



EC6000

Variable Frequency Drive User Manual



English Re-typeset Edition V2.2

Based on source manual V2.1 | Complete parameter reference included

Professional AC drive supplier

About This Manual

This manual describes installation, wiring, commissioning, parameter configuration, protection and maintenance for the Qingtian EC6000 series variable frequency drive. It is an English re-typeset edition based on source manual V2.1. The complete parameter reference is included so that commissioning technicians and panel builders can configure the drive without returning to the source document.

Intended Users

- Qualified electrical engineers installing or commissioning AC drive systems.
- Panel builders and OEM engineers integrating the EC6000 into machinery.
- Service technicians performing diagnostics, parameter adjustment or maintenance.
- Sales and application engineers preparing technical selections and proposals.

Typography and Parameter Conventions

Item	Convention
Parameter code	Shown in the same form as the drive keypad and communication map, for example P0-10.
Setting range	The valid range or selectable options; values are not recommendations.
Factory default	Typical shipped setting; some values are determined by drive rating or model.
Communication address	Hexadecimal register address used by RS-485/Modbus communication.
Warnings	Must be read before energizing the drive or modifying protection settings.

Safety Summary

- Installation, wiring and repair must be performed only by qualified personnel.
- Disconnect the supply, lock it out and wait for the DC bus discharge time before touching power terminals.
- Never connect AC supply to U/T1, V/T2 or W/T3.
- Do not perform voltage withstand tests on control circuits or drive components.
- Verify motor rotation, emergency stop, protection settings and mechanical limits before production operation.

Contents at a Glance

Section	Contents
1. Product Overview	Control architecture, terminal resources, protection and application features.
2. Technical Specifications	Control performance, I/O, environment, protection and rated output current.
3. Installation and Wiring	Mounting, power wiring, earthing, control terminals and EMC practice.
4. Keypad and Commissioning	Keypad operation, motor data, tuning and first-run checklist.
5. Complete Parameter Reference	All 502 extracted parameter records in groups P0 through U.
6. Fault Codes	Protection names, common causes and corrective actions.
7. RS-485 Monitoring	Status word, fault word and Modbus communication notes.
8. Maintenance and Warranty	Inspection intervals, spare parts, warranty terms and support.

Documentation Scope

Product	Edition	Parameter records	Source
EC6000 series	English V2.2 re-typeset	502	Source manual V2.1

1. Product Overview

- The EC6000 is a current-vector controlled AC drive for asynchronous and permanent-magnet synchronous motor applications.
- Control modes include V/F, sensorless vector control (SVC) and closed-loop flux vector control (FVC).
- The standard I/O set includes 8 digital inputs, 3 analog inputs, 2 analog outputs, 2 relay outputs and transistor outputs.
- One digital input supports high-speed pulse input up to 50 kHz; one transistor output can provide high-speed pulse output.
- Built-in functions include PID, 16-step speed/simple PLC, torque limiting, fast current limit, AVR and momentary-loss ride-through.
- Communication is provided through RS-485/Modbus, with fieldbus option support for Profibus-DP, CANlink and CANopen.

Terminal Resources

Group	Standard resources
Digital inputs	8 inputs; S8 supports high-speed pulse input to 50 kHz
Analog inputs	AI1 0-10 V; AI2/AI3 selectable 0-10 V or 4-20 mA
Digital outputs	2 transistor outputs; Y4 supports high-speed pulse output
Relay outputs	2 relay outputs, 250 VAC 3 A or 30 VDC 1 A
Analog outputs	2 outputs, selectable 0-10 V or 0-20 mA
Communication	RS-485 with optional fieldbus expansion

Optional Expansion

- PU-01 LED keypad and PU-02 LCD keypad with parameter copy.
- PUZ-01 remote keypad for panel-mounted operation.
- IO expansion cards and user-programmable card.
- Profibus-DP, CANlink and CANopen communication cards.
- Differential, open-collector, UVW, resolver and sine-cosine encoder cards.

2. Technical Specifications

Control Performance

Item	Specification
Maximum frequency	320 Hz standard; 3200 Hz when allowed by P0-21 and motor/machine limits
Carrier frequency	1-16 kHz, with automatic thermal adjustment available
Control modes	V/F, V/F separation, SVC and FVC
Start torque	G type 0.5 Hz/150% SVC, 0 Hz/180% FVC; P type 0.5 Hz/100%
Speed range	1:100 SVC; 1:1000 FVC
Speed accuracy	+/-0.5% SVC; +/-0.02% FVC
Torque accuracy	+/-5% FVC
Overload	G type 150%/60 s and 180%/3 s; P type 120%/60 s and 150%/3 s
Acceleration curves	Linear or S-curve; four acceleration/deceleration groups
DC braking	0 to maximum frequency; 0-600 s; 0-150% current

I/O and Protection

Item	Specification
Digital inputs	8 optocoupled inputs; S8 supports 50 kHz pulse input
Analog inputs	3 inputs; AI1 voltage only, AI2/AI3 voltage or current
Digital outputs	Y3/Y4 transistor outputs, 0-24 V, 50 mA
Relay outputs	Y1/Y2, 250 VAC 3 A or 30 VDC 1 A
Analog outputs	2 outputs, 0-10 V or 0-20 mA
Protection	Motor short-circuit check, input/output phase loss, OC, OV, UV, OH and OL
Protection class	IP20; pollution degree PD2

Environment

Item	Limit
Location	Indoor, free from direct sunlight, conductive dust, corrosive gas and dripping water
Ambient temperature	-10 to +40 C without derating; derate to +50 C
Humidity	Below 95% RH, non-condensing
Altitude	Below 1000 m without derating
Vibration	Below 5.9 m/s ²
Storage	-20 to +60 C
Supply variation	Maximum +15% above rated voltage

Rated Output Current

220 V kW	Current A	380 V kW	Current A
0.4	2.1	0.75	3.4
0.75	3.8	1.5	4.8
1.5	7.0	2.2	6.2
2.2	9.0	4.0	11.0
4.0	13.0	5.5	14.0
5.5	25.0	7.5	18.0
7.5	33.0	11	27.0
11	45.0	15	34.0
15	60.0	18.5	41.0
18.5	75.0	22	52.0
22	91.0	30	65.0
30	112.0	37	80.0
		45	96.0
		55	128.0
		75	165.0
		90	185.0
		110	210.0
		132	250.0
		160	307.0
		200	380.0
		220	450.0
		250	480.0
		280	520.0
		315	605.0
		355	670.0
		400	750.0
		450	810.0
		500	860.0
		560	990.0
		630	1100.0

3. Installation and Wiring

Mechanical Installation

- Mount vertically on a flat, non-flammable, load-bearing surface.
- Maintain the clearance specified for the frame and allow cooling air to flow upward.
- Do not mount heat-sensitive equipment below the drive.
- Prefer side-by-side arrangement when several drives share one cabinet.
- If drives must be stacked, provide a partition and verify derating.

Power Terminals

Terminal	Function
R/L1, S/L2, T/L3	Three-phase AC input through approved isolation and protection
U/T1, V/T2, W/T3	Motor output; never connect utility power here
+1, +2	DC reactor connection according to ordered configuration
+1, PR	Braking resistor connection where a built-in brake unit is fitted
+1, -	External brake unit connection
PE/E	Protective earth; low-impedance earth without loops

Control Terminals

Group	Terminals	Specification
Reference	10V-GND	+10 V, 10 mA maximum, for 1-5 kOhm potentiometer
Sensor supply	24V-COM	+24 V, 200 mA maximum
Digital inputs	S1-S8	Optocoupled; S8 supports 50 kHz pulse
Analog inputs	AI1-AI3	AI1 0-10 V; AI2/AI3 voltage or current
Analog outputs	AO1/AO2	0-10 V or 0-20 mA process output
Relay outputs	Y1/Y2	250 VAC 3 A or 30 VDC 1 A
RS-485	DA/DB	Standard serial bus; 120 Ohm termination by SW2

Wiring Practice

- Separate power and signal cables; cross unavoidable cables at right angles.
- Use shielded cable for analog, encoder and communication circuits.
- Keep analog cable runs short and ground shields according to site EMC practice.
- Tighten power terminals to the specified torque and recheck after thermal cycling.
- Fit reactors or filters where long motor cable, harmonics or insulation stress require them.

