Panasonic

Variable Speed AC Motor Drive

DV707H SERIES

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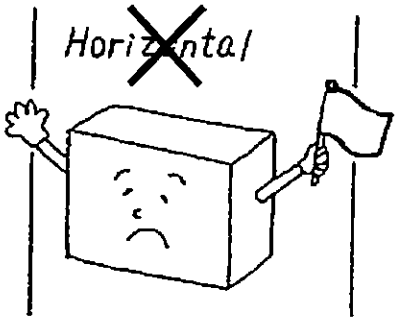
Chapter 1-Pre-installation

1.0 Caution

■ Please handle the Inverter carefully.
■ Please do not apply a force to a terminal cover.

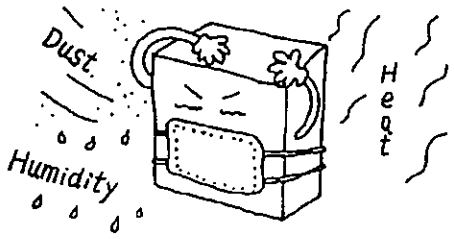
1.1 Installation

■ Please install vertically and allow enough open space for a better ventilation.

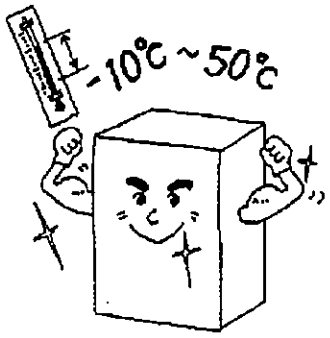


Note) ◇ Please use a mounting plate of the Inverter base with bolt or screw.
◇ Use M5 size bolt or screw.
◇ Please refer the mounting dimension to our drawing.
◇ Please mount on an incombustible material(metal) for a better heat dissipation.

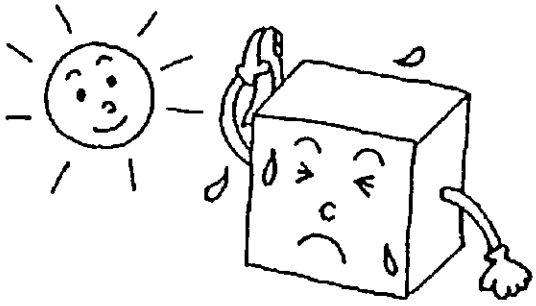
■ Please avoid high temperature, humidity, or dusty place.



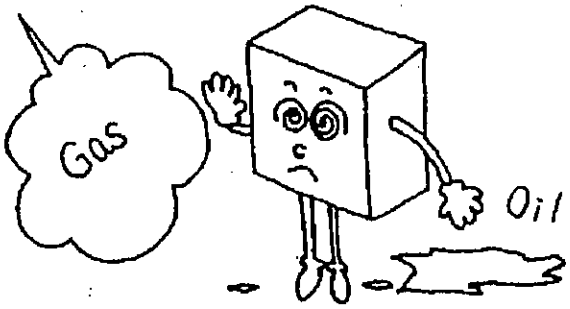
■ Please make sure ambient temperature is within -10℃ and +50℃.
In case, room temperature is over +40℃ please take off the ventilation cover and bushing.



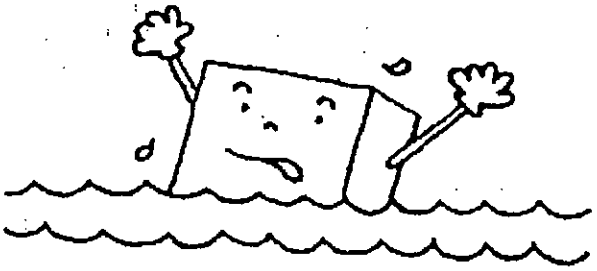
■ Please avoid the direct sunlight.



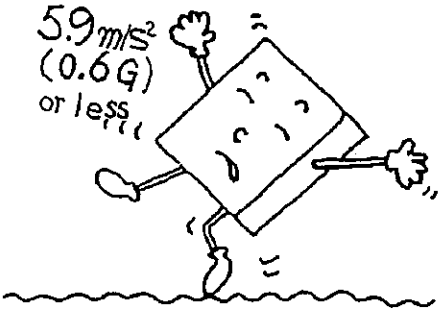
■ Please do not subject the Inverter to corrosive gas or oil.



■ This Inverter is not Water Proof. Please avoid using outdoors.



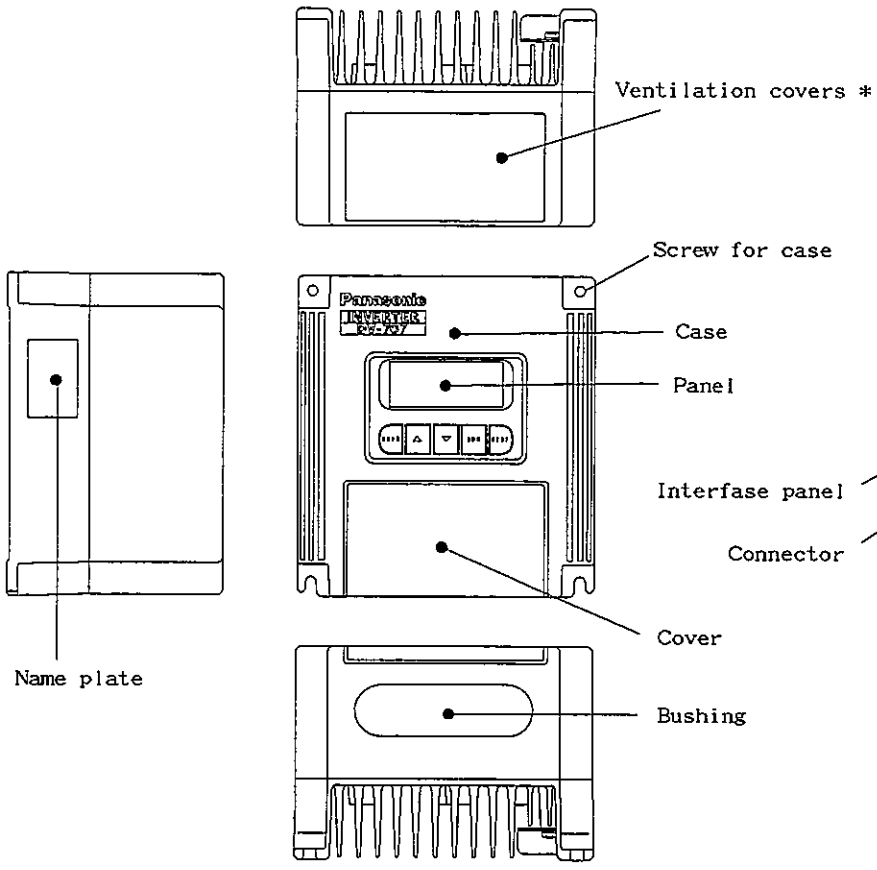
■ Please install at a stable location, or avoid using the Inverter continuously in the place with the vibration near the resonance frequency.



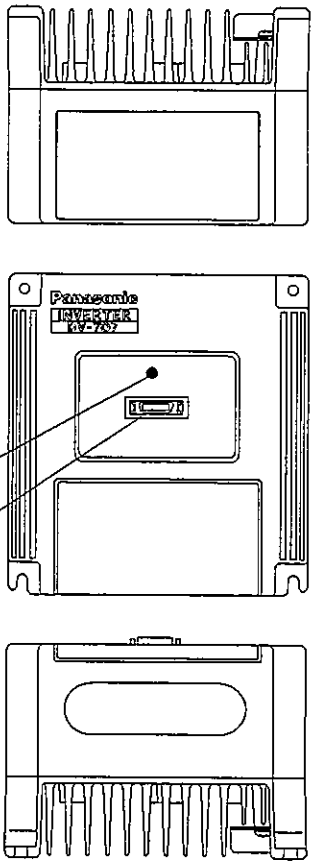
2.2 Construction

●DV707H750～3700

■A, B type (W/ operation panel)

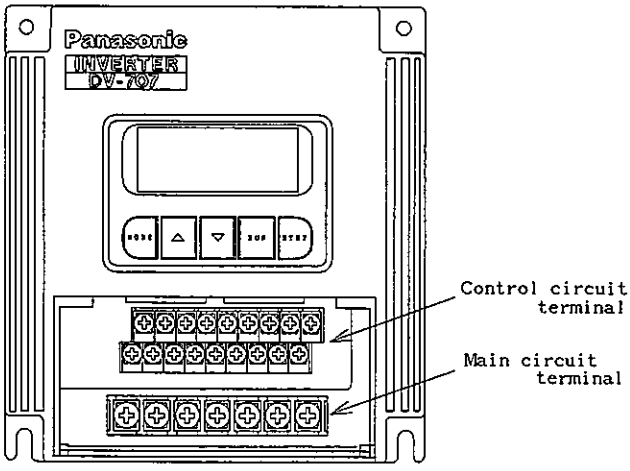


■C, D type (W/ interface panel)



* Ventilation covers are installed when shipping the Inverter.
In case, room temperature is over 40℃, please take off the ventilation cover and bushing.

