operate following functions with Freq-Setting Dial or Switch connected to Terminal Board;

- (1) Normal Run/ Reverse Run
- (2) In addition to above,
 - ① Normal/ Reverse Jogging
 - ② Freq-Selection up to 16 speed
 - ③ Free-Run Command, Outer Thermal Command, Selection of Accel/Decel Time up to 4 speed

6-3 Trial Operation

(1) For safety purpose, please proceed as follows;

- ① Make Motor only operative.
- ② Turn all input to Terminal Board to [OFF] (open).
- ③ Turn Outer Frequency Setting Dial to the minimum.

(2) Then turn on Power (turn on NFB[Non Fuse Breaker] and MC[Magnetic Contactor] at input side of Inverter and check the followings;

Operation	Switch	LED Display on Operation Panel
		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0
Command Normal Run	Turn RUN SW connected to Terminal Board to [ON]	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0
Turn Outer Freq-Setting Dial to the maximum gradually	Keep SW as it is	<input type="checkbox"/> 6 <input type="checkbox"/> 0 (varies gradually)
Command Stop	Turn RUN SW connected to Terminal Board to [OFF]	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 0 (will stop with DC Brake)

{ Check Point at Trial Operation }

- ① Does Motor run smoothly ? Any abnormal noise or vibration ?
 - ② Is Acceleration/Deceleration smooth ?
 - ③ Is rotational direction of Motor correct ?
- ★ If Inverter trips or shows any Malfunction, please refer Section 9 of [Trouble Shooting] When Inverter trips, cause of trip will be indicated on Operation Panel Display, and Motor becomes 'Free-Run'. Please refer Section 7-3 of [Monitor] for display.

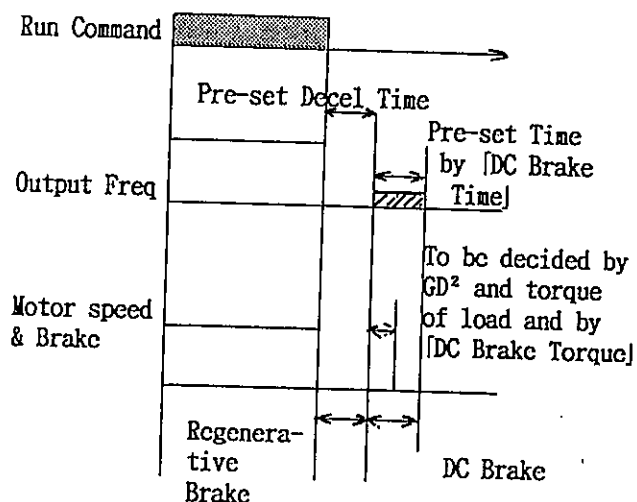
6-4 Operating Function

DV552 Series have following operation functions. You can command through Terminal Board.

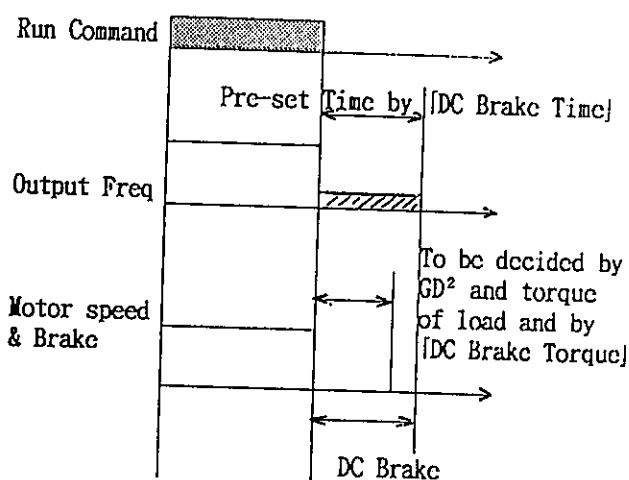
Function	Contents
Normal Run	■ Normal operating function with Accel/Decel. Time. You can set Accel/Decel. Time from 0 sec. to 1400 sec. separately. * ¹
Jogging Operation	■ Operating function with "0" sec. Accel/Decel. Time. (used for Positioning) Please select [Operation Mode]* ² to 2-Speed Operation Mode for this function. Inverter outputs [Jogging Frequency] by short-circuiting terminals [I3] - [G] (for Normal Run Jogging), [I4] - [G] (for Reverse Run Jogging) You can shift from Normal to Jogging or Jogging to Normal Run operation. Jogging Frequency can be set with 0 ~ 30 Hz range, but if this is too high, Inverter may trip due to overcurrent. * ³
Free-Run Stop	■ Inverter shuts off Output Voltage to Motor to make Free-Run (used with mechanical brake). Please note that Output Terminals to Motor (U, V, W) are not insulated during Free-Run Stop. Please be careful of electrical shock.
DC Dynamic Brake * ⁴	■ Braking function by applying DC to Motor during Inverter shifts from Run Mode to Stop Mode. If you give Normal/Reverse Run Command or Jogging Command during this DC Dynamic Brake is "Working", Inverter will stop braking and start commanded Operation Mode.
Positioning DC Brake	■ If you give Stop Command during Normal Run, Inverter makes Soft Stop and Brake starts working when output Frequency becomes 3 Hz (changeable by Parameter). ■ If you make Set Frequency to "0", Brake starts working at output Frequency of 1 Hz or lower. ■ You can set Torque and Time by Parameter
Full-range DC Brake (Sudden Stop Brake)	■ Brake starts working immediately after you give Stop Command during Normal Run (without making Soft Stop). ■ You can set Torque and Time by Parameter. ■ Braking Time from Normal Run to stop is 8 times of that of [Positioning DC Brake Mode].

(EX. DC Brake Pattern)

Positioning DC Brake



Sudden Stop DC Brake



*¹ Time to change by 60 Hz.

Please refer Section 7 of [Operation] how to set Accel/Decel. Time. (time to change by 60 Hz)

*² Please refer Section 6-5 of [Operation Mode]

*³ Please refer Section 7 of [Operation] how to set Jogging Frequency.

*⁴ Please refer Section 7 of [Operation] how to set Brake Mode Selection.

6-5 Operation Mode

DV552 series have 4 operation Modes. Please refer section 7-2(3) [Parameter Setting examples] for how to select

Operatio Mode	Terminal Board Function						Parameter value of [Oprtn Mode Slctn]
	I1	I2	I3	I4	I5*1	I6*1	
2-speed Mode	Normal Run	Reverse Run	Normal Jogging Run	Reverse Jogging Run	Free-Run/Outer Trip/2nd Accel/Decel Time	Free-Run/Outer Trip/2nd Accel/Decel Time	[0]
4-speed Mode	Normal Run	Reverse Run			Free-Run/Outer Trip/2nd Accel/Decel Time	Free-Run/Outer Trip/2nd Accel/Decel Time	[1] (Factory-Setting)
8-speed Mode	Normal Run	Reverse Run				Free-Run/Outer Trip/2nd Accel/Decel Time	[2]
16-speed Mode	Normal Run	Reverse Run					[3]

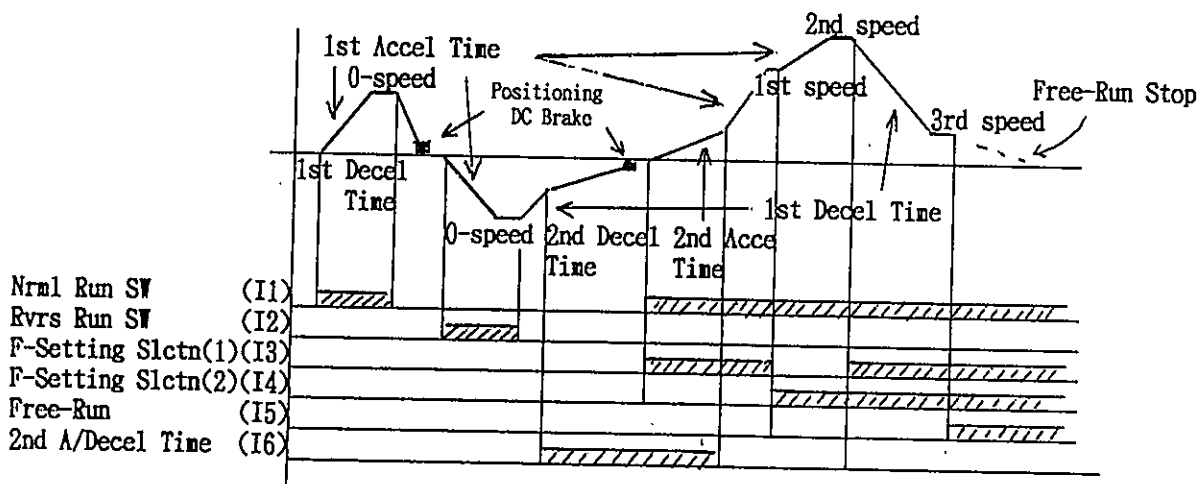
If all the Freq-Setting Selection is ipen, 0-speed will be selected and you can set with Outer Freq-Setting Dial.