4. Keypad and Commissioning

Keypad Operation

- Use the programming key to enter the parameter menu.
- Use arrow keys to select parameters and Enter to confirm values.
- RUN and STOP control local operation when P0-02 selects keypad control.
- STOP also resets a cleared fault when reset is permitted.
- PU-02 supports an LCD interface and parameter copy; PUZ-01 supports remote mounting.

Basic Commissioning Parameters

Code	Function	Typical setup
P0-00	G/P rating	Match ordered drive rating
P0-01	Control mode	V/F, SVC or FVC according to application
P0-02	Command source	0 keypad; 1 terminal; 2 communication
P0-03	Main frequency source	Keypad, AI, pulse, communication or PID
P0-10	Maximum frequency	Normally motor rated frequency
P0-15/P0-16	Acceleration/deceleration	Set for load inertia and regenerative capability
P1-02 to P1-06	Motor nameplate	Rated power, voltage, current, frequency and speed
P1-00	Motor tuning	Run static or full tuning only when safe

First-Run Checklist

- Check input, output, earth and control wiring.
- Confirm motor nameplate and drive rating.
- Verify emergency stop and machine interlocks.
- Set acceleration, deceleration, minimum and maximum frequency.
- Run motor tuning where required by the control mode.
- Check no-load current, rotation and vibration before applying full load.

5. Complete Parameter Reference

The following tables contain all 502 parameter records extracted from the source reference. Values are shown exactly as applicable to the drive. Where the original factory value depends on the drive rating, the source designation is retained.

Do not change protection or factory calibration parameters without a documented commissioning reason.

P0 - Basic Control

Drive rating, command source, frequency channels, frequency limits and basic acceleration control.

Code	Parameter	Setting range / options	Factory	Address
P0-00	G/P selection	1: Light-load rated (P) -> for variable torque applications	0	0000H
P0-01	Motor control mode	1: Sensorless vector control (SVC), direction indicator flashes slowly	0	0001H
P0-02	Run command source selection	2: RS485 communication control, REM indicator flashes	0	0002H
P0-03	Main channel selection	5: RS485 communication setting	0	0003H
P0-04	Main channel gain	0.000-5.000	1.000	0004H
P0-05	Frequency setting, auxiliary channel selection	Same as P0-03	0	0005H
P0-06	Auxiliary channel gain	0.000-5.000	1.000	0006H
P0-07	Main/auxiliary channel combination mode	0: Main channel valid 1: Auxiliary channel valid 2: Main + Aux 3: Main - Aux 4: MAX(Main , Aux) 5: MIN(Main , Aux) 6: Main * Aux 7: Any non-zero value in main/auxiliary channel is valid, main channel takes priority	0	0007H
P0-08	Main channel frequency	0.00-Maximum output frequency	50.00Hz	0008H
P0-09	Digital setting	0.00-Maximum output frequency	50.00Hz	0009H
P0-10	Maximum output frequency	0.00-320.00Hz	50.00Hz	000AH
P0-11	Upper limit frequency source selection	0: Upper limit frequency digital setting 1: Voltage analog AI1 setting 2: Voltage analog AI2 setting 3: Current analog AI3 setting 4: Terminal pulse setting 5: RS485 communication setting	0	000BH
P0-12	Upper limit frequency source Digital setting	Lower limit frequency~100.0%	100.0%	000CH
P0-13	Lower limit frequency source digital setting	0~Upper limit frequency	0.0%	000DH
P0-14	Lower limit frequency operation mode	2: Zero speed hold	0	000EH
P0-15	Acceleration time 1	0.1-6500.0s	Drive model setting	000FH
P0-16	Deceleration time 1	0.1-6500.0s	Drive model setting	0010H
P0-17	Accel/Decel time unit	1■0.1s 2■0.01s	1	0011H
P0-18	Stop mode	0: Deceleration stop 1: Coast to stop	0	0012H
P0-19	Rotation direction selection	Units digit: 0: Direction consistent 1: Direction reversed Tens digit: 0: Reverse allowed 1: Reverse prohibited	0	0013H
P0-20	Carrier frequency	1.0-15.0KHz	Drive model setting	0014H
P0-21	Frequency reference resolution	1■0.1Hz 2■0.01Hz	2	0015H
P0-22	Reserved	-	-	0016H
P0-23	Parameter initialization	0: No function 1: Data lock 2: Clear fault records 3~6: Undefined 7: Initialize - function data reset 10: Save user data 210: Restore user data	0-210	0017H

P1 - Motor Parameters

Motor nameplate data, motor tuning, encoder selection and motor identification.

Code	Parameter	Setting range / options	Factory	Address
P1-00	Selection	2: Complete tuning of asynchronous motor	0	0100H
P1-01	Motor type	0: Common asynchronous motor	0	0101H

Code	Parameter	Setting range / options	Factory	Address
P1-02	Motor rated power	0.1kW-1000.0kW	Drive model setting	0102H
P1-03	Motor rated voltage	1V-2000V	Drive model setting	0103H
P1-04	Motor rated current	0.01A-655.35A (inverter power <=55kW)	Drive model setting	0104H
P1-05	Motor rated frequency	0.01Hz-Maximum frequency	Drive model setting	0105H
P1-06	Motor rated speed	1rpm-65555rpm	Drive model setting	0106H
P1-07	Asynchronous motor stator resistance	0.001 ohm-65.535 ohm (inverter power <=55kW)	Drive model setting	0107H
P1-08	Asynchronous motor		Drive model setting	0108H
P1-09	Asynchronous motor leakage inductance	0.01mH-655.35mH (inverter power <=55kW) 0.001mH-65.535mH (inverter power >55kW)	Drive model setting	0109H
P1-10	Motor mutual inductance		Drive model setting	010AH
P1-11	Asynchronous motor no-load current	0.01A-P1-04 (inverter power <=55kW) 0.1A-P1-04 (inverter power >55kW)	Drive model setting	010BH
P1-12				010CH
P1-16				0110H
P1-17	Synchronous motor stator resistance	0.0001 ohm-65.535 ohm (inverter power >55kW)	Tuning parameters	0111H
P1-18	Synchronous motor D-axis	0.01mH-655.35mH (VFD power <=55kW)	Tuning parameters	0112H
P1-19	Synchronous motor Q-axis inductance	0.01mH-655.35mH (inverter power <=55kW) 0.001mH-65.535mH (inverter power >55kW)	Tuning parameters	0113H
P1-20	Reserved	-	-	0114H
P1-21	Synchronous motor back-EMF	0.0V-6553.5V	Tuning parameters	0115H
P1-22	Reserved	-	-	0116H
P1-23	Encoder type	3: Sine/cosine encoder	000	0117H
P1-24	Encoder pulse line speed	0-60000	1024	0118H
P1-25	Encoder mounting angle	0.0-359.9°	0.0°	0119H
P1-26	Offset angle	0.0-359.9°	0.0°	011AH
P1-27	Resolver pole pairs	1-100	1	011BH
P1-28	PG disconnection detection time	0.0: No action, 0.1s-10.0s	2.00s	011CH

P2 - Vector Control

Sensorless and closed-loop vector control, flux weakening, current loops and speed estimation.

