

SPECIFICATIONS

MODEL: INVERTER

DV551MH SERIES

DATE: FEB/12. 1991

**MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.
INDUSTRIAL MOTOR DIVISION**

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: 7500 Watt type》

Rated output→ current	<u>D V 5 5 1 M H 7 5 0 0 B</u>											Model Number
	INPUT		AC380		~		460V		50/60Hz			Rated Input/Voltage.Frequency
	OUTPUT		CURRENT		32 A							
	<u>SER. NO.</u>											Serial Number
	Mitsubishi Electric Industrial Co., Ltd.											
	Made in Japan A 6 0 1 0 2											

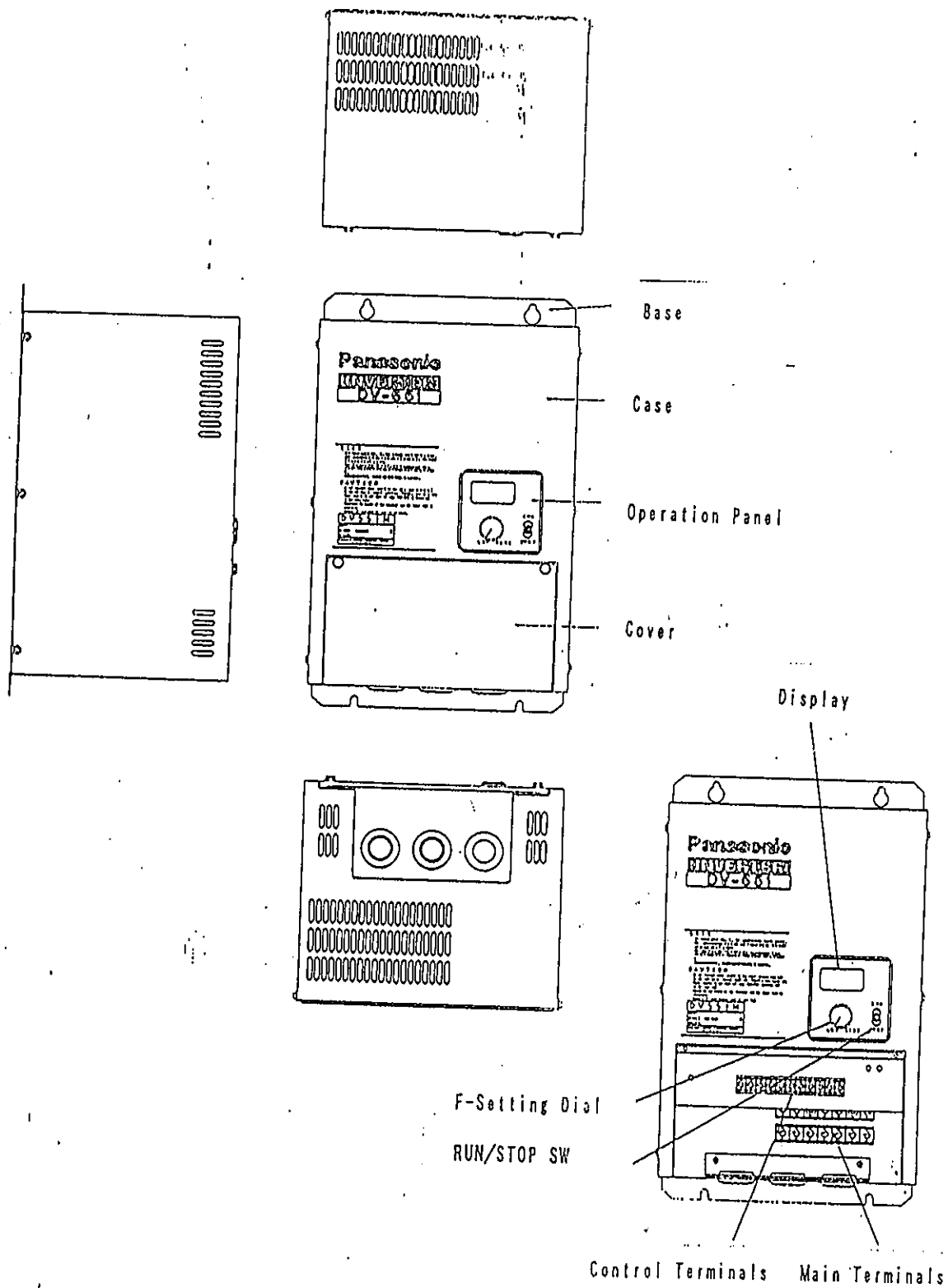
Model identification

《Ex》

D	V	5	5	1	M	H	7	5	0	0	B	
												A : w/o Brake Discharge resistor
												B : w/ Brake Discharge resistor
												Applicable Motor output(W)
												H : 3 Phase 400 V
												w/o : 3 Phase 230 V
												Series No.

2. Construction

2-1 Name of each component

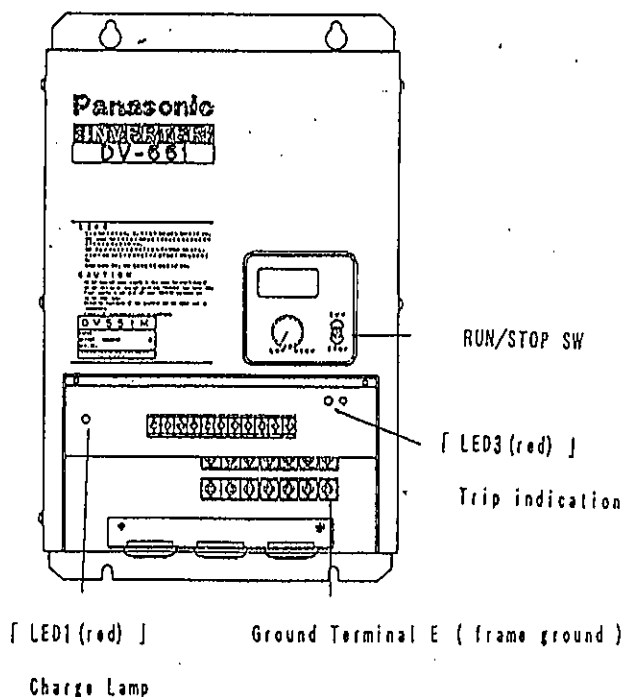


※DV551M5500、7500、及びDV551MH5500、7500の場合

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 for 200 V type, and 10 Ω or less for 400 V type)
- (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 Charge Lamp [LED1(red)] on PCB is off.
- (4) Please note that you can not turn off Power even if you stop Inverter through operation by RUN/STOP Switch or 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) Ground protection is for Inverter and not for operator.
- (9) For proper wiring, please refer page 7 of [Standard Wiring] and use Non-Fuse Breaker and Thermal Relay
- (10) Please prevent any dust or iron particle from coming into Inverter.
- (11) 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.

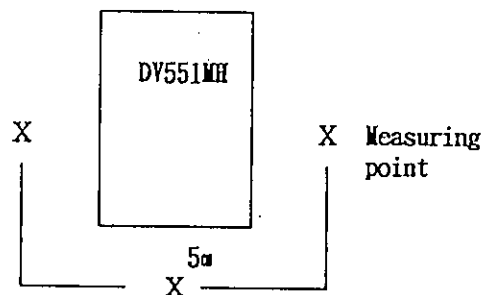
- (1) Please do not input higher Voltage than rating to Line Terminals(R, S, T). Please do not connect Line to other than R, S, and T Terminals. (refer Section 10-1 [Standard Specifications])
- (2) Please avoid any such wiring, operation sequence as Input Voltage is applied to Inverter Output. Such wiring 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 start/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) Please keep enough space above Inverter in order to have better cooling effect of fan.*1

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 ℃ ~ + 40 ℃)



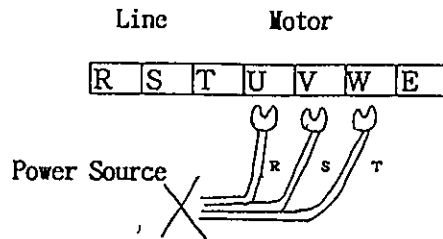
*1 DV551MH2200 and 3700 do not include fan.

