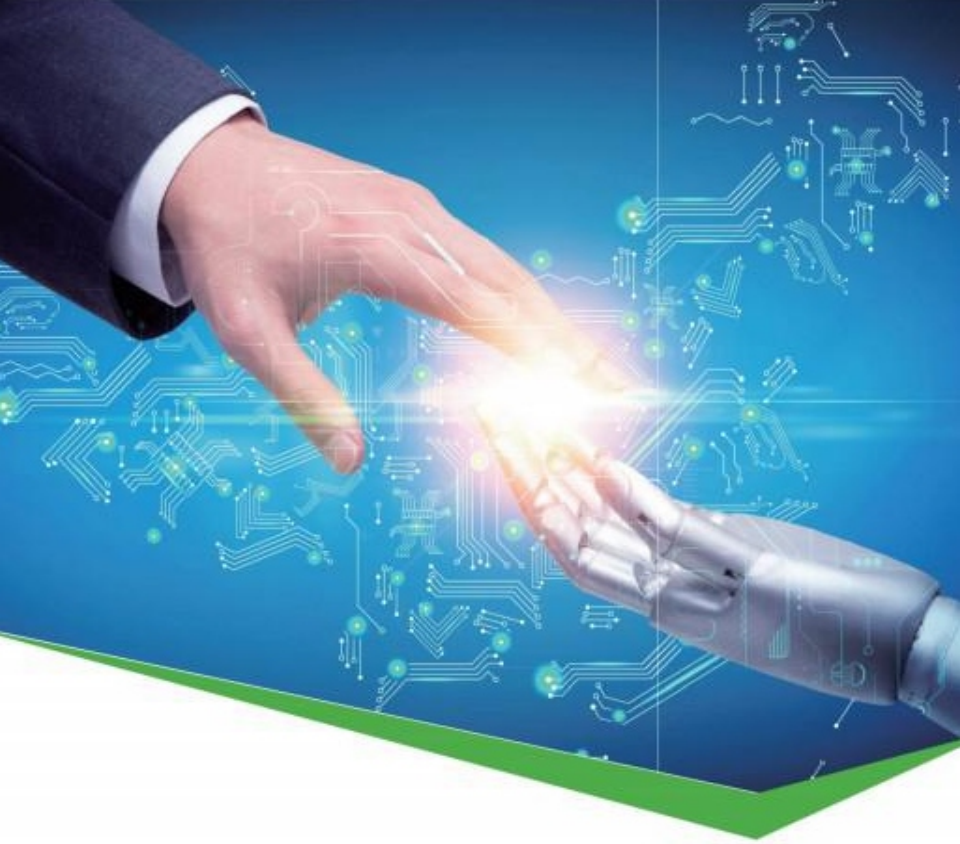


IKON drive

Product Catalogue
GE 300 User Manual

4.3.4 Wiring diagram of control circuit

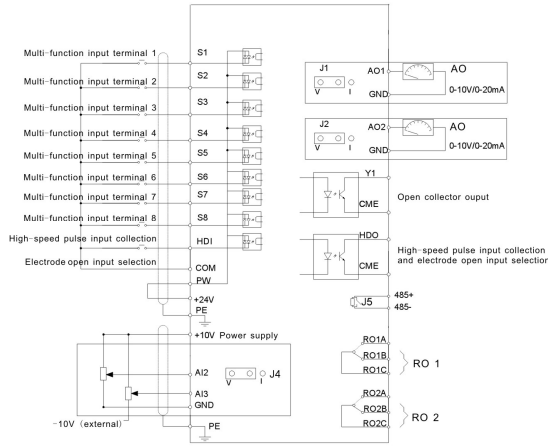


Fig 4-18 Wiring diagram of the control circuit

4.3.5 Terminals of control circuit

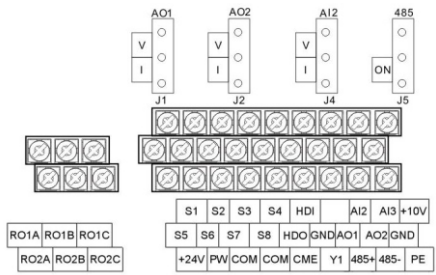


Fig 4-19 0.75~15kW Terminals of control circuit

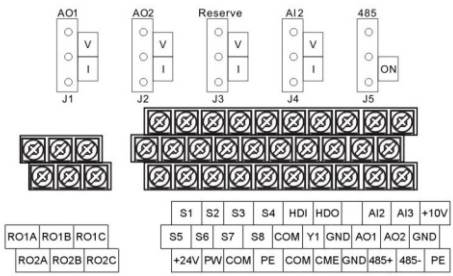


Fig 4-20 18.5~500kW Terminals of control circuit

Note: the spare terminal is reserved and not be used.

Terminal name	Description	
+10V	Local power supply +10V	
AI2 AI3	1. Input range: AI2 voltage and current can be chose: 0~10V/0~20mA; AI2 can be shifted by J4; AI3:-10V~+10V 2. Input impedance: voltage input: 20kΩ; current input: 500Ω 3. Resolution: the minimum one is 5mV when 10V corresponds to 50Hz 4. Deviation ±1%, 25 ℃	
GND	+10V reference null potential	
AO1 AO2	1. Output range:0~10V or 0~20mA; AO1 can be shifted by J1; AO2 can be shifted by J2 2. Deviation±1%,25 ℃	
RO1A RO1B RO1C	RO1 relay output, RO1A NO, RO1B NC, RO1C common terminal Contactor capability: 3A/AC250V,1A/DC30V	
RO2A RO2B RO2C	RO2 relay output, RO2A NO, RO2B NC, RO2C common terminal Contactor capability: 3A/AC250V,1A/DC30V	
PE	Grounding terminal	
PW	Provide the input switch working power supply from external to internal. Voltage range: 12~24V	
24V	The inverter provides the power supply for users with a maximum output current of 200mA	
COM	+24V common terminal	
S1	Switch input 1	1. Internal impedance:3.3kΩ 2. 12~30V voltage input is available 3. The terminal is the dual-direction input terminal supporting both NPN and PNP 4. Max input frequency:1kHz 5. All are programmable digital input terminal. User can set the terminal function through function codes.
S2	Switch input 2	
S3	Switch input 3	
S4	Switch input 4	
S5	Switch input 5	
S6	Switch input 6	
S7	Switch input 7	
S8	Switch input 8	
HDI	Except for S1~S8, this terminal can be used as high frequency input channel. Max. input frequency:50kHz	
HDO	1. Switch input:200mA/30V 2. Output frequency range:0~50kHz	
COM	+24V common terminal	
CME	Common terminal of HDO and Y1, short-connected with COM in factory	
Y1	1.Swtich capability:200mA/30V 2.Output frequency range:0~1kHz	
485+ 485-	485 communication interface and 485 differential signal interface If it is the standard 485 communication interface, please use twisted pairs or shield cable.	

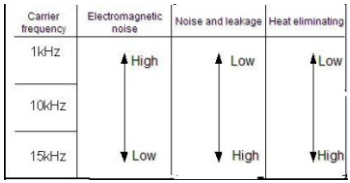
password freely and the inverter will work as the last setting one. When P07.00 is set to 0, the password can be canceled. If P07.00 is not 0 during powering on, then the parameter is protected by the password. When modify the parameters by serial communication, the function of the password follows the above rules, too.

Function code	Name	Detailed instruction of parameters	Default value	Modify
P00 Group Basic function group				
P00.00	Speed control mode	1: Sensorless vector control mode 1 (applying to AM) No need to install encoders. It is suitable in cases with high speed control accuracy for accurate speed and torque control at all power ratings. 2:SVPWM control No need to install encoders. It can improve the control accuracy with the advantages of stable operation, valid low-frequency torque boost and current vibration suppression and the functions of slip compensation and voltage adjustment. **Note**: AM-Asynchronous motor	2	
P00.01	Run command channel	Select the run command channel of the inverter. The control command of the inverter includes: start-up, stop, forward, reverse, jogging and fault reset. 0:Keypad running command channel("LOCAL/REMOT" light off) Carry out the command control by RUN, STOP/RST on the keypad. Set the multi-function key QUICK/JOG as FWD/REV shifting function (P07.02=3) to change the running direction; press RUN and STOP/RST simultaneously in running state to make the inverter coast to stop. 1:Terminal running command channel ("LOCAL/REMOT" flickering) Carry out the running command control by the forward rotation, reverse rotation and forward jogging and reverse jogging of the multi-function terminals 2:Communication running command channel ("LOCAL/REMOT" on); The running command is controlled by the upper monitor via communication.	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
P00.02	Communication selection	0: MODBUS communication 1~3: Reserved	0	
P00.03	Max. output frequency	This parameter is used to set the Maximum output frequency of the inverter. Users should pay attention to this parameter because it is the foundation of the frequency setting and the speed of acceleration and deceleration. Setting range: P00.04~400.00Hz	50.00 Hz	
P00.04	Upper limit of the running frequency	The upper limit of the running frequency is the upper limit of the output frequency of the inverter which is lower than or equal to the maximum frequency. Setting range:P00.05~P00.03 (Max. output frequency)	50.00 Hz	
P00.05	Lower limit of the running frequency	The lower limit of the running frequency is that of the output frequency of the inverter. The inverter runs at the lower limit frequency if the set frequency is lower than the lower limit one. **Note:** Max. output frequency ≥ Upper limit frequency ≥ Lower limit frequency Setting range:0.00Hz~P00.04 (Upper limit of the running frequency)	0.00Hz	
P00.06	A frequency command	0:Keypad data setting Modify the value of P00.10 (set the frequency by keypad) to modify the frequency by the keypad. 1:Analog AI1 setting(The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5kW) 2:Analog AI2 setting 3:Analog AI3 setting Set the frequency by analog input terminals. Goodrive200A series inverters provide 3 channels analog input terminals as the standard configuration, of which AI1/AI2 are the voltage/current option (0~10V/0~20mA) which can be shifted by jumpers; while AI3 is voltage input (-10V~+10V). **Note:** when analog AI1/AI2 select 0~20mA input, the corresponding voltage of 20mA is 10V.	0	
P00.07	B frequency command		2	

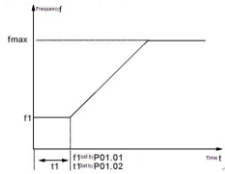
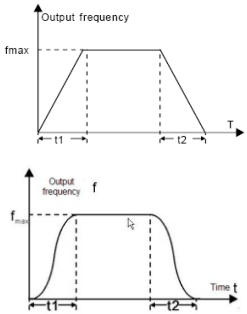
Function code	Name	Detailed instruction of parameters	Default value	Modify
		100.0% of the analog input setting corresponds to the maximum frequency (function code P00.03) in forward direction and -100.0% corresponds to the maximum frequency in reverse direction (function code P00.03) 4:High-speed pulse HDI setting The frequency is set by high-speed pulse terminals. Goodrive200A series inverters provide 1 channel high speed pulse input as the standard configuration. The pulse frequency range is 0.00~50.00kHz. 100.0% of the high speed pulse input setting corresponds to the maximum frequency in forward direction (P00.03) and -100.0% corresponds to the maximum frequency in reverse direction (P00.03). **Note:** The pulse setting can only be input by multi-function terminals HDI. Set P05.00 (HDI input selection) to high speed pulse input, and set P05.49 (HDI high speed pulse input function selection) to frequency setting input. 5:Simple PLC program setting The inverter runs at simple PLC program mode when P00.06=5 or P00.07=5. Set P10 (simple PLC and multi-step speed control) to select the running frequency, running direction, ACC/DEC time and the keeping time of corresponding step. See the function description of P10 for detailed information. 6: Multi-step speed running setting The inverter runs at multi-step speed mode when P00.06=6 or P00.07=6. Set P05 to select the current running step, and set P10 to select the current running frequency. The multi-step speed has the priority when P00.06 or P00.07 does not equal to 6, but the setting step can only be the 1~15 step. The setting step is 0~15 if P00.06 or P00.07 equals to 6. 7: PID control setting The running mode of the inverter is process PID		

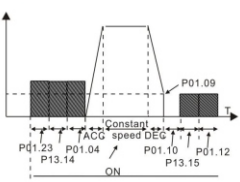
Function code	Name	Detailed instruction of parameters	Default value	Modify
		control when P00.06=7 or P00.07=7. It is necessary to set P09. The running frequency of the inverter is the value after PID effect. See P09 for the detailed information of the preset source, preset value, and feedback source of PID. 8:MODBUS communication setting The frequency is set by MODBUS communication. See P14 for detailed information. 9~11: Reserved **Note:** A frequency and B frequency can not set as the same frequency reference mode.		
P00.08	B frequency command reference	0:Maximum output frequency, 100% of B frequency setting corresponds to the maximum output frequency 1: A frequency command, 100% of B frequency setting corresponds to the maximum output frequency. Select this setting if it needs to adjust on the base of A frequency command.	0	
P00.09	Combination of the setting source	0: A, the current frequency setting is A frequency command 1: B, the current frequency setting is B frequency command 2: A+B, the current frequency setting is A frequency command + B frequency command 3: A-B, the current frequency setting is A frequency command - B frequency command 4: Max (A, B): the bigger one between A frequency command and B frequency is the set frequency. 5: Min (A, B): The lower one between A frequency command and B frequency is the set frequency. **Note:**The combination manner can be shifted by P05(terminal function)	0	
P00.10	Keypad set frequency	When A and B frequency commands are selected as “keypad setting”, this parameter will be the initial value of inverter reference frequency Setting range:0.00 Hz~P00.03 (the Max. frequency)	50.00 Hz	

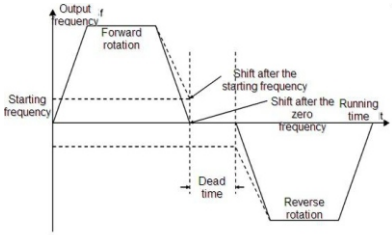
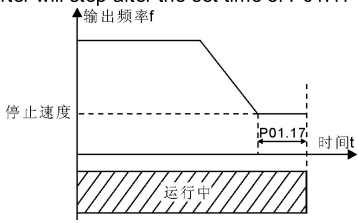
Function code	Name	Detailed instruction of parameters	Default value	Modify
P00.11	ACC time 1	ACC time means the time needed if the inverter speeds up from 0Hz to the Max. One (P00.03). DEC time means the time needed if the inverter speeds down from the Max. Output frequency to 0Hz (P00.03). Goodrive200A series inverters define four groups of ACC/DEC time which can be selected by P05. The factory default ACC/DEC time of the inverter is the first group. Setting range of P00.11 and P00.12:0.0~3600.0s	Depend on model	
P00.12	DEC time 1		Depend on model	
P00.13	Running direction	0: Runs at the default direction, the inverter runs in the forward direction. FWD/REV indicator is off. 1: Runs at the opposite direction, the inverter runs in the reverse direction. FWD/REV indicator is on. Modify the function code to shift the rotation direction of the motor. This effect equals to the shifting the rotation direction by adjusting either two of the motor lines (U, V and W). In keypad control, the motor rotation direction can be changed by QUICK/JOG on the keypad. Refer to parameter P07.02. **Note:** When the function parameter comes back to the default value, the motor's running direction will come back to the factory default state, too. In some cases it should be used with caution after commissioning if the change of rotation direction is disabled. 2: Forbid to run in reverse direction: It can be used in some special cases if the reverse running is disabled.	0	
P00.14	Carrier frequency setting	 The relationship table of the motor type and carrier frequency:	Depend on model	