Code	Parameter	Setting range / options	Factory	Address
P2-00	Vector control mode	1-Optimized mode 1	0001	0200H
P2-01	Speed loop proportional gain 1	1-100	30	0201H
P2-02	Speed loop integral time 1	0.01-10.00s	0.50s	0202H
P2-03	Switching frequency 1	0.00-P2-06	5.00Hz	0203H
P2-04	Speed loop proportional gain 2	1-100	20	0204H
P2-05	Speed loop integral time 2	0.01-10.00s	1.00s	0205H
P2-06	Switching frequency 2	P2-03-Maximum frequency	10.00Hz	0206H
P2-07	Slip compensation coefficient	50-200%	100%	0207H
P2-08	Speed loop filter	0.001-1.000s	0.010s	0208H
P2-09	Vector control over-excitation gain	0-200	64	0209H
P2-10	Positive torque upper limit source	3: AI3 4: PULSE pulse setting 5: Communication reference 6: MIN (AI1, AI2)	0	020AH
P2-11	Positive torque upper limit	0.0-200.0%	150.0%	020BH
P2-12	Reserved	-	-	020CH
P2-13	Reserved	-	-	020DH

Code	Parameter	Setting range / options	Factory	Address
P2-14	Excitation regulation proportional gain	0-60000	2000	020EH
P2-15	Excitation regulation integral gain		1300	020FH
P2-16	Torque regulation proportional gain		2000	0210H
P2-17	Torque regulation integral gain		1300	0211H
P2-18	Speed loop integral property	0: Invalid 1: Valid	0	0212H
P2-19	Over-excitation mode selection	0: Disabled	1	0213H
P2-20	Overmodulation enable selection	0-1	0	0214H
P2-21	Maximum output voltage coefficient	100%-110%	105%	0215H
P2-22	Field weakening auto-adjustment gain	50%-200%	100%	0216H
P2-23	Negative torque limit enable	0-1	0	0217H
P2-24	Synchronous motor field weakening mode	0-2	1	0218H
P2-25	Synchronous motor field weakening coefficient	1-50	5	0219H
P2-26	Maximum field weakening current	1-300	50	021AH
P2-27	Field weakening auto-tuning coefficient	10-500	100	021BH
P2-28	Field weakening integral multiplier	0-1	0	021CH
P2-29	Field weakening depth	0-50	5	021DH
P2-30	Synchronous motor field weakening coefficient	80%-180%	120%	021EH
P2-31	Initial position detection enable	0-2	0	021FH
P2-32	Speed loop mode selection	0-1	0	0220H
P2-33	Maximum output adjustment coefficient	50-500	100	0221H
P2-34	According to bus voltage	0-1	0	0222H
P2-35	Feedforward compensation mode	0-2	0	0223H
P2-36	Current loop KP during tuning	1-100	6	0224H
P2-37	Current loop KI during tuning	1-100	6	0225H
P2-38	Z signal correction enable	0-1	1	0226H
P2-39	Synchronous motor SVC speed	10-1000	100	0227H
P2-40	Synchronous motor SVC speed	5-200	40	0228H
P2-41	Synchronous motor SVC speed	5-500	30	0229H
P2-42	Synchronous motor SVC initial	0-80	30	022AH
P2-43	Synchronous motor SVC	0.8-100.0	1.5	022BH
P2-44	Low frequency operation mode	0-1	0	022CH
P2-45	Low frequency effective	0.00-10.00	2	022DH
P2-46	Low frequency step	5.0E-4-1.0000	0.001	022EH
P2-47	Low-frequency braking current	30-120	80	022FH
P2-48	Synchronous motor SVC speed tracking	0-1	0	0230H
P2-49	Zero servo enable	0-1	0	0231H
P2-50	Switchover frequency	0.00-655.35	0.3	0232H
P2-51	Zero servo speed loop	1-100	10	0233H
P2-52	Integral time	0.01-10.00	0.5	0234H
P2-53	Prohibit reverse rotation at stop	0-1	0	0235H
P2-54	Stop angle	0.0-10.0	0.8	0236H
P2-55	Online tuning enable	1: Tune before first run after power-on	0	0237H
P2-56	Online back EMF	0: Disabled	0	0238H

Code	Parameter	Setting range / options	Factory	Address
P2-57	Initial position compensation angle	0.0-359.9°	0°	0239H

P3 - V/F and Stall Control

V/F curves, current/voltage stall suppression, overcurrent compensation and stability settings.

Code	Parameter	Setting range / options	Factory	Address
P3-00	V/F curve selection	2: Square V/F	0	0300H
P3-01	User-defined frequency F1	0.00-P3-03	1.00Hz	0301H
P3-02	User-defined voltage V1	0.0-P3-04	3.0%	0302H
P3-03	User-defined frequency F2	P3-01-P3-05	25.00Hz	0303H
P3-04	User-defined voltage V2	P3-02-P3-06	50.0%	0304H
P3-05	User-defined frequency F3	P3-03 to max. frequency	50.00Hz	0305H
P3-06	Custom voltage V3	P3-04-100%	100%	0306H
P3-07	V/F torque boost	0.0-30.0%	1.0%	0307H
P3-08	Torque boost cutoff frequency	0.00 to max. frequency	50.00Hz	0308H
P3-09	Online torque compensation gain	80-150%	100%	0309H
P3-10	V/F slip compensation	0-200.0%	0.0%	030AH
P3-11	Slip compensation time constant	0.1-10.0s	0.5s	030BH
P3-12	Overexcitation gain	0-2.00	0.64	030CH
P3-13	V/F oscillation suppression gain	0-1000	Drive model setting	030DH
P3-14	Oscillation suppression mode selection	0-4	3	030EH
P3-15	V/F separation voltage source selection	4: PULSE pulse setting (S5)	0	030FH
P3-16	V/F separation voltage digital setting	0.0 to motor rated voltage	0V	0310H
P3-17	V/F separation voltage	0.1-1000.0s	10.0s	0311H
P3-18	V/F separation voltage deceleration time	0.1-1000.0s	10.0s	0312H
P3-19	V/F separation stop	0: Frequency/voltage decrease to 0 independently	0	0313H
P3-20	Overcurrent stall action current	50-200%	150%	0314H
P3-21	Overcurrent stall suppression enable	0: Invalid 1: Valid	1	1
P3-22	Overcurrent stall suppression gain	0-100	2	0
P3-23	Stall current compensation coefficient	50-200%	5	0%
P3-24	Overvoltage stall action voltage	480V■850V	Drive model	■■■
P3-25	Overvoltage stall enable	0: Invalid 1: Valid	1	1
P3-26	Overvoltage stall frequency gain	0-100	3	0
P3-27	Overvoltage stall voltage gain	0-100	3	0
P3-28	Overvoltage stall maximum frequency	0-50Hz	5	Hz
P3-29	Automatic frequency increase enable	0-1	0	0
P3-30	Minimum motoring torque current	10-100%	5	0%
P3-31	Maximum generating torque current	10-100%	2	0%
P3-32	Automatic frequency increase KP	0-100	3	0
P3-33	Automatic frequency increase KI	0-100	3	0

P4 - Digital Input/Output Functions

DI function selection, terminal polarity, filtering, multi-function outputs and terminal control logic.

