Starting frequency is the initial frequency when the inverter is started. If the starting frequency is set to 5.0Hz, the inverter will run between 5.0 Hz and the maximum operating frequency after its start at 5.0Hz .

For the related parameters refer to PD025, PD029 and PD031.

PD028 Stopping Frequency		
Set Range：0.1–10.0 Hz	Unit：0.1Hz	Factory Setting：0.5

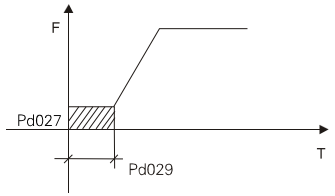
When stopping the inverter will decrease its frequency to the stopping frequency and then stop running or start DC braking to stop.

If PD030 is set to 0, DC braking is invalid at stop and the inverter will stop running.

If PD030 is set for valid, the inverter will stop by DC braking when the inverter reduce to PD028.

For the related parameters refer to PD026, PD031 and Pd030.

PD029 DC Braking Time at Start		
Set Range：0.02–5.0S	Unit：0.1S	Factory Setting：0.0

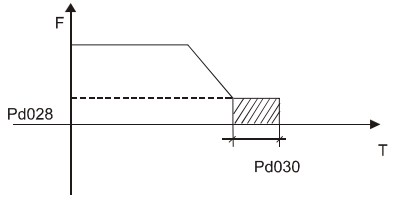


This parameter is set for DC braking at start and the lasting time of DC braking current to the motor. If it is set to zero it means DC braking is invalid.

DC braking at start is normally used in the application, in which the load is movable when the machine is at stop, such as windmill. Because of the load existing before the inverter drives, the motor is often in coasting with an uncertain rotation direction. So the DC braking can be executed before starting the motor to prevent the inverter from tripping.

This setting is valid only when PD025 is set to 0. For the related parameters refer to PD025, PD029 and Pd031.

PD030 DC Braking Time at stop		
Set Range：0.0–25.0	Unit：0.1S	Factory Setting：0.0



Note: When this parameter is set to any non-zero value it starts DC brake at stop and sends the DC braking time to the motor. DC braking at stop is often used for a high-level stop or positioning control.

When this parameter is set to zero it closes DC braking at stop.

This setting is valid when PD026 is set to 0. For the related parameters refer to PD026, PD028 and Pd031.

PD031 DC Braking Voltage Level		
Set Range：0.0–20.0%	Unit：0.1%	Factory Setting：2.0

This parameter is set for the DC braking voltage to the motor at start and stop.It can be adjusted for different braking voltage. When adjusting the parameter it must be increased slowly from lower value to high value until the sufficient braking torque is achieved.

The voltage at maximum frequency is 100% voltage.

PD032 Frequency Track Time		
Set Range：0.12–0.0S	Unit：0.1S	Factory Setting：5.0

This parameter is set as frequency track time when the inverter is started by frequency track after an external abnormality or temporary power breakdown. For starting or stopping of some large inertia load, if restarting a machine after its complete stop, it will waste much time because of its large inertia of load. But if the frequency track is started, it is not necessary to wait for the machine to come to a full stop for restart. The inverter will trace the frequency from high to low with the set frequency. After searching it will continue to accelerate to reach the set frequency.

PD033 Current Level for Frequency Track		
Set Range：0–200%	Unit：1%	Factory Setting：150

When the inverter is tracing the frequency this set value is taken as the level for output current. When the output current is higher than this level the inverter will decrease the frequency to restore the current below the level and then it will execute the frequency track again.

PD034 Inverter Track Time of Up/down	Factory Setting：0.5

When the inverter is started by frequency track ,in the track process ,the voltege will up.when the voltege up-speed increase ,the current will higher,the track process will faster. When the voltegr up-speed decrease , the current will lower,the track process will slower.The generally setting way is the low power machine establishes small, the high power machine establishes big.

PD035 Pd040 Reserved

PD041 Carrier Frequency	(Note: 015 corresponds to 020K Hz)	
Set Range：0–15	Unit：1	Factory Setting：5

The carrier frequency has some relation with the electromagnetic noise of the motor, and mean while the level of the carrier frequency has certain relation with the heating capacity of the inverter and the interference to the environment. See the following table:

Carrier Frequency	Electromagnetic Noise	Heating Capacity	Interference to the Environment
Low ↓ High	High ↓ Low	Small ↓ Large	Little ↓ Great

Carrier Frequency Corresponding Table

Set Value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Carrier Frequency Khz	0.1	1	1.5	2	3	4	5	7	8	9	10	11	13	15	17	20

As shown in the table above, the higher the carrier is, the lower the electromagnetic noise of the motor will be, but the stronger its interference to other systems will be and the greater the heating capacity of the inverter will have. Under higher ambient temperature and heavier load of the motor the carrier frequency should be decreased properly to improve the heat characteristics of the inverter.

The factory setting of carrier frequency is depending on the model.

PD042 Jogging Frequency		**
Set Range: 0.00–400.00	Unit: 0.01	Factory Setting: 5.00

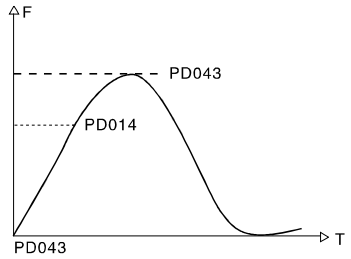
The parameter set can realize the jogging function when the inverter is tested. The jogging operation can be only achieved through the external terminals, which can be set by multi-input terminals. Jogging frequency is limited by the frequency upper/lower limits. While the jogging function is implemented, other running commands are invalid. The ramp-up time of jogging frequency is set by Ramp-up Time 4. When the jog button is released the inverter will stop output immediately. In case of jogging function please set the corresponding multi-input terminals to 07 or 08.

This function is only valid at stop. It is invalid at running. For the related parameters refer to PD044-PD049.

PD043 S–Curve Time		
Set Range: 0–6500S	Unit: 1	Factory Setting: 1

This parameter can be set for no impact slow start or slow stop of the inverter when starting or stopping. When starting S-curve the inverter will make accelerating or decelerating curve of different speed rates according to Ramp Time.

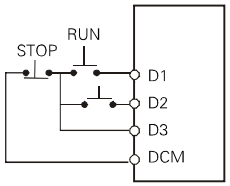
When PD043 is set as 0, S–curve is invalid, i.e. it will accelerate or decelerate in linear. Without consideration of stall the actual accel/decal time = (PD014+PD043)/2. The parameter is only valid when Pd014 is less than Pd043.



PD044	FOR (D1) Function	Factory Setting: 02
Pd045	REV (D2) Function	Factory Setting: 03
Pd046	RST (D3) Function	Factory Setting: 04
Pd047	SPH (D4) Function	Factory Setting: 07
Pd048	SPM (D5) Function	Factory Setting: 19
Pd049	SPL (C6) Function	Factory Setting: 20
	Set Range: 00–32	Unit: No

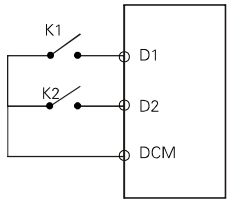
01: RUN Running. It can be combined with other terminals to compose multiple control modes.
02: FOR Forward Rotation
03: REV Reverse Rotation
04: STOP Stopping
05: FOR/REV Switching of FOR/REV rotation
06: JOG Jogging
07: Jog FOR
08: Jog REV
09: External Control Timer 1 Start: When the contact is closed, the timer will start and begin to count time. When the timer reaches the set point the corresponding multi-inputs will act.
10: External Control Timer 2 Start .
12: Over-heat of heat sink or motor: This contact can be used to detect over-heat of the heat sink or motor to protect the motor and inverter.
13: Emergent Stop: Emergent stop. It can receive external emergent stop command or other fault signals.
14: Reset: This terminal can be used for reset after a fault is removed.
15~16: Reserved.
17: Ramp Time 1: This terminal can be used to select the ramp time of the inverter.
18: Ramp Time 2: 4 kinds of ramp time are available for choice.
19: Multi-speed 1: 8-speed setting can be composed through Multi-speed 1, 2, 3.
20: Multi-speed 2
21: Multi-speed 3
22: High speed: High, middle and low speed can compose three kinds of operation mode
23: Middle speed with different frequencies. In the three terminals the high-end signal has
24: Low speed priority. Low, Middle and High Speed are determined respectively by Frequency 2,3,4.
25: PID Valid: When this contact is closed, PID function starts. PID Function start is only valid during operation.
26: PLC Reset Suspend: This contact can be used to achieve the function of AutoPLC clear suspend.
27: UP Function: When the switch of this terminal acts the frequency setting of the inverter will be increased or decreased by one unit. When the switch of the terminal is hold the frequency will increase or decrease rapidly to a point and then increase or decrease.