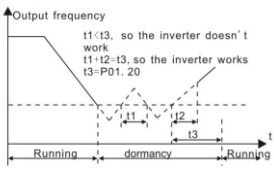
<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Model</th><th>Factory setting of carrier frequency</th></tr>
<tr><td>1.5~11kW</td><td>8kHz</td></tr>
<tr><td>15~55kW</td><td>4kHz</td></tr>
<tr><td>Above 75kW</td><td>2kHz</td></tr>
</table>
The advantage of high carrier frequency: ideal current waveform, little current harmonic wave and motor noise.
The disadvantage of high carrier frequency: increasing the switch loss, increasing inverter temperature and the impact to the output capacity. The inverter needs to derate on high carrier frequency. At the same time, the leakage and electrical magnetic interference will increase.
Applying low carrier frequency is contrary to the above, too low carrier frequency will cause unstable running, torque decreasing and surge.
The manufacturer has set a reasonable carrier frequency when the inverter is in factory. In general, users do not need to change the parameter.
When the frequency used exceeds the default carrier frequency, the inverter needs to derate 20% for each additional 1k carrier frequency.
Setting range:1.0~15.0kHz</td><td></td><td></td></tr>
<tr><td>P00.15</td><td>Motor parameter autotuning</td><td>0:No operation
1:Rotation autotuning
Comprehensive motor parameter autotune
It is recommended to use rotation autotuning when high control accuracy is needed.
2:Static autotuning 1
It is suitable in the cases when the motor can not de-couple from the load.
3:Static autotuning 2
It is suitable in the cases when the motor can not de-couple form the load. But only for parts of parameters.</td><td>0</td><td></td></tr>
<tr><td>P00.16</td><td>AVR function selection</td><td>0:Invalid
1:Valid during the whole procedure
The auto-adjusting function of the inverter can</td><td>1</td><td></td></tr>
</table>

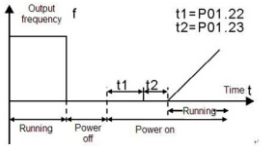
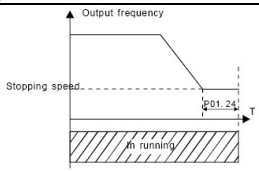
Function code	Name	Detailed instruction of parameters	Default value	Modify
		cancel the impact on the output voltage of the inverter because of the bus voltage fluctuation.		
P00.17	Inverter type	0:G type, for the constant torque load of rated parameters 1:P type; for the variable torque load of rated parameters (fans and water pumps) GD200A series inverters can use G/P type, the available motor power of G type is small one power file than that of P type.	0	
P00.18	Function restore parameter	0:No operation 1:Restore the default value 2:Clear fault records **Note:** The function code will restore to 0 after finishing the operation of the selected function code. Restoring to the default value will cancel the user password, please use this function with caution.	0	
P01 Group Start-up and stop control				
P01.00	Start mode	0:Start-up directly:start from the starting frequency P01.01 1:Start-up after DC braking: start the motor from the starting frequency after DC braking (set the parameter P01.03 and P01.04). It is suitable in the cases where reverse rotation may occur to the low inertia load during starting. 2: Start-up after speed tracking: start the rotating motor smoothly after tracking the rotation speed and direction automatically. It is suitable in the cases where reverse rotation may occur to the big inertia load during starting. Note: This function is available for the inverters of 4kW and above.	0	
P01.01	Starting frequency of direct start	Starting frequency of direct start-up means the original frequency during the inverter starting. See P01.02 for detailed information. Setting range: 0.00~50.00Hz	0.50Hz	
P01.02	Retention time of the starting frequency	Set a proper starting frequency to increase the torque of the inverter during starting. During the retention time of the starting frequency, the output frequency of the inverter is the starting	0.0s	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		frequency. And then, the inverter will run from the starting frequency to the set frequency. If the set frequency is lower than the starting frequency, the inverter will stop running and keep in the stand-by state. The starting frequency is not limited in the lower limit frequency.  Setting range: 0.0~50.0s		
P01.03	The braking current before starting	The inverter will carry out DC braking at the braking current set before starting and it will speed up after the DC braking time. If the DC braking time is set to 0, the DC braking is invalid. The stronger the braking current, the bigger the braking power. The DC braking current before starting means the percentage of the rated current of the inverter. The setting range of P01.03: 0.0~100.0% The setting range of P01.04: 0.00~50.00s	0.0%	
P01.04	The braking time before starting		0.00s	
P01.05	ACC/DEC selection	The changing mode of the frequency during start-up and running. 0:Linear type The output frequency increases or decreases linearly.  	0	

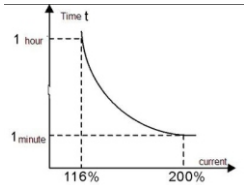
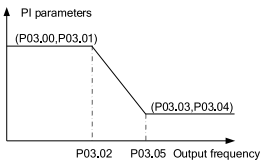
Function code	Name	Detailed instruction of parameters	Default value	Modify
		1: S curve		
P01.06	ACC time of the starting step of S curve	0.0~50.0s	0.1s	
P01.07	DEC time of the ending step of S curve		0.1s	
P01.08	Stop mode	0: Decelerate to stop: after the stop command becomes valid, the inverter decelerates to reduce the output frequency during the set time. When the frequency decreases to 0Hz, the inverter stops. 1: Coast to stop: after the stop command becomes valid, the inverter ceases the output immediately. And the load coasts to stop at the mechanical inertia.	0	
P01.09	Starting frequency of DC braking	Starting frequency of DC braking: start the DC braking when running frequency reaches starting frequency determined by P1.09.	0.00Hz	
P01.10	Waiting time before DC braking	Waiting time before DC braking: Inverters block the output before starting the DC braking. After this waiting time, the DC braking will be started so as to prevent over-current fault caused by DC braking at high speed.	0.00s	
P01.11	DC braking current	DC braking current The value of P01.11 is the percentage of rated current of inverter. The bigger the DC braking current is, the greater the braking torque is.	0.0%	
P01.12	DC braking time	DC braking time: The retention time of DC brake. If the time is 0, the DC brake is invalid. The inverter will stop at the set deceleration time.  Setting range of P01.09: 0.00Hz~P00.03 (the Max. frequency)	0.00s	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		Setting range of P01.10: 0.00~50.00s Setting range of P01.11: 0.0~100.0% Setting range of P01.12: 0.00~50.00s		
P01.13	Dead time of FWD/REV rotation	During the procedure of switching FWD/REV rotation, set the threshold by P01.14, which is as the table below:  Setting range: 0.0~3600.0s	0.0s	
P01.14	Shifting between FWD/REV rotation	Set the threshold point of the inverter: 0:Switch after 0 frequency 1:Switch after the starting frequency 2:Switch after the stopping speed	0	
P01.15	Stopping speed	0.00~100.00Hz	0.50 Hz	
P01.16	Detection of stopping speed	0: Detect according to speed setting (no stopping delay) 1: Detect according to speed feedback (only valid for vector control)	1	
P01.17	Detection time of the feedback speed	If set P01.16 to 1, the feedback frequency is less than or equal to P01.15 and detect in the set time of P01.17, the inverter will stop; otherwise the inverter will stop after the set time of P01.17  Setting range: 0.00~100.00s (only valid when P01.16=1)	0.50s	
P01.18	Operation protection	When the running command channel is the terminal control, the system will detect the state	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
	during powering on	of the running terminal during powering on. 0: The terminal running command is invalid when powering on. Even the running command is detected to be valid during powering on, the inverter won't run and the system keeps in the protection state until the running command is canceled and enabled again. 1: The terminal running command is valid when powering on. If the running command is detected to be valid during powering on, the system will start the inverter automatically after the initialization. **Note:** this function should be selected with cautions, or serious result may follow.		
P01.19	Action selection (operation frequency<lower frequency limit and valid when the lower limit >0)	This function code determines the running state of the inverter when the set frequency is lower than the lower-limit one. 0: Run at the lower limit frequency 1: Stop 2: Hibernation The inverter will coast to stop when the set frequency is lower than the lower-limit one. If the set frequency is above the lower limit one again and it lasts for the time set by P01.20, the inverter will come back to the running state automatically.	0	
P01.20	Hibernation restore delay time	This function code determines the hibernation delay time. When the running frequency of the inverter is lower than the lower limit one, the inverter will pause to stand by. When the set frequency is above the lower limit one again and it lasts for the time set by P01.20, the inverter will run automatically. **Note:** The time is the total value when the set frequency is above the lower limit one.  Setting range: 0.0~3600.0s (valid when P01.19=2)	0.0s	
P01.21	Restart after power off	This function can enable the inverter start or not after the power off and then power on.	0	

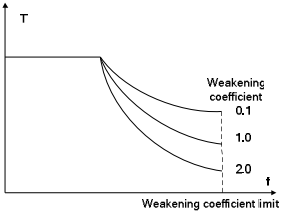
Function code	Name	Detailed instruction of parameters	Default value	Modify
		0: Disable 1: Enable, if the starting need is met, the inverter will run automatically after waiting for the time defined by P01.22.		
P01.22	The waiting time of restart after power off	The function determines the waiting time before the automatic running of the inverter when powering off and then powering on.  Setting range: 0.0~3600.0s (valid when P01.21=1)	1.0s	
P01.23	Start delay time	The function determines the brake release after the running command is reference, and the inverter is in a stand-by state and wait for the delay time set by P01.23 Setting range: 0.0~60.0s	0.0s	
P01.24	Delay time of the stop speed	 Setting range: 0.0~100.0 s	0.0s	
P01.25	0Hz output selection	0: Output without voltage 1: Output with voltage 2: Output at the DC braking current	0	
P02 Group Motor 1				
P02.01	Rated power of AM 1	0.1~3000.0kW	Depend on model	
P02.02	Rated frequency of AM 1	0.01Hz~P00.03(the Max. frequency)	50.00 Hz	
P02.03	Rated speed of AM 1	1~36000rpm	Depend on model	
P02.04	Rated voltage of AM 1	0~1200V	Depend on model	

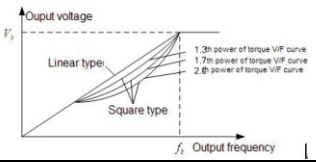
Function code	Name	Detailed instruction of parameters	Default value	Modify
P02.05	Rated current of AM 1	0.8~6000.0A	Depend on model	
P02.06	Stator resistor of AM 1	0.001~65.535Ω	Depend on model	
P02.07	Rotor resistor of AM 1	0.001~65.535Ω	Depend on model	
P02.08	Leakage inductance of AM 1	0.1~6553.5mH	Depend on model	
P02.09	Mutual inductance of AM 1	0.1~6553.5mH	Depend on model	
P02.10	Non-load current of AM 1	0.1~6553.5A	Depend on model	
P02.26	Motor 1 overload protection	0: No protection 1: Common motor (with low speed compensation). Because the heat-releasing effect of the common motors will be weakened, the corresponding electric heat protection will be adjusted properly. The low speed compensation characteristic mentioned here means reducing the threshold of the overload protection of the motor whose running frequency is below 30Hz. 2: Variable frequency motor (without low speed compensation) Because the heat-releasing effect of the specific motors won't be impacted by the rotation speed, it is not necessary to adjust the protection value during low-speed running.	2	
P02.27	Motor 1 over load protection coefficient	Times of motor overload M = Iout/(In*K) In is the rated current of the motor, Iout is the output current of the inverter and K is the motor protection coefficient. So, the bigger the value of K is, the smaller the value of M is. When M =116%, the fault will be reported after 1 hour, when M =200%, the fault will be reported after 1 minute, when M>=400%, the fault will be reported instantly.	100.0%	

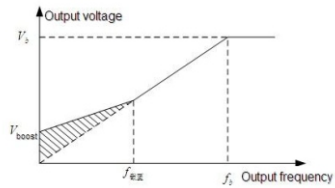
Function code	Name	Detailed instruction of parameters	Default value	Modify
		 Setting range: 20.0%~120.0%		
P02.28	Correction coefficient of motor 1 power	Correct the power displaying of motor 1. Only impact the displaying value other than the control performance of the inverter. Setting range: 0.00~3.00	1.00	
P03 Group Vector control				
P03.00	Speed loop proportional gain1	The parameters P03.00~P03.05 only apply to vector control mode. Below the switching frequency 1(P03.02), the speed loop PI parameters are: P03.00 and P03.01. Above the switching frequency 2(P03.05), the speed loop PI parameters are: P03.03 and P03.04. PI parameters are gained according to the linear change of two groups of parameters. It is shown as below:  Setting the proportional coefficient and integral time of the adjustor can change the dynamic response performance of vector control speed loop. Increasing the proportional gain and decreasing the integral time can speed up the dynamic response of the speed loop. But too high proportional gain and too low integral time may cause system vibration and overshoot. Too low proportional gain may cause system vibration and speed static deviation. PI has a close relationship with the inertia of the system. Adjust on the base of PI according to	20.0	
P03.01	Speed loop integral time1		0.200s	
P03.02	Low switching frequency		5.00Hz	
P03.03	Speed loop proportional gain 2		20.0	
P03.04	Speed loop integral time 2		0.200s	
P03.05	High switching frequency		10.00Hz	

