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1. Safety Information and Precautions

1.1. Safety Information

Please read this chapter carefully while installing and commissioning the inverter and be sure to follow the safety precautions required in this chapter. We will assume no liability or responsibility for any injury or loss caused by improper operation.

In this manual, safety precautions are classified into the following two categories：

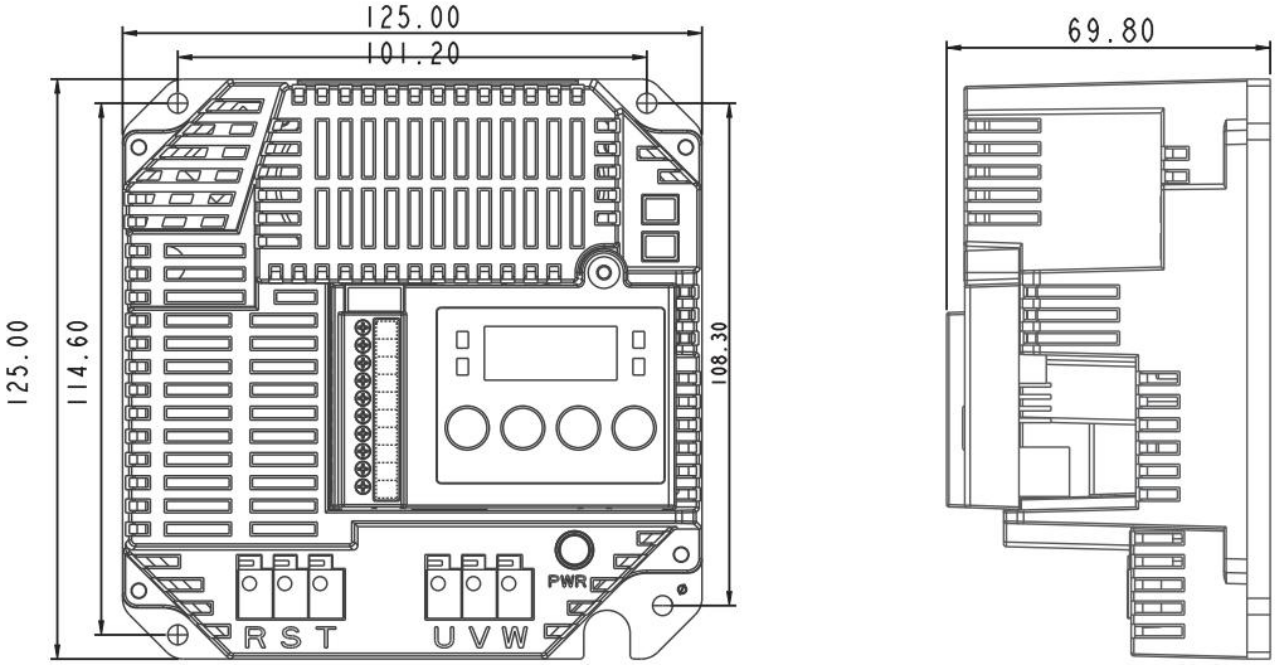
Danger — Indicates there is a risk of electric shock, which may cause equipment damage or personal injury if not avoided.

Warning — Indicates potential risks, which could result in equipment damage or property loss if not avoided

 Danger	★Do not install the equipment if you find water seepage, component missing or damage upon unpacking！
	★Do not use the strip to supply power to the inverter.
	★Do not conduct any high voltage insulation and withstand voltage test.
	★Before touching the inverter, disconnect the power supply; After power off, terminal and internal will exist high pressure for ten minutes, during when don't touch any input/output terminals.
	★Rotating motor may feed electrical energy back to the inverter, before touching it, please ensure that the motor has stopped, or disconnected with the inverter.
	★Before connecting the cable, make sure there is no voltage at the power terminal.
	★Ground the inverter as standard. The ground wire must be able to withstand the maximum fault current limited by the fuse or circuit breaker.
 Warning	▲ Handle the equipment with care during transportation.
	▲ Keep away from combustibles and electrical conductors.
	▲ Inverters are best used indoors, IP20 inverters must be installed in a level 2 pollution environment or in the cabinet of the IP54 and higher level of protection.
	▲ Ensure adequate heat dissipation while installing the inverter and do not drill holes near it, for drilling dust and metal debris could fall into the inverter, which may lead to danger.
	▲ Do not drop wire end or screw into the inverter.
	▲ Never connect the power cables to the output terminals (U, V, W) of the inverter.
	▲ Never connect the braking resistor between the DC bus terminals DC+ and DC-.
	▲ Do not install any automatic control device between the inverter and the motor.
	▲ When the control cable is near the power line, keep a minimum spacing of 100 mm and arrange a 90-degree crossover. Make sure all the terminals have been fastened using the appropriate torque.
	▲ If the enable input signal is valid, the driven motor may start directly after being powered on.
	▲ Ensure that the supply voltage, frequency and phase are in accordance with the inverter rating.
	▲ When motor autotune, pay attention that the motor may rotate, which may cause danger.
	▲ The inverter can control the motor to run above or below the rated speed. When needing the motor to run overrated speed, you can confirm whether it is feasible with motor manufacturers.
	▲ Do not power on or off the inverter frequently, which may be easy to shorten its service life. Please power on again ten minutes after power off.
	▲ In the area with an altitude of more than 1000m, derating is required.
	▲ Do not try to repair the inverter when errors and faults occur. Contact us for more help.

