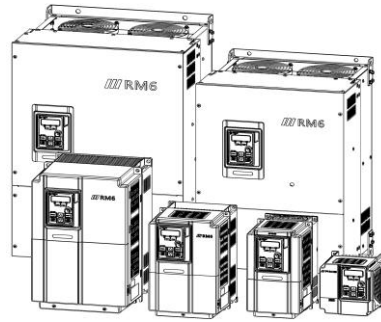
RM6 Series
Simple Version
Operation Manual



2021.05.05 Edition XB200194

Thank you for using RHYMEBUS RM6 series drive.
For proper operations and safety purposes, please read manual carefully.
Only the qualified personnel may proceed with the installation.
Scan the QR code on the right side for the complete operation manual.
Please pay attention to the safety precautions marked with “DANGER” or “CAUTION” in complete manual before installation.

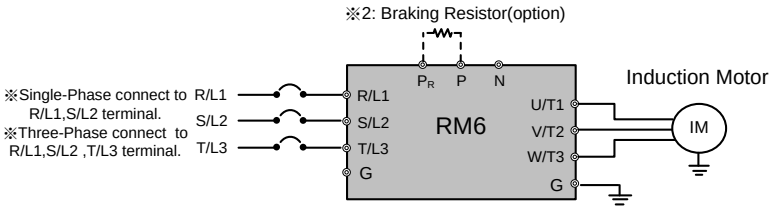
DANGER	User may cause the casualty or serious damages if user does not abide by the instructions of the manual to execute the tasks.
CAUTION	User may cause injuries to the people or damage the equipment if user does not abide by the instructions of the manual to execute the tasks.

■ Terminals of Main Circuit

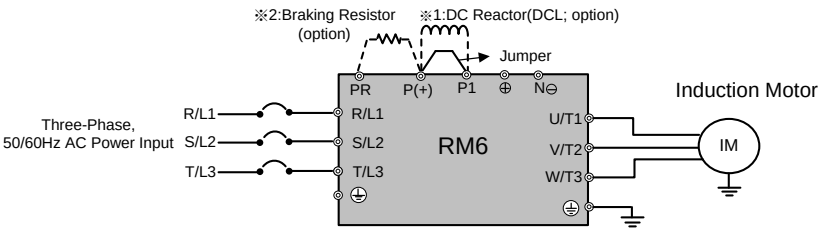
Power Source	R,S (L,N)	AC power source input terminals	Single-phase; sinusoidal power source input terminals.
	R,S,T (L1,L2,L3)		Three-phase; sinusoidal power source input terminals.
	⊕, N⊖	DC power source input terminals	External DC power source terminal. ※Only 2007 ~ 2015, 4007 ~ 4020 models have the terminal.
Motor	U,V,W (T1,T2,T3)	Drive outputs to motor terminals	Output three-phase variable frequency and voltage to motor.
Power and Braking	P(+), N⊖	Dynamic brake unit terminal	Connect to dynamic braking unit(option).
	P, N		
	P, PR	External brakingresistor terminal	Connect to external brake resistor (option).
	P(+), PR		
	P(+), P1	External reactor terminal	Connect to DC reactor (DCL) for improving power factor. The default setting is connected by a jumper.
Grounding	PE(or G) ⏚	Grounding terminal	Ground the drive in compliance with the NEC standard or local electrical code.

■ Decription of terminal and wiring diagram

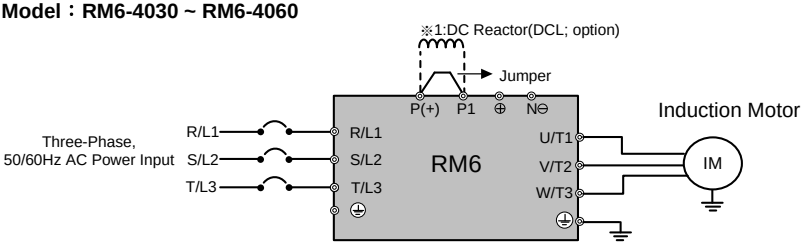
Model：RM6-1001/2-1PH~RM6-1002-1PH ; RM6-2001/2-1PH~RM6-2002-1PH
Model：RM6-2001/2~RM6-2005 ; RM6-4001~RM6-4005



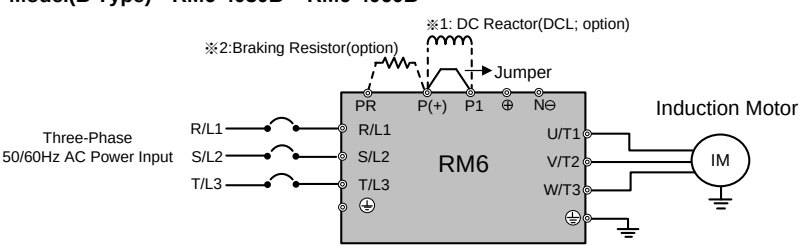
Model：RM6-2007 ~ RM6-2015;
Model：RM6-4007 ~ RM6-4025;



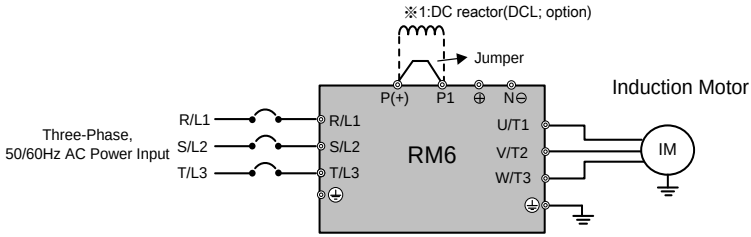
Model：RM6-2020 ~ RM6-2040;
Model：RM6-4030 ~ RM6-4060



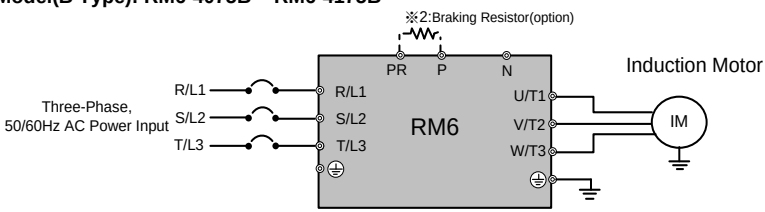
Model(B Type)：RM6-2020B ~ RM6-2040B;
Model(B Type)：RM6-4030B ~ RM6-4060B