Code	Parameter	Setting range / options	Factory	Address
P4-00	S1 function	4: Forward jog 5: Reverse jog	1	1
P4-01	S2 function	10: Frequency increase (UP) 11: Frequency decrease (DW) 12: Frequency increase/decrease clear (UP/DW reset)	2	2
P4-02	S3 function	18: Multi-segment speed terminal 3 19: Multi-segment speed terminal 4	4	4
P4-03	S4 function	26: PID characteristic switch 27: PID parameter group switch	5	5
P4-04	S5 function		6	6
P4-05	S6 function	42: Frequency channel switch terminal 4 43: Run command channel switch terminal 1	8	8
P4-06	S7 function	45: Timer trigger terminal	46: Timer	■■■■■
P4-07	S8 function	53: Pump 1 enable	54: Pump 2 enable	0407H
P4-08	Terminals S1-S4 characteristic selection	Ones digit: S1 terminal 0: Active on close 1: Active on open Tens digit: S2 terminal 0: Active on close 1: Active on open Hundreds digit: S3 terminal 0: Active on close 1: Active on open Thousands digit: S4 terminal 0: Active on close 1: Active on open	0000	0408H
P4-09	S1-S4 terminal filter time	0.00-60.00s	0.10s	0409H
P4-10	Terminals S5-S8 characteristic selection	Ones digit: S5 terminal 0: Active on close 1: Active on open Tens digit: S6 terminal 0: Active on close 1: Active on open Hundreds digit: S7 terminal 0: Active on close 1: Active on open Thousands digit: S8 terminal 0: Active on close 1: Active on open	0000	040AH
P4-11	S5-S8 terminal filter time	0.00-60.00s	0.1s	040BH
P4-12	Terminal control	2: Three-wire mode 1	0	040CH
P4-13	Terminal action selection mode	0: Restore original command after invalidation 1: Do not restore original command after invalidation	0111	040DH
P4-14	Reserved	-	-	040EH
P4-15	Reserved	-	-	040FH
P4-16	Protection selection	Tens digit: Run command source channel terminal valid selection	Sub-selection switching	■■■■■
P4-17	UP/DW frequency value	0.0-1.000	0.01	0411H
P4-18	UP/DW frequency adjustment selection	1: Not saved at power failure 2: Valid during run, cleared at stop	0	0412H
P4-19	UP/DW frequency increase/decrease	0.1-100.0%	2.0%/s	0413H
P4-20	Y1 function	0: No function 1: Forward running	1	0414H
P4-21	Y2 function	4: Fault alarm 2 (active during auto-reset period)	2	0415H
P4-22	Y3 function	11: Current level 1 reached 12: Current level 2 reached	3	0416H
P4-23	Y4 function	16: OL1 motor overload pre-alarm	6	0417H
P4-24	Y5 function - extended		0	0418H
P4-25	Y6 function - extended	29: AI1 input out of range 30: Module temperature reached	0	0419H
P4-26	Y7 function - extended	33: Data output 2 from communication (Y function)	0	041AH
P4-27	Y8 function - extension	38: Pump 3 start 39: Pump 4 start	0	041BH

P5 - Analog Terminal Parameters

AI signal type, scaling, filtering, AO function selection and analog calibration.

Code	Parameter	Setting range / options	Factory	Address
P5-00	AI1/2/3 input signal selection	0: 0-10V 1: 0-20.00mA Hundreds digit: AI3 signal selection	0010	0500H
P5-01	AI1 lower limit value	0.00-10.00V	0.00V	0501H
P5-02	Setting corresponding to AI1 lower limit	0.00-100.00%	0.00%	0502H
P5-03	AI1 upper limit value	0.00-10.00V	10.00V	0503H

Code	Parameter	Setting range / options	Factory	Address
P5-04	Setting corresponding to AI1 upper limit	0.00-100.00%	100.00%	0504H
P5-05	Filter time	0.00-10.00s	0.10s	0505H
P5-06	AI2 lower limit value	0.00-10.00V	0.00V	0506H
P5-07	Setting corresponding to AI2 lower limit	0.00-100.00%	0.00%	0507H
P5-08	AI2 upper limit value	0.00-10.00V	10.00V	0508H
P5-09	Setting corresponding to AI2 upper limit	0.00-100.00%	100.00%	0509H
P5-10	Filter time	0.00-10.00s	0.10s	0.10s
P5-11	AI3 lower limit value	0.00-10.00V	0.00V	0.00V
P5-12	Setting corresponding to AI3 lower limit	0.00-100.00%	0.00%	0.00%
P5-13	AI3 upper limit value	0.00-0.00V	10.00V	10.00V
P5-14	Setting corresponding to AI3 upper limit	0.00-100.00%	100.00%	100.00%
P5-15	Filter time	0.00-10.00s	0.10s	0.10s
P5-16	HS input minimum frequency	0.00-50.00KHz	0.00KHz	0.00KHz
P5-17	Value corresponding to HS minimum frequency	0.00-100.00%	0.00%	0.00%
P5-18	HS input maximum frequency	0.00-50.00KHz	50.00KHz	50.00KHz
P5-19	Value corresponding to HS maximum frequency	0.00-100.00%	100.00%	100.00%
P5-20	HS filter time	0.00-10.00s	0.10s	0.10s
P5-21				0515H
P5-28				051CH
P5-29	AO1 output selection	2: Output current 4: Mechanical speed	3: Output voltage 5: Set torque	0
P5-30	AO2 output selection	8: PID feedback	9: Output power	1
P5-31	HY output selection	16: Module temperature	17: Internal temperature	2
P5-32	Analog output signal selection	2: 0.00~20.00mA Hundreds digit: HY function enable	0000	0000
P5-33	AO1 output gain	25.0-200.0%	100.0%	100.0%
P5-34	AO1 output signal offset	-10.0-10.0%	0.0%	0.0%
P5-35	AO2 output gain	25.0-200.0%	100.0%	100.0%
P5-36	AO2 output signal offset	-10.0-10.0%	0.0%	0.0%
P5-37	HY pulse output lower limit	0.00-50.00KHz	0.20KHz	0.20KHz
P5-38	HY pulse output upper limit	0.00-50.00KHz	50.00KHz	50.00KHz

P6 - Start/Stop Control

Start mode, stop mode, DC braking, jog control, restart and speed tracking.

Code	Parameter	Setting range / options	Factory	Address
P6-00	Startup operation mode	Units digit: startup mode 0: direct startup 1: brake first, then start from startup frequency 2: track motor speed, then start	0	0600H
P6-01	Minimum output frequency	0.00-60.00Hz	0.50Hz	0601H
P6-02	Startup pre-excitation current	0-100%	30%	0602H
P6-03	Startup pre-excitation time	0.00-60.00s	Drive model setting	0603H
P6-04	Startup frequency	0.00-P6-04	0.50Hz	0604H
P6-05	Startup frequency holding time	0.0-50.0s	0.0s	0605H
P6-06	Pre-start braking current	0-150%	0%	0606H
P6-07	Pre-start braking time	0.0-300.0s	0.0s	0607H

Code	Parameter	Setting range / options	Factory	Address
P6-08	Stop braking start frequency	0.00-50.00Hz	0.00Hz	0608H
P6-09	Stop braking current	0-150%	0%	0609H
P6-10	Stop braking waiting time	0.00-60.0s	0.0s	060AH
P6-11	Stop braking duration	0.00-600.0s	0.0s	060BH
P6-12	Zero-speed holding current	0-150%	0%	060CH
P6-13	Accel/decel mode selection	1: Maximum frequency	0	060DH
P6-14	Accel start S-curve time	0.01-20.00s	0.50	060EH
P6-15	Accel end S-curve time	0.01-20.00s	0.50	060FH
P6-16	Decel start S-curve time		0.50	0610H
P6-17	Decel end S-curve time		0.50	0611H
P6-18	Speed tracking mode	1: Start from zero speed	0	0612H
P6-19	Speed tracking waiting time	0.0-600.0s	1.0s	0613H
P6-20	Speed tracking speed	0-100	20	0614H
P6-21	Speed tracking closed-loop current KP	0-1000	50	0615H
P6-22	Speed tracking closed-loop current KI	0-1000	50	0616H
P6-23	Speed tracking current	30%-200%	100%	0617H
P6-24	Speed tracking current lower limit	10-100%	30%	0618H
P6-25	Speed tracking voltage rise time	0.5-30s	1.1	0619H
P6-26	Speed tracking demagnetization time	0.00-5.00s	1.00s	061AH

P7 - System Configuration

Display items, counters, energy totals, keypad locking and system configuration.