28: Down Function at even speed. When the power is up again after the power breakdown the changed frequency will not be memorized.
29: Drawing Start When this contact is triggered the drawing action starts.
31: Pulse Counter When this terminal is set for the counter it can receive the pulse signal of≤250HZ and counts.
32: Counter Reset When this contact acts it will clear the present counting values displayed, restore C00 and restart counting.



Explanation:
1. Three multi-function terminals can be used for the connection method of three-wire system for the realization of switching of FOR/REV rotation, which is extensively applied in the cases of FOR/REV switching of photoelectric switches.

① Select the multi-function terminals of D1、D2 and D3
② Parameter setting:
PD001=1 for external control PD044=02 for FOR rotation
PD045=03 for REV Rotation PD046=04 for Stop
③ Action Description:
When triggering D1, the inverter will rotate forward (start);
When triggering D2, the inverter will rotate reverse;
When pressing STOP, the inverter will stop.



2. RUN, DCM, F/R can be used for Start, Stop and switching of FOR/REV:

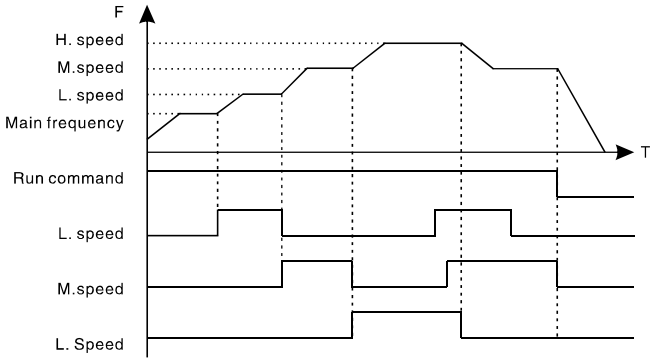
① Select the terminals of D1 and D2
② Parameter setting:
PD001=1 for external control
PD044=01 for RUN function
PD045=05 for switching of F/R
When K2 is opened it rotates forward, while K2 is closed it rotates reverse.

3. Description of Ramp Time 1 and 2:

① This function is only valid when PD080 is set to 0, 2 and 3. Under the disturbance and internal control multi-speed it is invalid.
② Any two multi-inputs can be combined for 4 kinds of ramp time for selection.
③ The related multi-inputs are set for Ramp Time 1, 2. Take the terminals of D4 and D5 as example, when the terminal of D4 PD047 is set to 22 and the terminals of D5 PD048 is set to 23, D4 and D5 are now Ramp Time 1, 2.

D4	D5	Result
OFF	OFF	Ramp Time 1
ON	OFF	Ramp Time 2
OFF	ON	Ramp Time 3
ON	ON	Ramp Time 4

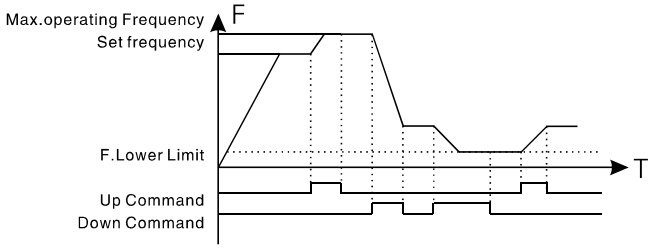
4. Function description of High, Middle and low speed terminals:



RUN	D6	D5	D4	Result
ON	OFF	OFF	OFF	Main speed, the frequency runs at the set value of Pd003.
ON	ON	OFF	OFF	Low speed, the frequency runs at the set value of Pd086.
ON	ON/OFF	ON	OFF	Middle speed, the frequency runs at the set value of Pd087.
ON	ON/OFF	ON/OFF	ON	High speed, the frequency runs at the set value of Pd088.

Note:
（1）This function is only valid when PD080 is set to 2, i.e. for 4-Speed of external control.
（2）Ramp time is determined by Ramp Select terminal.
（3）When all high, middle and low speeds have signal inputs it will give priority in the sequence of high, middle and low speed.

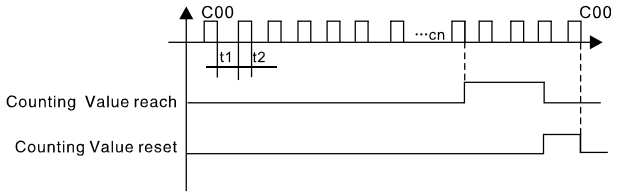
5. Description of UP and DOWN Function:



UP	DOWN	Result
ON	OFF	Frequency increase
OFF	ON	Frequency decrease
ON	ON	Not increase or decrease

Note:
（1）The function of UP and DOWN is only valid when the operator is selected for the source of the operating frequency,i.e. PD002=0.
（2）When the UP terminal is closed the frequency of the inverter will increase.
（3）When the DOWN terminal is closed the frequency of the inverter will decrease.
（4）When both UP and DOWN terminals are closed at the same time the frequency will neither increase nor decrease. It is regarded as invalid.
（5）When the frequency reaches the max operating frequency it will stop increasing.
（6）When the frequency reaches the min frequency or its lower limit, it will stop decreasing.
（7）After a power breakdown the set value of PD003 will be memorized instead of the frequency.
（8）When using the function of UP and DOWN, the keys of △☐ of the panel are valid. After changing the values it needs to press SET (ENTER) key for confirmation and then the inverter can implement the action. Meanwhile the value will write to PD003, which will be memorized after a power breakdown.
（9）When keeping pressing UP or DOWN，the frequency will increase or decrease rapidly to a point and then increase or decrease at even speed.
（10）The value changed by UP or DOWN can be set through PD077 for confirmation of whether it should be memorized or not memorized. For details refer to Pd077.

6.Function Description of Counter：



Note:
（1）The signal width triggered should not be lower than 2 msec（t1、t2≥2msec）.
（2）When the counting value is reached the corresponding multi-output contact will act.
（3）This counter can only count again after reset.
（4）When reaching to 65535 the counter will not count again.

PD050	Y1–input Function	Factory Setting：01
PD051	Y2–input Function	Factory Setting：03
PD052	FA、FB、FC Input Function	Factory Setting：01
PD053	Ka、KB Input Function	Factory Setting：03
	Set Range：00–32	Unit：1

01: In Run: The contact will act when the inverter has output or receives the running command.
02: Zero Speed: The contact will act when the output frequency of the inverter is less than its starting frequency.
03: Fault Indication: The contact will act when the inverter detects abnormal conditions.
04: DC Braking Indication: The contact will act when the inverter is in DC braking.
05: Set Frequency Reach: The contact will act when the output frequency of the inverter reaches the set frequency.
06: In Accel: The contact will act when the inverter is in ramp-up.
07: In Decel: The contact will act when the inverter is in ramp-down.
08: Uniform Frequency 1 Reach: The contact will act when the output frequency of the inverter reaches the designated frequency (PD060).
09: Uniform Frequency 2 Reach: The contact will act when the output frequency of the inverter reaches the designated frequency (PD061).
10: Motor Overload Alarm: The contact will act when the inverter detects over-load of the motor.

11: Over-torque Detect: The contact will act when the inverter detects over-torque.
12: Inverter Over-load Alarm: The contact will act when the inverter detects over-load.
13: Set Counter Reach: The contact will act when the inverter implements the external counter and the counting value is equal to the set value (PD065).
14: Middle Counter Reach: The contact will act when the inverter implements the external counter and the counting value is greater than or equal to the set value (PD066).
15: External Control Timer 1 reach: The contact will act when the timer 1 reaches the set value..
16: External Control Timer 2 reach: The contact will act when the timer 2 reaches the set value
17: Low Voltage Alarm: The contact will act when the inverter detects low voltage.
18: Single Step End: The contact will act and generate one pulse when the inverter finishes a single step in implementation of program operation.
19: Process End: The contact will act and generate one pulse when the inverter finishes all the steps (i.e. after one cycle) in implementation of program operation
20: 4∽20mA disconnected: When AI input signal is disconnected and PD072 more than 2, the contact will act.
25: Auxiliary Pump 1: This contact controls the starting and stopping of auxiliary pumps . For details refer to Operation of Multi-pumps.
26: Auxiliary Pump 2
27: Drawing reach: The contact will act when the drawing action is finished. The contact will auto matically reset when the inverter stops.
28: PID Lower Limit Alarm: This contact will act when the PID feedback is smaller than the lower limit (the set value of PD162).
29: PID Upper Limit Alarm: This contact will act when the PID feedback is greater than the upper limit (the set value of PD161).
30: Braking Resistor Act: When the inverter is in running and the DC voltage reaches the braking voltage the contact will act.
31: Electromagnetic Relay Act: When the contact pulls in, the corresponding multi-function terminal will act.
32: Fan act: When the temperature of the inverter is increased or it is in running, this contact will act.