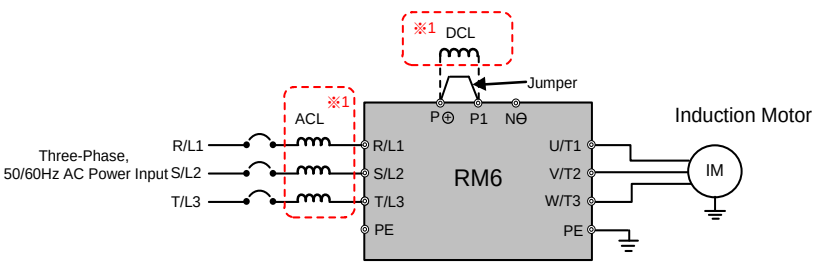
Model: RM6-2050 ~ RM6-2075;
Model: RM6-4075



Model(B Type): RM6-2050B ~ RM6-2075B;
Model(B Type): RM6-4075B ~ RM6-4175B



Model: RM6-2100~RM6-2250;
Model: RM6-4100~RM6-4600

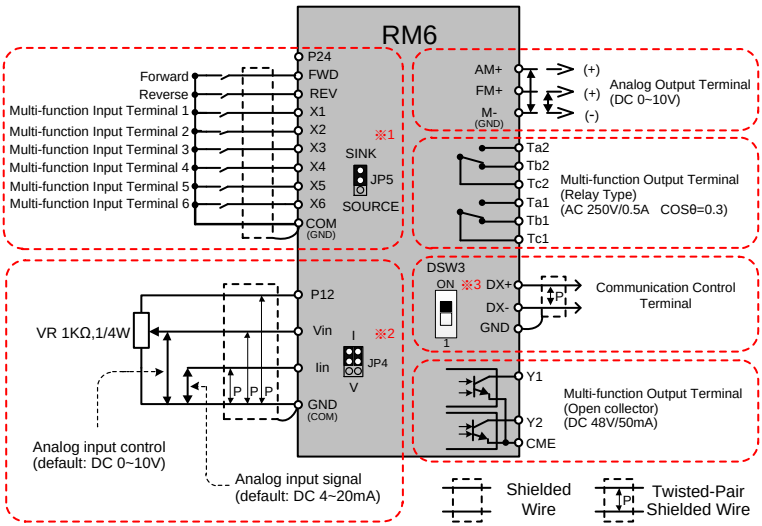


※1.RM6-100HP above drives: AC reactor (ACL) is the standard accessory;
RM6-175HP above drives: DC reactor (DCL) is the standard accessory.
Please remove the jumper between P1 and P terminal, when connecting the external DC reactor (DCL). Do Not remove the jumper, when DC reactor (DCL) does not be connected.
※2.PR terminal is suitable for braking resistor and B Type Series of RM6 is optional
(Example: RM6-2020B, include braking resistor)

■ Control Termianl

Type		Symbol	Function	Description
Control circuit terminal	Control power	P24	Power terminal; Control device usage	Output DC+24V; Maximum supplied current is 50mA.
		P12/12V		Output DC+12V; Maximum supplied current is 20mA.
		GND (COM)	Common of analog input control terminals	Common terminal for control power (P12/12V,P24) and analog input terminal (Vin, Iin).
	Input terminals	FWD	Forward command terminal	Connect the FWD and COM terminals for forward operation. (F_001=0,1,2)
		REV	Reverse command terminal	Connect the REV and COM terminals for reverse operation. (F_001=0,1,2)
		X1	Multi-function input terminal 1	• The function is set by F_052. • Default setting: Multi-speed level 1 command
		X2	Multi-function input terminal 2	• The function is set by F_053. • Default setting: Multi-speed level 2 command
		X3	Multi-function input terminal 3	• The function is set by F_054. • Default setting: Jog command
		X4	Multi-function input terminal 4	• The function is set by F_055. • Default setting: Secondary accel/decel time command
		X5	Multi-function input terminal 5	• The function is set by F_056. • Default setting: External fault command (thr)
		X6	Multi-function input terminal 6	• The function is set by F_057. • Default setting: Reset command
		COM (GND)	Common of digital input control terminals	Common of digital input control signal terminals. (FWD, REV and X1 ~ X6)
		Vin	Analog input terminal	Input range: DC 0~10V。
		Iin	Analog input terminal	• Input signal selection JP4: I position (current signal) JP4: V position (voltage signal) • Input range: DC 4~20mA (2~10V) or DC 0~20mA (0~10V) • The function is set by F_126.
	Output terminals	FM+ AM+	Analog output terminals	• Voltage meter with 10V full scale spec. (meter impedance: 10kΩ above) • Maximum output current: 1mA
		M- (GND)	Common of analog output terminals	Common of analog output terminals.
		Ta1	Multi-function output terminals (relay type)	• N.O (contact a); The function is set by F_060 . • Default setting: Error detection • Capacity: AC250V, 0.5A Max, cosθ=0.3
		Tb1		• N.C (contact b); The function is set by F_060 • Capacity: AC250V, 0.5A Max, cosθ=0.3
		Tc1		Common terminal for Ta1, Tb1.
		Ta2		• N.O (contact a); The function is set by F_131 • Default setting: Operation detection • Capacity: AC250V, 0.5A Max, cosθ=0.3
		Tb2		• N.C (contact b); The function is set by F_131 • Capacity: AC250V, 0.5A Max, cosθ=0.3
		Tc2		Common terminal for Ta2.
		Y1	Multi-function output terminals (open collector type)	• The function is set by F_058, F_059. • Capacity: DC48V, 50mA Max
		Y2		
		CME		Common terminal of Y1, Y2.
External Communication Terminal		DX+	Signal transmission terminal(+)	• Connect the RM6 series drive by transmission cable, when the drive is controlled by RS-485 communication interface. • Communication protocol: Modbus
		DX-	Signal transmission terminal(-)	
		GND	Grounding terminal of signal transmission	Grounding terminal of shielding wire.

■ Description of Terminal and Wiring Diagram



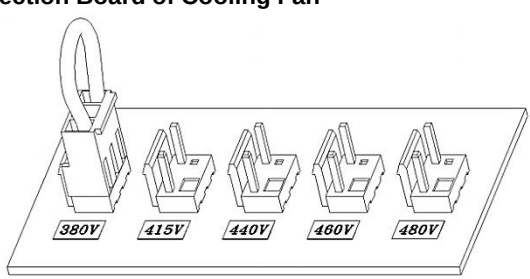
※1.JP5: SINK / SOURCE selection;
The signal input selection of multi-function input terminal(X1~X6), FWD/REV terminals.

※2.JP4: I / V selection;
I position: Iin-GND terminal is inputted with the current signal.(default)
V position: Iin-GND terminal is inputted with the voltage signal.

※3.DSW3: The terminal resistor selection for communication; The internal resistance is 100Ω. When external device control multiple drives, switch the DSW3 to “ON” position at the first and last drive.

