

# Vectorque™

## V5-I Asynchronous Servo Drive



# V&T

**V5-I Series  
ADDITIVE MANUAL**

## Foreword

The V5-I series is a high-performance vector control asynchronous servo drives provided by Shenzhen V&T Technologies Co., Ltd.

It's special for hydraulic system like injection molding machine, blow molding machine. The product adopts the most advanced international technology fully synchronized speed sensorless vector control technology, not only has the same excellent control performance and international high-end drives, but also combined with the application characteristics of the injection molding machine in China, to further strengthen the reliability of the product and the environment adaptability and customization and design industry, it can be better meet the application requirements of the injection molding machine.

Please use V5-H universal inverter manual work with the additive manual.

## 1. Change Scope:

Increase digital given stack allows functions;

The lowest carrier frequency down to 0.4K;

Increase the input terminal delay function;

Increase AI1 ~ AI3 support H0 group functions

AI terminal filter time and the the X1X2 terminal delay time factory default modified

## 2 . Changing function code description

Function code	Function code name	Factory setting	Setting range	Unit	Property	Function code selection	User setting
PA.00	Carrier frequency	8.0 4.0 3.0 2.0	0.4~ 16.0	kHz	○	Below 15kW : 0.7kHz ~ 16.0kHz ; 18.5kW ~ 45kW: 0.7kHz ~ 10.0kHz ; : 55kW ~ 110kW : 0.7kHz ~ 8.0kHz ; : Up 110kW : 0.7kHz ~ 3.0kHz ; :	
P5.08	X1 terminal delay time	4.0	0.0~ 999.9	s	×	0.0 ~ 999.9s	
P5.09	X2 terminal delay time	4.0	0.0~ 999.9	s	×	0.0 ~ 999.9s	
H0.33	Figures given overlay allows	0	0~1	/	○	0: Same as standard products 1: superposition of figures on the original channel set input given (including multi-speed)	
H0.34	AI1/AI2 extended input allows	0	0~1	/	○	0: Same as standard products 1: AI1 as AV4/AI4 , AI2 as AV5/AI5 Note: The input signal 0 ~ 10V / 0 ~ 20mA, it can realize the H0 group function without installing expansion cards,	
H0.35	Superimposed direction setting of figures given	0000	0000 ~ FFFF			H0.33 = 1, superimposed on the figures given (including speed) direction bit0 = 1: set of the original channel input - figures given 1 bit1 = 1: the original channel set input - multi-frequency 15 Bit15 = 1: the original channel set input - multi-frequency 15	

P5.08	X1 terminal delay time	0.0 ~ 999.9s
P5.09	X2 terminal delay time	0.0 ~ 999.9s

X1 and X2 terminals also have effective transition delay input function, when the need inverter on external multifunction terminal signal input with a delayed response can be achieved by setting the terminal delay time.

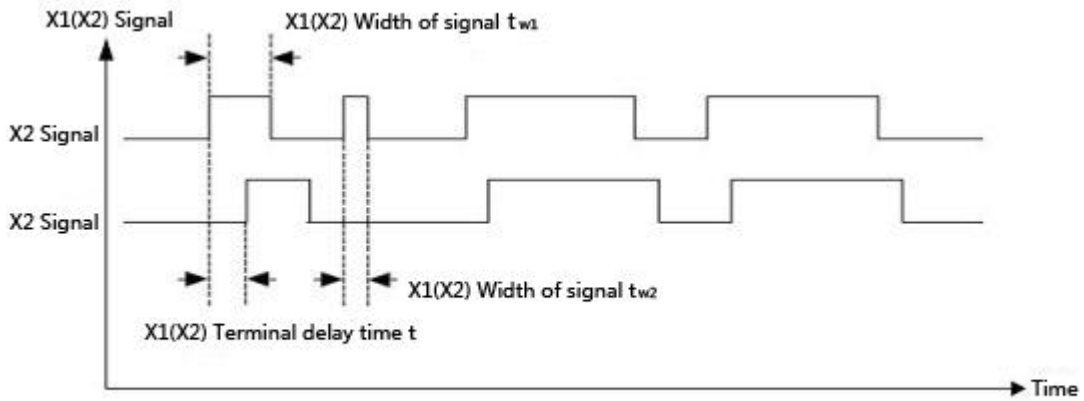


Figure 6-14 X1/X2 terminals delay

Note: Only when the width of the X1 (X2) signal is greater than X1 (X2) terminal to the delay time  $t$  can be identified. Eg:  $T - w_1$  are identified in Figure 6-14,  $t - w_2$  are ignored.

H0.33	Figures given overlay allows	0~1
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This function is effectively equivalent to the frequency in the current superimposed on a given one figure given, the figure given by the multi-speed terminal to switch options.

AI1+5.00Hz P0.04 = 1, H0.33 = 1, terminals in multi-frequency 5.00Hz, the final frequency output AI1 is 5.00 Hz

Such as H0.00 = 1, H0.33 = 1, multi-frequency terminal select the numbers given 0, that is,  $P < 0.05$ , then the output of the analog frequency is determined by the AIP and AIQ curve,  $+ P < 0.05$ .

H0.34	AI1/AI2 extended input allows	0~1
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This function is effective, the equivalent of AI1 and AI2 as injection machine on the expansion card AV4/AI4, AV5/AI5 input H0 set of parameters can be set in accordance with the the injection machine of expansion card from AV4/AI4 AV5/AI5 the introduction of the signal to use

Note: into AI1 and AI2 signal range is 0 to 10V / 0 ~ 20mA, not 0 ~ 24V/1A/2A

Note: The machine has been fixed AI1 as AV4/AI4 input, AI2 as a AV5/AI5 input.

Function comparison table

	V5-H	V5-I-I0
	Standard Products	Injection molding machine energy saving
the last10 parameter display mode	√	×
Keyboard and terminal UP / DN function	√	×
PID Process	√	×

Injection molding machine H0 function	×	√
X1X2 delay action	×	√

### **V5-I Injection Molding Machine Energy-saving Inverter**

#### **■The energy saving principle of variable frequency for injection molding machine**

On the injection molding machine, the pump motor power consumption accounted for a high proportion of the whole power consumption, the frequency energy of the injection molding machine for injection molding machine pump motor power-saving control. Injection molding machines are changing the required pressure and flow in the mold, mold shrinkage, injection, packing, cooling stage, all stages of electrical engineering frequency operation, the output power is always the same; only by the pump overflow flow valve to adjust the load pressure and flow, so that the utilization efficiency of the pump motor is low, resulting in energy waste.

V5-Inverter-based high-performance vector control technology to take the pressure of injection molding machines and traffic signals as the control basis, to ensure that the injection of different stages of flow and pressure at the same time, and adjust the operating speed of the motor, the motor output power control in the optimal level, in order to achieve the purpose of energy saving.