(Freq-Setting at 4-speed Operation Mode(Factory-Setting))

between [I3] and [G]	between [I4] and [G]	Freq-Setting
open	open	0-speed Freq
short	open	1st speed Freq
open	short	2nd speed Freq
short	short	3rd speed Freq

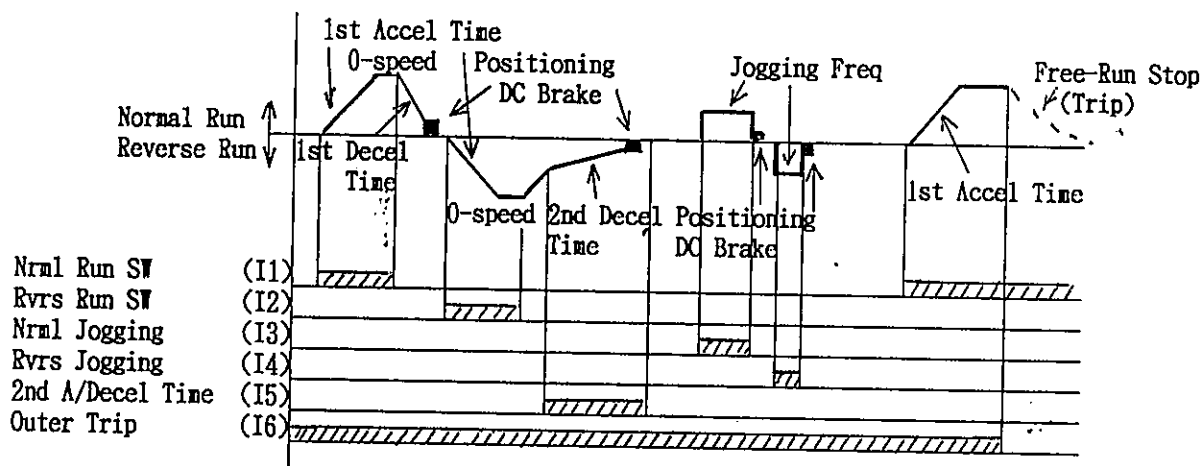
(Ex. operation pattern at 4-speed Mode(factory Setting))

when you select [0] of [I5 Function Selection]:Free-Run Command, and [2] of [I6 Function Selection]:2nd Accel/Decel Time;



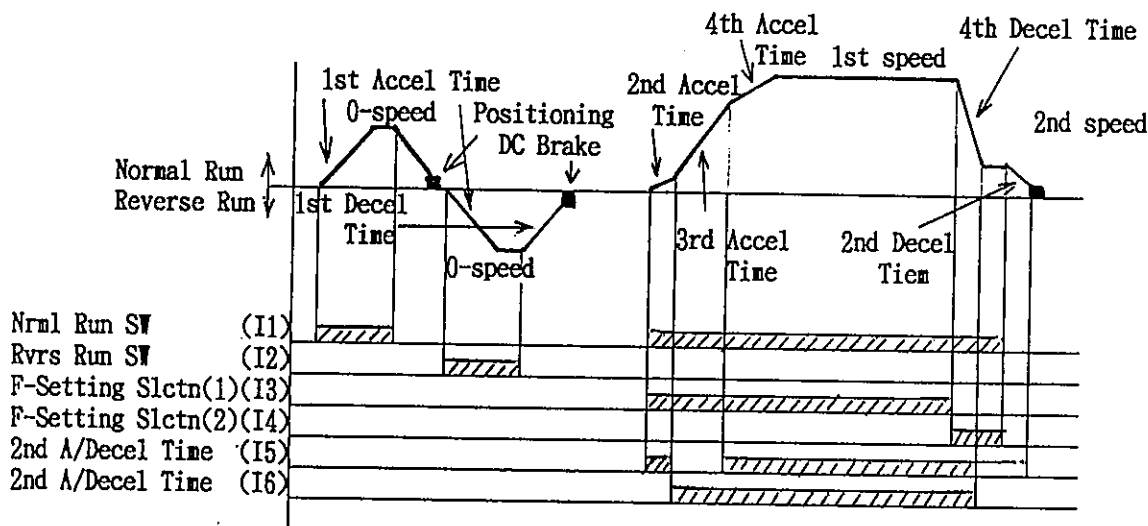
(Ex. operation pattern at 2-speed Mode)

when you select [2] of [I5 Function Selection]:2nd Accel/Decel Time, and [1] of [I6 Function Selection] :Outer Trip



(Ex. operation pattern at 4-speed Mode(factory Setting))

when you select [2] of both [I5 Function Selection] and [I6 Function Selection] :
2nd Accel/Decel Time



*1 [I5] and [I6] function will be decided by Parameter Level-3, No.6 and 7, I5/I6 Function Selection

*2 Please refer Section 10-4 for Freq-Setting at 8-speed or 16-speed.

7. Panel/Board/Parameter Operation

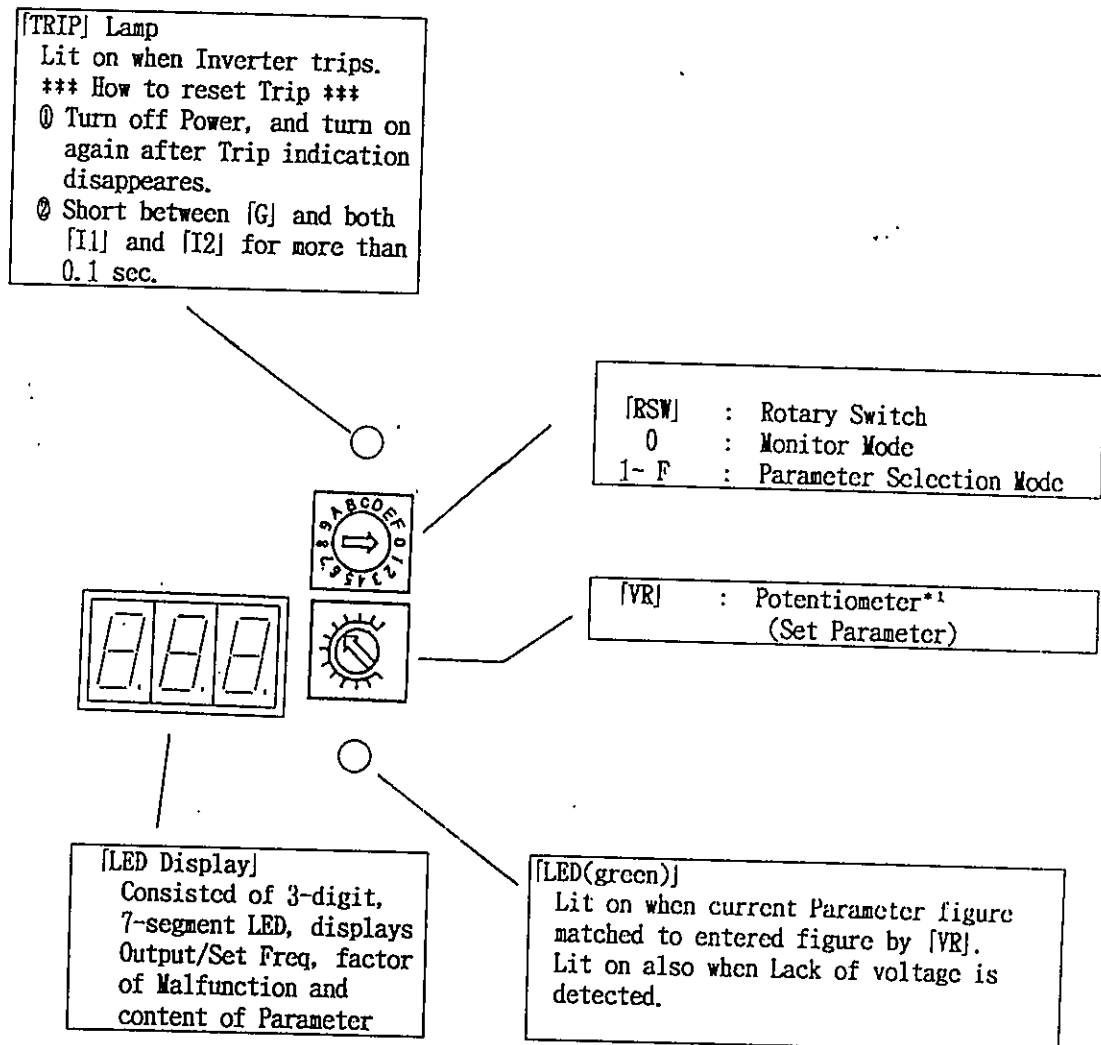
7-1 Operation Portion

(1) Outline of Function

Operation Portion is composed of LED Display of 3-digit, 7-segment, Rotary Switch, Potentiometer and LED and has following functions;

Setting	Confirmation and Change of Parameter
Monitoring	Condition of Inverter(Output/Set Freq. Malfunction)

(2) Composition



*1 When you select [1] of [0-speed Freq Selection] (Level-4, A), 0-speed Freq is set.

7-2 Parameter Setting

(1) Outline of Parameter

DV552 Series have Parameters with which you can adjust characteristics of Inverter, and classified into 6 levels;

Parameter Level		Outline
0	Basic	Most frequently used Parameter
1	Application	Multi-speed Freq Setting, Input Terminal Function Select
2		Output Terminal function Selection, Multi-speed Accel/
3		Decel Time Setting, F-Meter Adjustment, Parameter
4		Initialization, Retry Setting etc
5	Supplemental	Monitoring of Trip factors etc. *1

(2) How to set Parameter

You can set and confirm Parameter with Operation Portion

How to confirm	How to set
<ul style="list-style-type: none"> First adjust Parameter Level *2 Then adjust [RSW] to Parameter No. ([1] to [E]) Content (figure) of Parameter will be displayed on LED Display 	<ul style="list-style-type: none"> First turn [VR] gradually to either direction until [LED(green)] lits. Then you can change Parameter by rotating [VR] After adjusting Parameter to desired figure while confirming with [LED Display] turn [RSW] to either direction. *3

(3) Parameter Setting Ex.