<<when the terminal cover is taken out>>



Chapter 3-Specification

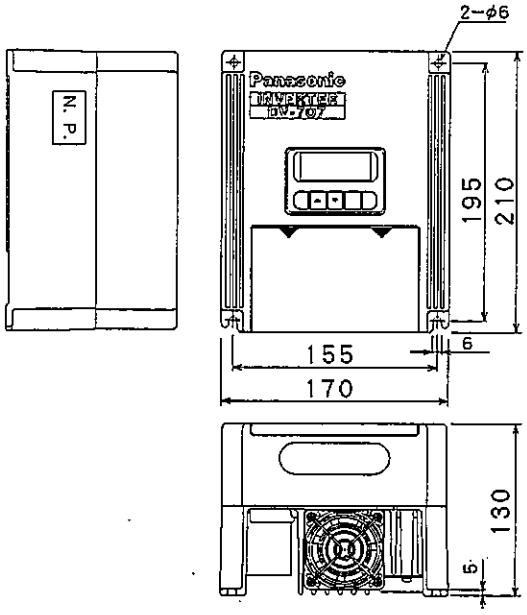
3.0 Standard specifications

Type designation*1			DV707H750 A, B, C, D	DV707H1500 A, B, C, D	DV707H2200 A, B, C, D	DV707H3700 A, B, C, D
Output ratings	Applied motor (kW)*2		0.75	1.5	2.2	3.7
	Rated capacity (kVA)*3		1.9	2.8	4.2	6.9
	Rated output current (A)		2.5	3.7	5.5	9.0
	Rated output voltage*4		3 phase, AC 380~440V			
Power source	Voltage/Frequency		3 phase, AC 380~440V 50/60Hz			
	Allowable voltage range		± 10%			
	Allowable frequency range		± 5%			
Control spec.	Control system		Sine wave PWM			
	Output frequency range		0.5~400Hz (Start/Stop from 0.5Hz)			
	Frequency accuracy		± 0.5% (at 25℃ ± 10℃)			
	Freq. setting resolution		<digital>:0.1Hz <analog>:Frequency range/1000Hz(Min.:0.05Hz)			
	Frequency command signal		DC 0~+5V, 0~+10V, 4~20mA			
	V/F pattern		Base frequency: 30~400Hz(1Hz step), Max. output volt.: 0~100% Torque boost, Squared reduced torque pattern, 2nd. V/F pattern			
	Over load capacity		150% for 1min.			
	Regenerative brake torque	Type A, C	20%			
		Type B, D	150% or more	100% or more	100% or more	70% or more
	DC dynamic brake		Free setting of Starting frequency, Brake time, Brake torque			
	Acceleration/deceleration time		0~3600secs(0~3secs:0.02secs step, 3~10secs:0.1secs step, 10~3600secs:1sec step) Time to change up to 50Hz. Up to 4th. accel./decel. time. Linear and 2-"S" shaped acceleration/deceleration.			
	Jogging frequency range		0~30Hz			
	Operation mode		2-speed mode, 4-speed mode, 8-speed mode, 16-speed mode			
	Others		Selectable retry function, Parameter lock, Automatic/Manual torque boost, Slip freq. compensation control			
Protective function			Undervoltage protection, Overvoltage protection, Overcurrent protection, Overload shutoff(Electronic thermal), Overload limit(current limit), Instantaneous power failure protection, Overvoltage stall prevention, Overcurrent stall prevention Auto restart prevention, Self-diagnosis trip (memorizes causes of last 5 trips)			
Ambient	Temperature		-10℃~+50℃ In case, room temperrature is over 40℃, please take off the ventilation cover and bushing.			
	Relative humidity		Max. 90%RH (non-condensing)			
	Atmosphere		Indoors (to be free from corrosive gas, dust)			
	Altitude		Up to 1000m without de-rating			
	Vibration		5.9m/s² (0.6G) or less (10~60Hz)			
Enclosures			Enclosed type*5			
Cooling method			Free cooling		Fan cooling	
Mass (kg)			2.9	2.9	2.9	

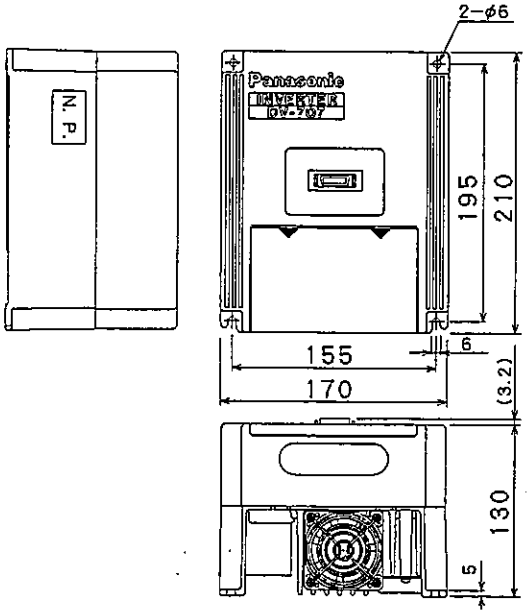
*1) Please refer to Chapter 「**2.0 Name plate identification**」 for distinction.
*2) Please select the proper motor which does not exceed the rating of the Inverter.
*3) Rated capacity is a value at 440V of the rated output voltage.
*4) Please note that the output voltage of the Inverter will not exceed the power source voltage.
*5) Except the connector of the interface panel.

3.1 Dimensions (in mm)

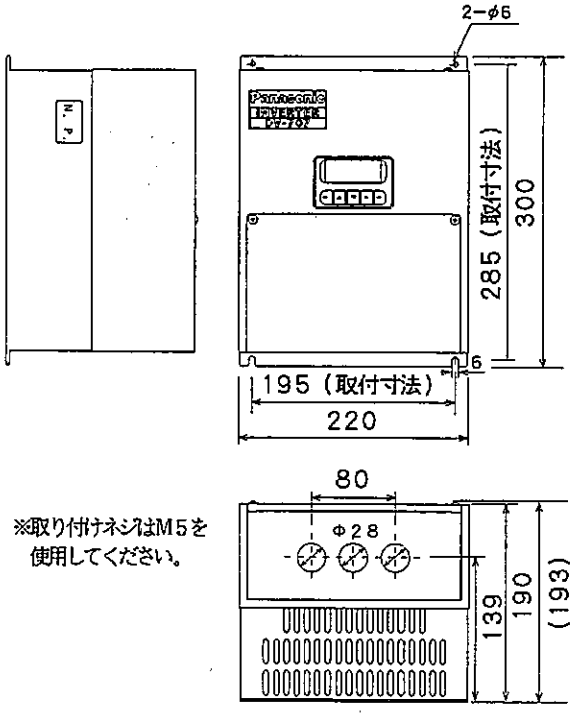
●DV707H750A, B
●DV707H1500A, B
●DV707H2200A, B
●DV707H3700A, B



●DV707H750C, D
●DV707H1500C, D
●DV707H2200C, D
●DV707H3700C, D



●DV707H5500A, B
●DV707H7500A, B
●DV707H11kWA, B



※取り付けネジはM5を
使用してください。

●DV707H5500C, D
●DV707H7500C, D
●DV707H11kWC, D

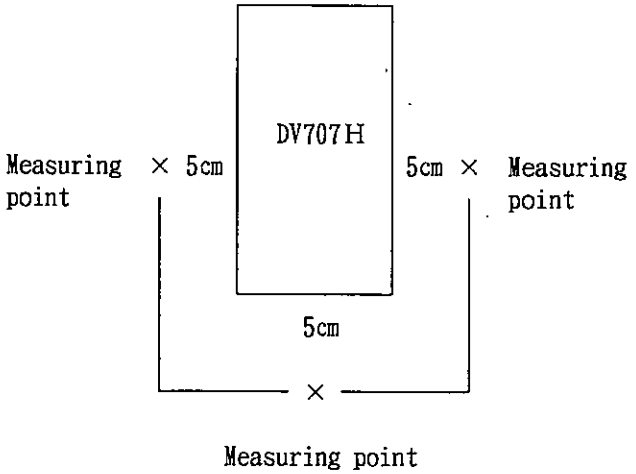
4.1 Proper use of the Inverter

Misuse of the Inverter leads to a wrong operation or sometimes results in damage to the Inverter.
Please read the following for proper use of the Inverter.