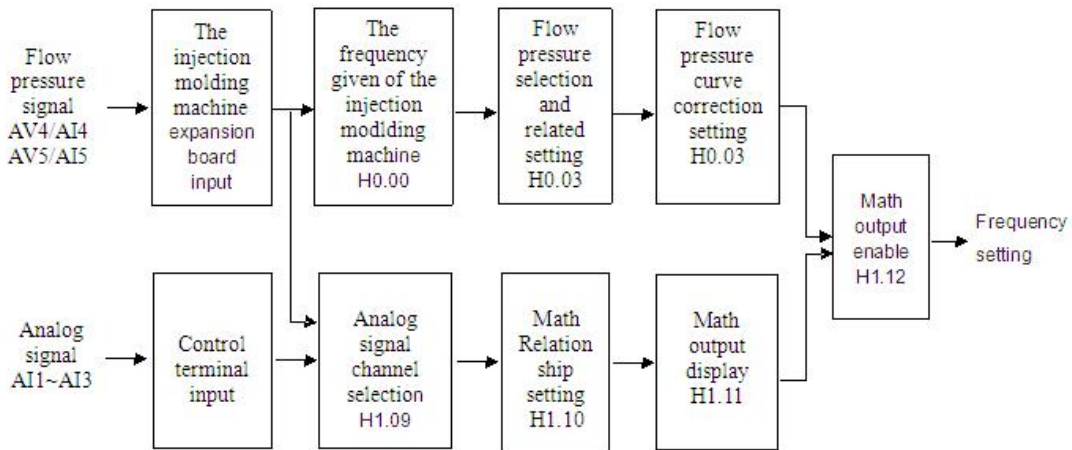
#### **■ Technical characteristics of V5-I inverter**

- ◆ Easy to install, no need to change the control mode of the original equipment, oil and circuit structure.
- ◆ Inverter energy-saving standard configuration injection molding machine interface card, independent of flow and pressure signals input signal specifications: 0 ~ 24V / 0 to 2A.
- ◆ Resistance to the current impact, excellent vector control features to ensure a steady trip run, 200% overload 0.5 seconds.
- ◆ Super low speed with load capacity and fast speed control, 0.5Hz 180% starting torque, the motor is accelerated to the fastest rated speed of 0.1 seconds.
- ◆ The output of high power factor, reactive power loss decreases when the soft-start high-current shock.
- ◆ Supporting electric injection molding machine control performance is still superior speed sensorless vector control mode, the output torque and accurate positioning.
- ◆ Provides customized technology curve, when replacing the mold, the user need to change the drive parameters, and easily the memory of the technology curve.
- ◆ A wide range of torque output, pressure and flow settings within the motor torque output stability, to ensure the quality of the workpiece.
- ◆ The use of advanced power modules drive, eliminating the inverter operation when the interference of the injection molding machine control circuits and sensors.
- ◆ V5-I Special function setting of inverter for injection molding machines

Function of the serial number	Name	The application if Injection molding machine
H0.00	The injection machine frequency given choice	From the different definitions of the control parameter set and stored in the inverter, through the control panel or the terminal is available online and flexible switch
H0.03	The injection machine the	Flow and pressure curves (4 point 5 sections) each for

	frequency for a given user defined	3, flow rate and pressure corresponding to the frequency can be customized
H1.00	Digital terminal logic operation mode	Injection molding machine computer board on any digital input of the inverter can be combined with "soft PLC" logical operations and through inverter digital terminal output result of the operation
H1.08	Analog math mode	Injection molding machine computer board on any analog input of the inverter can be combined with "soft PLC" math and can control the output of the inverter operation results
A0.00	User-defined function code explicit-implicit password	the user can define your own code to hide the function of converter and use password to protect code hidden features

### ■ Flow and pressure signals to control the frequency setting



### ■ programmable logic and math output

V5-I converter can provide a "soft PLC" programming function digital input terminal of the inverter status and analog inputs, similar to the PLC software programming, by the amount of the IO status " Math, or, non-"logical operators or the analog input AI" add, subtract, multiply, with the exception of "the result of the operation, and the results sent to the inverter terminal output of a digital or analog terminal output, In addition, the analog math results can also control the frequency output of the inverter.

### ■ About logic operations

- ◆ The logic operation of the digital input state up to 11
- ◆ Can produce up to three separate logical result of the operation by the output of the inverter Y1, Y2, relay terminal
- ◆ Each logic operation results up to the logical operations of the three digital input status
- ◆ Each digital input status, or can be carried out, or, non-operating
- ◆ Can define the priority of logical operations between three digital input status

### ■ About mathematical operation

- ◆ Involved in math analog input up to 5, voltage, current, pulse signal can be.

- ◆ Math through the Asynchronous servo drive AO1, AO2 terminal output
- ◆ Math results up to 3 analog input math
- ◆ Each analog input can be carried out between the "add, subtract, multiply and divide" Operation
- ◆ Can define the priority level of 3 between the analog input math

■ **Injection molding machine interface card**

- ◆ Model

EX-PM01

- ◆ **Technical specifications**

Provides 2-way 24V input terminals. 2-way 0 ~ 2A, 0 ~ 1A Input terminal.

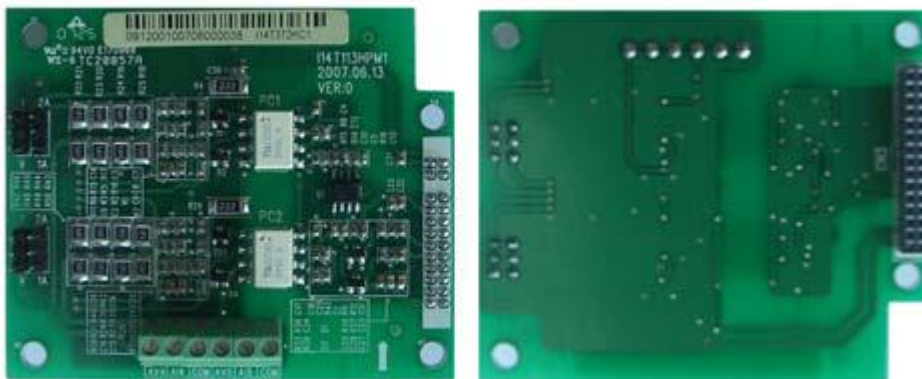
To determine the voltage / current input by jumper, jumper selectable current input range of 0 ~ 2A, 0 ~ 1A.

- ◆ **Appearance of interface card terminals**

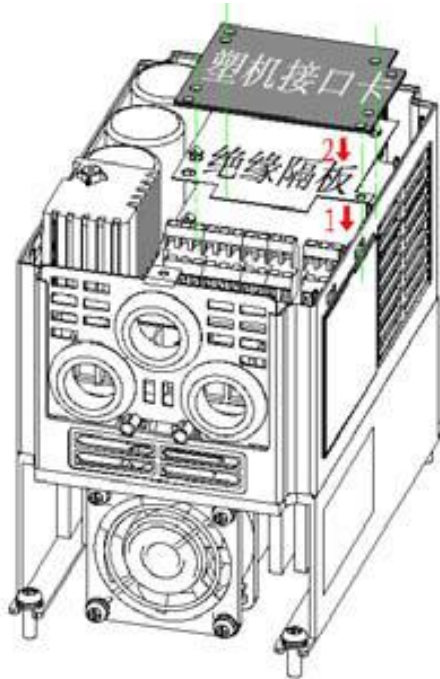
The AV4/AI4 terminal input voltage or current flow signal, the input voltage traffic signal, AV4 terminals AI4 terminal input current flow rate signal; AV5/AI5 terminal input voltage or current pressure signal, the pressure signal of the AV5 terminal input voltage, the AI5 terminal input current pressure signal.



