TOPTEK

TOPTEK ELECTRONICS CORPORATION

TOPVERT G1 series

TOPVERT H1 series

TOPVERT P1 series

QUICK START

High performance Vector Control AC drive

ISO 9001:2008 CE

PREFACE

Thank you for choosing TOPTEK'S TOPVERT G1, H1 and P1 Series Drive. TOPVERT G1, H1 and P1 Series are Sensorless current vector control high-performance drive. They were manufactured by adopting high-quality components, material and incorporating the latest microprocessor technology available.

Copyright statement

Getting Started

This manual will be helpful in the installation, parameter setting, troubleshooting, and daily maintenance of the drives. To guarantee safe operation of the equipment, read the following safety guidelines before connecting power to the drives. Keep this operating manual handy and distribute to all users for reference.

WARNING

Always read this manual thoroughly before using TOPVERT G1,H1 and P1 Series drives.

DANGER!

1- AC input power must be disconnected before any maintenance. Do not connect or disconnect wires and connectors while power is applied to the circuit. Maintenance must be performed by qualified technicians.
2- A charge may still remain in the DC-link capacitor with voltages even if the power has been turned off. To avoid personal injury, please ensure that power has turned off before operating drive and wait ten minutes for capacitors to discharge to safe voltage levels.
3- The drive may be destroyed beyond repair if incorrect cables are connected to the input/output terminals. Never connect the drive output terminals U/T1, V/T2, and W/T3 directly to the AC main circuit power supply

CAUTION!

1- There are highly sensitive MOS components on the printed circuit boards. These components are especially sensitive to static electricity. To avoid damage to these components, do not touch these components or the circuit boards with metal objects or your bare hands.
2- Ground the drive using the ground terminal. The grounding method must comply with the laws of the country where the drive is to be installed. Refer to Basic Wiring Diagram.
3- The final enclosures of the drive must comply with EN50178. (Live parts shall be arranged in enclosures or located behind barriers that meet at least the requirements of the Protective Type IP20.The top surface of the enclosures or barrier that is easily accessible shall meet at least the requirements of the Protective Type IP40). (TOPVERT G1, H1 and P1 Series correspond with this regulation.)
4- Heat sink may heat up over 70℃ (158℉), during the operation. Do not touch the heat sink.
5- The rated voltage for the drive must be ≤ 240V (≤ 480V for 460V models, ≤ 600VFor 575V models) and the mains supply current capacity must be ≤ 5000A RMS (≤10000A RMS for the ≥ 40hp (30kW) models).
6- The leakage current between chassis and earth could be up to 22mA.
7- The load motor should meet IEC:60034-1 standard.

STANDARD SPECIFICATIONS

Series			TOPVERT G1 series High performance general purpose multi-function drive	TOPVERT H1 series High performance high speed drive	TOPVERT P1 series High performance variable torque drive for Fan & Pump
Control Characteristics	Output frequency range		0.1 - 600Hz, Programmable	0.1 - 6000Hz, Programmable	0.1 - 600Hz, Programmable
	Overload endurance		150% of rated current for 1 minute/10 minutes, Ta <=40, 200% of rated current for 2 seconds		125% of rated current for 1 minute/10 minutes, Ta <=40,165% of rated current for 2 seconds
	Maximum output voltage		Proportional to Input Voltage, 3-Phase output		
	Power factor/Efficiency		Power factor no lower than 0.95. Efficiency no lower than 95% at full load		
	Control system		SPWM (Sinusoidal Pulse Width Modulation) vector control, 4 control modes :V/F, V/F + PG, SVC & VC + PG		
	Speed control range		V/F mode 20:1; V/F+PG mode 120:1; SVC mode 120:1; VC+PG mode 600:1		
	Output frequency resolution		Analog input: 10Bit(1/1024), Digital input: 0.01Hz, Fly-Shuttle dial input: 0.01Hz		
	Output frequency accuracy		Analog input: Within ±0.2% of max. output frequency (25℃ ±10℃). Digital input: Within 0.01% of set output frequency		
	PWM carrier Frequency		0.7 -18kHz, Adjustable (Some models are limited), H1: 1.4kHz ~ 36kHz, Adjustable		
	Torque characteristics		auto-torque boost, auto-slip compensation; starting torque can be 150% at 1.0Hz		
	Skip frequency		Setting range 0.00 -600Hz (H1series: 0.00 ~ 6000 Hz), Max. 6 points, skip width are adjustable		
	Accel/Decel time		0.1-60000 seconds (2 Independent settings for Accel/Decel Time)		
	Stall prevention		0 to 250% of Rated Current, independent adjustable both in acceleration and constant speed operation.		
	DC Braking		DC Braking both when start up and stop , Braking Current Level: 0 to 125% of rated output current. Braking time: 0 to 60 seconds. Braking Start-Point when stop: 0.1-600Hz (H1series: 0.00 ~ 6000 Hz)		
	Dynamic braking		Braking torque Approx. 20%(10%E.D.). Dynamic Brake chopper built-in in Frame code: xx-A and xx-B. Others can be built-in as an option. All models can connect to external Dynamic Brake Unit (TDBU-xxxx series).		
	V/F Pattern		2 of adjustable Random V/F curve. Constant Torque curve & Reduced Torque curve are available.		
OPERATING Characteristics	Frequency Setting	Keypad	By an Encoder style Fly-Shuttle dial. (setting resolution 0.01Hz/0.1Hz/1Hz/10Hz adjustable)		
		External Signal	0 ~ +10VDC((Input impedance 20kΩ), -10 ~ +10VDC((Input impedance 10kΩ),4 ~20mA DC ((Input impedance 250Ω),Multi-Function Inputs 1 ~ 6 (15 Steps Jog, up/down), PLC run, RS-485 port MODBUS protocol		
	Operation Setting	Keypad	Set by RUN, STOP and JOG. Switch-able between Keypad and External signal		
		External Signal	2 wire control(FWD/STOP、REV/STOP、RUN/STOP、FWD/REV), 3 wire control, FWD, REV, MI1 to MI6 can be combined to offer various modes of operation, RS-485 serial interface MODBUS protocol		
	Multi-Function Digital Input (DI) (6 terminals)		Multi-step selection 0 to 15, first to second accel/decel switches, accel/decel inhibit, Input the counter, Pause Stop, EF Input, Emergency Stop, auxiliary motor control is invalid, ACI/AVI/AUI speed command selection, Reset, PLC Run, Jog, Up/Down command, Sink/Source selection, Parameter team selection…etc, up to 43 functions.		
	Multi-Function Output Indication (DO) (4 indications)		Include a form C relay contact, a form A relay contact and 2 Open collector output. They can be programmed to below indications: Drive Operating, Frequency Attained, zero speed, Base Block, Over torque, Fault Indication, Local/Remote indication, PLC Operation indication, and Auxiliary Motor Output, Drive ready for use, IGBT over-heat indication …etc, up to 63 functions.		
	Multi-Function Analog Input (AI)		AVI: 0 ~ +10VDC((Input impedance 20kΩ), AUI: -10 ~ +10VDC((Input impedance 10kΩ), ACI: 4 ~20mA DC ((Input impedance 250Ω). 3 different Input terminals can be programmed to 15 functions		
	Multi-Function Analog Output (AO)		Include ACO and AVO, They can be programmed to Proportional to output frequency, output current, voltage, frequency command or motor's speed …etc, up to 15 functions.		
	Fault Indication		The output will be activated when faults occur (User may get 1 or up to 4 indications from below terminals:2 Relay contact point RA, RB, RC. or 2 Open-collector		
	Communication function		RS-485 serial port, MODBUS protocol, ASCII & RTU. (Baud rate up to 125 k bps)		
Other Functions			PID feedback control, Flying start, Automatic voltage regulation (AVR), 2 accel./decel time selection , Auto-optimum accel./decel. Time, S-curves, External fault interlock, External fault reset, Auto Restart after fault, 16 Fault records, Automatic energy–saving, Upper/Lower limit, Programmable pulse output, Password protection, Pump and Fan process control, Sleep/Wakeup function , Auto-Tuning, By-Pass, Y-Delta control,. Bi-Directional Speed search, Reverse inhibit, Automatic torque boost & slip compensation, 16-step PLC run, 16 step preset speed, Coast or ramp to stop, Random V/F curve, Mechanical brake release control, IGBT/ Heatsink temperature display & Pre-warning, Quiet operation mode (No noise), User define Multi-function display, Over torque detection, Over current/voltage t stall prevention, Sink/Source (NPN/PNP) mode, Electronic Thermal Relay, Internal Counter, DC injection brake both in start and stop, Dynamic brake, Controlled cooling Fan, Removable keypad operator, Programmable Multi-Function DI,DO,AI,AO and Ry terminals.		
Intelligent Protection Functions			Self-testing, AC source Over Voltage, Phase loss, Over Voltage, Over Current, Under Voltage, Over Torque, External Fault, Motor over-load, IGBT Over-temperature, Heat-sink Over-temperature, Electronic thermal, Ground Fault, Output short circuit, Stall Prevention, Fuse protection, IGBT short circuit , Drive Over Load , DC bus capacitor life monitoring, Auto carrier frequency adjust according temperature, 16 Trip records, Run information of latest Fault such like DC-BUS voltage, Output voltage/Frequency/Current, Command frequency, IGBT temperature, Heat-sink temperature….etc.		
Digital Keypad (PU-02 Digital Keypad with copy function and PU-03 Digital Keypad with LCD display are available as an option)			**Eight Function keys:** Access R un, Stop, Reset/ Digit Shift, Forward/ Reverse run, Display mode, Keypad Enable, Programming data and Jog operation…etc. **One Encoder style Fly-Shuttle dial:** Sets the parameter number and changes the numerical data **One 6 digits 7 segment display:** Display the Setting frequency/actual operation frequency, Output current/Voltage, motor speed, Fault trip User defined unit(up to 88 type)…etc. **Six LED Display for status indication:** Display the Drive run/stop status, Forward/Reverse run status, Keypad enable, and Frequency command source. **One RJ-45 connector:** Removable Keypad, remote control distance up to 150 meters.		
Environment	Certificate		Complies with CE (EN61800-3) standard		
	Temperature		Ambient: -10℃ ~ +40℃/(-10℃ ~ + 50℃) (Non-Condensing and not frozen). Storage: -20℃ ~ +60℃		
	Humidity		Below 98% R.H. (Non-Condensing)		
	Vibration		Below 20Hz: 1G, above 20Hz: 0.6G		
	Installation Location		Altitude 1,000 m or lower, keep away from corrosive gasses, liquid and dust		

- **All series in TOPVERT family are designed and manufactured base on CNS and IEC, IEEE, CE & UL standard.**

TOPVERT G1, H1 Series: 1-Phase,200/-15% ~ 240/+10%Vac, 47 ~ 63Hz /[400Hz]											
Model	Applicable Motor (230V 4 P)		Rated Output				Source	Enclosure structure			
TOPVERT G1-xxxxx H1-xxxxx	Power (kW)	Horse Power (Hp)	Capacity (kVA)	Current (A)	Voltage (V)	Frequency (Hz)	Current (Amax.)	Cooling Method (Noise level)	Degree of protection	Net Weight (kg)	Frame Code
210P4	0.4	0.5	1.2	3	3- Phase, 0-100% of supply voltage	G1 series 0 ~ 600 H1 series 0 ~ 6000	5.7	Fan-cooled (<70 dB/1M)	IP 20 NEMA 1 (IP 21/40/42 /50/52 optional)	2.6	G1-A H1-A
210P7	0.75	1	2	5			9.5			2.7	
211P5	1.5	2	3	7.5			14			2.7	
212P2	2.2	3	4.4	11			21			3.0	