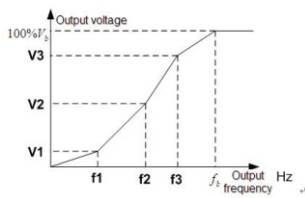
Function code	Name	Detailed instruction of parameters	Default value	Modify
		different loads to meet various demands. The setting range of P03.00:0~200.0 The setting range of P03.01: 0.000~10.000s The setting range of P03.02:0.00Hz~P03.05 The setting range of P03.03:0~200.0 The setting range of P03.04: 0.000~10.000s The setting range of P03.05:P03.02~P00.03(the Max. output frequency)		
P03.06	Speed loop output filter	0~8 (corresponds to $0\sim2^8$/10ms)	0	
P03.07	Compensation coefficient of electro motion slip	Slip compensation coefficient is used to adjust the slip frequency of the vector control and improve the speed control accuracy of the system. Adjusting the parameter properly can control the speed steady-state error. Setting range:50~200%	100%	
P03.08	Compensation coefficient of braking slip		100%	
P03.09	Current loop percentage coefficient P	**Note**: 1 These two parameters adjust the PI adjustment parameter of the current loop which affects the dynamic response speed and control accuracy directly. Generally, users do not need to change the default value. 2 Only apply to SVC control mode 0(P00.00=0). Setting range:0~65535	1000	
P03.10	Current loop integral coefficient 1		1000	
P03.11	Torque setting method	This parameter is used to enable the torque control mode, and set the torque. 0:Torque control is invalid 1:Keypad setting torque(P03.12) 2:Analog AI1 setting torque(The inverter(≤ 15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5kW) 3:Analog AI2 setting torque 4:Analog AI3 setting torque 5:Pulse frequency HDI setting torque 6:Multi-step torque setting 7:MODBUS communication setting torque 8~10:Reserved Note: Setting modes 2~10, 100% corresponds to	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		three times of the rated current of the motor.		
P03.12	Keypad setting torque	Setting range: -300.0%~300.0%(rated current of the motor)	50.0%	
P03.13	Torque reference filter time	0.000~10.000s	0.010s	
P03.14	Upper frequency of forward rotation in vector control	0:Keypad (P03.16 sets P03.14,P03.17 sets P03.15) 1: AI1 (The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5kW) 2: AI2 3: AI3 4:Pulse frequency HDI setting upper-limit frequency 5:Multi-step setting upper-limit frequency 6:MODBUS communication setting upper-limit frequency 7~ 9: Reserved Note: Setting method 1~9, 100% corresponds to the maximum frequency	0	
P03.15	Upper frequency of reverse rotation in vector control		0	
P03.16	Keypad setting for upper frequency of forward rotation	This function is used to set the upper limit of the frequency. P03.16 sets the value of P03.14; P03.17 sets the value of P03.15. Setting range:0.00 Hz~P00.03 (the Max. output frequency)	50.00 Hz	
P03.17	Keypad setting for upper frequency of reverse rotation		50.00Hz	
P03.18	Upper electro motion torque source	This function code is used to select the electro motion and braking torque upper-limit setting source selection. 0:Keypad setting upper-limit frequency (P03.20 sets P03.18, P03.21 sets P03.19) 1: AI1 (The inverter(≤15kW) can be set by the	0	
P03.19	Upper braking		0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
	torque source	analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5kW) 2: AI2 3: AI3 4: HDI 5:MODBUS communication **Note**: setting mode 1~9,100% corresponds to three times of the motor current.		
P03.20	Keypad setting of electromotion torque	The function code is used to set the limit of the torque. Setting range:0.0~300.0%(motor rated current)	180.0%	
P03.21	Keypad setting of braking torque		180.0%	
P03.22	Weakening coefficient in constant power zone	The usage of motor in weakening control.  	0.3	
P03.23	Lowest weakening point in constant power zone	Function code P03.22 and P03.23 are effective at constant power. The motor will enter into the weakening state when the motor runs at rated speed. Change the weakening curve by modifying the weakening control coefficient. The bigger the weakening control coefficient is, the steeper the weak curve is. The setting range of P03.22:0.1~2.0 The setting range of P03.23:10%~100%	20%	
P03.24	Max. voltage limit	P03.24 set the Max. Voltage of the inverter, which is dependent on the site situation. The setting range:0.0~120.0%	100.0%	
P03.25	Pre-exciting time	Reactivate the motor when the inverter starts up. Build up a magnetic field inside the inverter to improve the torque performance during the starting process.	0.300s	

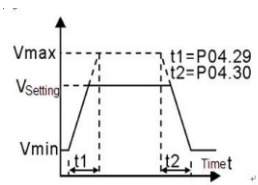
Function code	Name	Detailed instruction of parameters	Default value	Modify
		The setting time:0.000~10.000s		
P03.26	Weak magnetic proportional gain	0~8000 **Note**: P03.24~P03.26 are invalid for vector mode.	1000	
P03.27	Vector control speed	0: Display the actual value 1: Display the setting value	0	
P03.28	Compensation coefficient of static friction	0.0~100.0% Adjust P03.28 to compensate the coefficient of static friction. Only valid when setting in 1Hz.	0.0%	
P03.29	Compensation coefficient of dynamic friction	0.0~100.0% Adjust P03.29 to compensate the coefficient of static friction. Only valid when setting in 1Hz.	0.0%	
P04 Group SVPWM control				
P04.00	Motor 1 V/F curve setting	These function codes define the V/F curve of Goodrive200A motor 1, and meet the need of different loads. 0:Straight line V/F curve, applying to the constant torque load 1:Multi-dots V/F curve 2:1.3th power low torque V/F curve 3:1.7th power low torque V/F curve 4:2.0th power low torque V/F curve Curves 2~4 apply to the torque loads such as fans and water pumps. Users can adjust according to the features of the loads to achieve a best energy-saving effect. 5:Customized V/F(V/F separation); in this mode, V can be separated from f and f can be adjusted through the frequency reference channel set by P00.06 or the voltage reference channel set by P04.27 to change the feature of the curve. **Note:** V_b in the below picture is the motor rated voltage and f_b is the motor rated frequency. 	0	

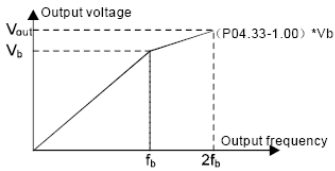
<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td>P04.01</td><td>Motor 1 torque boost</td><td rowspan="2">Torque boost is used for the compensation of low frequency torque. P04.01 is relative to the Max. output voltage V_b.
P04.02 defines the percentage of closing frequency of manual torque to f_b.
Torque boost should be selected according to the load. The bigger the load is, the bigger the torque is. Too big torque boost is inappropriate because the motor will run with over magnetic, and the current of the inverter will increase to add the temperature of the inverter and decrease the efficiency.
When the torque boost is set to 0.0%, the inverter is automatic torque boost.
Torque boost threshold: below this frequency point, the torque boost is effective, but over this frequency point, the torque boost is invalid.
 

The setting range of P04.01:0.0%:(automatic) 0.1%~10.0%
The setting range of P04.02:0.0%~50.0%</td><td>0.0%</td><td></td></tr>
<tr><td>P04.02</td><td>Motor 1 torque boost close</td><td>20.0%</td><td></td></tr>
<tr><td>P04.03</td><td>V/F frequency 1 of motor 1</td><td rowspan="5"> 

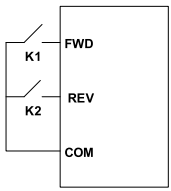
When P04.00 =1, the user can set V/F curve through P04.03~P04.08.
V/F is generally set according to the load of the motor.</td><td>0.00Hz</td><td></td></tr>
<tr><td>P04.04</td><td>V/F voltage 1 of motor 1</td><td>00.0%</td><td></td></tr>
<tr><td>P04.05</td><td>V/F frequency 2 of motor 1</td><td>00.00Hz</td><td></td></tr>
<tr><td>P04.06</td><td>V/F voltage 2 of motor 1</td><td>00.0%</td><td></td></tr>
<tr><td>P04.07</td><td>V/F frequency 3 of motor 1</td><td>00.00Hz</td><td></td></tr>
</table>

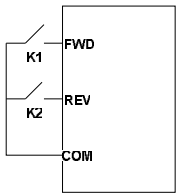
Function code	Name	Detailed instruction of parameters	Default value	Modify
P04.08	V/F voltage 3 of motor 1	**Note:**V1＜V2＜V3, f1＜f2＜f3. Too high low frequency voltage will heat the motor excessively or damage. The inverter may occur the overcurrent speed or overcurrent protection. The setting range of P04.03: 0.00Hz~P04.05 The setting range of P04.04:0.0%~110.0% The setting range of P04.05:P04.03~ P04.07 The setting range of P04.06:0.0%~110.0% (the rated voltage of motor 1) The setting range of P04.07:P04.05~ P02.02 (the rated frequency of motor 1) The setting range of P04.08:0.0%~110.0% (the rated voltage of motor 1)	00.0%	
P04.09	V/F slip compensation gain of motor 1	This function code is used to compensate the change of the rotation speed caused by load during compensation SVPWM control to improve the rigidity of the motor. It can be set to the rated slip frequency of the motor which is counted as below: $\triangle f=f_b-n*p/60$ Of which, f_b is the rated frequency of the motor, its function code is P02.02; n is the rated rotating speed of the motor and its function code is P02.03; p is the pole pair of the motor. 100.0% corresponds to the rated slip frequency△f. Setting range:0.0~200.0%	100.0%	
P04.10	Motor 1 low frequency vibration control factor	In the SVPWM control mode, current fluctuation may occur to the motor on some frequency, especially the motor with big power. The motor can not run stably or overcurrent may occur. These phenomena can be canceled by adjusting this parameter. The setting range of P04.10:0~100 The setting range of P04.11:0~100 The setting range of P04.12:0.00Hz~P00.03 (the Max. frequency)	10	
P04.11	Motor 1 high frequency vibration control factor		10	
P04.12	Motor 1 vibration control threshold		30.00 Hz	
P04.26	Energy-saving operation selection	0:No action 1:Automatic energy-saving operation Motor on the light load conditions, automatically	0	

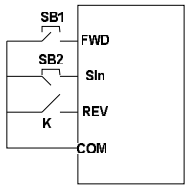
Function code	Name	Detailed instruction of parameters	Default value	Modify
		adjusts the output voltage to save energy		
P04.27	Voltage setting channel	Select the output setting channel at V/F curve separation. 0: Keypad setting voltage: the output voltage is determined by P04.28. 1:AI1 setting voltage(The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5kW) 2:AI2 setting voltage; 3:AI3 setting voltage; 4:HDI setting voltage; 5:Multi-step speed setting voltage; 6:PID setting voltage; 7:MODBUS communication setting voltage; **Note:** 100% corresponds to the rated voltage of the motor.	0	
P04.28	Keypad setting voltage	The function code is the voltage digital set value when the voltage setting channel is selected as "keypad selection" The setting range:0.0%~100.0%	100.0%	
P04.29	Voltage increasing time	Voltage increasing time is the time when the inverter accelerates from the output minimum voltage to the output maximum voltage.	5.0s	
P04.30	Voltage decreasing time	Voltage decreasing time is the time when the inverter decelerates from the output maximum voltage to the output minimum voltage. The setting range:0.0~3600.0s	5.0s	
P04.31	Maximum output voltage	Set the upper and low limit of the output voltage. The setting range of P04.31:P04.32~100.0% (the rated voltage of the motor)	100.0%	
P04.32	Minimum output voltage	The setting range of P04.32:0.0%~ P04.31 (the rated voltage of the motor) 	0.0%	

Function code	Name	Detailed instruction of parameters	Default value	Modify
P04.33	Weaking coefficient at constant power	Used to adjust the output voltage of inverter in SVPWM mode when weaking magnetic. Note: Invalid in constant-torque mode.  The setting range of P04.33: 1.00~1.30	1.00	
P05 Group Input terminals				
P05.00	HDI input	0: HDI is high pulse input. See P05.49~P05.54 1: HDI is switch input	0	
P05.01	S1 terminal function selection	0: No function 1: Forward rotation 2: Reverse rotation 3: 3-wire control 4: Forward jogging 5: Reverse jogging 6: Coast to stop 7: Fault reset 8: Operation pause 9: External fault input 10:Increasing frequency setting(UP) 11:Decreasing frequency setting(DOWN) 12:Cancel the frequency change setting 13:Shift between A setting and B setting 14:Shift between combination setting and A setting 15:Shift between combination setting and B setting 16:Multi-step speed terminal 1 17:Multi-step speed terminal 2 18:Multi-step speed terminal 3 19:Multi- step speed terminal 4 20:Multi- step speed pause 21:ACC/DEC time option 1	1	
P05.02	S2 terminal function selection		4	
P05.03	S3 terminal function selection		7	
P05.04	S4 terminal function selection		0	
P05.05	S5 terminal function selection		0	
P05.06	S6 terminal function selection		0	
P05.07	S7 terminal function selection		0	
P05.08	S8 terminal function selection		0	

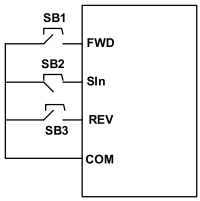
<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td>P05.09</td><td>HDI terminal function selection</td><td>22:ACC/DEC time option 2
23:Simple PLC stop reset
24:Simple PLC pause
25:PID control pause
26:Traverse Pause(stop at the current frequency)
27:Traverse reset(return to the center frequency)
28:Counter reset
29:Torque control prohibition
30:ACC/DEC prohibition
31:Counter trigger
32:Length reset
33:Cancel the frequency change setting temporarily
34:DC brake
36:Shift the command to the keypad
37:Shift the command to the terminals
38:Shift the command to the communication
39: Pre-exciting command
40:Clear the power
41:Keep the power
61: PID pole switching</td><td>0</td><td></td></tr>
<tr><td>P05.10</td><td>Polarity selection of the input terminals</td><td>The function code is used to set the polarity of the input terminals.
Set the bit to 0, the input terminal is anode.
Set the bit to 1, the input terminal is cathode.
<table><tr><td>BIT0</td><td>BIT1</td><td>BIT2</td><td>BIT3</td><td>BIT4</td></tr><tr><td>S1</td><td>S2</td><td>S3</td><td>S4</td><td>S5</td></tr><tr><td>BIT5</td><td>BIT6</td><td>BIT7</td><td>BIT8</td><td></td></tr><tr><td>S6</td><td>S7</td><td>S8</td><td>HDI</td><td></td></tr></table>The setting range:0x000~0x1FF</td><td>0x000</td><td></td></tr>
<tr><td>P05.11</td><td>ON-OFF filter time</td><td>Set the sample filter time of S1~S8 and HDI terminals. If the interference is strong, increase the parameter to avoid the disoperation.
0.000~1.000s</td><td>0.010s</td><td></td></tr>
<tr><td>P05.12</td><td>Virtual terminals setting</td><td>0x000~0x1FF(0: Disabled, 1:Enabled)
BIT0:S1 virtual terminal
BIT1:S2 virtual terminal
BIT2:S3 virtual terminal
BIT3:S4 virtual terminal
BIT4:S5 virtual terminal
BIT5:S6 virtual terminal</td><td>0x000</td><td></td></tr>
</table>

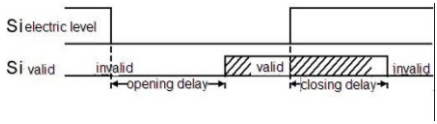
<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td></td><td>BIT6:S7 virtual terminal
BIT7:S8 virtual terminal
BIT8:HDI virtual terminal</td><td></td><td></td></tr>
<tr><td>P05.13</td><td>Terminals control running mode</td><td>Set the operation mode of the terminals control
0:2-wire control 1, comply the enable with the direction. This mode is widely used. It determines the rotation direction by the defined FWD and REV terminals command.
 