- ◆ **Appearance of Interface Card**



◆ Installation Diagram



Function comparison table

	V5-H	V5-I-I0 is
	Standard Products	Injection molding machine energy saving
AV4/AI4, AV5/AI5 input	×	√
Digital input terminal delay	×	√
Simulated curves 2, 3 and 4 effective	√	√
User terminal 485 and the master-slave mode	√	√
Auxiliary to the set as well as computing	√	×
the last10 parameter display mode	√	×
Keyboard and terminal UP / DN function	√	×



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## Chapter I Function parameter list of the injection molding machine industry

The indication and description of the function code parameter table

Summary table	Explanation
Function code	H0.00 The code name of the function code, such as H0.00
Function code name	The name of the function code, explaining the role of the functional code
Factory setting	Settings after the operation of the function code to restore factory settings (see V5-H user manual the P0.01 instructions)
Setting range	The function code allows a set of minimum to maximum
Unit	V: voltage; A: current; °C: degree; Ω: Ohm; mH: millihenry; rpm: speed; %: Percentage; bps: the baud rate; Hz、kHz: Frequency; ms、s、min、h、kh: time kW: Power; m: m; km: one thousand meters; /: Units
Property	O: The function code running can be modified; ×: The function code can only be modified when in shutdown; *: The function code for read-only parameter, can not be modified
Function code option	Function code parameter settings list
Use setting	For the user to record parameters

### 1.1 Special function parameters for injection machine industry

Function code	Function code name	Factory setting	Setting range	Unit	Property	Function code option	User Setting
H0.00	The injection machine frequency given choice	0	0-3	//	×	0: do not use the the the injection machine frequency of a given user-defined; 1~3 injection machine frequency of a given user defined	
H0.01	Flow signal AV4/AI4 filter time	0.100	0.000 ~1.000	s	○	0s ~ 1.000s	
H0.02	Pressure signal AV5/AI5 filter time	0.100	0.000 ~1.000	s	○	0s ~ 1.000s	

H0.03	The injection machine the frequency for a given user-defined	0	0 ~ 1222	/	×	<p>Bits: the flow pressure input selection 0 : 0: the flow and pressure signals are valid;  1: only the traffic signal;  2: Only the pressure signal;  10: Flow curve selection  0: the the injection machine frequency curve;  1: the the injection machine frequency curve;  2: the the injection machine frequency curve;  One hundred: the pressure of a given curve to choose  0: the the injection machine frequency curve;  1: the the injection machine frequency curve;  2: the the injection machine frequency curve;  1000: the relationship between flow and pressure to select  0: K1, * flow + (1-K1) pressure;  1: Max {flow, pressure};</p>
H0.04	K1 Flow coefficient K1	50.0	0.0~10 0.0	%	○	0.0%~100.0%
H0.05	The injection machine the frequency for a given user-defined	0	0~1222	/	○	Same as H0.03
H0.06	Flow coefficient K2	50.0	0.0~10 0.0	%	○	0.0%~100.0%
H0.07	The injection machine the frequency defined for a given user	0	0~1222	/	○	Same as H0.03
H0.08	Flow coefficient K3	50.0	0.0~10 0.0	%	○	0.0%~100.0%

Function code	Function code name	Factory setting	Setting range	Unit	Property	Function code option	User Setting
H0.09	the frequency curve 1 of the injection machine is input point A0	0.0	0.0~10 0.0 0.0-100 .0	%	○	0.0%~100.0%	
H0.10	the frequency curve 1 of the injection machine is input point A0. its Reference value is B0.	0.0	0.0~10 0.0	%	○○	0.0%~100.0%	
H0.11	the frequency curve 1 of the injection machine is input point A1	25.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.12	the frequency curve 1 of the injection machine is input point A1. its Reference value is B1	25.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.13	the frequency curve 1 of the injection machine is input point A2	50.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.14	the frequency curve 1 of the injection machine is input point A2. its Reference value is B2	50.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.15	the frequency curve 1 of the injection machine is input point A3	100.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.16	the frequency curve 1 of the injection machine is input	100.0	0.0~10 0.0	%	○	0.0%~100.0%	

	point A3. its Reference value is B3						
H0.17	the frequency curve 2 of the injection machine is input point A0	0.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.18	the frequency curve 2 of the injection machine is input point A0. its Reference value is B0	0.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.19	the frequency curve 2 of the injection machine is input point A1	25.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.20	the frequency curve 2 of the injection machine is input point A1. its Reference value is B1	25.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.21	the frequency curve 2 of the injection machine is input point A2	50.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.22	the frequency curve 2 of the injection machine is input point A2. its Reference value is B2	50.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.23	the frequency curve 2 of the injection machine is input point A3	100.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.24	the frequency curve 2 of the injection machine is input point A3. its Reference value is B3	100.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.25	the frequency curve	0.0	0.0~10	%	○	0.0%~100.0%	

	3 of the injection machine is input point A0		0.0				
H0.26	the frequency curve3 of the injection machine is input point A0. its Reference value is B0	0.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.27	the frequency curve 3 of the injection machine is input point A1	25.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.28	the frequency curve3 of the injection machine is input point A1. its Reference value is B1	25.0	0.0~10 0.0	%	○○	0.0%~100.0%	
H0.29	the frequency curve 3 of the injection machine is input point A2	50.0	0.0~10 0.0	%	○○	0.0%~100.0%	
H0.30	the frequency curve3 of the injection machine is input point A2. its Reference value is B2	50.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.31	the frequency curve 3 of the injection machine is input point A3	100.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.32	the frequency curve3 of the injection machine is input point A3. its Reference value is B3	100.0	0.0~10 0.0	%	○	0.0%~100.0%	
H0.33	Manufacturer-specific functions 11 (reserved)	0	0~6553	/	○	Retention	
H0.34.	Manufacturer-specific functions 12	0	0~6553 5	/	○	Retention	

	(reserved)					
H0.35	Manufacturer-specific functions 13 (reserved)	0 0	0~65535	/	○	Retention
H1.00	Digital terminal logic operation mode	0	0~111	/	○	Digital output terminal logic operation, the operation result in H1.07 bit: an digital output; Ten: two digital outputs; One hundred: 3 digital outputs;