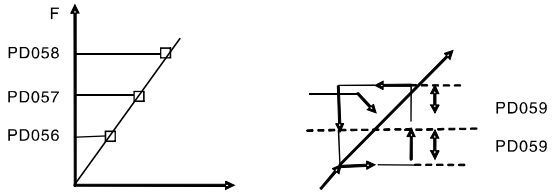
PD054 Vo Input		
Set Range: 0–7	Unit: 1	Factory Setting: 0

Functions: Output terminal of digital frequency, generating pulse or 010V analog. In combination with Pd055 it can be connected with a corresponding instrument with the measuring range below 10 to be used for external monitoring.
0: 0～10V analog output, corresponding to output frequency. 0～10V corresponds to 0～Maximum operating frequency
1: 0～10V analog output, corresponding to output current. 0～10V corresponds to 0～two times of the rated current of the inverter.
2: Analog output, corresponding to DC bus voltage. 0～10V corresponds to 0～1000V.
3: Analog output, corresponding to AC output voltage. 0～10V corresponds to 0～510V/255V.
(Note: The machine type of three phase, 380V corresponds to 510V and the machine type of single phase, 220V corresponds to 255V)

PD055 Vo Analog Output Gain		
Set Range: 0.0–100.0%	Unit: 0.1%	Factory Setting: 100.0

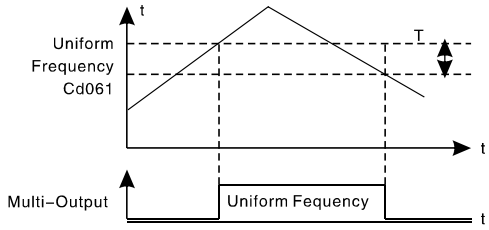
This parameter can be used to adjust the output voltage value of Multi-output 6 to adapt to frequency meters with different measuring range and also used to correct a frequency meter. For example, for an externally connected frequency meter with the measuring range of 0~5V, a multi-function terminal can be used to display its operating frequency. Then it can be corrected with this parameter. It can be achieved by setting PD055=50 .

PD056 Skip Frequency 1		**
PD057 Skip Frequency 2		
PD058 Skip Frequency 3		
Set Range: 0.00–400.00 Hz	Unit: 0.01Hz	Factory Setting: 0.0
PD059 Skip Frequency Range		**
Set Range: 0.10–10.00 Hz	Unit: 0.01Hz	Factory Setting: 0.5



These three frequency skipping points are set for avoiding a mechanical resonance point. In case of PD05 9=0, all skip frequencies are invalid. The actual skip frequency range is two times that of PD059, as shown in the above diagram.

PD060 Uniform Frequency 1		**
PD061 Uniform Frequency 2		
Set Range: 0.00–400.00 Hz	Unit: 0.01 Hz	Factory Setting: 0.00
Pd062 Uniform Frequency Range		**
Set Range: 0.10–10.00 Hz	Unit: 0.01 Hz	Factory Setting: 0.50

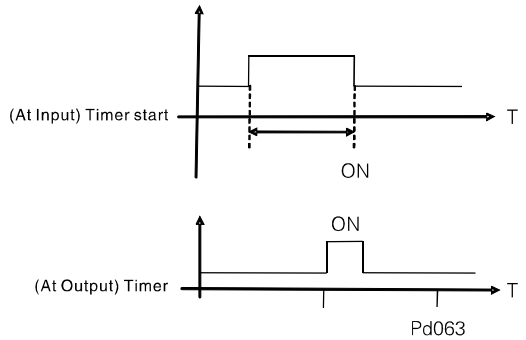


When the output frequency is more than the uniform frequency the corresponding multi-outputs will act. The uniform frequency range acts as a hysteresis loop.

When the inverter is in the operation of multi-pumps, PD060 is used as high speed frequency and PD061 is set as low speed operating frequency. The definitions of the corresponding multi-function contacts are changed.

PD063 Timer 1 Time		
Set Range：0.1 ~ 10.00	Unit: 1	Factory Setting：0.1
PD064 Timer 2 Time		
Set Range：1 ~ 100	Unit: 1	Factory Setting：1

Timer 1 is a timer of 0.1s ~ 10.0s and Timer 2 is a timer of 1s ~ 100s. When the timer start at multi-inputs is closed (on) the timer starts to count time. When it reaches the set time the corresponding multi-output contact will act. When the timer start is opened (off) the timer time at the multi-output will be reset.



For example, set PD063=5.0s. When the external control terminal (Multi-Input) is valid the output terminal will be valid after five (5.0) seconds, the signal of which can be used to control other corresponding signals.

PD065 Counting Value		**
Set Range：0–65500	Unit：1	Factory Setting：0

An external terminal of multi-function can be used as a trigger for the counter. When the counter reaches the set value of PD065 the corresponding multi-output contact will act. After the counter is cleared and reset it will start counting again. A proximity switch or optoelectronic switch can be used for the triggering signals.

PD066 Intermediate Counter		
Set Range：0–65500	Unit：1	Factory Setting：0

Refer to PD065.

PD067 PD069	Reserved	

PD070 Analog Input		
Set Range：0–4	Unit：1	Factory Setting：0

0：0~10V　　1：0~5V　　2：0~20mA
3：4~20mA　　4：0-10V 4-20mA stacked
This parameter can be set for different analog input signals.
When PD070=4, the output frequency =1/2（U/Umax＋I/Imax）× 50Hz
Among which: U: Analog Voltage　　Umax: Maximum Analog Voltage
I: Analog Current　　Imax: Maximum Analog Current

PD071 Analog Filtering Constant		
Set Range：0–50	Unit：1	Factory Setting：20

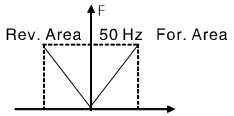
The setting of this parameter is related to the analog responding speed. The higher the value of PD071 is set, the lower the analog responding speed will be.

PD072 Higher Analog Frequency		
Set Range：0.00–400.00 Hz	Unit：0.01Hz	Factory Setting：50.00
PD073 Lower Analog Frequency		
Set Range：0.00–400.00 Hz	Unit：0.01 Hz	Factory Setting：0.00
PD074 Bias Direction at Higher Frequency		
Set Range：0–1	Unit：1	Factory Setting：0
PD075 Bias Direction at Lower Frequency		
Set Range：0–1	Unit：1	Factory Setting：0

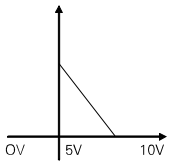
0：Positive direction
1：Negative direction
Bias direction means the instruction of FOR/REV rotation command. Positive bias indicates forward rotation while negative bias indicates reverse rotation. For details refer to the diagram in Pd076.

PD076 Analog Negative Bias Reverse		
Set Range：0–1	Unit：1	Factory Setting：0

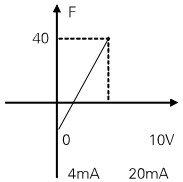
0：Negative bias Rev is not allowable.
1：Negative bias Rev is allowable.
The parameter group is set for the measuring range and zero point of the external analog terminals and can be combined for any kind of curve to control the operation of the motor.



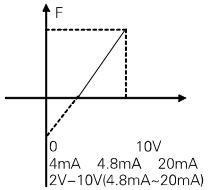
Setting: PD073=50 PD075=1 PD072=50
PD074=0 PD076=1
Note: this curve can be easily used in complicated applications in combination with other curves. When using it the instruction of FOR/REV run from external terminals is still valid. When switching, the curve will turn reverse.



Setting: PD073=50 PD075=1 PD072=50
PD074=0 PD076=1
Note: this curve is a kind of special application of reverse ramp setting.When using transmitter for the control of pressure, temperature and others and while the control has higher pressure and output signals but requiring the corresponding commands of stop or deceleration on the inverter this curve can satisfy the demand properly.