<table>
<tr><th>FWD</th><th>REV</th><th>运行命令</th></tr>
<tr><td>OFF</td><td>OFF</td><td>停止</td></tr>
<tr><td>ON</td><td>OFF</td><td>正转运行</td></tr>
<tr><td>OFF</td><td>ON</td><td>反转运行</td></tr>
<tr><td>ON</td><td>ON</td><td>保持</td></tr>
</table>
1:2-wire control 2; Separate the enable from the direction. FWD defined by this mode is the enabling ones. The direction depends on the state of the defined REV.
 

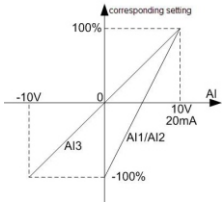
<table>
<tr><th>FWD</th><th>REV</th><th>运行命令</th></tr>
<tr><td>OFF</td><td>OFF</td><td>停止</td></tr>
<tr><td>ON</td><td>OFF</td><td>正转运行</td></tr>
<tr><td>OFF</td><td>ON</td><td>停止</td></tr>
<tr><td>ON</td><td>ON</td><td>反转运行</td></tr>
</table>
2:3-wire control 1; Sin is the enabling terminal on this mode, and the running command is caused by FWD and the direction is controlled by REV. Sin is natural closed.
 

The direction control is as below during operation:
<table>
<tr><th>SIn</th><th>REV</th><th>Previous direction</th><th>Current direction</th></tr>
</table></td><td>0</td><td></td></tr>
</table>

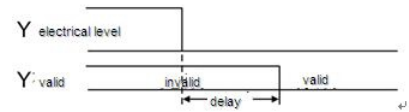
Function code	Name	Detailed instruction of parameters	Default value	Modify
		<table><tr><td rowspan="2">ON</td><td rowspan="2">OFF→ON</td><td>Forward</td><td>Reverse</td></tr><tr><td>Reverse</td><td>Forward</td></tr><tr><td rowspan="2">ON</td><td rowspan="2">ON→OFF</td><td>Reverse</td><td>Forward</td></tr><tr><td>Forward</td><td>Reverse</td></tr><tr><td>ON→ OFF</td><td>ON OFF</td><td colspan="2">Decelerate to stop</td></tr></table> 3:3-wire control 2; Sin is the enabling terminal on this mode, and the running command is caused by SB1 or SB3 and both of them control the running direction.NC SB2 generates the stop command.  <table><tr><th>SIn</th><th>FWD</th><th>REV</th><th>Direction</th></tr><tr><td rowspan="2">ON</td><td rowspan="2">OFF→ ON</td><td>ON</td><td>Forward</td></tr><tr><td>OFF</td><td>Reverse</td></tr><tr><td rowspan="2">ON</td><td>ON</td><td rowspan="2">OFF→ ON</td><td>Forward</td></tr><tr><td>OFF</td><td>Reverse</td></tr><tr><td>ON→ OFF</td><td></td><td></td><td>Decelerat e to stop</td></tr></table> **Note**: for the 2-wire running mode, when FWD/REV terminal is valid, the inverter stop because of the stopping command from other sources, even the control terminal FWD/REV keeps valid; the inverter won't work when the stopping command is canceled. Only when FWD/REV is relaunched, the inverter can start again. For example, the valid STOP/RST stop when PLC signal cycles stop, fixed-length stop and terminal control (see P07.04).		
P05.14	S1 terminal switching-on delay time	The function code defines the corresponding delay time of electrical level of the programmable terminals from switching on to switching off.	0.000s	

Function code	Name	Detailed instruction of parameters	Default value	Modify
P05.15	S1 terminal switching-off delay time		0.000s	
P05.16	S2 terminal switching-on delay time	Setting range:0.000~50.000s	0.000s	
P05.17	S2 terminal switching-off delay time		0.000s	
P05.18	S3 terminal switching-on delay time		0.000s	
P05.19	S3 terminal switching-off delay time		0.000s	
P05.20	S4 terminal switching-on delay time		0.000s	
P05.21	S4 terminal switching-off delay time		0.000s	
P05.22	S5 terminal switching-on delay time		0.000s	
P05.23	S5 terminal switching-off delay time		0.000s	
P05.24	S6 terminal switching-on delay time		0.000s	
P05.25	S6 terminal switching-off delay time		0.000s	

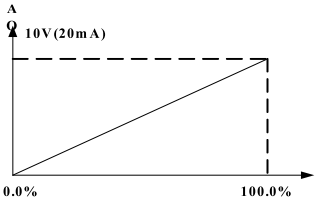
Function code	Name	Detailed instruction of parameters	Default value	Modify
P05.26	S7 terminal switching-on delay time		0.000s	
P05.27	S7 terminal switching-off delay time		0.000s	
P05.28	S8 terminal switching-on delay time		0.000s	
P05.29	S8 terminal switching-off delay time		0.000s	
P05.30	HDI terminal switching-on delay time		0.000s	
P05.31	HDI terminal switching-off delay time		0.000s	
P05.32	Lower limit of AI1	The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5 kW. The function code defines the relationship between the analog input voltage and its corresponding set value. If the analog input voltage beyond the set minimum or maximum input value, the inverter will count at the minimum or maximum one. When the analog input is the current input, the corresponding voltage of 0~20mA is 0~10V. In different cases, the corresponding rated value of 100.0% is different. See the application for detailed information. The figure below illustrates different applications:	0.00V	
P05.33	Corresponding setting of the lower limit of AI1		0.0%	
P05.34	Upper limit of AI1		10.00V	
P05.35	Corresponding setting of the upper limit of AI1		100.0%	
P05.36	AI1 input filter time		0.100s	
P05.37	Lower limit of AI2		0.00V	

Function code	Name	Detailed instruction of parameters	Default value	Modify
P05.38	Corresponding setting of the lower limit of AI2	 Input filter time: this parameter is used to adjust the sensitivity of the analog input. Increasing the value properly can enhance the anti-interference of the analog, but weaken the sensitivity of the analog input **Note:** Analog AI1 and AI2 can support 0~10V or 0~20mA input, when AI1 and AI2 selects 0~20mA input, the corresponding voltage of 20mA is 5V. AI3 can support the output of -10V~+10V. The setting range of P05.32:0.00V~P05.34 The setting range of P05.33:-100.0%~100.0% The setting range of P05.34:P05.32~10.00V The setting range of P05.35:-100.0%~100.0% The setting range of P05.36:0.000s~10.000s The setting range of P05.37:0.00V~P05.39 The setting range of P05.38:-100.0%~100.0% The setting range of P05.39:P05.37~10.00V The setting range of P05.40:-100.0%~100.0% The setting range of P05.41:0.000s~10.000s The setting range of P05.42:-10.00V~P05.44 The setting range of P05.43:-100.0%~100.0% The setting range of P05.44: P05.42~P05.46 The setting range of P05.45:-100.0%~100.0% The setting range of P05.46:P05.44~10.00V The setting range of P05.47:-100.0%~100.0% The setting range of P05.48:0.000s~10.000s	0.0%	
P05.39	Upper limit of AI2		10.00V	
P05.40	Corresponding setting of the upper limit of AI2		100.0%	
P05.41	AI2 input filter time		0.100s	
P05.42	Lower limit of AI3		-10.00V	
P05.43	Corresponding setting of the lower limit of AI3		-100.0%	
P05.44	Middle value of AI3		0.00V	
P05.45	Corresponding middle setting of AI3		0.0%	
P05.46	Upper limit of AI3		10.00V	
P05.47	Corresponding setting of the upper limit of AI3		100.0%	
P05.48	AI3 input filter time		0.100s	
P05.49	HDI high-speed pulse input	The function selection when HDI terminals is high-speed pulse input 0:Frequency setting input, frequency setting source 1:Counter input, high-speed pulse counter input terminals 2:Length counting input, length counter input terminals	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
P05.50	Lower limit frequency of HDI	0.000kHz~P05.52	0.000 kHz	
P05.51	Corresponding setting of HDI low frequency setting	-100.0%~100.0%	0.0%	
P05.52	Upper limit frequency of HDI	P05.50 ~50.00kHz	50.00 kHz	
P05.53	Corresponding setting of upper limit frequency of HDI	-100.0%~100.0%	100.0%	
P05.54	HDI frequency input filter time	0.000s~10.000s	0.100s	
P06 Group Output terminals				
P06.00	HDO output	The function selection of the high-speed pulse output terminals. 0: Open collector pole high speed pulse output: The Max.pulse frequency is 50.0kHz. See P06.27~P06.31 for detailed information of the related functions. 1: Open collector pole output. See P06.02 for detailed information of the related functions.	0	
P06.01	Y1 output	0:Invalid 1:In operation 2:Forward rotation 3:Reverse rotation 4: Jogging 5:The inverter fault 6:Frequency degree test FDT1 7:Frequency degree test FDT2 8:Frequency arrival 9:Zero speed running 10:Upper limit frequency arrival	0	
P06.02	HDO output		0	
P06.03	Relay RO1 output		1	
P06.04	Relay RO2 output		5	

<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td></td><td>11:Lower limit frequency arrival
12:Ready for operation
13:Pre-magnetizing
14:Overload pre-alarm
15: Underload pre-alarm
16:Completion of simple PLC step
17:Completion of simple PLC cycle
18:Setting count value arrival
19:Defined count value arrival
20:External fault valid
21:Length arrival
22:Running time arrival
23:MODBUS communication virtual terminals output
26: DC bus voltage establishment
27: Auxiliary motor 1
28: Auxiliary motor 2</td><td></td><td></td></tr>
<tr><td>P06.05</td><td>Polarity selection of output terminals</td><td>The function code is used to set the pole of the output terminal.
When the current bit is set to 0, input terminal is positive.
When the current bit is set to 1, input terminal is negative.
<table><tr><td>BIT0</td><td>BIT1</td><td>BIT2</td><td>BIT3</td></tr><tr><td>Y</td><td>HDO</td><td>RO1</td><td>RO2</td></tr></table>Setting range:0~F</td><td>0</td><td></td></tr>
<tr><td>P06.06</td><td>Y1 switching-on delay time</td><td rowspan="5">The function code defines the corresponding delay time of the electrical level change during the programmable terminal switching on and off.
 
The setting range :0.000~50.000s
Note: P06.08 and P06.09 are valid only when P06.00=1.</td><td>0.000s</td><td></td></tr>
<tr><td>P06.07</td><td>Y1 switching-off delay time</td><td>0.000s</td><td></td></tr>
<tr><td>P06.08</td><td>HDO switching-on delay time</td><td>0.000s</td><td></td></tr>
<tr><td>P06.09</td><td>HDO switching-off delay time</td><td>0.000s</td><td></td></tr>
<tr><td>P06.10</td><td>RO1 switching-on delay time</td><td>0.000s</td><td></td></tr>
</table>

Function code	Name	Detailed instruction of parameters	Default value	Modify
P06.11	RO1 switching-off delay time		0.000s	
P06.12	RO2 switching-on delay time		0.000s	
P06.13	RO2 switching-off delay time		0.000s	
P06.14	AO1 output	0:Running frequency	0	
P06.15	AO2 output	1:Setting frequency	0	
P06.16	HDO high-speed pulse output selection	2:Ramp reference frequency 3:Running rotation speed 4:Output current (relative to the rated current of the inverter) 5:Output current (relative to the rated current of the motor) 6:Output voltage 7:Output power 9:Output torque 10:Analog AI1 input value (The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5 kW) 11:Analog AI2 input value 12:Analog AI3 input value 13:High speed pulse HDI input value 14:MODBUS communication set value 1 15:MODBUS communication set value 2 22: Torque current (relative to the rated current of the motor) 23: Ramp reference frequency(with sign)	0	
P06.17	Lower limit of AO1 output	The above function codes define the relative relationship between the output value and analog output. When the output value exceeds the range of set maximum or minimum output, it will count according to the low-limit or upper-limit output. When the analog output is current output, 1mA equals to 0.5V. In different cases, the corresponding analog	0.0%	
P06.18	Corresponding AO1 output to the lower limit		0.00V	
P06.19	Upper limit of AO1 output		100.0%	