① Change [Parameter Level] from 0 to 1...change Basic Function [0] to Application Function [1]

	Parameter Level	Parameter figure
Parameter Level	— *4	F

*1) By adjusting [RSW] to [F], you can change [Parameter Level]

Operation of [RSW]	Operation of [VR]	LED (green)	LED Display
Adjust [RSW] to [F]			[0]
	Turn [VR] to the full left	Lit on	[0]
	Turn [VR] to the right gradually	Lit off once	[0]
	Turn [VR2] to the further right gradually	Lit on	[1]

- *1 Please refer Section 7-3 of [Monitoring]
 *2 When you turn on Power, Parameter Level is set to [0]. Please refer next section of [Parameter Setting Ex.] how to change Level of Parameter.
 *3 Newly set content (figure) will be memorized by rotating [RSW].
 *4 You can change [Parameter Level] by adjusting [RSW] to [F].

② Change [Operation Mode] from [4-speed Mode] to [2-speed Mode]

	Parameter Level	Parameter figure
Parameter Level	0	1

Operation of [RSW]	Operation of [VR]	LED(GREEN)	LED Display
Adjust [RSW] to [1]		—	[1]
	Turn [VR] to the full Extent till LED(green) lits on	Lit on	[1]
	Turn [VR] to the left gradually	Lit off once	[1]
	Turn [VR] to the further left	Lit on	[0]
Turn [RSW] to either direction	(memorized at this moment)	Lit off	[C A U] (Trip)

③ Change [1st speed Freq] from [14 Hz] to [20 Hz]

	Parameter Level	Parameter figure
Parameter Level	1	1

Operation of [RSW]	Operation of [VR2]	LED2	LED/Panel Display
Adjust [RSW] to [F]		—	[0]
	Turn [VR] to the full left	Lit on	[0]
	Turn [VR] to the right gradually	Lit off once	[0]
	Turn [VR] to the further right	Lit off	[1]
Adjust [RSW] to [1]		Lit off	[1 4]
	Turn [VR] to the left gradually	Lit on	[1 4]
	Turn [VR] to the right gradually ([1st speed Freq] Setting will be increased gradually)	Lit on	[2 0]
Turn [RSW] either direction	(memorized at this moment)	—	

Note

- You can not change Parameter during Trip or Auto-Restart Prevention.
- Most of Parameter reflects its content on the change.
- You can store the changed content of Parameter by rotating [RSW] after you change.
If Power is turned off during the change, latest figure will be stored.
- Inverter trips for safety when you change/store [Operation Mode Selection], [5V Input Freq], [0V Input Freq], [15 Function Select], [16 Function Select], [Multi-speed Input Selection] and [0-speed Freq Selection]. Please reset Trip.
- When Inverter trips before you rotate [RSW] after you change Parameter, changed Parameter will not be stored. If necessary, release Trip and re-adjust.
- Parameter level becomes [0] automatically when Power is turned on, or Trip is reset.

7-3 Monitoring

(1) Monitor Mode

When you adjust [RSW] to [0], you can monitor Frequency (either Output or Set) on [LED Display]. Please refer Parameter, [Monitor Mode Selection] (Level-3.1) for monitoring content.

(2) Warning/Malfunction Monitoring

When Inverter detects Warning or Trip, this will be displayed on [LED Display] and [LED(green)] and [TRIP] Lamp. This display is given first priority.

Warn- ing	Mal- func- tion	[LED Display]	[LED] (green)	Trip display [TRIP] Lamp.		Content
				on time	off time	
○	—	[L]	flash	—	—	Lack of Input Voltage
○	—	[r P]	—	—	—	Auto-Restart Prevention *1
—	○	[0 C]	—	continuous	—	Overcurrent Trip
—	○	[0 U]	—	1 sec.	1 sec.	Overvoltage Trip
—	○	[0 L]	—	0.25 sec	0.25 sec	Outer Trip *2
—	○	[E r r]	—	0.1 sec	0.4 sec	#-Comp Malfunction Trip
○	—	[C A U]	—	0.5 sec	0.5 sec	When you change/ store [Operation Mode Selection] [5V Input Freq] [0V Input Freq] [15 Function Selection] [16 Function Selection] [Multi-speed Input Selection] [0-speed Freq Selection]
○	—	[- - -]	flash/2sec	—	—	Completion of Initialization
○	—	[C L r]	interval	—	—	Completion of Trip Factor Clear

(3) Cause of Past Trip Monitoring

When you adjust [Parameter Level] to [5], you can confirm the factor of past 5 Trips at LED Display. Please refer previous Section, 7-3(2). (Please note that this will not be indicated at [LED(green)] or [TRIP] Lamp).

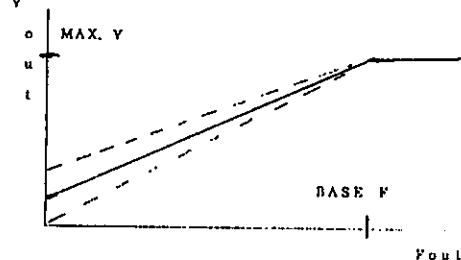
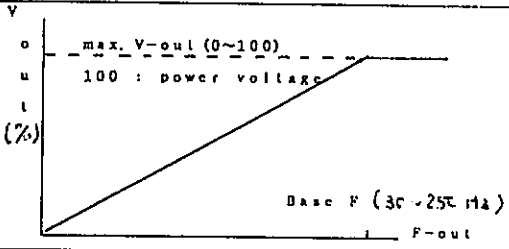
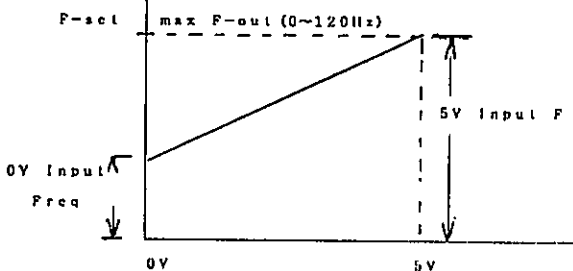
Operation of [RSW]	Operation of [VR2]	Panel Display
① Adjust [RSW] to [F]	② Turn [VR] either direction until [LED(green)] is lit ③ Turn [VR2] to the full right	displays current Parameter Level [5]
Ajust [RSW] to [2] (latest trip factor)		Latest trip factor
Ajust [RSW] to [3] (2nd. latest trip factor)		2nd. latest trip factor
Ajust [RSW] to [4] (3rd. latest trip factor)		3rd. latest trip factor
Adjust [RSW] to [5] (4th. latest trip factor)		4th. latest trip factor
Adjust [RSW] to [6] (5th. latest trip factor)		5th. latest trip factor

*1 This is valid only when you select [0] of [Retry/Auto-Restart Prevention].

*2 When you set [Outer Trip] at [15] or [16], Inverter trips when [Corresponding terminal] - [G] is open.

*3 When you change, turn off Power then turn on again to make the change valid.

7-4 Parameter Function (1) Level 0

Lc ve 1	N o	Parameter	Description
	0	Monitoring Mode	You can monitor Frequency . *1
	1	Mode Selection*2	You can select Operation Mode [0] : 2-speed Mode [1] : 4-speed Mode [2] : 8-speed Mode [3] : 16-speed Mode
	2	1st. Accel. Time	You can decide varying ratio of Freq. at Accel/Deceleration : You can set with time necessary to change by 60 Hz
	3	1st. Accel. Mgnfctn	Time multiplied by Magnification becomes Set Time Time(sec.) 0, 1, 2, 3, 4, 5, 6, 7 Magnification 0.2, 0.5, 1, 2, 10, 20, 100, 200
	4	1st. Decel. Time	
	5	1st. Decel. Mgnfctn	In case of "0"sec. setting, it will take 0.05 sec for Output Freq. to reach 60 Hz from Stall and 0.1 sec. to stop from 60 Hz.
	6	Carrier Frequency	You can select Carrier Frequency. You can avoid mechanical resonance to make quite operation. Larger the Parameter, higher the Carrier Frequency.
	7	DC Brake Selection	You can select type of DC Brake *3 [P] : Positioning, [-P] : Sudden Stop(Full range)
	8	DC Brake Time	You can adjust Time and Torque of DC Brake while you shift Inverter from Run to Stop. Please refer Section 6-4 [Operating Function] : If you select [0] for both or either one of Time and Torque, it makes "Free-Run"
	9	DC Brake Torque	: If you set too large Torque, Inverter may trip due to overcurrent.
0	A	Torque Boost	You can adjust Inverter Output Voltage at lower frequency range. : If you set this too large, it may cause Trip due to Over-current 
	B	Base Frequency	You can set V/F as per right (refer Level-3, No. C) 
	C	5 V Input Freq *2	You can set the range of F-Setting Larger F at either [5V Input Freq] or [0V Input Freq] becomes Max. Freq 
	D	0 V Input Freq *2	
	E	Jogging Frequency	You can set Jogging Frequency
	F	Parameter Level	0, 1, 2, 3, 4, 5

- *1 You can select Monitoring content at Level 3, No.1 [Monitor Mode Selection].
 *2 If you change this Parameter, Inverter trips for safety. To make the change valid, please push [SW] to reset Inverter and Trip will be released.
 *3 Refer Section 6-4, [Operating Function].