5. Wiring

5-1 Caution on wiring

Main Circuit

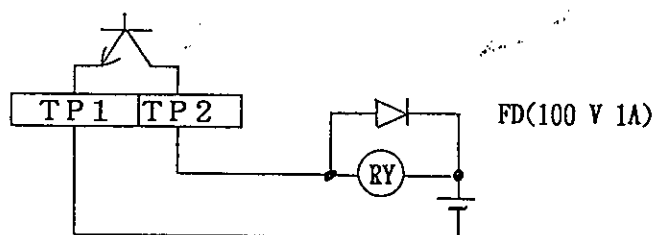
- (1) Please do not make reverse connectin between Line Terminals(R, S, T) and Motor Output Terminals(U, V, W).



- (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 for 200 V type and 10 Ω or less for 400 V type.
- (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).

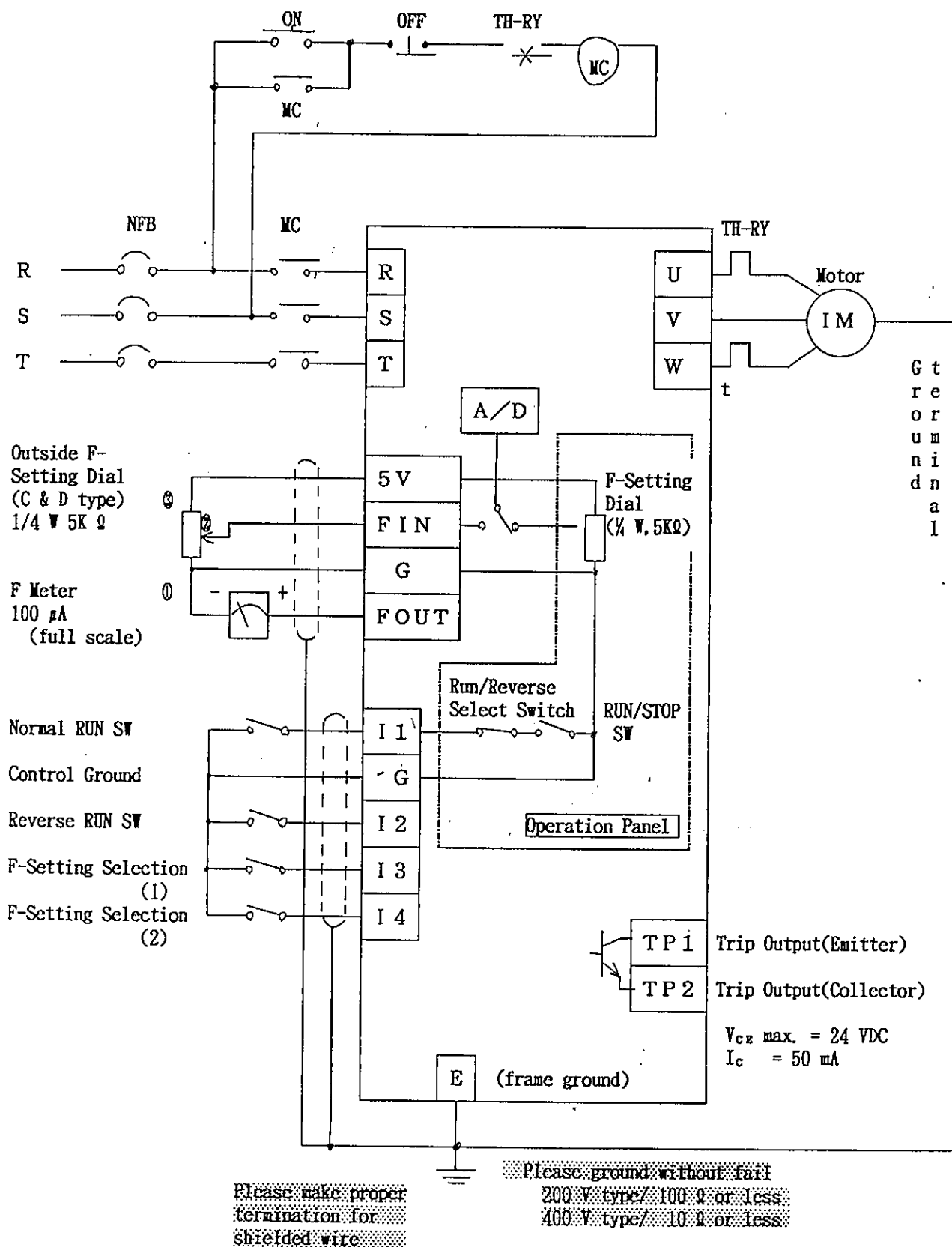
Control Circuit

- (1) Please do not apply more than DC 24 V, 50 mA to Output Terminals(TP1, TP2) or do not apply reversed polarity voltage.
- (2) Please do not apply voltage to Input Terminals (I1 ~ I4) except frequency Setting Input Terminals (FIN).
- (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 (TP1, TP2).



- (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



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 DV551M Series Inverter with the following ways;

Panel Operation	Terminal Board Operation *1
<p>■ You can operate with RUN/STOP Switch on Operation Panel</p> <p>(1) Normal Run</p> <div><p>If you connect [I3] and [I4] on Terminal Board, you can operate</p><ul style="list-style-type: none">① Jogging at normal run and Free-Run Command,② Select Frequency up to 4 speed,③ Outer Forced Trip Command and Free Run Command</div>	<p>■ You can operate with switch connected to Terminal Board.</p> <p>(1) Normal/Reverse Run</p> <p>(2)</p> <ul style="list-style-type: none">① Jogging at normal/reverse run or Free-run Command,② Select Frequency up to 4 speed,③ Outer Forced Trip Command and Free Run Command

* 1 Please make RUN/STOP Switch of Operation Panel [STOP].

6-3 Trial Operation

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

- ① Make Motor only operative.
- ② Turn RUN/STOP Switch of Operation Panel to [STOP]. Also turn all input to Terminal Board to [OFF] (open).
- ③ Turn Frequency Setting Dial to the full left.

(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"/> 0
Command Normal Run	Turn RUN/STOP SW of Operation Panel to [RUN]*1 or turn Normal Run SW to [ON]	<input type="checkbox"/> <input type="checkbox"/> 0
Turn Freq. Setting to the right gradually	Keep SW as it is	<input type="checkbox"/> 6 0 (varies gradually)
Command Stop	Turn RUN/STOP SW of Operation Panel to [STOP] or turn Normal Run SW to [OFF]	<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'.

* 1 Please make Normal/Reverse Selection switch (DSW6 on back side of Panel) [OFF] when you operate by connecting Normal RUN Switch to Terminal Board.

6-4 Operating Function

DV551M Series have following operation functions. You can command through switches on Operation Panel or 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) Inverter outputs Jogging Frequency by short-circuiting terminals [I3] and [G] You can shift from Normal to Jogging or Jogging to Normal operation. Jogging Frequency can be set with 0 ~ 30 Hz range, but if this is too high, Inverter may trip due to overcurrent. *2
Free-Run Stop	■ Inverter shuts off Output Voltage to Motor. (used with mechanical brake) Please note that Output Terminals to Motor (U,V,W) are not insulated during Free-Run Stop. Please be carefull of electrical shock.
DC Dynamic Brake *3	■ Braking function by applying DC to Motor during Inverter shifts from Operation Mode to Stop Mode. If you give Normal/Reverse Run Command or Jogging Command during this DC Dynamic Brake is "ON", 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 (Suden 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].

*1 Please refer Section 7 of [Operation] how to set Accel/Decel. Time. (time to change by 60 Hz)
 *2 Please refer Section 7 of [Operation] how to set Jogging Frequency.
 *3 Please refer Section 7 of [Operation] how to set Brake Mode.

6-5 Operation Mode

DV551M series have 5 operation Modes. Please refer section 7-2(3), [Parameter Setting examples 2].