TOPVERT G1, H1 Series: 3-Phase, 200/-15% ~ 240/+10%Vac, 47 ~ 63Hz /[400Hz]											
Model	Applicable Motor (230V 4 P)		Rated Output				Source	Enclosure structure			
TOPVERT G1-xxxxx H1-xxxxx	Power (kW)	Horse Power (Hp)	Capacity (kVA)	Current (A)	Voltage (V)	Frequency (Hz)	Current (Amax.)	Cooling Method (Noise level)	Degree of protection	Net Weight (kg)	Frame Code
230P4	0.4	0.5	1.2	3	3- Phase , 0-100% of supply voltage	G1 series : 0 ~ 600 H1 series : 0 ~ 6000	3.3	Fan-cooled (<70 dB/1M)	IP 20 NEMA 1 (IP 21/40/ 42/50/52 optional)	2.6	G1-A H1-A
230P7	0.75	1	2	5			5.5			2.8	
231P5	1.5	2	3	7.5			8.3			2.8	
232P2	2.2	3	4.4	11			12			2.8	
233P7	3.7	5	6.8	17			19			3.0	
235P5	5.5	7.5	10	25			28			3.2	
237P5	7.5	10	13	33			36			4.0	G1-B H1-B
23011	11	15	20	49			54			11.9	G1-C H1-C
23015	15	20	26	65			72			12.3	
23018	18.5	25	30	75			83			13.0	
23022	22	30	36	90			99			13.5	
23030	30	40	48	120			132		IP 00 NEMA 0 (IP 20/21 /40/42/ 50/52 NEMA 1 optional)	32.7	G1-D H1-D
23037	37	50	58	145			160			33.8	
23045	45	60	73	182			200			34.6	
23055	55	75	92	232			255			58.0	G1-F H1-F
23075	75	100	120	300			330			59.4	
23090	90	125	143	360			396	Fan-cooled (<80 dB/1M)		192	G1-G
23110	110	150	175	440			484			192	
23132	132	175	207	520			572			198	
23132S	132	175	207	520			572			302	G1-H Free-st anding

[ ]: Optional

TOPVERT G1, H1 Series: 3-Phase 380/-15% ~ 480/+10%Vac, 47 ~ 63Hz /[400Hz]											
Model	Applicable Motor (4 pole)		Rated Output				Source	Enclosure structure			
TOPVERT G1-xxxxx H1-xxxxx	380/415 V (kW/Hp)	440/460 V (kW/Hp)	Capacity (kVA)	Current (A)	Voltage (V)	Frequency (Hz)	Current (A)	Cooling Method (Noise level)	Degree of protection	Net Weight (kg)	Frame Code
430P7	0.75/1		2.4	3	3- Phase，0-100% of supply voltage	G1 series : 0 ~ 600 H1 series : 0 ~ 6000	3.3	Fan-cooled (<70 dB/1M)	IP 20 NEMA 1 (IP 21 /40/42/ 50/52 optional)	2.8	G1-A H1-A
431P5	1.5/2		3.3	4.2			4.6			2.9	
432P2	2.2/3		4.8	6			6.6			2.9	
433P7	3.7/5		6.8	8.5			9.4			2.9	
435P5	5.5/7.5		10	13			14			3.0	
437P5	7.5/10		14	18			20			3.3	
43011	11/15		19	24			26			4.3	G1-B H1-B
43015	15/20		25	32			35			5.0	
43018	18.5/25		32	40			44			13.0	G1-C H1-C
43022	22/30		38	48			53			13.0	
43030	30/40		48	60			66			13.9	
43037	37/50		64	80			88			13.9	
43045	45/60		77	97			107			13.9	
43055	55/75	75/100	94	118			130		IP 00 NEMA 0 (IP 20/21 /40/42/ 50/52 NEMA 1 optional)	33.5	G1-D H1-D
43075	75/100	90/125	121	152			167			37.1	
43090	90/125	110/150	143	180			198			42.4	G1-E H1-E
43110	110/150	132/175	191	240			264			63.0	G1-F H1-F
43132	132/175	160/215	215	270			297			64.5	
43160	160/215	185/250	242	304			334			64.5	
43185	185/250	220/300	295	370			407	Fan-cooled (<80 dB/1M)		192	G1-G
43220	220/300	280/375	359	450			495			192	
43280	280/375	315/422	414	520			572			198	
43315	315/422	375/500	486	610			671			198	
43280S	280/375	315/422	414	520			572		IP 20 NEMA 1 (IP 21 /40/42/ 50/52 optional)	302	G1-H Free-st anding
43315S	315/422	375/500	486	610			671			312	
43400S	400/535	450/600	583	732			805			333	
43450S	450/600	500/670	690	866			953			341	
43500S	500/670	560/750	766	962			1058			348	
43560S	560/750	630/850	872	1094			1203			355	
43630S	630/850	750/1000	966	1212			1333			360	

[ ]: Optional

TOPVERT P1 Series : 3-Phase，200/-15% ~ 240/+10%Vac, 47 ~ 63Hz /[400Hz]											
Model	Applicable Motor (230V 4 P)		Rated Output				Source	Enclosure structure			
TOPVERT P1-xxxxx	Power (kW)	Horse Power (Hp)	Capacity (kVA)	Current (A)	Voltage (V)	Frequency (Hz)	Current (Amax.)	Cooling Method (Noise level)	Degree of protection	Net Weight (kg)	Frame Code
230P7	0.75	1	1.4	3.6	3- Phase，0-100% of supply voltage	0 ~ 600	4	Fan-cooled (<70 dB/1M)	IP 20 NEMA 1 (IP 21 /40/42/ 50/52 optional)	2.6	P1-A
231P5	1.5	2	2.4	6			6.6			2.8	
232P2	2.2	3	3.6	9			9.9			2.8	
233P7	3.7	5	5.3	13.2			15			2.8	
235P5	5.5	7.5	8.1	20.4			22			3.0	
237P5	7.5	10	12	30			33			3.2	
23011	11	15	16	39.6			44			4.0	P1-B
23015	15	20	23	58.8			65			11.9	P1-C
23018	18.5	25	31	75			86			12.3	
23022	22	30	36	90			99			13.0	
23030	30	40	43	108			119			13.5	

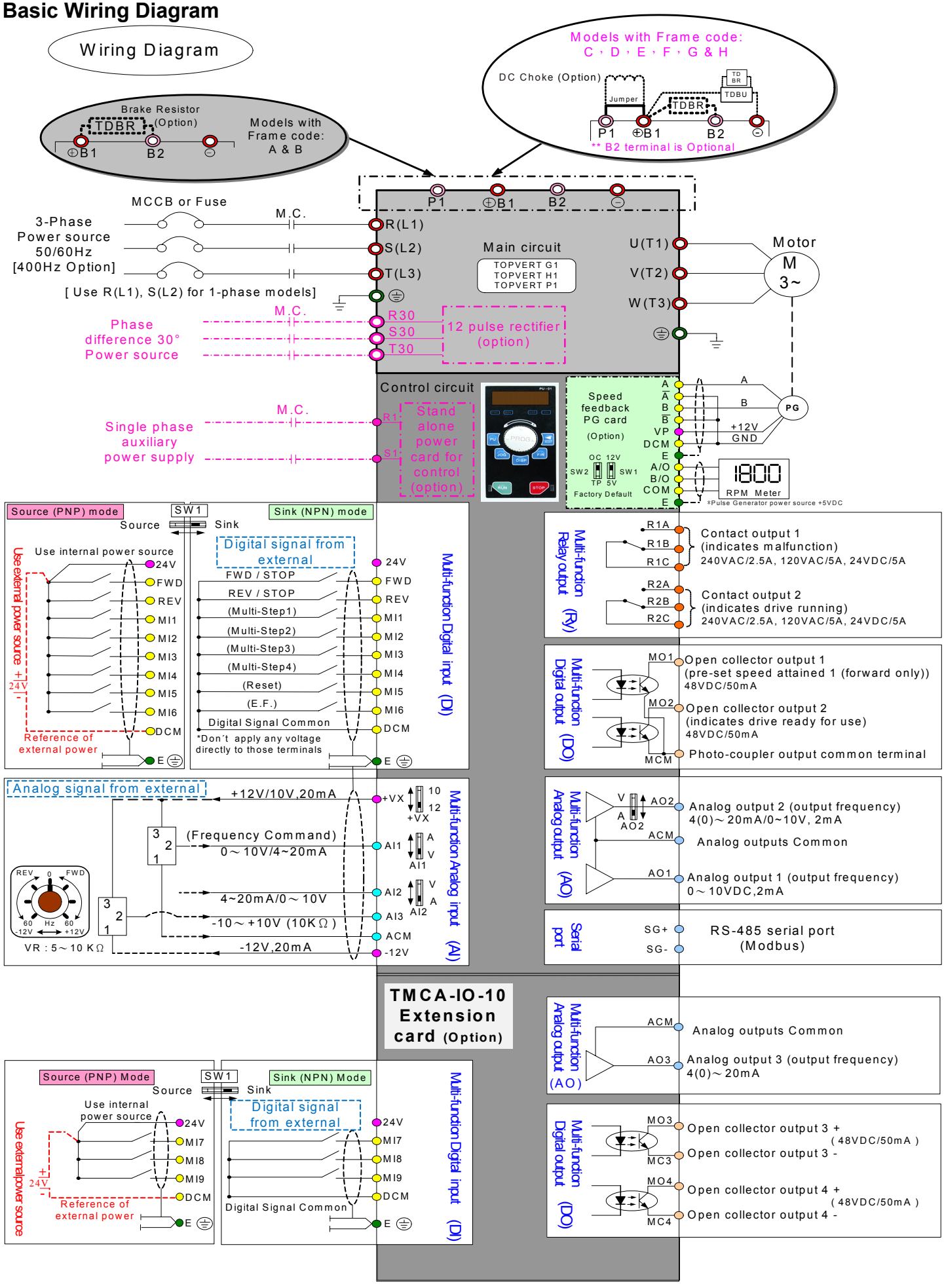
23037	37	50	57	144			158		IP 00 NEMA 0 (IP 20/21 /40/42/ 50/52 NEMA 1 optional)	32.7	P1-D
23045	45	60	69	174			191			33.8	
23055	55	75	87	218.4			240			34.6	
23075	75	100	111	278.4			306			58.0	P1-F
23090	90	125	143	360			396			59.4	
23110	110	150	172	432			475	Fan-cooled (<80 dB/1M)		192	P1-G
23132	132	175	210	520			581			192	

[ ]: Optional

TOPVERT P1 Series : 3-Phase,380/-15% ~ 480/+10%Vac, 47 ~ 63Hz /[400Hz]											
Model	Applicable Motor (4 pole)		Rated Output				Source	Enclosure structure			
TOPVERT P1-xxxxx	380/415 V (kW/Hp)	440/460 V (kW/Hp)	Capacity (kVA)	Current (A)	Voltage (V)	Frequency (Hz)	Current (Amax.)	Cooling Method (Noise level)	Enclosure	Net Weight (kg)	Frame Code
431P5	1.5/2		2.9	3.6	3-Phase - 0-100% of supply voltage	0 ~ 600	4	Fan-cooled (<70 dB/1M)	IP 20 NEMA 1 (IP 21 /40/42/ 50/52 optional)	2.8	P1-A
432P2	2.2/3		4	5.04			5.5			2.9	
433P7	3.7/5		5.7	7.2			7.9			2.9	
435P5	5.5/7.5		8.1	10.2			11			2.9	
437P5	7.5/10		12	15.6			17			3.0	
43011	11/15		17	21.6			24			3.3	
43015	15/20		23	28.8			32			4.3	P1-B
43018	18.5/25		31	38.4			42			5.0	
43022	22/30		38	48			53			13.0	P1-C
43030	30/40		46	57.6			63			13.0	
43037	37/50		57	72			79			13.9	
43045	45/60		76	96			106			13.9	
43055	55/75		93	116.4			128			13.9	
43075	75/100	90/125	113	141.6			156		IP 00 NEMA 0 (IP 20/21 /40/42/ 50/52 NEMA 1 optional)	33.5	P1-D
43090	90/125	110/150	145	180			201			37.1	
43110	110/150	132/175	172	216			238			42.4	P1-E
43132	132/175	160/215	229	270			317			63.0	P1-F
43160	160/215	185/250	258	304			356			64.5	
43185	185/250	220/300	291	365			401			64.5	
43220	220/300	280/375	354	444			488	Fan-cooled (<80 dB/1M)		192	P1-G
43280	280/375	315/422	430	520			594			192	
43315	315/422	375/500	497	610			671			198	
43400	400/535	450/600	583	732			805			198	
43315S	315/422	375/500	497	610			671		IP 20 NEMA 1 (IP 21 /40/42/ 50/52 optional)	312	P1-H Free-standing
43400S	400/535	450/600	583	732			805			333	
43450S	450/600	500/670	700	866			953			341	
43500S	500/670	560/750	828	962			1058			348	
43560S	560/750	630/850	920	1094			1203			355	
43630S	630/850	750/1000	1046	1212			1333			360	