Code	Parameter	Setting range / options	Factory	Address
P7-00	Parameters and keys	0: Not locked	0	1:■
P7-01	User password	0-65535	0	0701H
P7-02	Keypad STOP key	Tens digit: 0: Invalid for communication commands	000	1■■■
P7-03	Modification selection	6: PID feedback	7	■■■■
P7-04	Function parameter copy	1: Data verification	0	0704H
P7-05	Display speed coefficient	0.000-50.000	1.000	0705H
P7-06	Display content	Tens digit: second group display	6321	0706H
P7-07	Display content	Thousands digit: fourth group display 0: Reference frequency 1: Output frequen	cy	0707H
P7-08	Second line in run state	3: Output voltage 4: Input vol 6: Bus voltage 7: Output pow	tage er	0708H
P7-09	Second line in stop state: display content		OCA4	0709H
P7-10	Multi-function expansion card selection	0-8	0	070AH
P7-11	Keypad display item selection	Effective.	8001	070BH
P7-12	Cumulative power-on days	0-65535	Read-only	070CH
P7-13	Cumulative power-on hours	0.0-6553.5	Read-only	070DH
P7-14	Cumulative running days	0-65535	Read-only	070EH
P7-15	Cumulative running hours	0.0-6553.5	Read-only	070FH
P7-16	Cumulative power consumption (10,000 kWh)	0~65535 (10,000 kWh)	Read-only	0710H
P7-17	Cumulative power consumption (kWh)	0~65535 kWh	Read-only	0711H

Code	Parameter	Setting range / options	Factory	Address
P7-18	Drive status before power-off	Units digit: 0: Stop 1: Run; Tens digit: 0: Forward 1: Reverse; Hundreds digit: Reserved; Thousands digit: Reserved	0000	0712H

P8 - Auxiliary Functions

Timers, process thresholds, sleep/wake, auxiliary control and service-related functions.

Code	Parameter	Setting range / options	Factory	Address
P8-00	Forward jog operating frequency	0.00 to max. frequency	5.00Hz	0800H
P8-01	Reverse jog operating frequency	0.00 to max. frequency	5.00Hz	0801H
P8-02	Jog acceleration time	0.1-6500.0s	10.0s	0802H
P8-03	Jog deceleration time		10.0s	0803H
P8-04	2nd acceleration		10.0s	0804H
P8-05	2nd deceleration		10.0s	0805H
P8-06	3rd acceleration		10.0s	0806H
P8-07	3rd deceleration		10.0s	0807H
P8-08	4th acceleration		10.0s	0808H
P8-09	4th deceleration		10.0s	0809H
P8-10	Emergency stop deceleration time		10.0s	080AH
P8-11	Forward/reverse dead time	0.0-150.0s	0.0s	080BH
P8-12	Jump frequency 1	0.00~Maximum frequency	0.00Hz	080CH
P8-13	Jump frequency 2	0.00~Maximum frequency	0.00Hz	080DH
P8-14	Jump frequency amplitude		0.00Hz	080EH
P8-15	Output frequency detection 1	0.00~Maximum frequency	30.00Hz	080FH
P8-16	FDT1 detection width		0.00Hz	0810H
P8-17	Output frequency detection 2	0.00~Maximum frequency	50.00Hz	0811H
P8-18	FDT2 detection width		0.00Hz	0812H
P8-19	Frequency coincidence detection width		0.30Hz	0813H
P8-20	Current arrival 1 detection value	0	.0-200.0%	0814H
P8-21	Current 1 arrival detection width	0	.0-100.0%	0815H
P8-22	Current arrival 2 detection value	0	.0-200.0%	0816H
P8-23	Current 2 arrival detection width	0	.0-100.0%	0817H
P8-24	Zero current detection level	0	.0%-200.0%	0818H
P8-25	Zero current detection delay time	0	.00s-650.00s	0819H
P8-26	Output current over-limit value	0	.0%-200.0%	081AH
P8-27	Current over-limit detection delay	0	.00s-650.00s	081BH
P8-28	Timed run function	L	ED Tens digit: Timed run time 0: P8-29 setting 2: AI2	■■■ 1:AI1 3:AI3
P8-29	Timed run time setting	0	.0-6500.0Min	081DH
P8-30	Timer time unit	0	: Second 1: Minute 2	■■■■
P8-31	Timer set value	0	-65000	081FH
P8-32	Counter maximum value	0	-65000	0820H
P8-33	Counter set value	0	-65000	0821H
P8-34	AI1 voltage protection lower limit	0	.0%-P8-35	0822H
P8-35	AI1 voltage protection value upper limit	P	8-34-10.00V	0823H
P8-36	Module temperature reached	0	-100■■	0824H

P9 - Fault and Protection

Motor/inverter protection, phase loss, auto-reset, fault history and protection actions.

Code	Parameter	Setting range / options	Factory	Address
P9-00	Protection function selection 1	LED units digit: Motor overload protection selection 0: Invalid 1: Valid LED tens digit: Power-on ground short circuit protection selection 0: Invalid 1: Valid LED hundreds digit: Input phase loss and contactor pickup protection selection 0: Invalid 1: Valid LED thousands digit: Output phase loss protection selection 0: Invalid 1: Valid	1011	0900H
P9-01	Protection function selection 2	LED units digit: Output load loss protection selection 0: Invalid 1: Decelerate to stop LED tens digit: Instantaneous power loss action selection 0: Invalid 1: Valid LED hundreds digit: Frequency selection for continued running upon fault 0: Run at the current running frequency 1: Run at the set frequency 2: Run at the upper limit frequency 3: Run at the lower limit frequency 4: Run at the fault backup frequency LED thousands digit: Reserved	0000	0901H
P9-02	Fault auto-reset times	1~20: Enabled	0	0
P9-03	Fault auto-reset	0.1-100.0s	1.0s	1.0s
P9-04	Fault type	4: Overcurrent at constant speed	5: Overvoltage during acceleration	■■
P9-05	Previous 1st time	16: Communication (timeout) fault 18: Current detection fault	17: Contactor fault 19: Motor tuning fault	■■
P9-06	Fault type	45: Motor overtemperature fault	51: Magnetic pole position detection failed	■■
P9-07	Fault running frequency	0.00-655.35Hz	Read-only	■■
P9-08	Fault output current	0.1-2000.0A	Read-only	■■
P9-09	Fault bus voltage	0-3000V	Read-only	■■
P9-10	S terminal state at fault	See input terminal state diagram	Read-only	■■
P9-11	Y terminal state at fault	See output terminal state diagram	Read-only	■■
P9-12	Drive state at fault	0: Stop; 1: Constant speed	Read-only	■■
P9-13	Power-on time at fault	0-65535	Read-only	■■
P9-14	Running time at fault	0-65535	Read-only	■■
P9-15	Running frequency of the previous fault	0.00-655.35Hz	Read-only	■■
P9-16	Output current of the previous fault	0.1-2000.0A	Read-only	■■
P9-17	Bus voltage of the previous fault	0-3000V	Read-only	■■
P9-18	S terminal state of the previous fault	Same as P9-10	Read-only	■■
P9-19	Y terminal state of the previous fault	Same as P9-11	Read-only	■■
P9-20	Running state of the previous fault	Same as P9-12	Read-only	■■
P9-21	Power-on time of the previous fault	Same as P9-13	Read-only	■■
P9-22	Running time of the previous fault	Same as P9-14	Read-only	■■
P9-23	Running frequency at 2nd previous fault	0.00-655.35Hz	Read-only	■■
P9-24	Output current at 2nd previous fault	0.1-2000.0A	Read-only	0918H
P9-25	Bus voltage at 2nd previous fault	0-3000V	Read-only	0919H
P9-26	S terminal state at 2nd previous fault	Same as P9-10	Read-only	091AH
P9-27	Y terminal state at 2nd previous fault	Same as P9-11	Read-only	091BH
P9-28	Running state at 2nd previous fault	Same as P9-12	Read-only	091CH
P9-29	Power-on time at 2nd previous fault	Same as P9-13	Read-only	091DH
P9-30	Running time at 2nd previous fault	Same as P9-14	Read-only	091EH