(2) Level 1

Level 1	No	Parameter	Description																				
	0	Monitoring Mode	You can monitor Freq *1																				
	1	1st. speed Freq	<div>You can set Freq at Multi-speed operation</div> <table><tr><th>[Operation Mode]</th><th>I3</th><th>I4</th><th>I5</th><th>I6</th></tr><tr><td>4-speed Mode [1]</td><td colspan="2">Freq-Setting Selection</td><td>Free-Run</td><td>2nd Accel/ Decel Time *2</td></tr><tr><td>8-speed Mode [2]</td><td colspan="3"></td><td>2nd Accel/ Decel Time *2</td></tr><tr><td>16-speed Mode [2]</td><td colspan="4"></td></tr></table> <div>Please refer Section 10-4, [Terminal Function] for selecting Freq-Setting.</div> <div>: You can not set larger Freq than Max Freq.</div>	[Operation Mode]	I3	I4	I5	I6	4-speed Mode [1]	Freq-Setting Selection		Free-Run	2nd Accel/ Decel Time *2	8-speed Mode [2]				2nd Accel/ Decel Time *2	16-speed Mode [2]				
[Operation Mode]	I3	I4		I5	I6																		
4-speed Mode [1]	Freq-Setting Selection			Free-Run	2nd Accel/ Decel Time *2																		
8-speed Mode [2]				2nd Accel/ Decel Time *2																			
16-speed Mode [2]																							
	2	2nd. speed Freq																					
	3	3rd. speed Freq																					
	4	4th. speed Freq																					
	5	5th. speed Freq																					
	6	6th. speed Freq																					
	7	7th. speed Freq																					
	8	8th. speed Freq																					
	9	9th. speed Freq																					
	A	10th. speed Freq																					
	B	11th. speed Freq																					
	C	12th. speed Freq																					
	D	13th. speed Freq																					
	E	14th. speed Freq																					
	F	Parameter Level	0, 1, 2, 3, 4, 5																				

- *1 You can select Monitoring content at Level 3, No.1 [Monitor Mode Selection].
 *4 Function at Factory Setting

(3) Level 2

Level	No.	Parameter	Description																		
2	0	Monitoring Mode	You can monitor Frequency.. *1																		
	1	15th. speed Freq	You can set 15th speed Freq at 16-speed Operation Mode.																		
	2	2nd. Accel. Timectn	You can set varying ratio for Output Freq. at 2nd Accel/Deceleration. : You can set with time necessary to change by 60 Hz. : Time multiplied by Magnification becomes Set Time.																		
	3	2nd. Accel. Mgnfctn																			
	4	2nd. Decel. Time	<table><tr><td>Time(sec.)</td><td>0.</td><td>1.</td><td>2.</td><td>3.</td><td>4.</td><td>5.</td><td>6.</td><td>7</td></tr><tr><td>Magnification</td><td>0.2.</td><td>0.5.</td><td>1.</td><td>2.</td><td>10.</td><td>20.</td><td>100.</td><td>200</td></tr></table>	Time(sec.)	0.	1.	2.	3.	4.	5.	6.	7	Magnification	0.2.	0.5.	1.	2.	10.	20.	100.	200
	Time(sec.)	0.	1.	2.	3.	4.	5.	6.	7												
	Magnification	0.2.	0.5.	1.	2.	10.	20.	100.	200												
	5	2nd. Decel. Mgnfctn	In case of "0"sec. setting, it will take 0.05 sec. for Output Freq. to reach 60 Hz from Stall and 0.1 sec. to stop from 60 Hz.																		
	6	Jump Freq ① -A	You can set Jump Freq at 2 points(make ① smaller than ②-F) Within range of A-B, Freq B will be set, if Freq between A and B is set, B will be output. :If you set A=B, this function becomes void. *2																		
	7	Jump Freq ① -B																			
8	Jump Freq ② -A																				
9	Jump Freq ② -B																				
A	Upper Limit Freq	You can limit Output Freq :If you set Upper≤Lower, this function becomes void. *3																			
B	Lower Limit Freq																				
C	D	Please do not use																			
E	Accord-Detect Width	When you set [Output Signal Selection] or [Relay Output Selection] to [0] : Reach Signal, you can adjust Timing of Reach Signal output while Accel/Deceleration. : Outputs Reach Signal if the difference between Output Freq and Set Freq becomes smaller than [Accord-Detect Width] : No Reach Signal Output will be made if you set [0]. : If you set [Brake Starting Freq] < [Accord-Detect Width], please note that Reach Signal will be output just before Stop or when Normal and Reverse is switched.																			
F	Parameter Level	0, 1, 2, 3, 4, 5																			

*1 You can select Monitoring connect at Level 3, No. 1, [Monitor Mode Selection].

*2 Factory Setting of Jump function is void.

*3 Factory Setting of Limit function is void

7-4 Parameter Function (4) Level 3

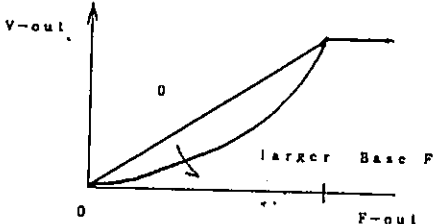
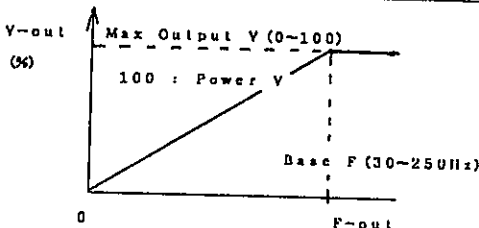
Level	No.	Parameter	Description																		
3	0	Monitoring Mode	You can monitor Frequency *1																		
	1	Mode Selection*2	You can select Operation Mode at [Monitor Mode] [O-F] : Output Freq. [S-F] : Set Freq																		
	2	3rd. Accel. Time	You can decide varying ratio of Freq. at 3rd. Accel/Deceleration.																		
	3	3rd. Accel. Mgnfctn	:You can set with time necessary to change by 60 Hz Time multiplied by Magnification becomes Set Time <table> <tr> <td>Time(sec.)</td><td>0.</td><td>1.</td><td>2.</td><td>3.</td><td>4.</td><td>5.</td><td>6.</td><td>7</td></tr> <tr> <td>Magnification</td><td>0.2.</td><td>0.5.</td><td>1.</td><td>2.</td><td>10.</td><td>20.</td><td>100.</td><td>200</td></tr> </table>	Time(sec.)	0.	1.	2.	3.	4.	5.	6.	7	Magnification	0.2.	0.5.	1.	2.	10.	20.	100.	200
	Time(sec.)	0.	1.	2.	3.	4.	5.	6.	7												
	Magnification	0.2.	0.5.	1.	2.	10.	20.	100.	200												
	4	3rd. Decel. Time	In case of "0"sec. setting, it will take 0.05 sec for Output Freq. to reach 60 Hz from Stall and 0.1 sec. to stop from 60 Hz.																		
	5	3rd. Decel. Mgnfctn																			
	6	I5 Function Selection *2	You can select Function of Terminal [0] : [Terminal]-[G] short → Free-Run Command [1] : [Terminal]-[G] short → Outer Trip Command [2] : [Terminal]-[G] short → 2nd. Accel/Decel Time Selection When you set [2] for both [I5 and I6 Function Selection]: 2nd Accel/Decel Time Selection, you can select 4-Accel/Decel Time <table> <tr> <td>[I5] - [G]</td><td>[I6] - [G]</td><td>Accel/Decel Setting</td></tr> <tr> <td>open</td><td>open</td><td>1st. Accel/Decel Time</td></tr> <tr> <td>short</td><td>open</td><td>2nd. "</td></tr> <tr> <td>open</td><td>short</td><td>3rd. "</td></tr> <tr> <td>short</td><td>short</td><td>4th. "</td></tr> </table>	[I5] - [G]	[I6] - [G]	Accel/Decel Setting	open	open	1st. Accel/Decel Time	short	open	2nd. "	open	short	3rd. "	short	short	4th. "			
	[I5] - [G]	[I6] - [G]	Accel/Decel Setting																		
open	open	1st. Accel/Decel Time																			
short	open	2nd. "																			
open	short	3rd. "																			
short	short	4th. "																			
7	I6 Function Selection *2																				
8	Multi-speed Input Selection *2	You can select F-Setting method at multi-speed operation. [0] : 1 bit Input/Each terminal corresponds to each Freq. *3 [I3] - [G] short : → 1st. speed Freq [I4] - [G] short : → 2nd. speed Freq [I5] - [G] short : → 3rd. speed Freq [I6] - [G] short : → 4th. speed Freq Priority of Terminal is given as; [I3 > I4 > I5 > I6 >] (ex: If you short [I3], [I4] and [G] at the same time, 1st. speed Freq will be selected) [1] : Binary Input[Factory Setting]/Each terminal corresponds to each Freq with Binary way <table> <tr> <td>[I3] - [G]</td><td>[I4] - [G]</td><td>Freq-Setting</td></tr> <tr> <td>open</td><td>open</td><td>0-speed Freq</td></tr> <tr> <td>short</td><td>open</td><td>1st. "</td></tr> <tr> <td>open</td><td>short</td><td>2nd. "</td></tr> <tr> <td>short</td><td>short</td><td>3rd. "</td></tr> </table>	[I3] - [G]	[I4] - [G]	Freq-Setting	open	open	0-speed Freq	short	open	1st. "	open	short	2nd. "	short	short	3rd. "				
[I3] - [G]	[I4] - [G]	Freq-Setting																			
open	open	0-speed Freq																			
short	open	1st. "																			
open	short	2nd. "																			
short	short	3rd. "																			
9	Output Signal Selection	You can select Output Signal between [O1] and [OE]. [0] : Trip Output Signal (Transistor ON at Trip) [1] : Reach Signal (Transistor ON at Reach) *4 [2] : Run/Stop Signal (Transistor ON at Run) [3] : Normal/Reverse Signal (Transistor ON at Normal Run) [4] : Free-Run Signal (Transistor ON at Free-Run) [5] : Do not use																			

*1 You can select Monitoring content at Level 3, No. 1 [Monitor Mode Selection].

*2 If you change this Parameter, Inverter trips for safety. To make the change valid, please push [SW] to reset Inverter and Trip will be released.

*3 You can set 3-speed operation at 4-speed Mode, 4-speed operation at 8-speed Mode and 5-speed operation at 16-speed Mode.

*4 Transistor will be OFF at Stop.