[ ]: Optional

Basic Wiring Diagram

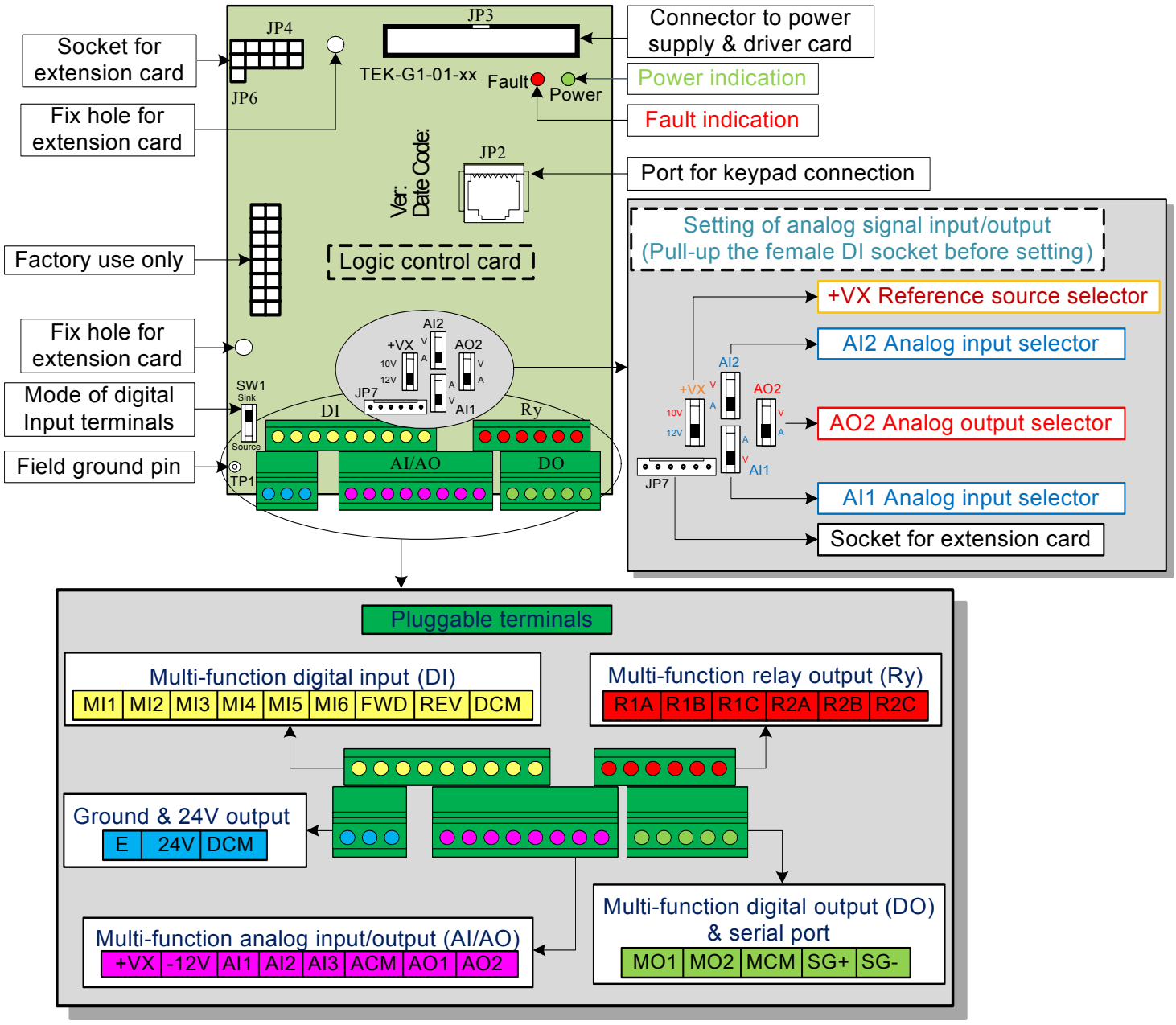


Remark: ◎ → Main circuit ○ → Control circuit → Shielded leads & Cable ( ) → Factory default → option

Main circuit terminal explanations

Terminal Symbol	Content Explanation
R(L1),S(L2),T(L3)	AC source input terminals, to be connected to commercial power. Ensuring the power voltage and the maximum current possible supplied is meet the driver nameplate.
R30,S30,T30 (option)	The phase difference 30° AC source input terminals (When using 12-pulse input, a transformer with a Dual Star-delta Secondary is necessary.) Ensuring the power voltage and the maximum current possible supplied is meet the driver nameplate.
R1,S1 (option)	Extra 1-phase AC source input terminals for main control card, to be connected to commercial power. The voltage rating is same as R(L1),S(L2),T(L3).These terminals can be powered both independent and simultaneously with the main inputs. When These terminals powered only, the drive cannot run, it can precede check signals and management parameter setting and troubleshooting only.
U(T1),V(T2),W(T3)	Drive output terminals for motor connections
⊕/B1, B2	Connections for Brake Resistor (optional) . Refer to Chapter 9
⊕/B1, Θ	Connecting terminals of the external Dynamic Brake Unit. (DC Bus, power source terminals)
P1, ⊕/B1	Connections for DC choke (option) . Disconnect the short-circuit piece when the device is installed
⏚	Ground terminals, please have these terminals grounded following the third-type grounding of 230V models and the special grounding of 460/575V models within the electrician regulations. There are two ground terminals, one for AC source grounding on the input side. The other one is for motor grounding on the output side.

Control Terminal Explanations



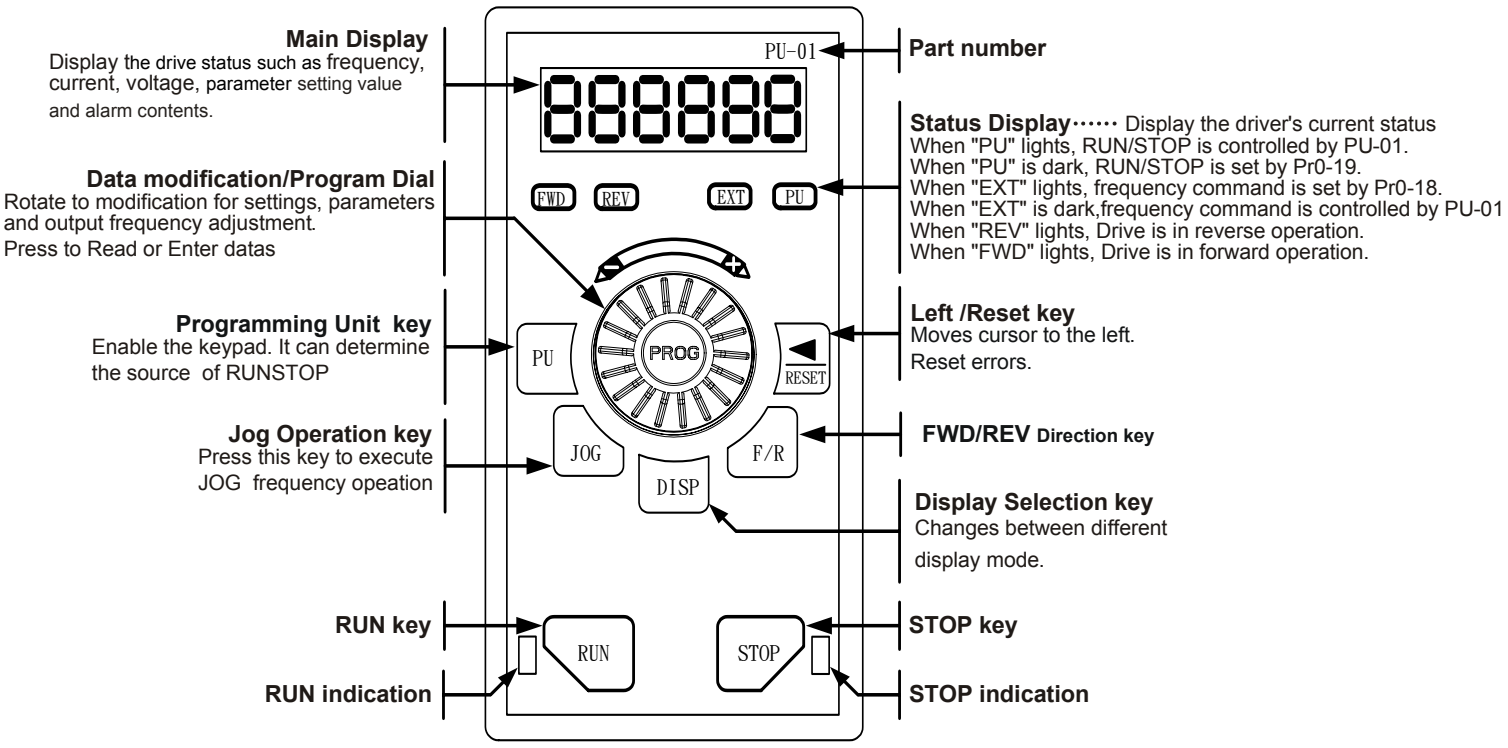
Symbol	Explanation	Ratings/Relative parameters/Factory Default
Digital inputs (Use the shielded twisted-pair cables to prevent operating faults)		
MI1	Multi-function digital input MI1 (3-wire STOP-designated terminal)	Pr2-01/ (multi-step speed command 1)
MI2	Multi-function digital input MI2	Pr2-02/ (multi-step speed command 2)
MI3	Multi-function digital input MI3	Pr2-03/ (multi-step speed command 3)
MI4	Multi-function digital input MI4	Pr2-04/ (multi-step speed command 4)
MI5	Multi-function digital input MI5	Pr2-05/(Abnormal reset command)
MI6	Multi-function digital input MI6 (TRG-designated terminal)	Pr2-06/ (EF input)
FWD	FWD RUN/STOP command	Pr2-00/(FWD RUN/STOP)

REV	REV RUN/STOP command	Pr2-00/(REV RUN/STOP)
DCM	The reference point of digital signal inputs. The reference of +24V control power supply. These terminals are isolated from ACM terminal	Totally 2 DCM terminals with same function.
[MI7]	[Multi-function digital input MI7]	Pr2-26
[MI8]	[Multi-function digital input MI8]	Pr2-27
[MI9]	[Multi-function digital input MI9]	Pr2-28
Relay contact outputs Separate these control circuit wiring from wiring for other control terminals		
R1A R1B R1C	Multi-Function digital output 1 Relay 1 (Relay dry contact output) R1A-R1C :Relay 1 Normal open (a contact) R1B-R1C :Relay 1 Normal close (b contact)	Pr2-20,Pr2-21 Resistive Load 5A(N.O.)/3A(N.C.) 240VAC 5A(N.O.)/3A(N.C.) 24VDC Inductive Load 1.5A(N.O.)/0.5A(N.C.) 240VAC 1.5A(N.O.)/0.5A(N.C.) 24VDC
R2A R2B R2C	Multi-Function digital output 2 Relay 2 (Relay dry contact output) R2A-R2C :Relay 2 Normal open (a contact) R2B-R2C :Relay 2 Normal close (b contact)	
Voltage source for digital signal and Frame Ground (Use the shielded twisted-pair cables to prevent operating faults)		
E	Connect to the shield net of shielded twisted-pair cables (Frame Ground)	
24V	Digital control voltage source. Reference point is DCM	Max. 50mA
DCM	The reference point of digital signal inputs. The reference of +24V control power supply. These terminals are isolated from ACM terminal	Totally 2 DCM terminals with same function.
Analog Inputs and outputs (Use the shielded twisted-pair cables to prevent operating faults)		
+VX	+12V/+10V selectable reference voltage source. Reference point is ACM.	Max.20mA/(+12V)
-12V	-12V reference voltage source. Reference point is ACM	Max. 20mA
AI1	Multi-Function analog input 1 (voltage command or current command selectable) (when AI1 analog input selector switch to “V” can accept DC 0~10V voltage signal. when switch to “I” can accept DC 4(0)~20mA current signal.	Pr3-02/ (DC 0~10V corresponding to the maximum operation frequency)
AI2	Multi-Function analog input 2 (current command or voltage command selectable) (when AI2 analog input selector switch to “V” can accept DC 0~10V voltage signal. when switch to “I” can accept DC 4(0)~20mA current signal.	Pr3-06/(4~20mA)
AI3	Multi-Function analog input 3 (accept DC -10~+10 0~10V voltage signal.)	Pr3-11
ACM	The reference point of analog inputs and outputs signal. The reference of reference voltage source. These terminals are isolated from DCM terminals	
AO1	Multi-Function analog output 1 (can output DC 0~10V voltage signal)	Max.2mA/Pr3-15/ (Output frequency)
AO2	Multi-Function analog output 2 (current signal or voltage signal selectable) (when AO2 analog output selector switch to “V” can	Pr3-16/(4~20mA) (Output frequency)