Setting: PD073=50 PD075=1 PD072=50
PD074=0 PD076=1
Note: this method is used extensively. The user can use it flexibly.



Setting: PD073=10 PD075=1 PD072=40
PD074=0 PD076=0
Note: the signal of 0Hz-40Hz （4~4.8mA）is invalid. It can be used to avoid noice disturbance. In harsh environment it is better not to use signals below 1V for setting the operating frequency of the inverter.

PD077 UP/DOWN Function		
Set Range：0–1	Unit：1	Factory Setting：0

0：Not memorized1：Memorized
This parameter can be set for the selection of whether the values changed by the UP or DOWN shall be memorized or not after stop. The changed values whether to be memorized or not means when they are changed by UP or DOWN during operation and the inverter is restarted after stop these changed values shall be memorized or not after restart. When PD077 is set to 0, the changed value will not be memorized and when it is set to 1, the changed values will be memorized. The set values of PD003 will be memorized after restart.
For the related parameters refer to PD044-PD049.

PD078 UP/DOWN Speed		
Set Range：0–1	Unit：1	Factory Setting：0

0：0.01Hz. Minimum UP/DOWN speed is 0.01Hz.
1：0.1Hz. Minimum UP/DOWN speed is 0.1Hz.
Through the changes of this set value the UP/DOWN speed unit can be adjusted to meet the needs of different customers.

PD079 Reserved

PD080 PLC Operation		
Set Range：0–5	Unit：1	Factory Setting：0

0：Normal operation, i.e. the inverter is running in the normal control mode.
1：Internal control Multi-speeds(16-speeds)
Note:
① Main speed and 7-speeds composes 8-speeds.
② The ramp time of each speed step is set by PD084,PD085.
③ Running Time is set by Timer PD101~PD116. For the control steps not to be used the timer can be set to 0.
④ Running direction of each speed step is determined by PD082,PD083.
⑤ In the internal control multi-speed operation the running time and direction are determined by the setting of internal parameters. Any switching of external time and FOR/REV rotation is invalid.

2:External control 4-Speeds (Refer to the function description and diagram of three terminals of high, middle and low speed in PD044～PD049)

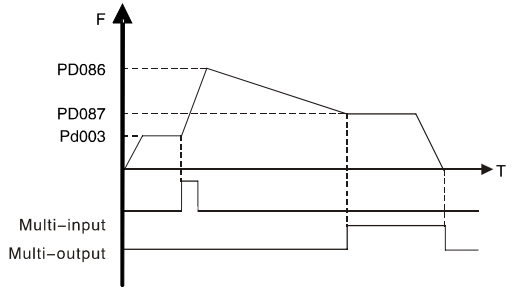
3：External control Mulit-speeds

Multi–function Terminals			Results
Multi–speed 1	Multi–speed 2	Multi–speed 3	
OFF	OFF	OFF	Main frequency and frequencies are determined by PD003 or potentiometer.
ON	OFF	OFF	Multi–speed 1 and frequency are determined by PD086.
OFF	ON	OFF	Multi–speed 2 and frequency are determined by PD087.
ON	ON	OFF	Multi–speed 3 and frequency are determined by Pd088.
OFF	OFF	ON	Multi–speed 4 and frequency are determined by PD089.
ON	OFF	ON	Multi–speed 5 and frequency are determined by PD090.
OFF	ON	ON	Multi–speed 6 and frequency are determined by PD091.
ON	ON	ON	Multi–speed 7 and frequency are determined by Pd092.

Note:
① It is only valid to realize the external control 8-Speeds operation when Multi-inputs are set for Multi-speed 1, 2, 3 and PD080 is set to 3.
② Multi-speed 1, 2, 3 can be used to make up 7-Speeds and 8-Speeds adding the main frequency .
③ The frequencies of Speed Step 1 ~ Step 7 are determined by PD086~PD092.
④ Each ramp time is determined by the external multi-function terminal D1-D6.
⑤ The directions of each program operation are determined by the external multi-function terminalsD1 -D6.
⑥ The main frequency can be set in two ways. One method is to set it through PD003 and another is to set it through the potentiometer. When PD002 is set to 1 the frequency of Main Frequency is set by the potentiometer. For the related parameters refer to PD003, PD002 and PD086~PD092.

4：Drawing

This is a special parameter for the constant speed of unwinding and rewinding. By using this function the linear speed constant in certain accuracy can be realized.



Note:

① Through triggering of the external multi-function terminal the drawing action begins.
② In implementation of the drawing action the actual running time is T=PD101×10.
③ when the drawing action is finished the inverter will run at the constant seed of PD087 and the corresponding multi-output contact will act at the same time. Until receiving the STOP command the inverter will stop running and the multi-output contact will reset.

5:Disturbance (Traverse function)

This is a special parameter in the chemical fiber and printing and dying industries to realize the traverse function. Except the commands of stop, external faults and emergency stop all other commands are not accepted at running.

Note:

① The frequency at each inflection point is determined by PD003 and PD086.
② Skip Frequency is determined by PD092.
③ Running Time is determined by Timer PD101 and PD102.
④ The related parameters: PD003, PD086~PD116.

PD081 Auto PLC		
Set Range：0–3	Unit：1	Factory Setting：0

0：Stop after the program runs one cycle.
1：Cycling running.
2：Stop after it runs one cycle automatically（STOP for intervention）.
3：Auto running and cycling （STOP for intervention）

This parameter setting is only valid when PD080 is set to 4. For relevant parameters refer to PD003, Pd080 and CD082~PD116.

Explanation:

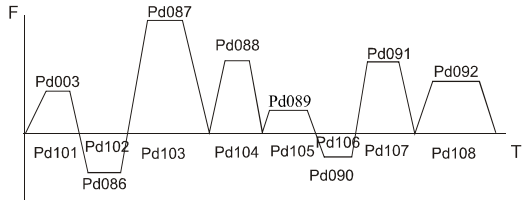
1.Stop after the program runs one cycle.

When the command of auto program operation is given, the inverter will run with each set value of internal parameters. It will run for one cycle and then stop automatically. The inverter will not restart and run until it receives another command of operation.

2.Cycling run.

When the command of operation is given, the inverter will run in sequence with the frequency of every speed step and running time set by each of the internal parameters and will recycle. During the cycling run, except the commands of stop, external faults and emergency stop, all other commands will not be accepted.

3.Stop after it runs one cycle automatically（STOP for intervention）



Note:

① When the command of auto program operation is given the inverter will run with each parameters. But it will stop first and then restart at changing of each step and will stop automatically after running for one cycle. The inverter will not restart and run until it receives another command of operation.
② The frequencies of each speed step are set by PD003 and PD086 ~ PD092.
③ The running times of each speed step are set by PD101 ~ PD108.
④ The running direction is set by P082

PD082 PLC Running Direction of the Front 8–Speeds		
PD083 PLC Running Direction of the Follow 8–Speeds		
Set Range：0–255	Unit：1	Factory Setting：0

This parameter is only valid when PD080 is set to 1 This parameter setting determine the running direction of each frequency of PD086~PD092 and PD003 in the program operation. The setting method is as follows:

The rotation direction is set first in the binary 8 bits mode, and then converted to a decimal value for the setting of this parameter. For instance:

The parameter value 01001010 is converted to a decimal value：
$1\times2^{6}+1\times2^{3}+1\times2^{1}=64+8+2=74$
Then PD082=74

PD083 means that set running direction of the follow 8–speeds(the algorithm likes Pd082)

PD084 Ramp Time of the Front 8–Speeds

PD085 Ramp Time of the Follow 8–Speeds		
Set Range：0–65535	Unit：1S	Factory Setting：0

This parameter is only valid when PD080 is set to 1.
This parameter is set to determine the ramp time values for the internal control multi-speed and each speed. The setting method is as follows:

① Determine each Ramp Time in the binary 2 bit mode

Bit1	Bit0	Ramp Time
0	0	Ramp Time 1 PD014, PD015
0	1	Ramp Time 2 PD016, PD017
1	0	Ramp Time 3 PD018, PD019
1	1	Ramp Time 4 PD020, Pd021