2. Product Information

2.1. Dimensional drawing of product appearance



A	B	DI1	DI2	GND	AI1	AO1	10V	TA	TB

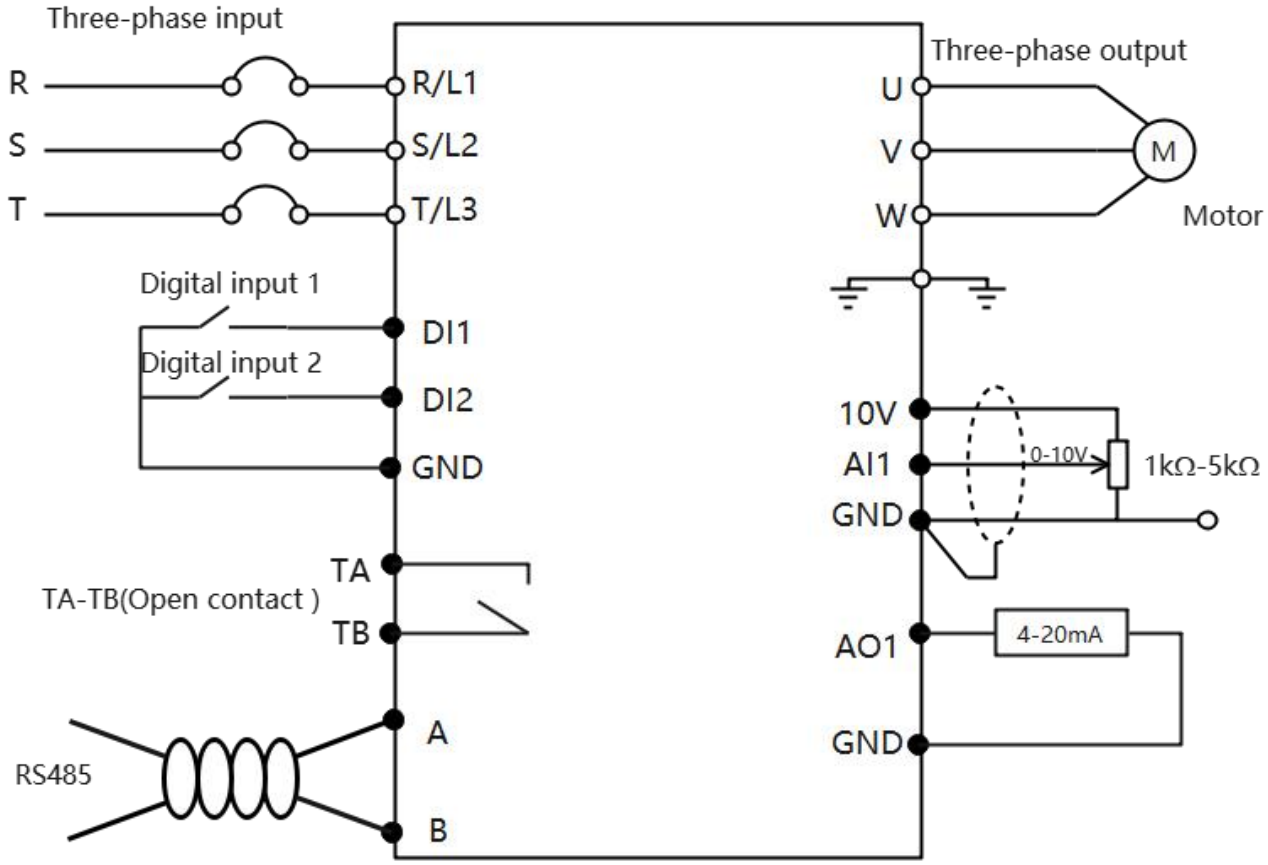
Control Terminal

Type	Terminal	Terminal Name	Function Description
Power Output	+10V-GND	Terminal of 10V power output	Provide +10V power supply for external units, with maximum output current of 10mA. It is generally used as the operating power supply for the external potentiometer. The potentiometer resistance range is 1-5kΩ.
Analog Input	AI1-GND	Analog input terminal 1	1.F2-31 set voltage and current mode. 2. Input impedance： 22kΩ
Digital Input	DI1-GND	Digital Input 1	1. Optical coupling isolation. 2. 2. Input impedance：2.4kΩ.
	DI2-GND	Digital Input 2	
Analog Output	AO1-GND	Analog output	Only for temperature sensors
485 Communication Interface	S+/S-	485 communication interface	Respectively are the positive end of 485 differential signal and the negative end of 485 differential signal (reference ground: GND). Standard 485 communication interface, please use twisted pair or shielded cable.

2.2. General Type Operation Panel

启动 停止	Start in keyboard mode Stop in keyboard mode	▲	Increase the data or the function code. Press the upper and lower keys at the same time to shift.
编程	Enter or exit the menu. Enter the menu to confirm the parameter Settings. Press 3 seconds to enter parameter setting.	▼	Decrease the data or the function code. Press the upper and lower keys at the same time to shift.

2.3. Terminal Wiring Diagram



3. Parameters

The symbols in the function code table are described as follows:
"☆": The parameter can be modified when the inverter is in either stop or running state.
"★": The parameter cannot be modified when the inverter is in the running state.
"●": The parameter is the measured value in real-time and cannot be modified.
"*": The parameter is factory parameter and can be set only by the manufacturer, not available for user.
"▲": The parameter is factory parameter and can be set only by the manufacturer, not available for user.

3.1. Parameters Instructions

3.1.1. F0 Parameter Group

Parameter	Description	Minimum Value	Default Value	Maximum Value	Unit	Change Permission
F0-00	Motor Rated Power	0.1	Depends on model	999.9	KW	★
	This parameter is set to the rated power of the motor (nameplate).					
F0-01	Motor Rated Voltage	1	Depends on mode	500	V	★
	This parameter is set to the rated voltage of the motor (nameplate).					
F0-02	Motor Rated Current	0.01	Depends on mode	99.99	A	★
	This parameter is set to the rated current of the motor (nameplate).					
F0-03	Motor Rated Frequency	0	50.0	500.0	Hz	★
	This parameter is set to the rated frequency of the motor (nameplate).					
F0-04	Motor Rated Speed	1	1460	9999	Rpm	★
	This parameter is set to the rated speed of the motor (nameplate).					
F0-05	Back EMF Coefficient for PM Motor	0	Depends on mode	999.9	V	★
	This parameter is set as the back EMF coefficient of synchronous machine.					
F0-06	Motor Parameter Autotune	0	0	3	-	★
	0: No operation. 1: Static parameter identification; 2: Dynamic parameter identification;					
F0-07	Synchronous Motor Stator Resistance	0.001	Depends on model	9.999	Ω	★
F0-08	Synchronous Motor D-axis Inductance	0.01	Depends on model	99.99	mH	★
F0-09	Synchronous Motor Q-axis Inductance	0.01	Depends on model	99.99	mH	★
	F0-07~F0-09 are synchronous motor parameters. Some synchronous motor nameplates will provide some parameters, but most of the motor nameplates do not provide the above parameters. These parameters must be obtained through parameter identification and must be identified in synchronous motor vector control mode.					
F0-10	M-axis Current Loop Kp	0	2000	9999	-	☆
F0-11	M-axis Current Loop Ki	0	1000	9999	-	☆
F0-12	Starting Switching Frequency	1.0	Depends on model	F0-14	KHz	☆

	The size of the carrier frequency at startup.					
F0-13	SVC Low Speed Switching Frequency	0.8	Depends on model	F0-14	KHz	☆
	In SVC mode, the switching frequency of synchronous motor running at low speed.					
F0-14	Switching Frequency	1.0	Depends on model	16.0	KHz	☆
	This function adjusts the switching frequency of the inverter. When the switching frequency is low, the higher harmonic component of the output current increases, the motor loss increases, and the motor temperature rises. When the switching frequency is high, the motor loss decreases, the motor temperature rises, but the frequency is changed. The loss of inverter increases, the temperature rise of inverter increases, and the interference increases.					
F0-15	Low Speed Maximum Magnetizing Current	0	30	80	%	☆
	Set the maximum excitation current of synchronous motor at low speed.					
F0-16	Torque upper limit	-200.0	100.0	+200.0	%	☆
F0-17	Dead zone compensation	0	1	1	-	☆
	0：Disable 1：Enable					
F0-18	Voltage feedback	0	1	1	-	☆
	0：Disable 1：Enable					
F0-19	Command Source Selection	0	0	3	-	☆
	0: Panel control. Press the RUN key of the inverter to run and press the STOP key to stop. 1: Terminal control. It is directly controlled by the inverter control terminal. By default, DI1 controls forward rotation and DI2 controls reverse rotation. 2: Reserved 3: The system starts automatically after power-on. Use F2-22 to set the delay time.					
F0-20	Main Frequency Source Selection	0	1	9	-	★
	0: function code setting, power-off memory 1: panel potentiometer 2: AI 4: Multi-segment command 6: Constant pressure water supply 8: Communication Settings Others: Reserved					
F0-21	Stop Mode	0	0	1	-	☆
	0: Ramp to stop. After the shutdown command is effective, the inverter reduces the output frequency according to the deceleration time and stops after the frequency drops to 0. 1: Coast to stop. After the shutdown command is effective, the inverter immediately stops the output, and the motor stops freely according to the mechanical inertia.					
F0-22	Output Phase Sequence	0	0	1	-	☆
	0：U V W 1：U W V Changing this parameter can change the motor direction without changing the motor wiring. Note: after the parameter is initialized, the parameter will return to the default value of 0, so be careful on some occasions where it is forbidden to change the motor direction.					
F0-23	Acceleration Time	0.1	Depends on model	500.0	s	☆
	The acceleration time required for the inverter to accelerate from 0 Hz to the upper limit frequency (F0-33).					
F0-24	Deceleration Time	0.1	Depends on model	500.0	s	☆
	The deceleration time required for the inverter to decelerate from the upper limit frequency (F0-33) to 0 Hz.					