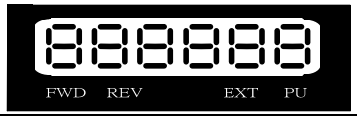
	output DC 0~10V voltage signal. when switch to "I" can output DC 4(0)~20mA current signal.	
[AO3]	[Multi-Function analog output 3] (can output DC 4(0)~20mA current signal)	Pr3-15/(4~20mA) (Output frequency)
Digital outputs and serial port (Use the shielded twisted-pair cables to prevent operating faults)		
MO1	Multi-Function Digital output 3 - MO1	Max.48VDC,50mA/(Pre-set speed attained 1 (Forward only))
MO2	Multi-Function Digital output 4 – MO2	Max.48VDC,50mA/ (Drive ready for use)
MCM	Multi-function output terminal – the common end	
SG+	RS-485 serial port +	
SG-	RS-485 serial port -	
[MO3]	[Multi-Function Digital output 5 MO3+]	Pr2-24
[MC3]	[Multi-Function Digital output 5 MO3-]	
[MO4]	[Multi-Function Digital output 6 MO4+]	Pr2-25
[MC4]	[Multi-Function Digital output 6 MO4-]	

[ ]:Option

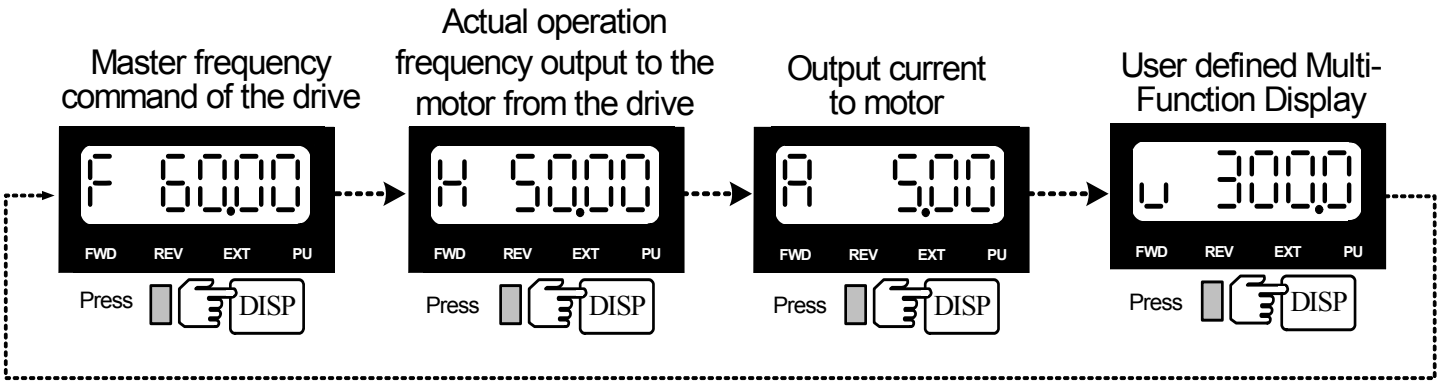
Description of the Digital Keypad



Explanations of Display Messages

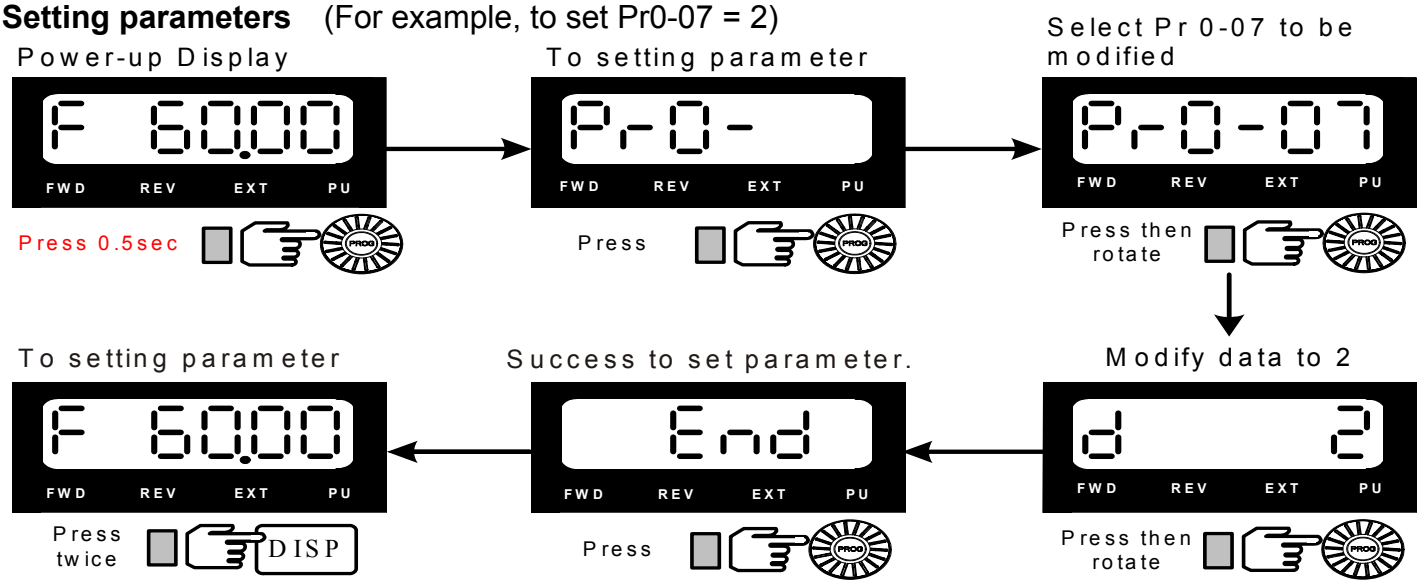
Messages Displayed	Descriptions
	Display master frequency command of the drive (Press the DISP key to read)
	Display actual operation frequency output to the motor from the drive (Press the DISP key to read)
	Display output current to motor (Press the DISP key to read)
	Display User-selected content on Pr0-07 (Press the DISP key to read)
	Display Read/Save selected content (For PU-02 only) (Press the DISP key to read)
	The specified parameter item (Rotate and press the dial to modification, read and Enter) (Press RESET to display those parameters which data are different from factory default)
	Value of the parameter content (Rotate the dial to modify for setting parameters)
	If the “End” message is displayed , for about 1 second, it is an indication that the data has been accepted and saved to the internal memory.

Operation Steps
Selecting display mode

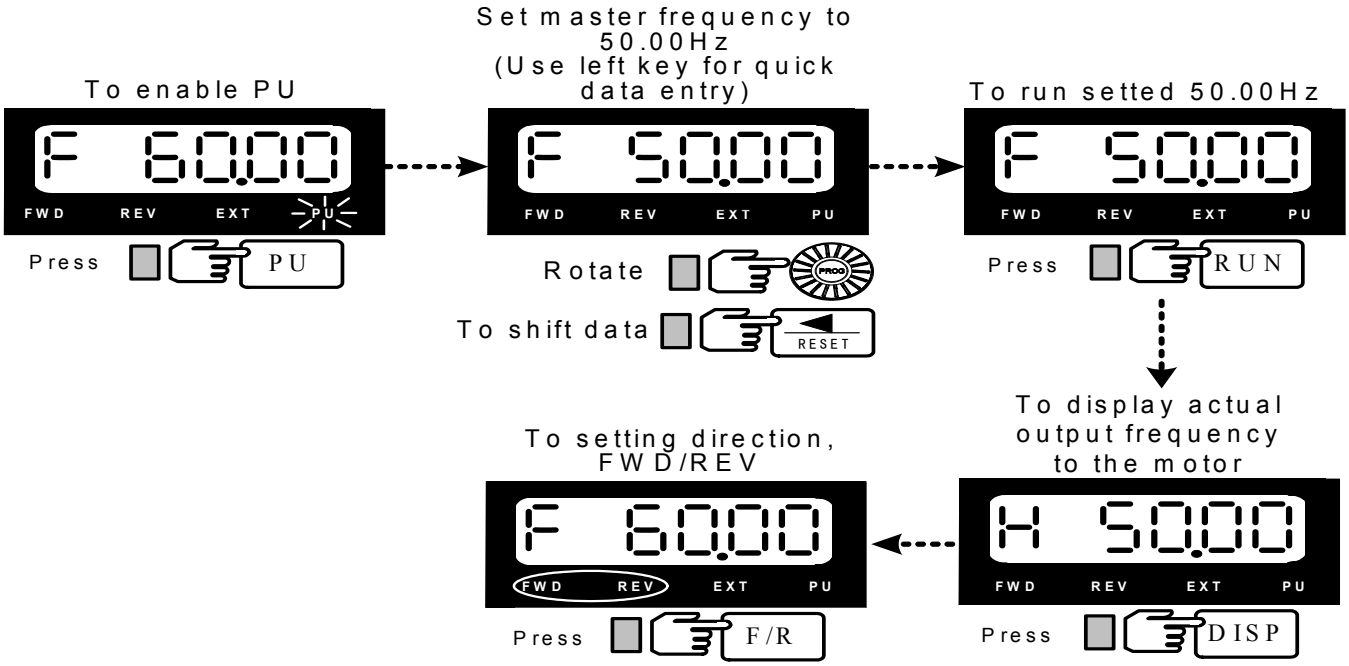


To scrolling between F page, H page, A page and U page by pressing the DISP key

Setting parameters (For example, to set Pr0-07 = 2)

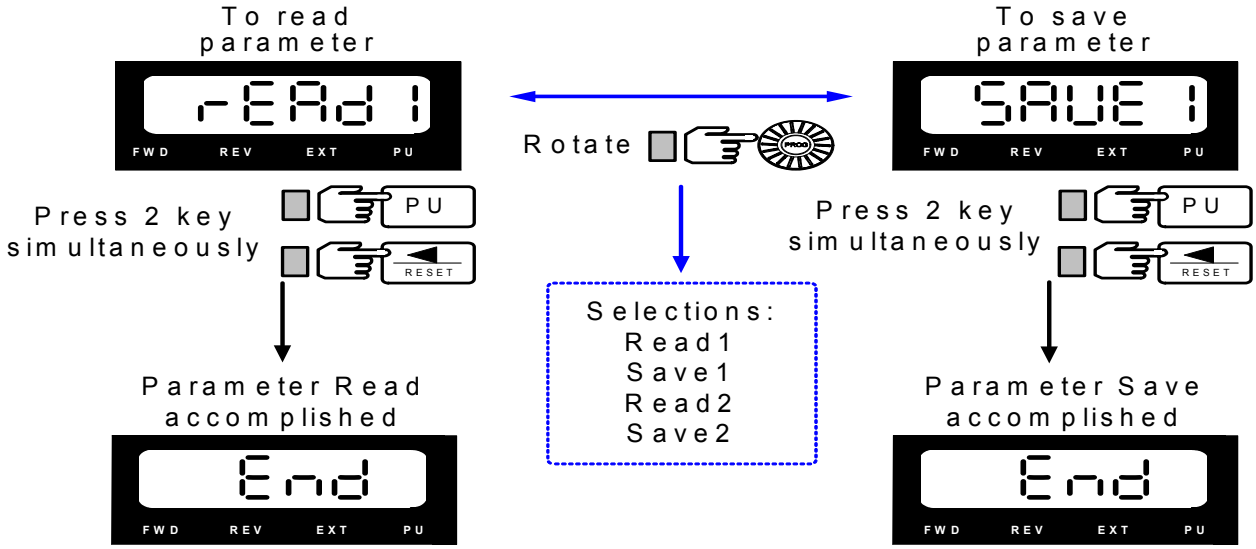


To run (For example, to run 50 Hz from PU)



Parameters READ/SAVE Operation (For PU-02 only)

(Parameter copy can execute between same drive model only)



FUNCTIONS AND PARAMETER SUMMARY

★=This parameter cannot be set during operation.	◎: Available in Firmware Version 2.xx and after only.	⊙: Available in Firmware Version 3.xx and after only.
{ }Parameter no. in Firmware Version 1.xx	[ ] :optional	