Operation Mode	1st.Freq Setting	Terminal Board Function				Accel/Decel *1 Time	Parameter' [Op. Mode Selection]
		I1	I2	I3	I4		
2-speed Mode (1)	Freq. Setting Dial	Normal Run	Reverse Run	Jogging	Free Run	1st. Accel. Time	<input type="checkbox"/> <input type="checkbox"/> 0 (Fact. Setting)
2-speed Mode (2)	[VR2] on PCB			Command *2	Command	Stop Decel. Time	<input type="checkbox"/> <input type="checkbox"/> 1
4-speed Mode (1)	Freq. Setting Dial	Normal Run	Reverse Run	Freq. Setting Selection		1st. Accel. Time Stop Decel. Time	<input type="checkbox"/> <input type="checkbox"/> 2
4-speed Mode (2)*3						1st. Accel. Time 1st. Decel. Time 2nd. Accel. Time 2nd. Decel. Time 3rd. Accel. Time 3rd. Decel. Time 4th. Accel. Time 4th. Decel. Time Stop Decel. Time	<input type="checkbox"/> <input type="checkbox"/> 3
1-speed Mode					Outer Forced Trip	Free Run Stop Command	1st. Accel. Time Stop Decel Time

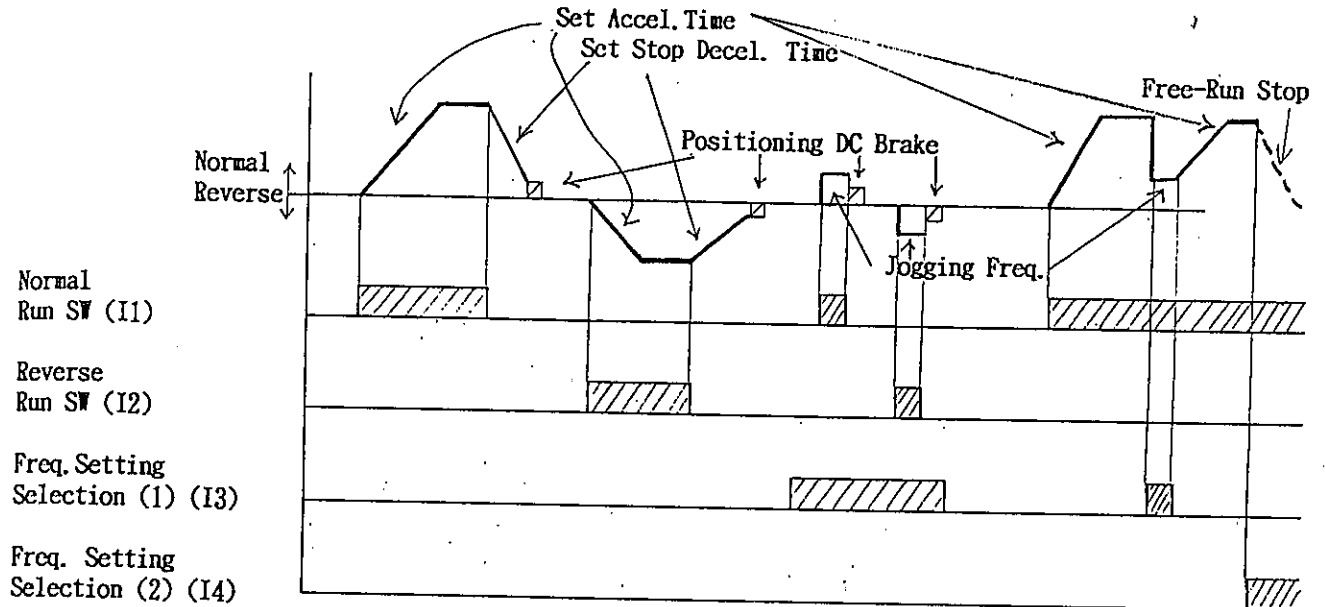
< Freq. Setting at 4-speed Mode >

I3	I4	Freq. Setting Slctn
Open	Open	1st. Speed Setting
Short	Open	2nd. Speed Setting
Open	Short	3rd. Speed Setting
Short	Short	4th. Speed Setting

Note) [Open] or [Short] represents relation to Common [G] of Control Circuit.

- 1) Please refer Section 7-4, [Parameter Function] how to set Accel/Decel. Time.
 2) When you short-circuit [I1] or [I2] after shorting [I3], you can get Jogging.
 3) When you stop with [RUN/STOP] SW or [I1], [I2], it becomes Stop Decel. Time.

< Example of 2-speed Mode >



7. Panel/Board/Parameter Operation

7-1 Operation Portion

(1) Outline of Function

Operation Portion is composed of Operation Panel which includes 3-digit, 7-segment LED Display and switches and variable resistors on PCB and has following functions;

Operation	Normal Run and Reset of Trip
Setting	Confirmation and Change of Parameter
Monitoring	Condition of Inverter(Output/Set Freq. Malfunction)

(2) Composition

① Operation Panel

Display Panel

3-digit, 7-segment LED,
displays Output/Set
Freq. Output Current,
Cause of Malfunction,
Content of Parameter

RUN/STOP SW

[RUN] : Normal Run Command
[STOP] : Stop Command

Run Command Select SW
ON : RUN/STOP by Panel
(Fact. Setting)
OFF: Outer Command

Freq. Setting Dial

You can set 1st Freq. except for 2-speed Mode (2)

② LED PCB

[DSW5]: Please keep this SW off at any time.

[DSW6]: You can operate with RUN/STOP SW of Operation Panel if you turn on DSW6. If you want to operate with Terminal Board, please turn this DSW6 off.

Note: Factory Setting/ DSW5: OFF
DSW6 : ON

7-2 Parameter Setting

(1) Outline of Parameter

DV551W Series have Parameters with which you can adjust characteristics of Inverter, and classified into 4 levels;

Parameter Level	[F] of RSW	Outline
0	Basic Function	Most frequently used Parameter
1	Application Function	Used to adjust to various load condition such as V/F Pattern.
2		([Level2] is used to set Accel/Decel. Time at [4-speed Mode(2)])
3	Supplemental Function	Used in supplemental function such as Monitoring of Cause of Trip*1
	Special Function	Used in special function such as Auto restart(Retry)

(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] (Rotary SW) to Parameter No. ([1] to [E]) ■ Content (figure) of Parameter will be displayed on Panel LED Display 	<ul style="list-style-type: none"> ■ First turn [VR2] (PCB, Variable Resistor) gradually (either direction) until [LED2 (green)] lights. ■ Then you can change Parameter by rotating [VR2] ■ After adjusting Parameter to desired figure, while confirming with Panel Display LED, turn [RSW] to either direction *3

(3) Parameter Setting Ex.

① Changing [Parameter Level]—change from ☐ ☐ 0 to ☐ ☐ 1

Parameter Level	Parameter figure
Parameter Level	F

Operation of [RSW]	Operation of [VR2]	LED2	LED Display on Panel
Adjust [RSW] to [F]			<input type="checkbox"/> <input type="checkbox"/> 0
	Turn [VR2] to the full left	Lit on	<input type="checkbox"/> <input type="checkbox"/> 0
	Turn [VR2] to the right gradually	Lit off	<input type="checkbox"/> <input type="checkbox"/> 0
	Turn [VR2] to the further right gradually	Lit on	<input type="checkbox"/> <input type="checkbox"/> 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) By adjusting [RSW] to [F], you can change [Parameter Level]

④ Changing [Operation Mode] from [2-speed Mode(1)](Factory Setting) to [2-speed Mode(2)]

	Parameter Level	Parameter figure
Parameter Level	0	1

Operation of [RSW]	Operation of [VR2]	LED2	LED/Panel Display
Adjust [RSW] to [F]		—	[0]
	Turn [VR2] to the full left	Lit on	[0]
	Turn [VR2] to the right gradually	Lit off	[0]
	Turn [VR2] to the further right	Lit on	[1]
Turn [RSW] to [0]	(memorized at this moment)	Lit off	[C A U] (trip)

④ Changing [Jogging Frequency] from [7Hz] to [10Hz]

	Parameter Level	Parameter figure
Parameter Level	1	1

Operation of [RSW]	Operation of [VR2]	LED2	LED/Panel Display
① Adjust [RSW] to [F]		—	[0]
	① Turn [VR2] to the full left	Lit on	[0]
	① Turn [VR2] to the right gradually	Lit off	[0]
	① Turn [VR2] to the further right	Lit on	[1]
② Adjust [RSW] to [1]		Lit off	[7]
	② Turn [VR2] to the left gradually	Lit on	[7]
	② Turn [VR2] to the right gradually ([Jogging Freq.] Setting will be increased gradually)	Lit on	[1 0]
③ Turn [RSW] either direction	(memorized at this moment)	—	—

CAUTION

- You can not change Parameter during Trip or Prevention of Auto Restart.
- Most of Parameter becomes effective after change is made.
- Inverter memorizes changed contents by rotating [RSW]. If Power is turned OFF during change of Parameter, latest content will be stored.
- If you change DSW1 or DSW4, or change/store [Operation Mode Selection] or [Analog Setting Selection], Inverter trips for safety. In order to start again, please release Trip.
- When you change Parameter but push [SW] or Inverter trips before rotating [RSW], changed content will not be stored. If necessary, please release Trip and make readjustment.
- When you turn Power ON, or reset Trip, Parameter Level automatically becomes [0].