Code	Parameter	Setting range / options	Factory	Address
P9-31	Fault standby frequency	0.0-100.0%	100.0%	091FH
P9-32	Motor overload protection gain	0.20-10.00	1.00	0920H
P9-33	Motor overload pre-alarm coefficient	50-100%	80%	0921H
P9-34	Momentary power loss action detection voltage	0-100%	80%	0922H
P9-35	Momentary power loss pause detection voltage	0-100%	90%	0923H
P9-36	Momentary power loss recovery detection time	0.00-100.00s	0.50s	0924H
P9-37	Momentary power loss deceleration gain	0-200%	100%	0925H
P9-38	Load loss detection level	0.0-100.0%	10.0%	0926H
P9-39	Load loss detection time	0.0-60.0s	1.0s	0927H
P9-40	Overspeed detection value	0.0–50.0% (of maximum frequency)	20.0%	0928H
P9-41	Overspeed detection time	0.0-60.0s	1.0s	0929H
P9-42	Excessive speed deviation detection value	0.0–50.0% (of maximum frequency)	20.0%	092AH
P9-43	Excessive speed deviation detection time	0.0-60.0s	5.0s	092BH
P9-44	Overvoltage stall gain	0-100	0	092CH
P9-45	Overvoltage stall protection voltage	120-150%	130%	092DH
P9-46	Overcurrent stall gain	0-100	20	092EH
P9-47	Overcurrent stall protection current	100-200%	150%	092FH
P9-48	Input phase loss detection threshold	-250-500	100	0930H
P9-49	Output phase loss detection threshold	400-1000	600	0931H
P9-50	Protection action selection 1	LED ones digit: Motor overload (Err11) action selection 0: Fast stop, report fault 1: Emergency stop, report fault 2: Warning only, VFD continues running LED tens digit: Input phase loss (Err12) action selection Same as ones digit LED hundreds digit: Output phase loss (Err13) action selection Same as ones digit LED thousands digit: External fault (Err15) action selection Same as ones digit	0000	0932H
P9-51	Protection action selection 2	LED ones digit: Communication error (Err16) action selection, same as P9-50 ones digit LED tens digit: Encoder fault (Err20) action selection 0: Fast stop, report fault 1: Emergency stop, report fault 2: Switch to V/F and continue running LED hundreds digit: Function code read/write error (Err21) action selection 0: Fast stop, report fault 1: Emergency stop, report fault LED thousands digit: Motor overheating (Err25) action selection, same as ones digit	0000	0933H
P9-52	Protection action selection 3	LED thousands digit: Load loss (Err30) action selection	0000	0934H
P9-53	Protection action selection 4	LED hundreds digit: Motor overspeed (Err43) action selection	0000	0935H
P9-54	Protection action selection 5	LED tens digit: Reserved	0	0936H
P9-58	Momentary power loss ride-through gain Kp	0-100	40	0937H
P9-59	Ride-through integral during momentary power loss	0-100	30	0938H
P9-60	UVW encoder fault enable	0-1	1	0939H
P9-61	Initial position fault enable	Ones digit: Initial position fault enable 0: Disabled 1: Enabled	11	093AH
P9-62	Reserved	-	-	093BH
P9-63	Overload curve	0-1	0	093CH

PA - Process PID Control

PID reference/feedback, gain, integral/derivative, feedback loss, sleep and process control.

Code	Parameter	Setting range / options	Factory	Address
PA-00	PID control	2: Voltage analog AI2 reference 3: Current analog AI3 reference 4: Terminal pulse PUL reference 5: Communication reference	0	0A00H
PA-01	Digital PID reference	0.0-PA-05	0.5Mpa	0A01H
PA-02	PID control	2: Analog AI2 feedback 3: Analog AI3 feedback 4: Terminal pulse PUL feedback 5: Communication feedback	2	0A02H
PA-03	Digital PID feedback	0.0-PA-05	1.00Mpa	0A03H
PA-04	Feedback signal gain	0.00-10.000	1.000	0A04H
PA-05	Feedback signal range	0.00-655.35	1.00	0A05H
PA-06	PID control selection 1	LED hundreds digit: Integral separation	0000	0A06H
PA-07	PID control selection 2	LED tens digit: Constant pressure water supply sleep function	00	0A07H
PA-08	Proportional gain Kp1	0.00-100.00	20.00	0A08H
PA-09	Integral time Ti1	0.00-10.00s	2.00s	0A09H
PA-10	Derivative time Td1	0.000-10.000s	0.000s	0A0AH
PA-11	PID reverse cutoff frequency	0.00 to max. frequency	2.00Hz	0A0BH
PA-12	PID deviation limit	0.0-100.0%	0.0%	0A0CH
PA-13	PID derivative limit	0.00-100.00%	0.10%	0A0DH
PA-14	PID reference change time	0.00-10.00s	0.00s	0A0EH
PA-15	PID feedback filter time	0.00-650.00s	0.00s	0A0FH
PA-16	PID output filter time	0.00-60.00s	0.00s	0A10H
PA-17	Reserved	-	-	0A11H
PA-18	Proportional gain Kp2	0.00-100.00	20.00	0A12H
PA-19	Integral time Ti2	0.00-10.00s	2.00s	0A13H
PA-20	Derivative time Td2	0.000-10.000s	0.000s	0A14H
PA-21	PID parameter switching deviation 1	0.0-PA-22	20.0%	0A15H
PA-22	PID parameter switching deviation 2	PA-21-100.0%	80.0%	0A16H
PA-23	PID preset frequency	0.0-100.0%	0.0%	0A17H
PA-24	Preset frequency operating time	0.0-6500.0s	0.0s	0A18H
PA-25	Two-sample deviation, positive maximum	0.00-100.00%	1.00%	0A19H
PA-26	Two-sample deviation, negative maximum	0.00-100.00%	1.00%	0A1AH
PA-27	Wire-break alarm detection value	0.0-100.0%	0.0%	0A1BH
PA-28	Feedback wire-break detection time	0.0-120.0s	1.0s	0A1CH
PA-29	Sleep detection reference	0.1-100.0%	95.0%	0A1DH
PA-30	Sleep reference duration time	0.1-6500.0S	30.0S	0A1EH
PA-31	Deceleration time to enter sleep	0.1-6500.0S	60.0S	0A1FH
PA-32	Sleep low-level holding frequency	0.00-20.00Hz	10.00Hz	0A20H
PA-33	Low frequency operation time	0.0-6500.0S	10.0s	0A21H
PA-34	Wake-up reference	0.0-100.0%	50.0%	0A22H
PA-35	Wake-up reference hold time	0.0-6500.0S	30.0s	0A23H

PB - Communication Control

RS-485 address, protocol, timeout, response delay and communication command behavior.