- Please do not input higher voltage than rating to the line terminals(L1, L2, L3). Please do not connect the line to other than 「L1」「L2」 and 「L3」 terminals. (refer to Chapter 「3.0 Standard specifications」)
- Please use the power supply of capacity from 150% of the capacity of the Inverter to 500kVA. When the power supply of capacity which exceeds 500kVA is used and the Phase-advance capacitor of the power supply is switched, please set up the suitable power factor correction Reactor for the capacity of the Inverter on the line side of the Inverter.
- Higher ambient temperature may influence the life of the Inverter. Please try to use at lower temperature as much as possible.
- Please do not install Electromagnetic Contactor between the motor and the Inverter in order start/stop the motor. Please start/stop the motor with 「RUN」/「STOP」 switches on the operation panel or with input terminals of the Inverter (「I1」, 「I2」).
- Please do not connect Phase-advance capacitor to output side of the Inverter.
- When you perform 「Megger test」, please follow procedure as described in Chapter 「7.2 Megger test」.
- Please avoid an overload operation which exceeds the capacity of the Inverter.
- Please ensure the sensitivity current is 30mA or more on the line side of the Inverter if you use an Earth Leakage Circuit Breaker.

Note

- Ambient temperature may affect the life of the Inverter. Please make sure that the ambient temperature will not exceed allowable temperature.
- Make sure that temperature at marked place will not exceed allowable temperature.



《 Allowable temperature 》

- ●-10℃ ～+40℃ : with ventilation covers & bushing(Factory setting) : DV707H750～3700
- ●-10℃ ～+50℃ : without ventilation covers & bushing : DV707H750～3700
- ●-10℃ ～+50℃ : without ventilation covers & bushing(Factory setting) : DV707H5500～11kW

4.3 Terminal functions

<Control circuit>

NC	COM2	NO	5V	G	I1	I3	I5	G
COM1	O1	O2	FIN2	FIN1	FOUT	I2	I4	I6

<Main circuit>

●DV707H750～3700

	Line			Motor			
PE	L1	L2	L3	U	V	W	PE

●DV707H5500～11kW

Line			Motor			
L1	L2	L3	U	V	W	PE

◆ Input terminals from 「I1」 to 「I6」 are pulled up from +5V by 4.7KΩ. You can control with a contact or an open collector output.
◆ Please do not touch the control circuit terminals while the power is on. This may cause malfunction due to a static electricity.

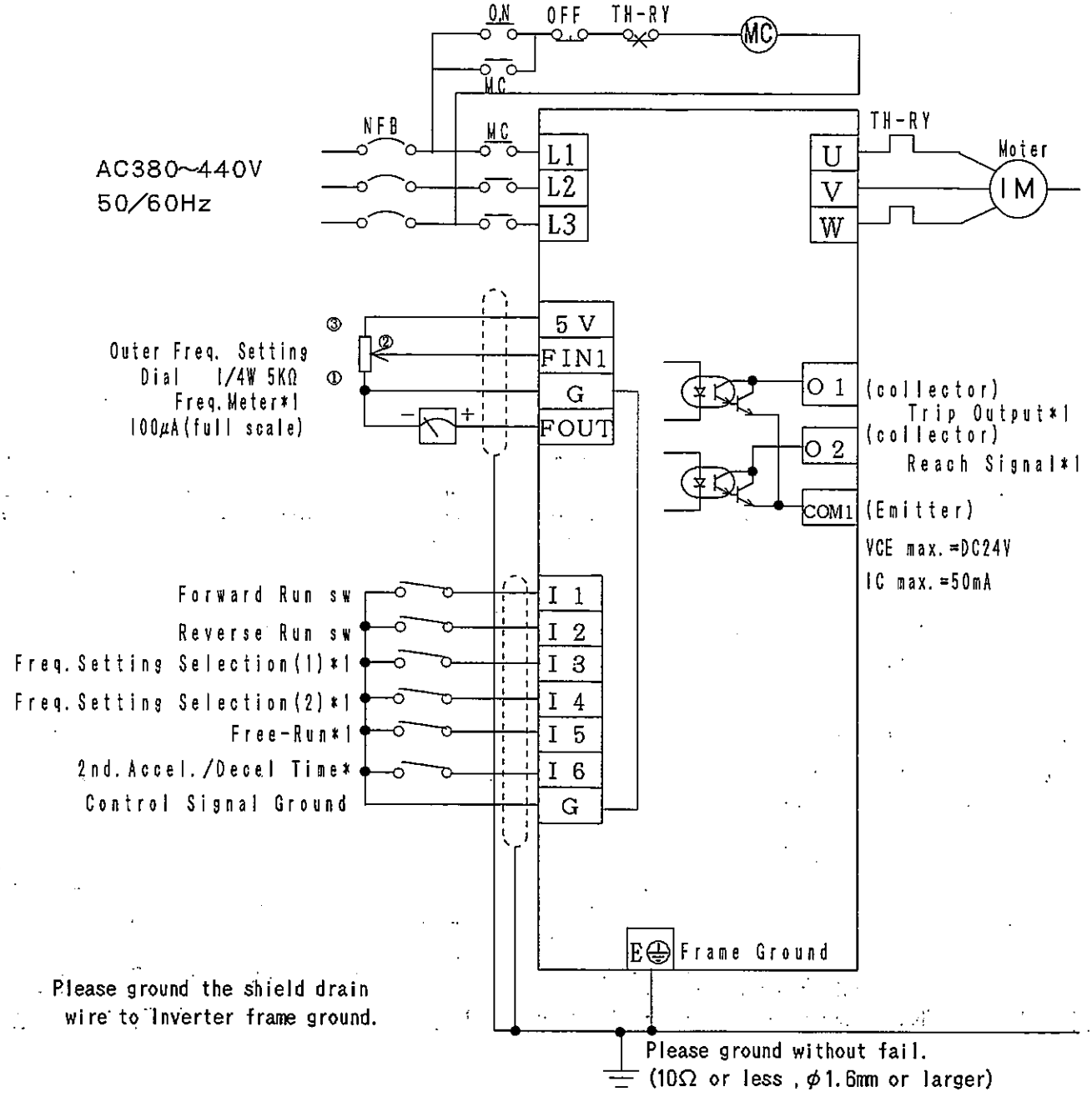
Input/output terminal function

Symbol/terminal title	Description
L1, L2, L3 /Line input terminals	Connect to the power source of AC 380～440V, 50/60Hz.
U, V, W /Motor output terminals	Connect to the 3-phase induction motor.
PE /Ground terminal	Frame ground:Please ground W/O fail(10Ω or less, φ1.6mm or larger).
5V /Freq. setting source	DC +5V is applied.
FIN1, FIN2 /Analog frequency setting input	You can make a frequency setting with the input of DC 0～5V or DC 0～10V between 「FIN1」 and 「G」. This is valid when 「17 **Frequency command selection**」 is set to 0-5 or 0-10. You can make a frequency setting with the input of DC 4～20mA between 「FIN2」 and 「G」. If you command both 「FIN1」 and 「FIN2」, lager value is valid.
G /Control signal ground	Common for the control signal.
FOUT /Frequency meter output	Outputs the voltage in proportion to the output frequency between 「FOUT」 and 「G」. Connect the frequency meter of full scale with 100μA. You can output the pulse which synchronizes with the output frequency by changing 「64 **FOUT selection**」. Output impedance : 390kΩ
I1 /Forward run command I2 /Reverse run command	● 「I1」 - 「G」/short : Forward run, 「I1」 - 「G」/open : Stop ● 「I2」 - 「G」/short : Reverse run, 「I2」 - 「G」/open : Stop You can make 「I1」 as run/stop and 「I2」 as forward/reverse command by changing 「46 **I1•I2 function selection**」.
I3, I4 /Selectable function(1) - Jogging command - Freq.setting select I5, I6 /Selectable function(2) - Free-run command - 2nd.accel./decel.time - Outer trip - Freq.setting select	You can select following functions per 「**5.7 Operation mode**」
G /Control signal ground	Common for the control signal.
O1, O2 (Collector) COM1 (Emitter) /Output signal	Open collector output terminals(does not hold when the power is off.). You can select the function through 「51 **Output signal① selection**」 or 「52 **Output signal② selection**」. Factory setting : 「O1」 is trip signal. 「O2」 is reach signal. I_C max. = 50mA, V_{CE} max. = DC 24V
NC, NO、COM2	RY output terminals(does not hold when the power is off.). You can select the function through 「53 **Output signal selection**」 Signal off : 「NO」-「COM2」→OPEN. 「NC」-「COM2」→CLOSE. Signal on : 「NO」-「COM2」→CLOSE. 「NC」-「COM2」→OPEN AC250V 5A(DC30V 5A)