7-3 Monitoring

(1) Monitoring Mode

When you adjust [RSW] to [0], you can monitor Output or Set Freq. or Output Current on Panel Display. Please refer [Monitor Mode Selection] of Parameter as to selection of Monitoring content. (p19)

(2) Warning/Malfunction Monitoring

When Inverter detects Warning or Trip, this will be displayed on Panel Display and [LED2(green)] and [LED3(red)] on PCB. This display will be given first priority.

Warning	Mal-function	Panel Display	[LED2] green	Trip display [LED3] (red)		Content
				on time	off time	
○	—	[L]	flash	—	—	Lack of Input Voltage
○	—	flash	—	—	—	Overload
○	—	[r P]	—	—	—	Auto-Restart Prevention
—	○	[0. C]	—	cont.	—	Overcurrent Trip
—	○	[0. U]	—	1 sec.	1 sec.	Overvoltage Trip
—	○	[0. H]	—	2 sec.	2 sec.	Heat Sink Overheat Trip
—	○	[0. L]	—	0.25 sec	0.25 sec	Outer Thermal Trip* ²
—	○	[h r]	—	0.9 sec.	0.1 sec.	Electronic Thermal Trip
—	○	[E r r]	—	0.1sec	0.4sec	Malfunction of Computer Trip
○	—	[C A U]	—	0.5sec	0.5sec	Change/ [Max. Freq], Store [Operation Mode Selection] of [Freq.Setting Selection] [Analog Setting Selection]
○	—	[- - -]	flash(2sec interval)	—	—	Completion of Parameter Initialization

(3) Cause of Past Trip Monitoring

When you adjust [Parameter Level] to [3], you can confirm cause of past 4 Trips at Panel Display. Please refer previous Section 7-3(2). (Please note that this will not be indicated at [LED2(green)] or [LED 3(red)].)

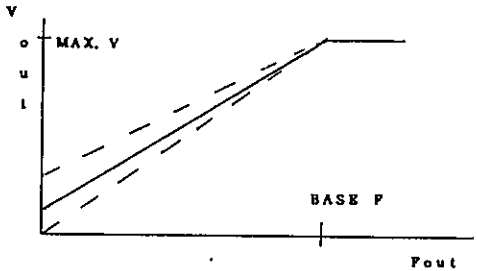
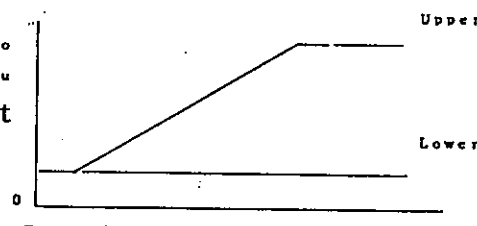
Operation of [RSW]	Operation of [VR2]	Panel Display
① Adjust [RSW] to [F]	① Turn [VR2] either direction until [LED2(green)] is lit ② Turn [VR2] to the full right	displays current Parameter
Adjust [RSW] to [E] (latest trip cause)		[3] Latest trip cause
Adjust [RSW] to [D] (2nd. latest trip cause)		2nd. latest trip cause
Adjust [RSW] to [C] (3rd. latest trip cause)		3rd. latest trip cause
Adjust [RSW] to [B] (4th. latest trip cause)		4th. latest trip cause

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

*2 This is only detected when you use at 1-speed Mode

*3 When you change/store, please reset Inverter by pushing [SW(Reset Switch)], then changed Parameter becomes effective and Trip will be released.

7-4 Parameter Function (1) Level 0

Level	No.	Parameter	Description
0	0	Monitoring Mode Mode Selection*2	You can monitor Frequency or Current. *1 You can select Operation Mode [0] : 2-speed Mode(1) [1] : 2-speed Mode(2) [2] : 4-speed Mode(1) [3] : 4-speed Mode(2) [4] : 1-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	Stop Decel. Time	
	5	Stop 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	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 
	8	DC Dynamic Brake Time	You can adjust Time and Torque of DC Dynamic Brake while you shift Inverter from Run to Stop. Please refer Section 6-4 [Operating Function]
	9	DC dynamic Brake Torque	: If you select [0] for both or either one of Time and Torque, it makes "Free-Run"
	A	Upper Limit Freq.	You can set both Lower and Upper Limit of Output Freq. 
	B	Lower Limit Freq.	If you set Upper/Lower this function becomes void. (Factory Setting is void)*3 P. setting Dial. Angle/V. Setting V (PIN-G)
	C	2nd. Speed Freq.	You can select Freq. through Board Terminals of I3 and I4 in case of 4-speed Mode *4 You can not set higher value than Max. Freq. *5
	D	3rd. Speed Freq.	
	E	4th. Speed Freq.	
	F	Parameter Level	0, 1, 2, 3

*1 You can select Monitoring content at Level 1/B, [Monitor Mode Selection].

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

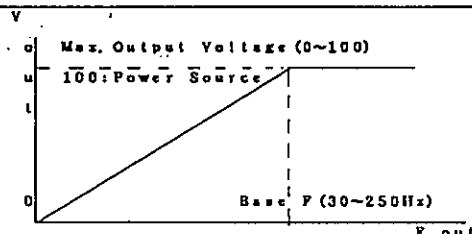
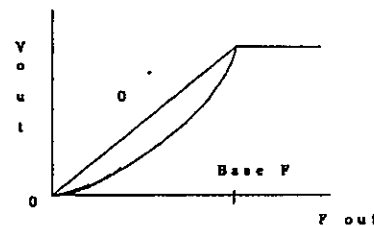
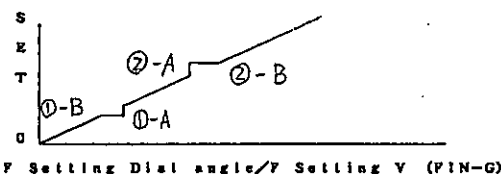
*3 In Factory Setting, Limiting function is made void.

*4 In case you set Operation Mode to [2] or [3].

*5 Please refer [Terminal Function] (page34)

(2) Level 1

Level	N	Parameter	Description
	0	Monitoring Mode	You can monitor Frequency or Current. *1
	1	Jogging Freq.	You can set freq. at Jogging Operation.
	2	Jump Freq. ①-A	You can set Jump freq. at 2 points. (① < ②)
	3	Jump Freq. ①-B	Within range of A-B, Freq. B will be set.
	4	Jump Freq. ②-A	
	5	Jump Freq. ②-B	: If Jump Freq. A=B, this function becomes void *2
	6	Reduced Freq. at Instantaneous Power Failure(IPF)	You can adjust Output-Starting Freq. on resuming Power after IPF. : Resuming Output Freq. is [Freq. before IPF] - [Reduced Freq.]. *3 : If P/F lasts long and Control Circuit is reset, Inverter starts output from 1 Hz.
	7	Starting Freq. for Brake	You can adjust Output Freq. at which DC Brake starts working. : When you make Soft Stop from normal run by Stop Command, Brake start working when Output Freq. becomes lower than this Set Freq *4
	8	Selection of DC Dynamic Brake	You can select types of DC Brake *5 [P]: Positioning Brake, [- P]: Sudden Stop(Full Range)
1	9	V/F Pattern Selection	You can select proper V/F Pattern based on Motor Load 0: Constant Torque Load 100: Reduced torque load You can make fine adjustment between 0 and 100.
	A	Decel. Magnification at Stall	You can adjust Decel. Time while Stall Prevention is working during Decelerating. You can set with Magnification against normal Decel. time
	B	Monitor Mode Selection	You can select Freq. on Panel Display. [0. - F]: Output Freq. [S. - F]: Set Freq. [C U r.] Output Current *5
	C	Max. Output Voltage Adjustment	You can select V/F Pattern as the right shows, by Max. Output voltage adjustment and Base Freq. and Base Freq. Selection
	D	Base Freq. Selection	
	E	F. Meter Adjustment	You can calibrate Freq. Meter.
	F	Parameter Level	0, 1, 2, 3



- *1 You can select Monitoring content at Level 1/B, [Monitor Mode Selection]. (page18)
 *2 Factory Setting is made as void.
 *3 You can prevent Auto Restart after Power Resumption when you select [0] at Level 3/4. (page20)
 *4 While Inverter stops due to lower Set Freq, Brake works when Output Freq. becomes 1 Hz or lower.
 *5 Please refer Section 6-4, [Operating Function] (page10)
 *6 Ratio(%) against Rated Current of Inverter will be monitored with 10 % step.
 Please do not use this display as a Meter/this only gives you guidance. Please note that at low speed, display includes some error.