H1.00	Digital terminal logic operation mode	0	0~111	/	○	1000-bit: reservations; 0: Disabled; 1: Effective
H1.01	Y1 terminal logic operation port settings	1	1~AA A	/	○ ○	Bits: a digital input terminal 1~ A: X1 ~ X7, AI1 ~ AI3 (for digital terminals); 10-bit digital input terminals 2: 0: digital input terminal without a valid choice; 1~ A: X1 ~ X7, AI1 ~ AI3 (for digital terminals); one hundred digital input terminals: The digital input terminal without a valid choice; 1 ~ A,,: the X1 ~ X7, AI1 ~ AI3 (for digital terminals); 1000: Reserved
H1.02	Y1 terminals logical relationship settings	0	0~111 7	/	○	Bits: the digital input terminal "non-operating 0 ~ 7: 3-8 decoding of the digital terminal, 1: corresponds to the non-operators; 10: in front of a digital input terminal or operation 0; 1: or; One hundred: two digital input terminals "or" Operation: 1: or; 1000: operator priority setting 0: digital input terminals 1, 2 op-priority high; 1: digital input terminals 2, 3 op-priority high;
H1.03	terminal logic operation port settings	0	0~AA A	/	○	Same as H1.01
H1.04	Y2 terminals logical relationship settings	1	1~111 7	/	○	Same as H1.02
H1.05	Relay terminal logic operation port settings	0	0~AA A	/	○	Same as H1.01

H1.06	Logical relationship between setting of the relay terminal	1	1~1117	/	○	Same as H1.02	
H1.07	Digital terminal logic operation output Show	0	0~FFF F	/	*	State of the digital input terminal logic operation results: Bits: a digital output; Ten: two digital outputs; One hundred: 3 digital outputs; 1000-bit: reservations;	
H1.08	Analog math mode	0	0~1	/	○	Analog input terminal arithmetic operations, the operation results in H1.110: Invalid; 1: Effective	
H1.09	Analog Terminal math Port Set	4	1~555	/	○	Bits: an analog input terminal 1 ~ 5 : AI1~AI3 , AV4/AI4 , AV5/AI5 ; ten: two analog input terminal 0: Analog input terminals without a valid 1 ~ 5: AI1 ~ AI3, AV4/AI4, AV5/AI5; one hundred: 3 analog input terminal 0: Analog input terminals without a valid c 1 ~ 5: AI1 ~ AI3, AV4/AI4, AV5/AI5; one thousand: Reserved	
H1.10	Analog Terminal math relations	0	0~1227	/	○	Bits: analog input "negated" operation 0 ~ 7: 3-8 decoding of the digital terminal, 1: corresponds to the non-operators; 10: 1 before computing the analog input operation 0: "+"; 1: "x"; "/"; One hundred: two analog input "operator" operation: "+"; "x"; "/"; 1000: operator priority setting 0: Analog input 1, 2 op-priority high; 1: Analog input 2, 3 op high priority;	

H1.11	Analog Terminal math output AIM Display AIM	0.0	0.0~6553.5	%	*	0 ~ 100% Arithmetic operations of analog input terminals: 0 to 100%	
H1.1	Analog Terminal math output Function is set	0	0~1	/	○	The analog input terminal arithmetic operation result the role of 0: no effect; 1: The frequency or speed settings;	
H1.13	Industry functionality H113 in group H1	0	0~65535	/	○	0~65535	
H1.14	H1 group of industries, functions H114	0	0~65535	/	○	0~65535	



H1.15	H1 group of industries, functions H115	0	0~65535	/	○	0~65535	
d2.18	AV4/AI4 enter one hundred components	0.0	0.0~6553.5	%	*	0~65535	
d2.19	AV4/AI4 after transformation by the curve of one hundred components	0.0	0.0~6553.5	%	*	0~65535	
d2.20	AV5/AI5 enter one hundred components	0.0	0.0~6553.5	%	*	0~65535	
d2.21	AV5/AI5 after transformation by the curve of one hundred components	0.0	0.0~6553.5	%	*	0~65535	

1.2 input and output terminal function set the parameter list of

Function code	Function code name	Factory value	Setting range	Unit	Property	Function code option	User Set
P0.01	Functional Protection	0	0~5	/	×	0: all parameters allowed to change; 1: All parameters prohibit the change; 2: to restore the P-zone parameters to factory settings; 3: Restore the P-zone parameters to factory settings (except the P9 group); 4: Restore H0 set of parameters to factory settings; 5: reservations;	
P2.02	Run the parameter selection	1CB0	0~FFFF	/	○	LED bits: 0: for a given frequency (Hz); 1:busbar voltage (V); 2 : AI1(V) ; 3: AI2 (V); 4: AI3 (V); 5: DI (%); 6 : AV4/AI4 (V); 7 the: AV5/AI5 (V); 8: Closed loop given (%);9: The closed-loop feedback (%); A: We give a given torque (%);B: Run Frequency (Hz); C: output current (A); D: Output torque (%); E: output power; F: output voltage (V); LED ten, hundred, one thousand: Ibid.	
P2.03	Stop display parameter selection	3210	0~FFFF	/	○		
P5.00	X1 video input function selection	99	0 ~ 99	/	×	See Table 1-1: multi-function input terminal definition table	
~ ~	~ ~	~ ~	~ ~	~ ~	~ ~		

P5.06	X7/DI video input function selection	99	0 ~ 99	/	×		
P7.00	Y1 terminal output function selection	0	0 ~ 47	/	○	See Table 1-2: multi-function switch output function Definition table	
P7.01	Y2/DO terminal output function selection	1	0 ~ 71	/	○	See Table 1-2 and Table 1-3: Multi-function analog output and pulse output function definition table	
P7.02	Relay terminal output function selection	14	0 ~ 47	/	○	See Table 1-2	
P7.03	terminal output function selection	48	48 ~ 71	/	○	See Table 1-3	
P7.04	AO2 terminal output function selection	49	48 ~ 71	/	○	See Table 1-3	

**Table 1-1 Multi-function input terminal definition table**

Serial number	Function defined	Serial number	Function defined
0	Inching Forward	1	Point dynamic inversion
2	Forward (FWD)	3	Reverse (REV)
4	Three-wire operation control	5	Pulse frequency DI input (only X7/DI terminal)
6	The digital voltage terminal 1	7	The digital voltage terminal 2
8	The digital voltage terminal 3	9	Multi frequency Terminal 1
10	Multi-frequency terminals 2	11	Multi frequency Terminal 3
12	Multi frequency Terminal 4	13	1 Acceleration and deceleration time of terminal 1
14	Acceleration and deceleration time of terminal 2	15	Digital adjust the frequency clear
16	Frequency increment instruction	17	Frequency decrement instruction
18	Acceleration and deceleration prohibit instruction	19	External fault input
20	Terminal fault reset input	21	External interrupt contact input
22	Inverter operation prohibits	23	Terminal shutdown
24	Terminal free Parking	25	1 Terminal DC brake 1

26	Emergency stop (the fastest stop)	27	Terminal DC braking 2
28	Counter trigger input	29	Counter trigger cleared
30	Retention	31	Retention
32	Flow for a given force the Select curve 1	33	Flow for a given force select the curve
34	Flow for a given force select the curve	35	Pressure for a given force select the curve
36	Pressure for a given force select the curve	37	Pressure for a given forced to choose curve 3
38	Forced to switch to the the injection machine frequency for a given user-defined way	39	Forced to switch to the the injection machine frequency for a given user-defined way
40	Forced to switch to the the injection machine frequency for a given user-defined way	41~46 4	Retention
		47	PG pulse closed-loop feedback single-phase input
48	Command cut to the operation panel	49 49	Command cut to the terminal
50	Command cut the first bit machine	51	Main frequency source closed-loop and open-loop switching input
52	The main frequency source switch to digital	53	Retention
54	The main frequency source is cut to AI1	55	The main frequency source to cut to the AI2
56	The main frequency source cut to AI3	57 57	The main frequency source to cut to the DI
58	The auxiliary frequency source to cut to the invalid	59	Retention
60	Auxiliary frequency source cut to AI1	61 61	Auxiliary frequency source to cut to the AI2
62	Auxiliary frequency source cut to AI3	63 63	Auxiliary frequency source to cut to the DI
64	Control the speed / torque control switch	65 ~ 98	Retention

Compared with the V5-H, new features 32-40.