F0-25	Synchronous Motor Initial Position Detection Mode	0	1	1	-	☆
	0: Check before each run. 1: No detection					
F0-26	Synchronous Motor Initial Position Identification Current Initial Value	5	120	180	%	★
F0-27	Main Menu Display Auto Switching	0	1	1	-	☆
	0: Switching is prohibited. When the display is switched from the frequency interface to other interfaces, it is forbidden to automatically switch back to the frequency interface. 1: Automatic switching. When the display is switched from the frequency interface to other interfaces, it will automatically switch back to the frequency interface after 10 seconds.					
F0-28	Parameter modification attribute	0	0	1	-	☆
	0: Allow modification. 1. No modification is allowed. When this parameter is set to 1, the inverter is forbidden to modify the parameter, and it must be set to 0 before it can be changed.					
F0-29	User password	0	0	9999	-	☆
	The inverter provides the user password protection function. When F6-03 is SET to non-zero, it is the user password. The password protection will take effect after exiting the function code editing state. Press the SET key again, "-------" will be displayed. You must input the user password correctly to enter the parameter interface.					
F0-30	Reserved					
F0-31	Reset to Factory Parameters	0	0	9999	-	★
	1: Reset the factory settings.					
F0-32	Load speed display coefficient	0.001	1.000	9.999	-	☆
F0-33	Frequency Upper limit	F0-34	50.0	500.0	Hz	☆
	Inverter maximum output frequency					
F0-34	Frequency Lower limit	0.0	0.0	F0-33	Hz	☆
	Inverter minimum output frequency					
F0-35	Plugging current value	0	100	200	A	☆
F0-36	Lock-turn judgment time	0.0	3.0	999.9	0.1s	☆
F0-37	Current loop voltage feedforward mode	0	0	2	-	☆
F0-38	On-line identification of back electromotive force enablement	0	0	1	-	☆
F0-39	Untuned mode	0	0	2	-	☆
F0-40	control frequency	2.0	16.0	16.0	Hz	☆
F0-41	Current filtering coefficient	0	0	5	-	★
F0-42	High Speed Area Switching Frequency	F0-45	10.0	F0-33	Hz	☆
	When the running frequency is greater than this value, the speed loop PID parameter is selected as the speed loop parameter in the high-speed segment. Running frequency between high speed and low speed, the speed loop PID parameter linear transformation of two sets of PID parameters.					
F0-43	High Speed Area Proportional Gain	1	20	100	-	☆
	Setting the proportional coefficient of the speed regulator can adjust the speed dynamic response characteristics of vector control. Increasing the proportional gain can speed up the					

	dynamic response of the speed loop, but excessive proportional gain may make the system oscillate. Note: The parameters of high-speed area and low-speed area are only valid when F3-00 selects vector control.					
F0-44	High Speed Area Integral Time Constant	0.01	1.00	10.00	s	☆
	The speed dynamic response characteristic of vector control can be adjusted by setting the integral time of the speed regulator. Shortening the integral time can accelerate the dynamic response of the speed loop, but too short integral time may make the system oscillate.					
F0-45	Low Speed Area Switching Frequency	0.0	5.0	F0-42	Hz	☆
	When the operating frequency is less than this value, F0-46 and F0-47 are selected as PID parameters of speed loop.					
F0-46	Low Speed Area Proportional Gain	1	30	100	-	☆
	The inverter runs at different frequencies and can select different speed loop PID parameters. When the running frequency is less than the switching frequency of the low-speed segment F0-45, the proportional gain of the speed loop is used.					
F0-47	Low Speed Area Integral Time Constant	0.01	0.50	10.00	s	☆
	When the operating frequency is less than the switching frequency F0-45 in the low-speed section, the value of this parameter is used for the speed loop integral time.					
F0-48	Speed Loop Filter Time Constant	0	0.2	1.00	s	☆
	This parameter generally does not need to be adjusted, and the filtering time can be appropriately increased when the speed fluctuation is large. If the motor oscillates, the parameter should be appropriately reduced. The speed loop filter time constant is small, and the output torque of a inverter may fluctuate greatly， but the response speed is fast.					
F0-49	T-axis Current Loop Kp	0	2000	30000	-	☆
F0-50	T-axis Current Loop Ki	0	1000	30000	-	☆
F0-51	Low Speed Switching Frequency Switch Frequency	3.0	20.0	F0-03	Hz	☆
	At low speed, the switching frequency is the set value of F0-12. After running the set value of this parameter, the switching frequency changes to the set value of F0-14.					
F0-52	Low Speed Magnetizing Current Switching Frequency	0.0	20.0	F0-03	Hz	☆
	The maximum magnetizing current of synchronous motor at low speed is set at F0-15. After reaching this frequency, it will switch to normal current.					
F0-53	Low Speed Magnetizing Current Switching Frequency Bandwidth	0.0	5.0	F0-03	Hz	☆
	When the synchronous motor runs at low speed, when the frequency reaches the set value of F0-52, if the current changes within the set range of F0-53, the low-speed magnetizing current is switched only once.					
F0-54	SVC Initial Position Compensation Angles	0.0	0.0	359.9	°	☆
F0-55	Synchronous Motor Inductance Detection Current	30	80	120	%	☆
F0-56	Synchronous Motor Back EMF Identification Initial Current	0	50	180	%	★
F0-57	Synchronous Motor Back EMF Identification Final Current	30	80	180	%	★
F0-58	Synchronous Motor Tuning Current Loop Kp Adjustment	1	6	100	-	☆

	Coefficient					
F0-59	Synchronous Motor Tuning Current Loop Ki Adjustment Coefficient	1	6	100	-	☆
F0-60	Synchronous Motor Flux Weakening Mode	0	1	2	-	☆
	0: Disable. The motor is not subject to flux-weakening control. At this time, the maximum speed of the motor is related to the bus voltage of the inverter. There is no flux-weakening current, and the output current is small, but the running frequency may not reach the set frequency. If you want to achieve a higher speed, you need to turn on the flux-weakening function. 1: Automatic adjustment. It is automatically adjusted by the inverter, and the higher the speed after entering the field weakening area, the greater the field weakening current. 2: Calculation + Automatic Adjustment. Combined with automatic adjustment, the speed of flux weakening current adjustment is faster, and this mode can be set when automatic adjustment can't meet the demand, but this mode depends on the accuracy of motor parameters.					
F0-61	Synchronous Motor Flux Weakening Coefficient	0	5	50	-	☆
	In the direct calculation mode, the required demagnetizing current can be calculated according to the target speed, and the size of demagnetizing current can be manually adjusted through F00-61. The smaller the demagnetizing current is, the smaller the total output current will be, but the desired flux weakening effect may not be achieved.					
F0-62	Flux Weakening Integral Multiple	2	2	10	-	☆
	Changing this parameter can change the adjustment speed of the flux weakening current. However, faster adjustment of the flux weakening current may lead to instability. Therefore, you do not need to manually change this parameter.					
F0-63	Output voltage saturation margin	1	5	50	-	☆
F0-64	Maximum Torque Ratio Current Enable	0	0	1	-	☆
	0: Disable 1: Enabled					
F0-65	Salient Rate Gain Coefficient	50	100	500	-	☆
	Related to the structure of synchronous motor, according to the different characteristics of the motor to set different salient pole rate gain coefficient, generally no need to set.					
F0-66	Maximum Output Voltage Coefficient	100	105	110	%	★
	The maximum output voltage of inverter can be increased. Increasing 00-66 can improve the maximum load capacity of fan weak magnetic area, but the increase of motor current ripple will aggravate the motor heat. On the contrary, the maximum load capacity of motor weak magnetic area will decrease, but the ripple of motor current will reduce the motor heat. Generally, no adjustment is required.					
F0-67	Reserved					
F0-68	Reserved					
F0-69	Motor overload protection gain	0.20	1.00	10.00	-	☆
	Used to adjust the gain multiple of the set value of overload current in the inverter. Note: Increasing this parameter means increasing the overload current, so improper setting may burn out the motor.					