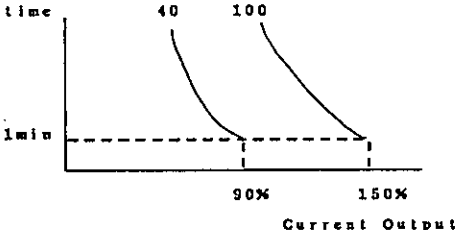
(3) Level 2

Level	No.	Parameter	Description																		
2	0	Monitoring Mode	You can monitor Frequency or Current. *1																		
	1	1st. Decel. Time																			
	2	1st. Decel. Mgnfctn																			
	3	2nd. Accel. Time	You can set varying ratio for Output Freq. at Accel/Decel. of 4-speed Mode(2)*2																		
	4	2nd. Accel. Mgnfctn																			
	5	2nd. Decel. Time	: You can set with time necessary to change by 60 Hz.																		
	6	2nd. Decel. Mgnfctn	: Time multiplied by Magnification becomes Set Time.																		
	7	3rd. Accel. Time																			
	8	3rd. Accel. Mgnfctn	<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												
	9	3rd. Decel. Time																			
	A	3rd. Decel. Mgnfctn																			
	B	4th. Accel. 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.																		
	C	4th. Accel. Mgnfctn																			
D	4th. Decel. Time																				
E	4th. Decel. Mgnfctn																				
F	Parameter Level	0, 1, 2, 3																			

*1 You can select Monitoring content at Level 1/B, [Monitor Mode Selection]. (page18)

*2 In case when you select [3] of [Mode Selection]. (page17)

(4) Level 3

Level	No	Parameter	Description															
	0	Monitoring Mode	You can monitor Frequency and Current. *1															
	1	Switching of Analog Setting	<div>You can switch FIN input from [0 - 5 V] to [4 - 20 mA]</div> <table><tr><th>Setting</th><th>DSW2</th><th>DSW3</th><th>Parameter</th></tr><tr><td>0 ~ 5 V</td><td>ON</td><td>OFF</td><td>[0 - 5]</td></tr><tr><td>0 ~10 V</td><td>OFF</td><td>OFF</td><td>[0 - 5]</td></tr><tr><td>4 ~20 mA</td><td>ON</td><td>ON</td><td>[4. 2 0]</td></tr></table> <div>Please turn Power off when you change DSW.</div>	Setting	DSW2	DSW3	Parameter	0 ~ 5 V	ON	OFF	[0 - 5]	0 ~10 V	OFF	OFF	[0 - 5]	4 ~20 mA	ON	ON
Setting	DSW2	DSW3	Parameter															
0 ~ 5 V	ON	OFF	[0 - 5]															
0 ~10 V	OFF	OFF	[0 - 5]															
4 ~20 mA	ON	ON	[4. 2 0]															
	2	Accel. Mgnfctn at Stall	<div>You can adjust Accel. Time while Stall Prevention is working.</div> <div>: Set by Magnification to normal setting</div>															
	3	Electronic Thermal	<div>You can adjust amount of Thermal function.</div> <div>: Set by percentage to rated current</div> <div>: Display Panel flashes when output current of Inverter exceeds set value.</div> <div></div>															
	3	4	Selection of Retry *3/ Auto Restart Prevention	<div>Retry : Even if Inverter trips, it release Trip automatically and Retry after [Retry Starting Time].</div> <div>Auto- Restart Prevention: You can prevent automatic restart of Inverter after Power ON/Resumption(from IPF)</div> <table><tr><th>Parameter</th><th>Retry function</th><th>Auto-restart Prevention</th></tr><tr><td>[0]</td><td rowspan="2">No retry</td><td>Prevents restart</td></tr><tr><td>[1]</td><td>Restarts after Power</td></tr><tr><td>[2]</td><td>Retry once *5</td><td rowspan="3"></td></tr><tr><td>[3]</td><td>Retry 2 times*4</td></tr><tr><td>[4]</td><td>Retry 3 times*4</td></tr></table> <div>Changed Parameter becomes effective when you reset(by pushing[SW]) Inverter.</div>	Parameter	Retry function	Auto-restart Prevention	[0]	No retry	Prevents restart	[1]	Restarts after Power	[2]	Retry once *5		[3]	Retry 2 times*4	[4]
Parameter	Retry function	Auto-restart Prevention																
[0]	No retry	Prevents restart																
[1]		Restarts after Power																
[2]	Retry once *5																	
[3]	Retry 2 times*4																	
[4]	Retry 3 times*4																	
	5	Retry StartingTime	You can set the time between Inverter's trip and retry.															
	A	Parameter Initialization	<div>You can initialize all Parameter to Factory Setting *6</div> <div><u>How to Initialize</u></div> <div>① Turn to [Y E S] and turn off Power without rotating [RSW].*1</div> <div>② Turn on Power again to initialize and Panel Display shows [- - -].</div> <div>③ Since you can not operate Inverter with this condition, turn off Power then turn on again in order to operate.</div>															
	B C D E	Memorization of causes of trip	Inverter memorizes causes of past 4 trips. *7															
	F	Parameter Level	0, 1, 2, 3															

*1 You can select Monitoring content at Level 1/B, [Monitor Mode Selection] (page18)

*2 If you change/store this Parameter, Inverter trips for safety. To release Trip and make changed Parameter effective, please push [SW] to reset Inverter.

*3 When you select Retry function, please note that Inverter resumes after set time even it trips.

*4 When you resume operation, please make Stop command.

*5 If no Trip occurs for more than 40 min. after retry, number of retry is initialized.

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

*7 Please refer Section7-3, [Monitoring] (page16).

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 [LED1(red)] (Charge 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)

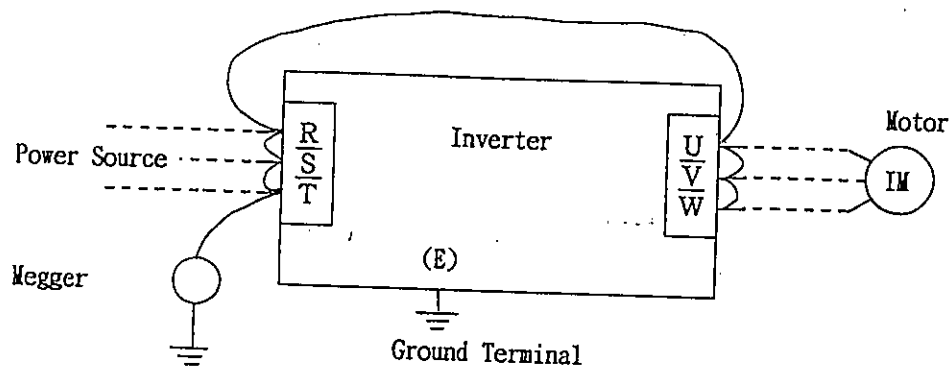
type	cycle	item
Daily Inspection	Daily	<ul style="list-style-type: none">● Environmental Temperature, Humidity and Dust check● Abnormal Noise or Vibration ?● Main Circuit Voltage ?● Any Smell ?● Cooling fan works fine ? *1● Panel is clean ?
Periodical Inspection	Annual	<ul style="list-style-type: none">● 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 ?

Note) Please note that if the operating condition diferes, cycle of periodical check will differ.

*1 Cooling fan is built in at bottom of the panel. It works during operation, for 2 minutes after Power On and Power Off. DV551WH2200, 3700 do not have fan.