Group 0: System parameters

	Parameters	Functions	Settings			Factory Setting		User
★	Pr0-00	Model display	Display according to the model number			Read Only		
★	Pr0-01	Rated output current to motor	Display according to the model number			Read Only		
★	Pr0-02	Parameter Reset (Motor V/F selecting)	10: Parameter reset for 60Hz - 230/460/575V motor application				8	
			9: Parameter reset for 50Hz - 220/380/575V motor application					
			8: Parameter reset for 60Hz - 220/380/575V motor application					
			7: Parameter reset for 50Hz - 230/460/575V motor application					
			6: Parameter reset for 60Hz - 240/415/575V motor application			◎		
			5: Parameter reset for 50Hz - 240/415/575V motor application			◎		
	Pr0-03	Password Input (The Key)	0～9999			0		
	Pr0-04	Password set (The Lock)	0～9999			0		
	Pr0-05	Parameter Locking Level	Bit0	0	All parameters are readable,	b00000		
				1	Parameters after Pr0-05 cannot read ”Err” message will displayed when try to read.			
			Bit1	0	Enable Frequency Command.			
				1	Disable frequency command			
			Bit2	0	Enable run command from PU			
				1	Disable run command from PU			
	Pr0-06	Power on display selection	0: Frequency command value			0		
			1: Actual output frequency (Hz）					
			2: Output current					
			3: User defined contents on Pr0-07					
	Pr0-07	Versatile display	0: Motor speed (RPM)			0		
			1: DC-Bus Voltage (Vdc)					
			2: Actual output voltage (Vac)					
			3: Output voltage command value (Vac)					
			4: PID feedback frequency value (Hz)					
			5: Running step no. of MSS run					
			6: Sleep time (Pr8-07)					
			7: Auto-Restart after Fault (Pr6-10)					
			8: PID frequency command value (Hz)					
			9: (Factory Reserved)					
			10: Output power factor angle (°)					
			11: Counter value					
			12: Over-Torque detection time 1 (Pr5-17)					
			13: (Factory Reserved)					
			14: Dwell Time at Accel. (Pr6-14)					
			15: Dwell Time at Decel. (Pr6-16)					
			16: DC Braking time in Start-up (Pr6-01)					
			17: DC Braking Time during stop (Pr6-02)					
			18: Remain time of the executing MSS Run					
			19: (Factory Reserved)					

			20: (Factory Reserved)				
			21: Accumulated power-up Day (day)				
			22: Accumulated power-up time (hh:mm)				
			23: (Factory Reserved)				
			24: (Factory Reserved)				
			25: (Factory Reserved)				
			26: The signal of AI1 analog input (Vdc)				
			27: The signal of AI2 analog input (mAdc)				
			28: The signal of AI3 analog input (Vdc)				
			29: (Factory Reserved)				
			30～33: (Factory Reserved)				
			34: Over-Torque detection level 1 (Pr5-16)				
			35: Motor 1 Auto torque boost (Pr5-01)				
			36~37: (Factory Reserved)				
			38: Stall level while run in constant torque area (Pr5-12)				
			39～52: (Factory Reserved)				
			53: Output power (kW)				
			54: Output capacity (kVA)				
			55：(Factory Reserved)				
			56: The temperature of IGBT module--TH1 (°C)				
			57: The temperature of environment or fin (TH2) (°C)				
			58: (Factory Reserved)				
			59: (Factory Reserved)				
			60: Drive overload accumulated time (OL)				
			61~63：(Factory Reserved)				
			64: DC Bus voltage upon a fault (Vdc)				
			65: Output voltage upon a fault (Vac)				
			66: Output frequency upon a fault (Hz)				
			67: IGBT module temperature upon a fault (°C)			◎	
			68: Output current value upon a fault (Aac)				
			69：Temperature of Fin or environment upon a fault (°C)			◎	
			70~86：(Factory Reserved)				
			87: DC Bus ripple voltage (Vdc)			◎	
			88: PG frequency (Hz)			◎	
	Pr0-08	User-Defined coefficient K	0～39 (no use)			0	
			40～60000 (the corresponding value for Pr1-00--the max. frequency).				
	Pr0-09	The decimal places	0~3 (0=Without d.p., 1= 1 digit d.p., 2=2 digit d.p., 3=3 digit d.p.)			0	
	Pr0-10	Firmware version	Read-only			x.xx	
	Pr0-11	EPROM store set	Bit0	0	FWD/REV direction command will be store	b00000	
				1	FWD/REV direction command not store		
			Bit1	0	Frequency command from PU will be store		
				1	Frequency command from PU not store		
			Bit2	0	RS-485 frequency command will be store		
				1	RS-485 frequency command not store		
			Bit3	0	Up/Down frequency command will be store		
				1	Up/Down frequency command not store		
			Bit4	0	Changed parameter will be store		
				1	Changed parameter not store		

	Pr0-12	Auto Accelerate/ Decelerate	0: Linear Acc, linear Dec. 1: Auto Acc, linear Dec. 2: Linear Acc, auto Dec. 3: Auto Acc, auto Dec. 4: Linear Acc,/Dec., auto to prevent stall.			0		
★	Pr0-13	Accelerate/ Decelerate time unit	0: 0.01 Second 1: 0.1 Second 2: 1 Second			0		
	Pr0-14	PWM Carrier frequency upper bound	0=0.7kHz 1～18kHz			10		
	Pr0-15	PWM Carrier frequency lower bound	0=0.7kHz 1～18kHz			10		
	Pr0-16	Automatic Voltage Regulation (AVR)	0: Enable Automatic Voltage Regulation 1: Disable Automatic Voltage Regulation 2: Disable Automatic Voltage Regulation while in decele			0		
	Pr0-17	Automatic Energy-Saving Operation (AESO) and others	Bit0	0	Disable Automatic Energy-Saving Operate	b00000		
				1	Enable Automatic Energy-Saving Operate			
			Bit1	0	Allow output voltage over source voltage			
				1	Maximum output voltage equals to source voltage			
			Bit2	0	For constant torque load application.			
				1	For variable torque load application.			
			Bit3	0	Regen-torque no slip compensation			
				1	Regen-torque with slip compensation			
			Bit4	0	Low noise mode operation			
				1	Quiet mode operation			
	Pr0-18	Source of the frequency command	0: From PU				0	
			1: From RS485 communication port					
			2: From external analog signal					
			3: From external Up/Down terminals					
			4: From Pulse input via PG Feedback Card			◎		
	Pr0-19	Source of the operation command	0: From RS485 communication port or PU 1: From external terminals or PU 2: From PU 3: From external terminals			0		
	Pr0-20	Stop/ Run/safety lockout	Bit0	0	Ramp to stop	b00000		
				1	Coast to stop			
			Bit1	0	Terminal command not run after reset			
				1	Terminal command restart after reset			
			Bit2	0	Line start Lockout is enabled			
				1	Line start Lockout is disabled			
			Bit3	0	FWD/REV go through zero point			
				1	FWD/REV go not through zero point			
			Bit4	0	Linear Accel/Decel at high speed zone			
				1	S-curve Accel/Decel at high speed zone			
	Pr0-21	Direction limit	0: Enable Forward/Reverse operation 1: Disable Reverse operation 2: Disabled Forward operation			0		
	Pr0-22	Waiting time to restart after stop	0.00~60.00sec			0.00		
	Pr0-23	Cooling fan control & PID direction	Bit0	0	Fan on while power on	b00000		
				1	Fan on while run command effect			

			Bit1	0	(Factory Reserved)		
				1			
			Bit2	0	(Factory Reserved)		
				1			
			Bit3	0	PID reverse operation allow		
				1	PID reverse operation not allow		
			Bit4	0	(Factory Reserved)		
				1			
	Pr0-24	Resolution of dial	0=0.01 Hz 1=0.10Hz 2=1.00Hz 3=10.00 Hz			1	
★ ◎	Pr0-25	Parameter select	0: Team A 1: Team B 2: Select Team A or Team B by MI3			0	

Group 1: Basic parameters

	Parameters	Functions	Settings			Factory Setting	User
★	Pr1-00	Maximum operation frequency	50.00～600.00Hz (H1:500. 0 ～6000.0Hz)			60.00/50.00	
★	Pr1-01	1st Frequency 1 (Base frequency 1) (Fbase 1)	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			60.00/50.00	
	Pr1-02	1st Voltage 1 (Motor rated voltage 1) (Vbase 1)	230V models: 0.0～255.0V	460V models: 0.0～510.0V	◎ 575V models: 0.0～637.5V	230V:230.0 460V:460.0 575V:575.0	
★	Pr1-03	2nd Frequency 1 (Middle frequency 1) (Fmid 1)	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.50	
	Pr1-04	2nd Voltage 1 (Middle voltage 1) (Vmid 1)	230V models: 0.0～255.0V	460V models: 0.0～510.0V	◎ 575V models: 0.0～637.5V	230V:5.0 460V:10.0 575V:12.5	
★	Pr1-05	3rd Frequency 1 (Low-point frequency 1) (Flow 1)	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.50	
	Pr1-06	3rd Voltage 1 (Low-point voltage 1) (Vlow 1)	230V models: 0.0～255.0	460V models: 0.0～510.0V	◎ 575V models: 0.0～637.5V	230V:5.0 460V:10.0 575V:12.5	
	Pr1-07	0Hz Voltage 1 (Output voltage at 0Hz) (V0Hz 1)	230V models: 0.0～25.5	460V models: 0.0～51.0V	◎ 575V models: 0.0～63.7V	0.0	
	Pr1-08	Start-up frequency	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.50	
	Pr1-09	Output frequency Upper limit	0.0～150.0% of Maximum operation frequency (Pr1-00)			110.0	
	Pr1-10	Output Frequency Lowerl limit	0.0～100.0% of Maximum operation frequency (Pr1-00)			0.0	
	Pr1-11	1st Acceleration time	0.00～60000 Sec			10.00/60.00	
	Pr1-12	1st Deceleration time	0.00～60000 Sec			10.00/60.00	
	Pr1-13	2nd Acceleration time	0.00～60000 Sec			10.00/60.00	
	Pr1-14	2nd Deceleration time	0.00～60000 Sec			10.00/60.00	
	Pr1-15	JOG Acceleration time	0.00～60000 Sec			10.00/60.00	
	Pr1-16	JOG Deceleration time	0.00～60000 Sec			10.00/60.00	
	Pr1-17	JOG frequency	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			6.00	
	Pr1-18	1st/2nd Acceleration/Deceleration Switching frequency	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.000	
	Pr1-19	S-Acc. departure time when accelerate	0.00～12000 Sec			0.00	
	Pr1-20	S-Acc. arrival time when accelerate	0.00～12000 Sec			0.00	
	Pr1-21	S-Dec. departure time when decelerate	0.00～12000 Sec			0.00	

	Pr1-22	S-Dec. arrival time when decelerate	0.00～12000 Sec			0.00	
	Pr1-23 {Pr1-29}	Offset voltage while decelerate	230V models: -50.0~50.0 V	460V models: -100.0~100.0 V	575V models: -125.0~125.0 V	0.00	
★	Pr1-24 {Pr1-23}	Skip Frequency 1 upper limit	0.00~600.00Hz (H1:00.0~6000.0Hz)			0.00	
★	Pr1-25 {Pr1-24}	Skip Frequency 1 lower limit	0.00~600.00Hz (H1:00.0~6000.0Hz)			0.00	
★	Pr1-26 {Pr1-25}	Skip Frequency 2 upper limit	0.00~600.00Hz (H1:00.0~6000.0Hz)			0.00	
★	Pr1-27 {Pr1-26}	Skip Frequency 2 lower limit	0.00~600.00Hz (H1:00.0~6000.0Hz)			0.00	
★	Pr1-28 {Pr1-27}	Skip Frequency 3 upper limit	0.00~600.00Hz (H1:00.0~6000.0Hz)			0.00	
★	Pr1-29 {Pr1-28}	Skip Frequency 3 lower limit	0.00~600.00Hz (H1:00.0~6000.0Hz)			0.00	
★◎	Pr1-30	Skip Frequency 4 upper limit	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.00	
★◎	Pr1-31	Skip Frequency 4 lower limit	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.00	
★◎	Pr1-32	Skip Frequency 5 upper limit	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.00	
★◎	Pr1-33	Skip Frequency 5 lower limit	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.00	
★◎	Pr1-34	Skip Frequency 6 upper limit	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.00	
★◎	Pr1-35	Skip Frequency 6 lower limit	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.00	
★◎	Pr1-36	1st Frequency 2 (Base frequency 2) (Fbase 2)	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			60.00/50.00	
◎	Pr1-37	1st Voltage 2 (Motor rated voltage 2) (Vbase 2)	230V models: 0.0～255.0V	460V models: 0.0～510.0V	575V models: 0.0～637.5V	230V:230 460V:460 575V:575	
★◎	Pr1-38	2nd Frequency 2 (Middle frequency 2) (Fmid 2)	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.50	
★◎	Pr1-39	2nd Voltage 2 (Middle voltage 2) (Vmid 2)	230V models: 0.0～255.0V	460V models: 0.0～510.0V	575V models: 0.0～637.5V	230V:5.0 460V:10.0 575V:12.5	
★◎	Pr1-40	3rd Frequency 2 (Low-point frequency 2) (Flow 2)	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			0.50	
★◎	Pr1-41	3rd Voltage 2 (Low-point voltage 2) (Vlow 2)	230V model: 0.0～255.0V	460V model: 0.0～510.0V	575Vmodels: 0.0～637.5V	230V:5.0 460V:10.0 575V:12.5	
★◎	Pr1-42	0Hz Voltage 2 (Output voltage at 0Hz) (V0Hz 2)	230V models: 0.0～25.5	460V models: 0.0～51.0V	◎ 575V models: 0.0～63.7V	0.0	