② Determine the Ramp time of each speed step in the binary 16 bit mode

Step 8		Step 7		Step 6		Step 5		Step 4		Step 3		Step 2		Step 1	
t8		t7		t6		t5		t4		t3		t2		t1	
0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1

t1 Select Ramp Time 4
t2 Select Ramp Time 1
t3 Select Ramp Time 3
t4 Select Ramp Time 2
t5 Select Ramp Time 1
t6 Select Ramp Time 1
t7 Select Ramp Time 1
t8 Select Ramp Time 1

The setting value:
$1\times2^0+1\times2^1+1\times2^5+1\times2^6=99$
So PD084 is set to 99
Attach：$2^0=1$ $2^1=2$ $2^2=4$ $2^3=8$
$2^4=16$ $2^5=32$ $2^6=64$ $2^7=128$

PD085 means that set ramp time of the follow 8-speeds(the algorithm likes Pd084)

PD086	Frequency 2	Factory Setting	15
PD087	Frequency 3	Factory Setting	20
PD088	Frequency 4	Factory Setting	25
PD089	Frequency 5	Factory Setting	30
PD090	Frequency 6	Factory Setting	35
PD091	Frequency 7	Factory Setting	40
PD092	Frequency 8	Factory Setting	0.5

PD093	Frequency 9	Factory Setting	10
PD094	Frequency 10	Factory Setting	15
PD095	Frequency 11	Factory Setting	20
PD096	Frequency 12	Factory Setting	25
PD097	Frequency 13	Factory Setting	30
PD098	Frequency 14	Factory Setting	35
PD099	Frequency 15	Factory Setting	40
PD100	Frequency 16	Factory Setting	45
Set Range：0.00–400.00 Hz		Unit：0.01 Hz	

This parameter is set for cooperate the multi-terminals , can choose the external 4-speeds\the external control multi-speeds and the internal control multi-speeds.For the relevant parameter refer to PD080 and PD086~PD100

PD101	Timer 1	Factory Setting	10.0
PD102	Timer 2	Factory Setting	10.0
PD103	Timer 3	Factory Setting	0.0
PD104	Timer 4	Factory Setting	0.0
PD105	Timer 5	Factory Setting	0.0
PD106	Timer 6	Factory Setting	0.0
PD107	Timer 7	Factory Setting	0.0
PD108	Timer 8	Factory Setting	0.0
PD101	Timer 9	Factory Setting	0.0
PD102	Timer 10	Factory Setting	0.0
PD103	Timer 11	Factory Setting	0.0
PD104	Timer 12	Factory Setting	0.0
PD105	Timer 13	Factory Setting	0.0
PD106	Timer 14	Factory Setting	0.0
PD107	Timer 15	Factory Setting	0.0
PD108	Timer 16	Factory Setting	0.0
Set Range：0.06500.0S		Unit：0.1S	

This parameter is set for the internal control multi-speeds and the running time of drawing function. For the relevant parameter refer to PD080 and PD101~PD116.

Pd117 Internal Control Multi–Speeds Memory Function	
Set Range：01	Factory Setting：0

0：Not memorized
1：Memorized

This parameter is set to determine whether the inverter is to realize the suspending function in Auto PLC mode. In case of PD115=1 it can memorize the status in which the inverter is running and will memorize it at stop or fail. It will continue to run when returning to normal. In case of PD115=0 it will not memorize.

PD118 Over-voltage Stall Prevention		
Set Range: 0-1	Unit: 1	Factory Setting: 1

0: Over-voltage stall prevention invalid
1: Over-voltage stall prevention valid.

When the inverter is in deceleration, due to the effect of load inertia, the motor will produce a return energy to the inverter and cause the DC voltage of the inverter to increase. So when the function of over -voltage stall prevention is started, if the DC voltage of the inverter becomes too high, the inverter will stop decelerating till the voltage at DC decreases below the set value, then the inverter will go on to decelerate and the ramp-down time will be extended automatically.

PD119 Stall Prevention Level at Ramp-up		
Set Range: 0-200%	Unit: 1%	Factory Setting: 150

When the inverter is in ramp-up, due to overload or too short ramp-up time, the output current of the inverter will go up quickly and exceed the set standard level. When this happens, the inverter will stop accelerating. When the current returns under its set value, the inverter will go on to accelerate.

100% current is the rated current of the motor. When this parameter is set to 0, the stall prevention function is invalid.

PD120 Stall Prevention Level at Constant Speed		
Set Range: 0-200%	Unit: 1%	Factory Setting: 0

When the inverter is running at constant speed, due to load fluctuation and other reasons, the current will increase. When the current exceeds its set standard value, the inverter will lower the output frequency. When the output current returns to its normal range, the inverter will accelerate again to its set frequency.

100% current is the Rated Current of the motor. When this parameter is set to 0 the stall prevention function is invalid.

PD121 Decel. Time for Stall Prevention at Constant Speed	Factory Setting: 5.0

When the inverter is used for the loads of kinds of fan and pump PD119 can be set to 120. When the current of the inverter is greater than 120% the output frequency will decrease and the current will also decrease accordingly. After the current returns to normal the frequency will return to normal slowly, so as to achieve the stall prevention function. The decreasing speed of the frequency is determined by PD119. For the Related parameters refer to PD 119.

PD122 Stall Prevention Level at Deceleration		
Set Range: 0-200%	Unit: 1	Factory Setting: 150

Refer to Pd120.
100% current is the rated current of the motor.

PD123 Over-torque Detect Mode		
Set Range: 0-3	Unit: 1	Factory Setting: 0

0: When reaching the frequency it starts to detect over-torque and when over-torque is detected it continues to run.
1: When reaching the frequency it starts to detect over-torque and when over-torque is detected it stop running.
2: It detects over-torque during running and when over-torque is detected it continues to run.
3: It detects over-torque during running and when over-torque is detected it stop running.

PD124 Over-torque Detect Level		
Set Range: 0-200%	Unit: 1%	Factory Setting: 0

When the output current exceeds the over-torque detection level and also exceeds half of the set time of over-torque detection (factory setting: 1.0s), the over-torque detection will indicate, and the corresponding multi-function alarm contact will act. When it exceeds the set time, the inverter will turn to self-protection. When this parameter is set to 0, the over-torque detection will be invalid

PD125 Over-torque Detect Time		
Set Range: 0.1-20.0s	Unit: 0.1s	Factory Setting: 1.0

When the inverter detects that the output current has exceeded the motor current set value, the inverter begins to calculate the over-torque time. When the over-torque time has exceeded half of the set detect time, the corresponding multi-function output contact will act, and produce the over-torque alarm, while the inverter will keep running. When the over-torque time has exceeded the set detect time (set by PD125), the inverter will turn to self-protection, display the fault information and stop output..

For the related parameters refer to Pd123.

PD126 Counter Memory		
Set Range: 0-1	Unit: 0	Factory Setting: 0

0: Not memorized
1: Memorized

The function of counter memory, the function of inverter power-breakdown memory

PD127PD129 Reserved

PD130 Number of Auxiliary Pump		
Set Range: 0-2	Unit: 1	Factory Setting: 0

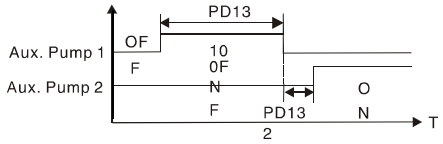
This parameter is set for the number of auxiliary pump. The start or stop of the auxiliary pumps is controlled by using the multi-output contacts and Auxiliary Pump 1 or Auxiliary Pump 2 is controlled through the peripheral control circuit.

PD131 Continuous Running Time of Auxiliary Pumps		
Set Range: 19000 (min)	Unit: 1	Factory Setting: 60

In case of two pumps with only one pump in duty, in order to ensure each pump to work evenly, it will be switched to another pump when its running time reaches the set value of PD131.

PD132 Interlocking Time of Auxiliary Pump		
Set Range: 1-250S	Unit: 1	Factory Setting: 5S

This parameter is set to determine the interlocking time of two auxiliary pumps when switching with each other.



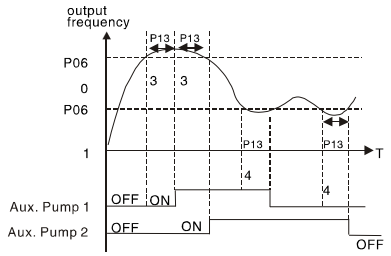
PD133 High Speed Running Time		
Set Range：1–250S	Unit：1	Factory Setting：60S

In the application of water supply with constant pressure, when the master pump is running at the frequency of high speed (set by PD060) due to larger water volume and the high speed running time is reached, the corresponding multi-function contacts act and the auxiliary pumps start.