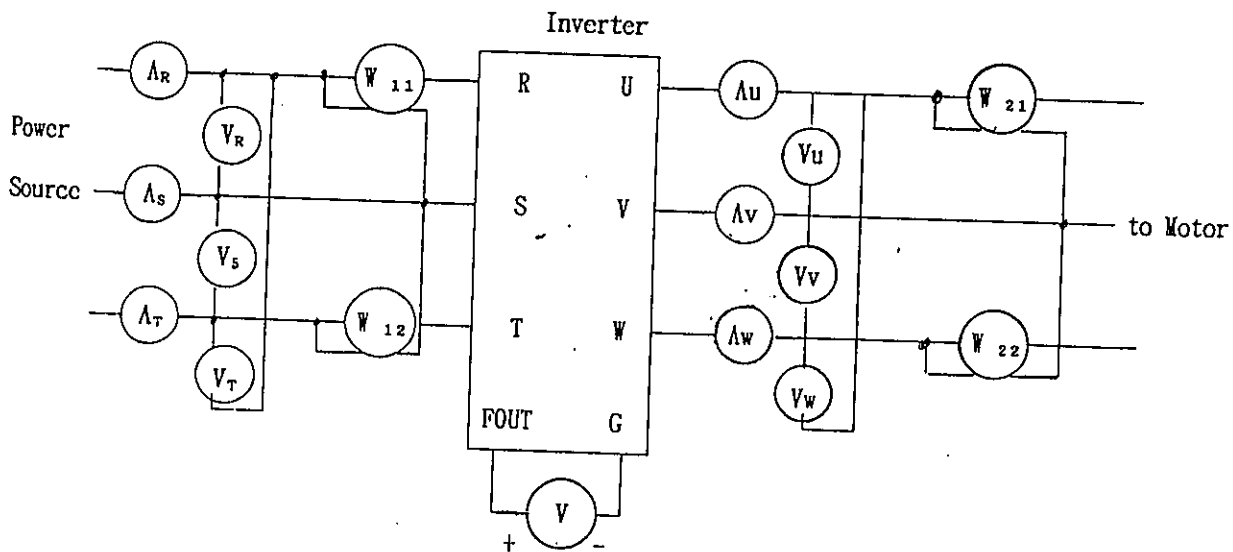
8-3 Megger Test

- (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 to be 1 M Ω or more at DC500V Megger.



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.



Test Point/ Meters

$A_R, A_S, A_T, A_U, A_V, A_W, V_R, V_S, V_T$ moving-iron type

moving-coil type ∇

$W_{11}, W_{12}, W_{21}, W_{22}$ electrodynamic type

rectifier type V_U, V_V, V_W

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]. (page3)

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] (page24~)
	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

DV551M Series have following classified Protective Functions;

- ① Warning Indication only
- ② Avoid Trip but no Warning Indication
- ③ Shut off Inverter Output together with Warning Indication
- ④ Make Trip for protection *1

type	Protective Function LED Display	Content of Protection	Cure or note
①	Overload Warning (Panel flashes)	Inverter indicates Warning when Motor current exceeds [Electronic Thermal] *2	Lower the load or use larger capacity of Inverter or Motor
②	Accel/Decel. Stall Prevention (no indication)	Prevents Trip by making Accel/Decel. Time longer *3 while Accel/Decelerating when ; DC Converter Voltage exceeds 375 V (700 V) or, Motor current exceeds Inverter rating by more than about 140 %	Lower the load or make Decel. Time longer (Please prevent from using Inverter under this condition for a long time..this leads to Overheating)
③	Warning of Lack of Voltage Instantaneous Power Failure Protection [L]	Shut off Output of Inverter when DC Voltage of Converter becomes lower than 400 V. (Inverter sees this as [Instantaneous Power Failure] *4) Also Control Circuit will be reset when DC Voltage of Converter becomes lower than 150 V (300 V). If Voltage recovers before the reset of Control Circuit, Inverter resume operation automatically. *5	Check Wiring of Power or Power condition
	Restart Prevention*6 [r P]	Inverter prevents automatic restart when you command operation at reset, even after Power On or Power Resumption after Instantaneous Power Failure.	Give [STOP] Command then give [RUN] Command

() figure is for DV551MH type

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

*2 Figure includes some error at 10 Hz or lower. When you use at lower speed, please use Thermal Relay (TH-RY) as per Section 5-2, [Standard Wiring Diagram]. (page7)

*3 Please refer Section 7-4, [Parameter Function]. (page17~)

*4 Inverter operate normally in case of 15 msec. or shorter Power Failure.

*5 Prevents when you select [0] of [Selection of Retry/Auto Restart Prevention] (Level 3/4, page20)

*6 Prevents when you select [0] of [Selection of Retry/Auto Restart Prevention] (Level 3/4, page20)

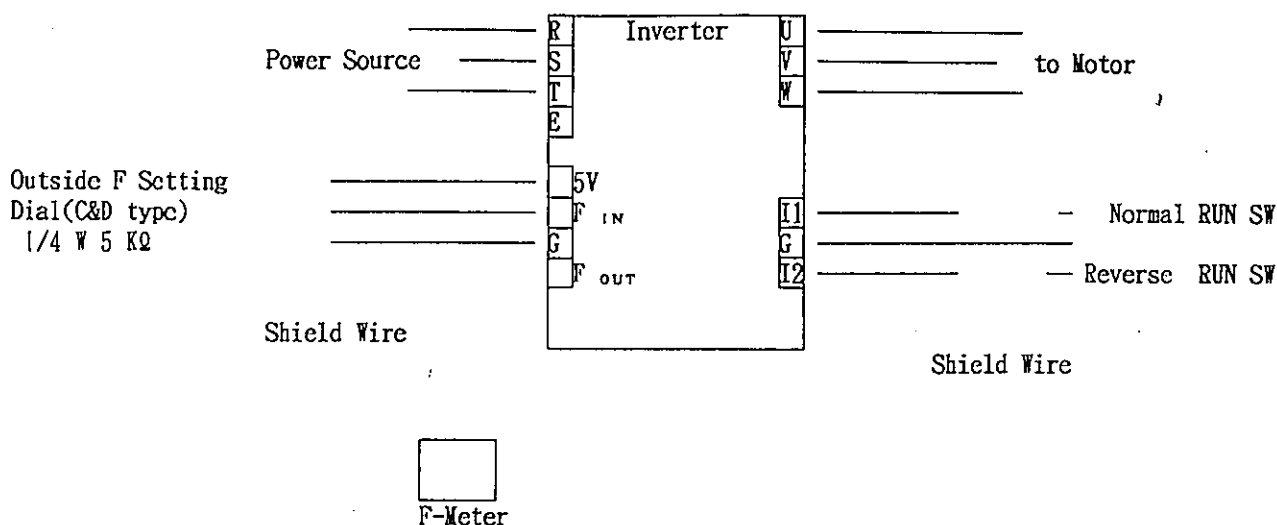
ty pc	Protective Function LED Display	Content of Protection	Cure or note
	Overcurrent Trip [O, C.]	Inverter trips when Output current of Converter exceeds 200 % of current rating of Inverter.	Check possible causes such as lower Input Voltage, too large GD ² , shorter Accel/Decel. Setting Time, Load Short Circuit or Grounding * ¹
	Heat Sink Overheat Trip [O, H.]	Inverter trips when cooling effect at Power Device is lowered and brings Overheat of Fin. (Thermal sensor will detect)	Check environment temperature Check cooling fan is working properly (fan cooling type)
	Regenerative Over- voltage Trip [O, U.]	Inverter trips when DC Voltage of Converter exceeds 400 V (800 V) due to Regenerative energy.	Possible cause is shorter Decel. Time. Please set it longer.
④	Overload Thermal Trip [T h.r.]	Inverter trips when Overload condition is kept according to the [Electronic Thermal Setting]	Check cause of Overload, lower the load, change operation or use larger Inverter or Motor.
	Self-Diagnosis Trip (1) [E r, r.]	Inverter will trip when Malfunction of Micro-Computer is detected	Outside Noise Interference is possible cause. Please check and remove.
	Self-Diagnosis Trip (2) [C A, U.]	Inverter will trip for safety when you change [Max. Freq.] Setting or change/store [Operation Mode]	This is not Malfunction. If you release Trip, changed Parameter becomes effective. * ²
	Self-Diagnosis Trip Trip (3) [O, L.]	Inverter will trip when Outer Thermal Function works.	Check cause of Overload, lower the load, change operation or use larger Inverter or Motor.