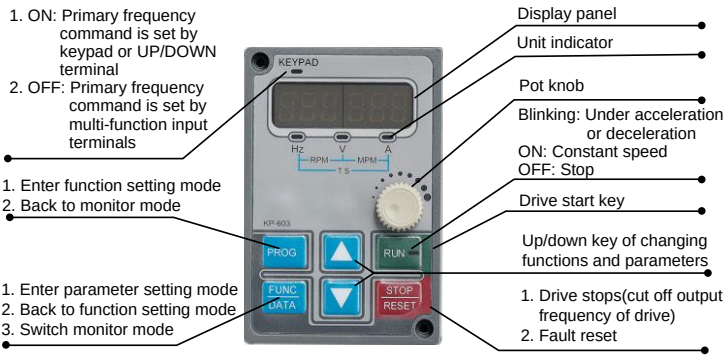
※4.The analog input selection is set by F_126 (default: DC 2~10V(4~20mA))

■ Voltage Selection Board of Cooling Fan



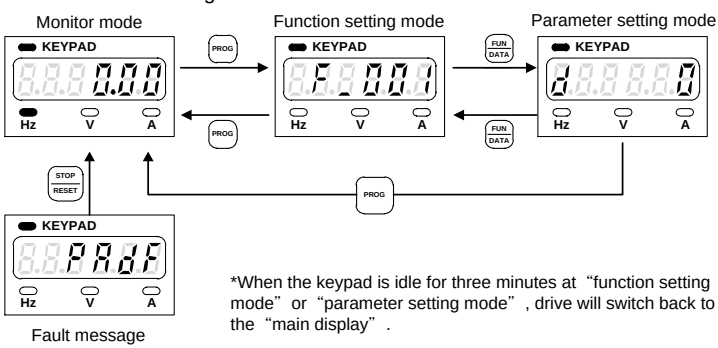
※RM6-4075 above models have the voltage selection board shown in above figure when removing the main circuit terminal cover of the drive. Please carefully select the jumper position according to the power source(actual power voltage level) to avoid the burnout of the fan or the overheating of the drive.(EX: When the power source is 460V, selecting the position from 380V to 460V)

■ Digital Type Keypad (KP-603) for RM6



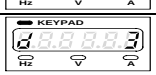
■ Operation of Keypad

The operation of the digital keypad includes fault messages and three modes. The switching methods are shown as below figure:



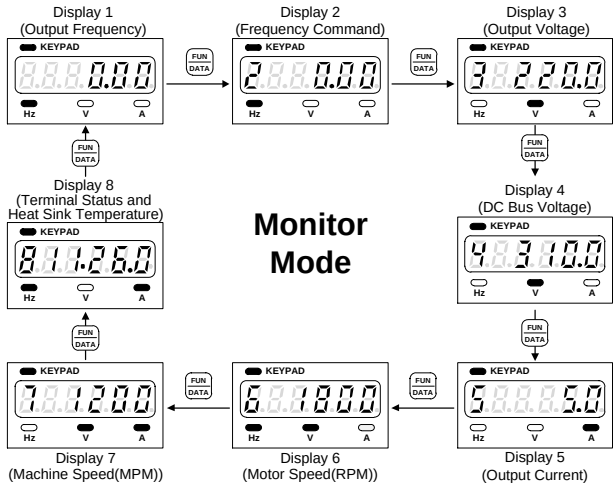
*When the keypad is idle for three minutes at "function setting mode" or "parameter setting mode", drive will switch back to the "main display".

The operation steps are shown as below table (by default setting)

Operation Steps	Display
1.Start the drive and enter the monitor mode.	
2.Press PROG key and enter the function setting mode.	
3.Press FUN DATA key and enter the parameter setting mode.	
4.Press FUN DATA key and return to the function setting mode.	
5.Press PROG key and return to the monitor mode.	

■ Description of Monitor Mode

There are eight displays can be selected in the monitor mode. Press FUN DATA to switch the display in accordance with below sequence under monitor mode. User can determine one of eight displays as the main display from function F_006 (Selection of Main Display). Please refer to the following illustrations:



a. Select one of eight displays as the main display from function F_006 (Selection of Main Display).

b. Determine one of eight displays as the main display according to the application. When the parameter of function is completed without pressing key, the drive will automatically switch back to the main display after 3 minute.

■ Parameter List

Func.	Name	Description			Range of Setting	Unit	Default
F_000	Drive Information	0: Software version 1: Drive model number 2: Drive running hours 3: Drive supply power time 4: Software checksum code 5: Reserved			–	–	–
F_001	Start Command Selection		**Start command**	**Rotation direction command**	0~11	–	3
		0:	FWD or REV terminal	FWD or REV terminal			
		1:	FWD terminal	REV terminal			
		2:	Keypad “RUN” key	FWD, REV terminal			
		3:		Forward direction			
		4:		Reverse direction			
		5~7:	Reserved	Reserved			
		8:	Communication interface	Communication interface			
		9:	Communication interface	REV terminal			
		10:	FWD terminal	Communication interface			
		11:	Keypad “RUN” key	Communication interface			