Code	Parameter	Setting range / options	Factory	Address
PB-00	Master/slave selection	Master/slave selection 0: Slave 1: Master	0	0B00H
PB-01	Local address	1-247	1	0B01H

Code	Parameter	Setting range / options	Factory	Address
PB-02	Communication baud rate selection	0■1200bps 1■2400bps 2■4800bps 3■9600bps 4■19200bps 5■38400bps 6: 57600bps 7: 115200bps	3	0B02H
PB-03	Data format	3: (N,8,2) No parity, data bits: 8, stop bits: 2	3	0B03H
PB-04	Communication ratio setting	0.000-5.000	1.000	0B04H
PB-05	Communication response delay	0.000-0.500s	0.000s	0B05H
PB-06	Communication timeout fault time	0.1-100.0s	1.0s	0B06H
PB-07	Transmission response handling	0: Response to write operation 1: No response to write operation	0	0B07H
PB-08	Master send selection	LED units digit: First group send frame selection 0: Invalid 1: Run command reference 2: Master reference frequency 3: Master output frequency 4: Master upper limit frequency 5: Master reference torque (reserved) 6: Master output torque 7: Master torque control forward speed limit (reserved) 8: Master torque control reverse speed limit (reserved) 9: Master PID reference A: Master PID feedback LED tens digit: Second group send frame selection, same as above LED hundreds digit: Third group send frame selection, same as above LED thousands digit: Fourth group send frame selection, same as above	0031	0B08H

PC - Optimization Parameters

Braking, efficiency, filtering and control optimization settings.

Code	Parameter	Setting range / options	Factory	Address
PC-00	Carrier frequency characteristic selection	Hundreds digit: 0: Random PWM disabled 1-A: Random PWM depth	000	0C00H
PC-01	DPWM switching upper limit frequency	0.00-15.00Hz	12.00Hz	0C01H
PC-02	Cooling fan control	1~A: Stop depends on temperature, runs whenever running, level 5 and above	0	0C02H
PC-03	Fast current limit enable	0-1	1	0C03H
PC-04	Dead-time compensation mode	0-2	1	0C04H
PC-05	Dynamic braking turn-on voltage	200.0-2000.0V	690V	0C05H
PC-06	Dynamic braking usage rate	0-100%	100%	0C06H
PC-07	DC bus overvoltage protection value	0-2500.0V	810.0V	0C07H
PC-08	DC bus undervoltage protection value	200-2000V	350V	0C08H
PC-09	Undervoltage fault handling method	1: Continue running within the allowed undervoltage recovery time	0	0C09H
PC-10	Allowed undervoltage recovery time	0.1-60.0s	2.0s	0C0AH
PC-11	Power failure restart method	0: Invalid 1: Valid	0	0C0BH
PC-12	Power failure restart waiting time	0.00-120.00s	3.00S	0C0CH

PD - Multi-Segment and Simple PLC

Multi-segment speeds, PLC stages, directions, ramps and repeat operation.

Code	Parameter	Setting range / options	Factory	Address
PD-00	Multi-segment frequency 1	0.0-100.0%	20.0%	0D00H
PD-01	Multi-segment frequency 2		40.0%	0D01H
PD-02	Multi-segment frequency 3		60.0%	0D02H
PD-03	Multi-segment frequency 4		80.0%	0D03H
PD-04	Multi-segment frequency 5		100.0%	0D04H
PD-05	Multi-segment frequency 6	0.0-100.0%	80.0%	0D05H

Code	Parameter	Setting range / options	Factory	Address
PD-06	Multi-segment frequency 7		60.0%	0D06H
PD-07	Multi-segment frequency 8		40.0%	0D07H
PD-08	Multi-segment frequency 9		20.0%	0D08H
PD-09	Multi-segment frequency 10		40.0%	0D09H
PD-10	Multi-segment frequency 11		60.0%	0D0AH
PD-11	Multi-segment frequency 12		80.0%	0D0BH
PD-12	Multi-segment frequency 13		100.0%	0D0CH
PD-13	Multi-segment frequency 14		80.0%	0D0DH
PD-14	Multi-segment frequency 15		60.0%	0D0EH
PD-15	PLC operation mode selection	LED hundreds digit: power-down storage mode	0000	0D0FH
PD-16	PLC stage 1 running time	0.0-6500.0(s/m/h)	10.0	0D10H
PD-17	PLC stage 2 running time		10.0	0D11H
PD-18	PLC stage 3 running time		10.0	0D12H
PD-19	PLC stage 4 running time		10.0	0D13H
PD-20	PLC stage 5 running time		10.0	0D14H
PD-21	PLC stage 6 running time		10.0	0D15H
PD-22	PLC stage 7 running time		10.0	0D16H
PD-23	PLC stage 8 running time		10.0	0D17H
PD-24	PLC stage 9 running time		10.0	0D18H
PD-25	PLC stage 10 running time		10.0	0D19H
PD-26	PLC stage 11 running time		10.0	0D1AH
PD-27	PLC stage 12 run time		10.0	0D1BH
PD-28	PLC stage 13 run time		10.0	0D1CH
PD-29	PLC stage 14 run time		10.0	0D1DH
PD-30	PLC stage 15 run time		10.0	0D1EH
PD-31	PLC stage 1 direction and accel/decel	LED units digit: run direction of this stage 0: Forward 1: Reverse LED tens digit: accel/decel time of this stage 0: Accel/decel time 1 1: Accel/decel time 2 2: Accel/decel time 3 3: Accel/decel time 4 LED hundreds digit: Reserved LED thousands digit: Reserved	00	0D1FH
PD-32	PLC stage 2 direction and accel/decel		00	0D20H
PD-33	PLC stage 3 direction and accel/decel		00	0D21H
PD-34	PLC stage 4 direction and accel/decel		00	0D22H
PD-35	PLC stage 5 direction and accel/decel		00	0D23H
PD-36	PLC stage 6 direction and accel/decel		00	0D24H
PD-37	PLC stage 7 direction and accel/decel	LED units digit: run direction of this stage	00	0D25H
PD-38	PLC stage 8 direction and accel/decel	0: Forward 1: Reverse LED tens digit: accel/decel time of this stage	00	0D26H
PD-39	PLC stage 9 direction and accel/decel	0: Accel/decel time 1 1: Accel/decel time 2	00	0D27H
PD-40	PLC stage 10 direction and accel/decel		00	0D28H
PD-41	PLC stage 11 direction and accel/decel	LED thousands digit: Reserved	00	0D29H
PD-42	PLC12 direction and accel/decel		00	0D2AH
PD-43	PLC13 direction and accel/decel		00	0D2BH
PD-44	PLC14 direction and accel/decel		00	0D2CH

Code	Parameter	Setting range / options	Factory	Address
PD-45	PLC15 direction and accel/decel		00	0D2DH
PD-46	Wobble control	LED tens digit: wobble activation mode	000	0D2EH
PD-47	Wobble preset frequency	0.00 to max. frequency	0.00Hz	0D2FH
PD-48	Preset frequency duration	0.00-650.00s	0.00s	0D30H
PD-49	Wobble amplitude	0.0-100.0%	0.0%	0D31H
PD-50	Jump frequency amplitude	0.0-50.0%	0.0%	0D32H
PD-51	Wobble ramp-up time	0.0-650.0s	5.0s	0D33H
PD-52	Wobble ramp-down time	0.0-650.0s	5.0s	0D34H

PF - User-Defined Function Codes

User-defined function mapping and application-specific configuration.