**Table 1-2 multi-function switch output function definition table**

Feature set	Meaning	Feature set	Meaning
0	Inverter operation signal (RUN)	1	Frequency arrival signal (FAR)
2	Frequency level detection signal 1 (FDT1)	3	Frequency level detection signal 2 (FDT2)
4	Inverter or motor overload pre-alarm detection signal (OL)	5	Undervoltage lockout stop (LU)
6	External downtime (EXT)	7	The upper frequency limit restrictions (FHL)
8	Lower limit of frequency (FLL)	9 9	Inverter running at zero speed
10	Preset count value action	11	Reaches a count of action
12	Retention	13	Inverter operation ready to complete (the RDY)
14	Drive fault	15	Inverter alarm
16	Retention	17	Set the total running time to reach
18	Setting the continuous operation time to	19	Output X1

	reach		
20	Output X2	21	Retention
22	Zero current is detected (as opposed to motor)	23	Stop command instructions
24 ~ 31	Retention		
32	A digital output of the logic operation	33	Two digital output of the logic operation
34	3 digital outputs of the logic operation	35 ~ 47	Retention

**Table 1-3 Multi-function analog output and pulse output functions defined in Table**

Feature set	Output signal selection	The definition of the analog output range	Pulse output range defined
48	Output frequency	The maximum frequency P0.11 corresponds to 10V/20mA	The maximum frequency P0.11 corresponds to P7.10
49	Set the frequency	The maximum frequency P0.11 corresponds to 10V/20mA	The maximum frequency P0.11 corresponds to P7.10
50	Output current	2 times the nominal drive current corresponding to the 10V/20mA	2 times the nominal drive current corresponds to P7.10
51	Motor current	Two times the motor rated current corresponds to 10V/20mA	Two times the motor rated current corresponds to P7.10
52	Output torque	2 times the rated motor torque corresponds to 10V/20mA	2 times the rated motor torque corresponds to P7.10
53	Output voltage	2 times the maximum output voltage of P0.12 corresponds in 10V/20mA	2 times the maximum output voltage corresponding to at P7.10
54	Bus voltage	1000V corresponding in 10V/20mA	1000V corresponds to at P7.10
55	AI1	10V corresponding in of 10V/20mA; 20mA corresponding 5V/10mA	10V corresponds to 20mA corresponds to 50% of the P7.10 to P7.10;
56	AI2	Same as AI1	Same as AI1
57	AI3	-10V ~ 10V corresponds to 0 ~ 10V/20mA	-10V ~ 10V corresponds to the 0 ~ P7.10
58	DI	Maximum input pulse frequency P5.10 corresponds to 10V/20mA	Maximum input pulse frequency P5.10 corresponds to P7.10
59	Output power	2 times the motor rated output power corresponding in 10V/20mA	2 times the rated motor output power corresponds to P7.10
60	Percentage of the host computer	10000 corresponds to at 10V/20mA	10000 corresponds to at P7.10
61~63	Retention		
64	AV4/AI4	Curve correction reference value 100% corresponding to 10V/20mA	Curve correction reference value 100% corresponding to P7.10
65	AV5/AI5	Same as AV4/AI4	Same as AV4/AI4
66	AIM	The reference value through H1.11 100% corresponding to 10V/20mA	The reference value through H1.11 100% corresponding to P7.10

## Chapter 2 Injection molding machine industry function detailed parameters

## 2.1 Injection machine energy-saving function parameters (H0 group)

H0.00	Injection molding machine frequency given method choice	0-3
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Make sure the given method of inverter frequency in the energy-saving mode of the injection machine. Depend on the different use environment or mold can set different user injection machine frequency given user-defined mode.

0: do not use the the injection machine frequency for a given user-defined;

If the flow and pressure signal of injection machine for 0 ~ 10V or 0 to 20mA available to input of the inverter terminals, there is no need to use injection machine interface card; P6 group frequency curve can be achieved by controlling the terminal AI input and the frequency of the inverter given.

1: Use the the injection machine frequency for given user defined method 1;

If you use Injection machine interface card to change the flow and pressure signals sent to the inverter, the flow and pressure signals in accordance with the the H0.03 Injection machine frequency of a given user-defined to determine the frequency of the inverter is given.

2: Use Injection machine frequency for given user-defined method 2;

If you use injection machine interface card to change the flow and pressure signals and sent it to the inverter, the flow and pressure signals in accordance with the the H0.05 Injection machine frequency for given user-defined method 2 to determine the frequency given of frequency inverter.

3: use injection machine frequency for given user-defined method 3;

If you use Injection machine interface card to change the flow and pressure signals and sent it to frequency inverter, the flow and pressure signals in accordance with H0.07 Injection machine frequency for given user-defined method 3 to determine the frequency given of frequency inverter.

Note: to select different injection machine frequencies for a given user-defined way through the switching of terminal.

H0.01	Flow signal AV4/AI4 filter time	0.000 ~ 1.000s
H0.02	Pressure signal AV5/AI5 filter time	0.000 ~ 1.000s

Can be realized digital filtering of the flow and pressure signals through the above function code , in order to improve anti-jamming capability; but large filter time response speed will cause the system to perform slower.

H0.03	Injection machine the frequency given user-defined way 1	0 ~ 1222
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User-defined the injection machine frequency given method 1.

The operator panel display	
Bits	Flow pressure input selection 0: the flow and pressure signals are valid; 1: the only traffic signal is valid; 2: Only the pressure signal;
tens	Flow for a given curve to select

	0: the Injection machine frequency curve 1; 1:Injection machine frequency curve; 2: the Injection machine frequency curve;
hundreds	Pressure for a given curve to select 0: the Injection machine frequency curve 1; 1:Injection machine frequency curve; 2: the injection machine frequency curve;
kilobit	The relationship between flow and pressure selection 0: $K1 \times \text{flow} + (1-K1) \text{ pressure}$ ; 1: $\text{Max}\{\text{flow, pressure}\}$ ;

Function code to determine the flow and pressure signals can be determined as the frequency given. When only choice one of signals between the flow signal and pressure signals as the frequency given another signal on the frequency given is no effect.