Operation mode	I3	I4	I5	I6
2-speed mode	Fwd. jogging	Rev. jogging	Free-run command, Outer trip command, 2nd. accel./decel. time, Trip reset	
4-speed mode	Frequency setting selection			
8-speed mode				
16-speed mode				

4.4 Standard wiring diagram

<< At factory setting >>



* Factory setting

Chapter 5-Operation

5.0 Prior to operation

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

(1) Right wiring ? (Especially line input terminals 「L1」, 「L2」 and 「L3」, and output terminals, 「U」, 「V」 and 「W」)

(2) Right input ? (3 phase, 380～440V, 50/60Hz)

(3) Any short circuit portion ?

(4) Any loose screw or termination ?

(5) Any short circuit or grounding at load ?

5.1 How to operate

You can enter the frequency command and the run command by the following 6 ways through the operation panel or the terminal board;

	Frequency command		Run command		Note
	panel	board 「FIN1」*2 or 「FIN2」*3	panel	board 「FIN1」 or 「FIN2」	
1	○		○ *1	○ *1	【Factory setting】
2		○	○ *1	○ *1	Change parameter, 「16 **Run command selection**」 or 「17 **Frequency command selection**」 (Please refer to Chapter 「**6.1 Parameter functions**」)
3	○		○		
4		○	○		
5	○			○	
6		○		○	

*1) The command through the terminal board is given a priority when the command is entered through both the panel and the terminal board. 「RUN」 switch is valid only when both 「I1」, forward run switch and 「I2」, reverse run switch is 「OFF」. If either or both of 「I1」 or/and 「I2」 of the terminal board is turned on, the command through the run switch of the panel will be cancelled.

*2) 「FIN1」 terminal is the voltage command only.

*3) 「FIN2」 terminal is the current command only.

☆ You can operate following additional functions through 「I3」～「I6」;

- Multi-speed operation up to 16 speeds
- Forward/reverse jogging
- Free-run command
- Acceleration/deceleration time selection up to 4
- Trip command
- Trip reset command

5.3 Trial operation

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

① Make the motor operate alone.
② Turn all input to the terminal board to 「OFF」(open).
③ Turn the external potentiometer to the minimum.

(2) Then turn on the power (turn on the NFB 「Non-Fuse Breaker」 and the MC 「Magnetic Contactor」 at input side of the Inverter) and check the following;

Operation	Operation panel		Note
	SW	4-digit LED	
① Power on		0.0	- Monitor mode on turning the power on. (displays the output frequency)
② Set the frequency	- Push △, ▽	0.0	- Displays 0-speed frequency. (Factory setting is 0.0Hz) (returns to the monitor mode if you do not operate SW for more than 3secs. In this case, push △, ▽)
	- Set the frequency with △, ▽	60.0	- Set 0-speed to 60.0Hz
③ Return to monitor mode		0.0	- Returns to the monitor mode if you do not operate SW for more than 3secs.
④ Run command	- Push RUN	60.0	- Varies gradually.
⑤ Stop command	- Push STOP	0.0	- Varies gradually.

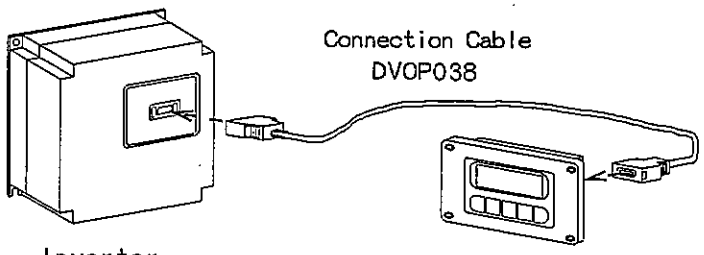
《 Check point at trial operation 》

① Does the motor run smoothly ? Any abnormal noise or vibration ?
② Is acceleration/deceleration smooth ?
③ Is rotational direction of the motor correct ?

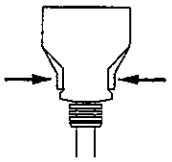
☆ If the Inverter trips or shows any malfunction, please refer to Chapter 「**8 Troubleshooting**」. When the Inverter trips, cause of the trip will be indicated on 4-digit LED of the panel, and the motor becomes 「Free-run」. Please refer to Chapter 「**5.8 Monitoring**」 for display.

(2) Connection

Plug the one side of the connecting cable(option) into the connector of the Inverter and the other end into the connector of the remote control panel.

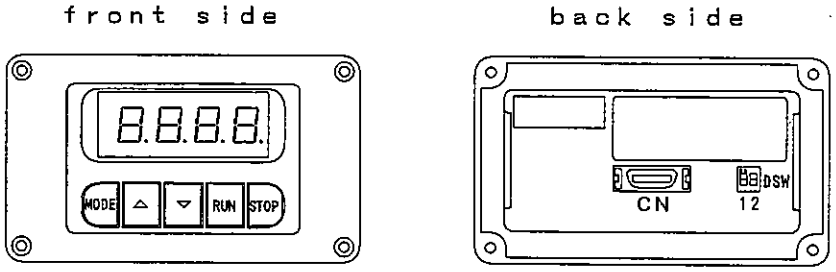


When you unplug, pull out while pushing the side of the the connector portion.



Please turn off the power to the Inverter when you plug-in or unplug.

(3)Composition



Front side consists of 4-digit LED [8.8.8.8.], (MODE) switch, setting switches (△) (▽), run switch (RUN) and stop switch (STOP). You can run/stop, confirm/change the parameters, Displays the Inverter's condition (output frequency, preset frequency and malfunction) and release the trip. (Please refer Chapter 「**5. 2 Operation panel**」) Back side consists of the connector 「**CN**」 and dip switch 「**DSW**」 with which you can prohibit the functions of the switches on the front side. Please follow the below when you want to prohibit the functions of the switches on the front side.

Dip switch	Title	Function	Factory setting
DSW-1	Parameter change prohibition switch	(MODE) and (△) (▽) switch becomes void with this switch.	「ON」
DSW-2	Run/stop command prohibition switch	Run/stop switches becomes void with this switch 「OFF」.	「ON」

(2) Parameter selecting examples

■ How to set acceleration time.
〈e.g.〉 Set 「2 1 **Acceleration time**」 to 1.0sec.

Operation	SW	4-digit LED	Note
① Power on		0.0	Monitor Mode
② Call for 「2 1 **Acceleration time**」	Push [MODE].	00	Displays the parameter number. (returns to monitor mode if you do not operate SW for more than 3secs. In this case, please push [MODE] again.)
	Set **21** with [△].	21	「2 1 **Acceleration time**」
③ Set to 1.0sec.	Push [MODE].	5.0	Factory setting is **5secs**.
	Set **1** with [▽].	1.0	Set 「**Acceleration time**」 to **1.0sec**.
④ Returns to monitor mode	Push [MODE].	21	Displays the parameter number.
		0.0	Returns to monitor mode in 3secs.

■ How to set a frequency with an external potentiometer.
〈e.g.〉 Set 「17 **Frequency command selection**」 to [0-5].