Func.	Name	Description	Range of Setting	Unit	Default
F_002	Primary Frequency Command Selection	0: Frequency command by analog signal via terminal. 1: Frequency command by keypad. 2: Motor speed (RPM) command by keypad. 3: Machine speed (MPM) command by keypad. 4: Frequency command by UP/DOWN terminal. 5: Frequency command by communication interface. 6: Frequency command by keypad pot.(Vin and Iin are disable)	0~6	—	1
F_003	Selection of "STOP" Key Validity	0: Start command by terminal, "STOP" key disabled. 1: Start command by terminal, "STOP" key enabled.	0,1	—	1
F_004	Frequency Command Selection	0: In the monitor mode, frequency command cannot be changed. 1: In the monitor mode, frequency command is changeable.	0,1	—	1
F_005	Selection of Frequency Command Auto-Storing	0: In the monitor mode, frequency command auto-storing disable. 1: In the monitor mode, frequency command auto-storing after 3 minutes.	0,1	—	1
F_006	Selection of Main Display	When F_153=0, select 1 of 8 "monitor modes" as the main display.	1~8	—	1
F_007	Machine Speed Ratio	Set the ratio of machine speed. This function determines MPM display value.	0.00~ 500.00	0.01	20.00
F_008	Digits of Decimal Value (Machine Speed)	Select the digits of decimal values displaying the machine speed.	0~3	—	0
F_009	Primary Speed	Multi-speed level 4 command / Multi-speed level 3 command / Multi-speed level 2 command / Multi-speed level 1 command	0.00~ 400.00	0.01 Hz	50.00 (Note1)
		OFF / OFF / OFF / OFF			60.00 (Note2)
F_010	Preset Speed 1	OFF / OFF / OFF / ON			10.00
F_011	Preset Speed 2	OFF / OFF / ON / OFF			20.00
F_012	Preset Speed 3	OFF / OFF / ON / ON			30.00
F_013	Preset Speed 4	OFF / ON / OFF / OFF			0.00
F_014	Preset Speed 5	OFF / ON / OFF / ON			0.00
F_015	Preset Speed 6	OFF / ON / ON / OFF			0.00
F_016	Preset Speed 7	OFF / ON / ON / ON			0.00
F_196	Preset Speed 8	ON / OFF / OFF / OFF			0.00
F_197	Preset Speed 9	ON / OFF / OFF / ON			0.00
F_198	Preset Speed 10	ON / OFF / ON / OFF			0.00
F_199	Preset Speed 11	ON / OFF / ON / ON			0.00
F_200	Preset Speed 12	ON / ON / OFF / OFF			0.00
F_201	Preset Speed 13	ON / ON / OFF / ON			0.00
F_202	Preset Speed 14	ON / ON / ON / OFF			0.00
F_203	Preset Speed 15	ON / ON / ON / ON			0.00
F_017	Jog Speed	Frequency setting by manual			6.00
F_018	Reference Frequency of Accel/Decel Time	The frequency corresponding to accel/decel time.	0.01~ 400.00	0.01 Hz	50.00 (Note1) 60.00 (Note2)
F_019	Primary Acceleration Time	The acceleration time of primary speed, preset speed 4~15, and jog speed.	0.0~ 3200.0	0.1sec	15.0 (Note5)
F_020	Primary Deceleration Time	The deceleration time of primary speed, preset speed 4~15, and jog speed.			
F_021	Acceleration Time of Preset Speed 1	Acceleration time of preset speed 1.			
F_022	Deceleration Time of Preset Speed 1	Deceleration time of preset speed 1.			
F_023	Acceleration Time of Preset Speed 2	Acceleration time of preset speed 2.			
F_024	Deceleration Time of Preset Speed 2	Deceleration time of preset speed 2.			
F_025	Acceleration Time of Preset Speed 3	Acceleration time of preset speed 3.			

Func.	Name	Description	Range of Setting	Unit	Default
F_026	Deceleration Time of Preset Speed 3	Deceleration time of preset speed 3.	0.0~ 3200.0	0.1 sec	15.0 (Note5)
F_027	Secondary Acceleration Time	Switch to secondary acceleration time by multi-function input terminal.			
F_028	Secondary Deceleration Time	Switch to secondary deceleration time by multi-function input terminal.			
F_029	Set S-curve for Accel/Decel Time	Set S-curve to slow the acceleration and deceleration time at start and stop.	0.0~5.0	0.1sec	0.0
F_030	Limitation of Output Voltage	0: Output voltage of V/F pattern is not limited, decrease the swithching frequency. 1: Output voltage of V/F pattern is limited, decrease the switching frequency. 2: The output voltage of V/F pattern is not limited. 3: The output voltage of V/F pattern is limited .	0~3	—	0
F_031	Maximum Output Frequency	Maximum output frequency of drive.	0.1~400.0	0.1Hz	50.0 (Note1) 60.0 (Note2)
F_032	Starting Frequency	Starting frequency of drive's output.	0.1~10.0	0.1Hz	0.5
F_033	Starting Voltage	The voltage corresponds to the output starting frequency.	0.1~50.0	0.1V	8.0 (Note3)
			0.1~100.0		12.0 (Note4)
F_034	Base Frequency	The frequency corresponds to the base voltage in V/F pattern.	0.1~400.0	0.1Hz	50.0 (Note1) 60.0 (Note2)
F_035	Base Voltage	The voltage corresponds to the base frequency in V/F pattern.	0.1~255.0	0.1V	220.0 (Note3)
			0.1~510.0		380.0 (Note4)
F_036	V/F Frequency 1	Frequency at the first point of V/F pattern.	0.0~399.9	0.1Hz	0.0
F_037	V/F Voltage 1	Voltage at the first point of V/F pattern.	0.0~255.0 0.0~510.0	0.1V	0.0
F_038	V/F Frequency 2	Frequency at the second point of V/F pattern.	0.0~399.9	0.1Hz	0.0
F_039	V/F Voltage 2	Voltage at the second point of V/F pattern.	0.0~255.0 0.0~510.0	0.1V	0.0
F_040	Vin Gain	Analog input "Vin" gain ratio adjustment.	0.00~2.00	0.01	1.00
F_041	Vin Bias	Analog input "Vin" bias ratio adjustment.	-1.00~ 1.00	0.01	0.00
F_042	Frequency Upper Limit	The upper limit of output frequency= F_031(Maximum Output Frequency)*F_042	0.00~1.00	0.01	1.00
F_043	Frequency Lower Limit	The lower limit of output frequency= F_031(Maximum Output Frequency)*F_043	0.00~1.00	0.01	0.00
F_044	Analog Output Signal Selection (FM+)	0:Output frequency 4:"Iin" analog input signal 1:Frequency command 5:DC bus voltage 2:Output current 6.Output voltage 3:"Vin" analog input signal 7:Hear sink temperature	0~7	—	0
F_045	Gain(FM+)	Analog output gain ratioadjustment.	0.00~2.00	0.01	1.00
F_046	Motor Overload Protection (OL)	0: Disable 1: Overload protection for dependent cooling fan type motor:Enabled(OL) 2: Overload protection for independent cooling fan type motor: Enabled(OL)	0~2	—	1
F_047	Filter Setting of Analog Input Signal	Filter the analog input signal when the frequency command is controlled by analog input terminal. (F_002=0).	0~255	—	20
F_048	Motor Rated Current	Set the value according to the motor rated current.	10%~150% of drive rated current	0.1A	According to the rated current of motor
F_049	Motor No-Load Current	Set the value according to the motor's no-load condition.	0~motor rated current	0.1A	1/3 motor rated current