Group 2: Digital Input/Output parameters

	Parameters	Functions	Settings	Factory Setting	User
★	Pr2-00	External operation	0: 2-wire mode 1- FWD/STOP, REV/STOP 1: 2-wire mode 2- RUN/STOP, REV/FWD 2: 3-wire mode -RUN,STOP, FWD/REV	0	
★	Pr2-01	Multi-Function Digital input MI1	0: No definition	1	
★	Pr2-02	Multi-Function Digital input MI2	1: Multi-step speed command 1	2	
★	Pr2-03	Multi-Function Digital input MI3	2: Multi-step speed command 2	3	
★	Pr2-04	Multi-Function Digital input MI4	3: Multi-step speed command 3	4	
★	Pr2-05	Multi-Function Digital input MI5	4: Multi-step speed command 4	5	
★	Pr2-06 [Pr2-26] [Pr2-27] [Pr2-28]	Multi-Function Digital input MI6	5: External Reset 6: Clear counter 7: 1st and 2nd acceleration/ deceleration time select 8: Acceleration/deceleration inhibit 9: Force the frequency command from AI1 10: Force the frequency command from AI2 11: Force the frequency command from AI3 12: Emergency Ramp to stop 13: Disable PID function 14: External fault input (EF) 15: B.B. traces from the bottom upward 16: B.B. traces from the top downward 17: Force operation command to external 18: Cancel the auto acceleration/ deceleration function 19: FWD JOG command 20: REV JOG command 21: JOG command 22: Cancel PLC Run 23: Pause PLC Run 24: Up command 25: Down command 26: Zero speed is replaced by DC braking 27: Pause 28: Disable dwell function 29: Disable traverse function 30: Disable Speed search during start-up 31: Disable EEPROM write function 32: Counter Trigger input (MI2 only) 33~41: (Factory Reserved) 42: Motor Select ◎ 43: Confirm signal of Motor selection ◎ 44: Disable reverse operation ◎ 45: Disabled forward operation ◎	14	
	Pr2-07	UP/DOWN command mode	Bit 0: 0 Up command-Accel by the Acc. time; 1 Up command-Accel by Pr2-08 setting Bit 1: 0 Down Command-Decel by the Dec. time; 1 Down Command-Decel by Pr2-08 setting Bit 2: (Factory Reserved) Bit 3: 0 FWD/REV terminals act by edge	b00000	

					trigger		
				1	FWD/REV terminals act by level trigger		
			Bit 4	0	Allow PG feed-back over compensation while Accel.		
				1	Refuse PG feed-back over compensation while Accel.		
	Pr2-08	UP/DOWN command rate	0.01～1.00Hz/msec (10～1000Hz/sec)			0.01	
	Pr2-09	Digital Input terminal debounce time	0.001～30.000 Sec			0.005	
	Pr2-10	Polarity of Digital Input terminals	00000~007FF (0=Close circuit enable 1=Open circuit enable)			h00000	
	Pr2-11	Target count value	0～65500			0	
	Pr2-12	Pre warn count value	0～65500			0	
	Pr2-13	Digital pulse output gain	1~20			1	
	Pr2-14	Pre-set arrival frequency 1	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			60.00/50.00	
	Pr2-15	Pre-set arrival frequency 1 bandwidth	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			2.00	
	Pr2-16	Pre-set arrival frequency 2	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			60.00/50.00	
	Pr2-17	Pre-set arrival frequency 2 bandwidth	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)			2.00	
	Pr2-18	Polarity of Digital output terminals	00000~0003F			h00000	
◎	Pr2-19	Delay time of Digital output terminals	0.000~60.000 Sec			0.003	
	Pr2-20 {Pr2-19}	Multi-Function Digital output 1- Relay 1	0: No definition			11	
	Pr2-21 {Pr2-20}	Multi-Function Digital output 2 - Relay 2	1: Drive in run			1	
	Pr2-22 {Pr2-21}	Multi-Function Digital output 3 - MO1	2: Master frequency attained 1 (Both Forward and Reverse)			5	
	Pr2-23 {Pr2-22}	Multi-Function Digital output 4 - MO2	3: Master frequency attained 2 (Both Forward and Reverse)				
◎	Pr2-24	[Multi-Function Digital output 5 - MO3]	4: Pre-set speed attained 1 (Both Forward and Reverse)			9	
◎	Pr2-25	[Multi-Function Digital output 6 - MO4]	5: Pre-set speed attained 1 (Forward only)			0	
			6: Pre-set speed attained 2 (Both Forward and Reverse)			0	
			7 : Pre-set speed attained 2 (Forward only)				
			8: Drive in decel				
			9: Drive ready for operate				
			10: Low voltage alarm (LU, LUr)				
			11: Fault Indication				
			12: Base block (B.B.) Indication				
			13: Zero Speed (including shutdown)				
			14: Zero speed (while in run)				
			15: Terminal count value attained				
			16: Pre warn count value attained				
			17: PLC Run running				
			18: PLC Run paused				
			19: A step of PLC Run completed				
			20: PLC Run completed				
			21: OH1 pre–warning indication				
			22: Dwell Accel/Decel in execution				
			23: External operation mode indication				
			24: Over-torque 1 (ot1)				
			25: Digital frequency output (MO2 only)				
			26: Software brake output (MO1 only)				

			27: Auxiliary Motor no. 1		
			28: Auxiliary Motor no. 2		
			29: Auxiliary Motor no. 3		
			30: Over-torque 2 (ot2) ◎		
			31: OH2 pre–warning indication ◎		
			32: Motor selection output (Pr5-49) ◎		
			33~47: (Factory Reserved)		
			48: Master speed executing		
			49: PLC Run step 1 executing		
			50: PLC Run step 2 executing		
			51: PLC Run step 3 executing		
			52: PLC Run step 4 executing		
			53: PLC Run step 5 executing		
			54: PLC Run step 6 executing		
			55: PLC Run step 7 executing		
			56: PLC Run step 8 executing		
			57: PLC Run step 9 executing		
			58: PLC Run step 10 executing		
			59: PLC Run step 11 executing		
			60: PLC Run step 12 executing		
			61: PLC Run step 13 executing		
			62: PLC Run step 14 executing		
			63: PLC Run step 15 executing		
			64~79: (Factory Reserved)		
◎	Pr2-26	[Multi-Function Digital input MI7]	Same as Pr2-01~Pr2-06	0	
◎	Pr2-27	[Multi-Function Digital input MI8]			
◎	Pr2-28	[Multi-Function Digital input MI9]			

Group 3: Analog Input/Output parameters

	Parameters	Functions	Settings	Factory Setting	User
	Pr3-00	Addition Function of the Analog Inputs	0: Enable addition function	0	
			1: Disable addition function		
	Pr3-01	Analog input noise filter time	0.00~2.00 sec	0.10	
	Pr3-02 Valid for AI2 (Pr3-06) and AI3 (Pr3-11)	AI1 Analog Input	0: No functions	1	
			1: Frequency command		
			2: To adjust 1st Acceleration/deceleration time) (same as Pr1-11, Pr1-12)		
			3: Over Current stall prevention level during constant speed run on the constant torque region (same as Pr5-12)		
			4: Over Current stall prevention level during accel on the constant torque region (same as Pr5-10)		
			5: Over-Torque detection level 1 (ot1) (same as Pr5-16)		
			6: Motor 1 Torque boost level (same as Pr5-01)		
			7: Auxiliary command when main frequency command is AI1 only		
			8: Auxiliary command when main frequency command is AI2 only		
			9: Auxiliary command when main frequency command is AI3 only		
			10: Auxiliary command of master frequency command		
			11: PID feedback signal		
			12: PID offset signal (same as Pr7-05)		
			13: DC Braking current level (same as Pr6-00)		

			14: Voltage adjusts during run. (AI1 Pr3-02 only)		
			15: External temperatures signal		
			16: Torque adjust		
	Pr3-03	AI1 analog Input bias	-10.00～10.00V	0.00	
	Pr3-04	AI1 analog Input gain	-500.0～+500.0%	100.0	
	Pr3-05	AI1 analog Input bias mode	0: Zero bias 1: Value lower than bias = bias 2: Value higher than bias = bias 3: The absolute value of the bias voltage while serving as the center	0	
	Pr3-06	AI2 Analog Input (see Pr3-02)	Same as Pr3-02	0.00	
	Pr3-07	AI2 analog Input bias	0.00～20.00mA	4.00	
	Pr3-08	AI2 analog Input gain	-500.0～+500.0%	100.0	
	Pr3-09	AI2 analog Input bias mode	0：Zero bias 1: Value lower than bias = bias 2: Value higher than bias = bias 3: The absolute value of the bias voltage while serving as the center	1	
	Pr3-10	Loss of the AI2 signal	0: Disabled 1: Continue operation by the last frequency commar 2: Decelerate to stop 3: Coast to stop and display Acl.	0	
	Pr3-11	AI3 Analog Input (see Pr3-02)	(Same as Pr3-02)	0.00	
	Pr3-12	AI3 analog Input bias	-10.00～10.00V	0.00	
	Pr3-13	AI3 analog Input gain	-500.0～+500.0%	100	
	Pr3-14	AI3 analog Input bias mode	0: Zero bias 1: Value lower than bias = bias 2: Value higher than bias = bias 3: The absolute value of the bias voltage while serving as the center	0	
	Pr3-15	Analog output 1 function (AO1)	0: Output frequency (Hz)	0	
	Pr3-16	Analog output 2 function (AO2)	1: Command frequency (Hz) 2: Motor Speed 3: Output current (A rms) 4: Output voltage (VAC) 5: DC BUS voltage (VDC) 6: Power factor 7: Power 8: AI1 (V) 9: AI2 (mA) 10: AI3 (V) 11~12: (Factory Resewrved) 13: Output voltage command 14: Counter Value 15: User defined value on Pr3-21 16~23: (Factory Reserved) 24: Define to digital output (MOx) ◎	0	
	Pr3-17	AO1 Analog output gain	-900.0～900.0%	100.0	
	Pr3-18	AO2 Analog output gain	-900.0～900.0%	80.0	
	Pr3-19	AO1 Analog output bias	-10.00～10.00V	0.00	
	Pr3-20	AO2 Analog output bias	0.00～20.00mA	4.00	
	Pr3-21	User defined analog output value	0.0～100.0%	0.0	

Group 4: Multi-Step Speed and Process Logic Control operation parameters

	Parameters	Functions	Settings	Factory Setting	User
	Pr4-00	The 1st step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-01	The 2nd step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-02	The 3rd step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-03	The 4th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-04	The 5th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-05	The 6th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-06	The 7th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-07	The 8th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-08	The 9th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-09	The 10th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-10	The 11th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-11	The 12th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-12	The 13th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-13	The 14th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-14	The 15th step speed of PLC Run or MSS Run	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr4-15	The duration of master speed	0.0～65500 Sec	0.0	
	Pr4-16	The 1st step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-17	The 2nd step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-18	The 3rd Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-19	The 4th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-20	The 5th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-21	The 6th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-22	The 7th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-23	The 8th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-24	The 9th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-25	The 10th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-26	The 11th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-27	The 12th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-28	The 13th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	
	Pr4-29	The 14th Step duration of PLC Run or MSS Run	0.0～65500 Sec	0.0	

	Pr4-30	The 15th Step duration of PLC Run or MSS Run	0.0～65500 Sec			0.0	
	Pr4-31	The PLC Run or MSS Run time multiplier	1～10			1	
	Pr4-32	The PLC Run or MSS Run operation direction of each step	00000~07FFF（0：forward；1：reverse）			h00000	
	Pr4-33	PLC Run operation mode	Bit 0	0	Direction determined by Pr4-32	b01000	
				1	Direction determined by the master speed		
			Bit 1	0	Without zero intervals (Continue mode)		
				1	With zero intervals (Stop mode)		
			Bit 2	0	Run zero speed when PLC Run Paused		
				1	Run original programmed step speed when PLC Run Paused		
			Bit 3	0	Re-Execute PLC Run from step 0 after recover from power interruption		
				1	Continue Execute PLC Run from the point which power interrupted after recover from power interruption		
	Pr4-34	PLC Run operation cycle	0~60000 : 0~60000 cycle			0	
			0= PLC Run disabled				
			60001: Continuously execute recurring cycles				
	Pr4-35	What to do after PLC Run completed	0~15：step speed (0=master speed)			16	
			16：stop				
	Pr4-36	Multi-Step Speed Run (MSS RUN) operation mode	Bit 0	0	Direction determined by Pr4-32	b00001	
				1	Direction determined by the master speed		
			Bit 1	0	Duration of MSS Run determined by Mix terminals.		
				1	Duration of MSS Run determined by Pr4-15~Pr4-30 setting.		
			Bit 2	0	Without zero intervals (Continue mode)		
				1	With zero intervals (Stop mode)		
			Bit 3 ◇	0	Jog command ineffective during Run		
				1	Jog command effective during Run		