Function code	Name	Detailed instruction of parameters	Default value	Modify
P06.20	The corresponding AO1 output to the upper limit	output of 100% of the output value is different. Please refer to each application for detailed information.  Setting range of P06.18 0.00V~10.00V Setting range of P06.19 P06.17~100.0% Setting range of P06.20 0.00V~10.00V Setting range of P06.21 0.000s~10.000s Setting range of P06.22 0.0%~P06.24 Setting range of P06.23 0.00V~10.00V Setting range of P06.24 P06.22~100.0% Setting range of P06.25 0.00V~10.00V Setting range of P06.26 0.000s~10.000s Setting range of P06.27 0.000s~10.000s Setting range of P06.28 0.00~50.00kHz Setting range of P06.29 P06.27~100.0% Setting range of P06.30 0.00~50.00kHz Setting range of P06.31 0.000s~10.000s	10.00V	
P06.21	AO1 output filter time		0.000s	
P06.22	Lower limit of AO2 output		0.0%	
P06.23	Corresponding AO2 output to the lower limit		0.00V	
P06.24	Upper limit of AO2 output		100.0%	
P06.25	Corresponding AO2 output to the upper limit		10.00V	
P06.26	AO2 output filter time		0.000s	
P06.27	Lower limit of HDO output		0.00%	
P06.28	Corresponding HDO output to the lower limit		0.00kHz	
P06.29	Upper limit of HDO output		100.0%	
P06.30	Corresponding HDO output to the upper limit		50.00 kHz	
P06.31	HDO output filter time		0.000s	
P07 Group Human-Machine Interface				
P07.00	User's password	0~65535 The password protection will be valid when setting any non-zero number. 00000: Clear the previous user's password, and	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		make the password protection invalid. After the user's password becomes valid, if the password is incorrect, users cannot enter the parameter menu. Only correct password can make the user check or modify the parameters. Please remember all users' passwords. Retreat editing state of the function codes and the password protection will become valid in 1 minute. If the password is available, press PRG/ESC to enter into the editing state of the function codes, and then "0.0.0.0.0" will be displayed. Unless input right password, the operator can not enter into it. **Note:** Restoring to the default value can clear the password, please use it with caution.		
P07.01	Parameter copy	The function code determines the mode of parameters copy. 0:No operation 1:Upload the local function parameter to the keypad 2:Download the keypad function parameter to local address(including the motor parameters) 3:Download the keypad function parameter to local address (excluding the motor parameter of P02 group) 4:Download the keypad function parameters to local address (only for the motor parameter of P02 group) **Note:** After completing the 1~4 operation, the parameter will come back to 0 automatically, the function of upload and download excludes the factory parameters of P29.	0	
P07.02	QUICK/JOG function selection	0:No function 1: Jogging. Press QUICK/JOG to begin the jogging running. 2: Shift the display state by the shifting key. Press QUICK/JOG to shift the displayed function code from right to left. 3: Shift between forward rotations and reverse rotations. Press QUICK/JOG to shift the direction of the frequency commands. This function is only	1	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		valid in the keypad commands channels. 4: Clear UP/DOWN settings. Press QUICK/JOG to clear the set value of UP/DOWN. 5: Coast to stop. Press QUICK/JOG to coast to stop. 6: Shift the running commands source. Press QUICK/JOG to shift the running commands source. 7:Quick commission mode(committee according to the non-factory parameter) **Note:** Press QUICK/JOG to shift between forward rotation and reverse rotation, the inverter does not record the state after shifting during powering off. The inverter will run according to parameter P00.13 during next powering on.		
P07.03	Shifting sequence selection of QUICK/JOG commands	When P07.02=6, set the shifting sequence of running command channels. 0:Keypad control→terminals control →communication control 1:Keypad control←→terminals control 2:Keypad control←→communication control 3:Terminals control←→communication control	0	
P07.04	STOP/RST stop function	STOP/RST is valid for stop function. STOP/RST is valid in any state for the fault reset. 0:Only valid for the keypad control 1:Both valid for keypad and terminals control 2:Both valid for keypad and communication control 3:Valid for all control modes	0	
P07.05	Parameters state 1	0x0000~0xFFFF BIT0:running frequency (Hz on) BIT1:set frequency(Hz flickering) BIT2:bus voltage (Hz on) BIT3:output voltage(V on) BIT4:output current(A on) BIT5:running rotation speed (rpm on) BIT6:output power(% on) BIT7:output torque(% on) BIT8:PID reference(% flickering) BIT9:PID feedback value(% on) BIT10:input terminals state	0x03FF	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		BIT11:output terminals state BIT12:torque set value(% on) BIT13:pulse counter value BIT14:length value BIT15:PLC and the current stage in multi-step speed		
P07.06	Parameters state 2	0x0000~0xFFFF BIT0: AI1 (V on) (The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5 kW) BIT1: AI2 (V on) BIT2: AI3 (V on) BIT3: HDI frequency BIT4: motor overload percentage (% on) BIT5: the inverter overload percentage (% on) BIT6: ramp frequency given value(Hz on) BIT7: linear speed BIT8: AC inlet current (A on) BIT9: upper limit frequency (Hz on)	0x0000	
P07.07	The parameter in the stop state	0x0000~0xFFFF BIT0:set frequency (Hz on, frequency flickering slowly) BIT1:bus voltage (V on) BIT2:input terminals state BIT3:output terminals state BIT4:PID reference (% flickering) BIT5:PID feedback value(% flickering) BIT6:reserved BIT7:analog AI1 value(V on) (The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5 kW) BIT8:analog AI2 value(V on) BIT9: analog AI3 value(V on) BIT10:high speed pulse HDI frequency BIT11:PLC and the current step in multi-step speed BIT12:pulse counters BIT13:length value BIT14: upper limit frequency (Hz on)	0x00FF	

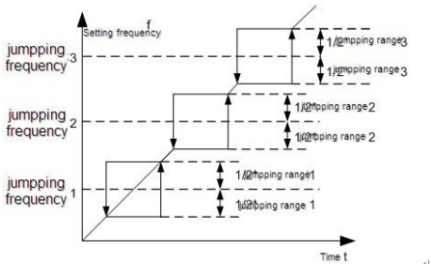
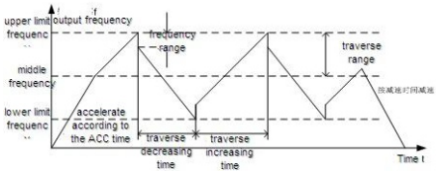
Function code	Name	Detailed instruction of parameters	Default value	Modify
P07.08	Frequency coefficient	0.01~10.00 Displayed frequency=running frequency* P07.08	1.00	
P07.09	Rotation speed coefficient	0.1~999.9% Mechanical rotation speed =120*displayed running frequency×P07.09/motor pole pairs	100.0%	
P07.10	Linear speed coefficient	0.1~999.9% Linear speed= Mechanical rotation speed×P07.10	1.0%	
P07.11	Rectifier bridge module temperature	0~100.0 ℃		◎
P07.12	Converter module temperature	0~100.0 ℃		◎
P07.13	Software version	1.00~655.35		◎
P07.14	Local accumulative running time	0~65535h		◎
P07.15	High bit of power consumption	Display the power used by the inverter. The power consumption of the inverter =P07.15*1000+P07.16 Setting range of P07.15: 0~65535°(*1000) Setting range of P07.16: 0.0~999.9°		◎
P07.16	Low bit of power consumption			◎
P07.17	Inverter type	0: G type 1: P type		◎
P07.18	The rated power of the inverter	0.4~3000.0kW		◎
P07.19	The rated voltage of the inverter	50~1200V		◎
P07.20	The rated current of the inverter	0.1~6000.0A		◎
P07.21	Factory bar code 1	0x0000~0xFFFF		◎
P07.22	Factory bar	0x0000~0xFFFF		◎

Function code	Name	Detailed instruction of parameters	Default value	Modify
	code 2			
P07.23	Factory bar code 3	0x0000~0xFFFF		◎
P07.24	Factory bar code 4	0x0000~0xFFFF		◎
P07.25	Factory bar code 5	0x0000~0xFFFF		◎
P07.26	Factory bar code 6	0x0000~0xFFFF		◎
P07.27	Current fault type	0:No fault 1:IGBT U phase protection(OUt1) 2:IGBT V phase protection(OUt2) 3:IGBT W phase protection(OUt3) 4:OC1 5:OC2 6:OC3 7:OV1 8:OV2 9:OV3 10:UV 11:Motor overload(OL1) 12:The inverter overload(OL2) 13:Input side phase loss(SPI) 14:Output side phase loss(SPO) 15:Overheat of the rectifier module(OH1) 16:Overheat fault of the inverter module(OH2) 17:External fault(EF) 18:485 communication fault(CE) 19:Current detection fault(ItE) 20:Motor antotune fault(tE) 21:EEPROM operation fault(EEP) 22:PID response offline fault(PIDE) 23:Braking unit fault(bCE) 24:Running time arrival(END) 25:Electrical overload(OL3) 26:Panel communication fault(PCE) 27:Parameter uploading fault (UPE) 28:Parameter downloading fault(DNE) 32:Grounding short circuit fault 1(ETH1) 33:Grounding short circuit fault 2(ETH2)		◎
P07.28	Previous fault type			●
P07.29	Previous 2 fault type			●
P07.30	Previous 3 fault type			●

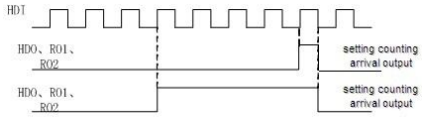
Function code	Name	Detailed instruction of parameters	Default value	Modify
P07.31	Previous 4 fault type	36: Undervoltage fault(LL)		.
P07.32	Previous 5 fault type			.
P07.33	Running frequency at current fault		0.00Hz	.
P07.34	Ramp reference frequency at current fault		0.00Hz	
P07.35	Output voltage at the current fault		0V	
P07.36	Output current at current fault		0.0A	
P07.37	Bus voltage at current fault		0.0V	
P07.38	The Max. temperature at current fault		0.0 ℃	
P07.39	Input terminals state at current fault		0	.
P07.40	Output terminals state at current fault		0	.
P07.41	Running frequency at previous fault		0.00Hz	.
P07.42	Ramp reference frequency at previous fault		0.00Hz	.
P07.43	Output		0V	.

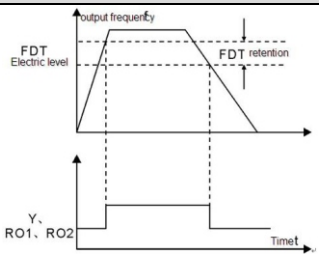
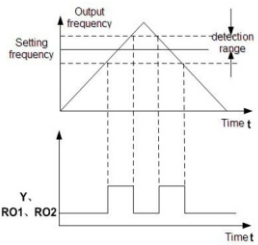
Function code	Name	Detailed instruction of parameters	Default value	Modify
	voltage at previous fault			
P07.44	The output current at previous fault		0.0A	.
P07.45	Bus voltage at previous fault		0.0V	.
P07.46	The Max. temperature at previous fault		0.0 C	.
P07.47	Input terminals state at previous fault		0	.
P07.48	Output terminals state at previous fault		0	.
P07.49	Runnig frequency at previous 2 fault		0.00Hz	.
P07.50	Output voltage at previous 2 faults		0.00Hz	.
P07.51	Output current at previous 2 faults		0V	.
P07.52	Output current at previous 2 fault		0.0A	.
P07.53	Bus voltage at previous 2 fault		0.0V	.
P07.54	The Max.		0.0 C	.

Function code	Name	Detailed instruction of parameters	Default value	Modify
	temperature at previous 2 fault			
P07.55	Input terminals state at previous 2 fault		0	
P07.56	Output terminals state at previous 2 fault		0	
P08 Group Enhanced function				
P08.00	ACC time 2	Refer to P00.11 and P00.12 for detailed definition. Goodrive200A series define four groups of ACC/DEC time which can be selected by P5 group. The first group of ACC/DEC time is the factory default one. Setting range:0.0~3600.0s	Depend on model	
P08.01	DEC time 2		Depend on model	
P08.02	ACC time 3		Depend on model	
P08.03	DEC time 3		Depend on model	
P08.04	ACC time 4		Depend on model	
P08.05	DEC time 4		Depend on model	
P08.06	Jogging frequency	This parameter is used to define the reference frequency during jogging. Setting range: 0.00Hz ~P00.03 (the Max. frequency)	5.00Hz	
P08.07	Jogging ACC time	The jogging ACC time means the time needed if the inverter runs from 0Hz to the Max. Frequency.	Depend on model	
P08.08	Jogging DEC time	The jogging DEC time means the time needed if the inverter goes from the Max. Frequency (P0.03) to 0Hz.	Depend on model	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		Setting range:0.0~3600.0s		
P08.09	Jumping frequency 1	When the set frequency is in the range of jumping frequency, the inverter will run at the edge of the jumping frequency. The inverter can avoid the mechanical resonance point by setting the jumping frequency. The inverter can set three jumping frequency. But this function will be invalid if all jumping points are 0.  Setting range: 0.00Hz ~P00.03 (the Max. frequency)	0.00Hz	
P08.10	Jumping frequency range 1		0.00Hz	
P08.11	Jumping frequency 2		0.00Hz	
P08.12	Jumping frequency range 2		0.00Hz	
P08.13	Jumping frequency 3		0.00Hz	
P08.14	Jumping frequency range 3		0.00Hz	
P08.15	Traverse range	This function applies to the industries where traverse and convolution function are required such as textile and chemical fiber. The traverse function means that the output frequency of the inverter is fluctuated with the set frequency as its center. The route of the running frequency is illustrated as below, of which the traverse is set by P08.15 and when P08.15 is set as 0, the traverse is 0 with no function.  Traverse range: The traverse running is limited by upper and low frequency. The traverse range relative to the center frequency: traverse range AW＝center frequency ×traverse range P08.15.	0.0%	
P08.16	Sudden jumping frequency range		0.0%	
P08.17	Traverse boost time		5.0s	
P08.18	Traverse declining time		5.0s	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		Sudden jumping frequency＝traverse range AW ×sudden jumping frequency range P08.16. When run at the traverse frequency, the value which is relative to the sudden jumping frequency. The raising time of the traverse frequency: The time from the lowest point to the highest one. The declining time of the traverse frequency: The time from the highest point to the lowest one. The setting range of P08.15: 0.0~100.0% (relative to the set frequency) The setting range of P08.16: 0.0~50.0% (relative to the traverse range) The setting range of P08.17: 0.1~3600.0s The setting range of P08.18: 0.1~3600.0s		
P08.19	Setting length	The function codes of setting length, actual length and unit pulse are mainly used to control the fixed length. The length is counted by the pulse signal of HDI terminals input and the HDI terminals are needed to set as the length counting input. Actual length＝the length counting input pulse /unit pulse When the actual length P08.20 exceeds the setting length P08.19, the multi-function digital output terminals will output ON. Setting range of P08.19: 0~65535m Setting range of P08.20:0~65535m Setting range of P08.21:1~10000 Setting range of P08.22:0.01~100.00cm Setting range of P08.23:0.001~10.000 Setting range of P08.24:0.001~1.000	0m	
P08.20	Actual length		0m	
P08.21	Pulse per rotation		1	
P08.22	Alxe perimeter		10.00 cm	
P08.23	Length ratio		1.000	
P08.24	Length correcting coefficient		1.000	
P08.25	Setting counting value	The counter works by the input pulse signals of the HDI terminals. When the counter achieves a fixed number, the multi-function output terminals will output the signal of “fixed counting number arrival” and the counter go on working; when the counter achieves a setting number, the multi-function output terminals will output the signal of “setting counting number arrival”, the counter will clear all	0	
P08.26	Reference counting value		0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		numbers and stop to recount before the next pulse. The setting counting value P08.26 should be no more than the setting counting value P08.25. The function is illustrated as below:  Setting range of P08.25:P08.26~65535 Setting range of P08.26:0~P08.25		
P08.27	Set running time	Pre-set running time of the inverter. When the accumulative running time achieves the set time, the multi-function digital output terminals will output the signal of “running time arrival”. Setting range:0~65535 min	0m	
P08.28	Fault reset times	The time of the fault reset: set the fault reset time by selecting this function. If the reset time exceeds this set value, the inverter will stop for the fault and wait to be repaired. The interval time of the fault reset: The interval between the time when the fault occurs and the time when the reset action occurs. Setting range of P08.28:0~10 Setting range of P08.29:0.1~3600.0s	0	
P08.29	Interval time of automatic fault reset		1.0s	
P08.30	Frequency decreasing ratio of the dropping control	The output frequency of the inverter changes as the load. And it is mainly used to balance the power when several inverters drive one load. Setting range:0.00~10.00Hz	0.00Hz	
P08.32	FDT1 electrical level detection value	When the output frequency exceeds the corresponding frequency of FDT electrical level, the multi-function digital output terminals will output the signal of “frequency level detect FDT” until the output frequency decreases to a value lower than (FDT electrical level—FDT retention detection value) the corresponding frequency, the signal is invalid. Below is the waveform diagram:	50.00 Hz	
P08.33	FDT1 retention detection value		5.0%	
P08.34	FDT2		50.00	