3.1.2. F1 Parameter Group

Parameter	Description	Minimum	Default	Maximu	Unit	Change

		Value	Value	m Value		Permission
F1-00	PID Reference Source	0	0	4	-	☆
	This parameter is used to select the target quantity given channel during PID control. **0: F1-01 setting 1：AI1 2：Reserved** **3: Panel potentiometer 4: Communication** No matter which channel, the set target quantity is a relative value, and the set range is 0.0%~100.0%.					
F1-01	PID Reference Value (Actual Pressure)	0.1	3.5	1000.0	Bar	☆
	Through the value of this parameter, a given amount of PID control is set.					
F1-02	PID Feedback Source	0	0	4	-	☆
	0:AI1 1. Reserved 2. Communication **3: DC bus voltage 4: Temperature** This parameter is used to select the feedback quantity in PID control. For a given channel, the feedback quantity is relative as the given quantity.					
F1-03	PID Direction	0	0	1	-	☆
	0: Positive effect. When the feedback signal of PID is less than a given amount, the output frequency of the inverter increases. 1: Negative effect. When the feedback signal of PID is less than a given amount, the output frequency of inverter decreases. The function of PID control is to make the given quantity and the feedback quantity the same. Through this parameter, you can set the running trend of the inverter when there is a difference between the given quantity and the feedback quantity.					
F1-04	Acceleration PID Proportional Gain Kp	0.0	20.0	6500.0	-	☆
	The proportional gain of PID controller determines the adjustment strength of the whole PID controller. The greater Kp, the greater the adjustment strength. If the value is high, even if the difference between the given and the feedback is small, the transducer can respond quickly, and the output frequency can vary greatly. But too high a value can cause instability.					
F1-05	Acceleration PID Integral Time Ki	0.01	0.80	10.00	s	☆
	The integral time of PID controller determines the integral adjustment intensity of PID controller. The shorter the integral time, the greater the adjustment intensity. If this parameter is set too small, the system may shock easily.					
F1-06	Deceleration PID Proportional Gain Kp	0.0	200.0	6500.0	-	☆
	Same as F1-04					
F1-07	Deceleration PID Integral Time Ki	0.01	0.01	10.00	s	☆
	Same as F1-05					
F1-08	Sensor Type	0	0	3	-	☆
	0：0~10V 1：4~20mA					
F1-09	Sensor Range	0.0	16.0	25.0	Bar	☆
	The maximum pressure measuring range of the sensor, the sensor nameplate or dial are marked.					
F1-10	Sensor Zero Correction	-10.0	0.0	10.0	Bar	☆
	This parameter is set when there is no pressure in the pipeline and pressure is fed back by the inverter.					
F1-11	Sensor Full-scale Correction	-10.0	0.0	10.0	Bar	☆

	This parameter is set when the pressure displayed on the pressure gauge is inconsistent with the feedback pressure after the pipeline is pressurized.					
F1-12	Sleep Frequency	0	20.0	F0-33	Hz	☆
	When the inverter detects that the feedback pressure reaches the target value, the frequency will be reduced to this parameter value, and the inverter will sleep and stop.					
F1-13	Sleep Delay Time	0.0	0.0	1200.0	s	☆
	During the running of the inverter, when the set frequency is less than F1-12 sleep frequency, after the F1-13 sleep delay time, the inverter enters the sleep state and automatically stops.					
F1-14	Sleep Pressure Offset	0	8	100	%	☆
	Percentage relative to target pressure.					
F1-15	Frequency Step of Sleep Deceleration	0.0	3.0	F0-33	Hz	☆
	Effective at constant or critical pressure.					
F1-16	Sleep Deceleration Time Delay	60.0	60.0	600.0	second	☆
	Note: F1-14 ~ F1-16 is effective when the pressure fluctuation is small.					
F1-17	Wake Up Pressure	0	80	100	%	☆
	Wake up pressure value, relative to feedback pressure; For example, set it to 80%, the feedback pressure is 10 bar, and the pressure wake-up is 8 bar.					
F1-18	Pressure Upper Limit	0	200	300	%	☆
	The percentage of the target pressure, exceeding this pressure, an overpressure fault Err53 is reported.					
F1-19	Water Shortage Detection Time	0.0	0.0	1200.0	s	☆
	It takes time from water pump water shortage to alarm detection.					
F1-20	Water Shortage Detection Frequency	0	45.0	F0-33	Hz	☆
	When the frequency reaches the set value, the current is lower than the set value of F1-21 or the pressure is lower than the set value of F1-22, A52 water shortage fault is reported.					
F1-21	Water Shortage Detection Current	0	0	200	%	☆
	Percentage of motor rated current. When the current is lower than this value, it is reported that A52 is short of water.					
F1-22	Water Shortage Detection Pressure	0	20	100	%	☆
	Percentage of target pressure. When the pressure is lower than this, it is reported that A52 is short of water.					
F1-23	Water Shortage Restart Time	1	20	2000	Min	☆
	The inverter will restart automatically after this time.					
F1-24	Water Shortage Auto Restart Pressure	0	50	100	%	☆
	Percentage of target pressure.					
F1-25	Antifreeze Function	0	0	1	-	☆
	0：Disable 1：enable					
F1-26	Antifreeze Running Frequency	2.0	10.0	F0-33	Hz	☆
	When F1-25 is set to 1, the antifreeze function takes effect, and the inverter runs at this frequency.					
F1-27	Antifreeze Running Time	60.0	60.0	3600.0	s	☆
	The time of single running when the inverter is enabled with anti-freezing function.					

F1-28	Anti-freezing running period	0	30	1440	Min	☆
	Running period of inverter when antifreeze function is enabled.					
F1-29	Auto start enable	0	0	1	-	☆
	0：Forbidden 1：Enabled					
F1-30	Auto start delay time(only Water supply mode)	0	10	120	s	☆

3.1.3. F2 Parameter Group

Parameter	Description	Minimum Value	Default Value	Maximum Value	Unit	Change Permission
F2-00	DI1 Terminal Function Selection	0	1	33	-	★
	0: No function 1: Forward running FWD 2: Reverse running REV 3: Fault reset 4: Coast stop, that is, blocking PWM output. 5: Emergency stop 6: External fault input (normally open) 7: External fault normally closed input 8：Low water level 9：High water level 11：Multi-segment command terminal 1 Others: Reserved					
F2-01	Relay 1 Output Function Selection	0	1	9	-	☆
	0: No function. **1. The inverter is running.** The inverter is in the running state, and when there is an output frequency (which can be zero), it outputs the ON signal. **2: Inverter fault.** When the inverter fails and stops, it outputs the ON signal. **3: Ready for running.** When the power supply of the main circuit and control circuit of the inverter is stable, and the inverter does not detect any fault information, and the inverter is in an operational state, the ON signal is output. **4: The upper limit frequency arrives.** When the operating frequency reaches the upper limit frequency, the ON signal is output. **5: The lower limit frequency arrives.** When the operating frequency reaches the lower limit frequency, the ON signal is output. This signal is OFF in the stop state. **6: Torque limit.** In the speed control mode of the inverter, when the output torque reaches the torque limit, the inverter is in the stall protection state and outputs the ON signal at the same time. 7: **Timed time exceeded.** When the running time of the inverter reaches the set timing time , it outputs the ON signal. 8: **Relay Manual Output**. When both the "PRGM" and "UP" buttons are pressed simultaneously, the relay will toggle between the activated and deactivated states. 9: **PRGM Button Manual Control of Relay Output**. When set to this function, a short press of the "PRGM" button toggles the relay between its activated and deactivated states. Press and hold the "PRGM" button for 10 seconds to enter the menu. The manual relay output switching is only effective during operation.					
F2-02	AI Gain	0	1.00	20.00	-	★
	Analog input AI signal gain multiple, maximum gain up to 20 times. For example, using AI as					