Operation	SW	4-digit LED	Note
① Power on		0.0	Monitor mode
② Call for 「17 **Freq. command selection**」	Push [MODE].	00	Displays the parameter number. (returns to monitor mode if you do not operate SW for more than 3secs. In this case, please push [MODE] again.)
	Set **17** with [△].	17	「17 **Frequency command selection**」
③ Set to 「0~5V」	Push [MODE].	PnL	Factory setting is operation panel
	Push [△].	0-5	Set 「**Frequency command selection**」 to 「**0~5V**」.
	Push [MODE].	17	Displays the parameter number.
	Memorize. *1	CAU (trip)	Trips for safety.
④ Release the trip*2	Push both [△] & [▽]	0.0	Monitor mode

*1) Changed parameter will be stored by pushing [△] or [▽] to move the parameter number or by returning to a monitor mode without touching SW for about 3secs.

*2) You cannot release the trip with [△] & [▽] if you push [MODE] beefore the trip release (this leads to show the trip factor). In this case, please release the trip by returning to a present trip factor mode. (refer to Chapter 「**5.8 Monitoring**」)

5.6 Operating functions

DV707H Series have the following operating functions. You can command through the switches on the operation panel or the terminal board.

Function	Contents
Normal operation	■ Normal operating function with acceleration/deceleration time. ■ The Inverter makes soft start by shorting the terminals 「I1」-「G」(for forward run), 「I2」-「G」(for reverse run). ■ You can operate multi-speed(up to 16 speeds) with the frequency setting terminals. ■ You can set acceleration/deceleration time to 0～3600secs independently to each other. *1
Jogging operation	■ Operating function with 0(zero)sec. acceleration/deceleration time. Useful for positioning. ■ Please select 「**Operation Mode**」*2 to 2-speed mode for this function. ■ The Inverter outputs 「**Jogging frequency**」 by shorting the terminals 「I3」-「G」(for forward jogging), 「I4」-「G」(for reverse jogging). ■ You can shift from normal operation to jogging or jogging to normal operation. ■ Jogging frequency can be set within 0～30Hz range, but if this is too high, the Inverter may trip due to an overcurrent. *3
Free-run stop	■ The Inverter shuts off the output voltage to the motor. Useful for applying mechanical brake. Please note that the output terminals to the motor (U, V, W) are not insulated during a free-run stop. Please be careful for electrical shock.
DC dynamic brake *4	■ Braking function by applying DC to the motor while the Inverter shifts from the operation to stop mode. If you enter the forward/reverse run command or the jogging command while the DC dynamic brake is working, the Inverter will stop braking and starts the instructed operation mode.
Positioning DC brake	■ If you give a stop command during the normal operation, the Inverter starts braking and soft stop when the output frequency becomes 3Hz(changeable by parameter). ■ If you make preset frequency to 0(zero)Hz, a brake starts at an output frequency of 1Hz or lower. ■ You can set torque and time by the parameter.
Immediate DC brake (Full-range)	■ Brake starts immediately after you give a stop command during a normal operation. (without making a soft stop) ■ You can set torque and time by the parameter. ■ Braking time to stop is 2 times that of 「**Positioning DC brake mode**」.

*1) Time to change up to 50Hz. Please refer to Chapter 「**5.2 Operation panel**」 how to set a acceleration/deceleration time.
*2) Please refer to Chapter 「**5.7 Operation mode**」.
*3) Please refer to Chapter 「**5.2 Operation panel**」 how to set a jogging frequency.
*4) Please refer to Chapter 「**5.2 Operation panel**」 how to set a brake mode selection.

5.7 Operation mode

DV707H Series have 4 operation modes. You can select a mode by 「 18 **Operation mode selection**」(refer to Chapter 「**6.1 Parameter functions**」).

Operation mode	Terminal function						Value of 「 18 **Operation mode selection**」
	I 1	I 2	I 3	I 4	I 5 *1	I 6 *1	
2-speed mode	Forward run	Reverse run	Forward jogging	Reverse jogging	- Free-run - Trip - 2nd. accel./ decel. time - Trip reset	- Free-run - Trip - 2nd. accel./ decel. time - Trip reset	2
4-speed mode	Forward run	Reverse run	Frequency setting selection		- Free-run - Trip - 2nd. accel./ decel. time - Trip reset	- Free-run - Trip - 2nd. accel./ decel. time - Trip reset	4 Factory setting
8-speed mode	Forward run	Reverse run	Frequency setting selection			- Free-run - Trip - 2nd. accel./ decel. time - Trip reset	8
16-speed mode	Forward run	Reverse run	Frequency setting selection				16

*1) You can select by 「47 **I5 function selection**」 or 「48 **I6 function selection**」.

☆ You can operate multi-speed(as below) by open/short the frequency setting terminals. When all terminal is open, 0-speed frequency will be selected and you can set by the parameter 「00 **Preset frequency(0-speed)**」 or by an external potentiometer. (select a parameter setting or an outer setting of 0-speed frequency by 「 17 **Frequency command selection**」)

〈 Frequency setting selection at 4-speed mode(Factory setting)〉 *2

between 「I3」 and 「G」	between 「I4」 and 「G」	Frequency setting
open	open	0-speed freq.
short	open	1st. speed freq.
open	short	2nd. speed freq.
short	short	3rd. speed freq.

*2) Please refer to Chapter 「**4.3 Terminal functions**」 for a frequency setting selection at 8-speed mode or 16-speed mode.

5.8 Monitoring

(1) Frequency monitoring

The output frequency is always displayed when you turn on the power and run. When in parameter selection mode, the display will automatically return to the output frequency display if none of the panel switches are touched for more than 3secs.
You can display the preset frequency by selecting parameter 「60 **Monitor mode selection**」).

(2) Warning/Malfunction monitoring

When the Inverter detects warning or trip, this will be displayed on 4-digit LED. This display is given the first priority. (refer to Chapter 「**8.1 Protective functions**」)

Alarm/ Fault	4-digit LED	Content
Alarm	L	Lack of input voltage
Alarm	rEUP.	Reverse run prevention
Alarm	r.P.	Automatic restart prevention
Fault	O.C.	Overcurrent trip
Fault	O.C.-U	Overcurrent trip at accel.
Fault	O.C.-d	Overcurrent trip at decel.
Fault	O.U.	Overvoltage trip
Fault	O.L.	Outer trip
Fault	Thr.	Electronic thermal
Fault	Err.	CPU error
Alarm	E.O.U.	Overvoltage trip on the power on

Alarm/ Fault	4-digit LED	Content
Alarm	CAU.	Change/store following parameters 「16 Run command selection」 「17 Frequency command selection」 「18 Operation mode selection」 「38 2nd. V/F type selection」 「45 Multi-speed input selection」 「46 I1•I2 function selection」 「47 I5 function selection」 「48 I6 function selection」 「69 Reverse run prevention」 「70 Automatic restart prevention」 「71 Retry selection」 「73 Frequency at 5V input」 「74 Frequency at 0V input」
Alarm	----	End of parameter initialization *1
Alarm	CLr	End of clearance of trip causes *2

*1) Refer to 「85 **Parameter initialization**」.
*2) Refer to 「80 **Trip causes clearance**」.

(3) Cause of past trip monitoring

You can confirm causes of up to the last 5 trips from 「81 **Trip cause ①**」 to 「85 **Trip Cause ⑤**」.
You can confirm per the following method while the Inverter trips.

Operation	Operation panel SW	Operation panel 4-digit LED	Note
Trip occurs.		O.C.	<e.g.> Overcurrent trip
① Confirm cause of the last trip.	Push (MODE).	81	「81 **Trip cause ①**」
	Push (MODE).	O.U.	For example, cause of the last trip is overvoltage.
② Confirm cause of the 2nd. latest trip.	Push (MODE).	81	Displays parameter number again.
	Push (△).	82	「82 **Trip cause ②**」
	Push (MODE).		Displays cause of the 2nd. latest trip(blank if none).
③ Confirm cause of the 3rd.~5th. latest trip.	Repeat ② procedure.		
④ Return to the present trip display mode. *1	Push (MODE).	85	Displays the parameter number.
		O.C.	Returns to monitor mode in 3secs.

*1) You can return to the present trip display mode in about 3secs. If you do not operate SW while the parameter number(81~85) is displayed. Please release the trip with both (△) and (▽) while the present trip display is on.