Function code	Name	Detailed instruction of parameters	Default value	Modify
	electrical level detection value		Hz	
P08.35	FDT2 retention detection value	Setting range of P08.32: 0.00Hz~P00.03 (the Max. frequency) Setting range of P08.33: -100.0~100.0% (FDT1 electrical level) Setting range of P08.34: 0.00 Hz ~P00.03 (the Max. frequency) Setting range of P08.35: 0.0~100.0% (FDT2 electrical level)	5.0%	
P08.36	Frequency arrival detection value	When the output frequency is among the below or above range of the set frequency, the multi-function digital output terminal will output the signal of “frequency arrival”, see the diagram below for detailed information:  The setting range:0.00Hz~P00.03 (the Max. frequency)	0.00Hz	
P08.37	Energy braking enable	This parameter is used to control the internal braking unit. 0:Disable 1:Enable **Note:** Only applied to internal braking unit. After enabling, the overvoltage stall point will increase by 20V more than the energy braking point.	0	
P08.38	Threshold voltage	After setting the original bus voltage, adjust this parameter to break the load appropriately. The	380V voltage:	

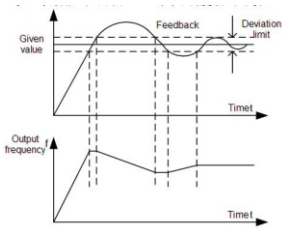
<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td></td><td>factory value changes with voltage level.
The setting range:200.0~2000.0V
In order to prevent customers set the value is too large, it is recommended setting range:
<table><tr><td>voltage</td><td>380V</td><td>500V</td><td>660</td></tr><tr><td>range</td><td>685~750V</td><td>860~950V</td><td>1080~1180V</td></tr></table></td><td>700.0V
500V voltage: 900.0V
660V voltage: 1120.0V</td><td></td></tr>
<tr><td>P08.39</td><td>Cooling fan running mode</td><td>Set the operation mode of the cooling fan.
0: Normal mode, after the rectifier receives operation command or the detected temperature of module is above 45℃ or the module current is above 20% of the rated current, the fan rotates.
1:The fan keeps on running after power on (generally for the site with high temperature and humidity)</td><td>0</td><td></td></tr>
<tr><td>P08.40</td><td>PWM selection</td><td>0x00~0x21
LED ones: PWM mode selection
0: PWM mode 1, three-phase modulation and two-modulation
1: PWM mode 2, three-phase modulation
LED tens: low-speed carrier frequency limit mode
0: Low-speed carrier frequency limit mode 1, the carrier frequency will limit to 2k if it exceeds 2k at low speed
1:Low-speed carrier frequency limit mode 2, the carrier frequency will limit to 4k if it exceeds 4k at low speed
2: No limit</td><td>00</td><td></td></tr>
<tr><td>P08.41</td><td>Over commission selection</td><td>0x00~0x11
LED ones
0: Invalid
1: Valid
LED tens
0: Light overcommission
1: Heavy overcommission</td><td>0x01</td><td></td></tr>
<tr><td>P08.42</td><td>Keypad data control</td><td>0x000~0x1223
LED ones:frequency enable selection
0:Both ∧/∨ keys and digital potentiometer adjustments are valid
1:Only ∧/∨ keys adjustment is valid</td><td>0x0000</td><td></td></tr>
</table>

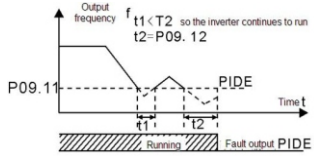
Function code	Name	Detailed instruction of parameters	Default value	Modify
		2:Only digital potentiometer adjustments is valid 3:Neither ∧/∨ keys nor digital potentiometer adjustments are valid LED tens: frequency control selection 0:Only valid when P00.06=0 or P00.07=0 1:Valid for all frequency setting manner 2:Invalid for multi-step speed when multi-step speed has the priority LED hundreds: action selection during stopping 0:Setting is valid 1:Valid during running, cleared after stopping 2:Valid during running, cleared after receiving the stop command LED thousands: ∧/∨ keys and digital potentiometer integral function 0:The integral function is valid 1:The integral function is invalid		
P08.43	Integral ratio of the keypad potentiometer	0.01~10.00s	0.10s	
P08.44	UP/DOWN terminals control	0x00~0x221 LED ones: frequency control selection 0:UP/DOWN terminals setting valid 1:UP/DOWN terminals setting valid LED tens: frequency control selection 0:Only valid when P00.06=0 or P00.07=0 1:All frequency means are valid 2:When the multi-step are priority, it is invalid to the multi-step LED hundreds: action selection when stop 0:Setting valid 1: Valid in the running, clear after stop 2: Valid in the running, clear after receiving the stop commands	0x000	
P08.45	UP terminals frequency increasing integral ratio	0.01~50.00Hz/s	0.50 Hz/s	
P08.46	DOWN terminals	0.01~50.00 Hz/s	0.50 Hz/s	

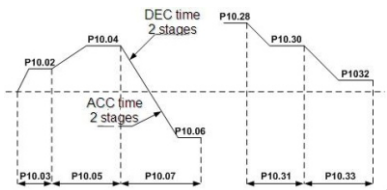
Function code	Name	Detailed instruction of parameters	Default value	Modify
	frequency integral ratio			
P08.47	Action when the frequency setting is off	0x000~0x111 LED ones: Action selection when power off. 0:Save when power off 1:Clear when power off LED tens: Action selection when MODBUS set frequency off 0:Save when power off 1:Clear when power off LED hundreds:The action selection when other frequency set frequency off 0:Save when power off 1:Clear when power off	0x000	
P08.48	High bit of initial power consumption	This parameter is used to set the original value of the power consumption. The original value of the power consumption =P08.48*1000+ P08.49 Setting range of P08.48: 0~59999°(k) Setting range of P08.49:0.0~999.9°	0°	
P08.49	Low bit of initial power consumption		0.0°	
P08.50	Magnetic flux braking	This function code is used to enable magnetic flux. 0: Invalid. 100~150: The bigger the coefficient, the stronger the braking is. This inverter is used to increase the magnetic flux to decelerate the motor. The energy generated by the motor during braking can be converter into heat energy by increasing the magnetic flux. The inverter monitors the state of the motor continuously even during the magnetic flux period. So the magnetic flux can be used in the motor stop, as well as to change the rotation speed of the motor. Its other advantages are: Brake immediately after the stop command. It does not need to wait the magnetic flux weaken. Better cooling for motors. The current of the stator other than the rotor increases during magnetic flux braking, while the cooling of the stator is more effective than the rotor.	0	

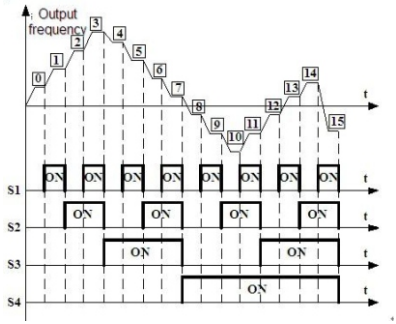
Function code	Name	Detailed instruction of parameters	Default value	Modify
P08.51	Input power factor of the inverter	This function code is used to adjust the displayed current of the AC input side. Setting range:0.00~1.00	0.56	
P09 Group PID control				
P09.00	PID reference source	When the frequency command selection (P00.06, P00. 07) is 7 or the voltage setting channel selection (P04.27) is 6, the running mode of the inverter is procedure PID controlled. The parameter determines the target reference channel during the PID procures. 0:Keypad digital reference(P09.01) 1:Analog channel AI1 reference (The inverter (≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5kW) 2:Analog channel AI2 reference 3:Analog channel AI3 set 4:High speed pulse HDI set 5:Multi-step speed set 6:MODBUS communication set The setting target of procedure PID is a relative one, 100% of the setting equals to 100% of the response of the controlled system. The system is calculated according to the relative value (0~100.0%). **Note:** Multi-step speed reference, it is realized by setting P10 group parameters.	0	
P09.01	Keypad PID preset	When P09.00=0, set the parameter whose basic value is the feedback value of the system. The setting range:-100.0%~100.0%	0.0%	
P09.02	PID feedback source	Select the PID channel by the parameter. 0:Analog channel AI1 feedback (The inverter(≤ 15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5 kW) 1:Analog channel AI2 feedback 2:Analog channel AI3 feedback 3:High speed HDI feedback 4:MODBUS communication feedback **Note:** The reference channel and the feedback	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		channel can not coincide, otherwise, PID can not control effectively.		
P09.03	PID output feature	0: PID output is positive: When the feedback signal exceeds the PID reference value, the output frequency of the inverter will decrease to balance the PID. For example, the strain PID control during wrap-up 1: PID output is negative: When the feedback signal is stronger than the PID reference value, the output frequency of the inverter will increase to balance the PID. For example, the strain PID control during wrap-down	0	
P09.04	Proportional gain (Kp)	The function is applied to the proportional gain P of PID input. P determines the strength of the whole PID adjuster. The parameter of 100 means that when the offset of PID feedback and reference value is 100%, the adjusting range of PID adjustor is the Max. Frequency (ignoring integral function and differential function). The setting range:0.00~100.00	1.00	
P09.05	Integral time(Ti)	This parameter determines the speed of PID adjustor to carry out integral adjustment on the deviation of PID feedback and reference. When the deviation of PID feedback and reference is 100%, the integral adjustor works continuously after the time (ignoring the proportional effect and differential effect) to achieve the Max. Frequency (P00.03) or the Max. Voltage (P04.31). Shorter the integral time, stronger is the adjustment Setting range: 0.01~10.00s	0.10s	
P09.06	Differential time(Td)	This parameter determines the strength of the change ratio when PID adjustor carries out integral adjustment on the deviation of PID feedback and reference. If the PID feedback changes 100% during the time, the adjustment of integral adjustor (ignoring the proportional effect and differential effect) is	0. 00s	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		the Max. Frequency (P00.03) or the Max. Voltage (P04.31). Longer the integral time, stronger is the adjusting. Setting range: 0.00~10.00s		
P09.07	Sampling cycle(T)	This parameter means the sampling cycle of the feedback. The modulator calculates in each sampling cycle. The longer the sapling cycle is, the slower the response is. Setting range: 0.000~10.000s	0.100s	
P09.08	PID control deviation limit	The output of PID system is relative to the maximum deviation of the close loop reference. As shown in the diagram below, PID adjustor stops to work during the deviation limit. Set the function properly to adjust the accuracy and stability of the system.  Setting range:0.0~100.0%	0.0%	
P09.09	Output upper limit of PID	These parameters are used to set the upper and lower limit of the PID adjustor output. 100.0 % corresponds to Max. frequency or the Max. voltage of (P04.31) Setting range of P09.09: P09.10~100.0% Setting range of P09.10: -100.0%~P09.09	100.0%	
P09.10	Output lower limit of PID		0.0%	
P09.11	Feedback offline detection value	Set the PID feedback offline detection value, when the detection value is smaller than or equal to the feedback offline detection value, and the lasting time exceeds the set value in P09.12, the inverter will report “PID feedback offline fault” and the keypad will display PIDE.	0.0%	
P09.12	Feedback offline detection time		1.0s	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		 Setting range of P09.11: 0.0~100.0% Setting range of P09.12: 0.0~3600.0s		
P09.13	PID adjustment	0x0000~0x1111 LED ones: 0: Keep on integral adjustment when the frequency achieves the upper and low limit; the integration shows the change between the reference and the feedback unless it reaches the internal integral limit. When the trend between the reference and the feedback changes, it needs more time to offset the impact of continuous working and the integration will change with the trend. 1: Stop integral adjustment when the frequency achieves the upper and low limit. If the integration keeps stable, and the trend between the reference and the feedback changes, the integration will change with the trend quickly. LED tens: P00.08 is 0 0: The same with the setting direction; if the output of PID adjustment is different from the current running direction, the internal will output 0 forcedly. 1:Opposite to the setting direction LED hundreds: P00.08 is 0 0: Limit to the maximum frequency 1: Limit to frequency A LED thousands: 0:A+B frequency, the buffer of A frequency is invalid 1:A+B frequency, the buffer of A frequency is valid ACC/DEC is determined by ACC time 4 of P08.04	0x0001	
P09.14	Proportional	0.00~100.00	1.00	○

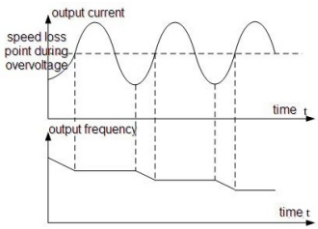
Function code	Name	Detailed instruction of parameters	Default value	Modify
	gain at low frequency (Kp)			
P09.15	PID command of ACC/DEC time	0.0~1000.0s	0.0s	○
P09.16	PID output filter time	0.000~10.000s	0.000s	○
P10 Group Simple PLC and multi-step speed control				
P10.00	Simple PLC	0: Stop after running once. The inverter has to be commanded again after finishing a cycle. 1: Run at the final value after running once. After finish a signal, the inverter will keep the running frequency and direction of the last run. 2: Cycle running. The inverter will keep on running until receiving a stop command and then, the system will stop.	0	
P10.01	Simple PLC memory	0: Power loss without memory 1:Power loss memory, PLC record the running step and frequency when power loss.	0	
P10.02	Multi-step speed 0	100.0% of the frequency setting corresponds to the Max. frequency P00.03. When selecting simple PLC running, set P10.02~P10.33 to define the running frequency and direction of all steps. **Note:** The symbol of multi-step determines the running direction of simple PLC. The negative value means reverse rotation.  Multi-step speeds are in the range of --f_{max}~f_{max} and it can be set continuously. Goodrive200A series inverters can set 16 steps	0.0%	
P10.03	The running time of step 0		0.0s	
P10.04	Multi-step speed 1		0.0%	
P10.05	The running time of step 1		0.0s	
P10.06	Multi-step speed 2		0.0%	
P10.07	The running time of step 2		0.0s	
P10.08	Multi-step speed 3		0.0%	
P10.09	The running time of step 3		0.0s	
P10.10	Multi-step		0.0%	

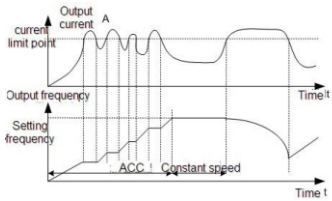
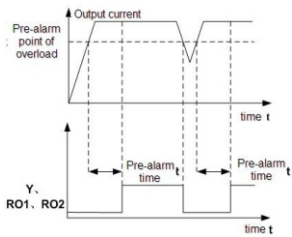
<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td>speed 4</td><td rowspan="28">speed, selected by the combination of multi-step terminals 1~4, corresponding to the speed 0 to speed 15.
 