	the target frequency setting, F0-07=0: 0-10V,this parameter is set to 2.00; Then a 5V input signal allows the converter to operate at its maximum frequency.					
F2-03	AI Offset	-10.0	0	10.0	V	★
	Analog input 1 signal offset value, the maximum offset can be +/-10V.For example, if AI is set as the target frequency, this parameter is set to 2.00; Then the 8V input signal can enable the frequency converter to operate at the maximum frequency. Internal calculated value of AI = actual input *F2-02+F2-03					
F2-04	Preset frequency	0.0	50.0	F0-33	Hz	☆
	When the target frequency setting mode is selected as "Digital Setting", this parameter sets the initial value for the target frequency of the inverter. After the target frequency is modified by the "Up/Down" key, this parameter will become invalid temporarily, unless this parameter is modified again.					
F2-05	Frequency Running action below the lower limit frequency	0	0	2	-	☆
	0：Run at the lower limit frequency 1：Stop 2：Zero speed operation When the set frequency is lower than the lower limit frequency, the running state of the converter can be selected by this parameter.					
F2-06	Jump frequency 1	0.0	0.0	F0-33	Hz	☆
	When the target frequency is set within the range of jump frequency, the final operating frequency of the converter will avoid the range and run stably with the boundary value outside the range. The frequency resonance point can be used to avoid mechanical equipment. This parameter is the reference value of the jump frequency. The range is set by F2-07.					
F2-07	Jump frequency amplitude	0.0	0.0	F0-33	Hz	☆
	Combined with F2-06, set specific jump frequency range (F2-06-F2-07) ~ (F2-06+ F2-07). After this range is enabled, the actual operating frequency of the converter is a hysteresis curve: when the frequency rises from low to within the range, the frequency remains at the low frequency boundary; When the frequency decreases from high to within the range, the frequency is maintained at the high frequency boundary;					
F2-09	Set the cumulative power-on arrival time	0	0	9999	H	☆
	When the accumulated power-on time of the frequency converter exceeds this value, the frequency converter reports Err29 as a fault. This parameter is invalid when set to 0.					
F2-10	The carrier frequency is adjusted with temperature	0	1	1	-	☆
	When the frequency converter detects that the heat sink temperature is high, it automatically reduces the carrier frequency to reduce the temperature rise of the frequency converter. When the heat sink temperature is low, the carrier frequency gradually returns to the set value. If the value is set to 0, this parameter is disabled.					
F2-11	Carrier frequency adjusts the starting temperature	0	70	150	℃	☆
	When the frequency converter detects that the temperature of the radiator exceeds the set value of this parameter, the F2-10 function is effective and the carrier frequency is adjusted with the temperature.					
F2-12	Carrier frequency adjustment time	0.1	20.0	50.0	s	☆
	When the frequency converter detects that the heat sink temperature exceeds the set value of F2-11 parameter, the carrier frequency starts to adjust after the set time of F2-12.					
F2-14	Fault enable select	0000	1111	1111	-	☆

	0：Prohibited protection　　1：Enable protection One bit: overload protection selection of motor Tens place: output phase protection selection Hundred bit: input phase protection selection 1000 bit: Short circuit protection on the ground during power-on.					
F2-15	Number of automatic fault resets	0	0	20	times	☆
	Number of times the frequency converter can automatically reset after fault alarm. After this number is exceeded, the frequency converter remains in the fault state. If the value is set to 0, the automatic reset function is not enabled.					
F2-16	Interval between automatic fault reset	0.1	1.0	999.9	s	☆
	The waiting time between the frequency converter fault alarm and the automatic fault reset enabled.					
F2-17	Inverter Address	1	1	249	-	☆
	The local address when using the communication function of the inverter. When this value is set to 0, it is the broadcast address, which realizes the broadcast function of the upper computer.					
F2-18	Baud Rate	0	0	4	-	★
	0：9600bps　1：19200bps　2：38400bps 3：57600bps　4：115200bps					
F2-19	Data Format	0	3	3	-	☆
	0: No check -2 stop bits (8-N-2) 1: Even check -1 stop bit (8-E-1) 2: Odd check -1 stop bit (8-O-1) 3: No check -1 stop bit (8-N-1)					
F2-20	Communication Timeout	0.0	0.0	60.0	second	☆
	When this parameter is set to 0.0 second, no communication timeout detection is performed. When this parameter is set to more than 0.1 second, if the interval between one communication and the next communication exceeds the communication timeout, the inverter will report a communication failure (Err16).					
F2-22	Automatic start delay time	0	150	3600	s	☆
F2-23	Heat dissipation fan running mode	0	1	1	-	☆
	0: The fan runs when the temperature is higher than 45 ° C. 1: The inverter runs and the fan starts immediately.					
F2-24	DI2 Terminal function Select	0	2	35	-	★
	Same as DI1（F2-00）					
F2-25	DI Terminal Effective Mode Selection	0000	0000	1111	-	★
	0: The high level is active. 1: The low level is active. Each of digits can only choose 0 or 1, which respectively correspond to the valid modes of DI1~2. They are: Bit: DI1; Ten: DI2;					
F2-26	Multi-segment Command 0 Frequency	-F0-33	0	F0-33	Hz	☆
F2-27	Multi-segment Command 1 Frequency	-F0-33	0	F0-33	Hz	☆
F2-28	DI1 delay time	0.0	0.0	3600.0	s	☆

F2-29	DI2 delay time	0.0	0.0	3600.0	s	☆
F2-30	Pulse counting time	0.0	4.0	999.9	s	☆
F2-31	AI1 Signal Format	0	0	5	-	★
	0：0-10V **1：0-20mA** **2：4-20mA** **3：20-4mA** **4：20-0mA** **5：10-0V**					
F2-32	Reserved					
F2-33	External Temperature Sensor Type	0	0	2	-	☆
	0：Disable. 1：PT100 2：PT1000					
F2-34	Overtemperature Protection Threshold	0	200	200	℃	☆
	When the temperature of the external sensor exceeds the protection threshold, the inverter will give an alarm.					
F2-35	Temperature detection bias	0	0	50	℃	☆
	Used for correcting temperature measurement deviation					
F2-36	Blocking protection current	0.0	150.0	300.0	%	☆
F2-37	Excessive Speed Deviation Detection Value	0.0	30.0	100.0	%	☆
F2-38	Excessive Speed Deviation Detection Time	0.0	0.0	60.0	s	☆
	This function is only valid when there is vector control of speed sensor. When this parameter is 0.0s, the detection of excessive speed deviation will be cancelled.					
F2-39	Panel Reverse Enable	0	0	1	-	☆
	0: Prohibit panel control reversal 1: Allow panel control reversal When this parameter is set to 1, the menu key and the descending key can be pressed at the same time to switch between forward and reverse during operation.					