No.	Parameter title	Specification				Order of display
		Adjustable range	Min. unit	Factory set	User setting	
04	4th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		16
05	5th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		17
06	6th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		18
07	7th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		19
08	8th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		20
09	9th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		21
10	10th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		22
11	11th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		23
12	12th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		24
13	13th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		25
14	14th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		26
15	15th. speed freq.	0, 0.5~Upper limit freq.	0.1Hz	0Hz		27
23	3rd. accel. time	0~3600secs ~ 3secs : 0.02secs step 3secs~10secs : 0.1secs step 10secs~ : 1sec. step		5secs		28
33	3rd. decel. time			5secs		29
24	4th. accel. time			5secs		30
34	4th. decel. time			5secs		31
25	DC brake torque	0~100	2	76(50*1)		32
26	DC brake time selection	0~3secs : P05 0~6secs : -P05	0.05secs 0.1 secs	0.5secs		33
27	DC brake type selection	-P05 Immediate P05 **Positioning**		P05		34
28	Start-up DC brake time	0~3secs	0.05secs	0(No active)		35
29	DC brake starting freq.	0.5~400Hz	0.1Hz	3Hz		36
36	Maximum output voltage	0~100%	1%	100%		37
37	V/F pattern	1.0~2.0(squared)	0.1	1.0		38
38	2nd. V/F type selection	n0 **Normal** UP Upper LO Lower		n0		39
39	2nd. base freq.	30~400Hz	1Hz	60Hz		40
40	2nd. torque boost	0~100	2	0		41
41	Jump freq. ①－A	0, 0.5~400Hz	0.1Hz	0Hz		42
42	Jump freq. ①－B	0, 0.5~400Hz	0.1Hz	0Hz		43
43	Jump freq. ②－A	0.5~400Hz	0.1Hz	60Hz		44
44	Jump freq. ②－B	0.5~400Hz	0.1Hz	60Hz		45
45	Multi-speed input selection	1b 1F 1 bit b In **Binary**		b In		46

*1) DV707H1500, DV707H2200, DV707H3700, DV707H5500, DV707H11kW only.

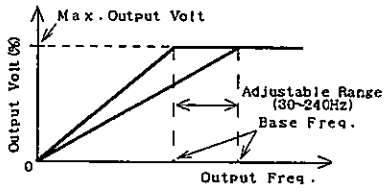
No.	Parameter title	Specification				Order of display
		Adjustable range	Min. unit	Factory set	User setting	
67	Accord detect width	0~400Hz	0.1Hz	3Hz		66
68	Reduced frequency at IPF	0~400Hz	0.1Hz	3Hz		67
69	Reverse run prevention	nO **Fwd./Rev.** YES Fwd. only		nO		68
70	Automatic restart prevention	nO **Auto-restart** YES Manual-restart		nO		69
71	Retry selection	nO **No retry** 1 ~ 4 Retry		nO		70
72	Retry starting time	0~120secs	2secs	4secs		71
73	Freq. at 5V input	0, 0.5~400Hz	0.1Hz	60Hz		72
74	Freq. at 0V input	0, 0.5~400Hz	0.1Hz	0Hz		73
75	Upper limit frequency	Lower limit freq.~400Hz	0.1Hz	60Hz		74
76	Lower limit frequency	0, 0.5~Upper limit freq.	0.1Hz	0Hz		75
77	Retry after overvoltage trip on power-on	nO YES		nO		76
79	Electronic thermal	50~100%	5%	100%		77
80	Trip causes clearance	nO YES		nO		78
81	Trip cause ①	Cause of the last trip	—	—		79
82	Trip cause ②	Cause of 2nd. latest trip	—	—		80
83	Trip cause ③	Cause of 3rd. latest trip	—	—		81
84	Trip cause ④	Cause of 4th. latest trip	—	—		82
85	Trip cause ⑤	Cause of 5th. latest trip	—	—		83
86	Parameter initialization	nO YES		nO		84
87	Motor selection	4P. 0.8 Applicable motor*2 Motor pole numbers		4poles Same as Inverter capacity*3		85
88	Do not use.					
--	Parameter lock	nO **No lock.** ALL Lock all the parameter. PArT Page 1(one) lock.		nO		—

Note)

*1 When you change/store the marked parameters, the Inverter trips for safety. Please release the trip to operate again.

*2 Applicable motor is represented as 0.8=0.75kW, 1.5=1.5kW, 2.2=2.2kW, 3.7=3.7kW, 5.5=5.5kW, 7.5=7.5kW, 11=11kW.

*3 Factory setting is the motor with the same capacity as the Inverter is preset.

No.	Parameter title	Description	Order of display
21 31	Acceleration time Deceleration time	You can adjust varying rate at acceleration/deceleration time. - Set with the time to change by 50Hz. - When you set 0sec., actual accel./decel. time becomes 0.05sec.	09 10
22 32	2nd. accel. time 2nd. decel. time	You can adjust varying rate at 2nd. acceleration/deceleration time. This is valid when 「47 I5 function selection」 or 「48 I6 function selection」 is set to [U-d] (2nd. acceleration/deceleration).	11 12
20	Jogging frequency	You can adjust a frequency at jogging run.	13
30	Do not use.		14
35	Base frequency	You can adjust a base frequency (Maximum frequency at constant torque area) to any frequency between 30 and 400Hz. 	15

*1) Factory setting

Note:
Above 15 parameters are adjustable at factory settings. Please set 「Number of selectable parameters」 before confirming/changing the parameters in the following pages.

6.2 Parameter functions(Non factory settings)

Note:
Please set 「Number of selectable parameters」 before confirming/changing the following parameters. (refer to Chapter 「5.5 Parameter selection」)

No.	Parameter title	Description	Order of display
04 05 06 07 08 09 10 11 12 13 14 15	4th. speed freq. 5th. speed freq. 6th. speed freq. 7th. speed freq. 8th. speed freq. 9th. speed freq. 10th. speed freq. 11th. speed freq. 12th. speed freq. 13th. speed freq. 14th. speed freq. 15th. speed freq.	You can set 4th. ~15th. speed frequency when you select 8-speed, 16-speed operation mode at 「18 Operation mode selection」.	16 17 18 19 20 21 22 23 24 25 26 27
23 33 24 34	3rd. accel. time 3rd. decel. time 4th. accel. time 4th. decel. time	You can set varying rate at 3rd./4th. acceleration/deceleration time. This is valid when both 「47 I5 function selection」 and 「48 I6 function selection」 is set to [U-d]. (2nd. acceleration/deceleration).	28 29 30 31

Operation mode	Input terminal			
	I3	I4	I5	I6
8-speed mode	Frequency setting selection			**2nd. accel./ decel. time** *1
16-speed mode	Frequency setting selection			

*1)Factory setting

<table>
<tr><th>No.</th><th>Parameter title</th><th>Description</th><th>Order of display</th></tr>
<tr><td>45</td><td>Multi-speed input selection</td><td>
You can set a selecting method of frequency at multi-speed operation

● [1b 1Γ] (1 bit) : 1 bit input

You can select one frequency per corresponding terminal of 「Frequency setting selection terminal」. You can operate up to 3 speeds at 4-speed mode, 4 speeds at 8-speed mode and 5 speeds at 16-speed mode.

〈e.g.〉at 16-speed mode
<table>
<tr><th colspan="4">Input terminal</th><th rowspan="2">Freq. setting</th></tr>
<tr><th>I 3</th><th>I 4</th><th>I 5</th><th>I 6</th></tr>
<tr><td>open</td><td>open</td><td>open</td><td>open</td><td>0-speed freq.</td></tr>
<tr><td>short</td><td>×</td><td>×</td><td>×</td><td>1st. speed freq.</td></tr>
<tr><td>open</td><td>short</td><td>×</td><td>×</td><td>2nd. speed freq.</td></tr>
<tr><td>open</td><td>open</td><td>short</td><td>×</td><td>3rd. speed freq.</td></tr>
<tr><td>open</td><td>open</td><td>open</td><td>short</td><td>4th. speed freq.</td></tr>
</table>
- open/short represents the relation to 「G」

- × means 'don't care'

● [b In] (Binary) : Binary input*1

You can select a frequency by interpreting 「Frequency setting selection terminal」 as binary digits.
</td><td>46</td></tr>
<tr><td>46</td><td>I1•I2 function selection</td><td>
You can select the function of 「I1」 and 「I2」 as follows;
<table>
<tr><th rowspan="2">Terminal
46 Setting</th><th colspan="2">between 「I1」 and 「G」</th><th colspan="2">between 「I2」 and 「G」</th></tr>
<tr><th>short</th><th>open</th><th>short</th><th>open</th></tr>
<tr><td>FS.rS*1</td><td>Forward run</td><td>Stop</td><td>Reverse run</td><td>Stop</td></tr>
<tr><td>rS.Fr</td><td>Run</td><td>Stop</td><td>Reverse</td><td>Forward</td></tr>
</table>
(FS.rS : Fwd. -Stop／Rev. -Stop　rS.Fr : Run-Stop／Fwd. -Rev.)
</td><td>47</td></tr>
<tr><td>47