Group 5: Motor parameters and protection parameters

	Parameters	Functions	Settings			Factory Setting	User
★	Pr5-00	Full-Load Current of Motor 1	Amp (10~120% of drive's rated current)			xxxA（100%）	
	Pr5-01	Auto Torque Compensation of Motor 1	0.0～25.0%			0.0	
	Pr5-02	Slip Compensation of Motor 1	0～20 RPM			0	
	Pr5-03	Number of Motor Poles 1	2～20			4	
	Pr5-04	Rotor Resistance R1 of Motor 1	0.000～65.535 Ω			0	
★	Pr5-05	Auto-tuning & control mode selection	0: No function			0	
			1: To execute auto-tuning and switch to Sensorless vector control mode				
			2: Reset to V/F control mode				
★	Pr5-06	Low Voltage Level l	230V models: 160～220VAC	460V models: 320～440VAC	◎ 575V models: 400～550VAC	230V:180 460V:360 575V:450	
★	Pr5-07	Over-Voltage Stall Prevention Level	230V models: 320～500VDC	460V models: 640～1000VDC	◎ 575V models: 800～1250VDC	230V:380 460V:760 575V:950	

	Pr5-08	Software Braking Level	230V models: 320～500VDC	460V models: 640～1000VDC	◎ 575V models: 800～1250VDC	230V:373 460V:746 575V:932	
	Pr5-09	Phase-Loss Protection	0: Warn and keep operation (below 50%) 1: Warn and ramp to stop 2: Warn and coast to stop			0	
	Pr5-10	Over- Current Stall Prevention level during accel on the constant torque region	Amp (10~250% of drive's rated current)			A(170%)	
	Pr5-11	Over- Current Stall Prevention low-limit level during accel on the constant power region	Amp (0~250% of drive's rated current)			A(120%)	
	Pr5-12	Over-Current Stall Prevention level during constantant speed on the constant torque region Operation	Amp (10~250% of drive's rated current)			A(170%)	
	Pr5-13	Over- Current Stall Prevention low-limit level during constant speed run on the constant power region	Amp (0~250% of drive's rated current)			A(120%)	
	Pr5-14	Over-Current Deceleration Time during Operation	0.050~600.00 Sec			3.00	
	Pr5-15	Over-Torque Detection Selection 1 (ot1)	0：Disabled 1：Over-torque detection during constant speed operation, stop operation after detection. 2：Over-torque detection during constant speed operation, continue to operate after detection. 3：Over-torque detection during operation, stop operation after detection 4：Over-torque detection during operation, continue operation after detection.			0	
	Pr5-16	Over-Torque Detection Level 1 (ot1)	Amp(10～250% of drive's rated current)			A(150%)	
	Pr5-17	Over-Torque Detection Time 1 (ot1)	0.0～60.0 Sec			0.1	
	Pr 5-18	Motor 1- Electronic Thermal Relay Selection (oL1)	0：Electronic thermal relay function disabled 1：Inverter duty motor (with independent cooling fan) 2：Standard motor (with shaft mounted cooling fan)			0	
	Pr5-19	Motor 1- Electronic Thermal Relay Characteristic	30～600 Sec			60	
	Pr5-20	IGBT Over-Heat pre–warning setting (oH2)	0.0~110.0			85.0	
	Pr5-21	Over-Torque Detection Selection 2 (ot2)	0: Disabled 1: Over-torque detection during constant speed operation, stop operation after detection. 2: Over-torque detection during constant speed operation, continue to operate after detection. 3: Over-torque detection during entire (acceleration, steady state, deceleration) operation, stop operation after detection 4: Over-torque detection during entire (acceleration, steady state, deceleration) operation, continue operation after detection.			0	
	Pr5-22	Over-Torque Detection Level 2 (ot2)	Amp(10～250% of drive's rated current)			A(150%)	
	Pr5-23	Over-Torque Detection Time 2 (ot2)	0.0～60.0 Sec			0.1	

	Pr5-24 {Pr5-21}	Most Recent Fault Record	0: no fault	16: HPF (protection circuit fault)	32: ot2 (Over-Torque2)	0	
	Pr5-25 {Pr5-22}	2nd Most Recent Fault Record	1: oC (over-current)	17: oH1 (IGBT overheat)	33: oL2 (electronic thermal relay 2)		
	Pr5-26 {Pr5-23}	3rd Most Recent Fault Record	2: oU (over-voltage)	18: oH2 (Heatsink overheat)	34: rnot (Motor selection error)		
	Pr5-27 {Pr5-24}	4th Most Recent Fault Record	3: GF (ground fault)	19: SoFt (Pre-charge circuit error)			
◎	Pr5-28	5th Most Recent Fault Record	4: SC (IGBT failure)	20: ACI. (AI2 error)	36: Lur (Low Voltage during Run)		
◎	Pr5-29	6th Most Recent Fault Record	5: oL (drive overload)	21: ASC (RS-485 error)	37: oUd (over-voltage during ecal)		
◎	Pr5-30	7th Most Recent Fault Record	6: oL1 (electronic thermal relay 1)	22: PI.d (PID error)	38: `x CoPY (Parameter copy error)		
◎	Pr5-31	8th Most Recent Fault Record	7: ot1 (Over-Torque1)	23: Pu (Keypad communication overtime)	39: LU (Low Voltage)		
◎	Pr5-32	9th Most Recent Fault Record	8: oCn (over-current during constant speed)	24: eca (Auto tuning failure)	40: bb (External Base Block)		
◎	Pr5-33	10th Most Recent Fault Record	9: oCA (over-current during accel.)	25: bF (braking chopper failure)			
◎	Pr5-34	11th Most Recent Fault Record	10: oCd (over-current during ecal.)	26: PG (PG error)			
◎	Pr5-35	12th Most Recent Fault Record	11: EP1 (EPROM error 1)	27: PHL (Phase-Loss protect or capacitor aged)			
◎	Pr5-36	13th Most Recent Fault Record	12: EP2 (EPROM error 2)	28: CC (current signal error during stop)			
◎	Pr5-37	14th Most Recent Fault Record	13: EF (external fault)	29: Cpu (CPU error)			
◎	Pr5-38	15th Most Recent Fault Record	14: Ct1 (current sensor 1)	30: Fan (Fan failure)			
◎	Pr5-39	16th Most Recent Fault Record	15: Ct2 (current sensor 2)	31: AnI fault (Analog input error)			
★◎	Pr5-40	Full-Load Current of Motor 2	Amp (10~120% of drive's rated current)			xxxA (100%)	
◎	Pr5-41	Auto Torque Compensation of Motor 2	0.0～25.0%			0.0	
◎	Pr5-42	Slip Compensation of Motor 2	0～20 RPM			0	
◎	Pr5-43	Number of Motor Poles 2	2～20			4	
◎	Pr5-44	Rotor Resistance R1 of Motor 2	0.000～65.535 Ω			0	
◎	Pr5-45	Motor 2- Electronic Thermal Relay Selection (oL2)	0: Electronic thermal relay function disabled 1: Inverter duty motor (with independent cooling fan)			0	

			2: Standard motor (with shaft mounted cooling fan)			
◎	Pr5-46	Motor 2- Electronic Thermal Relay Characteristic	30～600 Sec		60	
◎	Pr5-47	Heatsink Over-Heat pre–warning setting (oH2)	0.0～110.0 ℃		85.0	
◎	Pr5-48	Delay Time for Motor Selection	0.00~60.00 Sec		0.05	
◎	Pr5-49	Motor selection mode	Bit 0	0: Cannot be switch during operation. 1: Can be switch during operation.	b00000	
			Bit 1	0: No need to waiting for confirm signal when swiching 1: Need to waiting for confirm signal when swiching		

Group 6: Special Parameters

	Parameters	Functions	Settings	Factory Setting	User
	Pr6-00	DC Braking Current Level	Amp (0~125% of drive's rated current)	A(0%)	
	Pr6-01	DC Braking Time during Start-up	0.00～60.00 Sec	0.00	
	Pr6-02	DC Braking Time during stopping	0.00～60.00 Sec	0.00	
	Pr6-03	Start-point for DC Braking during stopping	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr6-04	Increasing Rate of the DC Braking Voltage	0.01~300.00%	50.00%	
	Pr6-05	Momentary Power Loss Operation Selection	0：Operation stops after momentary power loss. 1：Operation continues after momentary power loss, speed search Speed Search starts with Last Output Frequency Downward 2：Operation continues after momentary power loss, speed search starts with the Start-up frequency Upward	0	
	Pr6-06	Maximum Allowable Power Loss Time	0.1～5.0 Sec	2.0	
	Pr6-07	Base-Block Time for Speed Search (BB)	0.1～5.0 Sec	0.5	
	Pr6-08	Maximum Current Level for Speed Search	Amp(20～200% of drive's rated current)	A(120%)	
	Pr6-09	Deceleration Time for Speed Search	0.50～120.00 Sec	3.00	
	Pr6-10	Auto Restart after Fault	0～10 times	0	
	Pr6-11	Speed Search during Start-up	0：speed search disabled 1：speed search through the frequency command 2：FWD-speed search only (motor only runs in FWD direction) 3：REV-speed search only (motor only runs in REV direction) 4：FWD/REV speed search enabled in both directions (FWD first) 5：REV/FWD speed search enabled in both directions (REV first)	0	
	Pr6-12	Speed Search Frequency (FWD direction)	0.00～600.00 Hz (H1:00.0～6000.0Hz)	60.00/50.00	
	Pr6-13	Speed Search Frequency (REV direction)	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	60.00/50.00	
	Pr6-14	Dwell Time at Accel.	0.00~60.00 Sec	0.00	
	Pr6-15	Dwell Frequency at Accel.	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	6.00	

	Pr6-16	Dwell Time at Decel.	0.00~60.00 Sec	0.00	
	Pr6-17	Dwell Frequency at Decel.	0.00～600.00 Hz (H1:00.0～6000.0Hz)	6.00	
	Pr6-18	Dwell Frequency current	Amp (0~150% of rated current)	A(0%)	
	Pr6-19	Traverse Skip Frequency	0.00~100.00Hz	0.00	
	Pr6-20	The Amplitude of traverse	0.00~200.00Hz	0.00	

Group 7: High-function Parameters (PID and Communication)

	Parameters	Functions	Settings	Factory Setting	User
	Pr7-00	Proportional Gain (P)	0.0～500.0%	80.0	
	Pr7-01	Integral Time (I)	0.00～100.00 Sec 0.00：no integral	1.00	
	Pr7-02	Derivative Control (D)	0.00～5.00 Sec	0.00	
	Pr7-03	Upper limit for Integral Control	0.0～100.0%	100.0	
	Pr7-04	PID Output Frequency Limit	0.0～100.0%	100.0	
	Pr7-05	PID Offset	-100.0~+100.0%	0.0	
	Pr7-06	Primary Delay Filter Time	0.000~0.100 Sec	0.000	
	Pr7-07	PID Feedback Signal Detection Time	0.0～6000.0 Sec	0.0	
	Pr7-08	Treatment of the Erroneous PID Feedback Signals	0: warn and keep operating 1: warn and RAMP to stop 2: warn and COAST to stop	0	
	Pr7-9	Treatment of Keypad Transmission Fault	0: Warn and RAMP to stop 1: Warn and COAST to stop	0	
	Pr7-10	Keypad Transmission Fault detection	0.0: Disable and keep operating 0.1~60.0 Sec	0.0	
	Pr7-11	Communication Address	1～254	1	
	Pr7-12	Transmission Speed (Baud rate)	1.2～125 Kbps	9.6	
	Pr7-13	Transmission Fault Treatment	0: warn and keep operating 1: warn and RAMP to stop 2: warn and COAST to stop 3: No warning and keep operating	3	
	Pr7-14	Time-out Detection	0.0: disabled 0.1~60.0 Sec	0.0	
	Pr7-15	Communication Protocol	0：7,N,2 ASCII 1：7,E,1 ASCII 2：7,O,1 ASCII 3：7,E,2 ASCII 4：7,O,2 ASCII 5：8,N,1 ASCII 6：8, N,2 ASCII 7：8,E,1 ASCII 8：8,O,1 ASCII 9：8,E,2 ASCII 10：8,O,2 ASCII 11：8,N,1 RTU 12：8,N,2 RTU 13：8,E,1 RTU 14：8,O,1 RTU 15：8,E,2 RTU 16：8,O,2 RTU	0	