PD134 Low Speed Running Time		
Set Range：1–250S	Unit：1	Factory Setting：60S

In the application of water supply with constant pressure, when the master pump is running at the frequency of low speed (set by PD061) due to smaller water volume and the low speed running time (PD134) is reached, the corresponding multi-function contacts act and the auxiliary pumps stop.

PD133 and PD134 must be used in combination of PD060, PD061 and multi-outputs. Their main function is to increase or decrease the number of auxiliary pump.



PD135 Stopping Voltage Level		
Set Range：0–150%	Unit：1	Factory Setting：95%

This parameter is set for the voltage level of the master pump entering into sleep mode. For details refer to the following description.

PD136 Lasting Time of Stopping Voltage Level		
Set Range：1–250S	Unit：1	Factory Setting：30S

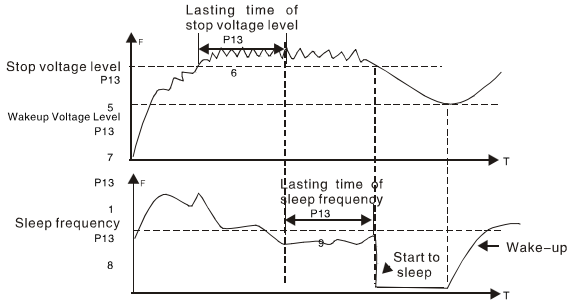
This parameter is set for the lasting time under the stopping voltage level before entering into sleep mode. For details refer to the following description.

PD137 Wakeup Voltage Level		
Set Range：1–150%	Unit：1	Factory Setting：80%

This parameter is set for the wakeup voltage level from sleep to wakeup.

PD138 Sleep Frequency		
Set Range：0.00–400.0	Unit：1	Factory Setting：20.00

PD139 Lasting Time of Sleep Frequency		
Set Range：1–250S	Unit：1	Factory Setting：20S



This parameter is set for the lasting time to run at sleep frequency when entering into sleep mode.

PD140 Reserved

PD141 Rated Motor Voltage	Unit：0.1V	Factory Setting：*

It is set according to the rated voltage value of the nameplate of the motor. For the inverters of 230V class the factory setting is 220, while for the inverters of 400 V class the factory setting is 380.

PD142 Rated Motor Current	Unit：0.1A	Factory Setting：*

It is set according to the rated value of the nameplate of the motor. This parameter can be used to restrict the output current of the inverter to prevent over-current and protect the motor. If the current of the motor has exceeded this value the inverter of AC motor will turn to self-protection.

PD143 Motor Pole Number		
Set Range：02–10	Unit：1	Factory Setting：04

This parameter is set for the number of the motor's pole according to the nameplate of the motor.

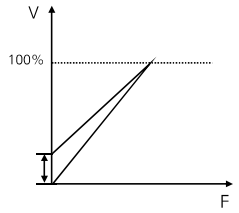
PD144 Rated Motor Revolution		
Set Range：0–9999	Unit：1r/min	Factory Setting：1440

This is set according to the actual revolution of the motor. The displayed value is the same as this set value. It can be used as a monitoring parameter, which is convenient to the user. This set value corresponds to the revolution at 50Hz.

PD145 Auto Torque Compensation		
Set Range：0.1–10.0 %	Unit：0.1%	Factory Setting：2.0%

This parameter can be set for the auto output of extra voltage when the inverter is running to achieve higher torque, which can compensate for the under-torque at lower frequency. The torque compensation should not be too big and it should be set slowly from low to high according to the actual situation.

Insufficient compensation will result in the under-torque of the motor at lower frequency. And over compensation will lead to too bigger torque, which will produce a shock to the machine and even result in a trip of the inverter under serious situation.



PD146 Motor No-load Current		
Set Range: 0-99	Unit: 1	Factory Setting: 40

The setting of motor no-load current will affect the value of slip compensation. The current is 100% of the rated current of the motor.

PD147 Motor Slip Compensation		
Set Range: 0.0-10.0	Unit: 0.1	Factory Setting: 20

When the inverter drives the motor the slip becomes bigger due to the increase of load. This param eter can be set for slip compensation to decrease the slip and make the running speed of the motor closer to the synchronous revolution.

PD148-PD149 Reserved

PD150 Auto Voltage Regulation		
Set Range: 0-1	Unit: 1	Factory Setting: 1

0: Invalid
1: Valid

When the input power is not stable and if the voltage is too high the operation of the motor with the power exceeding the rated voltage will cause increase of the temperature of the motor, damage of its insulation and unstable output torque. This auto voltage regulation can automatically stabilize the output voltage within the rated voltage range of the motor under the condition of unstable output power supply

When this function is set to invalid the output voltage will fluctuate.

PD151 Auto Energy Saving		
Set Range: 0-10%	Unit: 1%	Factory Setting: 0

When it is set to zero this function is invalid. When Auto energy saving function is started the inverter will run at the full voltage during ramp-up or -down. During the operation at constant speed the inverter can automatically calculate the optimum voltage value according to the power of load and supply power to the load to achieve the goal of energy saving.

PD152 Fault Restart Time	Factory Setting: 1.0 s

When the inverter is set for fault restart and if it has a fault trip with the time exceeding the set value of Pd152 the inverter will restart. When using this function pay more attention to the safety.

PD153 Restart after Instantaneous Stop		
Set Range: 0-1	Unit: 1	Factory Setting: 0

0: Invalid, i.e. the inverter will not restart after an instantaneous power breakdown.
1: Start by frequency track. Refer to PD025.

PD154 Allowable Power-Breakdown Time		
Set Range: 0.1-5.0S	Unit: 0.1S	Factory Setting: 0.5

This parameter is set for the maximum allowable power failure time. If exceeding the set time the inverter will continue to stop output after power on. Torestart the inverter it needs to follow the general starting procedures.

PD155 Number of Abnormal Restart		
Set Range: 00-10	Unit: 1	Factory Setting: 00

After the abnormal conditions (such as over-current and over-voltage) happens the inverter will automatically reset and restart. If the starting mode is set to normal mode it will start according to the normal procedures. If it is set to start by frequency track it will start in the frequency track mode. After starting it will restore the set number again if there is no more abnormality happened within 60 seconds. If there is still any error and it reaches the set number the inverter will stop output. It can only be started after reset. When PD155 is set to zero the inverter will not carry out the functions of automatic reset and restart.

PD156 Proportional Constant (P)		**
Set Range: 0.0-1000.0%	Unit: 0.1%	Factory Setting: 100%

This proportional constant is set for the error value gain. In case of I=0, D=0, it is only for proportional control.

PD157 Integral Time (I)		**
Set Range: 0.1-3600.0s	Unit: 0.1s	Factory Setting: 5.0s

The integral time (I) is set for the responding speed for PID. The larger the I value is set the slower the responding speed will be. To the contrary, if the responding speed is quick but the integral time value is set too small, it will cause oscillation.

Pd158 Differential Time (D)		**
Set Range: 0.01~10.00s	Unit: 0.01s	Factory Setting: 0

This differential time (D) is set for the depression operation of PID. The larger the D value is, the more obvious the depression operation will be. When D is set to zero, this function is invalid.

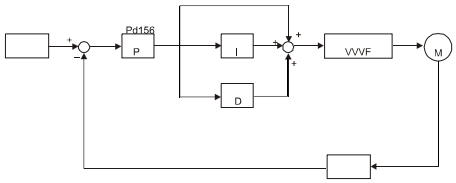
PD159 Target Value		**
Set Range: 0~100.0%	Unit: 1%	Factory Setting: *

This target value can be set through external voltage signal or the digital operator. 100% target value is corresponding to the analog frequency at +10V.

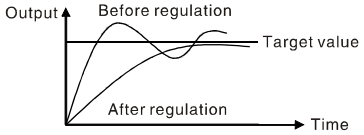
PID closed-loop control is usually used in the process control with physical quantity not changing fast, such as the controls of pressure and temperature, etc. The feedback signal is usually taken from temperature transmitter, or pressure transmitter, etc. Under PID control, the feedback signal input path is the analog current signal of 4-20mA.

PID closed-loop control is valid when Multi-input PID is started.