Level	No	Parameter	Description																	
3	A	Relay Output Selection	<p>You can select Relay output of [RA], [RB] and [RC].</p> <p>[0] : Trip Output Signal [1] : Reach Signal [2] : Run/Stop Signal [3] : Normal/Reverse Signal [4] : Free-Run Signal [5] : Do not use</p> <p>Please refer the table below for contact condition</p>																	
	B	V/F Pattern Selection	<p>You can adjust V/F pattern which conforms to the load.</p> <p>0 : Constant torque load 100 : Reduced torque load</p> <p>You can make fine adjustment between 0 and 100.</p> 																	
	C	Max Output Voltage Adjustment	<p>You can select V/F Pattern per the right Fig. by [Max Output Voltage Adjustment] or [Base Freq] (Level-0, B)</p> 																	
	D	Retry/**2 Auto-Restart Prevention	<p>Retry : Inverter restarts operation after [Retry Starting Time] even it trips by releasing Trip automatically.</p> <p>Restart Prevention : You can prevent Inverter from restart after Instantaneous Power Failure and Power Resumption.</p> <table><tr><th>Parameter</th><th>Retry Function</th><th>Restart Prevention Function</th></tr><tr><td>[0]</td><td>No Retry</td><td rowspan="5">Restarts automatically after Power Resumption</td></tr><tr><td>[1]</td><td></td></tr><tr><td>[2]</td><td>One Retry *3</td></tr><tr><td>[3]</td><td>Two Retry *3</td></tr><tr><td>[4]</td><td>Three Retry*3</td></tr><tr><td>[5]</td><td>Four Retry *3</td><td></td></tr></table> <p>When you change and store Parameter, turn off Power and turn on to make the change valid.</p>	Parameter	Retry Function	Restart Prevention Function	[0]	No Retry	Restarts automatically after Power Resumption	[1]		[2]	One Retry *3	[3]	Two Retry *3	[4]	Three Retry*3	[5]	Four Retry *3	
	Parameter	Retry Function	Restart Prevention Function																	
[0]	No Retry	Restarts automatically after Power Resumption																		
[1]																				
[2]	One Retry *3																			
[3]	Two Retry *3																			
[4]	Three Retry*3																			
[5]	Four Retry *3																			
E	Retry Start Time	You can set time between Trip and Retry.																		
F	Parameter Level	0, 1, 2, 3, 4, 5																		

[Relay Output Selection]	Contact condition	
[0] : Trip Output Signal	Trip	[RA] - [RC] : closed, [RB] - [RC] : open
[1] : Reach Signal	Reach	[RA] - [RC] : closed, [RB] - [RC] : open *4
[2] : Run/Stop Signal	Run	[RA] - [RC] : closed, [RB] - [RC] : open
[3] : Nrmal/Reverse Signal	Normal Run	[RA] - [RC] : closed, [RB] - [RC] : open
[4] : Free-Run Signal	Free-Run	[RA] - [RC] : closed, [RB] - [RC] : open

*1 If you want to resume operation, please enter Stop Command once.

*2 When you select Retry function, please note that Inverter repeats Retry after preset time.

*3 If no Trip occurs for more than 40 min. after retry, number of retry will be initialized.

*4 When Inverter stops, condition is; [RA] - [RC] : open, [RB] - [RC] : closed

7-4 Parameter Function
(5) Level 4

Level	No.	Parameter	Description
4	0	Monitoring Mode	You can monitor Frequency. *1
	1	Stall Decel Magnification	You can adjust Decel Time while Stall Prevention Function works : Set with magnification against normal Decel Time.
	2	4th. Accel. Time	You can decide varying ratio of Output F at 4th Decel : You can set with time necessary to change by 60 Hz
	3	4th. Accel. Mgnfctn	Time multiplied by Magnification becomes Set Time Time(sec.) 0, 1, 2, 3, 4, 5, 6, 7 Magnification 0.2, 0.5, 1, 2, 10, 20, 100, 200
	4	4th. Decel. Time	In case of "0" sec. setting, it will take 0.05 sec for Output Freq. to reach 60 Hz from Stall and 0.1 sec. to stop from 60 Hz.
	5	4th. Decel. Mgnfctn	
	6	Reduced Freq at Instantaneous Power Failure	You can adjust Output Freq on Power Resumption after Instantaneous Power Failure(IPF) : Resuming output Freq is [Last Freq before Power Failure] - [Reduced Freq at IPF]. *2 : If Power failure lasts long so that Control Circuit may be reset, Inverter resume from 1 Hz as normal Power ON.
	7	Brake Starting Freq	You can adjust Output Freq at which DC Positioning Brake is initiated. : When you make Soft Stop from Normal Run with Stop Command, Brake will start when Output Freq becomes lower than [Brake Starting Freq]. *3 : If you set [Brake Starting Freq] < [Accord Detect Width] while you select [1] of [Output Signal Selection] (Level-3,9) or [Relay Output Selection] (Level-3,A) : Reach Signal, Reach Signal will be output just before Stop or when Normal and Reverse is changed.
	8	Freq-Meter Adjust	You can calibrate Freq-Meter.
	9	Freq-Meter/Full Scale Selection	You can select Freq at Full Scale of Freq-Meter. Please adjust when you change Max Freq. *4
	A	0-speed Freq Selection	You can select Command for 0-speed Freq Setting among; [0] : Outer Freq-Setting Dial (between [F] and [G]) [1] : Potentiometer (VR) on operation board
	E	Parameter Initialization	You can initialize all Parameter to Factory Setting. *5 <u>How to initialize</u> ① Turn to [YES] and turn off Power without operating [RSW]. ② Turn on Power after display disappears, then Parameter is initialized and LED Display shows [- - -]. ③ Turn off Power again, then turn on Power to start operation.
	F	Parameter Level	0, 1, 2, 3, 4, 5

*1 You can select Monitoring content at Level 3, No.1 [Monitor Mode Selection].

*2 If you select [0] for [Retry/Automatic Restart Prevention] (Level-3,D), you can prevent automatic restart after Power Resumption.

*3 If you set Freq lower at normal running so that Inverter stops, DC Brake works when Output Freq becomes lower than 1 Hz.

*4 Higher Freq of [5V Input Freq] or [0V Input Freq] (Level-0, C, D) becomes Max Freq

*5 If you change this Parameter, Inverter trips for safety. To make the change valid, please turn off Power to release Trip.

*6 After Initialization, Parameter Level becomes to [0] automatically.

(6) Level 5

Level	No	Parameter	Description
5	0	Monitoring Mode	You can monitor Frequency . * ¹
	1	Trip Factor Clear Selection	You can clear the factor of Trip * ² <u>How to clear</u> ① Turn to [YES] and turn off Power without operating [RSW]. ② Turn on Power after display disappears, then factor is cleared and LED Display shows [C L r]. ③ Turn off Power again, then turn on Power to start operation.
	2~6	Memorization of Trip Factor	Inverter memorizes factors of past 5 Trips. * ³
	F	Parameter Level	0, 1, 2, 3, 4, 5

- *¹ You can select Monitoring content at Level 3, No.1 [Monitor Mode Selection].
 *² After Initialization, Parameter Level becomes to [0] automatically.
 *³ Please refer Section 7-3, [Monitoring].

8. Maintenance and Inspection

Inverter is Static Apparatus which is based on Semiconductors but is subject to environmental changes(temperature, humidity, dust or vibration). In order to avoid unnecessary affect to the life and performance of Inverter, please make Maintenance and Inspection daily or periodically.

8-1 Note on Maintenance and Inspection

- ① Please let the operator turn on / off Power by himself and prevent other people handle.
- ② Inner circuit will be kept charged at high voltage even after Power is turned off.
When you make Inspection, please turn off Power and make sure that [POWER] Lamp is off.

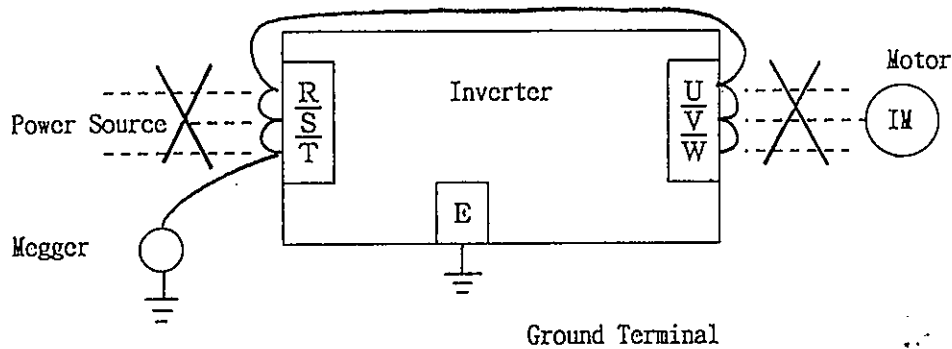
8-2 Inspection Item and Cycle

Please make following Inspections at normal operating condition (environmental temperature : ave. 30 ℃, load ratio : less than 80 %, operation rate : less than 12 hours/day)

type	cycle	item
Daily Inspection	Daily	<ul style="list-style-type: none">● Environmental Temperature, Humidity and Dust check● Abnormal Noise or Vibration ?● Main Circuit Voltage ?● Any Smell ?● Operation Board is clean, or any dust at duct hole ?
Periodical Inspection	Annual	<ul style="list-style-type: none">● Megger check (between Main Circuit and Ground Terminal)● Loose screw ?● Trace of overheat ?● Vibrating noise of relay ?● Balance of Output Voltage of each phase in case of Single-phase operation● Any damage on Operatin Board ?