- 0: the flow and pressure signals are valid;
- 1: only the traffic signal;
- 2: Only the pressure signal;

10-bit function code determine the amendments to the traffic signal frequency curve. Frequency curve of the external input flow signal into the analog machine, the signal input through the conversion in accordance with the 0 to the maximum input corresponds to the 0 to 100% per unit amount of converted; per unit volume and the maximum output frequency of P0.11 The product of the traffic signal corresponding to the set frequency component.

- 0: the Injection machine frequency curve;
- 1: the Injection machine frequency curve;
- 2: the injection machine frequency curve;

hundreds of the function code determine the frequency curve of the correction pressure signal. Frequency curve to the pressure of external input signal into the analog machine, the signal input through the conversion in accordance with the 0 to the maximum input corresponds to the 0 to 100% per unit amount of converted; per unit volume and the maximum output frequency of P0.11 The product of the pressure signal corresponding to the set frequency component.

- 0: the Injection machine frequency curve;
- 1: the Injection machine frequency curve;
- 2: the Injection machine frequency curve;

kilobit of the function code to determine the flow and pressure signals at the same time as the frequency to the timing, Flow signal and pressure signal corresponding to the frequency component of the manner in which the synthesis of the final set frequency output. If you select only the flow and pressure signals in a signal as the frequency of a given time, this bit is set is not valid.

- 0: Synthesis for weight, weight K1 is set by the H0.04;

Final set frequency output =  $K1 \times \text{flow frequency components} + (1-K1) \times \text{pressure frequency components}$ ;

- 1: check the flow and pressure signals corresponding to the maximum frequency component;

The final set frequency output =  $\text{Max}\{\text{flow, pressure}\}$ ;

H0.04	Flow coefficient K1	0.0-100.0
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Make sure the user-defined Injection machine frequency given the flow and pressure signals at the same time as the frequency to the timing frequency component of the right weight.

H0.05	Injection machine the frequency for a given user-defined mode	0 ~ 1222
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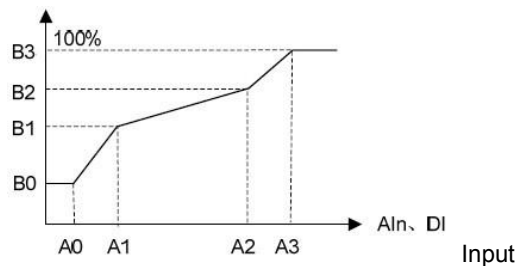
H0.06	Flow coefficient K2	0.0~ 100.0
H0.07	Injection machine the frequency for a given user-defined mode	0 ~ 1222
H0.08	Flow coefficient K3	0.0~ 100.0

Determine the user-defined the injection machine frequency given way 2 and 3, the same meaning as above.

H0.09	injection molding machine the frequency curve of 1 input point A0	0.0-100.0
H0.10	Injection molding machine the frequency curve of 1 input point A0 per unit volume corresponding to B0	0.0-100.0
H0.11	Injection molding machine the frequency curve of 1 input A1	0.0-100.0
H0.12	Injection molding machine the frequency curve of 1 input point A1 per unit volume corresponding to the B1	0.0-100.0
H0.13	Injection molding machine the frequency curve of 1 input A2	0.0-100.0
H0.14	Injection molding machine the frequency curve of 1 input point A2 corresponding to the per unit amount of B2	0.0-100.0
H0.15	Injection molding machine the frequency curve of 1 input point A3	0.0-100.0
H0.16	Injection molding machine the frequency curve of 1 input point A3 corresponding to the amount of per unit B3	0.0-100.0

Above function code can be set to the frequency curve of the first group. Frequency curve of the external input signal into the analog machine, input signal after conversion in accordance with the 0 to the maximum input corresponding to 0~100% per unit amount of converted; per unit volume and the product of the maximum output frequency of P0.11 determine the component of the signal corresponding to the set frequency.

#### Reference Value



H0.17	Injection machine the frequency curve of the input point A0	0.0-100.0
H0.18	Injection machine frequency curve input per unit volume B0 A0 corresponds	0.0-100.0
H0.19	The Injection machine frequency curve 2 input A1	0.0-100.0
H0.20	Injection machine frequency curve input points A1 corresponding per unit volume B1	0.0-100.0

H0.21	Injection machine the frequency curve 2 input point A2	0.0-100.0
H0.22	Injection machine frequency curve of the input point A2 corresponding to the amount of per unit B2	0.0-100.0
H0.23	The Injection machine frequency curve input A3	0.0-100.0
H0.24	Injection machine the frequency curve of two input points A3 per unit volume corresponding to the B3	0.0-100.0

The above function code can be set to the second group of frequency curve, the same way as the first set of frequency curves.

H0.25	Injection molding machine frequency curve 3 input point A0	0.0 ~100.0
H0.26	Injection molding machine frequency curve input per unit volume B0 A0 corresponds	0.0-100.0
H0.27	Injection molding machine the frequency curve 3 input point of A1	0.0-100.0
H0.28	Injection molding machine frequency curve input points A1 corresponding per unit volume B1	0.0-100.0
H0.29	the injection machine frequency curve 3 input A2	0.0-100.0
H0.30	Injection molding machine the frequency curve per unit volume of three input A2 corresponding B2	0.0-100.0
H0.31	the injection machine frequency curve input A3	0.0-100.0
H0.32	Injection molding machine the frequency curve input A3 per unit volume corresponding to the B3	0.0-100.0

Above function code can be set to the third group of the frequency curve, the same way as the first set of frequency curves.

H0.33	Manufacturer-specific functions 11 (reserved)	0 - 65535
H0.34	Manufacturer-specific functions 12 (reserved)	0 - 65535
H0.35	Manufacturer-specific functions 13 (reserved)	0 - 65535

The above function code reserved.

## 2.2 Injection machine energy-saving function parameters (H1 group)

H1.00	Digital terminal logic operation mode	0 to 111
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Can achieve three digital input terminal signal after "AND, or NON-" the digital output and non-logical operations, so that the digital output of up to 3. The logical result of the operation of the three digital terminal in H1.07, If select the digital output is invalid, the logical result of the operation of the digital terminal is always 0. Digital terminals logical result of the operation through a programmable digital output port Y1, Y2 or relay output.

The operator panel display	
Bits	A digital input



	0: Disabled; 1: Effective
tens	2 digital inputs 0: Disabled; 1: Effective
hundreds	3 digital inputs 0: Disabled; 1: Effective
kilobit	Retained;

H1.0 1	Digital terminal a logical operator port settings	1 ~ AAA-
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Determine the three digital input terminal signal involved in the logical operators to determine a digital output port, after the logic operation.