48</td><td>I5 function selection
-Invalid at 8-speed mode, 16-speed mode

I6 function selection
-Invalid at 16-speed mode</td><td>
You can select the function of 「I5」 and 「I6」 as follows;

● [FrEE] (Free) short 「I5」(「I6」) & 「G」 → Free-run stop*1

● [ΓHr] (Thermal) short 「I5」(「I6」) & 「G」 → Trip command

● [U-d] (Up-Down) short 「I5」(「I6」) & 「G」 → 2nd. accel. /decel. *1

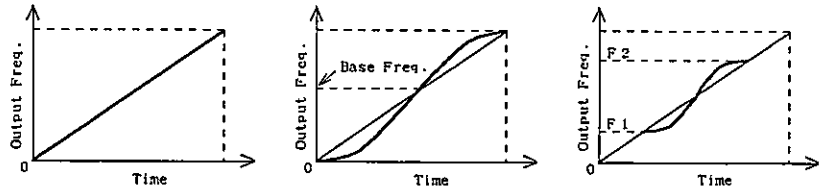
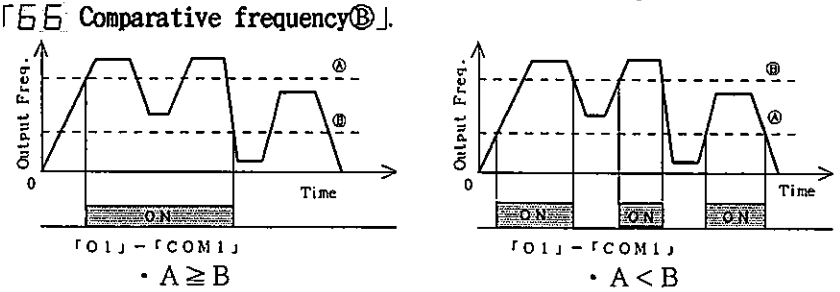
● [rSΓ] (Reset) short 「I5」(「I6」) & 「G」 → Trip reset command

- When you select [ΓHr], short 「I5」(「I6」) & 「G」 in advance.

- When you set both 47 and 48 to [U-d], you can select 4 acceleration/deceleration times.
<table>
<tr><th>between 「I5」&「G」</th><th>between 「I6」&「G」</th><th>Accel. /decel. setting</th></tr>
<tr><td>open</td><td>open</td><td>Accel. /decel. time</td></tr>
<tr><td>short</td><td>open</td><td>2nd. accel. /decel. time</td></tr>
<tr><td>open</td><td>short</td><td>3rd. accel. /decel. time</td></tr>
<tr><td>short</td><td>short</td><td>4th. accel. /decel. time</td></tr>
</table>
</td><td>48

49</td></tr>
</table>

*1) Factory setting

No.	Parameter title	Description	Order of display
58 59	Acceleration mode selection Deceleration mode selection	You can select among linear, curved(S-shaped) accel./decel. ● [L In.] Linear*1 ● [5.-1] S-shaped ① ● [5.-2] S-shaped ②  Normal accel./decel. mode...accel./decel. time is linear. Larger inclination at larger torque, smaller inclination at smaller torque. S-shaped curve between F1 and F2. Smooth accel./decel. - When you select [5.-1] S-shaped①, the Inverter follows to the preset accel./decel. time under the range of base freq., but shows smaller inclination at higher frequency than base freq.	57 58
60	Monitor mode selection	You can select the type of output displayed at 4-digit LED per below value is multiplied by magnification of 「61 Display magnification」 ● [0.-F] : Output freq.*1 ● [CUr] : Output current ● [5.-F] : Preset freq. ● [dC-U] : DC voltage at the converter	59
61	Display magnification	You can set the magnification and you can display such a frequency of the motor speed or production line speed. For example, if you set to 30.0, synchronous speed of the 4-pole motor will be displayed. ※If you change this parameter, all the displayed value parameter relating frequency represent the value multiplied by display magnification.	60
62	Frequency meter adjustment	You can calibrate the frequency meter. Adjust with △ ▽ so that the meter reads full scale.	61
63	Full scale frequency adjustment	You can select the frequency for full scale of the frequency meter. Factory setting shows the full scale at 60Hz. Please adjust when you operate at more than 60Hz.	62
64	「FOUT」selection	You can select the frequency signal at 「FOUT」terminal. ● [d IG.] Digital frequency counter output ● [AnA.] Analog frequency meter output*1	63
65 66	Comparative frequency A Comparative frequency B	You can set the frequency you want to detect when you select 「51 Output signal selection」 to [Ct-F] (Check frequency). - Activates 「ON」(「O1」and 「COM1」) when the output frequency exceeds 「65 Comparative frequency Ⓐ」 and 「OFF」when it gets lower than 「66 Comparative frequency Ⓑ」.  	64 65

*1) Factory setting

No.	Parameter title	Description	Order of display
80	Trip causes clearance	You can clear the trip causes. <How to clear> ① Set to [YES] with (△) and turn off the power. ② Clear by turning the power on after LED disappear and LED shows [CLr]. ③ To operate the Inverter again, turn power off then on again.	7 8
81 82 83 84 85	Trip cause ① Trip cause ② Trip cause ③ Trip cause ④ Trip cause ⑤	The Inverter memorizes causes of last 5 trips. - Refer to Chapter「**5.8 Monitoring**」for the contents of the display.	7 9 8 0 8 1 8 2 8 3
86	Parameter initialization	You can initialize all parameter to the factory setting. <How to initialize> ① Set to [YES] with (△) and turn off the power. ② Initialize by turning the power on after LED disappear and LED shows [----]. ③ To operate the Inverter again, turn the power off then on again.	8 4
87	Motor selection	Set the motor capacity and pole numbers.	8 5
88	Do not use.		8 6
–	Parameter lock	You can「lock」the preset parameters. ● [nO] **No lock.***1 ● [ALL] Lock all the parameter. ● [PArT] Lock the parameters unnecessary to set. - If you select [PArT], you can only set the parameter chosen with「**Number of selectable parameter**」 - Refer to「**How to lock the parameter**」.	

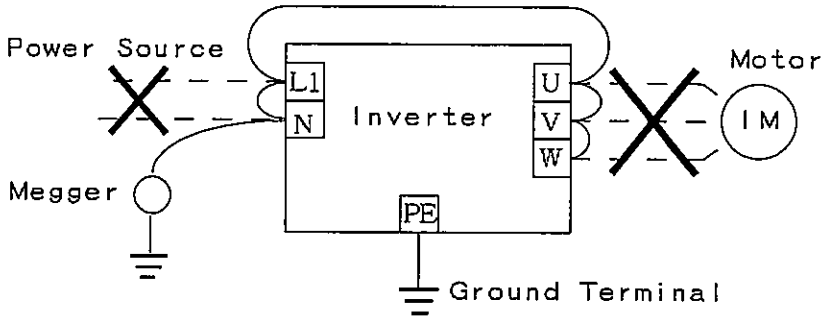
*1) Factory setting

7.2 Megger test

(1) Please perform the megger test only to the main circuit per the following procedure. Please do not apply to the control circuit.

(2) If you perform this test to the external circuit, please take off all the terminals so that the test voltage may not be applied to the Inverter.

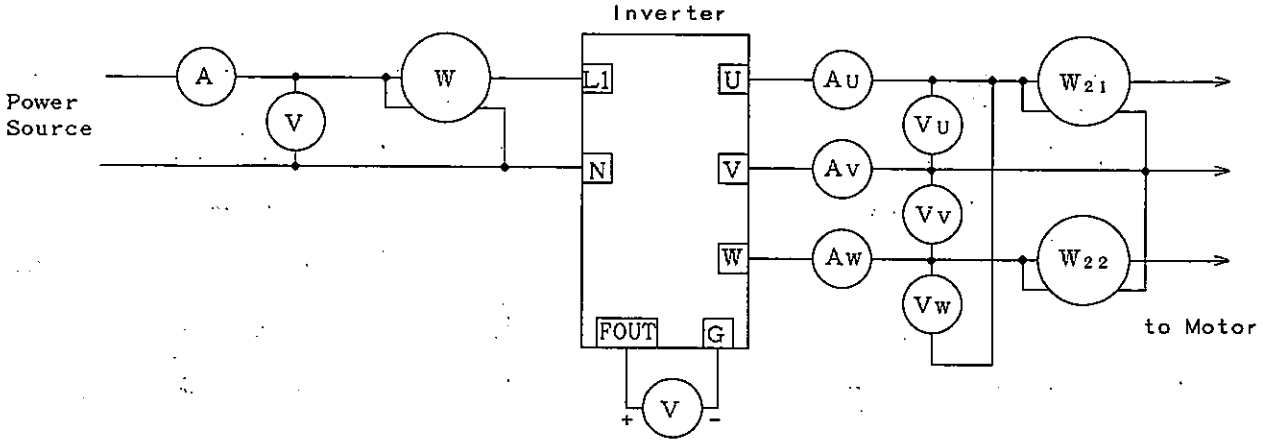
(3) Please make sure that the megger test is more than 1MΩ measured with DC 500V class insulation tester.