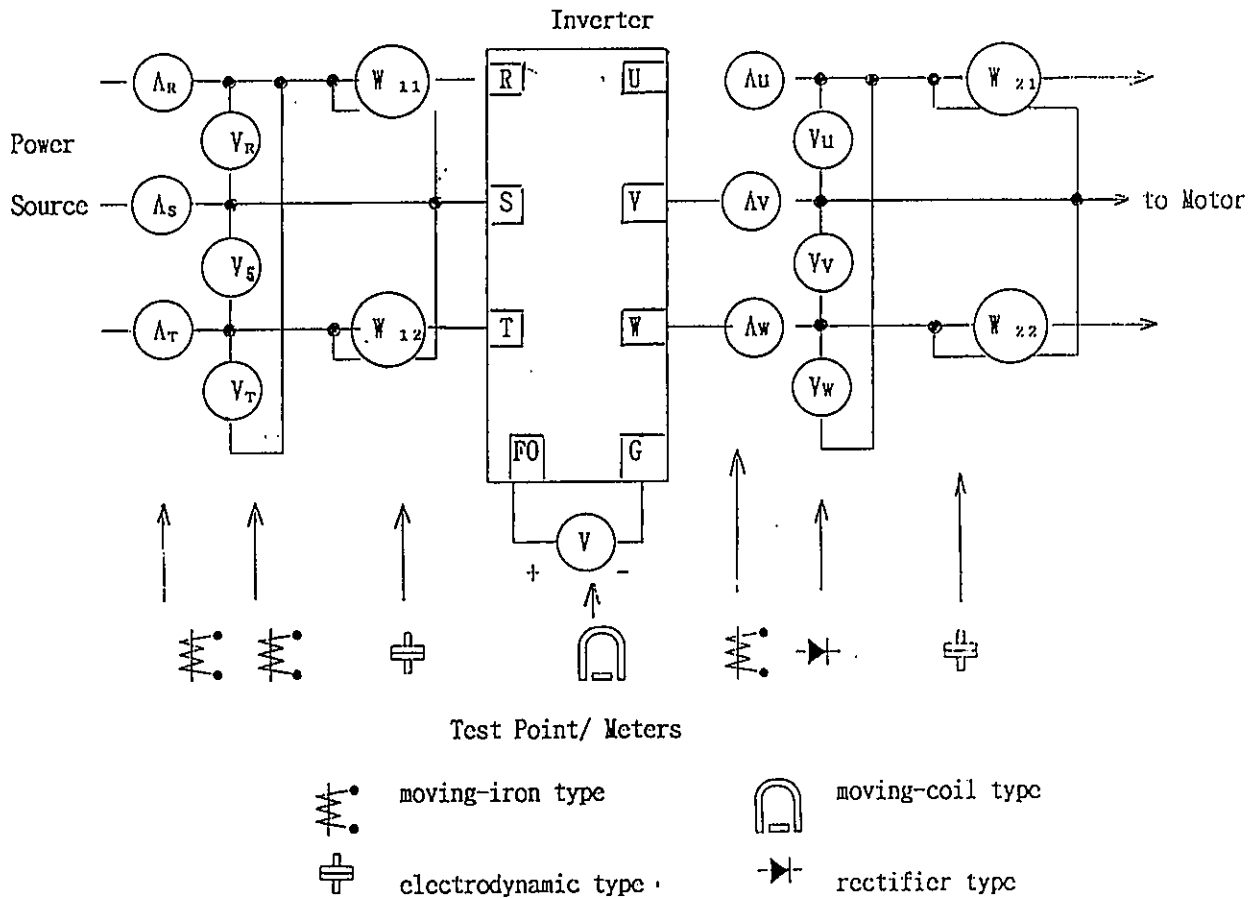
8-3 Megger Test :

- (1) Please perform Megger Test only to Main Circuit per the following procedure. Please do not perform to Control Circuit.
- (2) If you perform this test to outer circuit, please take off all terminal so that test voltage may not be applied to Inverter.
- (3) Please make sure that Megger Test to be made with Insulation Resistance Meter of DC 500 V and to be more than 1 M Ω .



8-4 Selection of Meters

If you test, please use the following Meters and Circuit. (Please note that test data may differ based on the different Meters since Primary and Secondary Voltage and Current of Inverter contains high frequency wave.



9. Trouble Shooting

9-1 Cause of Trouble and Check

If any trouble occurs, please check and cure per the following procedures. Please contact to our Distributors if you can not find proper Cause or Cure, or if you need service parts. Please make extra care when you open Chassis since PCB is High-Voltage Live portion. (refer Section 3-1 [Safety Caution]).

Malfunction	Check point	Cure
Motor does not run	Any Mis-Wiring ?	Make correct Wiring
	Is Power On to Line Terminals (R, S, T) ?	Turn Power On Turn Off Power then turn on
	Is Charge Lamp on ?	Check as per above
	Is Input Voltage to Line Terminals(R, S, T) correct ?	
	Any Malfunction displayed ?	Refer Section 9-2 [Protective to Function]
	Is Free-Run SW on ?	Turn Free-Run SW to [OFF]
	Is both Normal and Reverse Run SW on ?	Turn one of SW on
	Abnormal Freq. Setting ?	Check Freq. Setting
	Is Motor locked ?(too heavy load ?)	Release lock(lower the load)
	Is Motor run with full Phase ?	Recheck wiring between Motor and Inverter
Wrong rotating direction	Right Phase-turn at Output Terminals (U, V, W) ?	Make correct Phase-turn of Output Terminals to Motor
Motor speed does not change	Too heavy load ?	Lower the load
Motor speed does not match to set speed	Is Motor pole or voltage correct ?	Check Motor specifications and rating of name plate
	Is Max. Freq. Setting normal ?	Check Max. Freq. (Section 7)
	Is terminal voltage of Motor too low ?	Check Base Freq. and V/F Pattern (Section 7-4(2))
Motor speed fluctuates	Too heavy load ?	Lower the load
	Too much load fluctuation ?	Lower the load fluctuation Use up-grade Motor/ Inverter

9-2 Protective Function

DV552 Series have following classified Protective Functions;

- ① Avoid Trip but no Warning Indication
- ② Shut off Inverter Output together with Warning Indication
- ③ Make Trip for protection *¹

type	Protective Function LED Display	Content of Protection	Cure or note
①	Overvoltage Stall Prevention <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> (no indication)	Prevent Trip by making Decel. Time shorter when DC voltage of Converter exceeds 375 V during deceleration (refer Parameter Level-4, 1 for adjustment)	Lower the load or make Decel. Time longer
②	Warning of Lack of Voltage Instantaneous Power Failure Protection <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> L	Shut off Output of Inverter when DC Voltage of Converter becomes lower than 200 V. Inverter sees this as [Instantaneous Power Failure(IPF)]. * ² Also Control Circuit will be reset when DC Voltage of Converter becomes lower than 150 V. If Voltage recovers before the reset of Control Circuit, Inverter will resume operation automatically. * ³	Check Wiring of Power or Power condition.
	Restart Prevention* ⁴ <input type="checkbox"/> <input type="checkbox"/> R <input type="checkbox"/> P	Prevents automatic Restart after Power/On, Resume after Power Failure, or in case Run Command is given at Resetting	Enter Stop Command then enter Run Command
③	Overcurrent Trip <input type="checkbox"/> <input type="checkbox"/> O <input type="checkbox"/> C	Inverter will trip when Output Current of Converter exceeds 200 % of Current rating of Inverter	Check possible causes such as lower Input Voltage, too large GD ² , shorter Accel/Decel. Setting Time, Load Short Circuit or Grounding
	Regenerative Over- voltage Trip <input type="checkbox"/> <input type="checkbox"/> O <input type="checkbox"/> U	Inverter will trip when DC Voltage of Converter exceeds 400 V (due to Regenerative energy)	Possible cause is shorter Decel. Time. Please set it longer.
	Self-Diagnosis Trip 1 <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> R	Inverter will trip when Malfunction of Micro-Computer of Control Circuit is detected	Outside Noise Interference is possible cause. Please check and remove.
	Self-Diagnosis Trip 2 <input type="checkbox"/> C <input type="checkbox"/> A <input type="checkbox"/> U	Inverter will trip for safety when you change Parameter such as [Operation Mode Selection] and others. * ⁵	This is not Malfunction. If you release Trip, changed Parameter becomes effective.
	Self-Diagnosis Trip 3 <input type="checkbox"/> <input type="checkbox"/> O <input type="checkbox"/> L	Inverter trips when [Outer Trip] is set at [I5] or [I6] function and [corresponding terminal]-[G] is open. * ⁶ (Do not release Trip by keeping this open)	Check the cause and lower the load or use larger Inverter or Motor

In order to release Trip after correcting the cause, please;

- ① Turn off Power to Inverter and turn on again after Trip Indication disappears, or
- ② Short between [G] and both [I5] and [I6] for more than 0.1 sec.

*¹ Trip signal can not be hold when you turn off Power.

*² If IPF last less than 15 msec, Inverter operates normally.

*³ Prevents Auto-Restart when [0] is selected at [Retry/Auto-restart Prevention] (Level-3, D).

*⁴ Valid only when [0] is selected at [Retry/Auto-restart Prevention] (Level-3, D).

*⁵ Please refer Section 10-3, [Parameter List].

*⁶ Please refer Section 7-4, [Parameter Function].