The operator panel display	
Bits	1 digital output 1 ~ A,: the X1 ~ X7, AI1 ~ AI3 (for digital terminals);
tens	2 digital outputs 1 ~ A,: the X1 ~ X7, AI1 ~ AI3 (for digital terminals);
hundreds	3 digital outputs 1 ~ A,: the X1 ~ X7, AI1 ~ AI3 (for digital terminals);
kilobit	Retained;

H1.0 2	A logical relationship of the digital terminal settings	0 ~ 1117
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Determine the logical operations between three digital input, determined after the logic operation of a digital output.

The operator panel display	
Bits	"Operation of the digital input terminal "NON-" (0 to 7 corresponding Bit0 ~ 2) Bit0 ~ 2 corresponding to digital input 1 to 3; 1 means non-operating;
tens	The first digital input terminal "AND / OR "operator <OP1> 0: AND; 1: OR;
hundreds	The second digital input terminals "AND / OR " operating <OP2> 0: AND; 1: OR;
kilobit	Computing the priority level set 0: digital input terminals 1, 2 Operation high priority; 1: digital input terminals 2, 3 Operation high priority;

A bit determines whether digital input firstly go through the "non-action"; the setting 0 to 7 the corresponding binary Bit0 ~ 2

Digital input terminal	Digital terminal operator <NON> (the H1.02 a bit determines)							
	0	1	2	3	4	5	6	7
Terminal 1 <NON1>	/	Non -	/	Non-	/	Non-	/	Non-
Terminal 2 <NON2>	/	/	Non-	Non-	/	/	Non -	Non-
Terminal 3 <NON3>	/	/	/	/	Non-	Non-	Non -	Non-

tens and hundreds determine the operator among the digital input terminals<OP1> and <OP2>;

"and" operation is expressed as the <AND>, "or" operation is expressed as <OR>.

kilobit determine the sequence of logical operations between the digital input terminals;

0: digital input terminals 1, 2 Operation high priority;

1: digital input terminals 2, 3 Operation high priority;

For example: Select X1, X2, X3, as three digital input terminals, respectively corresponding to the digital input terminals 1 ~ 3, after logic operations the results showed In the first digital output ; to achieve the following logical operations: the first digital output = (X3 <AND> (<NON> X2)) <OR> X1; other digital output is not valid.

Determine digital terminals1 logical operator port : H1.01 = 0321.

Make sure the setting mode of digital terminal logic operation: H1.00 = 0001.

Determine the "non-operation: X3 and X1 no" NON-"operation, X2 has a " NON-"operation; so <NON3> = <NON1> = " / "; <NON2> = " non ", based on table digital terminal 1 logic relationship set of 2;

Determine the first digital input terminal "AND,OR" Operation: <OP1> = <OR>, tens of a logical relationship of the digital terminal is set to 1;

Determine the second digital input terminals "AND,OR" operation: set by <OP2> = the <AND> Hundred of a logical relationship of the digital terminal is set to 0;

Determine the operator priority: the digital input terminals 2, 3 computing priority, kilobit of a logical relationship of the digital terminal is set to 1;

Ultimately determine digital terminal 1 logical relationship is setting H1.02 = 1012.

The result of logic operation of the digital terminal for the first digital output, shown by H1.07 of bits, and through a programmable digital output port of Y1, Y2 or relay output.

H1.03	Digital terminal 2 logic operation port setting	0 ~ AAA
H1.04	Digital terminal 2 logical relationship setting	1 ~ 1117
H1.0 5	Digital terminal 3 logic operation port setting	0 ~ AAA
H1.0 6	Digital terminal 3 logical relationship setting	1 ~ 1117

Determine with logic operation, the three digital input terminal signal port and determine the relationship between three digital input logic operations, after the logic operation to determine the second and the third digital outputs.

H1.0 7	Digital terminal logic operation output	0 ~ FFFF
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Showed 3 digital terminals logical result of the operation, if the defined digital output is invalid, the logical operation result of the digital terminal is always 0.

The operator panel display	
Bits	A digital output: 0 to 1;
tens	2 digital outputs: 0 to 1;
hundreds	3 digital outputs: 0 to 1;
kilobit	Reservation

H1.0 8	Analog math mode	0 to 1
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Three analog inputs can be realized through "Math" of math operation to produce results, the results displayed in the analog terminals math output H1.11, if you choose analog math mode is invalid, the results of the analog input math to 0. The result of the operation can be used to make the inverter frequency setting AO terminal or through a programmable output.

0: invalid;

1: effective;

H1.0 9	Math port settings of the analog terminals	1 ~ 555
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Determine the logic operation three analog input signal port.

The operator panel display	
Bits	The First analog input terminal 1-5: AI1 ~ AI3, AV4/AI4, AV5/AI5;
tens	The second analog input terminal 0: Analog input terminals 5 and 1: AI1 ~ AI3, AV4/AI4, AV5/AI5;
hundreds	The third analog input terminal 0: Analog input terminals is invalid 1-5: AI1 ~ AI3, AV4/AI4, AV5/AI5;
kilobit	Reservation

H1.01	Analog terminal math relations set	0 ~ 1277
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Determine 3 analog input math relations, after a number crunching to determine the final output.

The operator panel display	
Bits	Analog inputs inverted operation (0 to 7 corresponding to Bit0 ~ 2) Bit0 ~ 2 corresponding to digital input 1 to 3; 1 indicates that the inversion operation;
tens	First An analog input "operator" operator 0: "+"; 1: "x"; 2: "/";
hundreds	First Two analog input "operator" operator 0: "+"; 1: "x"; 2: "/";
kilobit	0: Analog input 1, 2 computing high priority; 1: Analog input 2, 3 operator priority;

Bits to determine whether the analog input go through the "inversion" operation, if the original analog positive becomes to negative, the original analog negative becomes to positive;

the setting of 0 ~ 7 to corresponding binary Bit0 ~ 2.

Analog input	Analog terminal inversion operator (H1.11 bit OK)							
	0	A	2	3	4	5	6	7
Analog input 1 <NON1>	/	Negated	/	Negated	/	Negated	/	Negated
Analog input 2 <NON2>	/	/	Negated	Negated	/	/	Negated	Negated
Analog input 3 <NON3>	/	/	/	/	Negated	Negated	Negated	Negated

tens and hundreds to determine the operator between the analog input <OP1>, <OP2> .

kilobit determine the sequence of logical operations between the analog input;

0: Analog input 1, 2 computing high priority;

1: Analog input 2, 3 operator priority;

An example: Choose the analog input of AI1, AI2, AI3 corresponding to 3 analog inputs, the results showed after math in H1.11 ; Achieve the following math:  $H1.11 = (AI3 \times (-AI2)) + AI1$ .

Math ports of analog terminals: H1.09 = 0321.

Determine analog Terminal math mode settings: H1.08 = 1.

Make sure "negated "Operation: AI3 and AI1 have no "negated operation, AI2 has "negated" operation;

So <NON3> = <NON1> = "/";

<NON2> = "Negated", According above Table bits of analog terminal math operation relations is set to 2;

Determine before "Operator" operation of the first analog inputs: <OP1> = "+" 10-bit of analog terminal math operation relations set to 0;

Determine before "Operator" operation of the second analog inputs: <OP2> = "x" hundreds of analog terminal math operation relations set to 1;

Determine the operator priority: the analog input 2, 3 between the operator priority, kilobit of analog terminal math operation relations set to1;

To finalize the analog terminals math relations settings H1.10 = 1102.