Func.	Name	Description		Range of Setting	Unit	Default
F_050	Motor Slip Compensation	According to the load condition, set the compensation for motor running at constant speed. (0.0: off)		-9.9~10.0	0.1Hz	0.0
F_051	Number of Motor Poles	Determinate the RPM display value of monitor mode.		2~10	2P	4P
F_052	Multi-function Input Terminal (X1)	=0: UP/DOWN frequency command enter key	±1: Jog command ±2: Secondary accel/decel time command ±3: Multi-speed level 1 command ±4: Multi-speed level 2 command ±5: Multi-speed level 3 command ±6: Reset command ±7: External fault command(thr) ±8: Interruption of output command(bb) ±9: Coast to stop command(Fr) ±10: Speed tracing from the maximum frequency ±11: Speed tracing from the setting frequency ±12: Holding command ±13: UP command ±14: DOWN command ±15: Clear UP/DOWN frequency command ±16: Analog input source selection ±17: Stop command with 3-wire start/stop circuit ±18: Under close-loop control condition (F_153≠0), open-loop selection. ±19: Reset the integrator at close-loop control condition (F_153≠0) ±20: Stop command ±21: Multi-speed level 4 command	-21~ +21 (Note 7)	—	3
F_053	Multi-function Input Terminal (X2)	=0: DC braking enable (at stop)				4
F_054	Multi-function Input Terminal (X3)	=0: Current limit enable				1
F_055	Multi-function Input Terminal (X4)	=0: Selection of primary or secondary frequency command (ON: secondary frequency command)				2
F_056	Multi-function Input Terminal (X5)	=0: Stop command with 3-wire start/stop circuit (N.O; contact a)				7
F_057	Multi-function Input Terminal (X6)	=0: Stop command with 3-wire start/stop circuit (N.C; contact b)				6
F_058	Multi-function Output Terminal (Y1)	0: Disable ±1: Operation command detection ±2: Constant speed detection ±3: Zero speed detection ±4: Frequency detection ±5: Overload detection(OLO) ±6: Stall prevention detection ±7: Low voltage detection(LE) ±8: Braking detection ±9: Restart after instantaneous power failure detection ±10: Restart after error condition detection ±11: Error detection ±12: Overheating detection ±13: Upper limit of feedback detection ±14: On-Off dead band detection ±15: On-Off range detection ±16: Fan detection during operation		-16 ~+16 (Note 7)	—	3
F_059	Multi-function Output Terminal (Y2)					2
F_060	Multi-function Output Terminal (Ta1,Tb1)					11
F_061	Constant Speed Detection Range	Set the bandwidth of constant speed detection range.		0.0~10.0	0.1Hz	2.0
F_062	Frequency Detection Range	Set the bandwidth of frequency detection range.		0.0~10.0	0.1Hz	2.0
F_063	Frequency Detection Level	Set the frequency detection level of multi-function output terminal.		0.0~400.0	0.1Hz	0.0
F_064	Automatic Torque Compensation Range	According to the load condition, adjust the output voltage of the V/F pattern. (0.0: off)		0.0~25.5	0.1	1.0

Func.	Name	Description	Range of Setting	Unit	Default
F_065	System Overload Detection (OLO)	0: Disable 1: Enable	0,1	—	0
F_066	System Overload Detecting Selection	0: Detection during constant speedonly 1: Detection during operation only	0,1	—	0
F_067	Output Setting after System Overload	0: Drive keeps operation when “OLO” is detected 1: Drive trips to protection when “OLO” is detected	0,1	—	0
F_068	System Overload Detection Level	When the output current of drive is higher than the level (F_068 * drive’s rated current) with the duration of F_069, the drive will trip to protection.	30%~200% of drive rated current	1%	160
F_069	System Overload Detection Time		0.1~25.0	0.1sec	2.0
F_070	Stall Prevention Level at Acceleration	If stall is occurred during acceleration, the motor keeps running at constant speed. (200%: off)	30%~200% of drive rated current	1%	170
F_071	Stall Prevention Level at Constant Speed	If the stall is occurred during constant speed, the motor decreases the speed.(200%: off)	30%~200% of drive rated current	1%	160
F_072	Acceleration Time Setting after Stall Prevention under Constant Speed	Set the acceleration time after stall prevention under the constant speed.	0.1~ 3200.0	0.1sec	15.0 (Note5)
F_073	Deceleration Time Setting for Stall Prevention under Constant Speed	Set the deceleration time at the stallprevention under the constant speed.	0.1~ 3200.0	0.1sec	15.0 (Note5)
F_074	Stall Prevention Setting at Deceleration	0: Disable 1: Enable	0, 1	—	1
F_075	DC Braking Level	Set the current level of DC braking.	0~150% of drive rated current	1%	50
F_076	Time of DC Braking after Stop	Set the time for DC braking after drive stopped.	0.0~20.0	0.1sec	0.5
F_077	Time of DC Braking before Start	Set the time for DC braking before drive started.	0.0~20.0	0.1sec	0.0
F_078	Operation Selection at Instantaneous Power Failure	0: Drive cannot be restarted 1: Drive will restart from the operating frequency 2: Ramp to stop when the power failure 3: Drive will restart again when the power is restored during ramp to stop interval. 4: Drive will restart again from 0 Hz.	0~4	—	0
F_079	Voltage Level of Ramp to Stop by Power Failure	Set the voltage of power source for ramp to stop when the setting of F_078 is 2 or 3. Drive will ramp to stop accoreding to the setting F_103~F_106.	150.0~ 192.0 300.0~ 384.0	0.1V	175.0 (Note3) 320.0 (Note4)
F_080	Auto-restart Times Setting of Error Trip	When the auto-restart times of error conditions (OC,OE,GF only) reach the setting value, the drive must be restarted manually. (0: disable)	0~16	1	0
F_081	Switching Frequency	The setting value is higher and the motor noise is lower.	0~6	—	1 (Note6)
F_082	Stop Mode	0: Ramp to stop 1: Coast to stop 2: Coast to stop+ DC braking	0~2	—	0
F_083	Reverse Prohibition	0: Reverse rotation allowed. 1: Reverse rotation NOT allowed.	0, 1	—	0
F_084	Jump Frequency 1	Avoid mechanical resonance point 1.	0.0~400.0	0.1Hz	0.0
F_085	Jump Frequency 2	Avoid mechanical resonance point 2.	0.0~400.0	0.1Hz	0.0
F_086	Jump Frequency 3	Avoid mechanical resonance point 3.	0.0~400.0	0.1Hz	0.0
F_087	Jump Frequency Range	Set the range of the jump frequency 1, 2, 3.	0.0~25.5	0.1Hz	0.0
F_088	The Current Level of Speed Tracing	When the current is higher than the “speed tracingcurrent level”, the output frequency will trace downward.	0~200% of drive rated current	1%	150
F_089	Delay Time before Speed Tracing	Set the delay time before the speed tracing and coast stop+ DC braking.	0.1~5.0	0.1sec	0.5