Group 8: Fan & Pump Control Parameters

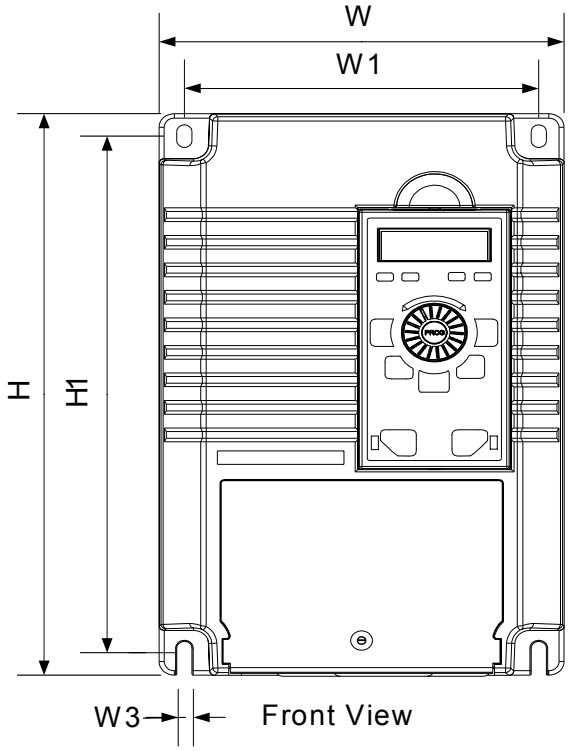
	Parameters	Functions	Settings	Factory Setting	User
★	Pr8-00	V/F Curve Selection	0: V/F Curve determined by Parameter Group 1 1: 1.5 Power Curve 2: Square Power Curve	0	
	Pr8-01	Start-Up Frequency of the Auxiliary Motor	0.00～600.00 Hz (H1:00.0 ～6000.0Hz)	0.00	
	Pr8-02	Stop Frequency of the Auxiliary Motor	5.00～600.00 Hz (H1:50.0 ～6000.0Hz)	5.00	
	Pr8-03	Time Delay before Stopping the Auxiliary Motor	0.0～6000.0 Sec	0.00	
	Pr8-04	Time Delay before Stopping the Auxiliary Motor	0.0～6000.0 Sec	0.00	
	Pr8-05	Sleep Frequency	0.00～600.00 Hz (H1:00.0～6000.0Hz)	0.00	
	Pr8-06	Wake-up Frequency	0.00～600.00 Hz (H1:00.0～6000.0Hz)	0.00	
	Pr8-07	Sleep Time	0.0～6000.0 Sec	0.0	

Group 9: Speed Feedback Control Parameters

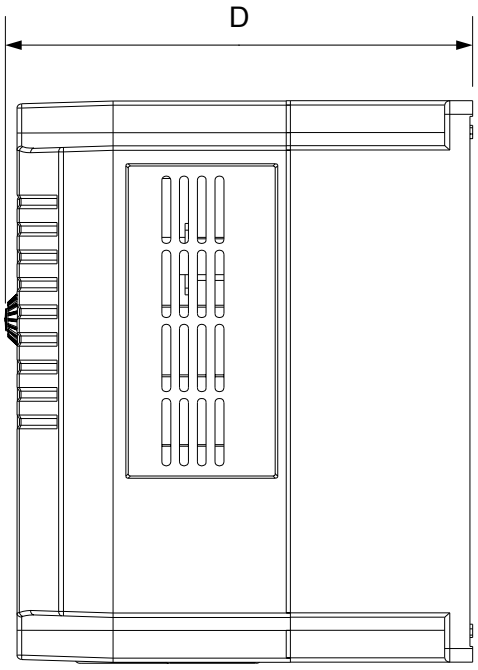
(A PG Feedback Card (optional) is necessary for setting those parameters)

	Parameters	Functions	Settings	Factory Setting	User
★	Pr9-00	PG Pulses	1~5000 PPR	1024	
★	Pr9-01	PG Type and Function setting	0 : Disable PG 1: Bidirection, Phase A leads in a forward run command and phase B leads in a reverse run command 2: Bidirection, Phase B leads in a forward run command and phase A leads in a reverse run command 4: As PID feedback (REV) 5: As PID feedback (FWD) 8: Frequency command (REV) (Pr0-18=4) 9: Frequency command (FWD) (Pr0-18=4)	0	
★	Pr9-02	PG Speed Feedback Display Filter	0.000~1.000sec	0.03	
	Pr9-03	PG feedback speed control Proportional Gain (P)	0.0～500.0%	20.0	
	Pr9-04	PG feedback speed control Integral Time (I)	0.00～10.00 Sec 0.00 : no integral	0.50	
	Pr9-05	PG feedback speed control Differential (D) Time	0.00～5.00 Sec	0.00	
	Pr9-06	PG Speed Control Output Frequency Limit	0.00~150.00Hz	20.00	
	Pr9-07	Treatment of PG Feedback Fault	0: warn and keep operating 1: warn and RAMP to stop 2: warn and COAST to stop	0	
	Pr9-08	PG Feedback Fault Detection Time	0.00~10.00 Sec	0.10	
	Pr9-09	PG Feedback compensation limit	0~900 RPM	90	

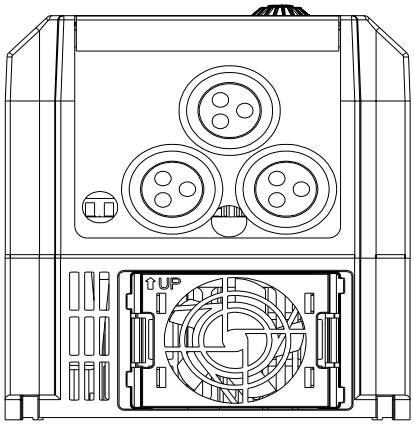
Dimension:



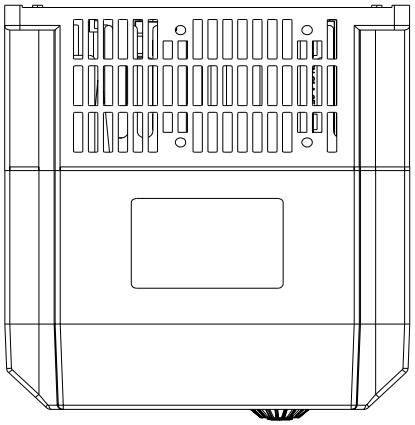
Front View



Side View



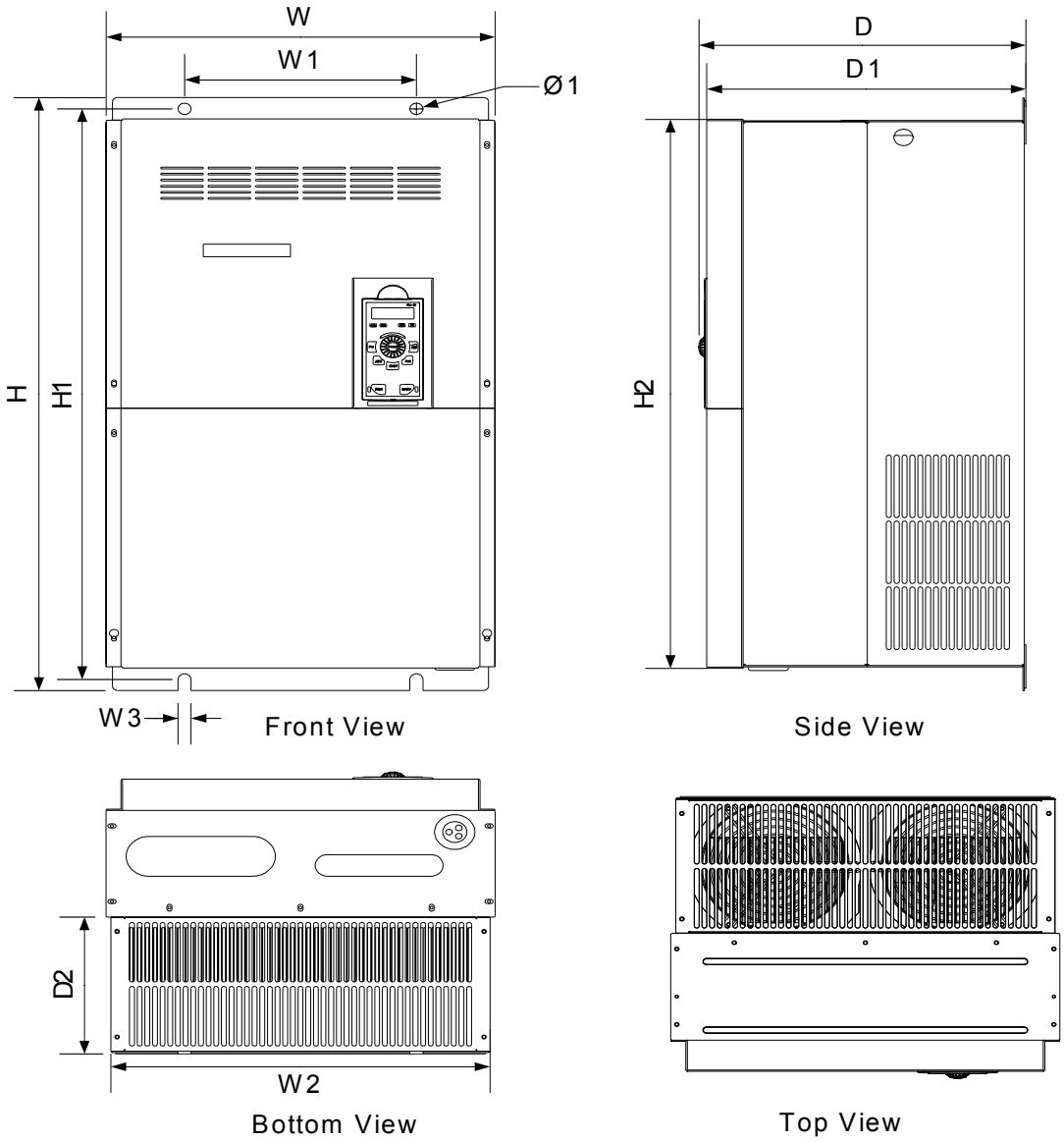
Bottom View



Top View

Unit: mm (inch)

Frame	W	H	D	W1	W3	H1
G1-A,H1-A,P1-A	160.0 (6.30)	250.0 (9.84)	186.0 (7.32)	140.0 (5.51)	6.0 (0.24)	230.0 (9.06)
G1-B,H1-B,P1-B	200.0 (7.87)	275.0 (10.83)	206.0 (8.11)	180.0 (7.87)	6.0 (0.24)	255.0 (10.83)
G1-C,H1-C,P1-C	260.0 (10.24)	460.0 (18.11)	245.0 (9.65)	236.0 (9.29)	9.0 (0.35)	440.0 (17.32)



Unit: mm (inch)

Frame	W	H	D	W1	W2	W3	H1	H2	D1	D2	Φ1
G1-D H1-D P1-D	386.0 (15.20)	617.0 (24.29)	298.3 (11.74)	230.0 (9.06)	376.0 (14.80)	13.0 (0.51)	591.5 (23.29)	566.5 (22.30)	290.5 (11.44)	131.5 (5.18)	13 (0.51)
G1-E H1-E P1-E	386.0 (15.20)	683.0 (26.89)	324.3 (12.77)	230.0 (9.06)	376.0 (14.80)	13.0 (0.51)	657.5 (25.89)	632.5 (24.90)	316.5 (12.46)	157.5 (6.20)	13 (0.51)
G1-F H1-F P1-F	496.0 (19.53)	810.0 (31.89)	352.1 (13.86)	260.0 (10.24)	484.0 (19.06)	13.0 (0.51)	784.0 (30.87)	764.0 (30.08)	344.0 (13.54)	180.5 (7.11)	13 (0.51)
G1-G H1-G P1-G	732 (28.82)	1196 (47.09)	413 (16.26)	410 (16.14)	720.0 (28.35)	13.0 (0.51)	1156 (45.51)	1133 (44.61)	404.9 (15.94)	177.30 (6.98)	13 (0.51)
G1-H H1-H P1-H											

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ML-QSG1/H1/P101

Date Code: 0601