When S1=S2=S3=S4=OFF, the frequency input manner is selected via code P00.06 or P00.07. When all S1=S2=S3=S4 terminals aren’t off, it runs at multi-step which takes precedence of keypad, analog value, high-speed pulse, PLC, communication frequency input. Select at most 16 steps speed via the combination code of S1, S2, S3, and S4.
The start-up and stopping of multi-step running is determined by function code P00.06, the relationship between S1,S2,S3,S4 terminals and multi-step speed is as following:
<table>
<tr><td>S1</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr>
<tr><td>S2</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>S3</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>S4</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td></tr>
<tr><td>Step</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>S1</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td></tr>
<tr><td>S2</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td></tr>
<tr><td>S3</td><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>S4</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>ON</td></tr>
<tr><td>Step</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td></tr>
</table>
Setting range of P10.(2n,1<n<17):
-100.0~100.0%
Setting range of</td><td></td><td></td></tr>
<tr><td>P10.11</td><td>The running time of step 4</td><td>0.0s</td><td></td></tr>
<tr><td>P10.12</td><td>Multi-step speed 5</td><td>0.0%</td><td></td></tr>
<tr><td>P10.13</td><td>The running time of step 5</td><td>0.0s</td><td></td></tr>
<tr><td>P10.14</td><td>Multi-step speed 6</td><td>0.0%</td><td></td></tr>
<tr><td>P10.15</td><td>The running time of step 6</td><td>0.0s</td><td></td></tr>
<tr><td>P10.16</td><td>Multi-step speed 7</td><td>0.0%</td><td></td></tr>
<tr><td>P10.17</td><td>The running time of step 7</td><td>0.0s</td><td></td></tr>
<tr><td>P10.18</td><td>Multi-step speed 8</td><td>0.0%</td><td></td></tr>
<tr><td>P10.19</td><td>The running time of step 8</td><td>0.0s</td><td></td></tr>
<tr><td>P10.20</td><td>Multi-step speed 9</td><td>0.0%</td><td></td></tr>
<tr><td>P10.21</td><td>The running time of step 9</td><td>0.0s</td><td></td></tr>
<tr><td>P10.22</td><td>Multi-step speed 10</td><td>0.0%</td><td></td></tr>
<tr><td>P10.23</td><td>The running time of step 10</td><td>0.0s</td><td></td></tr>
<tr><td>P10.24</td><td>Multi-step speed 11</td><td>0.0%</td><td></td></tr>
<tr><td>P10.25</td><td>The running time of step 11</td><td>0.0s</td><td></td></tr>
<tr><td>P10.26</td><td>Multi-step speed 12</td><td>0.0%</td><td></td></tr>
<tr><td>P10.27</td><td>The running time of step 12</td><td>0.0s</td><td></td></tr>
<tr><td>P10.28</td><td>Multi-step speed 13</td><td>0.0%</td><td></td></tr>
</table>

<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td>P10.29</td><td>The running time of step 13</td><td rowspan="6">P10.(2n+1,1<n<17):0.0~6553.5s(min)</td><td>0.0s</td><td></td></tr>
<tr><td>P10.30</td><td>Multi-step speed 14</td><td>0.0%</td><td></td></tr>
<tr><td>P10.31</td><td>The running time of step 14</td><td>0.0s</td><td></td></tr>
<tr><td>P10.32</td><td>Multi-step speed 15</td><td>0.0%</td><td></td></tr>
<tr><td>P10.33</td><td>The running time of step 15</td><td>0.0s</td><td></td></tr>
<tr><td>P10.34</td><td>Simple PLC 0~7 step ACC/DEC time</td><td>Below is the detailed instruction:
<table>
<tr><th>Function code</th><th colspan="2">Binary bit</th><th>Step</th><th>ACC/DEC 0</th><th>ACC/DEC 1</th><th>ACC/DEC 2</th><th>ACC/DEC 3</th></tr>
<tr><td rowspan="8">P10.34</td><td>BIT1</td><td>BIT0</td><td>0</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT3</td><td>BIT2</td><td>1</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT5</td><td>BIT4</td><td>2</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT7</td><td>BIT6</td><td>3</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT9</td><td>BIT8</td><td>4</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT11</td><td>BIT10</td><td>5</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT13</td><td>BIT12</td><td>6</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT15</td><td>BIT14</td><td>7</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
</table>
After the users select the corresponding ACC/DEC time, the combined 16 binary bits will change into decimal bit, and then set the</td><td>0x0000</td><td></td></tr>
<tr><td>P10.35</td><td>Simple PLC 8~15 step ACC/DEC time</td><td>
<table>
<tr><th>Function code</th><th colspan="2">Binary bit</th><th>Step</th><th>ACC/DEC 0</th><th>ACC/DEC 1</th><th>ACC/DEC 2</th><th>ACC/DEC 3</th></tr>
<tr><td rowspan="8">P10.35</td><td>BIT1</td><td>BIT0</td><td>8</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT3</td><td>BIT2</td><td>9</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT5</td><td>BIT4</td><td>10</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT7</td><td>BIT6</td><td>11</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT9</td><td>BIT8</td><td>12</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT11</td><td>BIT10</td><td>13</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT13</td><td>BIT12</td><td>14</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
<tr><td>BIT15</td><td>BIT14</td><td>15</td><td>00</td><td>01</td><td>10</td><td>11</td></tr>
</table></td><td>0x0000</td><td></td></tr>
</table>

<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td></td><td>corresponding function codes.
Setting range: 0x0000~0xFFFF</td><td></td><td></td></tr>
<tr><td>P10.36</td><td>PLC restart</td><td>0: Restart from the first step; stop during running (cause by the stop command, fault or power loss), run from the first step after restart.
1: Continue to run from the stop frequency; stop during running(cause by stop command and fault), the inverter will record the running time automatically, enter into the step after restart and keep the remaining running at the setting frequency.</td><td>0</td><td></td></tr>
<tr><td>P10.37</td><td>Multi-step time unit</td><td>0: Seconds; the running time of all steps is counted by second
1: Minutes; the running time of all steps is counted by minute</td><td>0</td><td></td></tr>
<tr><td colspan="5">P11 Group Protective parameters</td></tr>
<tr><td>P11.00</td><td>Phase loss protection</td><td>0x00~0x11
LED ones:
0: Input phase loss protection disable
1: Input phase loss protection enable
LED tens:
0: Input phase loss protection disable
1: Input phase loss protection enable
LED hundreds:
0: Input phase loss hardware protection disable
1: Input phase loss hardware protection enable</td><td>111</td><td></td></tr>
<tr><td>P11.01</td><td>Sudden power loss frequency-decreasing</td><td>0: Enable
1: Disable</td><td>0</td><td></td></tr>
<tr><td>P11.02</td><td>Frequency decreasing ratio of sudden power loss</td><td>Setting range: 0.00Hz/s~P00.03 (the Max. frequency)
After the power loss of the grid, the bus voltage drops to the sudden frequency-decreasing point, the inverter begin to decrease the running frequency at P11.02, to make the inverter generate power again. The returning power can maintain the bus voltage to ensure a rated running of the inverter until the recovery of power.
<table>
<tr><td>Voltage degree</td><td>220V</td><td>380V</td><td>660V</td></tr>
</table></td><td>10.00 Hz/s</td><td></td></tr>
</table>

<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>Frequency-decreasing point at sudden power loss</td><td>260V</td><td>460V</td><td>800V</td></tr>
</table>
Note:
1. Adjust the parameter properly to avoid the stopping caused by inverter protection during the switching of the grid.
2. Prohibition of input phase protection can enable this function.
</td><td></td><td></td></tr>
<tr><td>P11.03</td><td>Overvoltage stall protection</td><td>0:Disable
1:Enable
 
</td><td>1</td><td></td></tr>
<tr><td rowspan="2">P11.04</td><td rowspan="2">Protection voltage at overvoltage stall</td><td>120~150%(standard bus voltage) (380V)</td><td>140%</td><td rowspan="2"></td></tr>
<tr><td>120~150%(standard bus voltage) (220V)</td><td>120%</td></tr>
<tr><td>P11.05</td><td>Current limit action selection</td><td rowspan="3">The actual increasing ratio is less than the ratio of output frequency because of the big load during ACC running. It is necessary to take measures to avoid overcurrent fault and the inverter trips.
During the running of the inverter, this function will detect the output current and compare it with the limit defined in P11.06. If it exceeds the level, the inverter will run at stable frequency in ACC running, or the inverter will derate to run during the constant running. If it exceeds the level continuously, the output frequency will keep on decreasing to the lower limit. If the output current is detected to be lower than the limit level, the inverter will accelerate to run.</td><td>01</td><td></td></tr>
<tr><td>P11.06</td><td>Automatic current limit</td><td>G: 160.0%
P: 120.0%</td><td></td></tr>
<tr><td>P11.07</td><td>The decreasing ratio during current limit</td><td>10.00 Hz/s</td><td></td></tr>
</table>

Function code	Name	Detailed instruction of parameters	Default value	Modify
		 Setting range of P11.05: 0x00~0x11 LED ones:current limit 0:Invalid 1:Always invalid LED tens:overload alarm 0:Valid 1: Invalid Setting range of P11.06: 50.0~200.0% Setting range of P11.07: 0.00~50.00Hz/s		
P11.08	Overload pre-alarm of the motor/inverter	The output current of the inverter or the motor is above P11.09 and the lasting time is beyond P11.10, overload pre-alarm will be output.	0x000	
P11.09	Overload pre-alarm test level		G: 150% P: 120%	
P11.10	Overload pre-alarm detection time	Setting range of P11.08: Enable and define the overload pre-alarm of the inverter or the motor. Setting range: 0x000~0x131 LED ones: 0:Overload pre-alarm of the motor, comply with the rated current of the motor 1:Overload pre-alarm of the inverter, comply with the rated current of the inverter LED tens: 0:The inverter continues to work after underload pre-alarm 1:The inverter continues to work after underload	1.0s	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		pre-alarm and the inverter stops running after overload fault 2: The inverter continues to work after overload pre-alarm and the inverter stops running after underload fault 3. The inverter stops when overloading or underloading. LED hundreds : 0:Detection all the time 1:Detection in constant running Setting range of P11.09: P11.11~200% Setting range of P11.10: 0.1~3600.0s		
P11.11	Detection level of the underload pre-alarm	If the inverter current or the output current is lower than P11.11, and its lasting time is beyond P11.12, the inverter will output underload pre-alarm. Setting range of P11.11: 0~P11.09 Setting range of P11.12: 0.1~3600.0s	50%	
P11.12	Detection time of the underload pre-alarm		1.0s	
P11.13	Output terminal action during fault	Select the action of fault output terminals on undervoltage and fault reset. 0x00~0x11 LED ones: 0:Action under fault undervoltage 1:No action under fault undervoltage LED tens: 0:Action during the automatic reset 1:No action during the automatic reset	0x00	
P11.16	Extension functions selection	0x00~0x11 LED ones:Voltage drop frequency-decreasing selection 0: Voltage drop frequency-decreasing selection disable 1: Voltage drop frequency-decreasing selection enable LED tens: Step 2 ACC/DEC time option 0: Step 2 ACC/DEC time option disable 1: Step 2 ACC/DEC time option enable, when running frequency more than P08.36, ACC/DEC time switch to step 2 ACC/DEC time	00	
P13 Group Reserved				

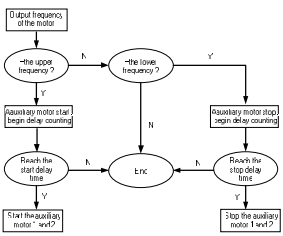
Function code	Name	Detailed instruction of parameters	Default value	Modify
P13.13	Braking current of short-circuit	When P01.00=0 during the starting of the inverter, set P13.14 to a non-zero value to enter the short circuit braking. When the running frequency is lower than P01.09 during the stopping of the inverter, set 13.15 to a non-zero value to enter into stopping short circuited braking and then carry out the DC braking at the time set by P01.12 (refer to the instruction of P01.09~P01.12) . Setting range of P13.13: 0.0~150.0% (the inverter) Setting range of P13.14: 0.00~50.00s Setting range of P13.15: 0.00~50.00s	0.0%	
P13.14	Braking retention time before starting		0.00s	
P13.15	The braking retention time when stopping		0.00s	
P14 Group Serial communication				
P14.00	Local communication address	The setting range:1~247 When the master is writing the frame, the communication address of the slave is set to 0; the broadcast address is the communication address. All slaves on the MODBUS fieldbus can receive the frame, but the salve doesn't answer. The communication address of the drive is unique in the communication net. This is the fundamental for the point to point communication between the upper monitor and the drive. **Note:** The address of the slave cannot set to 0.	1	
P14.01	Communication baud ratio	Set the digital transmission speed between the upper monitor and the inverter. 0:1200BPS 1:2400BPS 2:4800BPS 3:9600BPS 4:19200BPS 5:38400BPS 6:57600BPS 7:115200BPS **Note:** The baud rate between the upper monitor and the inverter must be the same. Otherwise, the communication is not applied. The bigger the baud rate, the quicker the communication speed.	4	
P14.02	Digital bit checkout	The data format between the upper monitor and the inverter must be the same. Otherwise, the	1	

Function code	Name	Detailed instruction of parameters	Default value	Modify
		communication is not applied. 0: No check (N,8,1) for RTU 1: Even check (E,8,1) for RTU 2: Odd check (O,8,1) for RTU 3:No check (N,8,2) for RTU 4: Even check (E,8,2) for RTU 5: Odd check(O,8,2) for RTU 6: No check (N,7,1) for ASCII 7: Even check (E,7,1) for ASCII 8: Odd check (O,7,1) for ASCII 9:No check (N,7,2) for ASCII 10: Even check (E,7,2) for ASCII 11: Odd check(O,7,2) for ASCII 12: No check (N,8,1) for ASCII 13: Even check (E,8,1) for ASCII 14: Odd check (O,8,1) for ASCII 15:No check (N,8,2) for ASCII 16: Even check (E,8,2) for ASCII 17: Odd check(O,8,2) for ASCII		
P14.03	Answer delay	0~200ms It means the interval time between the interval time when the drive receive the data and sent it to the upper monitor. If the answer delay is shorter than the system processing time, then the answer delay time is the system processing time, if the answer delay is longer than the system processing time, then after the system deal with the data, waits until achieving the answer delay time to send the data to the upper monitor.	5	
P14.04	Fault time of communication overtime	0.0(invalid), 0.1~60.0s When the function code is set as 0.0, the communication overtime parameter is invalid. When the function code is set as non-zero, if the interval time between two communications exceeds the communication overtime, the system will report “485 communication faults” (CE). Generally, set it as invalid; set the parameter in the continuous communication to monitor the communication state.	0.0s	
P14.05	Transmission	0:Alarm and stop freely	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
	fault processing	1:No alarm and continue to run 2:No alarm and stop according to the stop means (only under the communication control) 3:No alarm and stop according to the stop means (under all control modes)		
P14.06	Communication processing	LED ones: 0: Operation with response: the drive will respond to all reading and writing commands of the upper monitor. 1:Operation without response, The drive only responds to the reading command other than the writing command of the drive. The communication efficiency can be increased by this method. LED tens: 0: Communication encrypting valid 1: Communication encrypting invalid	0x00	
P16 Group Ethernet function				
P17 Group Monitoring function				
P17.00	Setting frequency	Display current set frequency of the inverter Range: 0.00Hz~P00.03		.
P17.01	Output frequency	Display current output frequency of the inverter Range: 0.00Hz~P00.03		.
P17.02	Ramp reference frequency	Display current ramp reference frequency of the inverter Range: 0.00Hz~P00.03		.
P17.03	Output voltage	Display current output voltage of the inverter Range: 0~1200V		.
P17.04	Output current	Display current output current of the inverter Range: 0.0~3000.0A		.
P17.05	Motor speed	Display the rotation speed of the motor. Range: 0~65535RPM		.
P17.08	Motor power	Display current motor power Range:-300~300%		.
P17.09	Output torque	Display the current output torque of the inverter. Range: -250.0~250.0%		.
P17.10	Evaluated motor frequency	Evaluated frequency of motor rotor Range: 0.00Hz~ P00.03		.
P17.11	DC bus	Display current DC bus voltage of the inverter		.