Func.	Name	Description	Range of Setting	Unit	Default
F_090	The V/F Pattern of Speed Tracing	Set the percentage of V/F output voltage at the speed tracing.	0~100%	1%	100
F_091	Error Record	Display the latest 5 error records.	—	—	—
F_092	Parameter Setting Lock	0: Parameters are changeable. Maximum frequency cannot exceed 120.0Hz. 1: Parameters are locked. Maximum frequency cannot exceed 120.0Hz. 2: Parameters are changeable. Maximum frequency can exceed 120.0Hz. 3: Parameters are locked. Maximum frequency can exceed 120.0Hz.	0~3	—	0
F_093	Automatic Voltage Regulation (AVR)	0: Disable 1: Enable	0,1	—	1
F_094	Drive Overload (OL1)	0: Disable 1: Thermal protection 2: Current limit overload protection 3: Both 1 and 2 enable	0~3	—	3
F_095	Power Source	Set the value according to the actual power source.	190.0~240.0 340.0~480.0	0.1V	220.0 (Note3) 380.0 (Note4)
F_096	Holding Frequency	The drive accelerates to the holding frequency and running at constant speed.	0.0~400.0	0.1Hz	0.5
F_097	Holding Time Interval	The drive runs at holding frequency by constant speed and running the time interval.	0.0~25.5	0.1sec	0.0
F_098	Grounding Fault Protection (GF)	0: Disable 1: Enable(GF)	0, 1	—	1
F_099	External Indicator 1	Select the monitor mode of external indicator 1 0: Disable	0~10	—	1
F_100	External Indicator 2	Select the monitor mode of external indicator 2 0: Disable	0~10	—	5
F_101	External Indicator 3	Select the monitor mode of external indicator 3 0: Disable	0~10	—	2
F_102	V/F Pattern Selection	0:Linear. 1: Energy-saving mode (auto-adjust V/F pattern according to the load condition). 2: Square curve. 3: 1.7^{th} power curve. 4: 1.5^{th} power curve.	0~4	—	0
F_103	Subtracted Frequency of Ramp to Stop by Power Failure	When the power failure, drive will substract the setting value from the current frequency before ramp to stop. (F_078=2 or 3)	0.0~20.0	0.1Hz	3.0
F_104	Deceleration Time 1 of Ramp to Stop by Power Failure	When the power failure, the deceleration time before the output frequency decelerates to the turning frequency set in F_106.	0.0~3200.0	0.1sec	15.0 (Note5)
F_105	Deceleration Time 2 of Ramp to Stop by Power Failure	When the power failure, the deceleration time after the output frequency decelerares to the turning frequency set in F_106.	0.0~3200.0	0.1sec	15.0 (Note5)
F_106	Turning Frequency of Ramp to Stop by Power Failure	Set the turning frequency level of ramp to stop when the deceleration time is switched from F_104 setting value to F_105 setting value.	0.0~400.0	0.1Hz	0.0
F_107	Analog Frequency Dead Band	When the noise of analog input signal is large, appropriately increase the dead band to stabilize the frequency command. But adjusting this function will reduce the tuning linearity of input signal.	0.00~2.55	0.01 Hz	0.00
F_108	Digital Input Response Time	When the pulse width of digital signal is lower than setting time, the signal disabled.	5~16	1ms	10
F_109	Communication Interface Selection	0: RJ-45 1: DX+ / DX-	0,1	—	1
F_110	Communication Address	The followers use the address to send and receive messages. (0: disable)	0~254	—	0
F_111	Communication Baud Rate	0: 4800bps 1: 9600bps 2: 19200bps 3: 38400bps	0~3	—	1
F_112	Communication Protocol	0: 8,N,2 1: 8,E,1 2: 8,O,1 3: 8,N,1	0~3	—	1

Func.	Name	Description	Range of Setting	Unit	Default
F_113	Communication Overtime (Cot)	When the message transmission is interrupted or delays during communication transmission, drive displays “Cot” message. (0.0: disable)	0.0~ 100.0	0.1 sec	0.0
F_114	Communication Overtime Disposal	0: Warning (Cot)；Continue operation 1: Warning (Cot)；Ramp to stop 2: Warning (Cot)；Coast to stop	0~2	—	0
F_115	Control Selection of Multi-Function Input Terminals	0: Multi-function input terminals (X1~X6) selves 1: Multi-function input terminals (X1~X6) command by communication interface	0,1	—	0
F_116	Fault Reset Selection	0: Auto-restart immediately (OC,OE,GF only). 1: Auto reset from 0Hz after the setting time (F_117). 2: Auto reset from 0Hz after the setting time (F_117) without executing error detection. (If the drive runs over 24hrs without any error, the drive will reset the counting number)	0~2	—	0
F_117	Error Tripping Time Interval before Auto-Restart	Set the error tripping time interval before drive auto restarts when the drive trips to stop. (F_116=2 or 3)	1~200	10sec	6
F_118	UP/DOWN Memory Selection	0: Clear the UP/DOWN frequency command when power failure. 1: Save the UP/DOWN frequency command at F_121 when power failure.	0, 1	—	0
F_119	UP/DOWN Frequency Resolution	0: 0.01Hz 1~8: x0.05Hz 9: 0.5Hz 10~250: x0.1Hz	0~250	—	0
F_120	UP/DOWN Trigger Mode	1~5: Continuous accel./decel. when the terminal is activated with the duration (1 ~ 5 sec). 6: Edge trigger	1~6	—	1
F_121	UP/DOWN Frequency Adjustment	Adjust UP/DOWN frequency by KP-603 keypad.	0.00~ 400.00	0.01 Hz	0.00
F_122	Secondary Frequency Command Selection	0: Frequency command by analog signal via terminal. 1: Frequency command by keypad. 2: Frequency command by UP/DOWN terminal. 3: Frequency command by communication.	0~3	—	0
F_123	Analog Input Selection	0: Vin+Iin 1: Vin-Iin 2: Iin-Vin 3: Vin or Iin(switch by multi-function input terminal).	0~3	—	0
F_124	Analog Input Selection (Vin)	0: Analog input gain 1: Frequency command 2: Current limit level 3: Adjust output voltage of V/F pattern 4: Feedback signal	0~4	—	1
F_125	Analog Input Selection (Iin)	0: Analog input gain 1: Frequency command 2: Current limit level 3: Adjust output voltage of V/F pattern 4: Feedback sugnal	0~4	—	1
F_126	Iin Range Selection	0: 4~20mA (2~10V) 1: 0~20mA (0~10V)	0,1	—	0
F_127	Gain(Iin)	The gain ratio of analog input terminal Iin.	0.00~2.00	0.01	1.00
F_128	Bias(Iin)	The bias ratio of analog input terminal Iin.	-1.00~ 1.00	0.01	0.00
F_129	Analog Output Signal Selection (AM+)	0:Output frequency 1:Frequency command. 2:Output current 3:Vin frequency command 4:Iin frequency command 5:DC bus voltage 6:Output voltage 7:Heat sink temperature	0~7	—	2
F_130	Gain (AM+)	AM+ analog output adjustment ratio.	0.00~2.00	0.01	1.00
F_131	Multi-function Output Terminal (Ta2/Tc2)	The way of settings are same as multi-function output terminals setting.(F_058 ~ F_060)	-16~+16 (Note 7)	—	1
F_132	DC Braking Frequencyat Stop	Active frequency level of DC braking at stop.	0.1~60.0	0.1Hz	0.5
F_135	200% Current limit	0: Disable 1: Enable	0,1	—	0
F_136	PID Error Gain	Set the gain for the error of PID.	0.1~8.0	—	1.0