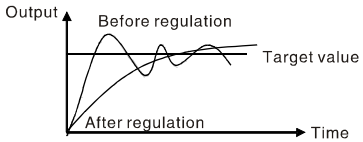
PID Control Block Diagram:



General operating methods of PID control:
（1）Choose the correct transmitter (with the output specification of standard current signal 4-20mA).
（2）Set the right target value.
（3）If the output does not have oscillation, increase the proportional constant (P).
（4）If the output does not have oscillation, decrease the integral time (Ti).
（5）If the output do not have oscillation, increase the differential time (Td).
（6）Concrete applications can be referred to the example application descriptions in Appendix 1.



1.Suppress the Over Output
a:Decrease the differential time (Dvalue)
b:Increase the integral time (I value)



2.Suppress the oscillation
a：Decrease the differential time (D value) or set it to zero.
b：Decrease Proportional Constant (P value)

PD160 PID Target Value		**
Set Range：0–1	Unit：	Factory Setting：0

The target value can be set through the selection of the panel or external analog. The external analog is 0~10V signal or given by the potentiometer.
When PD160=0, the target value of PID is the value set by PD159.
When PD160=1,the target value of PID is the value of the external analog 0-10V (corresponding to 0-100%), the setting of PD159 is invalid.

PD161 PID Upper Limit		**
Set Range：0–100%	Unit：	Factory Setting：100%

When PID feedback value is more than the set value of PD161 the corresponding multi-output will act and the inverter will not stop.

PD162 PID Lower Limit		**
Set Range：0–100%	Unit：	Factory Setting：0%

When PID feedback value is less than the set value of PD162 the corresponding multi-output will act and the inverter will not stop.

PD163 Communication Addresses		
Set Range：00–250	Unit：	Factory Setting：00

When the inverter is set for RS-485 Communication interface control, each of the inverters will be set for its individual identification .
00：No communication function.
01~250：Address for the inverters

PD164 Communication Baud Rate		
Set Range：0–3	Unit：	Factory Setting：0

0：4800 b/s 1：9600 b/s 2：19200 b/s 3：34800 b/s

PD165 Communication Data Method		
Set Range：0–5	Unit：1	Factory Setting：0

0：8N1 For ASCII 1：8E1 For ASCII 2：8O1 For ASCII
3：8N1 For RTU 4：8E1 For RTU 5：8O1 For RTU

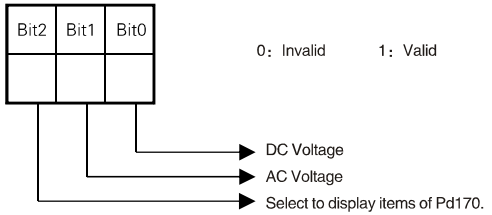
PD166~PD168 Reserved

PD170 Display Items		
Set Range： 0–5	Unit：1	Factory Setting：7

This parameter is only valid when Bit 2 is set to 1 in PD171. For the details refer to PD171.
0：Inverter Temperature
1：Counter Value
2：PID Target Value
3：PID Feedback Value

PD171 Display Items Open		
Set Range：0–15	Unit：1	Factory Setting：7

This parameter is set for selection of displaying of DC voltage, AC voltage and other items so that the customer can monitor and view them in sequence through the switch key.
It can be is set first in the binary 3 bits mode, and then converted to a decimal value.



In the contents displayed the factory setting is to show output frequency , set frequency , output current and output revolution through the switch key. If it is necessary to view and monitor other items they can be set through PD170 and Pd171.

PD172 Fault Clear		
Set Range：00–10	Unit：1	Factory Setting：**

01 is for fault clear. Others have no function.

PD173 Voltage Rating of Inverter	Unit：1V	Factory Setting：**

It is factory setting.It is depending on the model .It can be observed, but not set.

PD174	Rated Current of Inverter	Unit：1A	Factory Setting：*

It is depending on the model and can't be changed.

PD175	Inverter Model		
Set Range：01		Unit：1	Factory Setting：0

0：Constant torque 1：For kinds of fan. It can be observed, but not changed.

PD176	Inverter Frequency Standard	Unit：1	Factory Setting：*

0：50Hz 1：60Hz It is factory setting. It can be observed, but not set.

PD177	Fault Record 1	Factory Setting：
PD178	Fault Record 2	Factory Setting：
PD179	Fault Record 3	Factory Setting：
PD180	Fault Record 4	Factory Setting：

When it has no fault record it shows . After access to this parameter the fault display can be checked.

PD181	Software Version	Factory Setting：*

It can be observed, but not set.

PD182	Manufacture date	Factory Setting：*

It is factory setting. It can be observed, but not set.

PD183	Serial No.	Factory Setting：*

It is factory setting. It can be observed, but not set.

PD183~PD250 Factory Setting：*

Note:
* means the said parameter has a variety of set values or should be set specifically according to concrete conditions.
** means the said parameter can be set during the operation.

X. Care & Maintenance, Fault Information and Troubleshooting

Periodical maintenances and inspections will keep your inverter in its normal state for long time.

1. Precautions about Inspection and Maintenance

- Be sure to turn off the power supply to the inverter（R.S.T） first before the inspection and maintenance.
- After confirming the main circuit power supply has been turned off and the display has disappeared, wait until the internal indicator lamp for high voltage goes out before performing the inspection and maintenance.
- During the inspection, do not pull out or wrongly distribute the internal power supply, wires and cables. Otherwise it will cause malfunction or damage to the inverter.
- Do not leave any screw or other part inside the inverter during the installation, or it will result in the short circuit of circuit board.
- Keep the inverter clean, free from dust, oil mist and moisture after the installation.

2. Periodical Inspection and Maintenance Items

- Check whether the power supply voltage conforms to the rated voltage of the inverter.
  (Pay special attention to that whether there is any damage on the power supply wires and the motor.)
- Check whether the wiring terminals and the connectors are tight
  (Check whether the power supply wires and terminal connection wires have any broken strand).
- Check whether there is dust, iron filings or corrosive fluid in the inverter.
  Measuring the insulation impedance of the inverter is forbidden.
- Examine the output voltage, output current and output frequency of the inverter.
  (The measuring results should not have too big difference.)
- Check whether the ambient temperature of the inverter is between -5℃ and 40℃ and whether the installation environment has good ventilation.
- Check whether the humidity is kept below 90% (without condensation).
- Check whether the motor makes unusual noises or abnormal vibration in running.
  (The inverter should not be installed in a place with high vibration.)
- Please make periodical cleaning of vent holes.

3. Fault Indication and Troubleshooting

The inverter of HLP series is relatively perfective with the protection functions of overload, inter-phase short circuit, earth short circuit, under-voltage, overheating and over-current, etc. When a protection function happens with the inverter please check the reasons of faults according to the information listed in the table below. The inverter can be restarted after the disposal. If the fault cannot be disposed please contact the local distributor.

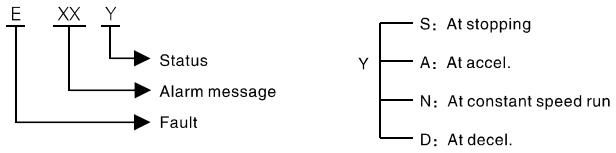
Fault Display	Fault Contents & Description	Disposal methods
OC-1	Over-current during ramp-up	1: Check whether the motor has got short circuit or partial short circuit and whether the insulation of output wire is good. 2: Extend the ramp-up time. 3: The configuration of the inverter is not reasonable. The inverter's capacity should be increased. 4: Decrease the torque and increase the set value.

OC-1	Over-current at constant speed	1: Check whether the motor has got short circuit and whether the insulation of the output wires is good. 2: Check whether the motor is blocked and whether there is a sudden change of mechanical load. 3: Check whether the inverter's capacity is too small and increase its capacity. 4: Check whether there is a sudden change in the power supply voltage.
OC-2	Over-current at decel Over-current at stop	1: Check whether the insulation of the output wires is good and whether the motor has got short circuit. 2: Extend the Ramp-down Time. 3: Replace it with an inverter of larger capacity. 4: DC braking is too high. Decrease DC braking. 5: The inverter has failure. Please send it to the factory for repair.
dL	Output short circuit	1: Check whether the connection wire of the motor has got short circuit. 2: Check whether the insulation of the output wires is good. 3: Please send it for repair.
Ou-1 Ou-2	Over-voltage at stop Over-voltage at accel Over-voltage at constant speed Over-voltage at decel	1: Extend the Ramp-down Time or add a braking resistor. 2: Improve the mains supply voltage and check whether there is any sudden change in the voltage.
Fb	Fuse break	Fuse break. Please send it to the factory for repair.
Lu	Low voltage	1: Check whether the input voltage is normal. 2: Check whether there is sudden change in load. 3: Check whether there is any phase missing.