() figure is for DV551MH type

*1 Please note there will be some case when no protection works if Output Terminal is grounded.
 *2 Trip can be released by pushing/releasing [SW].

9-3 Measures to Outside Noise

- Please separate cables of Control Circuit and Line



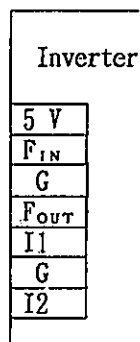
- If you use longer cable for Control Circuit, Outside Noise may come in from this cable which may cause malfunction of Inverter. In this case, please try to use Data Line Filter so that and make several turns of cable around this Filter. (Please install this Filter as close to Inverter as possible)

F Setting
Dial

F Meter

Normal RUN SW

Reverse run SW



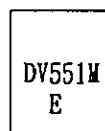
9-4 Measure for Radio Noise

Radio Noise comes from Electromagnetic Noise radiated from Inverter or Power. Where Field is weak, this noise may give larger effect at 10 M Hz or lower frequency band, especially at Medium Wave band.

How to suppress

Connect Noise Filter to Input Terminals and envelope Power Line and Inverter Line with Ground box or tube. By this you can expect some suppression of noise.

Out In RST
Power Source
Noise Filter



Cable Tube

Motor
IM

ground
Motor Frame

10. Specifications

10-1 Standard Specifications

Model		DV551M 5500A, B*1	DV551M 7500A, B*1	DV551MH 2200A, B*1	DV551MH 3700A, B*1	DV551MH 5500A, B*1	DV551MH 7500A, B*1
Output Ratings	Applicable Motor (W) *2	5500	7500	2200	3700	5500	7500
	Output Capacity(KVA)	8.3	11	3.8	5.5	8.3	11
	Rated Output Current(A)	24	32	5.5	8	12	16
	Rated Output Voltage(V)*3	3 phase AC200~230V			3 phase AC 380 ~ 460 V		
Power Source	Voltage	3 phase AC200~230V			3 phase AC 380 ~ 460 V		
	Frequency	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 ~ 60 Hz, 3 ~ 120 Hz (Start/Stop from 1 Hz) ± 0.5 %				
	Frequency Accuracy		± 0.5 % (25 ℃ ± 10 ℃)				
	Frequency Resolution		0.24 Hz(~ 60 Hz),		0.48 Hz(~ 120 Hz)		
	Frequency Command Signal		DC 0 ~ + 5 V, DC 0 ~ + 10 V, DC 4 ~ 20 mA				
	V/F Pattern		Base Freq. : 30 ~ 250 Hz(1 Hz step), Reduced Torque Pattern				
	Overload Current Rating		150 %, 1 min.				
	Regenerative Brake Torque	A	20 % (short duration)				
		B	70 % or more (short duration)	100% or more	70 % or more (short duration)		
	DC Dynamic Brake		Free setting of Starting Freq, Brake Time, Brake Torque				
	Acceleration/ Deceleration Time **		0~1.4 sec(0.2 sec step) 0~3.5sec(0.5 sec step) 0~ 7 sec(1.0 sec step) 0~14 sec(2 sec step)		0~ 70 sec(10 sec step) Time to 0~140 sec(20 sec step) change 0~700 sec(100 sec step) by 60 Hz 0~1400sec(200 sec step)		
	Jogging Frequency Range		0 ~ 30 Hz				
	Operation Mode		2 X 2-speed,		2 X 4-speed,		1 X 1-speed
Protective Function		Undervoltage Protection, Overvoltage Protection, Overcurrent Protection, Instantaneous Power Failure Protection, Overload Protection, Fan Overheat Protection, Self-Diagnosis Trip (memorizes causes of last 4 trips) Stall Prevention, Auto Restart Prevention, Ground Over- current Protection *5.					
Ambient	Ambient Temperature	- 10 ℃ ~ + 40 ℃(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	0.5 G or less (10 ~ 60 Hz)					
Protective Construction		Open type					
Cooling		Forced cooling		Self cooling		Forced cooling	
Weight (Kg)		11.4	12.0	7.8	8.2	12.3	12.5

*1 Please refer Item of Regenerative Brake torque for distinguishing 'A' or 'B'.

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

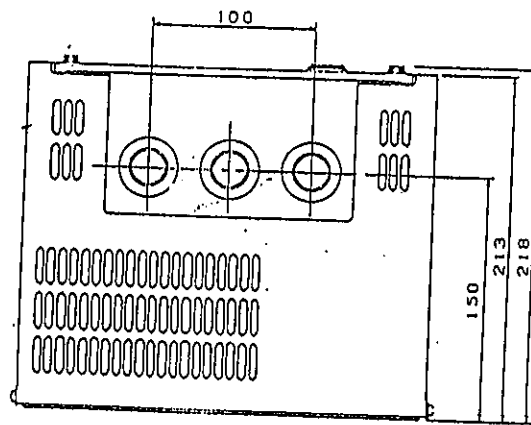
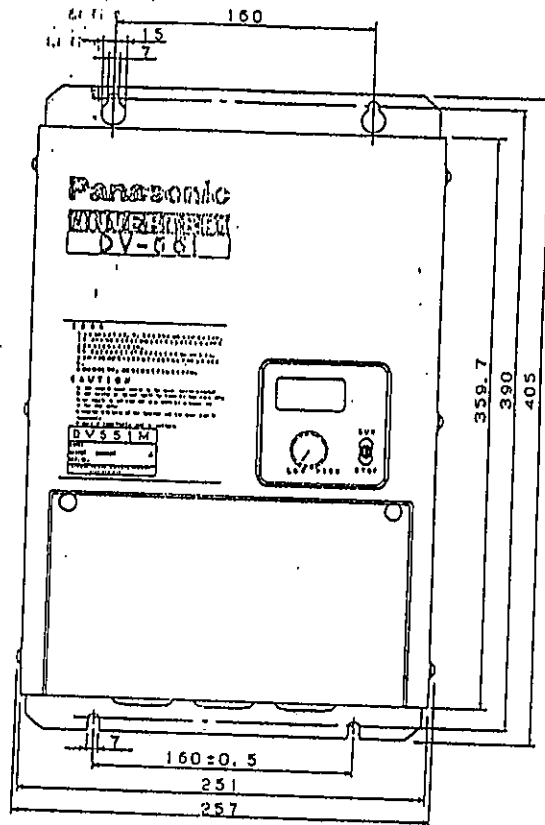
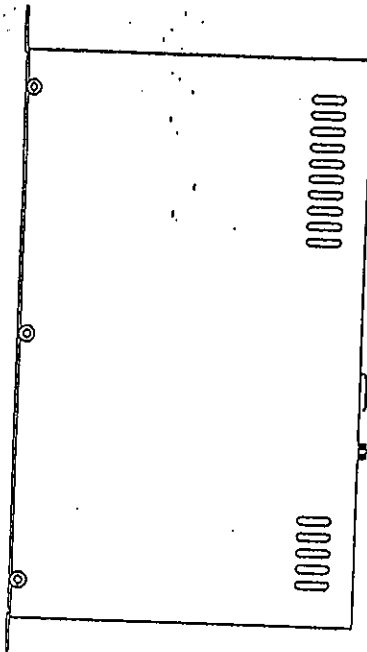
*3 Please note that Output Voltage of Inverter will not exceed Power Source Voltage.

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

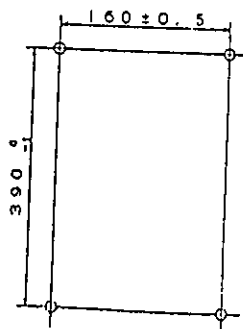
*5 Please note that there will be some case no protection works when Power is turned on while Output Terminal is grounded.