3.1.4. F3 Parameter Group

Parameter	Description	Minimum Value	Default Value	Maximum Value	Unit	Change Permission
F3-00	Motor control mode	0	0	2	-	★
	0：V/F control 1：Reserved 2: synchronous motor without speed sensor vector control (FMSVC). After SVC control is selected, F0-06 parameters need to be identified.					
F3-01	Torque Boost	0	Depends on model	30.0	%	☆

	Under the V/F control mode, the output torque of the motor is relatively low in low frequency operation, which can increase the value of this parameter; However, the torque boost setting is too large, the motor is easy to overheat, and the inverter is easy to overcurrent. When the load is heavy and the starting torque of the motor is insufficient, it is recommended to increase this parameter. When the load is light, the torque can be reduced.					
F3-02	Torque Boost Cut-off Frequency	0.0	50.0	F0-33	Hz	★
	Below this frequency, the torque boost is effective, and beyond this set frequency, the torque boost fails.					
F3-03	VF Over-current Stall Action Current	50	150	200	%	★
F3-04	VF Overvoltage Stall Action Voltage	200.0	Depends on model	2000.0	V	★
	VF overvoltage stall running voltage.					
F3-05	Speed Tracking Start	0	0	1	-	★
	0: Direct startup 1: Speed tracking starts When the inverter starts, there is a short time delay to detect the motor speed and control it from the current motor speed.					
F3-06	Speed Tracking Current Loop Kp	0	Depends on model	1000	-	☆
	F3-06-F3-09 parameters need not be set by users.					
F3-07	Speed Tracking Current Loop ki	0	Depends on model	1000	-	☆
F3-08	Speed Tracking Current Value	30	Depends on model	200	%	★
F3-09	Speed Tracking Current Lower Limit	5	30	100	%	★
F3-10	Asynchronous Motor Stator Resistance	0.001	Depends on model	65.535	Ω	★
F3-11	Asynchronous Motor Rotor Resistance	0.001	Depends on model	65.535	KW	★
F3-12	Asynchronous Motor Leakage Inductance	0.01	Depends on model	655.35	mH	★
F3-13	Asynchronous Motor Mutual Inductance	0.1	Depends on model	6553.5	mH	★
F3-14	Asynchronous Motor Magnetizing Current	0.01	Depends on model	F0-02	A	★
	F3-10~F3-14 are asynchronous motor parameters, these parameters are generally not on the motor nameplate, need to be obtained by motor parameter identification F0-06. If the induction motor cannot be tuned on site, you can input the above parameters according to					

	the parameters provided by the motor manufacturer.

3.2. Monitoring Parameter

The monitoring parameters of the inverter can only be read and cannot be modified.

Parameter	Description	Unit	Communication Address	Parameter Attribute
U0-00	Inverter Running State 1: forward 2: reverse 3: stop	-	1000H	Read only
U0-01	Fault Code	-	1001H	Read only
U0-02	Set Frequency	0.1Hz	1002H	Read only
U0-03	Running Frequency	0.1Hz	1003H	Read only
U0-04	Running Speed	Rpm	1004H	Read only
U0-05	Output Voltage	V	1005H	Read only
U0-06	Output Current	0.1A	1006H	Read only
U0-07	Output Power	0.1KW	1007H	Read only
U0-08	DC Bus Voltage	V	1008H	Read only
U0-09	Output Torque	0.1Nm	1009H	Read only
U0-10	Power Factor Angle	-	100AH	Read only
U0-11	DI input state. default display 0， DI1-DI2 effective will display 1,2	-	100BH	Read only
U0-12	Relay output state, default display ‾‾‾‾‾ . Relay 1 effective will display ‾‾‾‾ ┤	-	100CH	Read only
U0-13	AI1 Voltage Before Correction	0.01V	100DH	Read only
U0-14	Reserved	0.01V	100EH	Read only
U0-15	AI1 Voltage	0.01V	100FH	Read only
U0-16	Reserved	-	1010H	Read only
U0-17	Reserved	-	1011H	Read only
U0-18	Reserved	-	1012H	Read only
U0-19	Remaining Running Time	0.1Min	1013H	Read only
U0-20	Current Power-on Time	Min	1014H	Read only
U0-21	Current Running Time	0.1Min	1015H	Read only
U0-22	Cumulative Running Time	Hour	1016H	Read only
U0-23	Accumulated Power-on Time	Hour	1017H	Read only
U0-24	Cumulative Power Consumption	Kwh	1018H	Read only
U0-25	Motor Temperature Value	℃	1019H	Read only
U0-26	IGBT Temperature Value	℃	101AH	Read only
U0-27	Actual Switching Frequency	0.1KHz	101BH	Read only
U0-28	M-axis Current Actual Value	0.1A	101CH	Read only