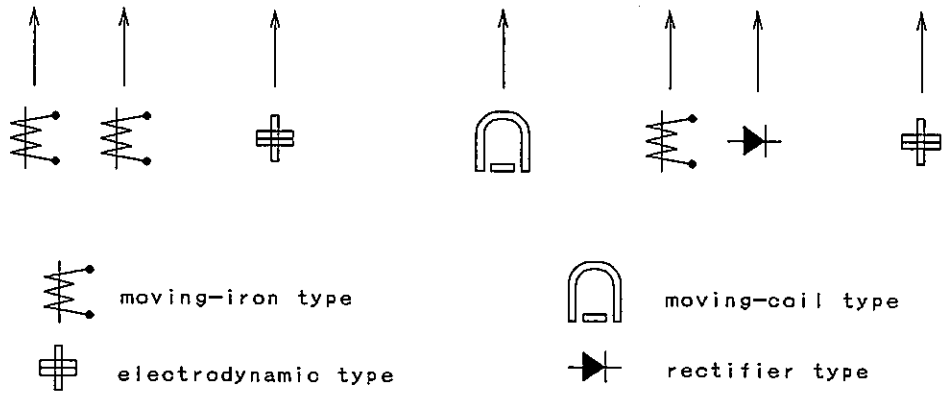


7.3 Selection of meters

If you test, please use the following meters and circuit. Please note that test data may differ based on the different meters since the primary and the secondary voltage and current of the Inverter contain higher harmonics.

《Test Point/Meter》





8.1 Protective functions

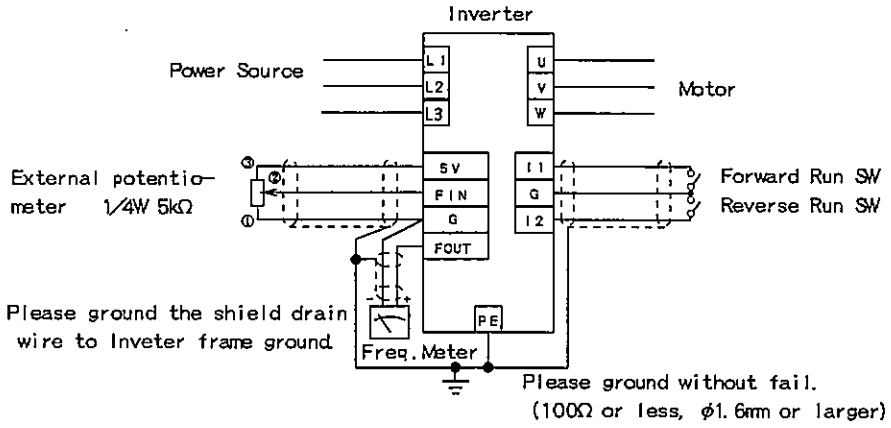
DV707H Series have following classified protective functions;

① Avoid the trip but with no warning indication.
② Shut off the Inverter output with warning indication.
③ Trip for protection. (Trip signal cannot be held when you turn off the power.)

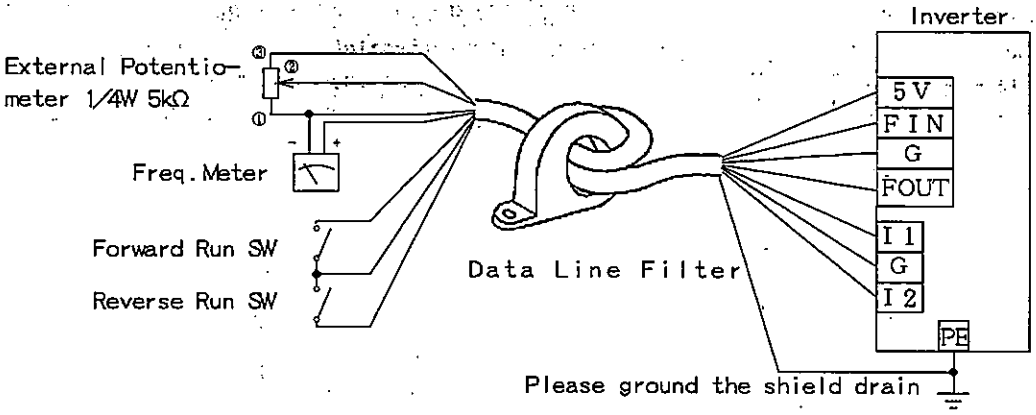
Type	Protective function LED display	Content of protection or possible cause	Corrective action
①	Overcurrent stall prevention (no indication)	Prevent the trip by making acceleration time longer when Motor current exceeeds 「56 **Current limit activation point**」 during acceleration or running constant speed. - You can adjust the activation level through 「56 **Current limit activation point**」.	Extend acceleration time or reduce the load inertia.
	Overvoltage stall prevention (no indication)	Prevent the trip by making deceleration time longer when DC converter voltage exceeds 390V during deceleration. - You can adjust deceleration time with 「57 **Stall deceleration magnification**」.	Correct the motor load or extend deceleration time.
②	Warning of the lack of input voltage Instantaneous power failure protection L	Shut off the output when the converter voltage becomes lower than 400V(DC). *1 Inverter sees this as 「Instantaneous power failure」. Also the control circuit will be reset when the converter voltage gets lower than 150V. If voltage recovers before the reset of control circuit, the Inverter resume operation automatically. *2	Check the wiring of the power or power condition.
	Reverse run prevention rEUP.	Prevents reverse run even when rev. signal is entered, if you select this function. *3	Check reverse run signal.
	Automatic restart prevention r.P.	Prevents automatic restart after power-on, or power resumption after power failure, or trip resetting in the case run command is entered. *2	Enter stop command then enter run command.
③	Overcurrent trip O.C. (at normal run) O.C.-U (at acceleration) O.C.-d (at deceleration)	Trips when the output current exceeds 200% of the rated current. Lower input voltage or too large GD^2, shorter acceleration/deceleration time, load short circuit or grounding.	Verify proper input voltage. Extend acceleration/deceleration time. Resize Motor/Inverter system Check wiring.
	Regenerative overvoltage trip O.U.	Trips when the converter voltage exceeds 800V due to regenerative energy. Shorter deceleration time.	Extend deceleration time.
	Power on overvoltage trip E.O.U.	Trips when the converter voltage exceeds 800V on power-on. Capacity of the power factor correction reactor set up on the input side of the Inverter is too large.	Correct reactor capacity.
	Overload trip (Electronic thermal) rHr	Trips when motor current keeps exceeding the setting value of 「79 **Electronic thermal**」, by interpreting this status as overload.	Verify the overload factor to reduce the load. Change the running pattern. Resize Motor/Inverter system Check wiring.

8.2 Measures to eliminate external noise

● Please separate cables of the control circuit and the power line.



● If you use longer cables for the control circuit, external noise may come in from these cables which may cause the malfunction of the Inverter. In this case, it is recommended to use 「**Data Line Filter**」 and make turns of cable around this filter. (Please install this Filter as close to the Inverter as possible.)



8.3 Measures to eliminate R.F.I.

The radio noise is due to the electromagnetic wave radiated from the Inverter or the power supply. The influence of the radio noise grows by frequency band of 10MHz or less (especially the medium frequency band), in the region where the radio wave is weak.

〈 **How to suppress** 〉

Set up the noise filter in the power supply side of the Inverter and shield the output side of the the Inverter. By this you can expect some suppression of the noise. Connect OUT-side of the filter to the power source and IN-side to the Inverter.