<table>
<tr><th>Function code</th><th>Name</th><th>Detailed instruction of parameters</th><th>Default value</th><th>Modify</th></tr>
<tr><td></td><td>voltage</td><td>Range: 0.0~2000.0V</td><td></td><td></td></tr>
<tr><td>P17.12</td><td>ON-OFF input terminals state</td><td>Display current Switch input terminals state of the inverter
<table><tr><td></td><td>BIT8</td><td>BIT7</td><td>BIT6</td><td>BIT5</td></tr><tr><td></td><td>HDI</td><td>S8</td><td>S7</td><td>S6</td></tr><tr><td>BIT4</td><td>BIT3</td><td>BIT2</td><td>BIT1</td><td>BIT0</td></tr><tr><td>S5</td><td>S4</td><td>S3</td><td>S2</td><td>S1</td></tr></table>Range: 0000~00FF</td><td></td><td></td></tr>
<tr><td>P17.13</td><td>ON-OFF output terminals state</td><td>Display current Switch output terminals state of the inverter
<table><tr><td>BIT3</td><td>BIT2</td><td>BIT1</td><td>BIT0</td></tr><tr><td>RO2</td><td>RO1</td><td>HDO</td><td>Y</td></tr></table>Range: 0000~000F</td><td></td><td></td></tr>
<tr><td>P17.14</td><td>Digital adjustment</td><td>Display the adjustment through the keypad of the inverter.
Range : 0.00Hz~P00.03</td><td></td><td></td></tr>
<tr><td>P17.15</td><td>torque reference</td><td>Display the torque given, the percentage to the current rated torque of the motor.
Setting range: -300.0%~300.0%
(the rated current of the motor)</td><td></td><td></td></tr>
<tr><td>P17.16</td><td>Linear speed</td><td>Display the current linear speed of the inverter.
Range: 0~65535</td><td></td><td></td></tr>
<tr><td>P17.17</td><td>Length</td><td>Display the current length of the inverter.
Range: 0~65535</td><td></td><td></td></tr>
<tr><td>P17.18</td><td>Counting value</td><td>Display the current counting number of the inverter.
Range: 0~65535</td><td></td><td></td></tr>
<tr><td>P17.19</td><td>AI1 input voltage</td><td>The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5 kW.
Display analog AI1 input signal
Range: 0.00~10.00V</td><td></td><td></td></tr>
<tr><td>P17.20</td><td>AI2 input voltage</td><td>Display analog AI2 input signal
Range: 0.00~10.00V</td><td></td><td></td></tr>
<tr><td>P17.21</td><td>AI3 input voltage</td><td>Display analog AI2 input signal
Range: -10.00~10.00V</td><td></td><td></td></tr>
<tr><td>P17.22</td><td>HDI input frequency</td><td>Display HDI input frequency
Range: 0.000~50.000kHz</td><td></td><td></td></tr>
</table>

Function code	Name	Detailed instruction of parameters	Default value	Modify
P17.23	PID reference value	Display PID reference value Range: -100.0~100.0%		.
P17.24	PID feedback value	Display PID response value Range: -100.0~100.0%		.
P17.25	Power factor of the motor	Display the current power factor of the motor. Range: -1.00~1.00		.
P17.26	Current running time	Display the current running time of the inverter. Range:0~65535min		.
P17.27	Simple PLC and the current step of the multi-step speed	Display simple PLC and the current step of the multi-step speed Range: 0~15		.
P17.35	AC input current	Display the input current in AC side. Range: 0.0~5000.0A		.
P17.36	Output torque	Display the output torque. Positive value is in the electromotion state, and negative is in the power generating state. Range : -3000.0Nm~3000.0Nm		.
P17.37	Counting of the motor overload	0~100 (100 is OL1 fault)		.
P17.38	PID output	-100.00~100.00%	0.00%	.
P17.39	Wrong download of parameters	0.00~99.99	0.00	.
P24 Group Water supply				
P24.00	Water supply selection	0: Disabled 1: Enabled	0	
P24.01	Press feedback source	0: AI1 setting value (The inverter(≤15kW) can be set by the analog potentiometer on the keypad and AI1 setting is not available for the device which is 18.5kW or higer than 18.5 kW) 1: AI2 setting value 2: AI3 setting value 3: HDI setting value	0	
P24.02	Hibernation	0: Hibernate as the setting frequency < P24.03	0	

Function code	Name	Detailed instruction of parameters	Default value	Modify
	check	1: Hibernate as the feedback pressure > P24.04		
P24.03	Starting frequency of the hibernation	0.00~P0.03(the Max. frequency)	10.00 Hz	
P24.04	Starting pressure of hibernation	0.00~100.0%	50.0%	
P24.05	Hibernation delay time	0.0~3600.0s	5.0s	
P24.06	Hibernation awake	0: Awake as the setting frequency > P24.07 1: Awake as the feedback pressure < P24.08	0	
P24.07	Awake frequency	0.00~P0.03(the Max. frequency)	20.00 Hz	
P24.08	Setting value of hibernation awake	0.00~100.0%	10.0%	
P24.09	Mini hibernation time	0.0~3600.0s	5.0s	
P24.10	Valid auxiliary motor	P24.10~P24.12 can make three motors to form a simple system of water supply.  P24.10 is used to select the valid auxiliary motor. 0: No auxiliary motor 1: Auxiliary motor 1 valid 2: Auxiliary motor 2 valid 3: Auxiliary motor 1 and 2 valid Setting range of P24.10: 0.0~3600.0s Setting range of P24.11: 0.0~3600.0s	0	
P24.11	Start/stop delay time of auxiliary motor 1		5.0s	
P24.12	Start/stop delay time of auxiliary motor 2		5.0s	

Fault Tracking 8

8.1 What this chapter contains

This chapter describes how to reset faults and view fault history. It also lists all alarm and fault messages including the possible cause and corrective actions.

✧**Only qualified electricians are allowed to maintain the inverter. Read the safety instructions in chapter Safety precautions before working on the inverter.**

8.2 Alarm and fault indications

Fault is indicated by LEDs. See ***Operation Procedure***. When TRIP light is on, an alarm or fault message on the panel display indicates abnormal inverter state. Using the information reference in this chapter, most alarm and fault cause can be identified and corrected. If not, contact with the INVT office.

8.3 How to reset

The inverter can be reset by pressing the keypad key STOP/RST, through digital input, or by switching the power light. When the fault has been removed, the motor can be restarted.

8.4 Fault history

Function codes P07.27~P07.32 store 6 recent faults. Function codes P07.33~P07.40, P07.41~P7.48 and P07.49~P07.56 show drive operation data when the latest 3 faults occurs.

8.5 Fault instruction and solution

Do as the following after the inverter fault:

1. Check to ensure there is nothing wrong with the keypad. If not, please contact with the local INVT office.

2. If there is nothing wrong, please check P07 and ensure the corresponding recorded fault parameters to confirm the real state when the current fault occurs by all parameters.

3. See the following table for detailed solution and check the corresponding abnormal state.

4. Eliminate the fault and ask for relative help.

5. Check to eliminate the fault and carry out fault reset to run the inverter.

Fault code	Fault type	Possible cause	What to do
OUt1	IGBT Ph-U fault	●The acceleration is too fast ●IGBT module fault ●Misaction caused by interference ●The connection of the driving wires is not good, ●Grounding is not properly	●Increase Acc time ●Change the power unit ●Check the driving wires ●Inspect external equipment and eliminate interference
OUt2	IGBT Ph-V fault		
OUt3	IGBT Ph-W fault		

Fault code	Fault type	Possible cause	What to do
OC1	Over-current when acceleration	●The acceleration or deceleration is too fast ●The voltage of the grid is too low ●The power of the inverter is too low ●The load transients or is abnormal ●The grounding is short circuited or the output is phase loss ●There is strong external interference ●The overvoltage stall protection is not open	●Increase the ACC time ●Check the input power ●Select the inverter with a larger power ●Check if the load is short circuited (the grounding short circuited or the wire short circuited) or the rotation is not smooth ●Check the output configuration. ●Check if there is strong interference ●Check the setting of relative function codes
OC2	Over-current when deceleration		
OC3	Over-current when constant speed running		
OV1	Over-voltage when acceleration	●The input voltage is abnormal ●There is large energy feedback ●No braking components ●Braking energy is not open	●Check the input power ●Check if the DEC time of the load is too short or the inverter starts during the rotation of the motor or it needs to add the dynamic bracking components ●Install the braking components ●Check the setting of relative function codes
OV2	Over-voltage when deceleration		
OV3	Over-voltage when constant speed running		
UV	DC bus Under-voltage	●The voltage of the power supply is too low ●The overvoltage stall protection is not open	●Check the input power of the supply line ●Check the setting of relative function codes
OL1	Motor overload	●The voltage of the power supply is too low ●The motor setting rated current is incorrect ●The motor stall or load transients is too strong	●Check the power of the supply line ●Reset the rated current of the motor ●Check the load and adjust the torque lift
OL2	Inverter overload	●The acceleration is too fast ●Reset the rotating motor ●The voltage of the power supply is too low ●The load is too heavy ●The motor power is too big	●Increase the ACC time ●Avoid the restarting after stopping ●Check the power of the supply line ●Select an inverter with bigger power ●Select a proper motor

Fault code	Fault type	Possible cause	What to do
OL3	Electrical overload	●The inverter will report overload pre-alarm according to the set value	●Check the load and the overload pre-alarm point.
SPI	Input phase loss	●Phase loss or fluctuation of input R,S,T	●Check input power ●Check installation distribution
SPO	Output phase loss	●U,V,W phase loss input(or serious asymmetrical three phase of the load)	●Check the output distribution ●Check the motor and cable
OH1	Rectify overheat	●Air duct jam or fan damage ●Ambient temperature is too high ●The time of overload running is too long	●Clean the air duct or the fan ●Reduce the ambient temperature
OH2	IGBT overheat		
EF	External fault	●SI external fault input terminals action	●Check the external device input
CE	Communication error	●The baud rate setting is incorrect ●Fault occurs to the communication wiring. ●The communication address is wrong ●There is strong interference to the communication	●Set proper baud rate ●Check the communication connection distribution ●Set proper communication address ●Chang or replace the connection distribution or improve the anti-interference capability
ItE	Current detection fault	●The connection of the control board is not good ●Hoare components is broken ●The modifying circuit is abnormal	●Check the connector and repatch ●Change the hoare ●Change the main control panel
tE	Autotuning fault	●The motor capacity does not comply with the inverter capability ●The rated parameter of the motor does not set correctly. ●The offset between the parameters autotunting and the standard parameter is huge ●Autotune overtime	●Change the inverter mode ●Set the rated parameter according to the motor name plate ●Empty the motor load and reindentify ●Check the motor connection and set the parameter. ●Check if the upper limit frequency is above 2/3 of the rated frequency.

Fault code	Fault type	Possible cause	What to do
EEP	EEPROM fault	●Error of controlling the write and read of the parameters ●Damage to EEPROM	●Press STOP/RST to reset ●Change the main control panel
PIDE	PID feedback fault	●PID feedback offline ●PID feedback source disappear	●Check the PID feedback signal ●Check the PID feedback source
bCE	Braking unit fault	●Braking circuit fault or damage to the braking pipes ●The external braking resistor is not sufficient	●Check the braking unit and change new braking pipe ●Increase the braking resistor
ETH1	Grounding shortcut fault 1	●The output of the inverter is short circuited with the ground ●There is fault in the current detection circuit	●Check if the connection of the motor is normal or not ●Change the hoare ●Change the main control panel
ETH2	Grounding shortcut fault 2		
dEu	Velocity deviation fault	●The load is too heavy or stalled	●Check the load and ensure it is normal ●Increase the detection time ●Check whether the control parameters are normal
STo	Maladjustment fault	●The control parameters of the synchronous motors not set properly ●The autoturn parameter is not right ●The inverter is not connected to the motor	●Check the load and ensure it is normal ●Check whether the control parameter is set properly or not ●Increase the maladjustment detection time
END	Time reach of factory setting	●The actual running time of the inverter is above the internal setting running time	●Ask for the supplier and adjust the setting running time
PCE	Keypad communication fault	●The connection of the keypad wires is not good or broken ●The keypad wire is too long and affected by strong interference ●There is circuit fault on the communication of the keypad and main board	●Check the keypad wires and ensure whether there is mistake ●Check the environment and avoid the interference source ●Change the hardware and ask for service

Fault code	Fault type	Possible cause	What to do
DNE	Parameters downloading fault	●The connection of the keypad wires is not good or broken ●The keypad wire is too long and affected by strong interference ● There is mistake on the data storage of the keypad	●Check the keypad wires and ensure whether there is mistake ●Change the hardware and ask for service ●Repack-up the data in the keypad
LL	Electronic underload fault	●The inverter will report the underload pre-alarm according to the set value	●Check the load and the underload pre-alarm point

8.5.2 Other states

Fault code	Fault type	Possible cause	What to do
PoFF	System power off	System power off or the bus voltage is too low	Check the grid
	Communication failure between the keypad and main control board	The keypad is not conneted correctly	Check the installation environment

8.6 Common fault analysis

8.6.1 The motor does not work