Func.	Name	Description	Range of Setting	Unit	Default
F_137	Delay Time before Stop	If “stop command” is activation at multi-funtion input terminal, drive will delay the setting time before stop.	0~1200	1 sec	0
F_138	Overheating Level Adjustment	Overheating level(OH)=setting level+85℃	0.0~25.0	0.1℃	0.0
F_139	Operation Condition Memory	Record the last status of drive before power off. 0: Enable (F_001=2,3,4) 1: Disable	0,1	—	1
F_140	NTC Thermistor	0: Disable. 1: Enable.	0,1	—	1
F_141	Drive Overheating Warning Selection	0: Disable 1: Warning (Ht): Continue operation. 2: Warning (Ht): Drive de-rates the switching frequency automatically per 5 minutes. 3: Warning (Ht): Stop operation.	0~3	—	0
F_142	Drive Overheating Warning Level	Set the warning level to prevent drive overheating.	45~85	1℃	70
F_143	Drive Overheating Dead Band	Set the temperature dead band of F_142 and F_145.	2.0~10.0	0.1℃	3.0
F_144	Fan Control Selection	0: Forced air: Start the fan at power ON. 1: Operation air: Start the fan at running. 2: Temperature level setting: Start the fan according to the setting of F_145.	0~2	—	1
F_145	Temperature Level of Fan Activation	Set the temperature level of fan activation.	25~60	1℃	50
F_146	Minimum Operation Time of Fan	Set the minimum operation time of fan when the fan stops.	0.1~25.0	0.1min	0.5
F_147	“SV” Value	Set the “SV” value	F_152~ F_151	0.1unit	2.0
F_148	PID Control Display	0: PV value 1: Integration value 2: Deviation value 3: PID command value 4: PID feedback value	0~4	—	0
F_149	“SV-PV” Value Display	Main display selection(under PID control and command by “SV” condition) 0: “PV” value 1: “SV-PV” value	0,1	—	1
F_150	PID Control Command	0: By F_002 1: Analong frequency command controls “SV” 2: Keypad conrols “SV” 3: Communication interface controls “SV”	0~3	—	2
F_151	Upper Limit of Transmitter	Set the value in accordance with the maximum specification of transmitter.	-800.0~ 800.0	0.1unit	10.0
F_152	Lower Limit of Transmitter	Set the value in accordance with the minimum specification of transmitter.	-800.0~ 800.0	0.1unit	0.0
F_153	PID Control Mode Selection	0: Open-loop operation 1: Forward control; D postposition 2: Forward control; D preposition 3: Reverse control; D postposition 4: Reverse control; D preposition	0~4	—	0
F_154	P Selection	0: P postposition 1: P preposition	0,1	—	1
F_155	Proportional Gain(P)	Set the gain for deviation adjustment.(0.0: disabled)	0.0~25.0	0.1	1.0
F_156	Integration Time(I)	Set the integration time for deviation adjustment. (0.0: disabled)	0.0~100.0	0.1sec	2.0
F_157	Derivative Time(D)	Set the derivative time for deviation adjustment. (0.00: disabled)	0.00~2.50	0.01 sec	0.00
F_158	Derivative Time of Feedback	Set the derivative time for feedback signal.	0.00~2.50	0.01 sec	0.00
F_159	Integration Upper Limitation	Set the upper limitation value of the integration. (1.00= maximum output frequency)	0.00~1.00	0.01	1.00
F_160	Integration Lower Limitation	Set the lower limitation value of the integration. (1.00= maximum output frequency)	-1.00~ 1.00	0.01	0.00
F_161	Integrator Initialized Value	Set the initial value of the integration before PID starts. (1.00= maximum output frequency)	-1.00~ 1.00	0.01	0.00
F_162	PID Buffer Space	Set the buffer space of PID output value.	0~255	—	2
F_163	Feedback Signal Filter	Filter the feedback signal.	0~255	—	10
F_164	Feedback Signal Trip Detection	0: Disable 1: Enable (at F_126=0)	0,1	—	1
F_165	Feedback Signal	0: Direct proportion signal.	0,1	—	0

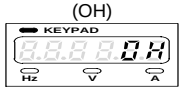
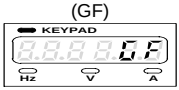
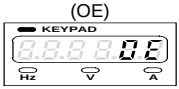
Func.	Name	Description	Range of Setting	Unit	Default
	Selection	1: Inverse proportion signal.			
F_166	(2nd PI Control) Active Range	2nd PI control starts when the deviation value is within the setting range(SV±F_166) (0.0: Disable)	0.0~25.0	0.1	0.0
F_167	(2nd PI Control) Active Time	2nd control work with the time duration and then switching back the primary PI control. (0.0: Disable)	0.0~300.0	0.1	0.0
F_168	Proportional Gain(P2)	Set the gain for deviation adjustment.(0.0: disabled)	0.0~25.0	0.1	1.0
F_169	Integration Time(I2)	Set the integration time for deviation adjustment. (0.0: disabled)	0.0~25.0	0.1	2.0
F_170	Display Setting by Open-Loop Command	Main display selection when the drive command by PID and executing open-loop command. 0: PV display 1: According to the value of F_006	0,1	—	0
F_171	Setting Selection by Open-Loop Command	Primary speed selection when the drive command by PID and executing open-loop command. 0: Analog input terminals 1: Keypad 2: UP/DOWN command 3: Communication	0~3	—	1
F_172	Keypad Selection by Open-Loop Command	Command can be adjusted by keypad when the drive control by PID and executing open-loop command. 0: Primary speed 1: “SV” value	0,1	—	0
F_174	(On-Off) Control Selection	0: Forward control 1: Reverse control	0,1	—	0
F_175	On-Off mode	0: Disable 1: Enable	0,1	—	0
F_176	(On) Range Setting	Drive starts when the “PV” exceeds the “On” range.	-12.8~ 12.7	0.1	1.0
F_177	(Off) Range Setting	Drive stops when the “PV” exceeds the “Off” range.	0.0~10.0	0.1	1.0
F_178	(On) Delay Time	After the “PV” exceeds the “On” range and lasts a duration(F_178), drive starts.	0~250	1sec	0
F_179	(Off) Delay Time	After the “PV” value exceeds the “Off” range and lasts a duration(F_179), drive stops.	0~250	1sec	0
F_180	(On-Off) Accel/Decel Time Selection	0: Primary accel./decel. time 1: Secondary accel./decel. time	0,1	—	1
F_181	(Off) Holding Time	Hold the “Off” condition with the duration.	0~240	1sec	0
F_182	Air conditioning mode	0: Disable 1: Enable	0,1	—	0
F_183	(Air Conditioning Mode) Temperature Response Time	In the air conditioning mode,the frequency is varied according to the setting value of temperature response time. PV > (SV+F186) , Variation of acceleration: (Hz/sec) = (F_184/ F183) PV > (SV+F187)，Variation of deceleration: (Hz/sec) = (F_184/ F183)*4.	0.0~25.0	0.1sec	5.0
F_184	(Air Conditioning Mode) Variation Frequency		0.1~25.0	0.1Hz	2.0
F_185	(Air Conditioning Mode) Upper Limit Range of Temperature	**Upper limit value = “SV” value + F_185** **Lower limit value = “SV” value + F_186** When the temperature is over upper limit value, drive outputs the setting value of F_042(Frequency Upper Limit) When the temperature is under lower limit value, drive outputs the setting value of F_043(Frequency Lower Limit)	F_184~ 20.0	0.1	3.0
F_186	(Air Conditioning Mode) Lower Limit Range of Temperature		0~F_184	0.1	1.0
F_187	(Air Conditioning Mode) Holding Frequency Level	When the operation frequency of drive is under (F_031*F_187) and maintaining F_188 duration, drive runs at full speed by oper-loop condition and maintaining a duration(F_189) and then recovering PID control. (F_188=0: Disable)	0.00~1.00	0.01	0.50
F_188	(Air Conditioning Mode) Time of Holding Frequency		0.0~25.0	0.1hr	0.0
F_189	(Air Conditioning Mode) Full Speed Time		0.0~25.0	0.1 min	1.0
F_190	Feedback Limit Detection	0: Disable 1: Warning detection；Continue operation 2: Warning detection；Stop output 3: Error detection；Error trip	0~3	—	0