OH	Overheat of inverter	1: Check whether the fan is blocked and whether there is any foreign matter stuck in the cooling fins. 2: Check whether the ambient temperature is normal. 3: Check whether there is enough space for ventilation and good air convection.
OL-1	Inverter overload 150% Per minute	1: Check whether the capacity of the inverter is lower. Otherwise it should be increased. 2: Check whether there is any jamming in the mechanical load. 3: The setting of V/F curve is bad. Set it again.
OL-2	Motor overload 150% Per minute	1: Check whether there is any sudden change in the mechanical load. 2: The equipped motor is too small. 3: The motor is hot and the insulation becomes bad. 4: Check whether the voltage has big fluctuation. 5: Check whether there is any phase missing. 6: The mechanical load is increased.
dt	Motor over-torque	1: Check whether there is any fluctuation in the mechanical load. 2: Check whether the equipped motor is smaller.
Eb5A Eb5n Eb5o Eb55	No feedback from auxiliary coil of the electromagnetic contactor	Please contact the factory.
bt	Braking transistor damage	Please send it for repair.
CPu	CPU fault	Please contact the factory.
EE E5 EE E4 EE E3 EE E2 EE E1	E^{2}Prom fault	Please contact the factory.

Er	External interferences	Isolate the interference source
ES	Emergency Stop	In Emergency Stop
20	4–20mAz wire broken	Join the broken wires
Pr	Setting error	Correct the setting
Dcb	DC braking status	In DC braking

Note:
(1) Fault Code Form as follows:



(2) Code Comparison Table

	B	C	D	E	F	G	H	O	S	N	L	T	P	R	U	2
	b	C	d	E	F	G	H	O	S	n	L	r	P	r	u	2

4. Faults and Analysis

（1）When RUN key is pressed, the motor does not run.

1）The setting of operation mode is wrong, i.e., under the operation mode of external control terminals, the inverter is started by the digital operator or under the operation mode of the digital operator it is started by the external control terminals.
2）The frequency reference is too low or not set.
3）The peripheral wiring is wrong. For example, the setting of wiring of two-wire system and three-wire system and other related parameters have errors.
4）The setting of multi-function terminals is wrong (in the external control).
5）The inverter is in the fault protection.
6）The motor fails.
7）The inverter fails.

（2）The parameters cannot be set.

1）Password locks. Please decrypt it first before resetting.
2）The inverter is in running.
3）The connection of the connecting parts is abnormal. The communication of the digital operator is abnormal. Take out the operator after power-off and then mount it again for a trial.

（3）The motor cannot rotate reverse.

Reverse rotation is disabled.

（4）The motor rotates in the opposite direction.

The output line is wrongly connected. Please change any two lines of U.V.W over.

（5）The deceleration of the motor is too slow.

1）The setting of Ramp-down Time is too long. Decrease Ramp-down Time.
2）Add a braking resistor.
3）Add a DC brake.

（6）Over–heat of the motor

1）The load is too large. The actual torque has exceeded the rated torque of the motor. It is recommended to increase the capacity of the motor.
2）The ambient temperature is too high. In a place with higher temperature the motor will be burn out. Please decrease the temperature around the motor.
3）The phase to phase withstand voltage of the motor is insufficient.
The switch actions of the inverter will make the winding coil of the motor produce shock wave. Typically the maximum shock voltage will reach 3 times that of input power of the inverter. Please select a motor with higher phase to phase withstand voltage against shock than the maximum shock voltage.

（7）The starting of the inverter interferes other control devices

1）Decrease the carrier frequency and reduce the number of actions of internal switches.
2）Install a noise filter at the power input of the inverter.
3）Install a noise filter at the output of the inverter.
4）Make correct grounding for the inverter and the motor.
5）Use metal conduit to tube the cable to shield it.
6）Make separate wiring for the main circuit wires and control wires.

（8）When the fan starts the inverter detected an over–current stall.

1）At start the fan rotates idly. Please set it for DC braking at start.
2）When DC braking at start has been set increase the DC braking value.

（9）The machine has the noise of vibration or roar

1）The vibration frequency of mechanical system resonates with the carrier. Adjust the carrier to avoid the point of resonance.
2）The vibration frequency of mechanical system resonates with the output frequency of the inverter.
A.Set it for skip function to avoid the point of resonance.
B.Put rubber vibration isolator on the base plate of motor.

XI. Selection of Peripheral Devices and Disposition

1. Options

Description	Functions
NFB or Ground fault interrupter for wire connection	Protect the wiring of the inverter. Be sure to install a breaker at the power. Please select a ground fault circuit interrupter against high–order harmonics.
Electromagnetic contactor	In order to prevent the braking resistor from burning out, please add an electro–magnetic contactor and connect a surge absorber to the coil when using it.

Surge absorber	Absorb the switching surge current from the electromagnetic contactor and control relays.
Isolating transformer	Its function of isolating the input and output of the inverter is effective to reduce the interference to other electric devices.
DC reactor	Improve the input power factor of the inverter.
AC reactor	Improve the input power factor of the inverter and prevent the shock of surge voltage.
Braking resistor, braking unit	Consume the regenerating energy of the motor and shorten the ramp–down time.

1) Leakage switch

There is earth static capacity inside of the inverter and the motor as well as the input and output leads. Due to higher carrier frequency of the inverter the inverter has higher earth leakage current, especially for the inverters of large capacity series. When using a leakage switch it may sometimes result in the error action of the protective circuit. So when using a leakage switch attention should be paid to its selection and the proper reduction of carrier frequency and shortening the leads, etc.

2) AC reactors

An AC reactor can constrict the high-order harmonic of input current of the inverter to improve its input power factor and prevent the shock of surge. It is recommended to use an input AC reactor under the following circumstances:

a: Three-phase power supply is in unbalance.

b: Any equipment with thyristor or power factor compensation unit with switching control is connected to the same power supply.

3) DC reactors

It is necessary to install a DC reactor when the capacity of power supply is more than 1000 KVA or the mains power capacity is higher than the rated capacity of the inverter. A DC reactor is also needed for the case with higher demand on the improvement of power factor of power supply. This DC reactor can be used together with an AC reactor to achieve the obvious effect of decreasing high-order harmonic at input. If it is necessary to install a DC reactor please contact the local distributor.

Disposition of Braking Resistor

Inverter Model	Braking resistor Specification		Braking torque 10%ED	Special Motor KW
	W	Ω		
HY00D423B	80	200	125	0.4
HY0D7523B	100	200	125	0.75
HY01D523B	300	100	125	1.5
HY02D223B	300	70	125	2.2
HY0D7543B	80	750	125	0.75
HY01D543B	300	400	125	1.5
HY02D243B	300	250	125	2.2
HY03D743B	400	150	125	3.7
HY05D543B	500	100	125	5.5
HY07D543B	1000	75	125	7.5
HY11D043B	1000	50	125	11
HY15D043B	1500	40	125	15
HY18D543B	4800	32	125	18.5
HY22D043B	4800	27.2	125	22
HY30D043B	6000	20	125	30
HY37D043B	9600	16	125	37
HY45D043B	9600	13.6	125	45
HY55D043B	12000	20/2	125	55
HY75D043B	18000	13.6/2	125	75
HY90D043B	18000	20/3	125	90
HY110D043B	18000	20/3	125	110
HY132D043B	24000	20/4	125	132
HY160D043B	36000	13.6/4	125	160
HY200D043B	45000	13.6/5	125	200
HY220D043B	48000	13.6/5	125	220
HY315D043B	57600	13.6/6	125	300

For the inverter of above 11KW to realize quick brake a braking unit must be added.

Note:

1: Please select the resistor value and operating frequency given by our company.

2: If it causes any damage to the inverter and other devices due to the use of any braking resistor and braking model group not supplied by our company, we will take no responsibility.

3: Be sure to consider the safety and ignitability of the environment when installing a braking resistor. The distance to the inverter should be at least 100 mm.

4: If it is necessary to change the resistor value and power value, please contact the local distributor.

5: In need of a braking resistor a separate order must be placed. Please contact the local distributor for details.

User Parameter Set

Par. No.	Function Name	User Set Value

Note:
The Engineer is highly appreciated to fill the form above carefully and detailedly in order to be easily readjusted by the end customers.

Engineer name:

Telephone No.:

Installing Date: