VEICHI

Manual

CH310E Elevator AC Drive(Simple)

Preface

First of all, thank you for using CH310E series AC drives for elevators.

Veichi Electric is committed to producing safe, efficient and reliable drive products for elevators. Based on many years of experience in the elevator industry, CH310E series products feature excellent control performance and special integrated functions such as brake control, anti-roll back operation, light load detection, brake resistor detection, output phase detection etc., for better elevator control.

This manual describes the relevant information in the aspects of installation, parameter setting, operation and fault diagnosis of the CH310E series products. Please read this manual carefully before using it. And if there are any doubts about the contents of this manual, please consult our technicians.

VEICHI is steadfast in its dedication to innovation and technological advancements to deliver the finest products and comprehensive solutions tailored to the specific requirements of the elevator industry. Content changes caused by continuous updates and upgrades of products are subject to no further notice.

Please get the PDF file by logging in to the official website of VEICHI(http: //www.veichi.com/), " Service and Support-Data Download", and search it by keywords.

Catalog

Chapter 1 General

1.1 Terminology

Please refer to the following table for terms and abbreviations used in this manual:

Term	Description
AC drive	CH310E
AM-VF	Asynchronous Motor-VF Control
AM-FVC	Asynchronous Motor-Vector control with PG
AM-SVC	Asynchronous Motor-Vector Control without PG
AM-VF-SPLIT	Asynchronous Motor-Voltage Frequency Split
PM-VF	Permanent Magnet Synchronous Motor-V/F Control
PM-FVC	Permanent Magnet Synchronous Motor-Vector control with PG
PM-SVC	Permanent Magnet Synchronous Motor-Vector Control without PG
PG	Pulse Generator
Bit	Bits in Binary

1.2 Safety Instructions

Thank you for purchasing CH310E series vector AC drive designed and manufactured by Suzhou VEICHI Electric Co., Ltd. This manual describes how to use this product correctly for better outcomes. Please read it carefully before installation, wiring, operation, maintenance, and inspection of the product. And always remember the safety precautions in mind during any operations.

1.2.1 Safety Precautions

Please use this product only after the safety precautions described in this manual are fully understood to protect both persons and the products.

1.2.2 Signs and Meanings

The following signs are used in this manual to highlight the key matters. Failure to observe these rules may result in damages to this product and the associated system, or even personal injuries.

Danger	Incorrect operation may result in death or major safety incidents.
Warning	Incorrect operation may result in death or major safety incidents.
Caution	Incorrect operation may result in minor injuries.
Note	Incorrect operation may result in damage to the product and the associated system.

General

In order to introduce the details of the product, the illustrations in this manual sometimes show the product with the outer cover or safety cover removed. But in your case, please always install the outer housing or covering according to the regulations for proper operation.

The figures in this manual are only for your information, so they may be different from what you ordered.

This manual is subject to change without notice due to product or manual improvements.

Danger

Pay attention to all information in this manual regarding safety.

Failure to observe the warnings may result in death or serious injuries, which will not be covered in VEICHI's warranty.

To prevent electric shock

Do not perform wiring, inspection or repair work while the power is on. Cut power supply to all machines before wiring or maintenance. After the power is switch off, there is still residual voltage in the capacitor, so, wait for the time on the label to prevent electric shock. Remove the front cover and terminal cover after all the indicator lights are off, and then measure the input voltage and main circuit DC voltage to keep it under the safe voltage.

Warning

For mechanical safety

Perform a test operation to check mechanical movement after the wiring work and parameter setting, otherwise it may cause personal injury or equipment damage.

Check the parameter setting for the virtual input/output function before the test operation.

The virtual I/O function is based on the virtual wiring of the I/O terminals inside the AC drive. Therefore, even if there is no physical wiring on the two terminals, the operation may be different from the factory settings. Confirm carefully or unexpected actions may cause personal accidents.

Check the people around drive, motor and machines before power-up. Check that cover, coupling, shaft key and machines around the drive have been effectively protected.

The machines may suddenly move when the main circuit is powered in some cases, which may cause death or serious injury.

When it is under terminal control, the function of the input/output terminals may be different from the factory setting, so the actions may be different from this manual. Use external terminals to confirm the input/output signals and the internal control sequence before the test operation.

To prevent electric shock

Do not modify the AC drive without approval from VEICHI, or we will not take any responsibility for the outcomes.

Only professionals are allowed to perform wiring, installation, maintenance, inspection, component replacement or repair operations.

Do not remove the outer cover of the product or touch the printed circuit board when the power is on.

To prevent fire

Check the voltage of the main circuit power supply. Confirm whether the rated voltage of the AC drive is the same with the power supply voltage.

Follow local standards to set up bypass circuits. Improper wiring may cause fire or personal accidents.

⚠ Caution
To prevent injury Do not move the AC drive by holding the front cover or terminal cover. And tighten the screws before moving, or it may fall due to loosen screws, which may cause injury.
Note
Use a motor with proper insulation for the PWM control to prevent short circuits or ground short circuits. Follow the procedures specified in the electro-static discharge (ESD) when operating the AC drive or disassembling the printed circuit board. Wrong operation may damage the circuits inside the AC drive due to static electricity. Do not perform any voltage withstand tests on any part of the AC drive. Precision instruments used inside may cause damage to the product due to high voltage. Do not operate on a damaged drive. Do not operate if it is visibly damaged or has missing parts, as this may aggravate damage to the machine and cause further problems. Do not turn on the power or operate the machine immediately when the fuse has broken down or the earth leakage circuit breaker has tripped. Check the cable wiring and the models of peripheral machines. And contact us as soon as possible if you can't identify the problems. Do not power up or operate the machines by yourself in this case. Use methods other than fumigation when disinfecting or deworming wooden materials for packaging, such as heat treatment(over 30 minutes with the core temperature of 56°C). Handel the materials before packaging, rather than process the whole product after packaging. The gases and vapors produced by the packaging materials may cause fatal damage to electronic products if fumigated wood materials are used around electrical products(stand-alone or mechanical components), like halogen disinfectants(fluorine, chlorine, bromine, iodine, etc.) particularly, may cause capacitor corrosion, and DOP gas(phthalate ester) may cause cracks in resins, etc.

1.3 Instructions for Special Purpose

If this product will be used for special purposes such as manned, medical, aerospace, nuclear energy, electric power, submarine relay communication equipment or systems, please consult our agents or sales persons in charge beforehand.

Chapter 2 Product Information

2.1 Safety Precautions

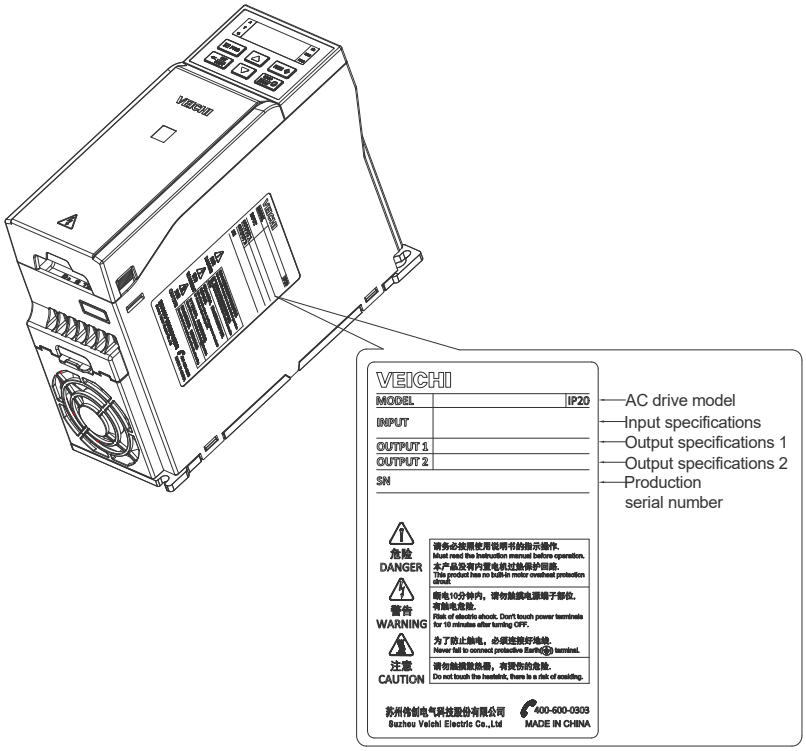
Danger
Pay attention to all information in this manual regarding safety, since failure to observe the warnings may result in death or serious injuries. In this case, VEICHI will not be held responsible for the possible results.

2.2 Drive Model and Description

After receiving the product, please confirm the following items:

- If there are scratches or dirt on the product. Contact the shipping company at once if there are. Please **Note** that the damage caused during transportation is not covered in the VEICHI's warranty scope.
- If the model number of the received drive is the same as what you have ordered. The model is on the nameplate on the side of the AC drive.
- If there are any defects. Immediately contact our distributor or sales persons in charge from whom you purchased the product.

2.2.1 Nameplate



2.2.2 Naming Rules

The naming rules of AC drive is shown in the figure below:

CH310E - T 3 - 011 B

1 2 3 4 5

Code	Name
1	Product series
2	Voltage T: Three-phase S: Single-phase
3	Voltage 2: 220V 3: 380V
4	Motor power(kW) 7R5: 7.5 011: 11
5	Accessory B: Brake unit L: DC reactor D: Cabinet machine

2.3 Technical Specifications

Table 2-1: Technical Specifications

Item		Specification
Power Input	Voltage/ frequency	Single-phase, 220V, 50Hz/60Hz; Three-phase, 220V, 50Hz/60Hz; Three-phase 380V~480V 50Hz/60Hz
	Allowable fluctuation	Voltage imbalance rate: <3%; Frequency ±5%; Distortion rate meets IEC61800-2 requirements
	Switching surge current	<rated current
Output	Output voltage	Output under rated conditions: three phase, 0V~input voltage, deviation＜5%
	Output frequency range	0.00Hz~599.00Hz
	Output frequency accuracy	±0.5% of the max. frequency
	Overload capacity	150% of rated current for 89s, 180% of rated current for 10s, and 200% of rated current for 3s
Main Control Performance	Motor type	Asynchronous motor, synchronous motor, and synchronous reluctance motor
	Motor control mode	V/F control, SVC, FVC, and V-F split control
	Modulation mode	PWM
	Carrier frequency	1.0kHz~16.0kHz
	Speed control range	SVC: Rated load 1: 200 FVC: Rated load 1: 1000

	Speed stabilizing accuracy	FVC: ≤0.5% rated synchronous speed(AM), ≤0.1% rated synchronous speed(PM) SVC: ≤ 0.02% of rated synchronous speed
	Starting torque	SVC: 150% of the motor rated torque at 0.25Hz FVC: 200% of the motor rated torque at 0Hz
	Torque response	SVC: <10ms; FVC: <5ms
	Torque accuracy	SVC: ±5%; FVC: ±2.5%
	Frequency accuracy	Digit setting: Max. frequency × ±0.01%; Analog setting: Max. frequency × ±0.2 %
	Frequency resolution	Digit setting: 0.01Hz; Analog setting: Max. frequency × ±0.05 %
	Torque boost	Auto torque boost 0.0%~100.0% Manual torque boost 0.0%~30.0%
	V/F curve	Four modes: Linear torque characteristic curve, user-defined V/F curve, reduced torque characteristic curve (to the power of 1.1 to 2.0), and square V/F curve
	ACC/DEC curve	2 patterns: Linear and S-curve acceleration/deceleration 4 sets of acceleration/deceleration time, unit: 0.01s, 650.00s max.
	Rated output voltage	With power supply voltage compensation, the motor rated voltage reaches 100%, which can be set in the range of 50% to 100% (the output cannot exceed the input voltage)
	Auto voltage regulation	The output voltage can be automatically kept constant when the grid voltage fluctuates
	Auto ECO mode	Output voltage is automatically optimized according to the load in V/F control mode to save energy
	Auto current limit	Auto current limit works during operation to prevent frequent tripping due to over-current fault
	Instantaneous power loss mode	Uninterrupted operation is realized through bus voltage control in case of instantaneous power loss
	Standard function	PID control, speed tracking and power-down restart, frequency jumping, upper and lower frequency limit control, programmed operation, multi-stage frequency, RS485 communication, analog output, and frequency pulse output
	Frequency source	Setting can be done via keypad, analog voltage/current terminal AI1 and AI2, communication and multi-function terminal, main and auxiliary source combination, and optional boards
	Feedback input source	Setting can be done via analog voltage/current terminal AI1, AI2, and communication
	Command source	Set via operation keypad, external terminals, communication and extension
	Input command signal	Start, stop, forward and reverse, jog, multi-frequency, coasting stop, reset, acceleration/deceleration time, frequency setting method selection, and external fault alarms
	Output signal	1 × relay output, 1× open collector output, and 1× AO can be selected to 0V~10V, 0mA~20mA or 4mA~20mA, or frequency pulse output

Protection		Over-voltage, under-voltage, current limit, over-current, overload, electronic thermal relay, overheat, overvoltage stall, data protection, stall protection, and input/output phase loss	
Keypad	LED display	Single-line 5-digit digital tube	1 AC drive status
		Dual-line 5-digit digital tube	2 AC drive status
	Parameter copy	The function code information of the AC drive can be uploaded and downloaded to realize fast parameter copying	
	Status monitoring	Output frequency, target frequency, output current, I/O voltage, motor speed, PID feedback, PID setting and module temperature all that can be monitored	
	Fault alarm	Overvoltage, undervoltage, overcurrent, short circuit, phase loss, overload, overheat, stall, damaged data, current fault status, and fault history	
Environment	Installation	<1000 meters, derate 1% for every 100 meters rise when above 1000m. No condensation, icing, rain, snow, hail, etc., solar radiation <700W/m2, air pressure 70kPa～106kPa	
	Temperature, humidity	-10℃~+50℃, derate above 40℃, 60℃ max.(no-load) 5%RH~95%RH (non-condensing)	
	Vibration	5.9m/s^2(0.6G) between 9Hz~200Hz	
	Storage temperature	-30℃~+60℃	
	Installation method	Wall-mounted, cabinet	
	IP	IP20	
	Pollution class	C2	
	Cooling method	Forced air-cooling	

2.4 Relationship between Rated Output Current, Voltage Level and Power

Table 2-2: Relationship between Rated Output Current, Voltage Level and Power

Input Voltage(V) / Output Current (A) / Power (kW)	220	380	660
0.75	4	3	--
1.5	7	4	--
2.2	10	6	--
4	16	10	--
5.5	20	13	--
7.5	30	17	10
11	-	25	15
15	-	32	18
18.5	-	38	22
22	-	45	28
30	-	60	35
37	-	75	45

45	-	90	52
55	-	110	63
75	-	150	86

2.5 Default Voltage Protection

The default voltage value of the AC drive includes voltage level, rated voltage, undervoltage suppression point, undervoltage point, overvoltage suppression point, overvoltage point and dynamic braking point, etc. See the table below for details.

Note: The units for the table are all in volt. (V)

Table 2-3: Default Voltages

Voltage Level	Rated Voltage	Anti-Undervoltage	Undervoltage Threshold	Anti-overvoltage	Overvoltage Threshold	Dynamic Braking
220	311.1	240	190	370	400	360
380	537.4	430	320	750	820	740

Chapter 3 Installation and Wiring

3.1 Safety Precautions

This section explains the various precautions regarding safety during use for optimal performance and stable operation of the AC drive.

3.1.1 On Use of AC Drive

Warning	Add a cooling fan or an air conditioner when the AC drive is installed in a closed cabinet to keep its air inlet temperature below 40°C for proper operation.
Note	Cover the upper part of the AC drive with cloth or paper to prevent metal chips, oil, water and other debris from falling inside during installation and drilling, and remove them carefully afterwards. Follow the measures and methods specified in ESD prevention measures during operation, otherwise the drive may be damaged. Reserve sufficient space on the upper of the cabinet if multiple AC drives are installed within to facilitate the replacement of the cooling fan. Do not use the AC drive beyond its rated range, otherwise it may be damaged. Hold to the fixed case during moving. Don't hold to the front cover, or it may fall to cause personal injury or damage to the product.

3.1.2 On Use of Motor

Note	Do not use the motor beyond its maximum allowable speed of the motor since the maximum speed varies with motor models. Use the dedicated variable frequency motor if the motor runs at low speeds very often, that's because the self-cooling effect of the motor will be severely reduced, leading to overheat and damage to the motor. Place anti-vibration rubber under the motor bracket or use the jump frequency function to avoid resonance when constant operation is changed to variable speeds. Confirm the torque characteristics of the mechanical devices since they are different when the motor is driven by variable frequency and the industrial frequency. Confirm the rated current of the motor and select an appropriate AC drive because the rated current of the submersible motor is greater than that of the standard motor. Use a thick cable for connecting over a long distance because when the distance between the motor and the AC drive is far away, the maximum torque of the motor will be reduced due to the voltage drop.

3.2 Installation

The installation environment is very important to give full play to the performance of this product and maintain its functions for a long time. Please install the product in an environment that complies with the specifications listed below.

Table 3-1: Environmental Conditions for CH310E Series

Environment	Requirement
Site	Indoors, free of direct sunlight
Working temperature	-10℃~+50℃
Storage temperature	-30℃~+60℃
Ambient humidity	No condensation below 95% RH.
Surroundings	Install the AC drives in the following places: ➢ Places free of oil mist, corrosive gas, flammable gas, and dust; ➢ Places where metal powder, oil, water and other foreign objects will not enter into the product(do not install it on flammable materials such as wood);

	➢ Places free of radioactive materials and flammable materials; ➢ Places free of harmful gases and liquids; ➢ Places with less salt erosion; ➢ Places without direct sunlight;
Altitude	Below 1,000 m; Derate for use above 1,000m.
Oscillation	5.9m/s^2(0.6G) at 9Hz~200Hz.
Installation and cooling	Do not be install the drive horizontally, but vertically; Separate the devices with heat such as braking resistors away from the AC drive. It is strictly forbidden to install such devices in the same cabinet with the AC drive or at the air inlet.

In order to improve the reliability of this product, please use it in a place where the temperature will not change sharply. And when using it in a closed space such as a control cabinet, please add a cooling fan or cooling air conditioner to prevent the internal temperature from exceeding the allowable temperature. Avoid freezing the product, since too low temperature may cause failure to some devices.

1) After exceeding the allowable ambient temperature, the AC drive shall be derated as shown in the following figure.

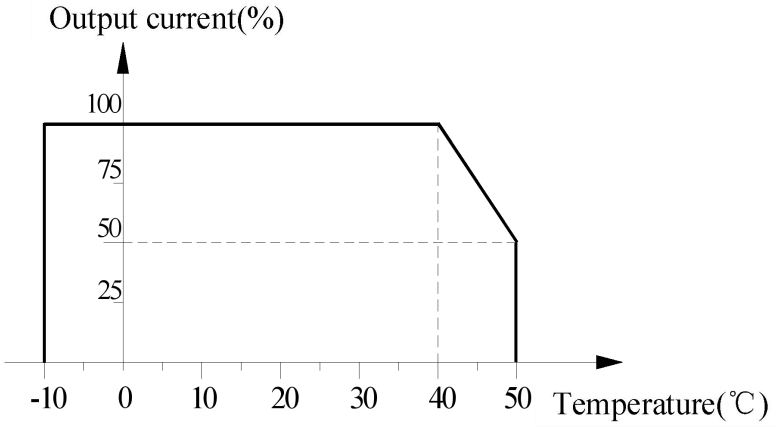


Figure 3-1 Derating Curve of CH310E Series after Exceeding Allowable Temperature

2) After exceeding the allowable altitude, the AC drive shall be derated as shown in the following figure.

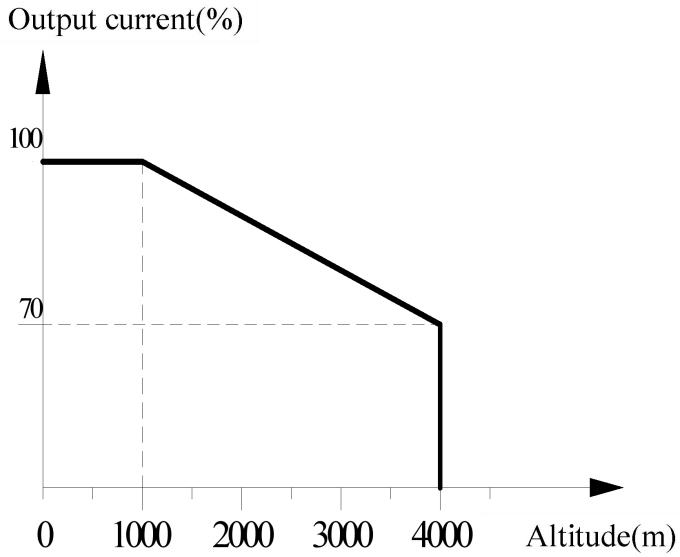


Figure 3-2 Derating Curve of CH310E Series after Exceeding Allowable Altitude

3.3 Installation Direction and Space

3.3.1 Direction

Be sure to install the AC drive vertically to avoid reducing the cooling effect.

3.3.2 Space

For stand-alone installation, to reserve the ventilation space and wiring space required for cooling, please be sure to comply with the installation conditions shown in the figure below and install the AC drive with its back closely attached to the wall for smooth ventilation.

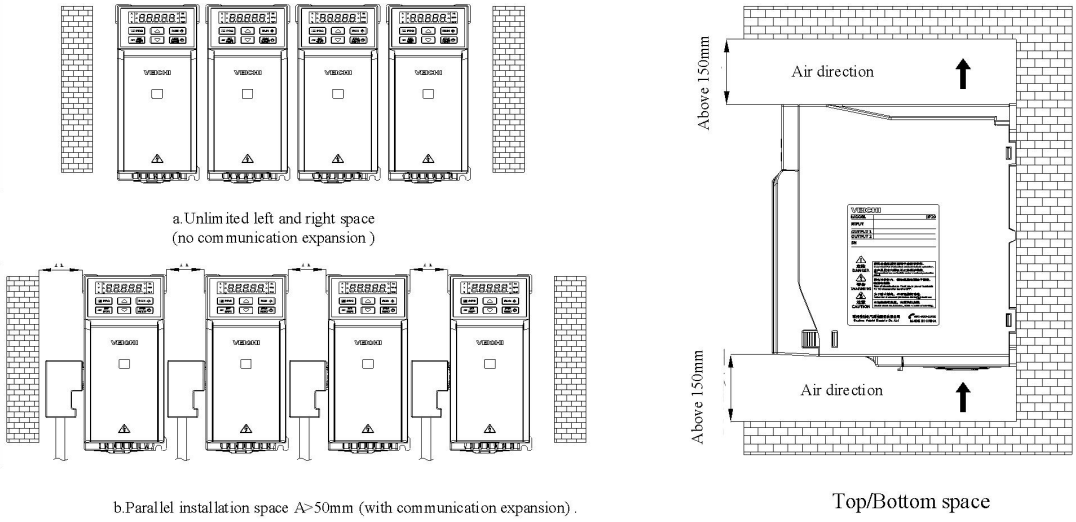
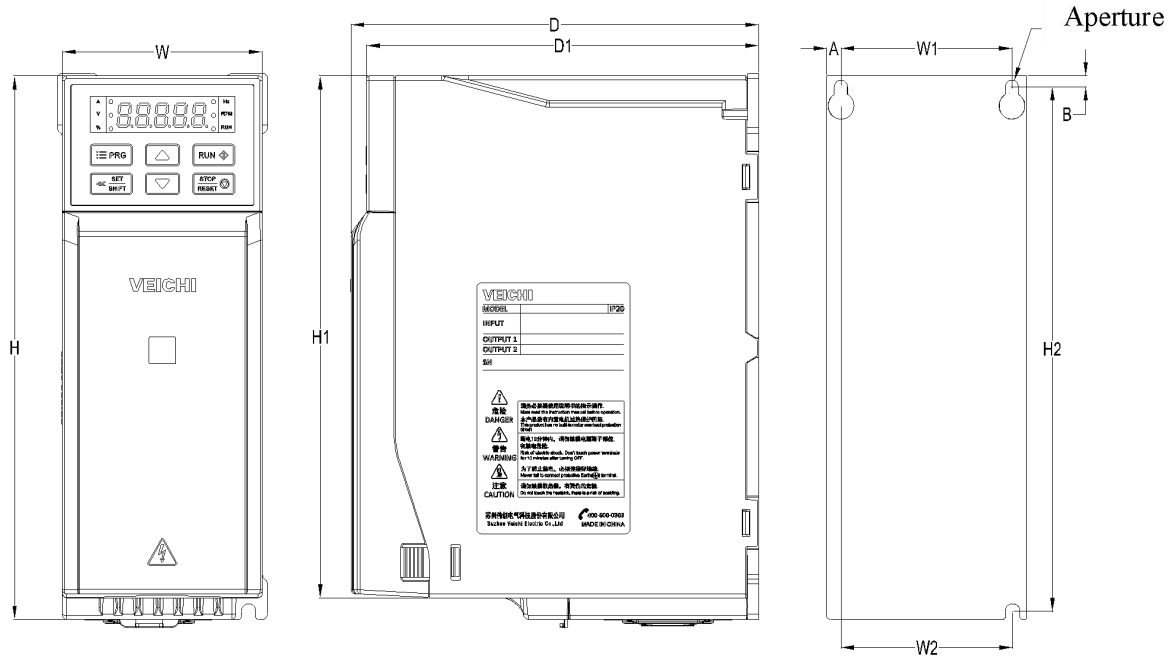


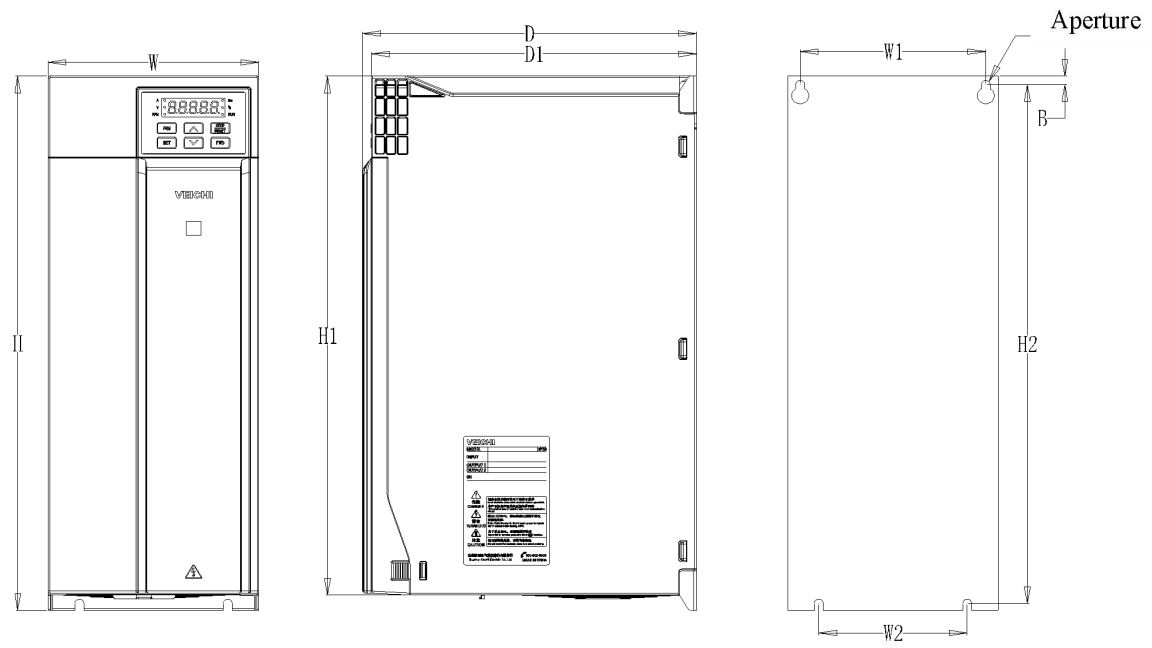
Figure 3-3 Installation Space Requirements

3.4 Dimensions

3.4.1 T2 Dimensions (Plastic)

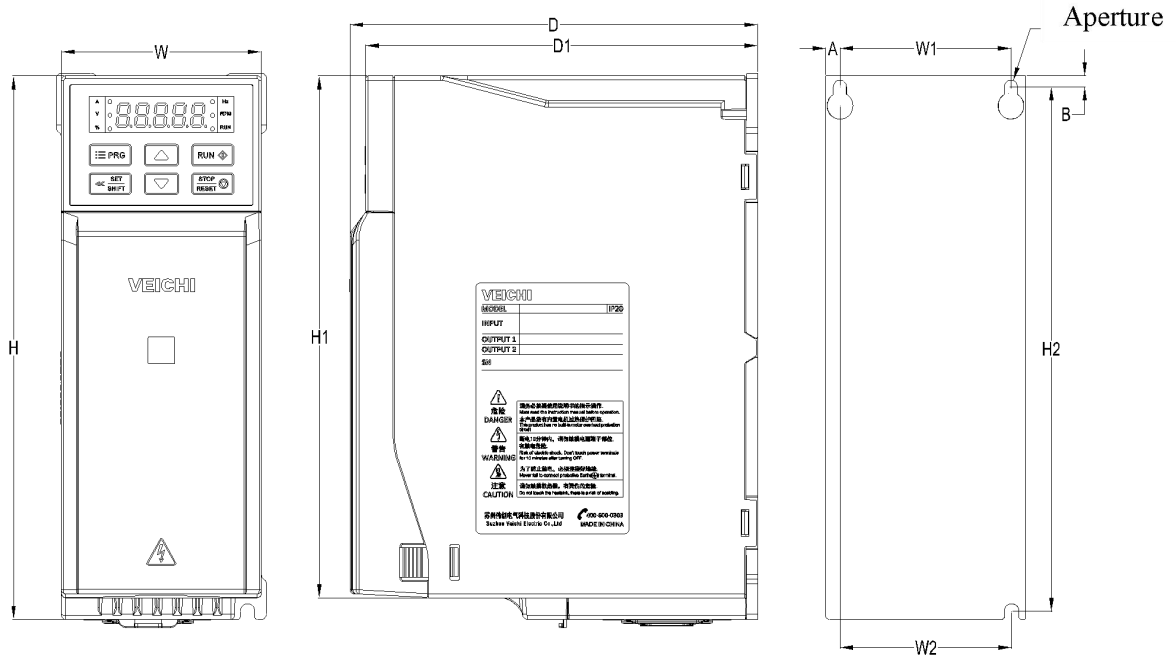


Drive Model	Outer Dimension(mm)					Installation Dimension(mm)					Aperture
	W	H	H1	D	D1	W1	W2	H2	A	B	
CH310E-T2-R75B	76	200	192	155	149	65	65	193	5.5	4	3-M4
CH310E-T2-1R5B											
CH310E-T2-2R2B	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4
CH310E-T2-004B											
CH310E-T2-5R5B	116	320	307.5	175	169	98	100	307.5	9	6	3-M5

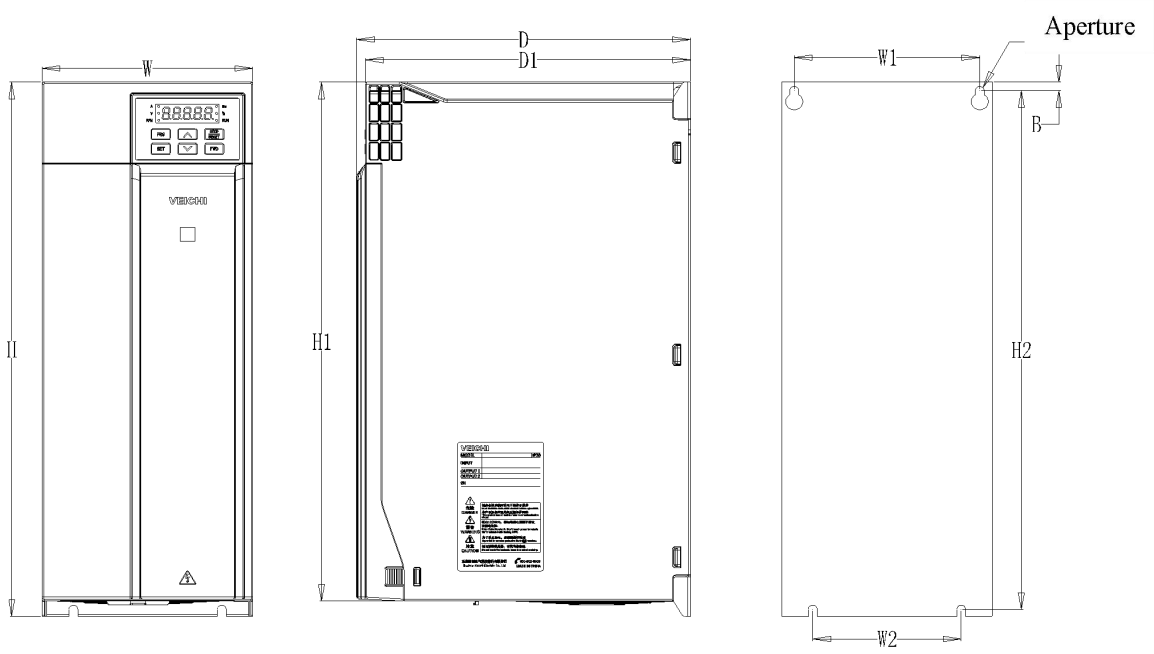


Drive Model	Outer Dimension(mm)					Installation Dimension(mm)				Aperture
	W	H	H1	D	D1	W1	W2	H2	B	
CH310E-T2-7R5B	142	383	372	225	219	125	100	372	6	4-M5
CH310E-T2-011B										

3.4.2 T3 Dimensions(Plastic)

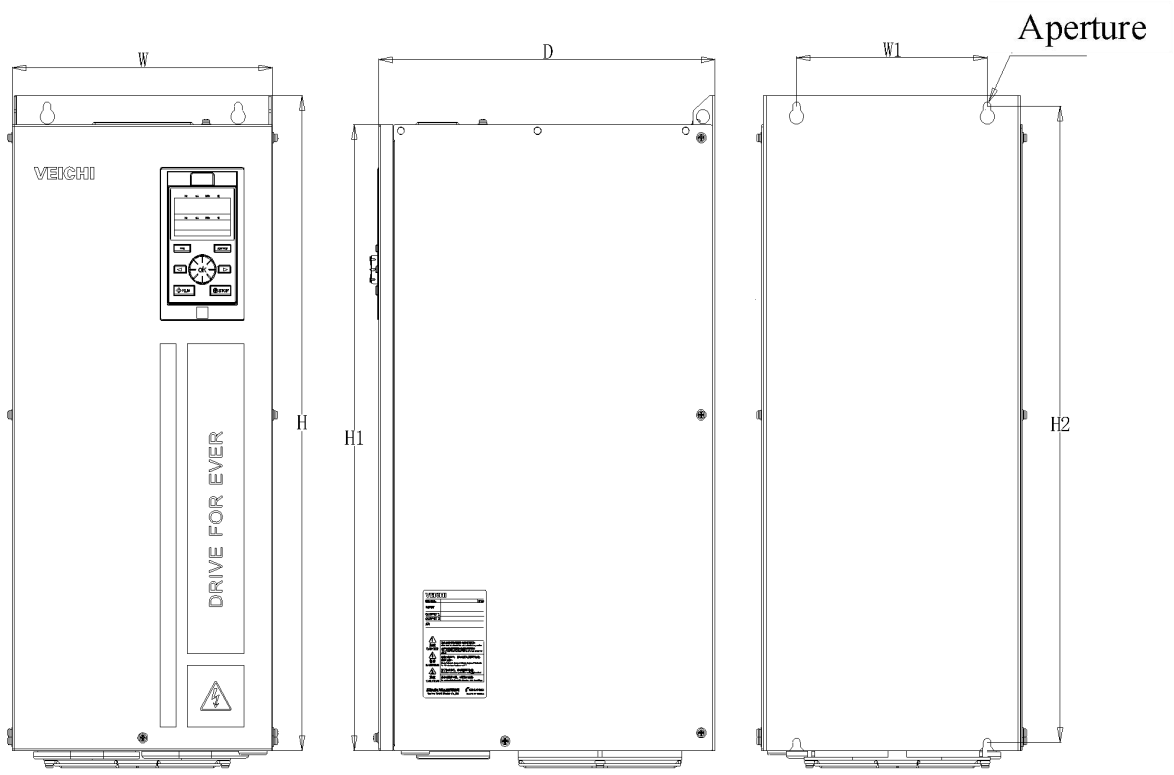


Drive Model	Outer Dimension(mm)					Installation Dimension(mm)					Aperture
	W	H	H1	D	D1	W1	W2	H2	A	B	
CH310E-T3-R75B	76	200	192	155	149	65	65	193	5.5	4	3-M4
CH310E-T3-1R5B											
CH310E-T3-2R2B											
CH310E-T3-004B	100	242	231	155	149	84	86.5	231.5	8	5.5	3-M4
CH310E-T3-5R5B											
CH310E-T3-7R5B	116	320	307.5	175	169	98	100	307.5	9	6	3-M5
CH310E-T3-011B											



Drive Model	Outer Dimension(mm)					Installation Dimension(mm)				Aperture
	W	H	H1	D	D1	W1	W2	H2	B	
CH310E-T3-015B	142	383	372	225	219	125	100	372	6	4-M5
CH310E-T3-018B										
CH310E-T3-022B										
CH310E-T3-030B	172	430	/	225	219	150	150	416.5	7.5	4-M5
CH310E-T3-037B										

3.4.4 T3 Dimensions (Steel)



Drive Model	Outer Dimension(mm)				Hole position(mm)		Aperture
	W	H	H1	D	W1	H2	
CH310E-T3-045B	240	560	520	310	176	544	4-M6
CH310E-T3-055B							
CH310E-T3-075B							

3.4.5 Keypad Outer and Opening Dimensions

Here is the outer dimension and opening dimension of external dual-line keypad KBD300-25(unit: mm), and the LCD and LED keypad dimensions are fully compatible.

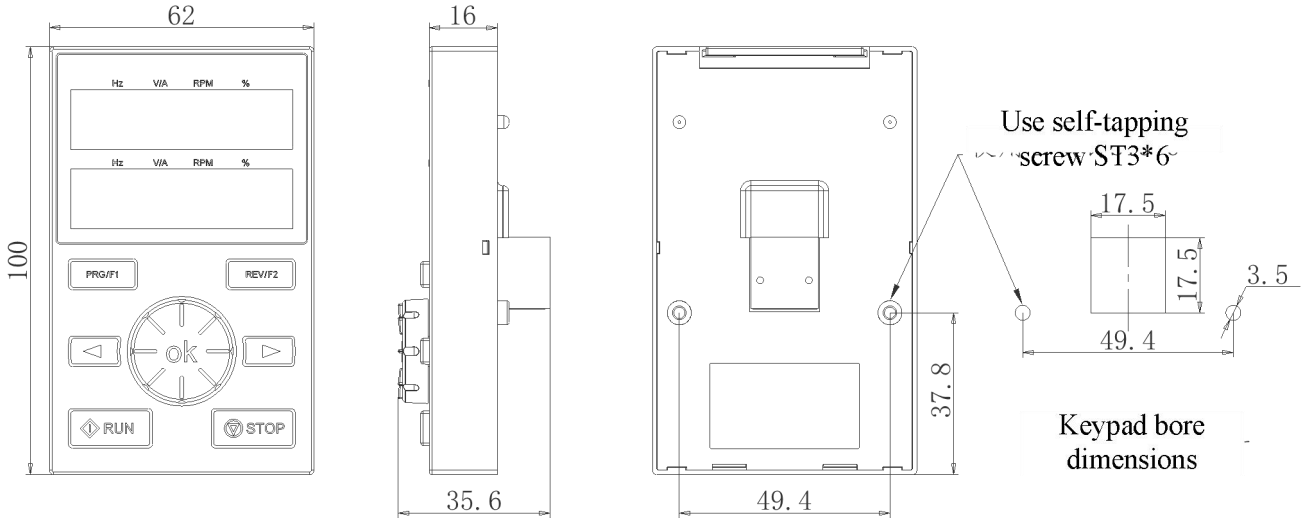


Figure 3-4 Outer Dimensions and Opening Dimensions of External Dual-line Keypad

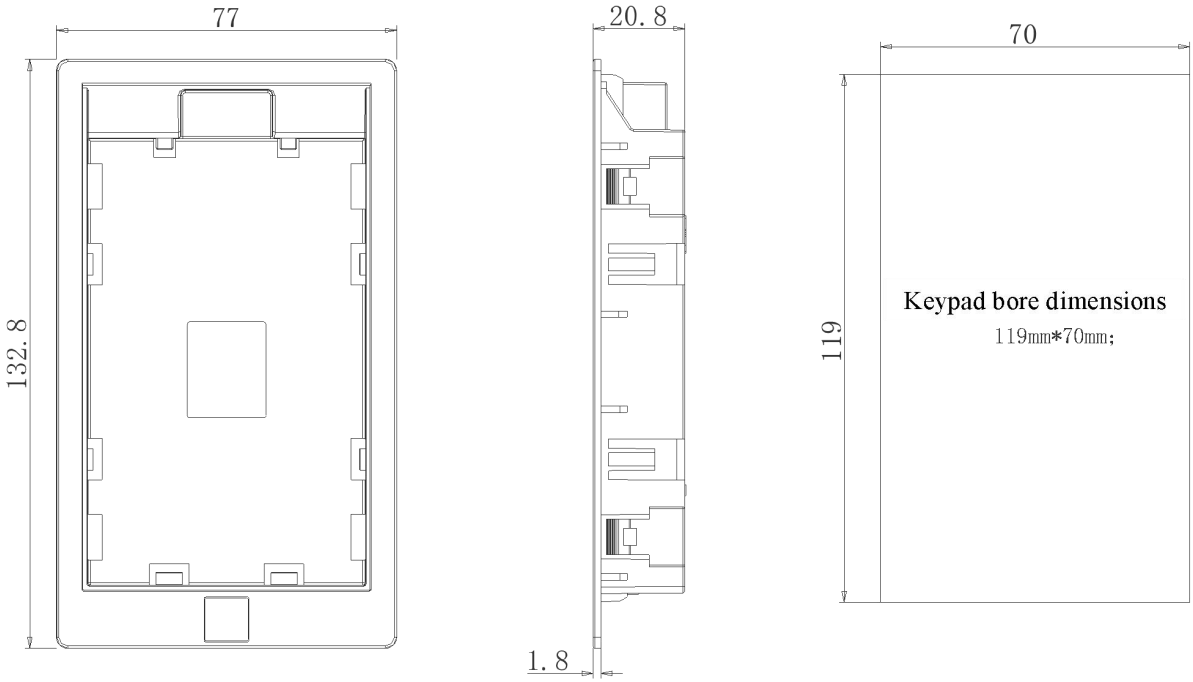


Figure 3-5 Outer Dimensions and Opening Dimensions of External Dual-line Keypad Pocket

3.5 Standard Wiring

This section explains the various precautions that must be followed to ensure safe use, maximized performance, and reliable operation of the AC drive.

3.5.1 Safety Precautions

Warning	Ground the drive reliably when it is put into operation, otherwise it may cause personal injury or death and failure of the device. In order to ensure the safe operation, the installation and wiring of the AC drive must be carried out by trained professionals. Do not carry out work with the power supply on, as there is a risk of electric shock and death. Do not perform wiring work while the power is on, as there is a risk of death by electric shock. Before performing wiring, inspection, maintenance, etc., disconnect the power supply to all associated equipment and make sure that the DC voltage in the main circuit has dropped to a safe level for 5 minutes.
Caution	Isolate the control cable and the power cable of the AC drive, and the cable to the motor from each other rather than arrange them in the same cable trough or on the same cable rack. This device can only be used for the purpose specified by the manufacturer. If you need to use it in other special occasions, please consult our sales department beforehand.
Note	Do not use high-voltage insulation testing device to test the AC drive and the insulation of the cables connected to it. When test insulation on the AC drive and external devices(filters, reactors, etc.), firstly measure their insulation resistance to ground with a 500V megameter, and the insulation resistance shall not be lower than 4MΩ.

3.5.2 Standard Connection Diagram

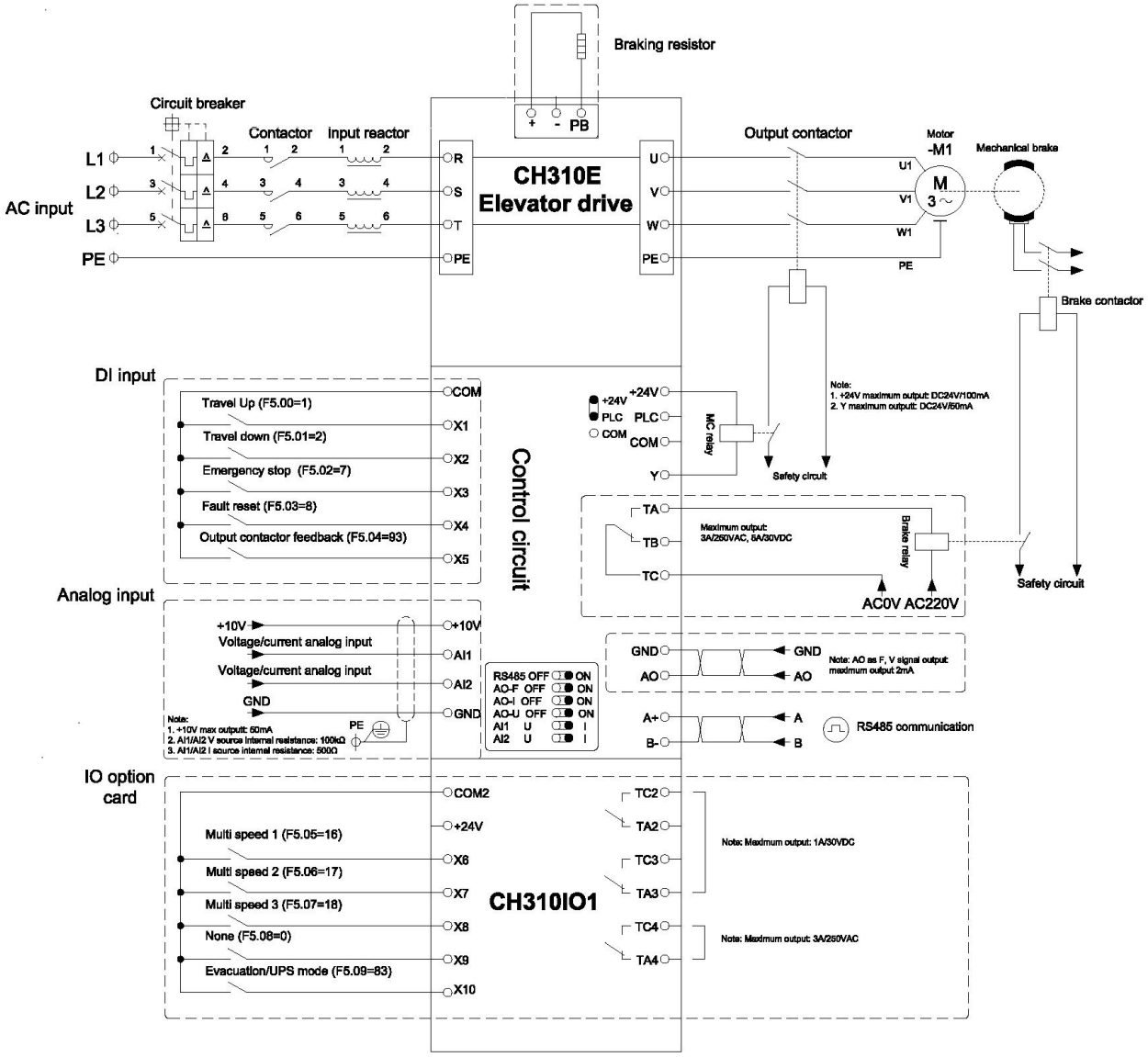


Figure 3-6: Standard Wiring

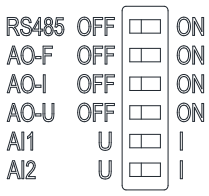
Note:

1) For T3 models with power of 22kW and below, and models with built-in braking units, please add braking resistors as required; for models without built-in braking units, please add external braking units as required.
2) Terminals(X1~X5, X6~X10)) can support NPN or PNP transistor input signals, and the bias voltage can be selected from the internal power supply of AC drive(+24V terminal) or external power supply(PLC terminal).

3.5.3 Auxiliary Terminal Output Capacity

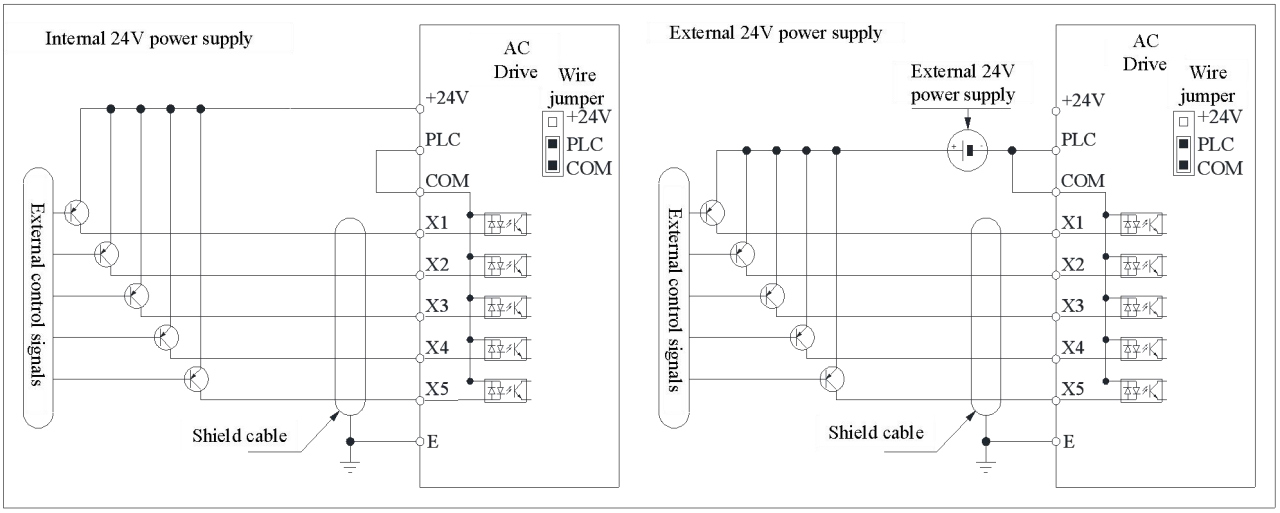
Terminal	Definition	Max. output
+10V	10V auxiliary power output, looped with GND	50mA
AO, AO2	Analog monitoring output, looped with GND	The maximum output is 2mA for the signal of frequency and voltage type.
+24V	24V auxiliary power output, looped with COM	100mA
Y, Y2	Open collector output, settable in the software	DC24V/50mA
TA/TB/TC	Passive contact output, settable in the software	NO: 5A/250VAC, 5A/30VDC NC: 3A/250VAC, 3A/30VDC
TA2/TB2/TC2	Passive contact output, settable in the software	NO: 3A/250VAC, 3A/30VDC NC: 2A/250VAC, 2A/30VDC

3.5.4 DIP Switch Functions

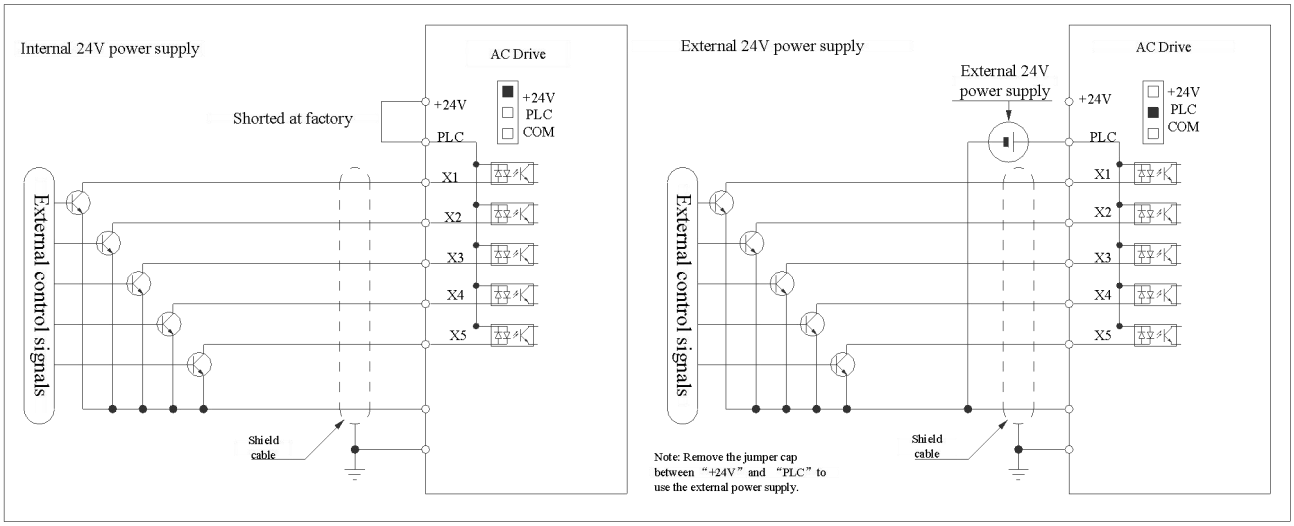
Pin	Position	Description
	RS485 terminating resistor	RS485 connected to a120Ω terminal resistor.
	AO-Frequency	0.0kHz~100.0kHz frequency output. AO-F dialed to ON, connect to additional 5.1kΩ resistance and make it 10V in total.
	AO-Current	0mA~20mA or 4mA~20mA current output.
	AO-Voltage	0V~10V voltage output.
	AI1-Current/Voltage	0mA~20mA or 0V~10V input.
	AI2-Current/Voltage	0mA~20mA or 0V~10V input.

3.5.5 Multi-function Input Connection

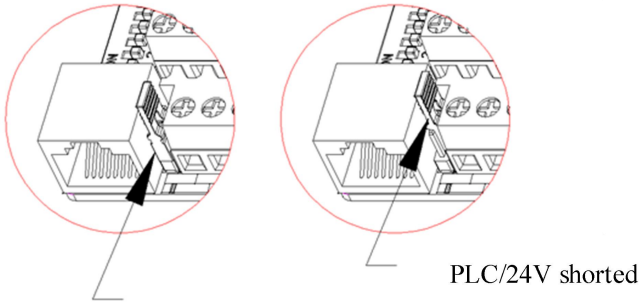
- Wiring method of PNP transistor:



- Wiring method of NPN transistor:



3.5.6 Connection Jumper Caps "+24V", "PLC", and "COM"



PLC/24V shorted

PLC/COM shorted

3.6 Wiring of Main Circuit

3.6.1 Arrangement and Definition of Terminals

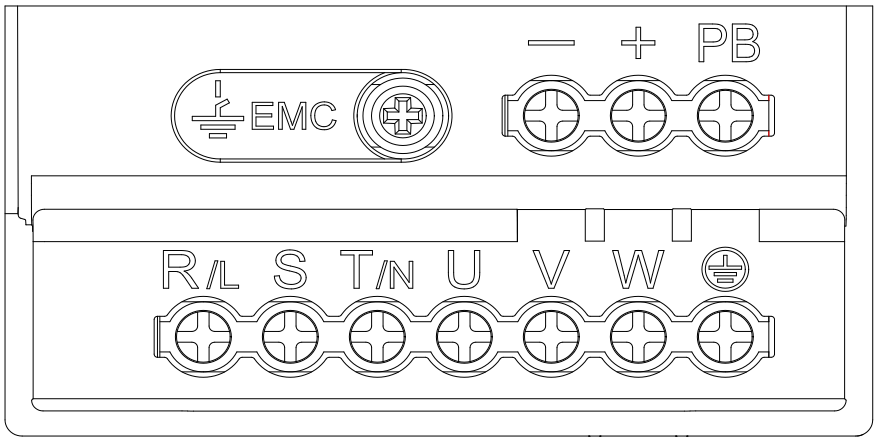


Table 3-2: Arrangement and Definition of Terminals of CH310 Series Main Circuit

Mark	Name	Description
(-)	DC power terminal	For connecting the DC power supply;(-) is the cathode of the DC bus, and(+) is the anode of the DC bus for connecting an external braking unit.
(+)		
(+)	Braking resistor terminal	For connecting external braking resistors to realize quick stop.
PB		

R	Drive input terminal	For connecting the three-phase AC supply.
S		
T		
U	Drive output terminal	For connecting the motor.
V		
W		
⏚	Ground	For grounding the product, with the grounding resistance<10Ω.
E		

3.6.2 Main Circuit Wiring of Three-Phase 380V~480V AC Drive

Table 3-3: Cable Diameter and Fixed Torque of Main Circuit of Three-phase 380V~480V AC Drive

Model	Screw (mm)	Torque (N·m)	Copper Core Cable mm^2(AWG)
CH310E-T3-R75B	M3	0.8~1.0	1.5mm^2(14)
CH310E-T3-1R5B	M3	0.8~1.0	2.5mm^2(12)
CH310E-T3-2R2B	M3	0.8~1.0	2.5mm^2(12)
CH310E-T3-004B	M3.5	1.2~1.5	4mm^2(10)
CH310E-T3-5R5B	M3.5	1.2~1.5	6mm^2(9)
CH310E-T3-7R5B	M4	1.2~1.5	6mm^2(9)
CH310E-T3-011B	M4	1.2~1.5	10mm^2(7)
CH310E-T3-015B	M6	4~6	10mm^2(7)
CH310E-T3-018B	M6	4~6	16mm^2(5)
CH310E-T3-022B	M6	4~6	16mm^2(5)
CH310E-T3-030B	M6	4~6	25mm^2(3)
CH310E-T3-037B	M6	4~6	25mm^2(3)
CH310E-T3-045B	M8	8~10	35mm^2(2)
CH310E-T3-055B	M8	8~10	35mm^2(2)
CH310E-T3-075B	M8	8~10	50mm^2(1)

3.6.3 Main Circuit Wiring of Single/Three-Phase 220V~240V AC Drive

Table 3-4: Cable Diameter and Fixed Torque of Main Circuit of Single/Three-phase 220V~240V AC Drive

Model	Screw (mm)	Torque(N·m)	Copper Core Cable mm^2(AWG)
CH310E-T/ S2-R75B	M3	0.8~1.0	2.5mm^2(12)
CH310E-T/ S2-1R5B	M3	0.8~1.0	2.5mm^2(12)
CH310E-T/ S2-2R2B	M3.5	1.2~1.5	4mm^2(10)
CH310E-T/ S2-004B	M3.5	1.2~1.5	4mm^2(10)
CH310E-T/ S2-5R5B	M4	1.2~1.5	10mm^2(7)
CH310E-T/ S2-7R5B	M6	4~6	16mm^2(5)

3.6.4 Main Circuit Component Specifications

Table 3-5: Recommended Components Specification of Main Circuit of Three-phase 380V AC Drive

Model	Contactor(A)	Breaker(A)	DC reactor	Input Filter	Output Filter
CH310E-T3-R75B	10A	10A	--	NFI-005	NFO-010
CH310E-T3-1R5B	10A	10A	--	NFI-005	NFO-010
CH310E-T3-2R2B	16A	15A	--	NFI-010	NFO-010
CH310E-T3-004B	16A	20A	--	NFI-010	NFO-010
CH310E-T3-5R5B	25A	20A	--	NFI-020	NFO-020
CH310E-T3-7R5B	25A	30A	--	NFI-020	NFO-020
CH310E-T3-011B	32A	40A	--	NFI-036	NFO-036
CH310E-T3-015B	40A	50A	--	NFI-036	NFO-036
CH310E-T3-018B	50A	60A	--	NFI-050	NFO-050
CH310E-T3-022B	50A	75A	--	NFI-050	NFO-050
CH310E-T3-030B	63A	100A	DCL-80	NFI-080	NFO-080
CH310E-T3-037B	80A	125A	DCL-100	NFI-100	NFO-100
CH310E-T3-045B	100A	150A	DCL-110	NFI-100	NFO-100
CH310E-T3-055B	125A	175A	DCL-125	NFI-150	NFO-150
CH310E-T3-075B	160A	200A	DCL-150	NFI-150	NFO-150
Note: For detailed specifications and circuit connection forms of DC reactors, input filters, output filters, etc., please refer to the "External Units and Optional Parts" section.					

3.7 Wiring of Control Circuit

3.7.1 Arrangement of Control Circuit Terminals

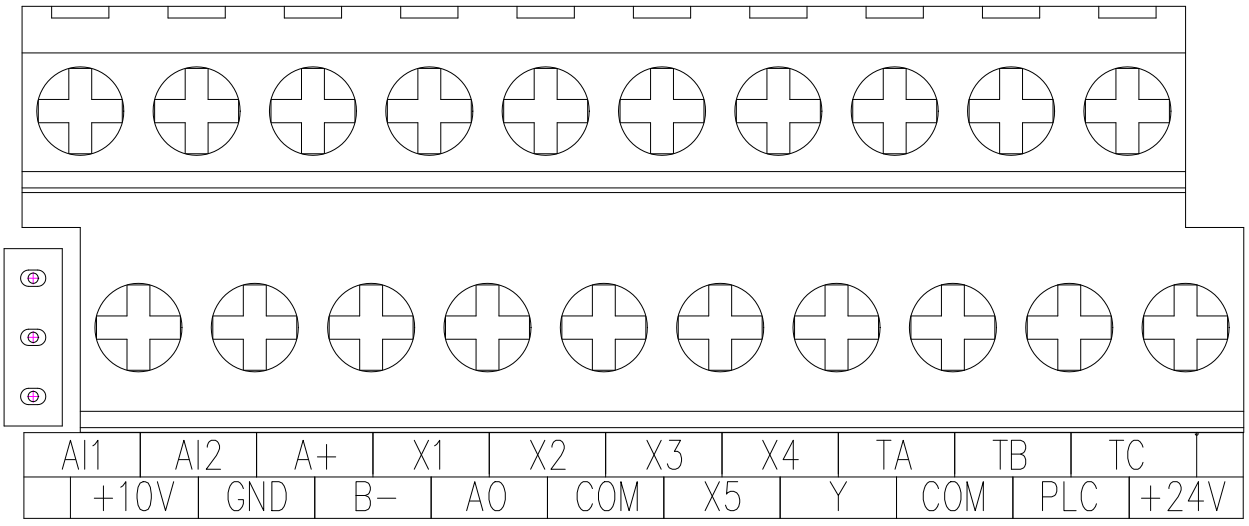


Table 3-6: Layout and Definition of Terminals of CH310E Control Circuit

Type	Mark	Name	Description
Power Supply	+10V-GND	External +10V power supply	Provide +10V power supply, with maximum output current of 50mA; generally used as the power supply for external potentiometer with the resistance range of 1kΩ~5kΩ
	+24V-COM	External +24V power supply	Provide +24 V power supply, generally used as the power supply for DI and DO terminals and external sensors Maximum output current: 100mA
	PLC	External common terminal	Connect to +24V by default. When X1-X5/PUL is driven with external signals, PLC needs to be connected to external power supply and disconnected from the +24 V power supply(see "+24V", "PLC", "COM" connection diagram for details)
AI	AI1-GND	Voltage/Current analog input	1. Range: DC 0V~10V/0mA~20mA. 2. Voltage impedance: 100KΩ. 3. Current impedance: 500Ω.
	AI2-GND	Voltage/Current analog input	1. Range: DC 0V~10V/0mA~20mA. 2. Voltage impedance: 100KΩ. 3. Current impedance: 500Ω.
DI	X1-PLC	Multi-function terminal 1	Optocoupler isolated, compatible with bipolar input. 1. Input impedance: 4.4KΩ. 2. Voltage range at high-level: 10V~30V. 3. Voltage range at low-level: 0V~5V.
	X2-PLC	Multi-function terminal 2	
	X3-PLC	Multi-function terminal 3	
	X4-PLC	Multi-function terminal 4	
	X5-PLC	Multi-function terminal 5	
AO	AO-GND	Analog output	1. Voltage range: DC 0V～10V. 2. Current range: DC 0mA～20mA. 3. Pulse range: 0kHz～50kHz.
DO	Y-COM	DO1	Optocoupler isolated, open collector output. 1. Voltage range: DC 0V～30V. 2. Current range: DC 0mA～50mA.
RO	TA-TC	Normally open	Contact capacity: NO: 5A/250VAC, 5A/30VDC. NC: 3A/250VAC, 3A/30VDC.
	TB-TC	Normally closed	
Comm. Terminal	A+	Communication terminal A+	RS485 communication port. According to the illustration and description of DIP switch function, the position of the RS485 DIP switch determines whether the RS485 communication is connected to 120 Ω terminal resistor.
	B-	Communication terminal B-	

3.7.2 CH310IO1 Extension Board

CH310IO1 extension board is designed for VEICHI CH310E full series AC drives for more digital input and output on the AC drives to meet various application requirements. Please read the "CH310IO1 Extension Manual" carefully before using.

Connect the CH310IO1 communication board with terminals to the EX-A and EX-B of the AC drive.

Table 3-7 CH310IO1 Technical Specifications

Power	24V/COM, external output capacity 100mA max			
Item	DI signal characteristics			
	Name	Response Frequency Range	Input Impedance: 4.4KΩ	Valid Level
Input signal	X6，X7，X8，X9，X10	0kHz~5kHz	4.3kΩ	High-level: 10V~30V Low-level: 0V~5V
Select PLC2 to be connected to 24V or COM via jumper switch S7, supporting the input of NPN and PNP transistor signals.				
Item	DO signal characteristics			
	Name	Output Mode	Max. Output	
Output signal	TC2, TA2, TC3, TA3	Relay normally open for output	1A/30VDC(Resistive)	
	TC4, TA4	Relay normally open for output	3A/250VAC(Resistive) 3A/30VDC(Resistive)	

3.7.3 Control Circuit Wiring Specification

Table 3-8 Control Circuit Wiring Specification

Name	Screw (mm)	Torque (N·m)	Cable (mm^2)	Cable Type
A+, B-	M2.5	0.4~0.6	0.75	Shielded twisted pair
+10V, GND, AO, AI1, AI2	M2.5	0.4~0.6	0.75	Shielded twisted pair
+24V, COM, Y, TA, TB, TC, PLC, X1, X2, X3, X4, X5	M2.5	0.4~0.6	0.75	Shielded cable

3.8. Braking Resistor Connetion and Selection

Here is the diagram for connection of brake resistors.

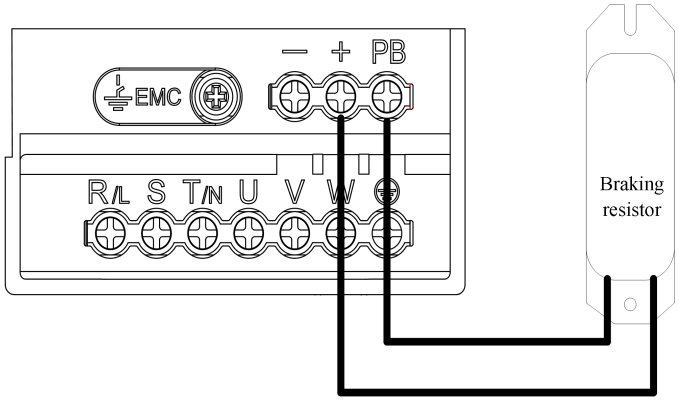


Figure 3-7 CH310 hoisting inverter 75kW (inclusive) or less of the machine braking resistance connection diagram

Select the braking resistor according to the actual power generated by the motor, which is related to the inertia, deceleration time, and potential energy load, etc. The larger the inertia of the system, the shorter the deceleration time required, and the more frequent the braking, the larger the power and smaller the braking resistance needs to be selected.

Table 3-9 CH310E Brake Component Models

AC Drive		Brake Unit	Brake Resistor		
Model	Rated Current		Braking Power	Recommend	Setting
CH310E-T3-004B	10A	Built-in	≥1.1kW	170Ω≥R≥130Ω	1
CH310E-T3-5R5B	13A	Built-in	≥1.6kW	115Ω≥R≥90Ω	1
CH310E-T3-7R5B	17A	Built-in	≥2.5kW	85Ω≥R≥65Ω	1
CH310E-T3-011B	25A	Built-in	≥3.5kW	55Ω≥R≥43Ω	1
CH310E-T3-015B	32A	Built-in	≥4.5kW	43Ω≥R≥32Ω	1
CH310E-T3-018B	38A	Built-in	≥5.5kW	34Ω≥R≥25Ω	1
CH310E-T3-022B	45A	Built-in	≥6.5kW	24Ω≥R≥22Ω	1
CH310E-T3-030B	60A	Built-in	≥9.0kW	20Ω≥R≥16Ω	1
CH310E-T3-037B	75A	Built-in	≥11kW	18Ω≥R≥14Ω	1
CH310E-T3-045B	90A	Built-in	≥23kW	≥10Ω	1
CH310E-T3-055B	110A	Built-in	≥28kW	≥8Ω	1
CH310E-T3-075B	150A	Built-in	≥38kW	≥7Ω	1

3.9 Backup Control System

The drives consist of semiconductor devices, passive electronic devices, and motion devices, all of which have a service life, and even under normal operating conditions, some of the devices may have characteristics change or failure if their service life is up. To prevent product failure and production halt, it is recommended to set up a backup control system for the AC drive.

The following figure shows the backup control system after manually switching to the grid power to directly drive the motor if the AC drive fails. In actual use, please select, according to actual needs and use environment, the grid power Y/Δ step-down start mode, the grid power auto-coupling step-down start mode and grid power soft start mode to drive the motor, and other control systems such as frequency conversion system in standby.

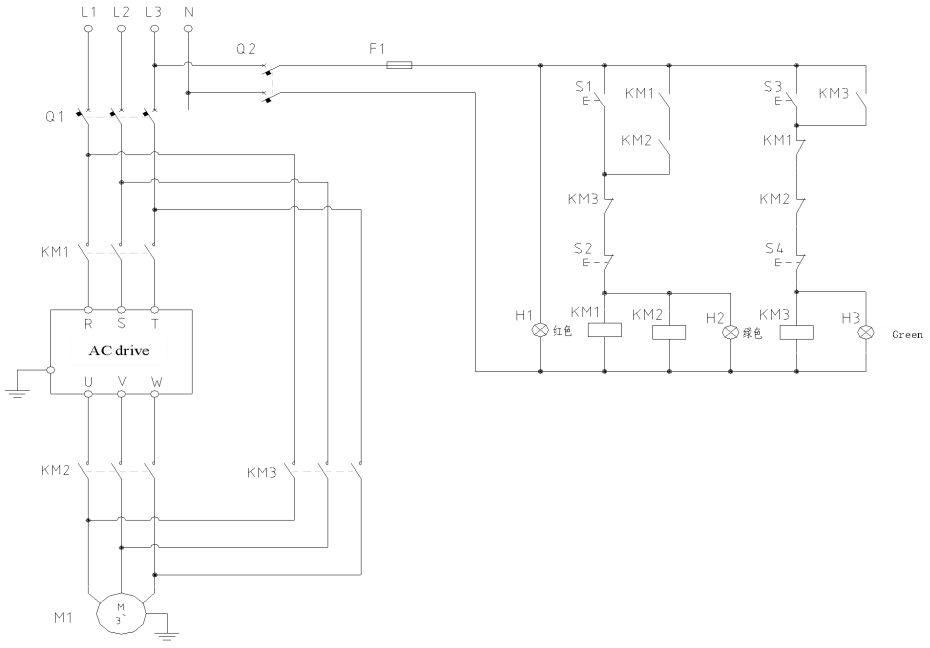


Figure 3-8 Backup Control System with Power Grid Directly Driving the Motor

Chapter 4 Trial Operation

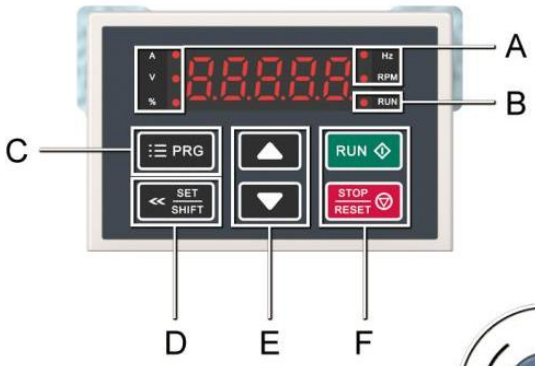
4.1 Safety Precautions

Danger
Pay attention to all information in this manual regarding safety. Failure to observe the warnings may result in death or serious injuries, in which case, VEICHI will not be held responsible for the possible results.

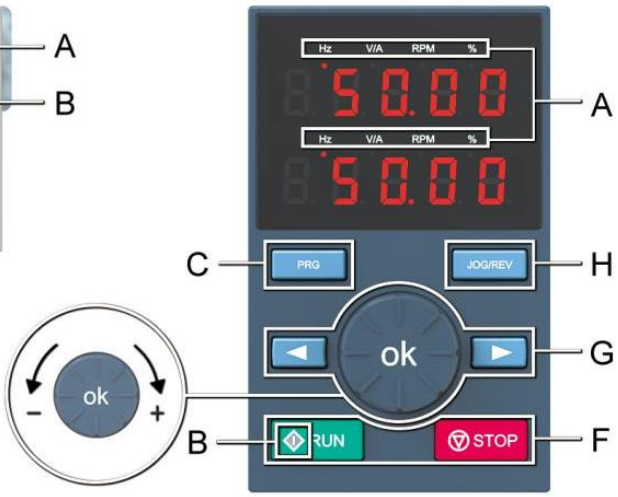
4.2 Layout and Function of Keypad

4.2.1 Keypad Layout

Single-line keypad(37kW and below)



Dual-line keypad(37kW and above)



● Keypad functions

Mark	Single-line keypad	Dual-line keypad	Function
A	Unit indicator		Hz: Frequency; A: Current; V: Voltage; A/V: Current or Voltage RPM: Speed ; %: Percentage
B	Status indicator		On: FWD running; Flashing: REV running; Off: Stop
C	Program PRG	Program PRG	Enter the function menu interface during standby or running; Press the key to exit the modification during parameter modification; Long press the key(1 second) during standby or running to enter the status interface directly.
D	Set/Shift SET SHIFT	-	Confirm: Press to confirm the modified value after modification. Shift: Long press the key(1 second) to move the operation position, and long press without releasing for cyclic shifting.
E	UP/DOWN	-	The UP key increases the value, the DOWN key decreases the value.
F	RUN RUN	RUN RUN	When run/stop is controlled by the keypad, press the key to turn the drive forward. The status indicator light is always on when running in forward direction, and flashes when running in reverse direction.

	Stop/Reset 	Stop, Reset 	When the command source is the keypad, press this button to stop the drive; Define the command sources are valid by F11.03; Press this button in the fault state to reset the drive.
G	-	Potentiometer 	Clockwise rotation to increase the value, while counterclockwise rotation to decrease the value.
			OK: Press this button after modifying the value to confirm it.
		Left/Right 	Move the operation bit left and right.
H	-	Jog/REV	The functions are selected via F11.02.

4.2.2 Number Cross Reference Table

Table 4-1 Cross Reference Table

Word	LED Display	Word	LED显示	Word	LED Display
0		C		O	
1		D		P	
2		E		Q	
3		F		R	
4		G		S	
5		H		T	
6		I		U	
7		J		V	
8		K		W	
9		L		X	No display
A		M		Y	
B		N		Z	No display

4.3 LED Status Indicator

In the table below, ○ indicates that the light is on, ● indicates that the light is off, and ◔ indicates that the light is flashing.

Operation indicator	●	OFF: Stop.
	○	ON: FWD operation.
	◔	Flashing: REV operation.
Unit indicator (Hz: Frequency; A: Current; V: Voltage; RPM: Revolutions per minute; %: Percentage)	○	ON: Unit of the value under monitor
	●	OFF: Indicator is invalid.

Chapter 5 Troubleshooting

5.1 Safety Precautions

Warning	This product carries hazardous voltage to control potentially dangerous movable mechanisms. Failure to follow the regulations or this manual may lead to damage to the product and associated systems or even personal injury and death. This product is exclusively for use by trained professionals who must thoroughly understand all safety precautions and operational procedures outlined in the manual prior to use. Proper operation and maintenance are essential for safe operation and stable performance of the product. Do not work on wiring while power is on, as it poses a risk of fatal electric shock. Prior to any wiring, inspection, or maintenance work, please ensure that the power supply to all associated equipment is disconnected, and that the DC voltage in the main circuit has dropped to a safe level. Wait for another 5 minutes before any operation.
Caution	Prevent children and the public from contacting or approaching this product. This product is intended for use in accordance with the manufacturer's specified purposes. Unauthorized use for emergency, rescue, marine, medical, aviation, or nuclear facilities is seriously prohibited. Unauthorized modifications or using of spare parts not sold or recommended by the manufacturer of this product may cause malfunctions.
Note	Send this manual directly to the actual users, and they must read it thoroughly prior to use. Thoroughly read and comprehend the associated safety guidelines and warning notices before installing and adjusting the AC drive.

5.2 Error and Alarm Definition

If the AC drive or motor operates abnormally, first check the codes and notifications on the keypad and this manual. If this issue still exists, please double-check the following items prior to contacting our agent or calling VEICHI's customer service(refer to the back cover for details).

1. Model of the AC drive
2. Software version
3. Purchase date
4. Malfunction status

Please refer to the following table for the description of the errors and warnings that occur during operation of the AC drive.

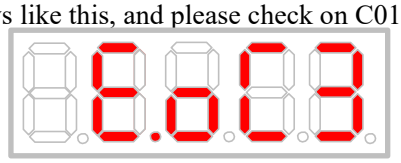
Table 5-1 Error and Alarm Codes

Type	AC Drive Response during Fault
Error	The following conditions will occur upon a fault. The AC drive will stop operate until it is restored to normal status by fault reset. • An error prompt appears on the keypad. • The AC drive cuts off output and the motor coasts to stop. • When a fault is detected, set F06.21~F06.22=4 [Output Terminal Function=Error] to ON. Terminal will not output a signal even if a fault is detected without this setting.

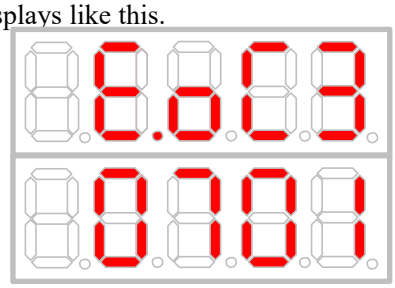
Alarm	The following conditions occur when an alarm is detected, and no reset is required. • An alarm appears on the keypad. • The AC drive continues to operate. • When an alarm is detected, set F06.21~F06.22=29[Output Terminal Function=Alarm] to ON. Terminal will not output a signal even if an alarm is detected without this setting.
Note:	• "Pon" is displayed to indicate that the control board is powered. •"SAvE" is displayed when it is reset to factory settings. •"T-00" is displayed to indicate the auto-tuning is going. •"CoPy" is displayed during parameters uploading, and "LoAd" during parameters downloading.

5.3 Error and Alarm Code Table

The single-line keypad fault displays like this, and please check on C01.01 for the fault subcodes.



While the dual-line keypad fault displays like this.



The first three digits of the dual-line keypad display are the fault code, and the last two digits are the fault sub-code.

The fault, warning and prompt codes are shown in Table 6.2. When the keypad displays the codes in the table, the detailed causes and countermeasures of the fault or warning can be found on the corresponding page of the reference source.

Note: The numbers in brackets in the code column are error codes or alarm codes (Dec indicates decimal).

Table 5-2: Error and Alarm Codes

Display (Dec.)	Name	Type	Display (Dec.)	Name	Type
E. SC1(1)	System failure during acceleration	Error	E. PST3 (76)	PM step loss 3	Error
E. SC2(2)	System failure during deceleration	Error	E. dEF (77)	Large speed deviation	Error
E. SC3(3)	System failure during constant running	Error	E. SPd (78)	Stall	Error
E. SC4(4)	System failure during stop	Error	E. Ld1(79)	Load failure 1	Error
E. oC1(5)	Overcurrent during acceleration	Error	E. Ld2(80)	Load failure 2	Error
E. oC2(6)	Overcurrent during deceleration	Error	E. CPU (81)	CPU timeout	Error
E. oC3(7)	Overcurrent during constant running	Error	E. LoC (85)	Chip locked	Error
E. oU1(9)	Overvoltage during acceleration	Error	E. EEP (86)	EEPROM failure	Error
E. oU2(10)	Overvoltage during deceleration	Error	E. PLL (87)	PLL failure	Error

E. oU3(11)	Overvoltage during constant running	Error	E. bUS1(91)	Extension A disconnection	Error
E. Lu(13)	Undervoltage during operation	Error	E. bUS2(92)	Extension B disconnection	Error
E. oL1(14)	Motor overload	Error	E. bUS3(93)	CAN extension failure	Error
E. oL2(15)	AC drive overload 1	Error	E. bUS4(94)	Others extension failure	Error
E. oL3(16)	AC drive overload 2, CBC	Error	E. bUS5(95)	Others extension failure	Error
E. oL4(17)	AC drive overload 3	Error	E. bUS6(96)	Others extension disconnection	Error
E. iLF(18)	Input phase loss	Error	E. CP1(97)	Monitor comparator failure 1	Error
E. oLF(19)	Three-phase loss	Error	E. CP2(98)	Monitor comparator failure 2	Error
E. oLF1(20)	U-phase loss	Error	E. dAT (99)	Parameter setting failure	Error
E. oLF2(21)	V-phase loss	Error	E. 103(103)	Brake resistor failure	Error
E. oLF3(22)	W-phase loss	Error	E. 104(104)	Insufficient brake torque	Error
E. oH1(30)	Rectifier module overheat	Error	E. 105(105)	Brake release feedback failure	Error
E. oH2(31)	IGBT overheat	Error	-	-	-
E. oH3(32)	Motor overheat	Error	-	-	-
E. EF(33)	External fault	Error	**The following are the warning codes**		
E. CE(34)	Modbus communication failure	Error			
E. HAL1(35)	Large U-phase zero drift	Error	A. LU1(128)	Undervoltage during stop	Alarm
E. HAL2(36)	Large V-phase zero drift	Error	A. oU (129)	Overvoltage during stop	Alarm
E. HAL(37)	Non-0 current sum of three phase	Error	A. iLF (130)	Input phase loss	Alarm
E. HAL3(38)	Large W-phase zero drift	Error	A. Pid (131)	PID feedback disconnection	Alarm
E. SGxy(40)	Short circuit to ground	Error	A. EEP (132)	EEPROM read/write failure	Alarm
E. FSG(41)	Fan short circuit	Error	A. dEF (133)	Large speed deviation	Alarm
E. PiD(42)	PID feedback disconnection	Error	A. SPd (134)	Stall	Alarm
E. CoP(43)	Parameter copy failure	Error	A. GPS1 (135)	GPS lock	Alarm
E. PG01(44)	Wrong PG parameter setting	Error	A. GPS2 (136)	GPS disconnection	Alarm
E. PG02(44)	Encoder Z-pulse failure	Error	A. CE (137)	Modbus disconnection	Alarm
E. PG03(44)	ABZ encoder disconnection	Error	A. Ld1 (138)	Load failure 1	Alarm
E. PG04(44)	Resolver verification error	Error	A. Ld2 (139)	Load failure 2	Alarm
E. PG05(44)	Resolver breakage	Error	A. bUS (140)	Extension disconnection	Alarm
E. PG06(44)	Other encoder failures	Error	A. oH1 (141)	Module overheat	Alarm
E. PG08(44)	Encoder Z-pulse logic failure	Error	A. oH3 (142)	Motor overheat	Alarm
E. PG10(44)	Encoder Z-pulse logic failure	Error	A. rUn1 (143)	Operation command conflict	Alarm
E. PG11(44)	reserved	Error	A. rUn2 (158)	Jogging terminal starting protection	Alarm
E. PG12(44)	Encoder feedback is abnormal	Error	A. rUn3 (159)	Terminal starting protection	Alarm
E. PG13(44)	The encoder hardware is disconnected	Error	A. PA2 (144)	External keypad disconnection	Alarm
E. PG14(44)	The communication of the sine and cosine encoder is disconnected	Error	A. CP1(146)	Monitor comparator output 1 failure	Alarm

E. PG15(44)	SinCos encoder body failure	Error	A. CP2(147)	Monitor comparator output 2 failure	Alarm
E. brU(50)	Braking unit failure	Error	A. 161(161)	Cooling fan lifetime reached	Alarm
E. TExx(52)	Motor auto-tuning failure	Error	A. 163(163)	Main relay life reached	Alarm
E. E62(62)	Current not reaching setting before brake release	Error	A. 168(168)	Target frequency below starting frequency	Alarm
E. E63(63)	Low current	Error	A. 169(169)	Target frequency below brake releasing frequency	Alarm
E. iAE1(71)	Motor angle tuning failure 1	Error	A. FSTP (170)	Coasting stop command valid	Alarm
E. iAE2(72)	Motor angle tuning failure 2	Error	A. ESTP (171)	Emergency stop command valid	Alarm
E. iAE3(73)	Motor angle tuning failure 3	Error	A. Con0 (173)	Output contactor failure	Alarm
E. PST1(74)	PM step loss 1	Error	A.178(178)	Brake failure	Alarm
E. PST2(75)	PM step loss 2	Error	-	-	-

Chapter 6 Parameter List

6.1 Safety Precautions

Danger
Please pay attention to all information in this book regarding safety.
Failure to observe the warnings may result in death or serious injuries, in this case, VEICHI will not be held responsible for the possible results.

6.2 Icons and Terminology

Mark	Content
V/F	Valid parameters under AM V/F control.
SVC	Valid parameters under AM open-loop vector control.
FVC	Valid parameters under AM closed-loop vector control.
PMVF	Valid parameters under PM V/F control.
PMSVC	Valid parameters under PM open-loop vector control.
PMFVC	Valid parameters under PM closed-loop vector control.

Note: The unshaded control mode icon indicates that the parameter is invalid for that control mode.

6.3 Parameter Group

6.3.1 Parameter Group List

Parameter		Name
F00 Environment	F00.0x	Environment Setting
	F00.1x	Common Parameters
F01 Basic Settings	F01.0x	Basic Commands
	F01.1x	Frequency Commands
	F01.2x~F01.3x	ACC/DEC Time
	F01.4x	PWM Control
F02 Motor 1 Parameters	F02.0x	Basic Motor Parameters and Auto-tuning
	F02.1x	AM Advanced Parameters
	F02.2x	PM Advanced Parameters
	F02.3x~F02.4x	Encoder
	F02.5x	Motor Application
F03 Vector Control	F03.0x	ASR
	F03.1x	ACR and Torque Limit
	F03.2x	Torque Optimization
	F03.3x	Flux Optimization
	F03.4x~F03.5x	Torque Control
	F03.6x	PM HF Injection
	F03.7x	Position Compensation
	F03.8x	Extensions
F04 V/F Control	F04.0x	V/F Control
	F04.1x	Customized V/F Curves
F05 Input Terminal	F05.0x	DI Terminal Function
	F05.1x	X1~X5 Detection Delay
	F05.2x	DI Terminal Mode
	F05.4x	Analog Type
	F05.5x	AI Characteristics

	F05.6x	AI Curve 1
	F05.7x	AI Curve 2
	F05.8x	AI as DI Terminal
F06: Output Terminal	F06.0x	AO (analog, frequency)
	F06.1x	AO Extension
	F06.2x~F06.3x	Digital and Relay Output
	F06.4x	Frequency Detection
F07 Operation Control	F07.0x	Start Control
	F07.1x	Stop Control
	F07.2x	DC Brake and Fly Track
	F07.3x	Jogging
	F07.4x	Start/Stop Hold and Jump Frequency
F10 Protection	F10.0x	Current Protection
	F10.1x	Voltage Protection
	F10.2x	Auxiliary Protection
	F10.3x	Load Protection
	F10.4x	Stall Protection
	F10.5x	Fault Reset and Motor Overload Protection
F11 Keypad	F11.0x	Keypad Operation
	F11.1x	Cyclic Monitoring of Status Interface
	F11.2x	Monitoring Parameters
F12 Communication	F12.0x	Modbus Slave
	F12.1x	Modbus Master
	F12.2x	RJ45 Communication
	F12.3x	PROFIBUS-DP Communication
	F12.4x	CAN Communication
	F12.5x	EX_A and EX_B Communication
F14 Multi-frequency Control	F14.00~F14.14	Multi-frequency
F23 Elevator Control	F23.00~F23.36	Elevator Functions
F29 Elevator S-curve	F29.00~F27.35	Elevator S-curve
Monitoring	C00.xx	Basic Monitoring
	C01.xx	Fault Monitoring
	C02.xx	APP Monitoring
	C03.xx	Maintenance Monitoring
Communications	Basic Modbus Communication	0x3000~0x301F, 0x2000~0x201F
	Basic Extension Communication	0x3100~0x311F
	I/O Interfaces	0x3400~0x341F
	Cache Register	0x3500~0x350F
	Extension Fault and Power-down Save	0x3600~0x361F

6.3.2 Parameter Properties

The following table describes the adjustable attributes of the parameters.

Adjustment Status	Description
STOP	"○": Parameters can't be modified when AC drive is operating;

RUN	"●": Parameters can be modified when AC drive is operating;
READ	This parameter is read-only.

6.4 F00: Environment

F00.0x: Environment Setting

Code (Add)	Name	Content	Default	Adjmt
F00.00 (0x0000)	Parameter Access Level	**V/F SVC FVC PMVF PMSVC PMFVC** Set the parameter access level according to access restriction. 0: Standard parameters (Fxx.yy, Cxx.yy) 1: Common parameters (F00.00, Pxx.yy) 2: Monitoring parameters (F00.00, Cxx.yy) 3: Modified parameter (F00.00, Hxx.yy) **Range:** 0~3	1	RUN
F00.02 (0x0002)	Reserved			
F00.03 (0x0003)	Initialization	**V/F SVC FVC PMVF PMSVC PMFVC** Set the drive initialization mode. 0: Initialization off 11: Initialization on according to purpose setting (motor parameters excl.) 22: Initialization on for all parameters 33: Clear fault records **Range:** 0~33	0	STOP
F00.04 (0x0004)	Keypad Parameter Copy	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 11: Upload parameters to keypad 22: Download parameters to the drive **Range:** 0~30	0	STOP
F00.05 (0x0005)	Reserved			
F00.06 (0x0006)	Reserved			
F00.07 (0x0007)	Free Parameter 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set as the machine number when multiple machines are used. Set as the mode number for each application when multiple machines are used. **Range:** 0~65535	0	RUN
F00.08 (0x0008)	Free Parameter 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set as the machine number when multiple machines are used. Set as the mode number for each application when multiple machines are used. **Range:** 0~65535	0	RUN

F00.09 (0x0009)	Operation Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Application mode 1: Debugging mode **Note:** In the debugging mode, all limits, output phase loss protection, and holding current detection are shielded, which is convenient for users to debug new equipment. This parameter is automatically cleared after re-powering. **Range:** 0~1	0	STOP

6.5 F01: Basic Settings

F01.0x: Basic Commands

<table>
<tr><th>Code (Add)</th><th>Name</th><th>Content</th><th>Default</th><th>Adjmt</th></tr>
<tr><td>F01.00 (0x0100)</td><td>Motor Control Mode</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the motor control mode.
AM:
0: AM-V/F
1: AM-SVC
2: AM-FVC
PM:
10: PM-V/F
11: PM-SVC
12: PM-FVC
POWER:
20: VF-SPLIT (for T3 7.5kW and T2 5.5kW models)
Range: 0~20</td><td>1</td><td>STOP</td></tr>
<tr><td>F01.01 (0x0101)</td><td>Command Source</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Select the source from which the drive receives start/stop commands and the direction of operation.
0: Keypad (external keypad first)
1: Terminal
2: RS485
3: Extension
Range: 0~3</td><td>1</td><td>RUN</td></tr>
<tr><td>F01.02 (0x0102)</td><td>Frequency Source A</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the frequency source.
<table><tr><td>0: Keypad</td><td>1: Potentiometer (external)</td></tr><tr><td>2: AI1</td><td>3: AI2</td></tr><tr><td>4~5: Reserved</td><td>6: RS485</td></tr><tr><td>7: UP/DW terminal</td><td>8~9: Reserved</td></tr><tr><td>10: Extension</td><td>11: Multi-frequency</td></tr></table>Range: 0~11</td><td>11</td><td>RUN</td></tr>
<tr><td>F01.03 (0x0103)</td><td>Frequency Source A Gain</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the gain of source A.
Range: 0.0%~500.0%</td><td>100.0%</td><td>STOP</td></tr>
</table>

F01.04 (0x0104)	Frequency Source B	**V/F SVC FVC PMVF PMSVC PMFVC** Set the frequency source. The same as [F01.02] **Range:** 0~11	2	RUN
F01.05 (0x0105)	Frequency Source B Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the gain of source B. Range: 0.0%~500.0%	100.0%	STOP
F01.06 (0x0106)	Source B Reference	**V/F SVC FVC PMVF PMSVC PMFVC** Set the reference for source B. 0: Max. output frequency as reference 1: Source A frequency as reference **Range:** 0~1	0	RUN
F01.07 (0x0107)	Frequency Source	**V/F SVC FVC PMVF PMSVC PMFVC** Set the combination method of frequency source A and B of the drive. 0: Source A 1: Source B 2: Source A + Source B 3: Source A -Source B 4: Max(A, B) 5: Min(A, B) **Range:** 0~5	0	RUN
F01.08 (0x0108)	Frequency/ Command Source Binding	**V/F SVC FVC PMVF PMSVC PMFVC** Set to bind each command source to frequency sources. Ones-bit: Keypad command Tens-bit: Terminal command Hundreds-bit: Communication command Thousands-bit: Extension command 0: OFF 1: Frequency from keypad 2: Frequency from Potentiometer(external first) 3: Frequency from AI1 4: Frequency from AI2 5~6: Reserved 7: Frequency from communication 8: Frequency from UP/DW terminal 9~A: Reserved B: Frequency from Extension C: Frequency from Multi-frequency setting Range: 0x0000~0xDDDD	0x0000	RUN
F01.09 (0x0109)	Keypad Set Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set and modify the frequency via the keypad. Range: 0.00Hz~Upper limit frequency	15.00Hz	RUN

F01.1x: Frequency Commands

Code (Add)	Name	Content	Default	Adjmt
F01.10 (0x010A)	Max. Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the maximum frequency for the drive. Range: Upper limit frequency~500.00Hz	100.00Hz	STOP
F01.11 (0x010B)	Upper Limit Frequency Source	**V/F SVC FVC PMVF PMSVC PMFVC** Set the upper limit frequency source. 0: Keypad; 1: Potentiometer(external) 2: AI1; 3: AI2 4~5: Reserved; 6: RS485 7: Extension; -- **Range:** 0~7	0	RUN
F01.12 (0x010C)	Keypad Set Upper Limit Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** It's the frequency source when F01.11 is set to 0. Range: Lower limit frequency~Max. frequency	100.00Hz	RUN
F01.13 (0x010D)	Lower Limit Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the lower limit to the target frequency. Range: 0.00Hz~Upper limit	0.00Hz	RUN

F01.2x~F01.3x: ACC/DEC Time

Code (Add)	Name	Content	Default	Adjmt
F01.20 (0x0114)	ACC/DEC Time Reference Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the reference frequency to calculate the acceleration and deceleration time. 0: Maximum frequency 1: Fixed frequency 50Hz 2: Set frequency **Range:** 0~2	1	STOP
F01.22 (0x0116)	ACC Time 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to accelerate from 0.00Hz to the reference frequency. Range: 0.01s~650.00s	Up to model	RUN
F01.23 (0x0117)	DEC Time 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to decelerate from the reference frequency to 0.00 Hz. Range: 0.01s~650.00s	Up to model	RUN
F01.24 (0x0118)	ACC Time 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to accelerate from 0.00Hz to the reference frequency. Range: 0.01s~650.00s	Up to model	RUN
F01.25 (0x0119)	DEC Time 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to decelerate from the reference frequency to 0.00 Hz. Range: 0.01s~650.00s	Up to model	RUN

F01.26 (0x011A)	ACC Time 3	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to accelerate from 0.00Hz to the reference frequency. Range: 0.01s~650.00s	Up to model	RUN
F01.27 (0x011B)	DEC Time 3	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to decelerate from the reference frequency to 0.00 Hz. Range: 0.01s~650.00s	Up to model	RUN
F01.28 (0x011C)	ACC Time 4	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to accelerate from 0.00Hz to the reference frequency. Range: 0.01s~650.00s	Up to model	RUN
F01.29 (0x011D)	DEC Time 4	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time required for the output frequency to decelerate from the reference frequency to 0.00Hz. Range: 0.01s~650.00s	Up to model	RUN
F01.30 (0x011E)	S-curve ACC/DEC	**V/F SVC FVC PMVF PMSVC PMFVC** Set the acceleration/deceleration in s-curve. **Ones-bit: General s-curve** 0: OFF 1: ON 2: Soft S-curve **Tens-bit: Elevator-specific S-curve** 0: OFF, up to the ones-bit setting 1: ON, up to F29 parameters, start-up holding phase excluded 2: ON, up to F29 parameters, start-up holding phase included **Range:** 0~22	0x01	STOP
F01.31 (0x011F)	ACC S-curve Start Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the start point for s-curve acceleration. Range: 0.00s~10.00s	2.20s	STOP
F01.32 (0x0120)	ACC S-curve End Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the end point for s-curve acceleration. Range: 0.00s~10.00s	2.20s	STOP
F01.33 (0x0121)	DEC S-curve Start Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the start point for s-curve deceleration. Range: 0.00s~10.00s	1.00s	STOP
F01.34 (0x0122)	DEC S-curve End Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the end point for s-curve deceleration. Range: 0.00s~10.00s	0.20s	STOP
F01.35 (0x0123)	ACC/DEC Switching Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the switching frequency between acceleration AND decelation time Range: 0.00Hz~Max. frequency	0.00Hz	RUN

F01.4x: PWM Control

Code (Add)	Name	Content	Default	Adjmt
F01.40 (0x0128)	Carrier Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the switching frequency of the drive's IGBT. Range: 1.0kHz~16.0kHz	3.0kHz	RUN
F01.41 (0x0129)	PWM Control Mode	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Carrier-temperature correlation** 0: Irrelevant 1: Relevant **Tens-bit: Carrier-output frequency correlation** 0: Irrelevant 1: Relevant Hundreds-bit: Random PWM enable 0: OFF 1: ON in V/F control 2: ON in vector control **Thousands-bit: PWM modulation mode** 0: Three-phase modulation only 1: Auto switching between two-/three-phase modulation Range: 0x0000~0x1211	0x1111	RUN
F01.43 (0x012B)	Deadband Compensation Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the deadband compensation gain. **Range:** 0~512	306	RUN
F01.46 (0x012E)	PWM Random Depth	**V/F SVC FVC PMVF PMSVC PMFVC** The larger the setting, the greater the carrier fluctuation when random PWM is in effect. **Range:** 0~20	0	RUN

6.6 F02: Motor 1 Parameters

F02.0x: Basic Motor Parameters and Auto-tuning

Code (Add)	Name	Content	Default	Adjmt
F02.00 (0x0200)	Motor Type	**V/F SVC FVC PMVF PMSVC PMFVC** Set the motor type. 0: Asynchronous motor (AM) 1: Permanent magnet synchronous motor (PMSM) **Range:** 0~1	0	READ
F02.01 (0x0201)	Pole No.	**V/F SVC FVC PMVF PMSVC PMFVC** Set the motor pole number. **Range:** 2~48	4	STOP
F02.02 (0x0202)	Rated Power	**V/F SVC FVC PMVF PMSVC PMFVC** Set the rated power of the motor. Range: 0.1kW~1000.0kW	Up to model	STOP

F02.03 (0x0203)	Rated Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the rated frequency of the motor. Range: 0.01Hz~Max. frequency	Up to model	STOP
F02.04 (0x0204)	Rated Speed	**V/F SVC FVC PMVF PMSVC PMFVC** Set the rated speed of the motor. Range: 0rpm~65000rpm	Up to model	STOP
F02.05 (0x0205)	Rated Voltage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the rated voltage of the motor. Range: 0V~1500V	Up to model	STOP
F02.06 (0x0206)	Rated Current	**V/F SVC FVC PMVF PMSVC PMFVC** Set the rated current of the motor. Range: 0.1A~3000.0A	Up to model	STOP
F02.07 (0x0207)	Auto-tuning	**V/F SVC FVC PMVF PMSVC PMFVC** After the motor auto-tuning is finished, [F02.07] will be set to "0" automatically. 0: OFF 1: Dynamic auto-tuning 2: Static auto-tuning 3: Stator resistance auto-tuning **Range:** 0~20	0	STOP

Note: When F02.00 [Motor Type] is a synchronous motor, F2.04 [Rated Speed] is calculated from F2.01 [Pole No.] and F2.03 [Rated Frequency], please set the corresponding parameters correctly. The calculation formula is: F2.04[Rated Speed]=60* F2.03[Rated Frequency]/(F2.01[Pole No.]/2).

F02.1x: AM Advanced Parameters

Code (Add)	Name	Content	Default	Adjmt
F02.10 (0x020A)	No-load Current	**V/F SVC FVC PMVF PMSVC PMFVC** Set the AM no-load current. Range: 0.1A~3000.0A	Up to model	STOP
F02.11 (0x020B)	Stator Resistance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the AM stator resistance. Range: 0.1mΩ~60000.0mΩ	Up to model	STOP
F02.12 (0x020C)	Rotor Resistance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the AM rotor resistance. Range: 0.1mΩ~60000.0mΩ	Up to model	STOP
F02.13 (0x020D)	Stator Leakage Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the AM stator leakage inductance. Range: 0.001mH~6553.500mH	Up to model	STOP
F02.14 (0x020E)	Stator Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the AM stator inductance. Range: 0.01mH~65535.00mH	Up to model	STOP
F02.15 (0x020F)	Per-unit Stator Resistance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the per-unit stator resistance. Range: 0.01%~50.00%	Up to model	READ

F02.16 (0x0210)	Per-unit Rotor Resistance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the per-unit rotor resistance. Range: 0.01%~50.00%	Up to model	READ
F02.17 (0x0211)	Per-unit Stator Leakage Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set per-unit stator leakage inductance. Range: 0.01%~50.00%	Up to model	READ
F02.18 (0x0212)	Per-unit Stator Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the per-unit stator inductance. Range: 0.1%~999.0%	Up to model	READ
F02.19 (0x0213)	F02.11~F02.14 Decimals	**V/F SVC FVC PMVF PMSVC PMFVC** Set the decimal places of F02.11 to F02.14. Range: 0x0000~0x2322	0x2322	READ

F02.2x: PM Advanced Parameters

Code (Add)	Name	Content	Default	Adjmt
F02.20 (0x0214)	Stator Resistance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the PM stator resistance. Range: 0.1mΩ~60000.0mΩ	Up to model	STOP
F02.21 (0x0215)	D-axis Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the PM D-axis inductance. Range: 0.001mH~6553.500mH	Up to model	STOP
F02.22 (0x0216)	Q-axis Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the PM Q-axis inductance. Range: 0.001mH~6553.500mH	Up to model	STOP
F02.23 (0x0217)	Back Emf	**V/F SVC FVC PMVF PMSVC PMFVC** Set the PM back emf, only recognized under dynamic auto-tuning. Range: 0V~1500V	Up to model	STOP
F02.24 (0x0218)	Encoder Installation Angle	**V/F SVC FVC PMVF PMSVC PMFVC** Set PM encoder installation angle. Range: 0.0°~360.0°	Up to model	RUN
F02.25 (0x0219)	Per-unit Stator Resistance	**V/F SVC FVC PMVF PMSVC PMFVC** Set per-unit PM stator resistance.	Up to model	READ
F02.26 (0x021A)	Per-unit D-axis Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the per-unit PM d-axis inductance.	Up to model	READ
F02.27 (0x021B)	Per-unit Q-axis Inductance	**V/F SVC FVC PMVF PMSVC PMFVC** Set the per-unit PM d-axis inductance.	Up to model	READ
F02.28 (0x021C)	Pulse Width Factor	**V/F SVC FVC PMVF PMSVC PMFVC** Set the PM pulse width factor. **Range:** 00.00~99.99	Up to model	STOP
F02.29 (0x021D)	F02.20~F02.22 Decimals	**V/F SVC FVC PMVF PMSVC PMFVC** Set the decimal places of F02.20~F02.22. Range: 0x0000~0x2332	0x0332	READ

F02.3x~F02.4x: Encoder

Code (Add)	Name	Content	Default	Adjmt
F02.30 (0x021E)	Encoder Type	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Common ABZ encoder+AC300PG01 to EX-B 1: Resolver+ AC300RT1 to EX-B 2: Common ABZ encoder+AC300PG02 to EX-B 3: Common ABZ encoder+AC300PG02 to EX-B 4: SINCOS encoder(ABR)+CH310-PG01 to EX-B, e.g. ERN 1387 5: SINCOS encoder(AB+endat protocol)+CH310-PG01 to EX-B, e.g. ECN 1313 6: SINCOS encoder(AB+SSI protocol)+CH310-PG01 to EX-B **Range:** 0~6	0	STOP
F02.31 (0x021F)	Direction	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Same direction 1: Opposite direction **Range:** 0~1	0	STOP
F02.32 (0x0220)	ABZ Encoder Revolution Detection	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: ON(positive) 2: ON(negative) **Range:** 0~2	0	STOP
F02.33 (0x0221)	ABZ Encoder PPR	**V/F SVC FVC PMVF PMSVC PMFVC** Set the pulses per revolution of the ABZ encoder. **Range:** 1~10000	1024	STOP
F02.34 (0x0222)	Resolver Pole No.	**V/F SVC FVC PMVF PMSVC PMFVC** Set the pole number of the rotary transformer. **Range:** 2~128	2	STOP
F02.35 (0x0223)	Ratio Numerator	**V/F SVC FVC PMVF PMSVC PMFVC** Set the encoder transmission ratio numerator. **Range:** 1~32767	1	RUN
F02.36 (0x0224)	Ratio Denominator	**V/F SVC FVC PMVF PMSVC PMFVC** Set the encoder transmission ratio denominator. **Range:** 1~32767	1	RUN
F02.37 (0x0225)	Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the filter time when the encoder detects speed. Range: 0.0ms~100.0ms	1.0ms	RUN
F02.38 (0x0226)	Disconnection Detection Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the time for disconnection judgement. Range: 0.100s~60.000s	0.050s	RUN

F02.39 (0x0227)	CH310-PG01 Frequency Division Factor	**V/F SVC FVC PMVF PMSVC PMFVC** For CH310-PG01, the dividing frequency outputs by A/B two orthogonal channels, the dividing frequency base is the number of encoder line number. For example: If the number of lines is 2048, set this parameter to 2, that is, bifurcation, AB output respectively 1024 pulses. **Range:** 1~32767	64	STOP
F02.49 (0x0231)	Debug Register	**V/F SVC FVC PMVF PMSVC PMFVC** Ones-bit: Monitor PG feedback under open loop 0: OFF 1: ON Range: 0x0000~0x1111	0x0001	RUN

F02.5x: Motor Application

Code (Add)	Name	Content	Default (Range)	Adjmt
F02.50 (0x0232)	Stator Resistance Auto-tuning	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: Auto-tuning only without updating; >1: Auto-tuning and updating **Range:** 0~3	0	STOP
F02.51 (0x0233)	Stator Resistance Tuning Factor 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the stator resistance tuning factor 1. **Range:** 0~1000	0	RUN
F02.52 (0x0234)	Stator Resistance Tuning Factor 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the stator resistance tuning factor 2. Range: -20.00%~20.00%	0.00%	RUN
F02.53 (0x0235)	Stator Resistance Tuning Factor 3	**V/F SVC FVC PMVF PMSVC PMFVC** Set the stator resistance tuning factor 3. **Range:** 0~65535	0	RUN

F02.60 (0x023C)	PM Pole Search	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Under FVC** 0: OFF 1: ON 2: ON at the first start-up 3: ON at each start-up **Tens-bit: Under SVC** 0: OFF 1: ON 2: ON during the first start-up **Hundreds-bit: V/F** 0: OFF 1: ON 2: ON during the first start-up **Thousands-bit: Magnetic pole search time** 0: Once 1: 4 times 2: 8 times 3: 12 times **Range:** 0000~3223	1022	STOP
F02.61 (0x023D)	Pole Search Current	**V/F SVC FVC PMVF PMSVC PMFVC** Set the value of pole search current. Range: 0.0%~6553.5%	0.0%	STOP

6.7 F03: Vector Control

F03.0x: ASR(Automatic Speed Regulator)

Code (Add)	Name	Content	Default	Adjmt
F03.00 (0x0300)	Rigidity Level	**V/F SVC FVC PMVF PMSVC PMFVC** Set the rigidity level, the higher the level, the better the speed rigidity. **Range:** 1~128	32	RUN
F03.01 (0x0301)	Rigidity Mode	**V/F SVC FVC PMVF PMSVC PMFVC** Set the speed rigidity mode. Range: 0x0000~0xFFFF	0x0000	RUN
F03.02 (0x0302)	Proportional Gain 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the proportional gain 1 for the velocity loop. **Range:** 0.01~100.00	10.00	RUN
F03.03 (0x0303)	Integral Time 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the integral time 1 for the velocity loop. Range: 0.000s~6.000s	0.100s	RUN
F03.04 (0x0304)	Filter Time 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the filter time 1 for the velocity loop. Range: 0.0ms~100.0ms	0.0ms	RUN
F03.05 (0x0305)	Switching Frequency 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the switching frequency 1 for the velocity loop. Range: 0.00Hz~Max. frequency	15.00Hz	RUN

F03.06 (0x0306)	Proportional Gain 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the proportional gain 2 for the velocity loop. **Range:** 0.01~100.00	10.00	RUN
F03.07 (0x0307)	Integral Time 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the integral time 2 for the velocity loop. Range: 0.000s~6.000s	0.050s	RUN
F03.08 (0x0308)	Filter Time 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the filter time 2 for the velocity loop. Range: 0.0ms~100.0ms	4.0ms	RUN
F03.09 (0x0309)	Switching Frequency 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the switching frequency 2 for the velocity loop. Range: 0.00Hz~Max. frequency	5.00Hz	RUN

F03.1x: ACR(Automatic Current Regulator) and Torque Limit

Code (Add)	Name	Content	Default	Adjmt
F03.10 (0x030A)	D-axis Proportional Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the d-axis proportional gain for the current loop. **Range:** 0.001~4.000	1.000	RUN
F03.11 (0x030B)	D-axis Integral Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the d-axis proportional gain for the current loop. **Range:** 0.001~4.000	1.000	RUN
F03.12 (0x030C)	Q-axis Proportional Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the q-axis proportional gain for the current loop. **Range:** 0.001~4.000	1.000	RUN
F03.13 (0x030D)	Q-axis Integral Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the q-axis proportional gain for the current loop. **Range:** 0.001~4.000	1.000	RUN
F03.15 (0x030F)	Torque Limit under Motoring	**V/F SVC FVC PMVF PMSVC PMFVC** Set the torque limit when motor is running. Range: 0.0%~400.0%	180.0%	RUN
F03.16 (0x0310)	Torque Limit under Generating	**V/F SVC FVC PMVF PMSVC PMFVC** Set the torque limit during power generation. Range: 0.0%~400.0%	180.0%	RUN
F03.17 (0x0311)	Regenerative Torque Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the regenerative torque limit at low speeds. Range: 0.0%~400.0%	0.0%	RUN
F03.18 (0x0312)	Frequency Range for Torque Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the frequency range limited by torque at low speeds. Range: 0.00Hz~30.00Hz	6.00Hz	RUN

<table>
<tr>
<td>F03.19
(0x0313)</td>
<td>Torque Limit Source</td>
<td>
V/F SVC FVC PMVF PMSVC PMFVC
Ones-bit: Torque limit source under motoring
<table>
<tr><td>0: Keypad</td><td>1: Reserved</td></tr>
<tr><td>2: AI1</td><td>3: AI2</td></tr>
<tr><td>4~5: Reserved</td><td>6: RS485(0x3014)</td></tr>
<tr><td>7: Extension</td><td>-</td></tr>
</table>
Tens-bit: Torque limit under generating
<table>
<tr><td>0: Keypad</td><td>1: Reserved</td></tr>
<tr><td>2: AI1</td><td>3: AI2</td></tr>
<tr><td>4~5: Reserved</td><td>6: RS485(0x3015)</td></tr>
<tr><td>7: Extension</td><td>--</td></tr>
</table>
Hundreds-bit: C00.06 display selection
<table>
<tr><td>0: Torque limit value under motoring</td><td>1: Torque limit value under generating</td></tr>
</table>
Thousands-bit: Reserved
Range: 0x0000~0x0177
</td>
<td>0x0000</td>
<td>RUN</td>
</tr>
</table>

F03.2x: Torque Optimization Control

Code (Add)	Name	Content	Default	Adjmt
F03.20 (0x0314)	PM LF Drag Current	**V/F SVC FVC PMVF PMSVC PMFVC** When PMSVC is on, the larger the drag current, the larger the torque output. Range: 0.0%~50.0%	20.0%	RUN
F03.21 (0x0315)	PM HF Drag Current	**V/F SVC FVC PMVF PMSVC PMFVC** When PMSVC is on, the larger the drag current, the larger the torque output. Range: 0.0%~50.0%	10.0%	RUN
F03.22 (0x0316)	PM Drag Current Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** The set value 100.0% corresponds to F01.10 [Maximum Frequency]. Range: 0.0%~100.0%	10.0%	RUN
F03.23 (0x0317)	Slip Compensation	**V/F SVC FVC PMVF PMSVC PMFVC** Set the motor slip compensation. Range: 0.0%~250.0%	100.0%	RUN
F03.24 (0x0318)	Initial Starting Torque	**V/F SVC FVC PMVF PMSVC PMFVC** Set the initial starting torque. Range: 0.0%~250.0%	0.0%	RUN

F03.3x Flux Optimization

Code (Add)	Name	Content	Default	Adjmt
F03.30 (0x031E)	Field-weakening Feed-forward Coefficient	**V/F SVC FVC PMVF PMSVC PMFVC** Set the field-weakening feedforward coefficient. Range: 0.0%~500.0%	10.0%	RUN

F03.31 (0x031F)	Field-weakening Control Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the field-weakening control gain. Range: 0.0%~500.0%	10.0%	RUN
F03.32 (0x0320)	Field-Weakening Current Upper Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the field-weakening current upper limit. Range: 0.0%~250.0%	60.0%	RUN
F03.33 (0x0321)	Field-weakening Voltage Coefficient	**V/F SVC FVC PMVF PMSVC PMFVC** Set the field-weakening voltage coefficient. Range: 0.0%~120.0%	97.0%	RUN
F03.34 (0x0322)	Axis Output Power Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the axis output power limit. Range: 0.0%~400.0%	250.0%	RUN
F03.35 (0x0323)	Over-excitation Brake Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the over-excitation brake gain. Range: 0.0%~500.0%	100.0%	RUN
F03.36 (0x0324)	Over-excitation Brake Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the over-excitation brake range. Range: 0.0%~250.0%	100.0%	RUN
F03.37 (0x0325)	ECO Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: ON **Range:** 0~1	0	RUN
F03.38 (0x0326)	ECO Mode Excitation Lower Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the lower limit of excitation for energy-saving running. Range: 0.0%~80.0%	50.0%	RUN
F03.39 (0x0327)	ECO Mode Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the filter time for energy-saving running. Range: 0.000s~6.000s	0.010s	RUN

F03.4x~F03.5x: Torque Control

Code (Add)	Name	Content	Default	Adjmt
F03.40 (0x0328)	Control Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Torque limited by speed control 1: Speed limited by torque control **Range:** 0~1	0	RUN

<table>
<tr><td>F03.41
(0x0329)</td><td>Torque Command Source</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Ones-bit: Source A
Tens-bit: Source B<table><tr><td>0: Keypad</td><td>1: Reserved</td></tr><tr><td>2: AI1</td><td>3: AI2</td></tr><tr><td>4: Reserved</td><td>5: Reserved</td></tr><tr><td>6: RS485</td><td>7: Extension</td></tr><tr><td>8: Reserved</td><td>9: Reserved</td></tr></table>Hundreds-bit: A/B combination<table><tr><td>0: Source A</td><td>1: Source B</td></tr><tr><td>2: Source A + Source B</td><td>3: Source A -Source B</td></tr><tr><td>4: MIN(A, B)</td><td>5: MAX(A, B)</td></tr></table>Range: 0x0000~0x0599</td><td>0x0000</td><td>RUN</td></tr>
<tr><td>F03.42
(0x032A)</td><td>Keypad Set Torque</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the torque command source to the keypad.
Range: 0.0%~100.0%</td><td>0.0%</td><td>RUN</td></tr>
<tr><td>F03.43
(0x032B)</td><td>Torque Input Lower Limit</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the torque input lower limit.
Range: 0.00%~100.00%</td><td>0.00%</td><td>RUN</td></tr>
<tr><td>F03.44
(0x032C)</td><td>Torque Input Lower Limit Percentage</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the lower limit percentage.
Range: -250.00%~300.00%</td><td>0.00%</td><td>RUN</td></tr>
<tr><td>F03.45
(0x032D)</td><td>Torque Input Upper Limit</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the torque input upper limit.
Range: 0.00%~100.00%</td><td>100.00%</td><td>RUN</td></tr>
<tr><td>F03.46
(0x032E)</td><td>Torque Input Upper Limit Percentage</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the upper limit percentage.
Range: -250.00%~300.00%</td><td>100.00%</td><td>RUN</td></tr>
<tr><td>F03.47
(0x032F)</td><td>Torque Filter Time</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the frequency range limited by torque at low speeds.
Range: 0.000s~6.000s</td><td>0.100s</td><td>RUN</td></tr>
<tr><td>F03.52
(0x0334)</td><td>Torque Output Upper Limit</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the upper limit for torque command.
Range: 0.0%~300.0%</td><td>150.0%</td><td>RUN</td></tr>
<tr><td>F03.53
(0x0335)</td><td>Torque Output Lower Limit</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set lower limit for torque command.
Range: 0.0%~300.0%</td><td>0.0%</td><td>RUN</td></tr>
<tr><td>F03.54
(0x0336)</td><td>FWD Speed Limit</td><td>V/F SVC FVC PMVF PMSVC PMFVC<table><tr><td>0: F03.56</td><td>1: Reserved</td></tr><tr><td>2: AI1×F03.56</td><td>3: AI2×F03.56</td></tr><tr><td>4~5: Reserved</td><td>6: RS485×F03.56</td></tr><tr><td>7: Extension×F03.56</td><td>8: Reserved</td></tr></table>Range: 0~8</td><td>0</td><td>RUN</td></tr>
</table>

F03.55 (0x0337)	REV Speed Limit	**V/F SVC FVC PMVF PMSVC PMFVC** 0: F03.57 / 1: Reserved 2: AI1×F03.57 / 3: AI2×F03.57 4~5: Reserved / 6: RS485×F03.57 7: Extension×F03.57 / 8: Reserved **Range:** 0~8	0	RUN
F03.56 (0x0338)	Max. FWD Speed Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the max. forward speed limit in torque mode. Range: 0.0%~100.0%	100.0%	RUN
F03.57 (0x0339)	Max. REV Speed Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the max. reverse speed limit in torque mode. Range: 0.0%~100.0%	100.0%	RUN
F03.58 (0x033A)	Torque Gain Switching Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the torque gain switching frequency. Range: 0.00Hz~50.00Hz	1.00Hz	RUN
F03.59 (0x033B)	Torque Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the torque gain. Range: 0.0%~500.0%	100.0%	RUN

F03.6x: PM HF Injection

Code (Add)	Name	Content	Default	Adjmt
F03.60 (0x033C)	HF Injection	**V/F SVC FVC PMVF PMSVC PMFVC** It is valid under PMSVC, so please select 0 with asychrnous motors and 0~5 with sychrnous motors 0: OFF 1~5: ON, the greater the value, the higher the injection frequency. **Range:** 0~5	0	STOP
F03.61 (0x033D)	HF Injection Voltage	**V/F SVC FVC PMVF PMSVC PMFVC** It indicates the injection voltage range relative to rated voltage. It is the result of auto-tuning, so there's no need to modify it. Range: 0.0%~100.0%	10.0%	RUN
F03.62 (0x033E)	HF Injection Cut-off Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** It indicates the high-frequency injection range (relative to motor rated frequency), valid when the motor speed is less than this value. Range: 0.0%~20.0%	10.0%	RUN

F03.7x: Position Compensation

Code (Add)	Name	Content	Default	Adjmt
F03.70 (0x0346)	Position Compensation	**V/F SVC FVC PMVF PMSVC PMFVC** Set the position compensation under speed control to enable zero servo or enhanced system rigidity. **Range:** 0.0~100.0	50.0	RUN
F03.71 (0x0347)	Compensation Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the compensation gain. **Range:** 0.00~250.00	0.00	RUN
F03.72 (0x0348)	Compensation Range	**V/F SVC FVC PMVF PMSVC PMFVC** Set the compensation range. Range: 0.0%~100.0%	0.0%	RUN
F03.73 (0x0349)	Compensation Scope	**V/F SVC FVC PMVF PMSVC PMFVC** Set the position compensation working scope. Range: 0.0%~100.0%	10.0%	RUN

F03.8x: Extensions

Code (Add)	Name	Content	Default	Adjmt
F03.80 (0x0350)	PM MYPA Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the MTPA gain of synchronous motors. Range: 0.0%~400.0%	100.0%	RUN
F03.81 (0x0351)	PM MYPA Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the MTPA filter time of synchronous motors. Range: 0.0ms~100.0ms	1.0ms	RUN

6.8 F04: V/F Control

F04.0x: V/F Control

Code (Add)	Name	Content	Default	Adjmt
F04.00 (0x0400)	V/F Curve	**V/F SVC FVC PMVF PMSVC PMFVC** Set the type of V/F curve according to different load characteristics. 0: Linear V/F curve 1~9: 1.1~1.9 power V/F curves respectively 10: Square V/F curve 11: Customized V/F curve **Range:** 0~11	0	STOP
F04.01 (0x0401)	Torque Boost	**V/F SVC FVC PMVF PMSVC PMFVC** 0.0%: Automatic torque boost 0.1%~30.0%: Manual torque boost Range: 0.0%~30.0%	Up to model	RUN

F04.02 (0x0402)	Torque Boost Cutoff Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the range of the torque boost function. It is invalid when the output frequency exceeds this value. Range: 0.0%~100.0%	100.0%	RUN
F04.03 (0x0403)	Slip Compensation Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the slip compensation gain. Range: 0.0%~200.0%	0.0%	RUN
F04.04 (0x0404)	Slip Compensation Range	**V/F SVC FVC PMVF PMSVC PMFVC** Set the slip compensation range. Range: 0.0%~300.0%	100.0%	RUN
F04.05 (0x0405)	Slip Compensation Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Enter the parameters on the motor's nameplate correctly to implement parameter tuning for best performance. Range: 0.000s~6.000s	0.100s	RUN
F04.06 (0x0406)	Anti-oscillation Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Adjust this value to suppress low frequency resonance. But an excessive value will cause instability. Range: 0.0%~900.0%	100.0%	RUN
F04.07 (0x0407)	Anti-oscillation Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the filter time for oscillation suppression. Range: 0.0s~100.0s	1.0s	RUN
F04.08 (0x0408)	Output Voltage Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output voltage percentage. 100% of it corresponds to the motor rated voltage. Range: 25.0%~120.0%	100.0%	STOP

F04.1x: Customized V/F Curve

Code (Add)	Name	Content	Default	Adjmt
F04.10 (0x040A)	V1(Customized Voltage)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the V1(customized voltage). Range: 0.0%~100.0%	3.0%	STOP
F04.11 (0x040B)	F1(Customized frequency)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the F1(customized frequency). Range: 0.00Hz~Max. frequency	1.00Hz	STOP
F04.12 (0x040C)	V2(Customized Voltage)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the V2(customized voltage). Range: 0.0%~100.0%	28.0%	STOP
F04.13 (0x040D)	F2(Customized Frequency)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the F2(customized frequency). Range: 0.00Hz~Max. frequency	10.00Hz	STOP
F04.14 (0x040E)	V3(Customized Voltage)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the V3(customized voltage). Range: 0.0%~100.0%	55.0%	STOP

F04.15 (0x040F)	F3(Customized Frequency)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the F3(customized frequency). Range: 0.00Hz~Max. frequency	25.00Hz	STOP
F04.16 (0x0410)	V4(Customized Voltage)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the V4(customized voltage). Range: 0.0%~100.0%	78.0%	STOP
F04.17 (0x0411)	F4(Customized Frequency)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the F4(customized frequency). Range: 0.00Hz~Max. frequency	37.50Hz	STOP
F04.18 (0x0412)	V5(Customized Voltage).	**V/F SVC FVC PMVF PMSVC PMFVC** Set the V5(customized voltage). Range: 0.0%~100.0%	100.0%	STOP
F04.19 (0x0413)	F5(Customized Frequency)	**V/F SVC FVC PMVF PMSVC PMFVC** Set F5(customized frequency). Range: 0.00Hz~Max. frequency	50.00Hz	STOP

6.9 F05: Input Terminal

F05.0x: DI Terminal Function

Code (Add)	Name	Content	Default	Adjmt
F05.00 (0x0500)	X1 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	1	STOP
F05.01 (0x0501)	X2 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	2	STOP
F05.02 (0x0502)	X3 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	16	STOP
F05.03 (0x0503)	X4 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	17	STOP
F05.04 (0x0504)	X5 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	18	STOP
F05.05 (0x0505)	X6 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	8	STOP
F05.06 (0x0506)	X7 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	7	STOP
F05.07 (0x0507)	X8 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	0	STOP

F05.08 (0x0508)	X9 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	0	STOP
F05.09 (0x0509)	X10 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the input terminal x function table below. **Range:** 0~95	0	STOP

X	Description	X	Description	X	Description
0	OFF	18	Multi-frequency 3	52	Operation disable
1	FWD	19	Multi-frequency 4	53	FWD disable
2	REV	20~31	Reserved	54	REV disable
3	Three-wire operation (Xi)	32	ACC/DEC time 1	55	Fault reset and jogging frequency
4	FWD jogging	33	ACC/DEC time 2	60	Speed/torque control switching
5	REV jogging	34	ACC/DEC pause	61	Reserved
6	Coasting stop	35	Wobble frequency operation	62	Jogging frequency as torque mode upper limit
7	Emergency stop	36	Wobble frequency pause	63~81	Reserved
8	Fault reset	37	Wobble frequency reset	82	Braking torque
9	External fault	38~43	Reserved	83	Evacuation mode
10	Frequency up(UP)	44	DC brake command	84~92	Reserved
11	Frequency down(DW)	45	Pre-excitation	93	Output contactor state feedback
12	Frequency reset(UP/DW reset)	46	Reserved	-	
13	Source A to source B	47	S-curve switching	-	-
14	Combined frequency source to source A	48	Command source to keypad	-	-
15	Combined frequency source to source B	49	Command source to terminal	-	-
16	Multi-frequency 1	50	Command source to communication	-	-
17	Multi-frequency 2	51	Command source to extension	-	-

F05.1x: X1~X5 Detection Delay

Code (Add)	Name	Content	Default	Adjmt
F05.10 (0x050A)	X1 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X1 from OFF to ON. Range: 0.000s~6.000s	0.010s	RUN

F05.11 (0x050B)	X1 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X1 from ON to OFF. Range: 0.000s~6.000s	0.010s	RUN
F05.12 (0x050C)	X2 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X2 from OFF to ON. Range: 0.000s~6.000s	0.010s	RUN
F05.13 (0x050D)	X2 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X2 from ON to OFF. Range: 0.000s~6.000s	0.010s	RUN
F05.14 (0x050E)	X3 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Output delay time for terminal X3 from OFF to ON. Range: 0.000s~6.000s	0.010s	RUN
F05.15 (0x050F)	X3 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X3 from ON to OFF. Range: 0.000s~6.000s	0.010s	RUN
F05.16 (0x0510)	X4 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Output delay time for terminal X4 from OFF to ON. Range: 0.000s~6.000s	0.010s	RUN
F05.17 (0x0511)	X4 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X4 from ON to OFF. Range: 0.000s~6.000s	0.010s	RUN
F05.18 (0x0512)	X5 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X5 from OFF to ON. Range: 0.000s~6.000s	0.010s	RUN
F05.19 (0x0513)	X5 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output delay time for terminal X5 from ON to OFF. Range: 0.000s~6.000s	0.010s	RUN

F05.2x: DI Terminal Operation

Code (Add)	Name	Content	Default	Adjmt
F05.20 (0x0514)	Terminal Operation Pattern	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Two-wire 1 1: Two-wire 2 2: Three-wire 1 3: Three-wire 2 **Range:** 0~3	0	STOP
F05.21 (0x0515)	Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Filter time** 0: F05.28 setting 1: X6~X10 up to F05.28 (X1~X5 are still determined by F05.10~F05.19) **Tens-bit: Emergency stop/Free stop filter time** 0: F05.29 setting 1: Irrelevant to F05.29 setting	0x0000	STOP

F05.22 (0x0516)	X1~X4 Characteristics	**V/F SVC FVC PMVF PMSVC PMFVC** **0: ON when closed** **1: ON when open** Ones-bit: X1 Tens-bit: X2 Hundreds-bit: X3 Thousands-bit: X4 Range: 0x0000~0x1111	0x0000	RUN
F05.23 (0x0517)	X5~X8 Characteristics	**V/F SVC FVC PMVF PMSVC PMFVC** **0: ON when closed** **1: ON when open** Ones-bit: X5 Tens-bit: X6 Hundreds-bit: X7 Thousands-bit: X8 Range: 0x0000~0x1111	0x0000	RUN
F05.24 (0x0518)	X9~X10 Characteristics	**V/F SVC FVC PMVF PMSVC PMFVC** **0: ON when closed** **1: ON when open** Ones-bit: X9 Tens-bit: X10 Hundreds-bit and thousands-bit: Reserved Range: 0x0000~0x0011	0x0000	RUN
F05.25 (0x0519)	UP/DW Terminal	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Power-down save on 1: Power-down save off 2: Modifiable during operation, reset after stop **Range:** 0~2	0	STOP
F05.26 (0x051A)	UP/DW ACC/DEC Rate	**V/F SVC FVC PMVF PMSVC PMFVC** Set the terminal UP/DW controlled frequency increase/decrease rate. Range: 0.01Hz/s~50.00Hz/s	0.50Hz/s	RUN
F05.27 (0x051B)	Emergency Stop DEC Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the deceleration time for emergency stop on X terminal. Range: 0.01s~650.00s	1.00s	RUN
F05.28 (0x051C)	Terminal Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time for X1-X10 terminals. (emergency stop/coasting stop excl.) Range: 0.000s~6.000s	0.010	STOP
F05.29 (0x051D)	Emergency Stop/Coasting Stop Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time of emergency stop/coasting stop command from X terminal. Range: 0.000s~6.000s	0.010	STOP

F05.4x: AI Type

Code (Add)	Name	Content	Default	Adjmt
F05.41 (0x0529)	AI1 Signal Type	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Voltage 0.00V~10.00V 1: Current 0.00mA~20.00mA **Range:** 0~1	0	RUN
F05.42 (0x052A)	AI2 Signal Type	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Voltage 0.00V~10.00V 1: Current 0.00mA~20.00mA **Range:** 0~1	0	RUN
F05.43 (0x052B)	AI Curve	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Straight line(default) 1: Curve 1 2: Curve 2 **Ones-bit: AI1** **Tens-bit: AI2** **Hundreds-bit and thousands-bit: Reserved** Range: 0x0000~0x0022	0x0000	RUN

F05.5x: AI Characteristics

Code (Add)	Name	Content	Default	Adjmt
F05.50 (0x0532)	AI1 Lower Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the signal received by the terminal. The drive will process as the lower limit if the voltage signal is below this value. Range: 0.0%~100.0%	0.0%	RUN
F05.51 (0x0533)	AI1 Lower Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the parameter above. Range: -100.00%~100.00%	0.00%	RUN
F05.52 (0x0534)	AI1 Upper Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the signal received by the terminal. The voltage signal higher than this value is processed as the upper limit. Range: 0.0%~100.0%	100.0%	RUN
F05.53 (0x0535)	AI1 Upper Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the parameter above. Range: -100.00%~100.00%	100.00%	RUN
F05.54 (0x0536)	AI1 Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the size of the filter applied to the analog signal to remove interfering signals. Range: 0.000s~6.000s	0.100s	RUN

F05.55 (0x0537)	AI2 Lower Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the signal received by the terminal. The drive will process as the lower limit if the voltage signal is below this value. Range: 0.0%~100.0%	0.0%	RUN
F05.56 (0x0538)	AI2 Lower Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the parameter above. Range: -100.00%~100.00%	0.00%	RUN
F05.57 (0x0539)	AI2 Upper Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the signal received by the terminal. The drive will process as the upper limit if the voltage signal is below this value. Range: 0.0%~100.0%	100.0%	RUN
F05.58 (0x053A)	AI2 Upper Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the parameter above. Range: -100.00%~100.00%	100.00%	RUN
F05.59 (0x053B)	AI2 Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the size of the filter applied to the analog signal to remove interfering signals. Range: 0.000s~6.000s	0.100s	RUN

F05.6x: AI Curve 1

Code (Add)	Name	Content	Default	Adjmt
F05.60 (0x053C)	Lower Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the lower limit for Curve 1. Range: 0.0%~100.0%	0.0%	RUN
F05.61 (0x053D)	Lower Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the set value. Range: 0.00%~100.00%	0.00%	RUN
F05.62 (0x053E)	Inflection Point 1 Input Voltage	**V/F SVC FVC PMVF PMSVC PMFVC** Set Curve 1 inflection point1 input voltage. Range: 0.0%~100.0%	30.0%	RUN
F05.63 (0x053F)	Inflection Point 1 Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the setting above. Range: 0.00%~100.00%	30.00%	RUN
F05.64 (0x0540)	Inflection Point 2 Input Voltage	**V/F SVC FVC PMVF PMSVC PMFVC** Set Curve 1 inflection point 2 input voltage. Range: 0.0%~100.0%	60.0%	RUN
F05.65 (0x0541)	Inflection Point 2 Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the setting above. Range: 0.00%~100.00%	60.00%	RUN
F05.66 (0x0542)	Upper Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the upper limit for Curve 1. Range: 0.0%~100.0%	100.0%	RUN
F05.67 (0x0543)	Upper Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the setting above. Range: 0.00%~100.00%	100.00%	RUN

F05.7x: AI Curve 2

Code (Add)	Name	Content	Default	Adjmt
F05.70 (0x0546)	Lower Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the lower limit for Curve 2. Range: 0.0%~100.0%	0.0%	RUN
F05.71 (0x0547)	Lower Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the setting above. Range: 0.00%~100.00%	0.00%	RUN
F05.72 (0x0548)	Inflection Point 1 Input Voltage	**V/F SVC FVC PMVF PMSVC PMFVC** Set Curve 2 inflection point 1 input voltage. Range: 0.0%~100.0%	30.0%	RUN
F05.73 (0x0549)	Inflection Point 1 Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the setting above. Range: 0.00%~100.00%	30.00%	RUN
F05.74 (0x054A)	Inflection Point 2 Input Voltage	**V/F SVC FVC PMVF PMSVC PMFVC** Set Curve 2 inflection point 2 input voltage. Range: 0.0%~100.0%	60.0%	RUN
F05.75 (0x054B)	Inflection Point 2 Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the setting above. Range: 0.00%~100.00%	60.00%	RUN
F05.76 (0x054C)	Upper Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the upper limit for Curve 2. Range: 0.0%~100.0%	100.0%	RUN
F05.77 (0x054D)	Upper Limit Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the percentage of the setting above. Range: 0.00%~100.00%	100.00%	RUN

F05.8x: AI as DI Terminal

Code (Add)	Name	Content	Default	Adjmt
F05.80 (0x0550)	AI as DI Characteristic	**V/F SVC FVC PMVF PMSVC PMFVC** 0: ON at low level 1: ON at high level Ones-bit: AI1 Tens-bit: AI2 Hundreds-bit and thousands-bit: Reserved Range: 0x0000~0x0011	0x0000	RUN
F05.81 (0x0551)	AI1 Funtion (as DI Terminal)	**V/F SVC FVC PMVF PMSVC PMFVC** See the X terminal functions for AI1. **Range:** 0~95	0	STOP
F05.82 (0x0552)	AI1 High Level	**V/F SVC FVC PMVF PMSVC PMFVC** Any value beyond this setting is considered as high level. Range: 0.00%~100.00%	70.00%	RUN

F05.83 (0x0553)	AI1 Low Level	**V/F SVC FVC PMVF PMSVC PMFVC** Any value below this setting is considered as low level. Range: 0.00%~100.00%	30.00%	RUN
F05.84 (0x0554)	AI2 Funtion (as DI Terminal)	**V/F SVC FVC PMVF PMSVC PMFVC** See the X terminal functions for AI2. **Range:** 0~95	0	STOP
F05.85 (0x0555)	AI2 High Level	**V/F SVC FVC PMVF PMSVC PMFVC** Any value beyond this setting is considered as high level. Range: 0.00%~100.00%	70.00%	RUN
F05.86 (0x0556)	AI2 Low Level	**V/F SVC FVC PMVF PMSVC PMFVC** Any value below this setting is considered as low level. Range: 0.00%~100.00%	30.00%	RUN

6.10 F06: Output Terminal

F06.0x: AO(Analog Output)

Code (Add)	Name	Content	Default	Adjmt
F06.00 (0x0600)	AO Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: 0V~10V / 1: 4.00mA~20.00mA 2: 0.00mA~20.00mA / 3: FM high-speed pulse 4: Fixed frequency ratio / - **Range:** 0~4	0	RUN
F06.01 (0x0601)	AO Content	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Target frequency / 1: Output frequency 2: Output current / 3: Input voltage 4: Output voltage / 5: Mechanical speed 6: Target torque / 7: Output torque 8~9: Reserved / 10: Output power 11: Bus voltage / 12: AI1 setting 13: AI2 setting / 14~15: Reserved 16: Module temp.1 / 17: Module temp. 2 18: RS485 setting / - **Range:** 0~18	0	RUN
F06.02(0x0602)	AO Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Adjust the value of the terminal analog output. Range: 0.0%~300.0%	100.0%	RUN
F06.03 (0x0603)	AO Bias	**V/F SVC FVC PMVF PMSVC PMFVC** Set AO bias. Used to adjust the zero point of the terminal output. Range: -10.0%~10.0%	0.0%	RUN
F06.04(0x0604)	AO Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the size of the filter applied to the analog signal to remove interfering signals. Range: 0.000s~6.000s	0.010s	RUN

F06.05(0x0605)	AO as FM Lower Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the output signal lower limit. Range: 0.00kHz~100.00kHz	0.20kHz	RUN
F06.06(0x0606)	AO as FM Upper Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set AO as the upper limit of the FM frequency. Range: 0.00kHz~100.00kHz	50.00kHz	RUN

F06.1x: AO Extension

Code (Add)	Name	Content	Default	Adjmt
F06.10 (0x060A)	AO Extension Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: 0V~10V 1: 4.00mA~20.00mA 2: 0.00mA~20.00mA **Range:** 0~2	0	RUN
F06.11 (0x060B)	AO Extension Content	**V/F SVC FVC PMVF PMSVC PMFVC** Set the extension AO output items, same as F06.01. **Range:** 0~18	1	RUN
F06.12 (0x060C)	AO Extension Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the value of the analog output. Range: 25.0%~300.0%	100.0%	RUN
F06.13 (0x060D)	AO Extension Bias	**V/F SVC FVC PMVF PMSVC PMFVC** Set the zero point of the terminal output. Range: -10.0%~10.0%	0.0%	RUN
F06.14 (0x060E)	AO Extension Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the size of the filter applied to the analog signal to remove interfering signals. Range: 0.000s~6.000s	0.010s	RUN

F06.2x~F06.3x: Digital and Relay Output

Code (Add)	Name	Content	Default	Adjmt
F06.20 (0x0614)	Terminal Polarity	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Positive 1: Negative Ones-bit: Y terminal / Tens-bit: Relay 1 Tens-bit: CH310-IO1 Relay 2 / Thousands-bit: CH310-IO1 Relay 3 Range: 0x0000~0x1111	0x0000	RUN
F06.21 (0x0615)	Y Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the output terminal Y functions. **Range:** 0~63	40	RUN
F06.22 (0x0616)	Relay 1 Function(TA-TB-TC)	**V/F SVC FVC PMVF PMSVC PMFVC** See the output terminal Y functions. **Range:** 0~63	40	RUN

F06.23 (0x0617)	CH310-IO1 Relay 2 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See the output terminal Y functions. **Range:** 0~63	42	RUN
F06.24 (0x0618)	CH310-IO1 Relay 3 Function	**V/F SVC FVC PMVF PMSVC PMFVC** See output terminal Y functions. **Range:** 0~63	4	RUN
F06.25 (0x0619)	Y ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time for Y terminal from OFF to ON. Range: 0.000s~60.000s	0.010s	RUN
F06.26 (0x061A)	Relay 1 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time for relay 1 from OFF to ON. Range: 0.000s~60.000s	0.010s	RUN
F06.27 (0x061B)	CH310-IO1 Relay 2 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time when CH310-IO1 relay 2 from OFF to ON. Range: 0.000s~60.000s	0.010s	RUN
F06.28 (0x061C)	CH310-IO1 Relay 3 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time when CH310-IO1 relay 3 from OFF to ON. Range: 0.000s~60.000s	0.010s	RUN
F06.29 (0x061D)	Y OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time for Y terminal from ON to OFF. Range: 0.000s~60.000s	0.010s	RUN
F06.30 (0x061E)	Relay 1 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time for relay 1 from ON to OFF. Range: 0.000s~60.000s	0.010s	RUN
F06.31 (0x061F)	CH310-IO1 Relay 2 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time when CH310-IO1 relay 2 from OFF to OFF. Range: 0.000s~60.000s	0.010s	RUN
F06.32 (0x0620)	CH310-IO1 Relay 3 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time when CH310-IO1 relay 3 from OFF to OFF. Range: 0.000s~60.000s	0.010s	RUN
F06.33 (0x0621)	Terminal Polarity 2	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Positive 1: Negative Ones-bit: Extension relay 4 / Tens-bit: Reserved Hundreds-bit: Reserved / Thousands-bit: Reserved Range: 0x0000~0x1111	-	-
F06.34 (0x0622)	CH310-IO Relay 4(TA4-TC4)	**V/F SVC FVC PMVF PMSVC PMFVC** See the output terminal Y functions. **Range:** 0~63	-	-
F06.35 (0x0623)	CH310-IO Relay 4 ON Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time when CH310-IO relay 4 from OFF to ON. Range: 0.000s~60.000s	-	-

F06.36 (0x0624)	CH310-IO Relay 4 OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the delay time when CH310-IO relay 4 from ON to OFF. Range: 0.000s~60.000s	-	-

Output Terminal Y Function Table

Y	Description	Y	Description	Y	Description
0	OFF	11	Target frequency arrival	28	Underload alarm 2
1	Drive in operation	12	Zero-speed operation	29	Reserved
2	Drive in REV operation	13	Upper limit frequency arrival	30	RS485 control
3	Drive in FWD operation	14	Lower limit frequency arrival	31	Drive overheat alarm
4	Fault trip alarm 1(alarm during fault reset)	15	Program cycle completion	39	Output contactor c
5	Fault trip alarm 2(no alarm during fault self-recovery)	16	Program phase completion	40	Brake control
6	Stop due to external faults	17~23	Reserved	41	Input phase loss alarm
7	AC drive undervoltage	24	Under dynamic brake	42	Brake failure
8	AC drive ready for operation	25	Reserved	43	Insufficient brake torque
9	Output frequency detection 1(FDT1)	26	Under emergency stop	44~47	Industrial extension
10	Output frequency detection 2(FDT2)	27	Overload alarm 1	48~63	Extension board

F06.4x: Frequency Detection

Code (Add)	Name	Content	Default	Adjmt
F06.40 (0x0628)	Frequency Detection Threshold 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the frequency detection threshold 1. Range: 0.00Hz~Max. frequency	2.00Hz	RUN
F06.41 (0x0629)	Frequency Detection Hysteresis 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the frequency detection hysteresis 1. Range: 0.00Hz~Max. frequency	1.00Hz	RUN
F06.42 (0x062A)	Frequency Detection Threshold 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the frequency detection threshold 2. Range: 0.00Hz~Max. frequency	2.00Hz	RUN
F06.43 (0x062B)	Frequency Detection Hysteresis 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the frequency detection hysteresis 2. Range: 0.00Hz~Max. frequency	1.00Hz	RUN
F06.44 (0x062C)	Frequency Arrival Hysteresis	**V/F SVC FVC PMVF PMSVC PMFVC** Set the detection range of the target frequency. Range: 0.00Hz~Max. frequency	2.00Hz	RUN

6.11 F07: Operation Control

F07.0x: Start Control

Code (Add)	Name	Content	Default	Adjmt
F07.00 (0x0700)	Start Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Start at starting frequency 1: Start from DC braking and then at starting frequency 2: Start from fly track and direction identification **Range:** 0~2	0	STOP
F07.01 (0x0701)	Pre-excitation Time	**V/F SVC FVC PMVF PMSVC PMFVC** Only the asynchronous motor in vector control supports pre-excitation, which is not supported in other cases. When it is set to 0, pre-excitation time is decided as motor parameter. When it is not set to 0, pre-excitation time is decided by this setting. Range: 0.00s~60.00s	0.00s	STOP
F07.02 (0x0702)	Starting Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** The drive will stay in standby status instead of starting when the target frequency is lower than this value. Range: 0.00Hz~Keypad set upper limit frequency	0.00Hz	STOP
F07.03 (0x0703)	Starting Protection	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: ON **Ones-bit: Terminal protection under abnormal exit** **Tens-bit: Jogging terminal protection under abnormal exit** **Hundreds-bit: Terminal protection under terminal control** **Thousands-bit: Reserved** **Note:** The terminal starting protection is enabled by default when the coasting stop, emergency stop or forced stop command are valid. Range: 0x0000~0x0111	0x1111	STOP
F07.05 (0x0705)	Motor Direction	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Operation direction** 0: Keep the direction 1: Invert the direction **Tens-bit: Direction disable** 0: FWD/REV allowed 1: Only FWD allowed 2: Only REV allowed **Hundreds-bit: Frequency controlled command direction** 0: OFF 1: ON **Thousands-bit: Reserved** **Note:** This value will not be reset during initialization; And the ones-bit value will not be changed after parameter download. Range: 0x0000~0x1121	0x0000	STOP

F07.06 (0x0706)	Power-down Restart	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: Start from fly track 2: Start as start mode setting **Range:** 0~2	0	STOP
F07.07 (0x0707)	Power-down Restart Waiting Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the power-down restart waiting time. Range: 0.00s~60.00s	0.50s	STOP

F07.1x: Stop Control

Code (Add)	Name	Content	Default	Adjmt
F07.10 (0x070A)	Stop Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: DEC stop 1: Coasting stop **Range:** 0~1	0	RUN
F07.11 (0x070B)	Stopping Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** In deceleration stop mode, the drive will stop if the output frequency is lower than this value. Range: 0.00Hz~Keypad set upper limit frequency	1.00Hz	RUN
F07.12 (0x070C)	Pause-restart Time Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the pause-restart time limit. Range: 0.000s~60.000s	0.000s	STOP
F07.15 (0x070F)	Work Mode below Lower Limit Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Run at frequency command 1: Free stop and pause 2: Run at lower limit frequency 3: Run at zero speed **Range:** 0~3	2	RUN
F07.16 (0x0710)	Zero-speed Torque Hold Coefficient	**V/F SVC FVC PMVF PMSVC PMFVC** 100.0% of the rated motor current, the upper limit of the braking current is the rated current of the drive. Range: 0.0%~150.0%	60.0%	RUN
F07.17 (0x0711)	Zero-speed Torque Hold Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the zero-speed torque holding time. Range: 0.0s~6000.0s	0.0s	RUN
F07.18 (0x0712)	FWD/REV Deadtime	**V/F SVC FVC PMVF PMSVC PMFVC** Set the zero-speed holding time during FWD/REV switching. Range: 0.0s~120.0s	0.0s	STOP

F07.2x: DC Brake and Fly Track

Code (Add)	Name	Content	Default	Adjmt
F07.20 (0x0714)	Starting Braking Current	**V/F SVC FVC PMVF PMSVC PMFVC** 100.0% of the rated motor current, the upper limit of the braking current is the rated current of the drive. Range: 0.0%~150.0%	130.0%	STOP
F07.21 (0x0715)	Starting Braking Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the braking time before startup. Range: 0.0s~60.0s	0.8s	STOP
F07.22 (0x0716)	Stopping Braking Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the DC braking frequency for shutdown. Range: 0.00Hz~50.00Hz	0.50Hz	STOP
F07.23 (0x0717)	DC Braking Current	**V/F SVC FVC PMVF PMSVC PMFVC** 100.0% of the rated motor current, the upper limit of the braking current is the rated current of the drive. Range: 0.0%~150.0%	40.0%	STOP
F07.24 (0x0718)	Stopping Braking Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the DC braking time for shutdown. Range: 0.0s~60.0s	0.0s	STOP
F07.25 (0x0719)	Fly Track	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Search mode** 0: Search from max. frequency 1: Search from stop frequency **Tens-bit: REV search** 0: OFF 1: ON **Hundreds-bit and thousands-bit: Reserved** Range: 0x0000~0x0111	0x0000	STOP
F07.26 (0x071A)	Fly Track Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the fly track time. Range: 0.00s~60.00s	0.50s	STOP
F07.27 (0x071B)	Fly Track Stop Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the stop delay time for fly track. Range: 0.00s~60.00s	1.00s	STOP
F07.28 (0x071C)	Fly Track Current	**V/F SVC FVC PMVF PMSVC PMFVC** Set the current for fly track. Range: 0.0%~400.0%	120.0%	STOP

F07.3x: Jogging

Code (Add)	Name	Content	Default	Adjmt
F07.30 (0x071E)	Jogging Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Check the jogging frequency setting. See F14 for details. Range: 0.00Hz~Max. frequency	5.00Hz	READ

F07.31 (0x071F)	Jogging ACC Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the jogging acceleration time. Range: 0.00s~650.00s	10.00s	RUN
F07.32 (0x0720)	Jogging DEC Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set jogging deceleration time. Range: 0.00s~650.00s	10.00s	RUN
F07.33 (0x0721)	Jogging S-curve	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: ON **Range:** 0~1	1	RUN
F07.34 (0x0722)	Jogging Stop Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Same as F7.10 1: Deceleration stop only **Range:** 0~1	0	RUN

F07.4x: Start /Stop Hold Frequency and Jump Frequency

Code (Add)	Name	Content	Default	Adjmt
F07.40 (0x0728)	Starting Hold Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** It is higher than the starting frequency and lower than the upper limit frequency set via keypad. Range: 0.00Hz~Keypad set upper limit frequency	0.00Hz	STOP
F07.41 (0x0729)	Starting Hold Frequency Time	**V/F SVC FVC PMVF PMSVC PMFVC** The set value should be greater than the starting frequency, and if it is insufficient, start at starting frequency. Range: 0.00s~60.00s	0.00s	STOP
F07.42 (0x072A)	Stopping Hold Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the holding frequency at stop. Range: 0.00Hz~Keypad set upper limit frequency	0.00Hz	STOP
F07.43 (0x072B)	Stopping Hold Frequency Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set holding frequency during stop. Range: 0.00s~60.00s	0.00s	STOP
F07.44 (0x072C)	Jump Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the jump frequency 1. Range: 0.00Hz~Max. frequency	0.00Hz	RUN
F07.45 (0x072D)	Jump Frequency Hysteresis 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the jump frequency 1 hysteresis. Range: 0.00Hz~Max. frequency	0.00Hz	RUN
F07.46 (0x072E)	Jump Frequency 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the jump frequency 2. Range: 0.00Hz~Max. frequency	0.00Hz	RUN
F07.47 (0x072F)	Jump Frequency Hysteresis 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the jump frequency 1 hysteresis. Range: 0.00Hz~Max. frequency	0.00Hz	RUN

6.12 F10: Protection Parameters

F10.0x: Current Protection

Code (Add)	Name	Content	Default (Range)	Adjmt
F10.00 (0x0A00)	Anti-overcurrent	**V/F SVC FVC PMVF PMSVC PMFVC** Set to auto limit the current below the setting here to prevent faults triggered by excessive current. 0: ON 1: ON during acceleration and deceleration and OFF during constant speed 2: Overcurrent suppression off **Range:** 0~2	2	RUN
F10.01 (0x0A01)	Anti-overcurrent Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the load current threshold, 100% of the drive rated current. Range: 0.0%~300.0%	160.0%	RUN
F10.02 (0x0A02)	Anti-overcurrent Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the response effect of overcurrent suppression. Range: 0.0%~500.0%	100.0%	RUN
F10.03 (0x0A03)	Current Protection 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the current protection on/off. **Ones-bit: CBC** 0: OFF 1: ON **Tens-bit: Overcurrent protection interference reduction** 0: OFF 1: L1 2: L2 **Hundreds-bit: Short-circuit protection interference reduction** 0: OFF 1: L1 2: L2 **Thousands-bit: Reserved** Range: 0x0000~0xf221	0x0000	STOP
F10.04 (0x0A04)	Current Protection 2	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Three-phase current sum protection** 0: OFF 1: ON **Tens-bit: Three-phase current imbalance protection** 0: OFF 1: ON Range: 0x0000~0x0011	0x0001	STOP

F10.05 (0x0A05)	Current Imbalance Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Compare the ratio of the largest to the smallest phase of the three-phase current with the set value here to judge current imbalance. Range: 0%~500%	160%	STOP
F10.06 (0x0A06)	Current Imbalance Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Increase this parameter under high current fluctuation. Range: 0.0s~60.0s	2.0s	STOP

F10.1x: Voltage Protection

Code (Add)	Name	Content	Default	Adjmt
F10.11 (0x0A0B)	Anti-overvoltage	**V/F SVC FVC PMVF PMSVC PMFVC** If the bus voltage is higher than the anti-overvoltage threshhold, acceleration and deceleration will be slowed down or canceled to prevent overvoltage faults. **Ones-bit: Anti-overvoltage function** 0: OFF 1: ON **Tens-bit: Over-excitation function** 0: OFF 1: ON during deceleration 2: ON during operation Range: 0x0000~0x0021	0x0010	STOP
F10.12 (0x0A0C)	Anti-overvoltage Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the bus voltage value to trigger the overvoltage suppression function. Range: 0V~S2: 400V; T3: 400V	S2: 370V; T3: 750V	STOP
F10.13 (0x0A0D)	Anti-overvoltage Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the response effect of overvoltage suppression. Range: 0.0%~500.0%	100.0%	RUN
F10.14 (0x0A0E)	Dynamic Brake	**V/F SVC FVC PMVF PMSVC PMFVC** Set the dynamic brake on or off. 0: OFF 1: ON, with anti-overvoltage off 2: ON, with anti-overvoltage on **Range:** 0~2	1	RUN
F10.15 (0x0A0F)	Dynamic Brake Voltage	**V/F SVC FVC PMVF PMSVC PMFVC** Set the dynamic brake voltage to start when the bus voltage is higher than this value. Range: 0 V~S2: 400V; T3: 400V	S2: 360V; T3: 740V	RUN
F10.16 (0x0A10)	Anti-Undervoltage	**V/F SVC FVC PMVF PMSVC PMFVC** Auto adjust the operation frequency when the bus voltage is lower than the undervoltage suppression point to prevent undervoltage fault 0: OFF 1: ON **Range:** 0~1	0	STOP

F10.17 (0x0A11)	Anti-Undervoltage Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the bus voltage value to trigger the undervoltage suppression function. Range: 0 V~S2: 400V; T3: 400V	S2: 240V; T3: 430V	STOP
F10.18 (0x0A12)	Anti-Bus Undervoltage Gain	**V/F SVC FVC PMVF PMSVC PMFVC** Set the response effect of undervoltage suppression. Range: 0.0%~500.0%	100.0%	RUN
F10.19 (0x0A13)	Undervoltage Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the lower limit voltage of the busbar voltage allowed, report undervoltage fault when below this value. Range: S2 0V~ 400V, T3: 0V~ 820V	S2: 190V; T3: 320V	STOP

F10.2x: Auxiliary Protection

Code (Add)	Name	Content	Default	Adjmt
F10.20 (0x0A14)	Phase Loss Protection	**V/F SVC FVC PMVF PMSVC PMFVC** Set the I/O phase loss protection function on or off. **Ones-bit: Output phase loss** 0: OFF 1: ON **Tens-bit: Input phase loss** 0: OFF 1: ON, report alarm, continue operation 2: ON, report error, coast to stop **Hundreds-bit and thousands-bit: Reserved** Range: 0x0000~0x1121	0x0021	STOP
F10.21 (0x0A15)	Input Phase Loss Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the voltage detection percentage for the input phase loss detection, 100% of the rated bus voltage. Range: 0.0%~30.0%	10.0%	STOP
F10.22 (0x0A16)	Grounding Short Circuit Protection	**V/F SVC FVC PMVF PMSVC PMFVC** Set the drive output and cooling fan to ground short circuit protection on/off. **Ones-bit: Output to ground short circuit protection** 0: OFF 1: ON after power on 2: ON before operation **Tens-bit: Fan to ground short circuit protection** 0: OFF 1: ON **Hundreds-bit: Power short circuit protection** 0: OFF 1: ON Range: 0x0000~0x0112	0x0111	STOP

<table>
<tr><td>F10.23
(0x0A17)</td><td>Fan</td><td>Set the cooling fan operation mode.
0: ON after power-on
1: ON according to temperature, and runs with the drive
2: OFF for the set time of F10.24 and stops, temperature-related
Range: 0~2</td><td>1</td><td>RUN</td></tr>
<tr><td>F10.24
(0x0A18)</td><td>Fan Delay Time</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the time from running command releasing to cooling fan stopping.
Range: 0.00s~600.00s</td><td>30.00s</td><td>STOP</td></tr>
<tr><td>F10.25
(0x0A19)</td><td>Drive Overheat Alarm Threshold</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the value for overheat, report an alarm when it is above this value.
Range: 0.0℃~100.0℃</td><td>80.0℃</td><td>RUN</td></tr>
<tr><td>F10.26
(0x0A1A)</td><td>Motor Overheat Protection (Extension)</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the function related to motor overheat protection when IO extension is used.
Ones-bit: Temperature sensor type
0: PT1000
1: KTY84
(Note: PT100 is prior by hardware switch)
Tens-bit: Temperature detection time<table><tr><td>0: 2s</td><td>1: OFF</td><td>2: 5s</td></tr><tr><td>3: 30s</td><td>4: 60s</td><td>5: 120s</td></tr><tr><td colspan="2">6: 300s(5min)-default</td><td>7: 600s</td></tr><tr><td>8: 1200s</td><td colspan="2">9: 1800s(30min)</td></tr></table>Hundreds-bit: Reserved
Thousands-bit: Temperature sensor disconnection mode
0: OFF
1: Report error, coast to stop
2: Report alarm, continue operation
Range: 0x0000~0xA1A</td><td>0x0061</td><td>RUN</td></tr>
<tr><td>F10.27
(0x0A1B)</td><td>Motor Overheat Error Threshold (Extension)</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the value for overheat, report a fault when it is above this value.
Range: 0.0℃~200.0℃</td><td>110.0℃</td><td>RUN</td></tr>
<tr><td>F10.28
(0x0A1C)</td><td>Motor Overheat Alarm Threshold (Extension)</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the value for overheat, report an alarm when it is above this value.
Range: 0.0℃～F10.27</td><td>90.0℃</td><td>RUN</td></tr>
</table>

F10.3x: Load Protection

<table>
<tr><th>Code (Add)</th><th>Name</th><th>Content</th><th>Default</th><th>Adjmt</th></tr>
<tr><td>F10.32 (0x0A20)</td><td>Load Detection and Work Mode</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the drive load detection mode and the alarm mode at this time.
Ones-bit: Load detection mode 1<table><tr><td>0: OFF</td><td>1: ON for overload</td></tr><tr><td>2: ON for overload only at constant speed</td><td>3: ON for underload</td></tr><tr><td>4: ON for underload at constant speed only</td><td>-</td></tr></table>Tens-bit: Work mode 1<table><tr><td>0: Report alarm, continue operation</td><td>1: Report error, coast to stop</td></tr></table>Hunreds-bit: Load detection mode 2<table><tr><td>0: OFF</td><td>1: ON for overload</td></tr><tr><td>2: ON for overload only at constant speed</td><td>3: ON for underload</td></tr><tr><td>4: ON for underload at constant speed only</td><td>-</td></tr></table>Thousands-bit: Work mode 2<table><tr><td>0: Report alarm, continue operation</td><td>1: Report error, coast to stop</td></tr></table>Range: 0x0000~0x1414</td><td>0x0000</td><td>STOP</td></tr>
<tr><td>F10.33 (0x0A21)</td><td>Load Detection Threshold 1</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the threshold 1 for abnormal load prompt.
For V/F control, 100% of the rated motor current.
For vector control, 100% of the motor rated output torque.
Range: 0.0%~200.0%</td><td>130.0%</td><td>STOP</td></tr>
<tr><td>F10.34 (0x0A22)</td><td>Load Detection Time 1</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the duration of load 1 detection, if the load is higher than the load detection threshold value 1 and it lasts for the set time, trigger the work mode 1 in F10.32.
Range: 0.0s~60.0s</td><td>5.0s</td><td>STOP</td></tr>
<tr><td>F10.35 (0x0A23)</td><td>Load Detection Threshold 2</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the threshold 2 for abnormal load prompt.
For V/F control, 100% of the rated motor current.
For vector control, 100% of the motor rated output torque.
Range: 0.0%~200.0%</td><td>30.0%</td><td>STOP</td></tr>
<tr><td>F10.36 (0x0A24)</td><td>Load Detection Time 2</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Set the duration of load 2 detection, if the load is higher than the load detection threshold value 1 and it lasts for the set time, trigger the work mode 2 in F10.32.
Range: 0.0s~60.0s</td><td>5.0s</td><td>STOP</td></tr>
</table>

F10.4x: Stall Protection

Code (Add)	Name	Content	Default	Adjmt
F10.40 (0x0A28)	Speed Deviation Detection Mode	**V/F SVC FVC PMVF PMSVC PMFVC** Set the detection mode and the work mode when the deviation between the motor's given speed and the feedback speed is too large. **Ones-bit: Detection mode** 0: OFF 1: ON only at constant speed 2: ON **Tens-bit: Alarm selection** 0: Report error, coast to stop 1: Report alarm, continue operation Range: 0x0000~0x0012	0x0000	STOP
F10.41 (0x0A29)	Speed Deviation Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the detection value for excessive speed deviation, 100% of F01.10 [Max. Frequency]. Range: 0.0%~60.0%	10.0%	STOP
F10.42 (0x0A2A)	Speed Deviation Detection Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the duration for detecting speed deviation. If the deviation between the given speed and the feedback speed is greater than F10.41 and continues for this time, an alarm is reported. Range: 0.0s~60.0s	2.0s	STOP
F10.43 (0x0A2B)	Stall Detection Mode	**V/F SVC FVC PMVF PMSVC PMFVC** Set the detection mode and work mode for stall fault. **Ones-bit: Detection mode** 0: OFF 1: ON only at constant speed 2: ON **Tens-bit: Alarm mode** 0: Report error and coast to stop 1: Report alarm and continue operation Range: 0x0000~0x0012	0x0002	STOP
F10.44 (0x0A2C)	Stall Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the level value of the stall detection, 100% of F01.10 [Maximum Frequency]. Range: 0.0%~150.0%	110.0%	STOP
F10.45 (0x0A2D)	Stall Detection Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the duration of stall detection, if the feedback speed is higher than F10.44 and lasts for the set time here, report the alarm. Range: 0.000s~2.000s	0.100s	STOP

F10.5x: Fault Reset and Motor Overload

Code (Add)	Name	Content	Default	Adjmt
F10.50 (0x0A32)	Fault Reset No.	**V/F SVC FVC PMVF PMSVC PMFVC** Set the number of times allowed to perform fault reset. **Note**: 0 indicates that the fault reset function is disabled; otherwise, it is enabled. **Range:** 0~10	0	STOP
F10.51 (0x0A33)	Fault Reset Interval	**V/F SVC FVC PMVF PMSVC PMFVC** Set the waiting time after a fault occurs until reset. Range: 0.0s~100.0s	3.0s	STOP
F10.52 (0x0A34)	Performed Reset No.	**V/F SVC FVC PMVF PMSVC PMFVC** It indicates the times of already performed fault reset. Read-only.	0	READ
F10.55 (0x0A37)	Motor Overload Model	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Common motor 1: Variable frequency motor(50Hz) 2: Variable frequency motor(60Hz) 3: Motor without cooling fans **Range:** 0~3	0	RUN
F10.56 (0x0A38)	Motor Insulation Class	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Class A 1: Class E 2: Class B 3: Class F 4: Class H 5: Special class S **Range:** 0~5	3	STOP
F10.57 (0x0A39)	Motor Work Pattern	**V/F SVC FVC PMVF PMSVC PMFVC** 0-1: S1 pattern(continuous operation) 2: S2 pattern 3-9: S3-S9 **Range:** 0~9	0	STOP
F10.58 (0x0A3A)	Motor Overload Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** Set the motor overload threshold. When the actual current is greater than this value, the drive starts to record the overload quantity. Range: 0.0%~130.0%	105.0%	STOP
F10.59 (0x0A3B)	Motor Overload Current Coefficient	**V/F SVC FVC PMVF PMSVC PMFVC** Motor overload current=actual current * motor overload current coefficient. Range: 0.0%~250.0%	100.0%	STOP

6.13 F11: Keypad Parameters

F11.0x: Key Operation

<table>
<tr><th>Code (Add)</th><th>Name</th><th>Content</th><th>Default</th><th>Adjmt</th></tr>
<tr><td>F11.00 (0x0B00)</td><td>Key Lock</td><td>V/F SVC FVC PMVF PMSVC PMFVC
0: Unlock
1: Parameter modification via keypad locked
2: Parameters and non-start/stop key locked
3: Parameters and keys locked
Range: 0~3</td><td>0</td><td>RUN</td></tr>
<tr><td>F11.01 (0x0B01)</td><td>Key Lock Password</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Use with key lock; please remember the password after setting, otherwise it will not be operated if locked.
Range: 0~65535</td><td>0</td><td>RUN</td></tr>
<tr><td>F11.02 (0x0B02)</td><td>Multi-function Key</td><td>V/F SVC FVC PMVF PMSVC PMFVC
<table><tr><td>0: OFF</td><td>1: REV operation</td></tr><tr><td>2: FWD jogging</td><td>3: REV jogging</td></tr><tr><td>4: Switch command source between keypad and terminal</td><td>5: Switch command source between keypad and communication</td></tr><tr><td>6: Switch command source between terminal and communication</td><td>7: Switch command source among keypad, terminal and communication cyclically</td></tr></table>Range: 0~7</td><td>0</td><td>STOP</td></tr>
<tr><td>F11.03 (0x0B03)</td><td>STOP Key</td><td>V/F SVC FVC PMVF PMSVC PMFVC
0: Non-keypad control off
1: Non-keypad stop works as stop mode
2: Non-keypad stop works as coast to stop
Range: 0~2</td><td>0</td><td>STOP</td></tr>
<tr><td>F11.04 (0x0B04)</td><td>Up/Down(Knob) on Status Screen</td><td>V/F SVC FVC PMVF PMSVC PMFVC
Ones-bit: UP/DW modification
0: OFF
1: Adjust F01.09 setting
2: Reserved
3: Adjust F11.05 setting
Tens-bit: Power-down save
0: Power-down save off
1: Power-down save on
Hundreds-bit: Modification condition
0: Modifiable during running and stop
1: Modifiable during running, keep during stop
2: Modifiable during operation, reset after stop
Thousands-bit: Reserved
Range: 0x0000~0x0213</td><td>0x0010</td><td>STOP</td></tr>
</table>

F11.1x: Cyclic Monitoring of Status Screen

Code (Add)	Name	Content	Default	Adjmt
F11.10 (0x0B0A)	Left/Right Shift	**V/F SVC FVC PMVF PMSVC PMFVC** Ones-bit: Left shift key to adjust the first row of monitoring 0: OFF 1: ON Tens-bit: Right shift key to adjust the second row of monitoring 0: OFF 1: ON When the left/right shift key is invalid, the monitor display value is shown as parameter 1 after re-powering up. Range: 0x0000~0x0011	0x0011	STOP
F11.11 (0x0B0B)	1st Row Parameter 1 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0001	RUN
F11.12 (0x0B0C)	1st Row Parameter 2 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0002	RUN
F11.13 (0x0B0D)	1st Row Parameter 3 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0000	RUN
F11.14 (0x0B0E)	1st Row Parameter 4 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0014	RUN
F11.15 (0x0B0F)	2nd Row Parameter 1 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0002	RUN

F11.16 (0x0B10)	2nd Row Parameter 2 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0004	RUN
F11.17 (0x0B11)	2nd Row Parameter 3 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0010	RUN
F11.18 (0x0B12)	2nd Row Parameter 4 for Cyclic Display	**V/F SVC FVC PMVF PMSVC PMFVC** Ones- and tens-bit: Set 00~63 to yy in monitor parameter in Cxx.yy Hundreds and thousands-bit: Set 00~07 to xx in monitor parameter Cxx.yy Range: 0x0000~0x0763	0x0012	RUN

F11.2x: Monitoring Parameters

Code (Add)	Name	Content	Default	Adjmt
F11.20 (0x0B14)	Display Item	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Output frequency display** 0: Target frequency 1: Operating frequency 2～F: The larger the value, the deeper the filter **Tens-bit: Reserved** **Hundreds-bit: Power dimension** 0: In percentage(%) 1: In kilowatt(kW) **Thousands-bit: Reserved** Range: 0x0000~0x111F	0x1000	RUN
F11.21 (0x0B15)	Speed Display Coefficient	**V/F SVC FVC PMVF PMSVC PMFVC** Adjust the display of C00.05 speed. Range: 0.0%~500.0%	100.0%	RUN
F11.22 (0x0B16)	Power Display Coefficient	**V/F SVC FVC PMVF PMSVC PMFVC** Adjust the display of C00.10 power. Range: 0.0%~500.0%	100.0%	RUN

6.14 F12: Communication

F12.0x: Modbus Slave

Code (Add)	Name	Content	Default	Adjmt
F12.00 (0x0C00)	Master/Slave	**V/F SVC FVC PMVF PMSVC PMFVC** Ones-bit: Master/Slave selection 0: Slave 1: Master Tens-bit: Reserved	0000	STOP
F12.01 (0x0C01)	Modbus Address	**V/F SVC FVC PMVF PMSVC PMFVC** Set different values for different slaves. **Range:** 1~247	1	STOP
F12.02 (0x0C02)	Baud Rate	**V/F SVC FVC PMVF PMSVC PMFVC** 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps 6: 57600 bps **Range:** 0~6	5	STOP
F12.03 (0x0C03)	Data Format	**V/F SVC FVC PMVF PMSVC PMFVC** 0: (N, 8, 1) no parity, data bit: 8, stop bit: 1 1: (E, 8, 1) even parity, data bit: 8, stop bit: 1 2: (O, 8, 1) odd parity, data bit: 8, stop bit: 1 3: (N, 8, 2) no parity, data bit: 8, stop bit: 2 4: (E, 8, 2) even parity, data bit: 8, stop bit: 2 5: (O, 8, 2) odd parity, data bit: 8, stop bit: 2 **Range:** 0~5	0	STOP
F12.04 (0x0C04)	Response Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Respond to write operation 1: No response to write operation **Range:** 0~1	0	RUN
F12.05 (0x0C05)	Response Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the Modbus communication response delay. Range: 0ms~5000ms	0ms	RUN
F12.06 (0x0C06)	Modbus Timeout	**V/F SVC FVC PMVF PMSVC PMFVC** Set the Modbus communication failure timeout. Range: 0.1s~100.0s	1.0s	RUN
F12.07 (0x0C07)	Disconnection Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: Report error and coast to stop 2: Report alarm and continue operation 3: Forced stop **Range:** 0~3	0	RUN
F12.08 (0x0C08)	Received Data Zero Bias (0x3000)	**V/F SVC FVC PMVF PMSVC PMFVC** Set the bias to correct communication data on 0x3000. **Range:** -100.00~100.00	0.00	RUN

F12.09 (0x0C09)	Received Data Gain (0x3000)	**V/F SVC FVC PMVF PMSVC PMFVC** Perform linear correction on address 0x3000 communication data. Range: 0.0%~500.0%	100.0%	RUN

F12.1x: Modbus Master

Code (Add)	Name	Content	Default	Adjmt
F12.10 (0x0C0A)	Master Text	**V/F SVC FVC PMVF PMSVC PMFVC** Ones, tens, hundreds, and thousands all can be selected with: 0: OFF / 1: Operating command 2: Target frequency / 3: Output frequency 4: Upper limit frequency / 5: Target torque 6: Output torque / 7-C: Reserved Range: 0x0000~0xCCCC	0x0031	RUN
F12.11 (0x0C0B)	Customized Frequency Address	**V/F SVC FVC PMVF PMSVC PMFVC** Set the user-defined address to give frequency, compatible with the upper computer or PLC command. Range: 0x0000~0xFFFF	0x0000	RUN
F12.12 (0x0C0C)	Customized Command Address	**V/F SVC FVC PMVF PMSVC PMFVC** Set the user-defined address to give frequency, compatible with upper computer or PLC command. Range: 0x0000~0xFFFF	0x0000	RUN
F12.13 (0x0C0D)	FWD Command Value	**V/F SVC FVC PMVF PMSVC PMFVC** Customizedaddress to forward running command value. Range: 0x0000~0xFFFF	0x0001	RUN
F12.14 (0x0C0E)	REV Command Value	**V/F SVC FVC PMVF PMSVC PMFVC** Customizedaddress to reverse running command value. Range: 0x0000~0xFFFF	0x0002	RUN
F12.15 (0x0C0F)	Stop Command Value	**V/F SVC FVC PMVF PMSVC PMFVC** Set the user-defined address to stop command value. Range: 0x0000~0xFFFF	0x0005	RUN
F12.16 (0x0C10)	Reset Command Value	**V/F SVC FVC PMVF PMSVC PMFVC** Set the user-defined address to reset command value. Range: 0x0000~0xFFFF	0x0007	RUN
F12.19 (0x0C13)	Master Command	**V/F SVC FVC PMVF PMSVC PMFVC** Set the command type from the master. 0: Send running command 1: Send running status **Range:** 0~1	0	RUN

F12.2x: RJ45 Communication

Code (Add)	Name	Content	Default	Adjmt
F12.20 (0x0C14)	Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Dual-line keypad 1: Modbus slave(via F12.2x) 2: Modbus master(via F12.1x) 3: VEICHI-defined **Note**: T3 models 45kW and above only support two-wire keypad communication. **Range:** 0~3	0	STOP
F12.21 (0x0C15)	Slave Address	**V/F SVC FVC PMVF PMSVC PMFVC** Set the slave address when RJ45 port is for Modbus communication. **Range:** 1~247	1	STOP
F12.22 (0x0C16)	Baud Rate	**V/F SVC FVC PMVF PMSVC PMFVC** Set the baud rate when RJ45 port is for Modbus communication. 0: 1200 bps 1: 2400bps 2: 4800 bps 3: 9600bps 4: 19200 bps 5: 38400bps 6: 57600bps **Range:** 0~5	3	STOP
F12.23 (0x0C17)	Data Format	**V/F SVC FVC PMVF PMSVC PMFVC** Set the data format when RJ45 port is for Modbus communication. 0: (N, 8, 1) no parity, data bit: 8, stop bit: 1 1: (E, 8, 1) even parity, data bit: 8, stop bit: 1 2: (O, 8, 1) odd parity, data bit: 8, stop bit: 1 3: (N, 8, 2) no parity, data bit: 8, stop bit: 2 4: (E, 8, 2) even parity, data bit: 8, stop bit: 2 5: (O, 8, 2) odd parity, data bit: 8, stop bit: 2 **Range:** 0~5	0	STOP
F12.24 (0x0C18)	Response Mode	**V/F SVC FVC PMVF PMSVC PMFVC** Set the answer mode when RJ45 port is for Modbus communication. 0: Respond to write operation; 1: No response to write operation **Range:** 0~1	0	RUN
F12.25 (0x0C19)	Response Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Set the communication answer delay when RJ45 port is for Modbus communication. Range: 0ms~5000ms	0ms	RUN
F12.26 (0x0C1A)	Timeout	**V/F SVC FVC PMVF PMSVC PMFVC** Set the timeout error value when RJ45 port is for Modbus communication. Range: 0.1s~100.0s	1.0s	RUN

F12.27 (0x0C1B)	Disconnection Mode	**V/F SVC FVC PMVF PMSVC PMFVC** Set the processing method when RJ45 port for Modbus communication fails. 0: OFF 1: Report error and coast to stop 2: Report alarm and continue operation 3: Forced stop **Range:** 0~3	0	RUN

F12.3x: PROFIBUS-DP Communication

Code (Add)	Name	Content	Default	Adjmt
F12.30 (0x0C1E)	Slave Address	**V/F SVC FVC PMVF PMSVC PMFVC** Set different values for different slaves. **Range:** 1~247	1	RUN
F12.32 (0x0C20)	Disconnection Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: Report error and coast to stop 2: Report alarm and continue operation **Range:** 0~2	0	STOP

Note: Extensions are not allowed to be plugged or unplugged with power-on.

F12.4x: CAN Communication

Code (Add)	Name	Content	Default	Adjmt
F12.40 (0x0C28)	Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: Slave 1: VEICHI-defined master **Range:** 0~1	0	RUN
F12.41 (0x0C29)	Slave Address	**V/F SVC FVC PMVF PMSVC PMFVC** Set the address of the slave. **Range:** 1~247	1	RUN
F12.42 (0x0C2A)	Baud Rate	**V/F SVC FVC PMVF PMSVC PMFVC** 0: 20kbps 1: 50kbps 2: 100kbps 3: 125kbps 4: 250kbps 5: 500kbps 6: 1Mbps **Range:** 0~6	3	RUN
F12.43 (0x0C2B)	Disconnection Mode	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: Report error and coast to stop 2: Report alarm and continue operation **Range:** 0~2	0	RUN

Note: Extensions are not allowed to be plugged or unplugged with power-on.

F12.5x~F12.6x: EX_A and EX_B Communication

Code (Add)	Name	Content	Default	Adjmt
F12.50 (0x0C32)	Disconnection Mode	**V/F SVC FVC PMVF PMSVC PMFVC** Ones-bit: EX-A disconnection mode 0: OFF 1: Report error and coast to stop 2: Report alarm and continue operation Tens-bit: EX-B disconnection mode 0: OFF 1: Report error and coast to stop 2: Report alarm and continue operation **Range:** 0000~0022	0000	RUN
F12.51 (0x0C33)	EX-A Parameter Update	**V/F SVC FVC PMVF PMSVC PMFVC** 0: No update; 1: Update the initial values on power up 2: Restore to initial values **Range:** 0~2	0	RUN
F12.52 (0x0C34)	EX-B Parameter Update	**V/F SVC FVC PMVF PMSVC PMFVC** 0: No update; 1: Update the initial values on power up 2: Restore to initial values **Range:** 0~2	0	RUN
F12.53 (0x0C35)	EX-A Monitor Frame Address Group 1	**V/F SVC FVC PMVF PMSVC PMFVC** Ones-bit and tens-bit: Low 8 bits 00~63 Hundreds-bit and thousands-bit: High 8 bits 00~07 **Range:** 0000~0763	0001	RUN
F12.54 (0x0C36)	EX-A Monitor Frame Address Group 2	**V/F SVC FVC PMVF PMSVC PMFVC** Same	0002	RUN
F12.55 (0x0C37)	EX-A Monitor Frame Address Group 3	**V/F SVC FVC PMVF PMSVC PMFVC** Same	0007	RUN
F12.56 (0x0C38)	EX-A Monitor Frame Address Group 4	**V/F SVC FVC PMVF PMSVC PMFVC** Same	0011	RUN
F12.57 (0x0C39)	EX-B Monitor Frame Address Group 1	**V/F SVC FVC PMVF PMSVC PMFVC** Same	0001	RUN
F12.58 (0x0C3A)	EX-B Monitor Frame Address Group 2	**V/F SVC FVC PMVF PMSVC PMFVC** Same	0002	RUN
F12.59 (0x0C3B)	EX-B Monitor Frame Address Group 3	**V/F SVC FVC PMVF PMSVC PMFVC** Same	0007	RUN
F12.60 (0x0C3C)	EX-B Monitor Frame Address Group 4	**V/F SVC FVC PMVF PMSVC PMFVC** Same	0011	RUN

Note: Extensions are not allowed to be plugged or unplugged with power-on.

6.15 F14 Multi-frequency Control

F14.00~F14.14: Multi-frequency

Code (Add)	Name	Content	Default	Adjmt
F14.00 (0x0E00)	PLC Multi-frequency 1	**V/F SVC FVC PMVF PMSVC PMFVC** Set the first frequency in PLC program and multi-frequency control. F14.00~F14.14 are read-only corresponding to F14.51~F14.65. Range: 0.00Hz~Max. frequency	15.00Hz	READ
F14.01 (0x0E01)	PLC Multi-frequency 2	**V/F SVC FVC PMVF PMSVC PMFVC** Set the second frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	38.00Hz	READ
F14.02 (0x0E02)	PLC Multi-frequency 3	**V/F SVC FVC PMVF PMSVC PMFVC** Set the third frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	5.00Hz	READ
F14.03 (0x0E03)	PLC Multi-frequency 4	**V/F SVC FVC PMVF PMSVC PMFVC** Set the fourth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	6.00Hz	READ
F14.04 (0x0E04)	PLC Multi-frequency 5	**V/F SVC FVC PMVF PMSVC PMFVC** Set the fifth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	15.00Hz	READ
F14.05 (0x0E05)	PLC Multi-frequency 6	**V/F SVC FVC PMVF PMSVC PMFVC** Set the sixth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	15.00Hz	READ
F14.06 (0x0E06)	PLC Multi-frequency 7	**V/F SVC FVC PMVF PMSVC PMFVC** Set the seventh frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	15.00Hz	READ
F14.07 (0x0E07)	PLC Multi-frequency 8	**V/F SVC FVC PMVF PMSVC PMFVC** Set the eighth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	20.00Hz	READ
F14.08 (0x0E08)	PLC Multi-frequency 9	**V/F SVC FVC PMVF PMSVC PMFVC** Set the ninth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	10.00Hz	READ
F14.09 (0x0E09)	PLC Multi-frequency 10	**V/F SVC FVC PMVF PMSVC PMFVC** Set the tenth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	20.00Hz	READ

F14.10 (0x0E0A)	PLC Multi-frequency 11	**V/F SVC FVC PMVF PMSVC PMFVC** Set the eleventh frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	30.00Hz	READ
F14.11 (0x0E0B)	PLC Multi-frequency 12	**V/F SVC FVC PMVF PMSVC PMFVC** Set the twelfth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	40.00Hz	READ
F14.12 (0x0E0C)	PLC Multi-frequency 13	**V/F SVC FVC PMVF PMSVC PMFVC** Set the thirteenth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	50.00Hz	READ
F14.13 (0x0E0D)	PLC Multi-frequency 14	**V/F SVC FVC PMVF PMSVC PMFVC** Set the fourteenth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	40.00Hz	READ
F14.14 (0x0E0E)	PLC Multi-frequency 15	**V/F SVC FVC PMVF PMSVC PMFVC** Set the fifteenth frequency in PLC program and multi-frequency control. Range: 0.00Hz~Max. frequency	30.00Hz	READ

6.16 C0x: Monitoring Parameters

C00.xx: Basic Monitoring

Code (Add)	Name	Min.unit	Content
C00.00 (0x2100)	Target Frequency	0.01Hz	Display the absolute value of drive target frequency.
C00.01 (0x2101)	Output Frequency	0.01Hz	Display the drive output frequency.
C00.02 (0x2102)	Output Current	0.1A	Display the drive output current.
C00.03 (0x2103)	Input Voltage	0.1V	Display the drive input voltage
C00.04 (0x2104)	Output Voltage	0.1V	Display the drive output voltage.
C00.05 (0x2105)	Mechanical Speed	1rpm	Display the motor mechanical speed.
C00.06 (0x2106)	Target Torque	0.1%	Display drive given torque. ON when vector is selected as the control mode.
C00.07 (0x2107)	Output Torque	0.1%	Display drive output torque.
C00.10 (0x210A)	Output Power	0.1%	Display drive current output power.