10. Specifications
10-1 Standard Specifications

Model		D V 5 5 2 S 400 A, B *1	D V 5 5 2 S 750 A, B *1	D V 5 5 2 S 1500 A, B *1
Output Ratings	Applicable Motor(kW) *2	0.4	0.75	1.5
	Output Capacity(KVA)	1.0	1.7	2.4
	Rated Output Current(A)	3	5	7
	Rated Output Voltage(V)*2	3 phase, AC 200 ~ 230 V		
Power Source	Voltage . Frequency	3 phase, AC 200 ~230 V 50/60 Hz		
	Allowable Voltage Range	± 10 %		
	Allowable Frequency Range	± 5 %		
Control Spec.	Control System	Carrier Frequency Constant Sine Wave PWM		
	Output Frequency Range	1.5~ 120 Hz (Start/Stop from 1 Hz) ± 0.5%		
	Frequency Accuracy	± 0.5 % (25 ℃ ± 10 ℃)		
	Frequency Resolution	Set-Freq range/250 Hz (min 0.06 Hz)		
	Frequency Command Signal	DC 0 ~ + 5 V		
	V/F Pattern	Base Freq. : 30 ~ 250 Hz(1 Hz step), Reduced Torque Pattern		
	Overload Current Rating	150 %, 2 min.		
	Regenerative A *1	20 %		
	Brake Torque B *1	200% or more	100 % or more	90% or more
	DC Dynamic Brake	Free setting of Starting Freq, Brake Time, Brake Torque		
	Acceleration/Deceleration Time *3	0~1.4 sec(0.2 sec step) 0~ 70 sec(10 sec step) Time to 0~3.5sec (0.5 sec step) 0~140 sec(20 sec step) change 0~ 7 sec (1.0 sec step) 0~700 sec(100 sec step) by 60 Hz 0~14 sec (2 sec step) 0~1400sec(200 sec step)		
	Jogging Frequency Range	0 ~ 30 Hz		
	Operation Mode	2-speed Mode, 4-speed Mode, 8-speed Mode, 16-speed Mode		
Protective Function		Undervoltage Protection, Overvoltage Protection, Overcurrent Protection, Instantaneous Power Failure Protection, Regenerative Overvoltage Stall Prevention, Self-Diagnosis Trip (memorizes causes of last 5 trips) Auto-Restart Prevention		
Ambient	Ambient Temperature	- 10 ℃ ~ + 50 ℃(to be free from frozen)		
	Ambient Humidity	Max. 90 % RH(to be free from condense dew)		
	Atmosphere	To be used inside of building		
	Altitude	1000 m or lower		
	Vibration	5 m/s ² (0.5 G) or less (10 ~ 60 Hz)		
Protective Construction		Open type		
Cooling		Self cooling		
Weight (Kg)		1.5	1.9	2.2

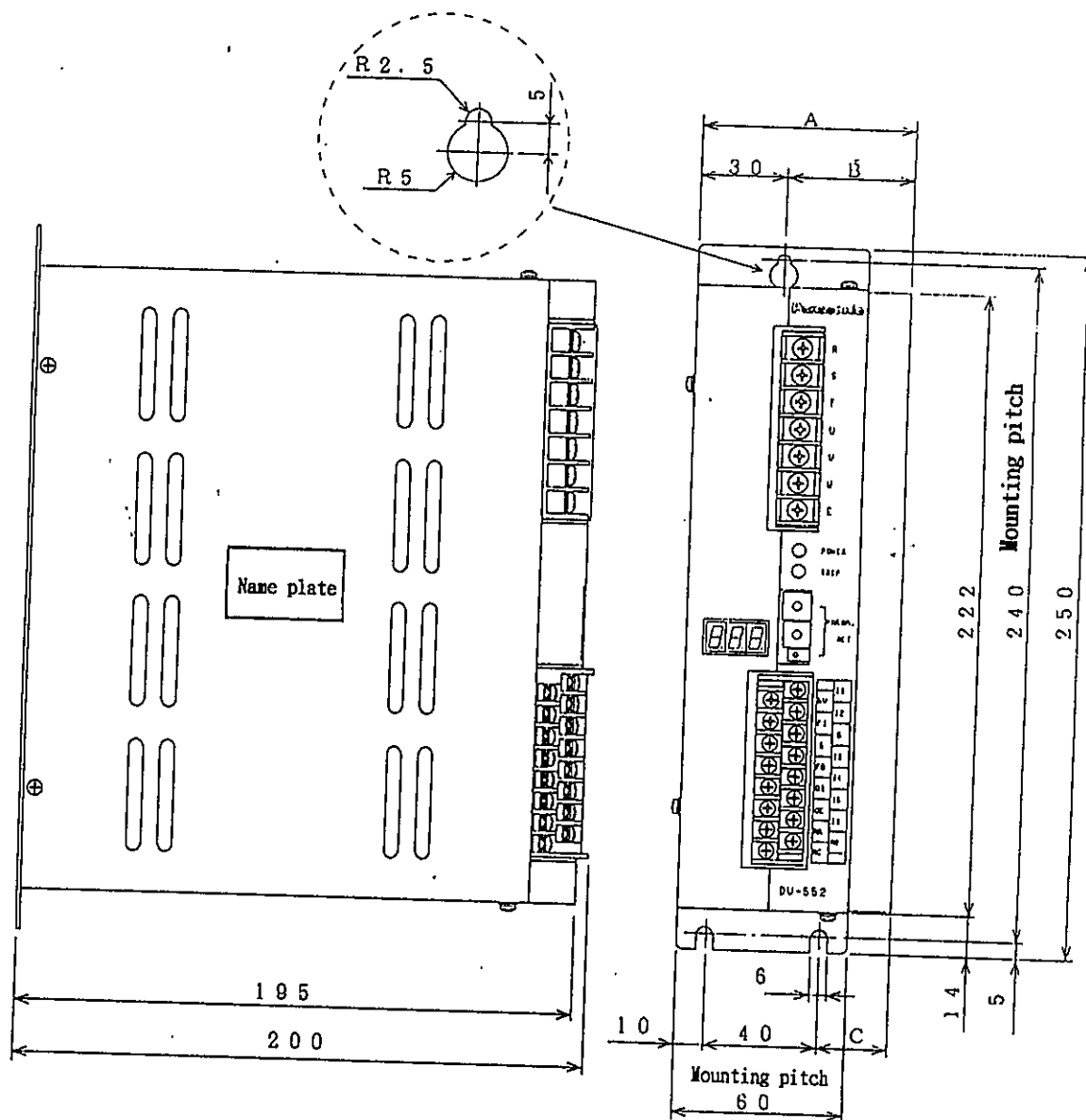
*1 Refer to item 'Regenerative Brake Torque' for clasification.

*2 Standard 3-phase Induction Motor to be applied. Please select proper Motor which does not exceed rating of Inverter.

*3 Please note that Output Voltage of Inverter will not exceed Power Source Voltage.

*4 In case of "0" sec Setting, actual Acceleration Time will be 0.05 sec. and Deceleration Time will be 0.1 sec.

10-2 Dimensions (in mm)



Model No.	A	B	C
DV552S400A, B	63	33	13
DV552S750A, B	69	39	19
DV552S1500A, B	75	45	25

Please use M4 screw

10-3 Parameter List

Level	No	Parameter	Parameter Setting Figure			
			Adjustable Range		Min. Unit	Factory Setting Customer Setting
0	1	Operation Mode Selection*1	0, 1, 2, 3	☆	—	0
	2	1st. Accel. Time	0, 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	3	1st. Accel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	4	1st. Decel. Time	. 0 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	5	1st. Decel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	6	Carrier Frequency	. 0 1, 2, 3, 4, 5, 6, 7	☆	—	2
	7	DC Brake Selection	[PI : (Positioning) [- PI : (Sudden Stop).	☆	2	[PI Position
	8	DC Brake Time *2	[PI : 0 ~ 3.1 sec [- PI : 0 ~ 24.8 sec		0.05 sec 0.4 sec	0.5 sec 4 sec
	9	DC Brake Torque	0 ~ 100		2	26(20)
	A	Torque Boost	0 ~ 100		2	34(20)
	B	Base Frequency	30 ~ 250 Hz		1 Hz	60 Hz
	C	5V Input Freq *1*3	0 ~ 120 Hz		1 Hz	60 Hz
	D	0V Input Freq *1*3	0 ~ 120 Hz		1 Hz	0 Hz
	E	Jogging Frequency	0 ~ 30 Hz		1 Hz	7 Hz
	F	Parameter Level	0, 1, 2, 3, 4, 5	☆	—	—
1	1	1st. speed Freq	0 ~ Max. Freq		1 Hz	14 Hz
	2	2nd. speed Freq	0 ~ Max. Freq.		1 Hz	5 Hz
	3	3rd. speed Freq	0 ~ Max. Freq.		1 Hz	30 Hz
	4	4th. speed Freq	0 ~ Max. Freq		1 Hz	0 Hz
	5	5th. speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
	6	6th. speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
	7	7th. speed Freq	0 ~ Max. Freq		1 Hz	0 Hz
	8	8th. speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
	9	9th. speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
	A	10th. speed Freq	0 ~ Max. Freq		1 Hz	0 Hz
	B	11th. speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
	C	12th. speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
	D	13th. speed Freq	0 ~ Max. Freq		1 Hz	0 Hz
	E	14th. speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
2	F	Parameter Level	0, 1, 2, 3, 4, 5	☆	—	—
	1	15th speed Freq	0 ~ Max. Freq.		1 Hz	0 Hz
	2	2nd. Accel. Time	0, 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	3	2nd. Accel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	4	2nd. Decel. Time	. 0 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	5	2nd. Decel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	6	Jump Freq ① - A	0 ~ Max. Freq		1 Hz	0 Hz
	7	Jump Freq ① - B	0 ~ Max. Freq		1 Hz	0 Hz
	8	Jump Freq ② - A	0 ~ Max. Freq		1 Hz	60 Hz
	9	Jump Freq ② - B	0 ~ Max. Freq		1 Hz	60 Hz
	A	Upper Limit Freq	0 ~ Max. Freq		1 Hz	0 Hz
	B	Lower Limit Freq	0 ~ Max. Freq		1 Hz	0 Hz
	C	(Do not use)				
	D	(Do not use)				
	E	Accord Detect Width			1 Hz	3 Hz
	F	Parameter Level	0, 1, 2, 3, 4, 5	☆	—	—

() represents 1500 type.