Code	Parameter	Setting range / options	Factory	Address
PF-00	PF parameter function	Units digit: 0: display parameter groups normally 1: display PF parameter group only	00	0F00H
PF-01	PF macro parameter selection	0: per user programming mode	0	0F01H
PF-02	PF parameter group length	0-96	18	0F02H
PF-03				0F03H
PF-67				0F27H

U - Monitoring Parameters

Frequency, current, voltage, torque, power, temperature, status and diagnostic values.

Code	Parameter	Setting range / options	Factory	Address
U-00	Reference frequency	-	-	2110H
U-01	Output frequency	-	-	2111H
U-02	Output current	-	-	2112H
U-03	Output voltage	-	-	2113H
U-04	Input voltage	-	-	2114H
U-05	Mechanical speed	-	-	2115H
U-06	Bus voltage	-	-	2116H
U-07	Output power	-	-	2117H
U-08	Target torque	-	-	2118H
U-09	Output torque	-	-	2119H
U-10	PID reference	-	-	211AH
U-11	PID feedback	-	-	211BH
U-12	AI1 input value	-	-	211CH
U-13	AI2 input value	-	-	211DH
U-14	HS input value	-	-	211EH
U-15	Counter value	-	-	211FH
U-16	AI3 input value	-	-	2120H
U-17	S terminal status	-	-	2121H
U-18	Y terminal status	-	-	2122H
U-19	AO1 output value	-	-	2123H
U-20	AO2 output value	-	-	2124H
U-21	HY output value	-	-	2125H
U-22	Reserved	-	-	2126H
U-23	Module temperature	-	-	2127H

Code	Parameter	Setting range / options	Factory	Address
U-24	Output excitation	-	-	2128H
U-25	Power factor	-	-	2129H
U-26	Accumulated power-on time	-	-	212AH
U-27	Power-on running time	-	-	212BH
U-28	Current run time	-	-	212CH
U-29	Current running status	-	-	212DH
U-30	Maximum current	-	-	212EH
U-31	Maximum voltage	-	-	212FH
U-32	Maximum temperature of current run	-	-	2130H
U-33	Minimum voltage	-	-	2131H
U-34	Rated power	-	-	2132H
U-35	Rated voltage	-	-	2133H
U-36	Rated current	-	-	2134H
U-37	AC software version	-	-	2135H
U-38	MC software version	-	-	2136H

6. Fault Codes

Code	Fault	Common cause	Corrective action
Err01	Inverter unit protection	Output short circuit, module damage or insulation failure	Check motor/output insulation and wiring; service if damaged
Err02	Acceleration overcurrent	Short ramp, excessive load or output fault	Increase acceleration time; inspect load and output
Err03	Deceleration overcurrent	High inertia or missing braking capacity	Increase deceleration time; check braking resistor/unit
Err04	Constant-speed overcurrent	Load surge or output short circuit	Check mechanical jam and output circuit
Err05	Acceleration overvoltage	Abnormal bus voltage during acceleration	Check supply and braking configuration
Err06	Deceleration overvoltage	Regeneration with insufficient braking	Increase deceleration time; add braking
Err07	Constant-speed overvoltage	Regeneration or supply disturbance	Check supply, PID tuning and braking
Err09	Undervoltage	Low supply, phase loss or weak DC bus	Check supply voltage, fuses and input terminals
Err10	Inverter overload	Drive duty exceeded	Reduce load, check current and cooling
Err11	Motor overload	Motor thermal model tripped	Check motor current, duty and cooling
Err12	Input phase loss	Missing/unbalanced input phase	Check supply, breaker, fuse and terminals
Err13	Output phase loss	Motor cable or winding fault	Power off and test output circuit
Err14	Heatsink overtemperature	Blocked airflow, dirty sink or failed fan	Clean filters/heatsink and check fans/ambient
Err15	External fault	Programmed DI reported machine fault	Inspect external interlock/machine
Err16	Communication timeout	Host stopped, wiring or protocol error	Check RS-485 wiring, address, baud and polling
Err17	Contactors fault	Pre-charge contactor feedback abnormal	Check contactor/feedback; service if repeated
Err18	Current detection fault	Current sensor/sampling circuit abnormal	Power off and inspect; service if persistent
Err19	Motor tuning fault	Incorrect nameplate data or locked rotor	Verify motor data and safe tuning conditions
Err20	Encoder fault	PG wiring, supply or signal error	Check PG card, cable and signals
Err21	EEPROM read/write fault	Memory access failure	Power cycle; service if repeated
Err23	Motor ground fault	Motor/cable insulation failure	Test insulation; do not repeatedly restart
Err30	Load loss	Load current below threshold	Check coupling, belt, pump prime and settings
Err31	PID feedback loss	Transmitter or feedback signal failed	Check transmitter, wiring and scaling
Err42	Speed deviation	Blocked load or wrong encoder/vector data	Check load, tuning and encoder
Err43	Motor overspeed	Unexpected acceleration or feedback error	Check speed limits, encoder direction/scaling
Err45	Motor overtemperature	Motor thermal sensor exceeded limit	Reduce load/duty; improve cooling; check sensor
Err51	Magnetic pole detection failed	PM motor data/coupling unsuitable	Check PM data, initial position and coupling
Err52	Zero-position identification failed	Load prevented identification	Use safe commissioning setup and retry
Err53	UVW feedback error	Wrong UVW wiring or signal	Check PG card, wiring and phase mapping

7. RS-485 Monitoring

Common Monitor Addresses

Address	Meaning
2100H	Drive running status bit field
2101H	Active fault type bit/numeric field
2110H	Given frequency
2111H	Output frequency
2112H	Output current
2113H	Output voltage
2114H	Power/torque related monitored value

Communication Practice

- Use twisted shielded RS-485 cable and a single daisy-chain topology.
- Enable 120 Ohm termination only at both physical ends of the bus.
- Use consistent address, baud rate and data format on all devices.
- Poll continuously and implement a timeout/fallback strategy in the host.
- Do not write protection parameters from PLC logic without safety review.

8. Maintenance, Warranty and Support

Maintenance Schedule

Interval	Action
Daily	Check noise, vibration, current, fault display and ventilation
Monthly	Check cabinet temperature, filters, fan sound and dust
Every 6 months	Clean heat sink/filter; inspect fans and terminals
Annually	After isolation, check torque, connectors, capacitors and insulation history
After storage	Inspect humidity/dust damage and perform safe commissioning

Warranty Terms

- Qingtian provides an 18-month warranty from shipment against defects in material and workmanship.
- Warranty excludes improper installation, unauthorized repair, abnormal environment, misuse, surge/lightning beyond rating and consumable wear parts.
- Keep the drive label, serial number and delivery record.
- Return authorization is required before shipment.

Support Checklist

- Complete EC6000 model, rated current and serial number.
- Application description and driven machine type.
- Supply voltage, motor rating and motor cable length.
- Fault code, frequency, current, load and ambient temperature.
- Changed parameter list or exported parameter file.

Qingtian Support

Item	Contact
Company	Quanzhou Fengze Qingtian Electronic Technology Co., Ltd.
Email	[Add email]
WhatsApp	[Add number]
Website	qingtian-vfd.com

Specifications and parameter ranges are subject to change without notice. The drive nameplate and delivered configuration take precedence.