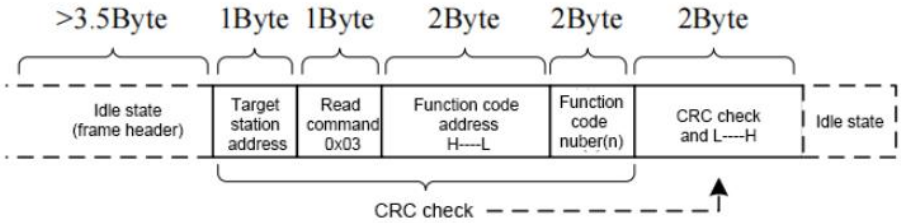
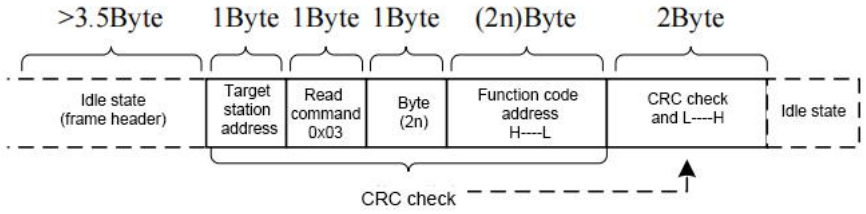
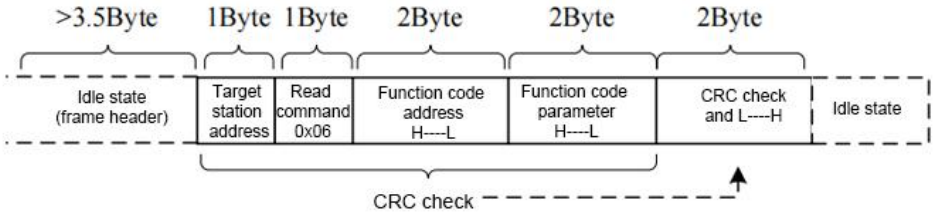
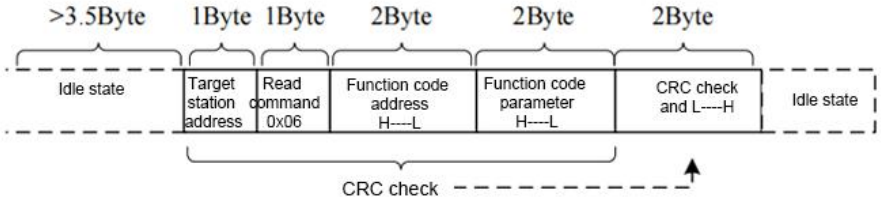
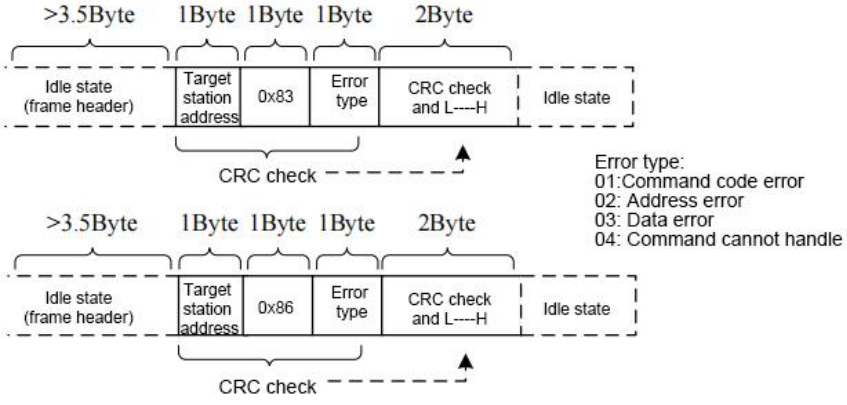
U0-29	T-axis Current Actual Value	0.1A	101DH	Read only
U0-30	Feedback Speed Actual Value	0.1Hz	101EH	Read only
U0-31	Reserved	-	101FH	Read only
U0-32	Reserved	-	1020H	Read only
U0-33	Reserved	-	1021H	Read only
U0-34	Reserved	-	1022H	Read only
U0-35	Reserved	-	1023H	Read only
U0-36	Reserved	-	1024H	Read only
U0-37	Reserved	-	1025H	Read only
U0-38	Reserved	-	1026H	Read only
U0-39	Reserved	-	1027H	Read only
U0-40	Reserved	-	1028H	Read only
U0-41	Reserved	-	1029H	Read only
U0-42	Product Serial Number Lower 16 Digits	-	102AH	Read only
U0-43	Product Serial Number Higher 16 Digits	-	102BH	Read only
U0-44	Motor Boot Version	-	102CH	Read only
U0-45	CPU Type	-	102DH	Read only
U0-46	Power Board Hardware Version	-	102EH	Read only
U0-47	Power Board Software Version	-	102FH	Read only
U0-48	Control Board Software Version	-	1030H	Read only
U0-49	Product Number	-	1031H	Read only
U0-50	Manufacturer Code	-	1032H	Read only
U0-51	Third (most recent) Fault Code	-	1033H	Read only
U0-52	Second Fault Code	-	1034H	Read only
U0-53	First Fault Code	-	1035H	Read only
U0-54	Third Fault Frequency	0.1Hz	1036H	Read only
U0-55	Third Fault Current	0.1A	1037H	Read only
U0-56	Third Fault DC Bus Voltage	0.1V	1038H	Read only
U0-57	Third Fault Heatsink Temperature	℃	1039H	Read only
U0-58	Third Fault Time(from power-on time)	Min	103AH	Read only
U0-59	Third Fault Time(from running time)	0.1Hour	103BH	Read only
U0-60	Second Fault Frequency	0.1Hz	103CH	Read only
U0-61	Second Fault Current	0.1A	103DH	Read only
U0-62	Second Fault DC Bus Voltage	0.1V	103EH	Read only

U0-63	Second Fault Heatsink Temperature	℃	103FH	Read only
U0-64	Second Fault Time(from power-on time)	Min	1040H	Read only
U0-65	Second Fault Time(from running time)	0.1Hour	1041H	Read only
U0-66	First Fault Frequency	0.1Hz	1042H	Read only
U0-67	First Fault Current	0.1A	1043H	Read only
U0-68	First Fault DC Bus Voltage	0.1V	1044H	Read only
U0-69	First Fault Heatsink Temperature	℃	1045H	Read only
U0-70	First Fault Time(from power-on time)	Min	1046H	Read only
U0-71	First Fault Time(from running time)	0.1Hour	1047H	Read only

4. Communication

4.1. Modbus-RTU Communication Protocol

The controller can read consecutive addresses at one time, with a maximum of 12 addresses, but it should be noted that it cannot exceed the last address, otherwise it will make an error. The read operation command is 0x03; The write command is 0x06, which does not support reading and writing of bytes or bits.

Operation	command frame
Read	Read command frame of master station 
	Read response frame of slave station 
Write	Write command framd of master station 
	Write response framd of master station 
Fault	Read response errot framd of slave station  Error type: 01:Command code error 02: Address error 03: Data error 04: Command cannot handle

4.2. Modbus Register Definition

Register Number	Function Code Parameter	Function Code	Function	Range	Description
0x01	-	06	Set communication frequency	-10000~10000	10000 refers to 100% corresponding to the maximum frequency, 0 refers to 0% corresponding to the minimum frequency, when set to negative direction.
0x02	-	06	Control command	1~7	1：forward running 2：reverse running 3：forward jogging 4：reverse jogging 5：free stop 6：ramp to stop 7：fault reset
0xF000	F0-00	03	Motor rated power	Depend on inverter model	Refer to F0-00
……					
0xF30E	F3-14	03	Asynchronous motor no-load current	Depend on inverter model	Refer to F3-14
0x1000	U0-00	03	Refer to U0-00		
……					
0x1047	U0-71	03	Refer to U0-71		

All user-configurable parameters can be read or written from the hold register by the appropriate Modbus command. The register numbers of parameters F0-00 to F3-14 are defined as 0xF000 to 0xF30E. The register numbers of parameters U0-00 to U0-71 are defined as 0x1000 to 0x1047.

4.3. Modbus Application Cases

4.3.1. Setting Communication Parameters

During MODBUS communication, you need to set relevant parameters first, and they can be set in F2 parameter group.

Parameter	Name	Description
F2-17	Inverter address	The local address of the inverter when it uses the communication function. If the value is set to 0, the broadcast address is used to implement the broadcast function of the upper computer.
F2-18	Baud Rate	0：9600BPS 1：19200BPS 2：38400BPS 3：57600BPS 4：115200BPS
F2-19	Data Format	0: No verification (8-N-2) 1: even check (8-E-1) 2: Odd check (8-O-1) 3: No verification (8-N-1)
F2-20	Communication Timeout	When this parameter is set to 0.0 second, no communication timeout detection is performed. When this parameter is set to more than 0.1 second, if the interval between one communication and the next communication exceeds the communication timeout, the inverter will report a communication failure (Err16).

4.3.2. Enable Communication Function

Parameter	Set Value	Function
F0-19： Command Mode	2	The start-stop control mode of an inverter is set as communication control. The controller writes the number "1~5" to register no.2 to control the start-stop command executed by the inverter. See Section 4.2 for the specific command.
F0-20： Target Frequency Setting Mode	8	The target frequency setting mode of an inverter is communication setting. The controller can control the target frequency of an inverter by writing the number "-10000~10000" to register No. 1. For specific command, see Section 4.2.

5. Maintenance and Troubleshooting

5.1. Faults and Solutions

Fault Name	Display	Possible Causes	Solutions
Inverter Unit Protection	Err01	1. The output circuit is grounded or short circuited. 2. The connecting cable of the motor is too long 3. The inverter module is faulty	1. Eliminate external faults. 2. Install a reactor or an output filter 3. Contact for technical support
Overcurrent During Acceleration	Err02	1. The control method is vector and no parameter identification. 2. The acceleration time is too short 3. Manual torque boost or V/F curve is not appropriate 4. The inverter model is of too small power class.	1. Perform the motor auto-tuning. 2. Increase the acceleration time. 3. Adjust the manual torque boost or V/F curve. 4. Select higher power rating inverter
Overcurrent at Constant Speed	Err04	1. The output circuit is grounded or short circuited. 2. The inverter model is of too small power class.	1. Eliminate external faults. 2. Select higher power rating inverter
Overvoltage During Acceleration	Err05	1. The input voltage is too high. 2. The acceleration time is too short.	1. Adjust the voltage to normal range. 2. Increase the acceleration time.
Overvoltage at Constant Speed	Err07	1. The input voltage is too high. 2. An external force drives the motor during running	1. Adjust the voltage to normal range. 2. Cancel the external force or install a braking resistor
Inverter Overload	Err10	1. The load is too heavy or locked rotor occurs on the motor. 2. The inverter model is of too small power class.	1. Reduce the load and check the motor and mechanical condition. 2. Select an inverter of higher power class.
Power Output Phase Loss	Err13	1. The cable connecting the inverter and the motor is faulty 2. The inverter's three-phase outputs are unbalanced when the motor is running 3. The drive board is faulty 4. The module is faulty	1. Eliminate external faults 2. Check whether the motor three-phase winding is normal 3. Contact for Technical support 4. Contact for Technical support
Module	Err14	1. The ambient temperature is	1. Lower the ambient temperature.