*1 When you change/store this Parameter, it trips. Change becomes valid when you reset Inverter.

*2 Time is different depending on [DC Brake Selection]

*3 Higher Freq of either [5V Input Freq] or [0V Input Freq] becomes Max Freq.

Level	No	Parameter	Parameter Setting Figure			
			Adjustable Range	☆	Min. Unit	Factory Setting Customer Setting
3	1	Monitor Mode Selection	[0 - F] : Output Freq [S - F] : Set Freq	☆		[0 - F] Output F
	2	3rd. Accel. Time	0, 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	3	3rd. Accel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	4	3rd. Decel. Time	0, 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	5	3rd. Decel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	6	I5 Function Selection *1	[0] : Free-Run [1] : Outer Trip [2] : 2nd Accel/Decel Time	☆		[0] Free-Run
	7	I6 Function Selection *1	[0] : Free-Run [1] : Outer Trip [2] : 2nd Accel/Decel Time	☆		[2] 2nd Accel/ Decel Time
	8	Multi-speed Input Selection	[0] : 1-bit Input [1] : Binary Input	☆		[1] Binary
	9	Output Signal Selection	[0] : Trip Signal [1] : Reach Signal [2] : Run/Stop Signal			[0] Trip Signal
	A	Reley Output Selection	[3] : Normal/Reverse Signal [4] : Free-Run Signal [5] : Do not use	☆		[0] Trip Signal
	B	V/F Pattern	0:V/F constant~100:Reduced Torque		1	0
	C	Max Output Voltage Adjst	0 ~ 100		1	100
	D	Retry/ *2 Auto-Restart Prevention	0, 1, 2, 3, 4, 5	☆		1
	E	Retry Starting Time	0 ~ 124 sec		2 sec	4 sec
	F	Parameter Level	0, 1, 2, 3, 4, 5			
4	1	Decel. Mgnfctn at Stall	x 1, 2, 4, 8, 16		1 Hz	14 Hz
	2	4th. Accel. Time	0, 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	3	4th. Accel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	4	4th. Decel. Time	0, 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	5	4th. Decel. Magnification	0.2, 0.5, 1, 2, 10, 20, 100, 200	☆	—	X 1
	6	Reduced Freq at IPF	0 ~ Max. Freq.		1 Hz	3 Hz
	7	Brake Starting Freq	0 ~ 30 Hz		1 Hz	3 Hz
	8	Freq-Meter Adjustment	—			—
	9	F-Meter/Full Scale Slctn	0 ~ 120 Hz		1 Hz	60 Hz
	A	0-speed Freq Selection *1	[0] : Outer F-Setting Dial [1] : VR on Operation Board	☆		[0]
	E	Parameter Initialization	[YES] / [n0]	☆		[n0]
5	F	Parameter Level	0, 1, 2, 3, 4, 5	☆		—
	1	Trip Factor Clear	[YES] / [n0]	☆	—	[n0]
	2	Trip Factor 1	Latest Trip Factor			
	3	Trip Factor 2	2nd Latest Trip Factor			
	4	Trip Factor 3	3rd Latest Trip Factor			
	5	Trip Factor 4	4th Latest Trip Factor			
	6	Trip Factor 5	5th Latest Trip Factor			
	F	Parameter Level	0, 1, 2, 3, 4, 5	☆	—	—

■ ☆-marked Parameters are digital(8-steps or less). Others are analog.

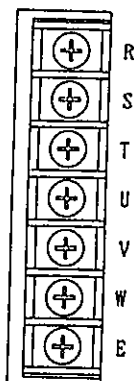
■ You can change [Parameter Level] from any level with VR by turning [RSW] to [F].

*1 If you change/ store this Parameter, Inverter trips. To make the change valid, reset Inverter.

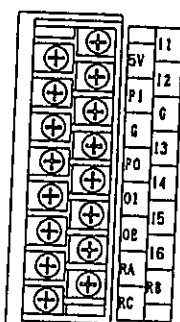
*2 If you change/stor this Parameter, Inverter trips. To make the change valid, reset Inverter.

10-4 Terminal Function

(Main Circuit)



(Control Circuit)



Title	Function
R, S, T/Power Input Terminal	Connect to Power Source of 200 ~ 230 V, 50/60 Hz
U, V, W/Output Terminal	Connect to 3-phase Induction motor
E/Ground Terminal	Ground Inverter base (100 Ω or less, ϕ 1.6 mm or larger)
5V/F-Setting Power Terminal	DC + 5 V is applied
FI/F-Setting Input Terminal	You can make F-Setting by inputting DC 0 ~ 5 V between [FI] and [G].
G/Ground for Control Terminal	Common for Contact Input
FO/Freq-Meter Input Terminal	Outputs voltage in proportion with Output Freq between [FI] and [G].
I1/Normal Run Command Terminal I2/Reverse Run Command Terminal G/Ground for Control Terminal I3, I4 I5, I6 Freq-Setting Select Terminal	Command Input terminals, such as Normal/Reverse Run, Jogging, Multi-speed etc.
	[I1] - [G]/short : Normal Run [I1] - [G]/open : Stop
	[I1] - [G]/short : Reverse Run [I1] - [G]/open : Stop
	Common for Contact Input
I3, I4 I5, I6 Freq-Setting Select Terminal	Have different functions per [Operation Mode]
	① 2-speed Mode [I3] - [G]/short:Normal Jogging, [I3] - [G]/open:Stop [I4] - [G]/short:Normal Jogging, [I4] - [G]/open:Stop [I5] function to be decided with [I5 Function Select] [I6] function to be decided with [I6 Function Select]
	② 4-speed Mode You can select up to 4-speed with [I3], [I4] terminal [I5] function to be decided with [I5 Function Select] [I6] function to be decided with [I6 Function Select]
	③ 8-speed Mode You can select up to 8-speed with [I3] ~ [I5] terminal [I6] function to be decided with [I6 Function Select]
Output Terminal	④ 16-speed Mode You can select up to 16-speed with [I3] ~ [I6] terminal.
	Output terminals showing the condition of Inverter(can not be held while Power is off.) and insulated from others.
O1, OE Output Signal Terminal	Open Collector Output terminal You can select content with [Output Signal Select]. Factory Setting is Trip Signal(Transistor:ON at Trip) [O1] (Collector) $I_{c\ max} = 50\ mA$, [OE] (Emitter) $V_{CE\ max} = DC24V$
RA, RB, RC Relay Output Terminal	You can select content with [Relay Output Select]. Factory Setting is Trip Signal([RA]~[RC]: open, [RB]~[RC]: closed/Normal, [RA]~[RC]: closed, [RB]~[RC]: open/Trip). [RA] (NO) Contact Capacity AC 230 V 0.3 A [RB] (NC) DC 30 V 0.3 A [RC] (COM)

- ◆ Each Input Terminal is pulled-up by +5 V with 4.7 K Ω . You can control with Contact or Open Collector Output.
- ◆ Please do not touch Control Circuit while running. It may cause malfunction by Static Electricity.

Note 1) Priority of Input Terminal is given as;

DC Brake < Normal Run < Jogging < Free-Run Stop < Outer Trip

Ex ① When Run Command is entered during DC Brake, Inverter starts running.

② If Free-Run Command is given during Jogging, Inverter makes Free-Run Stop.

③ Even Run Command is entered during Free-Run, Inverter does not accept.

If contradicting Command is entered(ex command both Normal and Reverse Run at the same time), Inverter stops.

2) You can release Trip by entering both Normal and Reverse Run Command during Trip. *1

<How to select Freq at Multi-speed operation>

① When you select [0] for [Multi-speed Input Selection] (1-bit Input)

Select Freq corresponding to each Terminal *2

[I3] - [G]/short	→	Select 1st. speed Freq	Higher	Priority
[I4] - [G]/short	→	Select 2nd. speed Freq		
[I5] - [G]/short	→	Select 3rd. speed Freq		
[I6] - [G]/short	→	Select 4th. speed Freq	Lower	

Ex When you short both [I3]-[G] and [I4]-[G], 1st. speed Freq will be selected.

② When you select [1] for [Multi-speed Input Selection] (Binary Input)

Select Freq corresponding to each Terminal with Binary way.

(4-speed Mode)

I3	I4	F-Setting
		0-speed Freq
0		1st speed Freq
	0	2nd speed Freq
0	0	3rd speed Freq

(8-speed Mode)

I3	I4	I5	F-Setting
			0-speed Freq
0			1st speed Freq
	0		2nd speed Freq
0	0		3rd speed Freq
		0	4th speed Freq
0		0	5th speed Freq
	0	0	6th speed Freq
0	0	0	7th speed Freq

(16-speed Mode)

I3	I4	I5	I6	F-Setting
				0-speed Freq
0				1st speed Freq
	0			2nd speed Freq
0	0			3rd speed Freq
		0		4th speed Freq
0		0		5th speed Freq
	0	0		6th speed Freq
0	0	0		7th speed Freq
			0	8th speed Freq
0			0	9th speed Freq
	0		0	10th speed Freq
0	0		0	11th speed Freq
		0	0	12th speed Freq
0		0	0	13th speed Freq
	0	0	0	14th speed Freq
0	0	0	0	15th speed Freq

Note

0-mark represents Short between [G] of Control Ground and blank represents Open.

*1 Please release Trip after removing Trip factor.

*2 You can select up to 3 speeds at 4-speed Mode, 4 speeds at 8-speed Mode and 5 speeds at 16-speed Mode.