C00.11 (0x210B)	Bus Voltage	0.1V	Display current bus voltage.
C00.12 (0x210C)	Module Temperature 1	0.1℃	Drive Internal Temperature.
C00.13 (0x210D)	Module Temperature 2	0.1℃	-
C00.14 (0x210E)	Input Terminal Status	-	The status of the multi-function input terminal is indicated by 1(ON) and 0(OFF). For example, when both terminals X1 and X2 are ON, C00.14 displays 11.
C00.15 (0x210F)	Output Terminal Status	-	The status of the multi-functional output terminal is displayed by 1(ON) and 0(OFF). For example, when Y terminal and relay are ON, C00.15 displays 11.
C00.16 (0x2110)	AI1	0.001V/0.001mA	Set F05.41 for voltage and current input. F05.41to "0" for voltage input and to "1" for current input.
C00.17 (0x2111)	AI2	0.001V/0.001mA	Set F05.42 for voltage and current input. F05.42 Set to "0" for voltage input and set to "1" for current input.
C00.20 (0x2114)	AO	0.01V/0.01mA/0.01kHz	Set F06.00 to 0V~10V, 0mA~20mA or pulse output.
C00.21 (0x2115)	AO Extension	0.01V/0.01mA	Can be selected as 0V~10V or 0mA~20mA, used with the extensions.
C00.23 (0x2117)	Current Runtime	0.1 hour	-
C00.24 (0x2118)	Cumulative Runtime	hour	-
C00.25 (0x2119)	Drive Capacity	0.1kVA	AC drive capacity
C00.26 (0x211A)	Drive Rated Voltage	1V	Drive rated voltage.
C00.27 (0x211B)	Drive Rated Current	0.1A	Drive rated current.
C00.28 (0x211C)	Software Version	00.00	Software version.
C00.29 (0x211D)	PG Feedback Frequency	0.01Hz	Convert the signal detected by PG encoder to frequency values.
C00.30 (0x211E)	Timer	1: Second/Minute/Hour	The unit is determined by parameter F08.07.
C00.32 (0x2120)	Software Sub-Version	1	Software update time.
C00.33 (0x2121)	Encoder Feedback Angle	1	Encoder feedback angle.

C00.34 (0x2122)	Z-pulse Loss	1	Use A and B signals from the ABZ encoder to tell Z-signal loss.
C00.35 (0x2123)	Z-pulse Count	1	The Z-pulse count through the ABZ encoder.
C00.36 (0x2124)	Error Code	1	The number corresponds to the fault code, and "0" means no fault.
C00.37 (0x2125)	Cumulative Power Consumption(Low)	1	Total electricity consumption=[C00.37 + C00.38*10000] °
C00.38 (0x2126)	Cumulative Power Consumption(High)	1	
C00.39 (0x2127)	Power Factor Angle	1°	-

C01.xx: Error Monitoring

Code (Add)	Name	Min.unit	Content
C01.00 (0x2200)	Error Code	-	Display in letters.
C01.01 (0x2201)	Diagnosis Information	1	Display the error code and sub-code in digital form. Please check the corresponding solutions in the diagnosis section.
C01.02 (0x2202)	Operating Frequency	0.01Hz	Display output frequency during the error.
C01.03 (0x2203)	Output Voltage	0.1V	Display output voltage during the error.
C01.04 (0x2204)	Output Current	0.1A	Display output current during the error.
C01.05 (0x2205)	Bus Voltage	0.1V	Display bus voltage during the error.
C01.06 (0x2206)	Module Temperature	0.1	Display the temperature of the inner module of the drive during the error.
C01.07 (0x2207)	Drive Status	0x0000	Ones-bit: Operation direction 0: FWD 1: REV Tens-bit: Operation status 0: Stop 1: Constant operation 2: Accelerating 3: Decelerating Hundreds-bit: Overvoltage and overcurrent 0: Normal 1: Overvoltage 2: Overcurrent 3: Overvoltage and overcurrent Thousands-bit: Reserved

C01.08 (0x2208)	Input Terminal Status	-	Display the status of the multi-functional input terminal by 1(ON) and 0(OFF) during the error. For example, when both terminals X1 and X2 are ON, C01.08 displays .
C01.09 (0x2209)	Output Terminal Status	-	Display the status of the multi-functional output terminal by 1(ON) and 0(OFF) during the error. For example, when Y terminal and relay are ON, C01.09 displays .
C01.10 (0x220A)	Previous 1 Error Code	-	Display in letters.
C01.11 (0x220B)	Previous 1 Diagnosis Information	1	Display the error code and sub-code in digital form. Please check the corresponding solutions in the diagnosis section during the last error.
C01.12 (0x220C)	Previous 1 Output Frequency	0.01Hz	Display output frequency during the last error.
C01.13 (0x220D)	Previous 1 Output Voltage	0.1V	Display output voltage during the last error.
C01.14 (0x220E)	Previous 1 Output Current	0.1A	Display output current during the last error.
C01.15 (0x220F)	Previous 1 Bus Voltage	0.1V	Display bus voltage during the last error.
C01.16 (0x2210)	Previous 1 Module Temperature	0.1	Display the temperature of the inner module of the drive during the last error.
C01.17 (0x2211)	Previous 1 Drive Status	0x0000	Ones-bit: Operation direction 0: FWD 1: REV Tens-bit: Operation status 0: Stop 1: Constant operation 2: Accelerating 3: Decelerating Hundreds-bit: Overvoltage and overcurrent 0: Normal 1: Overvoltage 2: Overcurrent 3: Overvoltage and overcurrent Thousands-bit: Reserved
C01.18 (0x2212)	Previous 1 Input Terminal Status	-	Display the status of the multi-functional input terminal by 1(ON) and 0(OFF) during the last error. For example, when both terminals X1 and X2 are ON, C01.08 displays .
C01.19 (0x2213)	Previous 1 Output Terminal Status	-	Display the status of the multi-functional output terminal by 1(ON) and 0(OFF) during the last error. For example, when Y terminal and relay are ON, C01.09 displays .

C01.20 (0x2214)	Previous 2 Error Code	-	Display in letters.
C01.21 (0x2215)	Previous 2 Diagnosis Information	1	Display the error code and sub-code in digital form. Please check the corresponding solutions in the diagnosis section during the last 2 error.
C01.22 (0x2216)	Previous 3 Error Code	-	Display in letters.
C01.23 (0x2217)	Previous 3 Diagnosis Information	1	Display the error code and sub-code in digital form. Please check the corresponding solutions in the diagnosis section during the last 3 error.

C02: App Monitoring

Code(Add)	Name	Code(Add)	Name
C02.00(0x2300)~ C02.07(0x2307)	Reserved	C02.25(0x2319)	IO extension analog 1
C02.08(0x2308)	FWD/REV command	C02.26(0x231A)	IO extension analog 2
C02.09(0x2309)	Jogging command	C02.27(0x231B)	IO extension analog 3
C02.10(0x230A)	Voltage/current before AI1 correction	C02.28(0x231C)	IO extension input terminal status
C02.11(0x230B)	Voltage/current before AI2 correction	C02.29(0x231D)	IO extension for motor temperature detection
C02.12(0x230C)	Voltage/current before AO correction	C02.30(0x231E)	IO extension PUL count low
C02.13(0x230D)	Voltage/current before AO extension correction	C02.31(0x231F)	IO extension PUL count high
C02.14(0x230E)	Reserved	C02.32(0x2320)~ C02.47(0x232F)	Power-down save parameter 1~16
C02.15(0x230F)	AC drive overload timing factor	C02.48(0x2330)~ C02.49(0x2331)	Reserved
C02.16(0x2310)	Motor overload timing factor	C02.50(0x2332)~ C02.59(0x233B)	Cache register 0~9
C02.17(0x2311)～ C02.18(0x2312)	Reserved	C02.60(0x233C)	Extension A version
C02.19(0x2313)	CBC No.	C02.61(0x233D)	Extension B version
C02.20(0x2314)~ C02.24(0x2318)	Reserved	C02.62(0x233E)	External keypad version

C03: Maintenance Monitoring

Code(Add)	Name
C03.00(0x2400)	Current runtime
C03.01(0x2401)	Cumulative runtime(Hour)
C03.02(0x2402)	Cumulative power-up(Hour)
C03.03(0x2403)	Cumulative power-up(Minute)
C03.04(0x2404)	Cooling fan runtime

C03.05(0x2405)	Cooling fan maintenance
C03.06(0x2406)	Reserved
C03.07(0x2407)	Main relay maintenance
C03.08(0x2408)~C03.19(0x2413)	Reserved
C03.50(0x2432)	Machine code 1
C03.51(0x2433)	Machine code 2
C03.52(0x2434)	Machine code 3

6.17 Communication Variables

10.17.1 Modbus Communication(0x30xx/ 0x20xx)

Address	Name	R/W	Scale(Range)	Content
0x2000/ 0x3000	Target Frequency	R/W	0.01Hz (0.00Hz~320.00Hz)	Frequency given via communication.
0x2001/ 0x3001	Target Command	W	0x0000 (0x0000~0x0103)	0x0000: OFF 0x0001: FWD operation 0x0002 3: REV operation 0x0003: FWD jogging 3: REV jogging 0x0005: Deceleration stop 0x0006: Coasting stop 0x0007: Reset 0x0008: Operation disable command, when writing address 3001 written to 8 by communication, AC drive coasts to stop. Writing 9 to address 3001 or re-power on to run again. 0x0009: operation on 0x0101: Equivalent to F02.07=1 [Dynamic Auto-tuning] plus operation command 0x0102: Equivalent to F02.07=2 [Static Auto-tuning] plus operation command 0x0103: Equivalent to F02.07=3 [Stator Resistance Auto-tuning], plus operation command
0x2002/ 0x3002	Drive Status	R	Binary	Bit0: 0-Stop 1-Operation Bit1: 0-Non-acceleration 1-Acceleration Bit2: 0-Non-deceleration 1-Deceleration Bit3: 0: FWD operation 1: REV operation Bit4: 0-Normal 1-Error Bit5: 0-Unlocked 1-Locked Bit6: 0- Normal 1-Alarm Bit7: 0-Operation enable; 1-Operation disable
0x2003/ 0x3003	Error Code	R	0 (0~127)	Read the corresponding value of the fault code via communication.

0x2004 /0x3004	Upper Limit Frequency	R/W	0.01Hz (0.00Hz~320.00Hz)	Upper limit frequency given via communication.
0x2005 /0x3005	Torque	R/W	0.0% (0.0%~100.0%)	Torque setting via communication.
0x2006/ 0x3006	FWD Speed Limit	R/W	0.0% (0.0%~100.0%)	FWD speed limit given via communication under torque control.
0x2007 /0x3007	REV Speed Limit	R/W	0.0% (0.0%~100.0%)	REV speed limit given via communication under torque control.
0x200E/ 0x300E	ACC Time 1	R/W	0.00s 0.00s~600.00s	Read and write F01.22.
0x200F/ 0x300F	DEC Time 1	R/W	0.00s (0.00s~ 600.00s)	Read and write F01.23.
0x2010/ 0x3010	Error/Alarm Code	R	0 (0~65535)	1～127: Error code, 128～159: Alarm code, 0 means no error.
0x2012/ 0x3012	Torque Filter Time	R/W	0.000s (0.000s~6.000s)	Read and write F03.47.
0x2018/ 0x3018	Terminal Output Control	W	Binary	Set the output terminal function on F6.21~F06.24 to 30(Communication control). Bit0: Y terminal Bit1: Relay Bit2: Extension Y2 Bit3: Extension relay
0x2019/ 0x3019	AO Content	W	0.01 (0.00~100.00)	F06.01=18 [AO Content]=RS485 setting
0x201A /0x301A	AO Extension	W	0.01 (0.00~100.00)	F06.11=18 [Extension AO Content]=RS485 setting

10.17.2 Extension Communication(0x31xx)

Address	Name	R/W	Scale(Range)	Content
0x3100	Target Frequency	R/W	0.01Hz (0.00Hz~599.00Hz)	Frequency given via communication.

0x3101	Target Command	W	0x0000 (0x0000~0x0103)	0x0000: OFF 0x0001: FWD operation 0x0002: REV operation 0x0003: FWD jogging 0x0004: REV jogging 0x0005: Deceleration stop 0x0006: Coasting stop 0x0007: Reset 0x0008: Operation disable command, when writing address 3001 written to 8 by communication, AC drive coasts to stop. Writing 9 to address 3001 or re-power on to run again. 0x0009: Operation enable 0X0101: Equivalent to F02.07=1 [Dynamic Auto-tuning], plus operation command 0X0102: Equivalent to F02.07=2 [Static Auto-tuning] plus operation command 0X0103: Equivalent to F02.07=3 [Stator Resistance Auto-tuning] plus operation command
0x3102	Drive Status	R	Binary	Bit0: 0-Stop 1-Operation Bit1: 0-Non-acceleration 1-Acceleration Bit2: 0-Non-deceleration 1-Deceleration Bit3: 0-FWD operation 1-REV operation Bit4: 0-Normal 1-Error Bit5: 0-Unlocked 1-Locked Bit6: 00-Normal 1-Alarm Bit7: 0-Operation enable 1-Operation disable
0x3103	Drive Fault Code	R	0 (0~127)	Read the corresponding value of the fault code via communication.
0x3104	Upper Limit Frequency	R/W	0.01Hz (0.00Hz～F01.10Hz)	Upper limit frequency given via communication.
0x3105	Target Torque	R/W	0.0% (0.0%~100.0%)	Torque setting via communication.
0x3106	FWD Speed Limit	R/W	0.0% (0.0%~100.0%)	FWD speed limit given via communication under torque control.
0x3107	REV Speed Limit	R/W	0.0% (0.0%~100.0%)	REV speed limit given via communication under torque control.
0x310E	ACC Time 1	R/W	0.00s (0.00s~600.00s)	Read and write F01.22.
0x310F	DEC Time 1	R/W	0.00s (0.00s~600.00s)	Read and write F01.23.
0x3110	Error/Alarm Code	R	0 (0~65535)	1～127: Error code, 128～159: alarm code, 0 means no error.

0x3112	Torque Filter Time	R/W	0.000s (0.000s~6.000s)	Read and write F03.47.
0x3118	Terminal Output Control	W	Binary	Select output terminal functions on F06.21~F06.24 to 30(Communication). Bit0: Y terminal Bit1: Relay Bit2: Extension Y2 Bit3: Extension relay
0x3119	AO Content	W	0.01 (0.00~100.00)	F06.01=18 [AO Content]=RS485 setting
0x311A	AO Extension Content	W	0.01 (0.00~100.00)	F06.11=18 [AO Extension Content]=RS485 setting

10.17.3 I/O Extension Communication(0x34xx)

Address	Name	R/W	Scale(Range)	Content
0x3400	Extension SPI Communication	R	0 (0~65535)	CH310E Series are default to 1.
0x3401	Input Terminal Status	R	Binary	Bit0: X1, 0-OFF 1-ON Bit1: X2, 0-OFF 1-ON Bit2: X3, 0-OFF 1-ON Bit3: X4, 0-OFF 1-ON Bit4: X5, 0-OFF 1-ON Bit5: X6, 0-OFF 1-ON Bit6: X7, 0-OFF 1-ON Bit7: X8, 0-OFF 1-ON Bit8: X9, 0-OFF 1-ON Bit9: X10, 0-OFF 1-ON
0x3402	Output Terminal Status	R	Binary	Bit0: Y status, 0-OFF 1-ON Bit1: Relay status, 0-OFF 1-ON Bit2: Extension Y2 status, 0-OFF 1-ON Bit3: Extension relay status, 0-OFF 1-ON
0x3403	Reserved	R	-	-
0x3404	Reserved	R/W	-	-
0x3405	Multi-function Input Terminal Group 0	R	Binary	Each function corresponds to one bit in 0~15. 0:OFF 1:ON
0x3406	Multi-function Input Terminal Group 1	R	Binary	Each function corresponds to one bit in 16~31. 0:OFF 1:ON
0x3407	Multi-function Input Terminal Group 2	R	Binary	Each function corresponds to one bit in 32~47. 0:OFF 1:ON
0x3408	Multi-function Input Terminal Group 3	R	Binary	Each function corresponds to one bit in 48~63. 0:OFF 1:ON
0x3409	Multi-function Input Terminal Group 4	R	Binary	Each function corresponds to one bit in 64~79. 0:OFF 1:ON
0x340A	Multi-function Input Terminal Group 5	R	Binary	Each function corresponds to one bit in 80~95. 0:OFF 1:ON

0x340B	IO Extension Input Terminal Status	R	Binary	Bit0: X6, 0-OFF 1-ON Bit1: X7, 0-OFF 1-ON Bit2: X8, 0-OFF 1-ON Bit3: X9, 0-OFF 1-ON Bit4: X10, 0-OFF 1-ON Bit5~Bit11: Reserved Bit12~Bit15: Correspond to 4-bit virtual terminal signal 0:OFF 1:ON
0x340C	IO Extension Output Terminal Status	R	Binary	Bit0: Extension Y2 status, 0-OFF 1-ON Bit1: Extension relay status, 0-OFF 1-ON
0x340D	IO Extension Analog 1	R	0.00% (0.00%~100.00%)	IO extension analog detection(Motor temperature detection)
0x340E	IO Extension Analog 2	R	-	Reserved
0x340F	IO Extension Analog 3	R	-	Reserved
0x3410	IO Extension Analog 4	R	-	Reserved
0x3414	AO 24	R/W	0 (0~1000)	Use with extensions.
0x3415	AO 25	R/W	0 (0~1000)	Use with extensions.
0x3416	AO 26	R/W	0 (0~1000)	Use with extensions.
0x3417	AO 27	R/W	0 (0~1000)	Use with extensions.
0x3418	AO 28	R/W	0 (0~1000)	Use with extensions.
0x3419	AO 29	R/W	0 (0~1000)	Use with extensions.
0x341A	AO 30	R/W	0 (0~1000)	Use with extensions.
0x341B	AO 31	R/W	0 (0~1000)	Use with extensions.

10.17.4 Cache Register Communication(0x35xx)

Address	Name	R/W	Scale(Range)	Content
0x3500	Register 0	R/W	(0~65535)	Use with extensions.
0x3501	Register 1	R/W	(0~65535)	Use with extensions.
0x3502	Register 2	R/W	(0~65535)	Use with extensions.
0x3503	Register 3	R/W	(0~65535)	Use with extensions.
0x3504	Register 4	R/W	(0~65535)	Use with extensions.
0x3505	Register 5	R/W	(0~65535)	Use with extensions.
0x3506	Register 6	R/W	(0~65535)	Use with extensions.
0x3507	Register 7	R/W	(0~65535)	Use with extensions.

0x3508	Register 8	R/W	(0~65535)	Use with extensions.
0x3509	Register 9	R/W	(0~65535)	Use with extensions.
0x350A	Register 10	R/W	(0~65535)	Use with extensions.
0x350B	Register 11	R/W	(0~65535)	Use with extensions.
0x350C	Register 12	R/W	(0~65535)	Use with extensions.
0x350D	Register 13	R/W	(0~65535)	Use with extensions.
0x350E	Register 14	R/W	(0~65535)	Use with extensions.
0x350F	Register 15	R/W	(0~65535)	Use with extensions.

10.17.5 Extension Register and Power-down Save(0x36xx)

Address	Name	R/W	Scale(Range)	Content
0x3600	Customized Error Register	R/W	0 (11~18)	11~18 correspond to E. FA1~E. FA8.
0x3601	Customized Alarm Register	R/W	0 (11~16)	11~16 correspond to E. FA1~E. FA6.
0x3602	Reserved	R/W	-	-
0x3603	Reserved	R/W	-	-
0x3604	Reserved	R/W	-	-
0x3605	Reserved	R/W	-	-
0x3606	Reserved	R/W	-	-
0x3607	Reserved	R/W	-	-
0x3608	Reserved	R/W	-	-
0x3609	Reserved	R/W	-	-
0x360A	Power-down Save Parameter 1	R/W	(0~65535)	Use with extensions, view via C02.32.
0x360B	Power-down Save Parameter 2	R/W	(0~65535)	Use with extensions, view via C02.33.
0x360C	Power-down Save Parameter 3	R/W	(0~65535)	Use with extensions, view via C02.34.
0x360D	Power-down Save Parameter 4	R/W	(0~65535)	Use with extensions, view via C02.35.
0x360E	Power-down Save Parameter 5	R/W	(0~65535)	Use with extensions, view via C02.36.
0x360F	Power-down Save Parameter 6	R/W	(0~65535)	Use with extensions, view via C02.37.
0x3610	Power-down Save Parameter 7	R/W	(0~65535)	Use with extensions, view via C02.38.
0x3611	Power-down Save Parameter 8	R/W	(0~65535)	Use with extensions, view via C02.39.
0x3612	Power-down Save Parameter 9	R/W	(0~65535)	Use with extensions, view via C02.40.
0x3613	Power-down Save Parameter 10	R/W	(0~65535)	Use with extensions, view via C02.41.

0x3614	Power-down Save Parameter 11	R/W	(0~65535)	Use with extensions, view via C02.42.
0x3615	Power-down Save Parameter 12	R/W	(0~65535)	Use with extensions, view via C02.43.
0x3616	Power-down Save Parameter 13	R/W	(0~65535)	Use with extensions, view via C02.44.
0x3617	Power-down Save Parameter 14	R/W	(0~65535)	Use with extensions, view via C02.45.
0x3618	Power-down Save Parameter 15	R/W	(0~65535)	Use with extensions, view via C02.46.
0x3619	Power-down Save Parameter 16	R/W	(0~65535)	Use with extensions, view via C02.47.

Chapter 7 Elevator Control

7.1 Brake Release Sequence for Different Control Modes

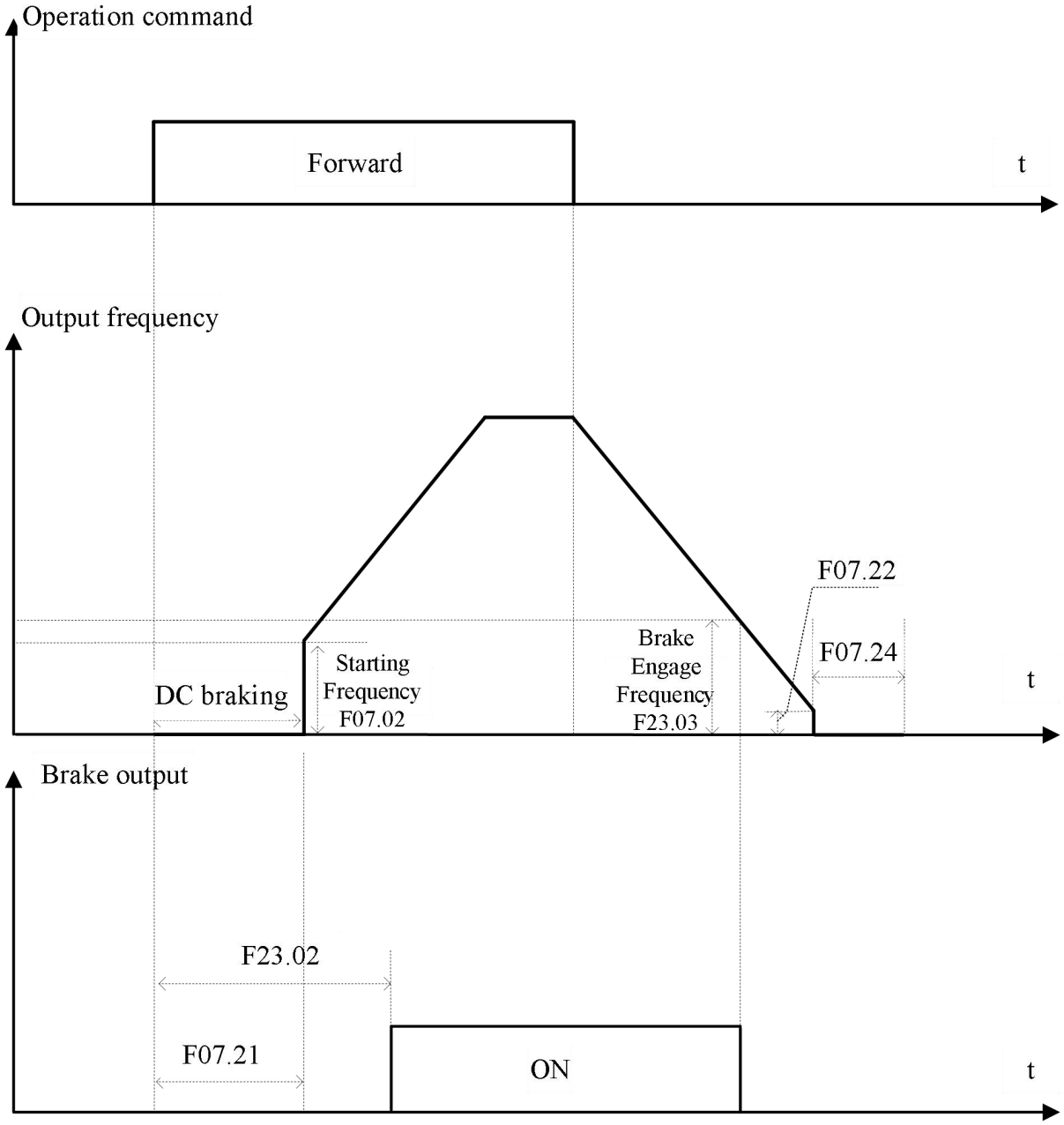
There are different control sequences for brake release for elevator-specific functions depending on the motor control and start-up modes, as well as the release conditions. But the brake application has only one condition.

Here is the brake application sequence. When the output frequency is lower than the brake apply frequency, the drive sends out the apply signal and the system brake is engaged, and the brake apply frequency is set by F23.03 [Brake Engage Frequency]. And when the stopping holding frequency is valid, i.e. the duration of the holding frequency at shutdown is set, the minimum value of the holding frequency is F07.42[Stopping Hold Frequency].

Here is the brake release sequence:

7.1.1VF Control Mode

1. DC braking before starting from the starting frequency, and the DC braking time <=release delay
   DC braking before starting from the starting frequency, and the DC braking time is 0, smaller than release delay;

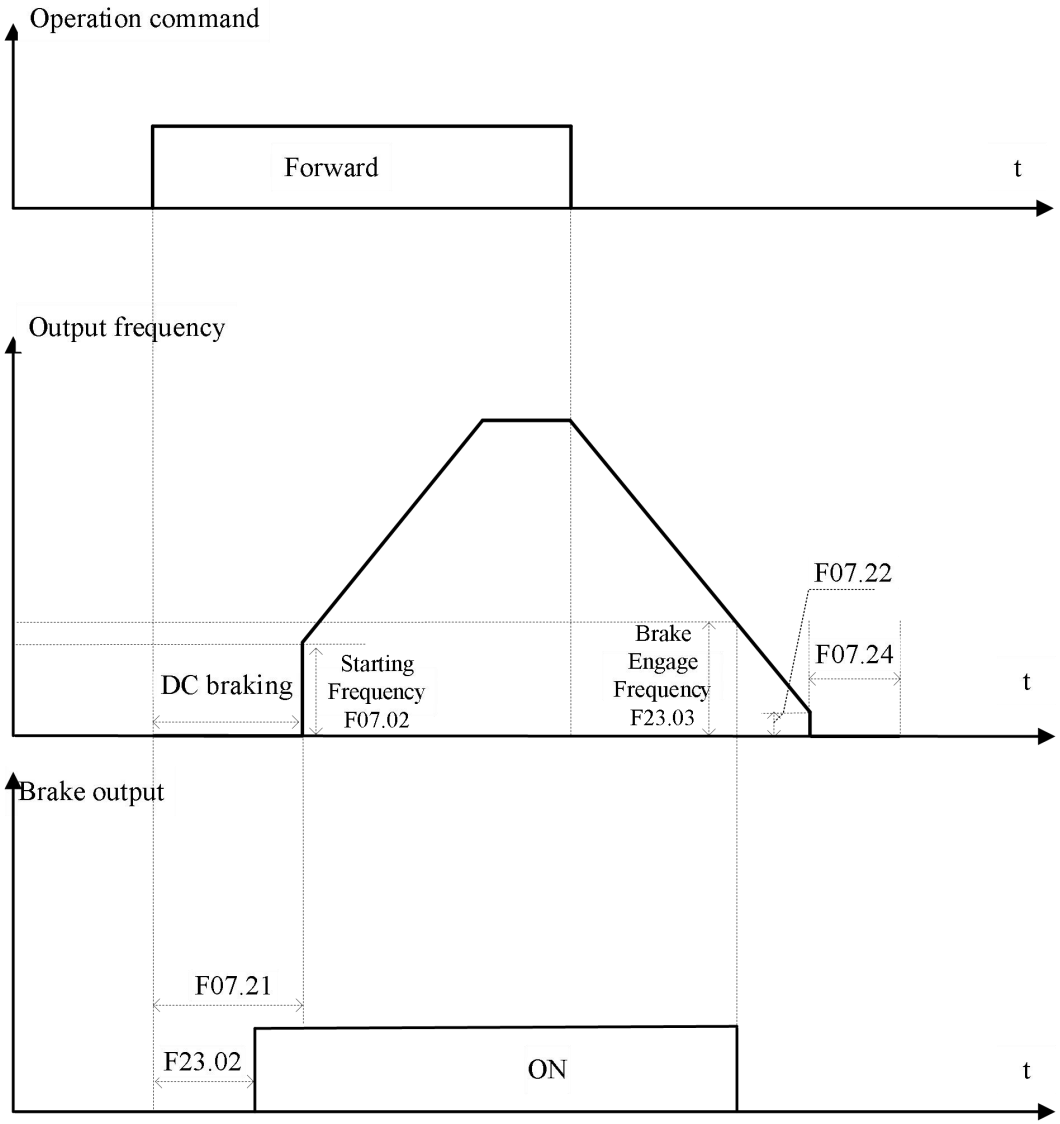


When the operation command is valid, DC braking is carried out first, and the brake is released after the DC braking time and the release delay.