Func.	Name	Description	Range of Setting	Unit	Default
F_191	Feedback Limit Level	Set the physical volume according to the specification of transmitter(refer to F_151, F_152)	-800.0~ 800.0	0.1	8.0
F_192	Feedback Limit Detection Setting	0: Detection when “PV” > F_191 1: Detection when “PV” < F_191	0,1	—	0
F_193	Feedback Limit Detection Time	When the feedback signal exceeds the setting value of F_191 and maintaining a duration, drive is detection. Drive will close the detection when the feedback signal is without the range of feedback limit.	0~2550	1 sec	300
F_194	Feedback Limit Range Setting		0~20.0	0.1 unit	1.0
F_195	(Feedback Limit) Condition Selection	0: Enable during operation 1: Enable full time	0,1	—	1
F_208	Filter Setting of Keypad pot knob	Filter the input signal when the frequency command is controlled by keypad pot knob. (F_002=6).	0~255	—	10
F_209	Keypad pot knob Bias	Analog input “keypad pot knob” bias ratio adjustment.	0.00~1.00	0.01	0.00
F_211	Drive Duty selection	0: Heavy duty(150% OL1)1: Normal duty(120% OL1)	0,1	—	0
F_212	Parameter Display Selection of Parameter Lock	1: Paramerter cannot be changed after F_213 is locked, but it can display the setting value. 2: Paramerter cannot be changed after F_213 is locked, but it cannot display the setting value.	0~1	—	0
F_213	Parameter Lock Password Setting	Setting the password of parameter lock.	0~9999	1	0
F_214	Parameter Lock Decoding Setting	Decording the password of parameter lock.	0~9999	1	—
F_215	Current Oscillation Gain (HPF)	The setting gain of the current oscillation (16=1)	0~255	—	0
F_220	Cut frequency of Current Oscillation	When the setting value is too high, it will make the output current to high in light duty.	0~2000	—	400
F_221	Current Oscillation Gain (LPF)	When the setting value is too high, it will make the output current to high in light duty.	0~255	—	128
F_222	Upper frequency of Current Oscillation prevention	The function of current oscillation enable when the output frequency is within the range of F_222 and F_223.	0~255	Hz	25
F_223	lower frequency of Current Oscillation prevention		0~255	Hz	14
F_224	Default Setting	0: Disable CLF: Clear fault records dEF60: Default value of drive for 60Hz.(heavy duty) dEF50: Default value of drive for 50Hz.(heavy duty) SAv: Save the setting value. rES: Restore the setting value. rd_EE: Read the parameters from drive to Keypad Wr_EE: Write the parameters from keypad to drive dEFC3: Default value of constant pressure PID control for 50Hz dEFC4: Default value of constant pressure PID control for 60Hz dEFC1~dEFC6: Customize default value PdEF60: Default value of drive for 60Hz(normal duty) PdEF50: Default value of drive for 50Hz(normal duty)	—	—	0

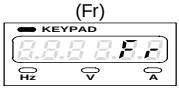
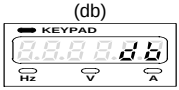
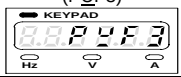
The color as [ ] means the functions can be set during operation.

Note:
1. Default value of 50Hz.
2. Default value of 60Hz.
3. Specification of 200V series.
4. Specification of 400V series.
5. 0.5 ~ 5HP: 5sec / 7.5 ~ 30HP: 15sec / 40HP above: 30sec
6. Heavy duty: When F_081 exceeds 4, the drive must be de-rating or selecting higher capacity.
   Normal duty: When F_081 exceeds 2, the drive must be de-rating or selecting higher capacity.
7. ＋: Represents a contact (N.O) －: Represents b contact (N.C)

Error Trip Messages of Drive

Display	Description	Display	Description
(EEr) 	EEPROM error	(OLO) 	System overload
(AdEr) 	A/D converter error	(thr) 	External fault
(SC) 	Fuse open	(PAdF) 	Keypad interruption during copy
(LE1) 	Under voltage during operation	(OH) 	Drive overheating
(OC) 	Drive over current	(OL) 	Motor overload
(GF) 	Grounding fault	(OL1) 	Drive overload
(OE) 	Over voltage	(ntCF) 	NTC thermistor sensor fault
(no Fb) 	PID feedback signal error	(OP) 	Over pressure

Warning Messages of Drive

Display	Description	Display	Description
(LE) 	Power source under voltage	(Err_00) 	Err_00: Keypad cable trip.(before connecting)
(bb) 	Drive output interruption	(Err_01) 	Err_01: Keypad cable trip.(connected)
(Fr) 	Coast to stop	(Wr_F) 	Different software version inter-copy
(db) 	Over voltage at stop	(PUF1) 	First time you enter wrong
(LOC) 	Parameter locking	(PUF2) 	Second time you enter wrong
(ULOC) 	Parameter Password Unlock	(PUF3) 	Third time you enter wrong
(dtF) 	Direction command error	(Ht) 	Drive overheat
(PrEr) 	Program fault	(OP) 	Over pressure
(Cot) 	Communication overtime		