Analog terminal math results by The H1.11 show. The result of the operation can be used to make the inverter frequency setting volume or by programmable AO

Terminal output.

Note: The analog input in the machine are normalized 0 ~ 10V signal, such as AI1 current signal 0 ~ 20mA, AV4/AI4 current signal 0 ~ 1.0A,

AV5/AI5 voltage signal 0 ~ 24V are in the machine specification into a 0 ~ 10V signal.

H1.11	Analog terminal math output display	0.0 ~ 6553.5
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Show 3 analog input math results, has been defined to invalidate the results of mathematical operations, analog terminal math results always is 0.

The results show that as a percentage of the amount of 0 ~100.0% corresponds to 0 ~ 10V math results.

H1.12	Math output function settings of the analog terminals	0 ~ 1
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Determine the analog terminal math output H1.11 is set as the frequency of the inverter; 0 ~100.0% corresponds to 0 ~ maximum output frequency P0.11.

0: no effect.

1: Analog terminal math operation output H1.11 is set as the frequency of the inverter.

H1.13	Industry functionality H113 in group H113	0 ~ 65535
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H1.14	H1 group of industries, functions H114	0 ~ 65535
H1.15	H1 group of industries, functions H115	0 ~65535

Reservation

d2.18	AV4/AI4 enter hundreds components	0 ~ 65535
d2.19	AV4/AI4 after transformation by the curve of hundreds components	0 ~ 65535
d2.20	AV5/AI5 enter hundreds components	0 ~65535
d2.21	AV5/AI5 after transformation by the curve of hundreds components	0 ~ 65535

d2.18 and d2.20 is the maximum input hundred components about the AV4/AI4 and AV5/AI5 input relative to the of AV4/AI4 and AV5/AI5 ;d2.19 and d2.21 is the Per unit volume of the injection machine frequency curve correction of AV4/AI4, and AV5/AI5 . d2 group are read-only parameter.

### 2.3 Injection machine the input and output terminals function (P5 group ~ P7 group)

P0.01	Functional Protection	0 ~5
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This function is used to set change permissions and initialization level of parameters .

0: All parameters are allowed to change.

1: all parameters are prohibited changes.

2: all The parameters of the P region restore to the factory settings.

3: Except the motor group parameters (P9 group) The parameters of the P region restore to the factory settings.

4: all The parameters of H restore to the factory settings.

5: reservation.

P5.00	X1 video input select function	0 ~99
P5.01	X2 video input selection	0 ~ 99
P5.02	X3 video input selection function	0 ~99
P5.03	X4 terminal input select	0 ~99
P5.04	X5 terminal input select	0 ~99
P5.06	The X6 video input selection	0 ~99
P5.07	X7 terminal input select	0 ~99

The following list only add and modify the menu item, not listed in the function V5-H is consistenst. Please refer to V5-H user manual.

32	Flow for a given force to select the curve 1	33	Flow for a given force to select the curve 2
34	Flow for a given force to select the curve 3	35	Pressure for a given force to select the curve A
36	Pressure for a given force to select the curve 2	37	Pressure for a given force to select the curve 3
38	Forced to switch to the Injection machine frequency for a given user-defined way 1	39	Forced to switch to the Injection machine frequency for a given user-defined way 2

40	Forced to switch to the Injection machine frequency for a given user-defined way 3	41 to 46	
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**32 to 34:** flow given forced choice

Flow given AV4/AI4 forced through the function to select the injection machine frequency curves 1 ~3, but if forced to select two or more traffic given injection machine at the same time

The frequency curve of the terminal function is invalid, Flow given to maintain the original way.

**35-37:** Pressure given forced choice

Pressure given AV5/AI5 forced through the function to select the injection machine frequency curves 1 ~3, but if forced to select two or more traffic given injection machine at the same time The frequency curve of the terminal function is invalid, Voltage given to maintain the original way.

**38 to 40:** Injection machine forced to select the frequency of a given user defined

Select three kinds of injection machine frequency given a user-defined way through the terminal. However, if forced to select more than two injection machine frequency at the same time, Given user defined function is not terminal. Injection machine the frequency of a given user defined to maintain the original way.

P7.00	Y1 terminal output selection function	0 to 47
P7.01	Y2/DO terminal output selection	0 to 71
P7.02	Continued electrical terminals output options	0 to 47
P7.03	The AO1 terminal output options	48 to 71
P7.05	AO2 terminal output selection function	48 to 71

Y1 and the relay terminals can be defined as a multi-function digital output; AO1 and AO2 terminal can be defined as a multi-function analog output, and Jumper choose the type of analog output (0 ~ 10V / 0 ~ 20mA).

Y2 terminals can be used as a multi-function digital output is also available as high-speed pulse output (0 ~ 50kHz).

Noted as Below are just new functions, consistent with the V5-H general-purpose inverters usage. Please refer to the V5-H general purpose inverter user manual.

**Table Functions defined in Table 2-1 multi-function switch output**

Feature set	Meaning	Feature set	Meaning
32	A digital output of the logic operation	33	Two digital output of the logic operation
34	3 digital outputs of the logic operation	35 to 37	Retention

**32 to 34: logical operations digital output**

Can be realized Three digital input terminal signal after "AND, OR and NON-" logical operations to determine the digital output, digital output up to 3

A. 3 digital terminal logic operation results in H1.07, When select the digital output is not valid ,result of logic operation of the digital terminal is always 0. Digital terminals Logical result of the operation can by digital of programmable to output port Y1, Y2 or relay output.

**Table 2-2 multi-function analog output function definition table**

Feature set	Output signal selection	The definition of the analog output range	Pulse output range defined
64	AV4/AI4	Curve correction per unit volume corresponds to 100% 10V/20mA	Curve correction per unit volume corresponds to 100% P7.10
65	AV5/AI5	The Same with AV4/AI4	The Same withAV4/AI4
66	AIM	H1.11 per unit amount of 100% corresponds to 10V/20mA	H1.11 per unit amount of 100% corresponds to P7.10

**64: p.u. AV4/AI4 machine output**

Flow signal AV4/AI4 input is converted into After Injection machine expansion board signal processing, 0 to the maximum corresponding to the input 0 to 100% d2.18 display;

Percentage of the per unit value d2.18 after the Injection machine frequency curve correction in d2.19 display, and programmable analog output AO terminal output.

**65: AV5/AI5 per unit value of output**

Pressure signal AV5/AI5 input is converted into 0 to the maximum corresponding to the input 0~100% d2.20 display ,After Injection machine expansion board signal processing;

The Percentage of the per unit value d2.20 in d2.21 display after the Injection machine frequency curve correction , and programmable analog output AO terminal output.

**66: AIM machine per unit value of output**

Output is H1.11 that is 3 analog input math results. if it has been defined to invalidate the results of mathematical operations, the result of the operation is always 0.

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