Fault Name	Display	Possible Causes	Solutions
Overheat		too high. 2. The air filter is blocked. 3. The fan is damaged	2. Clean the air filter. 3. Replace the damaged fan.
External Equipment Fault	Err15	1. External fault signal is input via DI 2. External fault signal is input via virtual I/O	1. Reset the operation 2. Reset the operation
Communication Fault	Err16	1. The controller is in abnormal state 2. The communication cable is faulty 3. Parameters setting incorrect	1. Check the cabling of host computer 2. Check the communication cabling 3. Check communication parameters
Contactor Fault	Err17	1. The drive board and power supply are faulty 2. The contactors is faulty	1. Replace the faulty drive board or power supply board 2. Replace the faulty contactor
Current Detection Fault	Err18	1. The HALL device is faulty 2. The drive board is faulty	1. Replace the faulty HALL device 2. Replace the faulty drive board
Motor Auto-tuning Fault	Err19	1. The motor parameters are not set according to the nameplate 2. The motor auto-tunning times out	1. Set the motor parameters according to the nameplate properly 2. Check the cable connecting the inverter and the motor
EEPROM Write Fault	Err21	1. The EEPROM chip is damaged	1. Replace the main control board
Inverter Hardware Fault	Err22	1、Overvoltage 2、Overcurrent	1. Solve as overvoltage fault 2. Solve as overcurrent fault
Short Circuit to Ground	Err23	1. The motor is short circuited to the ground	1. Replace the cable or motor
Accumulative Running Time Reached	Err26	1. The accumulative running time reaches the setting value	1. Clear the record through the parameter initialization function
Accumulative Power-on Time Reached	Err29	1. The accumulative power-on time reaches the setting value	1. Clear the record through the parameter initialization function
Pulse-by-pulse Current Limit Fault	Err40	1. The load is too heavy or locked rotor occurs on the motor 2. The inverter model is of too small power class	1. Reduce the load and check the motor and mechanical condition 2. Select an inverter of higher power class
Motor Switchover Fault During Running	Err41	1. Change the selection of the motor via terminal during running of the inverter	1. Perform motor switchover after the inverter stops
Excessive Speed Deviation Fault	Err42	1. Excessive Speed deviation Inspection parameter P6-10, P6-11 Setting is not correct 2. No parameter identification	1. Correctly Setting Parameter F2-37,F2-38. 2. Executive parameter identification
Pt100 Overtemperature	Err45	1.Loose wiring of the temperature sensor	1.Check the wiring of the temperature sensor and eliminate

Fault Name	Display	Possible Causes	Solutions
Alarm		2.Motor temperature too high 3.Incorrect parameter settings	any faults 2.Reduce the switching frequency or take other cooling measures to dissipate heat from the motor 3.Correctly set parameters F2-33, F2-34, F2-35
Water Shortage alarm	A52	1. Pressure sensor is damaged 2. Check whether the parameters of the inverter are incorrectly set 3. Whether the pipe network and motor are correct	1. Check pressure sensor 2. Check inverter parameter setting 3. Check motor and pipe
Overpressure Fault	Err53	1. Pressure sensor is damaged 2. Check whether the parameters of the inverter are incorrectly set	1. check the pressure sensor 2. Test whether the inverter F1-18 is correctly set
Power board Communication Fault	Err65	1. Power board abnormality	1.Contact for Technical support

5.2. Common Faults and Solutions

The following faults may be encountered during the use of the inverter. Refer to the following table for simple fault analysis：

SN	Fault	Possible Causes	Solutions
1	There is no display at power-on	1. There is no power supply to the inverter or the power input to the inverter is too low 2. The power supply of the switch on the drive board of the inverter is faulty 3. The rectifier bridge is damaged 4. The buffer resistor is faulty 5. The control board or the operation panel is faulty 6. The cable connecting the control board and the drive board, and the operation panel breaks	1. Check the power supply 2. Check the DC bus voltage 3. Re-connect the 10-core cables 4~6. Contact us for technical support
2	”Err23” is displayed at power-on	1. The motor or the motor output cable is short circuited to the ground 2. The inverter is damaged	1. Measure the insulation of the motor and the output cable with a megger 2. Contact us for technical support
3	Err14 (Module overheat) fault alarm frequently	1. The setting of switching frequency is too high 2. The cooling fan is damaged, or the air filter is blocked 3. Components inside the inverter are damaged (thermocouple or other)	1. Reduce the switching frequency (F0-14) 2. Replace the fan and clean the air filter 3. Contact us for technical support

SN	Fault	Possible Causes	Solutions
4	The motor does not rotate after the inverter runs	1. Check the motor and the motor cables 2. The inverter parameters are set improperly (Motor parameters) 3. The cable between the drive board and the control board is in poor contact 4. The drive board is faulty	1. Ensure the cable between the inverter and the motor is normal 2. Replace the motor or clear mechanical faults 3. Check the re-set motor parameters 4. Contact us for technical support
5	The DI terminals are disabled	1. The parameters are set incorrectly 2. The external signal is incorrect 3. The control board is faulty	1. Check and reset the parameters 2. Re-connect the external signal cables 3. Contact us for technical support
6	The inverter overcurrent and overvoltage frequently	1. The motor parameters are set improperly 2. The acceleration/deceleration time is improper 3. The load fluctuates	1. Re-set motor parameters or re-perform the motor auto-tunning 2. Set proper acceleration/deceleration time 3. Contact us for technical support
7	Err17 alarm when power-on or running	The soft startup contactor is not picked up	1. Check whether the contactor cable is loose 2. Check whether the contactor is faulty 3. Check whether 24V power supply of the contactor is faulty 4. Contact us for technical support

5.3. Warranty Agreement

（1） Free warranty only refers to the inverter itself.

（2） In case of failure or damage within the warranty terms, our company is responsible for 12 months warranty (from the date of delivery, the bar code on the fuselage shall prevail, and if there is a contract agreement, it shall be implemented according to the agreement). For more than 12 months, we will charge a reasonable maintenance fee;

（3） During the warranty period, our company will charge a certain maintenance fee if:

a) Machine damage caused by the user's failure to comply with the regulations in the user manual;

b) Machine damage caused by mistakes in use and unauthorized maintenance and modification;

c) Damage caused by fire, flood, abnormal voltage, etc.;

d) Damage caused by using the inverter for abnormal functions;

e) Damage caused by man-made falling and transportation after purchase;

f) Failure and damage caused by obstacles outside the machine (such as external equipment factors);

（4） The service fee is calculated according to the uniform standard of the manufacturer. If there is a contract, the contract will take precedence.

（5） If there is any problem in the service process, please contact the supplier in time.

（6） The final interpretation right of warranty instructions belongs to our company.