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|  | File Name | Non-standard Function Change Instruction | | |
| | File No | HP-WI-R&D-10.0102 | | |
| | File Version | V1.1 | Secret Level | Secret |

Configuration Number: HD50-TC

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Revision Record:

| Version No | Revised Content and Reason | Date |
|-------------------|--|-------------|
| 1.0 | Revised | 2014.11.10 |
| 1.1 | Change the original non-standard function of multi-satge terminal setting torque to lifting industry specific function | 2021.03.04 |

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1. Summary

Shenzhen Hpmont Technology Co., Ltd made corresponding custom design changes to the partial functions and design of the inverter according to the special application requirements of the industry.

For your convenience, please refer to this instruction file and "HD50 High Performance Vector Control Inverter User Manual" for operation.


2. Non-standard Function Instruction

According to the requirements of lifting industry, increase the brake control logic function and delete PID, PLC, textile swing frequency, fixed length control and other functions.


3. Function Parameter Setting

3.1 Function Parameter Summary


| Parameter | Function | Setting Range | Factory Default | Property Change |
|-----------|--|--|---------------------|-----------------|
| F00.01 | Motor control mode selection | 0: Motor 1 V/F control without PG 1: Reserve 2: IM without PG vector control 3: IM with PG vector control | 0 | × |
| F00.05 | Extended application functions | 0: General function • Inverter does not deal with brake logic, conical motor can choose this control mode. 1: Lifting mechanism • Dedicated lifting logic function. | 1 | × |
| F00.11 | Command setting channel selection | 0: Keypad run command 1: Terminal run command 2: SCI communication run command | 0 | × |
| F00.13 | Digital setting of initial operating frequency | 0.00 - Upper limit frequency | 20.00Hz | ○ |
| F03.01 | Acceleration time 1 | 0.1 - 6000.0s | Model determination | ○ |
| F03.02 | Deceleration time 2 | 0.1 - 6000.0s | | ○ |
| F06.00 | Multistage speed 1 | 0.00 - Upper limit frequency | 50.00Hz | ○ |
| F15.00 | DI1 Terminal function | 2: Up command | 2 | × |
| F15.01 | DI2 Terminal function | 3: Down command | 3 | |
| F15.02 | DI3 Terminal function | 13: Multistage frequency 1 | 13 | |
| F15.03 | DI4 Terminal function | 200: Upper limit switch input | 0 | |

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| Parameter | Function | Setting Range | Factory Default | Property Change |
|-----------|---------------------------------------|---|-----------------|-----------------|
| F15.04 | DI5 Terminal function | 201: Lower limit switch input 202: Upper limit switch input 203: Lower limit switch input 204: Brake feedback input (closed normally contact) | 0 | |
| F15.05 | DI6 Terminal function | | 0 | |
| F15.06 | DI7 Extended terminal function | | 0 | |
| F15.07 | DI8 Extended terminal function | | 0 | |
| F15.08 | DI9 Extended terminal function | | 0 | |
| F15.09 | DI10 Extended terminal function | | 0 | |
| F15.10 | DI11 Extended terminal function | | 0 | |
| F15.11 | DI12 Extended terminal function | | 0 | |
| F15.18 | DO1 Terminal function | 200: Brake output: 202: Upper limit reached 203: Lower limit reached 204: Upper limit reached 205: Lower limit reached 206: Brake fault output | 2 | × |
| F15.19 | DO2 Terminal function | | 0 | |
| F15.20 | RLY1 Terminal function | | 200 | |
| F15.21 | RLY2 Extended terminal function | | 0 | |
| F15.22 | RLY3 Extended terminal function | | 0 | |
| F15.23 | RLY4 Extended terminal function | | 0 | |
| F24.00 | Starting frequency | 0 - MIN (F24.04,F24.09) | 0.50Hz | × |
| F24.01 | Starting frequency delay time | 0.00 - 9.99s | 0.10s | × |
| F24.02 | Upward release brake frequency | F24.00 - F24.04 | 2.00Hz | × |
| F24.03 | Upward release brake current | 0.0 - 100.0% (Motor rated current) | 20.0% | × |
| F24.04 | Upward release brake delay frequency | F24.02 - 20.00Hz | 3.00Hz | × |
| F24.05 | Upward release brake delay time | 0.00 - 9.99s | 0.30s | × |
| F24.06 | Upward closing brake frequency | F24.07 - 20.00Hz | 3.00Hz | × |
| F24.07 | Upward slipping prevention frequency | 0.00 - F24.06 | 2.50Hz | × |
| F24.08 | Upward slipping prevention delay time | 0.00 - 9.99s | 0.30s | × |
| F24.09 | Downward release brake frequency | F24.00 - F24.11 | 2.00Hz | × |