If the brake release requires the output current detection, the drive will detect the current before releasing the

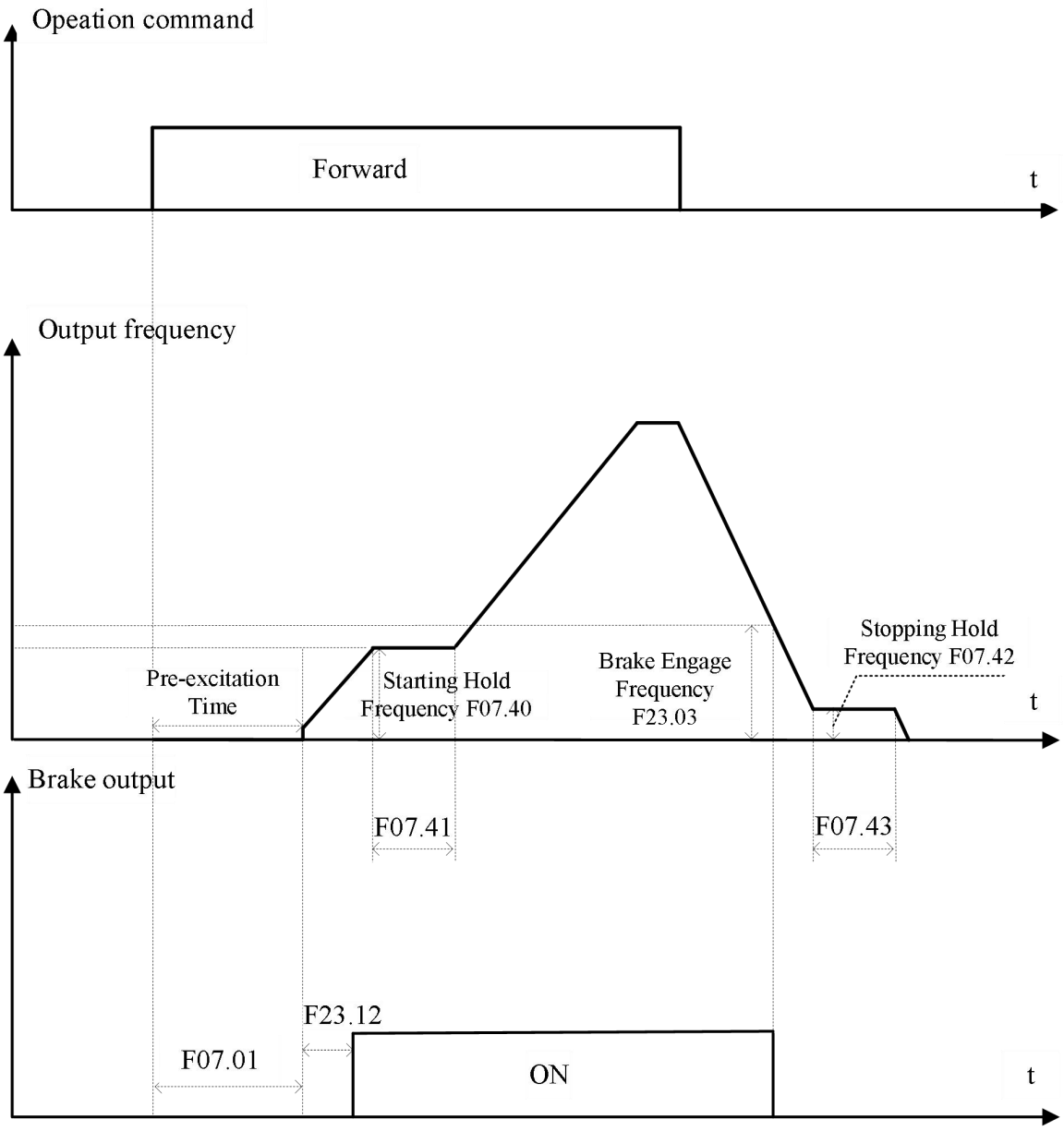
brake, and if the actual output current is less than the set current, it will report E.E62, that means current not reached before brake releasing, will be reported.

2. The starting method: DC braking before starting from the starting frequency, and the DC braking time>release delay;



When the operation command is valid, after the release delay, and the brake releases. At this time the drive is still in the DC braking state, and starts after the DC braking is over. If the brake release requires the output current detection, the drive will detect the current before releasing the brake, and if the actual output current is less than the set current, fault E.E62, that means current not reached before brake releasing, will be reported.

7.1.2Vector Control Mode



In vector control mode, the drive starts from the starting frequency. When the operation command is valid, the pre-excitation is performed first, after the time set on F23.12, the brake releases. If the starting hold frequency is set, it will continue to run at the starting hold frequency for a period of time, followed by normal operation.

If the brake release requires the output current detection, the drive will detect the current before releasing the brake, and if the actual output current is less than the set current, fault E.E62, that means current not reached before brake releasing, will be reported.

7.2 F23.00: Elevator Control

Code (Add)	Name	Content	Default	Adjmt
F23.00 (0x5700)	Elevator Control	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Control station** 0~8: Automatic switching of elevator parameters according to the control station **Tens-bit: Elevator speed** 0: 0.5mps 1: 0.7mps 2: 1.0mps 3: 1.6mps 4: 2.0mps	5	STOP

7.3 F23.01~F23.33: Brake Engage/Release Delay

Code (Add)	Name	Content	Default	Adjmt
F23.01 (0x5701)	Brake Release Current	**V/F SVC FVC PMVF PMSVC PMFVC** **Note**: When the current before releasing the brake is less than this value, report E.E62: Low release current. Range: 0.0%~100.0%(100.0% corresponds to the motor rated voltage)	20	STOP
F23.02 (0x5702)	Brake Release Delay	**V/F** SVC FVC PMVF PMSVC PMFVC Set the delay time before brake release. Range: 0.0s~2.00s	0.5	STOP
F23.03 (0x5703)	Brake Engage Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** The brake works when frequency is lower than this setting. Range: 0.0Hz～10.00Hz. When the stopping frequency remains valid, the minimum value of this parameter is F07.42.	0.1	STOP

7.4 F23.04: Phase Loss Detection Current

Code (Add)	Name	Content	Default	Adjmt
F23.04 (0x5704)	Phase Loss Detection Current	**V/F SVC FVC PMVF PMSVC PMFVC** Set for current detection during DC braking and pre-excitation, 100% corresponds to the rated current of the motor, and the detection can be turned off when it is set to 0. Range: 0% ～ 50%. Phase current detection shall be carried out before DC braking and pre-excitation. If it is less than this value, E.E63-Current error shall be reported. See E.E63 fault description for details.	0%	STOP

7.5 F23.05: Brake Control

Code (Add)	Name	Content	Default	Adjmt
F23.05 (0x5705)	Brake Control	**V/F SVC FVC PMVF PMSVC PMFVC** **Ones-bit: Low-frequency brake** 0: Apply the brake when the target frequency and the output frequency are lower than the holding frequency, and it no longer releases 1: After the low-frequency brake application, it releases again when the target frequency and the output frequency are higher than the holding frequency **Tens-bit: Stop command lock** 0: OFF	0100	STOP

		1: Lock 1 After the stop command is issued, if the output frequency <=F7.42 [Stop holding frequency], stop command is locked, during which the drive does not respond to the operation command until it stops. 2: Lock 2 After the stop command is issued, the stop command is locked during DC braking, during which the drive does not respond to the operation command until it stops. **Hundreds-bit: Light duty detection in evacuation mode** 0: OFF 1: ON **Thousands-bit: Forced command in evacuation mode** 0: OFF 1: ON		

7.6 F23.06: Multi-frequency 0

Code (Add)	Name	Content	Default	Adjmt
F23.06 (0x5706)	Multi-frequency 0	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the target frequency when none of the multi-frequency terminals are valid at F01.02=11 (Frequency Source A to multi-frequency). Range: 0.00Hz~Max. frequency	10.00Hz	STOP

7.7 F23.07: Torque Boost Proportional Gain

Code (Add)	Name	Content	Default	Adjmt
F23.07 (0x5707)	Torque Boost Proportional Gain	**V/F** SVC FVC PMVF PMSVC PMFVC Range: 0.0%~500.0%	160.0%	STOP

7.8 F23.08: Torque Boost Cutoff Frequency

Code (Add)	Name	Content	Default	Adjmt
F23.08 (0x5708)	Torque Boost Cutoff Frequency	**V/F** SVC FVC PMVF PMSVC PMFVC Range: 0.00Hz~50.00Hz	5.00Hz	STOP

7.9 F23.09: ASR Gain Switching Frequency Percentage

Code (Add)	Name	Content	Default	Adjmt
F23.09 (0x5709)	Gain Switching Frequency Percentage	V/F **SVC** **FVC** PMVF **PMSVC** **PMFVC** Set the asymptotic change of ASR proportional and integral gains under vector control. When it is 0, the original ASR gain is valid, i.e. F03.05/F03.09. Range: (0.0%~100.0%)	1.0%	STOP

7.10 F23.10: ASR Gain Switching Time

Code (Add)	Name	Content	Default	Adjmt
F23.10 (0x570A)	Gain Switching Time	V/F **SVC** **FVC** PMVF **PMSVC** **PMFVC** Range: 0.1s~10.0s	1.5s	STOP

7.11 F23.11: Brake Mode during Emergency Stop

Code (Add)	Name	Content	Default	Adjmt
F23.11 (0x570B)	Brake Mode during Emergency Stop	**V/F** **SVC** **FVC** **PMVF** **PMSVC** **PMFVC** 0: Brake engage frequency, when the target frequency is lower than the brake engage frequency 1: Direct brake Engage the brake immediately during emergency stop **Range:** 0~1	0	STOP

7.12 F23.13: Starting Torque Direction

Code (Add)	Name	Content	Default	Adjmt
F23.13 (0x5B0D)	Starting Torque Direction	**V/F** **SVC** **FVC** **PMVF** **PMSVC** **PMFVC** Ones-bit: F03.24 [Starting Torque] direction 0: Remain 1: Invert Tens-bit: Forced magnetic pole search during faults 0: ON 1: OFF Range: 0~FFFF	0	STOP

7.13 F23.14~F27.59: Brake Torque Detection

Code (Add)	Name	Content	Default	Adjmt
F23.14 (0x5B0E)	Brake Resistance Detection	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: ON before operation Range: 0~1	1	STOP
F23.15 (0x5B0F)	Brake Resistance Detection Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the brake resistance detection time. Range: 0ms~2000ms	200ms	STOP
F23.16 (0x5710)	Bus Voltage Change Ratio	**V/F SVC FVC PMVF PMSVC PMFVC** If the minimum value of C04.01[Bus Voltage Change Ratio] is lower than -F23.16 when the brake is working, it will be considered that the braking resistor is connected, and then the system will start as normal; otherwise, the braking resistor is abnormal, and the system will report E.103. Range: 0.0V/s~500.0V/s	100.0V/s	STOP

7.14 F23.07: Torque Boost Proportional Gain 1

Code (Add)	Name	Content	Default	Adjmt
F23.17 (0x5B11)	Torque Boost Proportional Gain 1	**V/F** SVC FVC PMVF PMSVC PMFVC Used with F23.07/F23.08 Range: 0.0%~500.0%	100.0%	STOP

7.15 F23.18: Torque Boost Cutoff Frequency 1

Code (Add)	Name	Content	Default	Adjmt
F23.18 (0x5B12)	Torque Boost Cutoff Frequency 1	**V/F** SVC FVC PMVF PMSVC PMFVC Used with F23.07/F23.08 Range: 0.00Hz~50.00Hz	5.00Hz	STOP

7.16 F23.06: Multi-frequency 0 Filter Time

Code (Add)	Name	Content	Default	Adjmt
F23.19 (0x5B13)	Multi-frequency Filter Time	**V/F SVC FVC PMVF PMSVC PMFVC** Set the target frequency filter time when F1.02=11. Range: 0ms~6000ms	0.015s	STOP

7.17 F23.21: Automatic Torque Boost Enable

Code (Add)	Name	Content	Default	Adjmt
F23.21 (0x5B15)	Automatic Torque Boost Enable	**V/F** SVC FVC PMVF PMSVC PMFVC 0: ON during constant, accelerating and decelerating operation 1: ON during accelerating and perform once only After entering the constant speed or deceleration after startup, the torque boost proportional factor gradually changes to 100.0% according to F23.22 until the end of this operation. Range: 0~1	1	STOP

7.18 F23.22: Automatic Torque Boost Factor Change Time

Code (Add)	Name	Content	Default	Adjmt
F23.22 (0x5B16)	Automatic Torque Boost Factor Change Time	**V/F** SVC FVC PMVF PMSVC PMFVC Range: 0.000s~5.000s	4.000s	STOP

7.19 F23.23: Start Delay

Code (Add)	Name	Content	Default	Adjmt
F23.23 (0x5B17)	Start Delay	**V/F SVC FVC PMVF PMSVC PMFVC** The interval between the start command and the actual operation of the drive under control of the output contactor, after which detection of whether the contactor is engaged or not starts. Range: 0.000s~50.00s	0.3s	STOP

7.20 F23.24: Error Reset

Code (Add)	Name	Content	Default	Adjmt
F23.24 (0x5B18)	Error Reset	**V/F SVC FVC PMVF PMSVC PMFVC** 0: OFF 1: ON **Ones-bit: Output phase loss** E.oLF(19), E.oLF1(20), E.oLF2(21), E.oLF3(22) and E.E63(63) **Tens-bit: Low release current** E.E62(62) **Hundreds-bit: System error** E.SC1~SC4(1~4) **Thousands-bit: Current detection error** E.HAL1~E.HAL3(35,36,38) Range: 0x0~0x1111	0x11	STOP

7.21 F23.25: Output Contactor OFF Delay

Code (Add)	Name	Content	Default	Adjmt
F23.25 (0x5B19)	Output Contactor OFF Delay	**V/F SVC FVC PMVF PMSVC PMFVC** Execute under normal shutdown but not under coasting stop or fault status. Range: 0.000s~20.00s	0.20s	STOP

7.22 F23.26~F23.28: Evacuation Mode

Code (Add)	Name	Content	Default	Adjmt
F23.26 (0x5B1A)	Undervoltage Threshold	**V/F SVC FVC PMVF PMSVC PMFVC** The minimum undervoltage protection point of the busbar in evacuation mode is 200V. Range: 200V~500V	200V	STOP
F23.27 (0x5B1B)	Upper Frequency Limit	**V/F SVC FVC PMVF PMSVC PMFVC** Set the upper frequency limit under evacuation mode with reference to F01.10[Max. Frequency] Range: 0.0%~50.0%	15%	STOP
F23.28 (0x5B1C)	Enable Frequency	**V/F SVC FVC PMVF PMSVC PMFVC** Set the frequency to trigger the evacuation mode, with reference to F01.10[Max. Frequency] Range: 0.0%~50.0%	0%	STOP

7.23 F23.29: Stopping Torque Change Rate

Code (Add)	Name	Content	Default	Adjmt
F23.29 (0x5B1D)	Stopping Torque Change Rate	V/F SVC **FVC** PMVF PMSVC **PMFVC** It is valid for FVC, and used with the stop holding frequency. 1. F07.42 [Stopping Hold Frequency] is valid 2. F07.03 [Brake Engage Frequency] >=F07.42 [Stopping Hold Frequency] Range: 0.0A/s～500.0A/s	0	STOP

7.24 F23.30~F23.36 Anti-Roll Back Function(ARB)

Code (Add)	Name	Content	Default	Adjmt
F23.30 (0x5B1E)	Delay Time	**V/F SVC FVC PMVF PMSVC PMFVC** The anti-reversion function is a position control, i.e. zero position control, also called zero servo control. In this mode, the anti-reversion function is automatically activated when the brake release command is issued, and it moves to the normal operation state when the times reaches the set here. **Note**: This function may have been activated during	0	STOP

		DC braking and pre-excitation, but it will wait until the DC braking or pre-excitation has ended to work. Turn off this function when F23.30=0. Range: 0.000s~5.000s		
F23.31 (0x5B1F)	Proportional Gain	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC The larger the value is, the stronger the zero servo rigidity is, but if it is too large, it may cause oscillation. Range: 0.0~500.0	0	STOP
F23.32 (0x5B20)	Frequency Limit	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC 100.0% corresponds to the F01.10 [Max. Frequency], and it is recommended that the value should not exceed 20% for zero servo function. Range: 0.0~100.0	100.0	STOP
F23.33 (0x5B21)	ASR Proportional Gain	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Range: 0.00%~100.00%	40.00%	STOP
F23.34 (0x5B22)	ASR Integral Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Range: 0.0s~6.000s	0.030s	STOP
F23.35 (0x5B23)	PI Transition Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the transition time for ASR PI parameters before the end of anti-roll back from the ARB specific parameters to the normal parameters F3.02/03/06/07. Range: 0.0s~5.000s	0.0s	STOP
F23.36 (0x5B24)	ASR Filter Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Range: 0.0ms~100.0ms	0.0ms	STOP

7.25 F23.40~F23.42: Brake Detection

Code (Add)	Name	Content	Default	Adjmt
F23.40 (0x5B28)	Stopping Contact Detection Time	**V/F** **SVC** **FVC** **PMVF** **PMSVC** **PMFVC** Set the time to detect the contact closing during shutdown, and report an error if an abnormal closing occurs. Detection is off when this value is 0. Range: 0s~120.00s	1	STOP
F23.41 (0x5B29)	Stopping Brake Detection Time	**V/F** **SVC** **FVC** **PMVF** **PMSVC** **PMFVC** Set the time to detect the brake release during shutdown, and report an error if an abnormal brake release occurs. Detection is off when this value is 0. Range: 0s~120.00s	5%	STOP
F23.42 (0x5B2A)	Running Brake Detection Time	**V/F** **SVC** **FVC** **PMVF** **PMSVC** **PMFVC** Set the time to detect the brake signal during operation, and report an error if an abnormal closing condition occurs. A value of 0 reports the fault immediately. Range: 0.000s~1.000s	0.300s	STOP

7.26 F23.43: Brake Delay

Code (Add)	Name	Content	Default	Adjmt
F23.43 (0x5B2B)	Brake Delay	**V/F SVC FVC PMVF PMSVC PMFVC** When the brake engaging condition is reached, the brake engage signal will be output after the delayed time set here. Range: 0.000s～10.000s	0.00	STOP

7.27 F23.44: Current Error Detection Time Percentage

Code (Add)	Name	Content	Default	Adjmt
F23.44 (0x5B2C	Current Error Detection Time Percentage	**V/F SVC FVC PMVF PMSVC PMFVC** Before brake release, the drive performs output phase-loss detection. If any phase current remains below the F23.04 threshold for longer than F23.44 × Detection Time, an output phase-loss error will be triggered. Setting range: 0.0%~100.0%	0.00	STOP

7.28 F23.45: Z-Pulse Correction Index

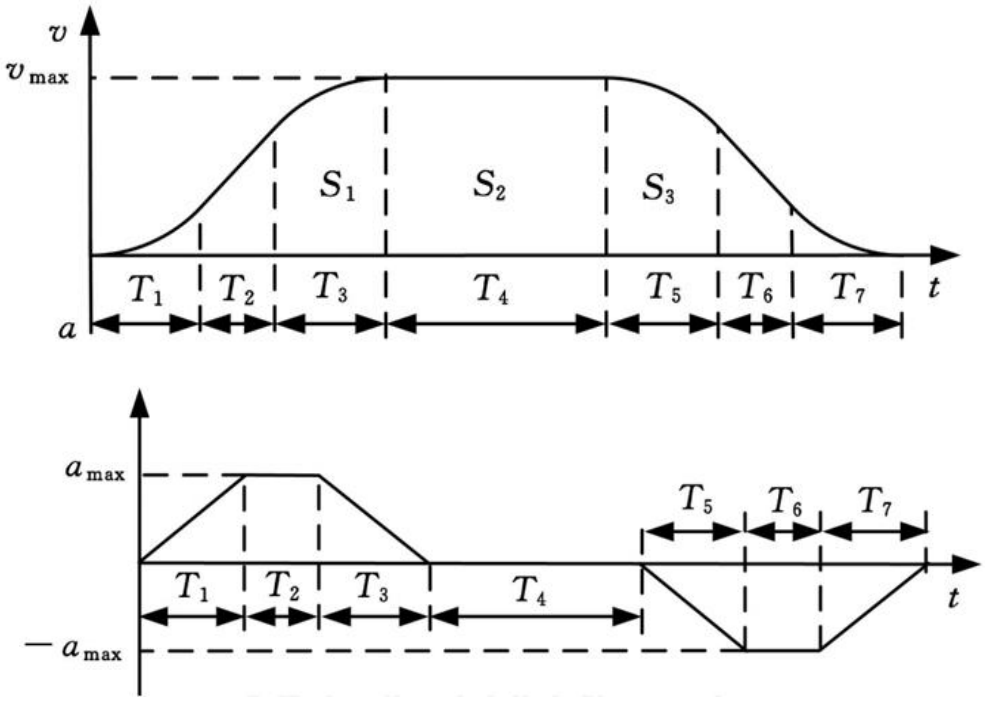
Code (Add)	Name	Content	Default	Adjmt
F23.45 (0x5B2D)	Z-Pulse Correction Index	V/F SVC **FVC** PMVF PMSVC **PMFVC** For sin/cos encoders with Z-pulse detection enabled, this parameter defines at which Z-pulse count the encoder installation angle is updated. By default, the installation angle is corrected at the 2nd Z-pulse. Setting range: 0~10	2	STOP

Chapter 8 Elevator S-curve

The elevator-specific S-curve has a total of 4 groups of S-curve parameters, respectively Ramp1/2/3/4, and each group of S-curve parameters includes ACC Time, DEC Time, ACC Start Frequency Percentage, ACC End Frequency Percentage, DEC Start Frequency Percentage, and DEC End Frequency Percentage.

To use the Ramp1 and Ramp2, and select the state by the digital input terminal(47: S-curve switching) so that Ramp2 is used when the corresponding terminal is valid, otherwise, Ramp1 is used; Real-time switching of Ramp1 and Ramp2 during operation is available and different cut-in strategies need to be selected according to the current acceleration.

To use the Ramp3 and Ramp4,when the stop command is issued, if the current target frequency is larger than or equal to F29.28 [Stopping Ramp Frequency Threshold], use Ramp3, otherwise use Ramp4.



As shown in the above figure, T1+T2+T3 are the acceleration time of the S-curve from 0 to the maximum frequency during both the start and end phases. T5+T6+T7 are the deceleration times of the S-curve from the maximum frequency deceleration to 0 during both the start and end phases.

Total s-curve acceleration time: The time to accelerate from 0 to the target speed.

Total s-curve deceleration time: The time to decelerate from the current speed to 0.

S-curve acceleration start frequency percentage: The acceleration start phase is S-curve. During T1 time, the rising frequency value accounts for the proportion of the maximum speed, e.g. S-curve ACC Start Frequency Percentage. Modify this parameter can also modify the S-curve time of the acceleration start phase.

S-curve acceleration end frequency percentage: The acceleration end phase is S-curve. During T3 time, the rising frequency value accounts for the proportion of the maximum speed, e.g. S-curve ACC End Frequency Percentage. Modify this parameter can also modify the S-curve time of the acceleration end phase.

S-curve deceleration start frequency percentage: The deceleration start phase is S-curve. During T5 time, the falling frequency value accounts for the proportion of the maximum speed, e.g. S-curve DEC Start Frequency Percentage. Modify this parameter can modify also the S-curve time of the deceleration start phase.

S-curve deceleration end frequency percentage: The deceleration end phase is S-curve. During T7 time, the falling frequency value accounts for the proportion of the maximum speed, e.g. S-curve DEC End Frequency Percentage. Modify this parameter can also modify the S-curve time of the acceleration start phase.

8.1 F29.00～F29.06: Ramp1

Code (Add)	Name	Content	Default	Adjmt
F29.00 (0x5D00)	Ramp1 Type	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC 0: Straight line 1: S-curve The S-curve characteristic function enables the smooth starting and stopping of machines and reduces the impact on the load. Range: 0~1	1	STOP
F29.01 (0x5D01)	Ramp1 ACC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S-curve output frequency to accelerate from 0Hz to the reference frequency. Range: 0.00s~20.00s	3.00s	STOP
F29.02 (0x5D02)	Ramp1 DEC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S output frequency to decelerate from the reference frequency to 0Hz. Range: 0.00s~20.00s	2.15s	STOP
F29.03 (0x5D03)	Ramp1 ACC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration start phase of Ramp1. Range: 0%~99%	50%	STOP
F29.04 (0x5D04)	Ramp1 ACC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration end phase of curve 1. Range: 0%~99%	40%	STOP
F29.05 (0x5D05)	Ramp1 DEC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration start phase of curve 1. Range: 0%~99%	50%	STOP
F29.06 (0x5D06)	Ramp1 DEC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration end phase of curve 1. Range: 0%~99%	50%	STOP

8.2 F29.07: S-curve ACC/DEC End Proportion Coefficient

Code (Add)	Name	Content	Default	Adjmt
F29.07 (0x5D07)	S-curve ACC/DEC End Proportion Coefficient	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Range: 0.0~2.0	1.0	STOP

8.3 F29.00～F29.06: Ramp2

Code (Add)	Name	Content	Default	Adjmt
F29.10 (0x5D0A)	Ramp2 Type	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC 0: Straight line 1: S-curve The S-curve characteristic function enables the smooth starting and stopping of machines and reduces the impact on the load. Range: 0~1	1	STOP
F29.11 (0x5D0B)	Ramp2 ACC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S-curve output frequency to accelerate from 0Hz to the reference frequency. Range: 0.00s~100.00s	20.00s	STOP
F29.12 (0x5D0C)	Ramp2 DEC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S output frequency to decelerate from the reference frequency to 0Hz. Range: 0.00s~20.00s	2.00s	STOP
F29.13 (0x5D0D)	Ramp2 ACC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration start phase of Ramp2. Range: 0%~99%	50%	STOP
F29.14 (0x5D0E)	Ramp2 ACC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration end phase of Ramp2. Range: 0%~99%	5%	STOP
F29.15 (0x5D0F)	Ramp2 DEC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration start phase of Ramp2. Range: 0%~99%	30%	STOP

F29.16 (0x5D10)	Ramp2 DEC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration end phase of Ramp2. Range: 0%~99%	30%	STOP

8.4 F29.00~F29.06: Ramp3

Code (Add)	Name	Content	Default	Adjmt
F29.20 (0x5D14)	Ramp3 Type	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC 0: Straight line 1: S-curve The S-curve characteristic function enables the smooth starting and stopping of machines and reduces the impact on the load. Range: 0~1	1	STOP
F29.21 (0x5D15)	Ramp3 ACC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S-curve output frequency to accelerate from 0Hz to the reference frequency. Range: 0.00s~20.00s	1.00s	STOP
F29.22 (0x5D16)	Ramp3 DEC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S output frequency to decelerate from the reference frequency to 0Hz. Range: 0.00s~20.00s	1.00s	STOP
F29.23 (0x5D17)	Ramp3 ACC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration start phase of Ramp3. Range: 0%~99%	5%	STOP
F29.24 (0x5D18)	Ramp3 ACC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration end phase of Ramp3. Range: 0%~99%	5%	STOP
F29.25 (0x5D19)	Ramp3 DEC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration start phase of Ramp3. Range: 0%~99%	15%	STOP
F29.26 (0x5D1A)	Ramp3 DEC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration end phase of Ramp3. Range: 0%~99%	5%	STOP

8.5 F29.28: Stopping Ramp Frequency Threshold

Code (Add)	Name	Content	Default	Adjmt
F29.28 (0x5D1C)	Stopping Ramp Frequency Threshold	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC After stop command is issued, if the current output frequency is larger than or equal to F29.28, use Ramp3, otherwise Ramp4. Range: 0.0%~100.0%	15.5%	STOP

8.6 F29.29: Ramp4 for Forced DEC

Code (Add)	Name	Content	Default	Adjmt
F29.29 (0x5D1D)	Ramp4 Enable	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC When the output frequency and target frequency are lower than F29.28 the stopping ramp frequency threshold, Ramp4 is forced to be enabled for deceleration. 0: OFF 1: ON Range: 0~1	0	STOP

8.7 F29.30: Ramp4

Code (Add)	Name	Content	Default	Adjmt
F29.30 (0x5D1E)	Ramp4 Type	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC 0: Straight line 1: S-curve The S-curve characteristic function enables the smooth starting and stopping of machines and reduces the impact on the load. Range: 0~1	1	STOP
F29.31 (0x5D1F)	Ramp4 ACC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S-curve output frequency to accelerate from 0Hz to the reference frequency. Range: 0.00s~20.00s	0.50s	STOP
F29.32 (0x5D20)	Ramp4 DEC Time	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the total time required for the S-curve output frequency to decelerate from the reference frequency to 0Hz. Range: 0.00s~20.00s	4.00s	STOP

F29.33 (0x5D21)	Ramp4 ACC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration start phase of Ramp4. Range: 0%~99%	5%	STOP
F29.34 (0x5D22)	Ramp4 ACC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the rising frequency and the max. frequency during acceleration end phase of Ramp4. Range: 0%~99%	5%	STOP
F29.35 (0x5D23)	Ramp4 DEC Start Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration start phase of Ramp4. Range: 0%~99%	30%	STOP
F29.36 (0x5D24)	Ramp4 DEC End Frequency Percentage	**V/F** **SVC** **FVC** PMVF PMSVC PMFVC Set the percentage between the falling frequency and the max. frequency during deceleration end phase of Ramp4. Range: 0%~99%	50%	STOP

Version Change Log

Date	Version	Content
2025.11	V1.1	1. Section 2.3 Modify Output Frequency Range 2. Modification of factory values for groups F23.04, F23.05, F23.07, F23.08, F23.09, F23.10, and F23.17 3. Add groups F23.44 and F23.45
2025.03	V1.0	First version issued

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