10-2 Dimensions (mm)

DV551M5500、7500、DV551MH5500、7500



Mounting pitch
Please use M6 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	Stop Decel. Time	0, 1, 2, 3, 4, 5, 6, 7	☆	1 sec.	5 sec.
	5	Stop 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	Torque Boost	0 ~ 100		2	20
	8	DC Brake Time	[P] : 0 ~ 3.1 sec. [- P] : 0 ~ 24.8 sec.		0.05 sec 0.4 sec	0.5 sec 4 sec
	9	DC Brake Torque	0 ~ 100		2	20
	A	Upper Limit Freq.	0 ~ Max. Freq.		1 Hz	0 Hz
	B	Lower Limit Freq.	0 ~ Max. Freq.		1 Hz	0 Hz
	C	2nd. Speed Freq.	0 ~ Max. Freq.		0.24Hz *3	14 Hz
	D	3rd. Speed Freq.	0 ~ Max. Freq.		0.24Hz *3	5 Hz
	E	4th. Speed Freq.	0 ~ Max. Freq.		0.24Hz *3	30 Hz
	F	Parameter Level	0, 1, 2, 3	☆	1	0
1	1	Jogging Frequency	0 ~ 30 Hz		0.24Hz *3	7 Hz
	2	Jump Frequency 1-A	0 ~ Max. Freq.		1 Hz	5 Hz
	3	Jump frequency 1-B	0 ~ Max. Freq.		1 Hz	5 Hz
	4	Jump frequency 2-A	0 ~ Max. Freq.		1 Hz	60 Hz
	5	Jump frequency 2-B	0 ~ Max. Freq.		1 Hz	60 Hz
	6	Reduced Frequency at Instantaneous Power Failure	0 ~ Max. Freq.		0.24Hz *3	3 Hz
	7	Brake Starting Frequency	0 ~ 30 Hz		0.24Hz *3	3 Hz
	8	DC Brake Selection	[P] : (Positioning) [- P] : (Suden stop)	☆		[P]
	9	V/F Pattern **	0 ~ 100		1	0
	A	Stall Decel. Magnification	x 1, 2, 4, 8, 16	☆	—	V/F cnstnt
	B	Selection of Freq. Display	[0. - F] : Output Freq. [S. - F] : Set Freq. [C U r.] : Output Curnt *5	☆		x 8 [0. - F]
	C	Max. Freq. Output Adjustment	0 ~ 100		1	100
	D	Base Frequency	30 ~ 250 Hz		1 Hz	60 Hz
	E	Frequency Meter Adjustment	—		—	—
	F	Parameter Level	0, 1, 2, 3	☆	1	—

- *1 Inverter trips when you change or store this Parameter. Changed content becomes effective after you reset Inverter.
- *2 Braking time differs depending on [DC Brake Selection].
- *3 0.24 Hz is Min. Unit in case of 60 Hz of Max. freq. setting. In case of 120 Hz Setting, time is doubled. In both case, Min. Unit of panel is 1 Hz.
- *4 0 : V/F Constant, 100 : Squire Reduced Pattern
- *5 Ratio against Rated Current of Inverter will be displayed with 10 % step.
At low speed operation, display include some error and please do not use this display as measuring equipment but use as guidance.

10-4 Terminal Functions

(Main Circuit Terminals)

R	S	T	U	V	W	E
---	---	---	---	---	---	---

(Control Circuit Terminals)

TP1	TP2	5V	FIN	G	FOUT	I1	G	I2	I3	I4
-----	-----	----	-----	---	------	----	---	----	----	----

Line Motor Ground

- ◆ I1 ~ I4 terminals are "pulled up" from +5 V by 4.7 K Ω . You can control with contact or Open Collector Output.
- ◆ Please do not touch Control Circuit Terminals while Power is on. This may cause malfunction due to static electricity.

(Input Terminal Function)

Symbol	Terminal Name	Function																														
MNA	R, S, T	Power Input Terminal DV551M : Connect to AC 200-230 V, 50/60 Hz DV551MH : Connect to AC 380-460 V, 50/60 Hz																														
	U, V, W	Output Terminal Connect to 3 Phase Induction Motor																														
C	E	Ground Terminal DV551M : Ground with 100 Ω or less DV551MH: Ground with 10 Ω or less																														
	TP1 TP2	Trip Output Terminal Output Inverter Trip(can not hold when Power is off) and is insulated from the other Terminals Open Collector Output : [TP1] (Emitter) $V_{CE\ Max.} = DC\ 24\ V$ [TP2] (Collector) $I = 50\ mA\ Max.$																														
	5 V	F-Setting Terminal DC + 5 V is applied																														
	FIN	Freq Setting Input Terminal You can set Freq. by inputting DC 0 ~ +5V(or DC 0 ~+10 V, DC 4 ~ 20 mA) between [FIN] and [G]. 5V(or 10V, 20 mA) becomes max. Freq. Setting. <table><tr><th>Setting</th><th>DSW2</th><th>DSW3</th><th>Analog Setting</th></tr><tr><td>0 ~ 5 V</td><td>ON</td><td>OFF</td><td>[0 - 5]</td></tr><tr><td>0 ~ 10V</td><td>OFF</td><td>OFF</td><td>[0 - 5]</td></tr><tr><td>4 ~ 20mA</td><td>ON</td><td>ON</td><td>[4.2 0]</td></tr></table> Please keep DSW4 [OFF] at any time *1	Setting	DSW2	DSW3	Analog Setting	0 ~ 5 V	ON	OFF	[0 - 5]	0 ~ 10V	OFF	OFF	[0 - 5]	4 ~ 20mA	ON	ON	[4.2 0]														
	Setting	DSW2	DSW3	Analog Setting																												
0 ~ 5 V	ON	OFF	[0 - 5]																													
0 ~ 10V	OFF	OFF	[0 - 5]																													
4 ~ 20mA	ON	ON	[4.2 0]																													
G	Ground Terminal Common Grounging Terminal																															
RONT	FOUT	Freq. Meter Terminal Output the voltage in proportion with Output Frequency between [FOUT] and [FIN]/Please connect DC AMP Meter with full scale of 100 μA .																														
	I1	Normal Run Command Run with Short between [I1] and [G], Stop with Open																														
	I2	Reverse Run Command Reverse Run with Short between [I2] and [G], Stop with Open																														
	I3	Frequency Setting Different functions with different Operation Mode as below																														
	I4	Selection Terminal <table><tr><th>Operation Mode</th><th>I3 *2</th><th>I4 *2</th><th>Function</th></tr><tr><td rowspan="2">2-speed Mode</td><td>short</td><td>open</td><td>Jogging Operation *3</td></tr><tr><td>—</td><td>short</td><td>Free-Run Stop</td></tr><tr><td rowspan="5">4-speed Mode</td><td>open</td><td>open</td><td>1st. speed Selection</td></tr><tr><td>short</td><td>open</td><td>2nd. speed Selection</td></tr><tr><td>open</td><td>short</td><td>3rd. speed Selection</td></tr><tr><td>short</td><td>short</td><td>4th. speed Selection</td></tr><tr><td>open</td><td>—</td><td>Forced Trip</td></tr><tr><td></td><td>short</td><td>short</td><td>Free-Run Stop</td></tr></table>	Operation Mode	I3 *2	I4 *2	Function	2-speed Mode	short	open	Jogging Operation *3	—	short	Free-Run Stop	4-speed Mode	open	open	1st. speed Selection	short	open	2nd. speed Selection	open	short	3rd. speed Selection	short	short	4th. speed Selection	open	—	Forced Trip		short	short
Operation Mode	I3 *2	I4 *2	Function																													
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	open	short	3rd. speed Selection																													
	short	short	4th. speed Selection																													
	open	—	Forced Trip																													
	short	short	Free-Run Stop																													

*1 When you switch DSW, please turn off Power.

*2 [open] or [short] represent the relation to [G] for Control.

*3 If you give Normal Run or Reverse Run Command, it becomes Jogging.

① Priority of Terminal Function is given as follows;

DC Brake < Normal Operataion Jogging Operation < Free-Run Stop < Trip

- Ex. ① When you give Run Command during DC Brake is working, Inverter starts running.
② When you give Free-Run Stop Command during Jogging, Inverter starts Free-Run Stop.
③ Inverter will not follow Normal Run Command even if you give Free-Run Stop.

If you give contradicting Command(ex. Normal and Reverse Run Command) at the same time, Inverter sees it as Stop Command.

- (2) When you use [I1], [I2], please turn [Normal/Reverse Command Selection Switch](back side of Operation Panel) to [OFF]. When you give both Normal and Reverse Run Command during Trip, Trip will be released. *1.

*1 Please release Trip only after the cause of Trip is cured.