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| Parameter | Function | Setting Range | Factory Default | Property Change |
|-----------|---|---|-----------------|-----------------|
| F24.10 | Downward release brake current | 0.0 - 100.0% (Motor rated current) | 20.0% | × |
| F24.11 | Downward release brake delay frequency | F24.09 - 20.00Hz | 3.00Hz | × |
| F24.12 | Downward release brake delay time | 0.00 - 9.99s | 0.30s | × |
| F24.13 | Downward closing brake frequency | F24.14 - 20.00Hz | 3.00Hz | × |
| F24.14 | Downward slipping prevention frequency | 0.00 - F24.13 | 2.50Hz | × |
| F24.15 | Downward slipping prevention delay time | 0.00 - 9.99s | 0.30s | × |
| F24.19 | Restart after closing brake process | 0: It is forbidden to restart after closing the brake 1: Allow to restart after closing the brake | 0 | × |
| F24.20 | Restart waiting time | 0.10 - 2.00s | 0.50s | × |
| | When F24.19 = 0: Prohibit restarting during closing of the brake, closing the brake and not completely stopping. It will no longer respond to the running command. It shall completely stop and sustain F24.20 restart waiting time before responding to the running command. | | | |
| F24.23 | Output phase loss detection selection | 0: Detect output phase loss when only one phase is missing 1: Detect output phase loss when all phase is missing | 0 | × |
| F24.24 | Output phase loss detection frequency | 0.00 - 10.00Hz | 5.00Hz | ○ |
| F24.25 | Brake feedback detection time | 0.00 - 9.99s | 0.50s | × |
| F24.26 | Reserved | | | * |
| F24.27 | Brake opening abnormal detection time | 0.00 - 9.99s | 1.00s | × |
| F24.29 | Upward release brake torque | 0.0 - 100.0 (Motor rated torque) | 0.00% | × |
| F24.30 | Downward release brake torque | 0.0 - 100.0 (Motor rated torque) | 0.00% | × |

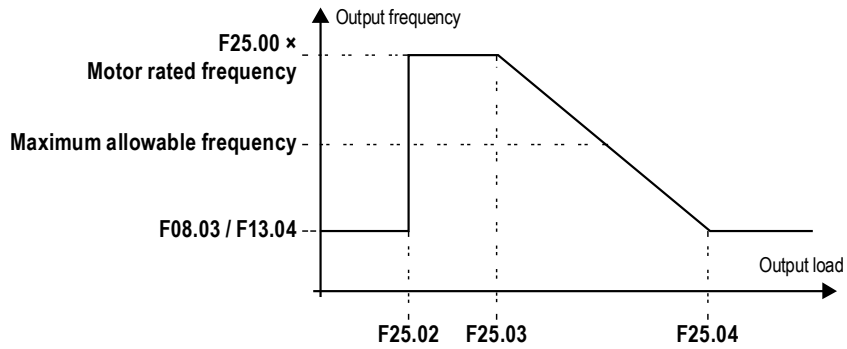
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| Parameter | Function | Setting Range | Factory Default | Property Change |
|-----------|--|--|-----------------|-----------------|
| F24.34 | Command reverse selection | 0: Direct reverse is not allowed during operation <ul style="list-style-type: none"> When there is a reverse direction command in the running process, the brake logic should be normally closed first, and then restart in the reverse direction after the F24.20 restart waiting time after stopping. 1: Allow direct reverse during operation, but brake action during forward and reverse switching 2: Allow direct reverse during operation, but the zero-crossing jump frequency is valid during forward and reverse switching | 1 | × |
| F24.35 | zero - crossing jump frequency | 0.00 - 10.00Hz | 2.00Hz | × |
| F24.36 | Panel UP/DN change frequency enable | 0: Enable 1: Disable | 1 | × |
| F25.00 | Weak magnetic magnification | 0.0 - 300.0 | 100.0% | × |
| F25.01 | Load judgment basis | 0: Output current 1: Output torque | 1 | × |
| F25.02 | Release rope coefficient | 0.0 - F25.03 | 10.0% | × |
| F25.03 | Light load coefficient | F25.02 - F25.04 | 40.0% | × |
| F25.04 | Allowable load | F25.03 - 100.0 | 80.0% | × |
| F25.05 | Detection frequency | MAX (F24.02, F24.09) - F08.03 | 40.00Hz | × |
| F25.06 | Detection time | 0.0 - 5.0 | 0.5s | × |
| F25.07 | Upward correction | 0.0 - 100.0 | 100.0% | × |
| F25.08 | Downward correction | 0.0 - 100.0 | 100.0% | × |
| | When inverter target frequency > motor rated frequency (F08.03) and weak magnetic magnification (F25.00) > 100%, the light load high speed function is enabled. <ul style="list-style-type: none"> After inverter receives start command, it runs at the detection frequency (F25.05) and maintains the frequency to output F25.06 time. During F25.06 time, inverter automatically calculate the maximum reachable output frequency during running according to the load judgment (F25.01). The calculation method within detection time is as follows: | | | |



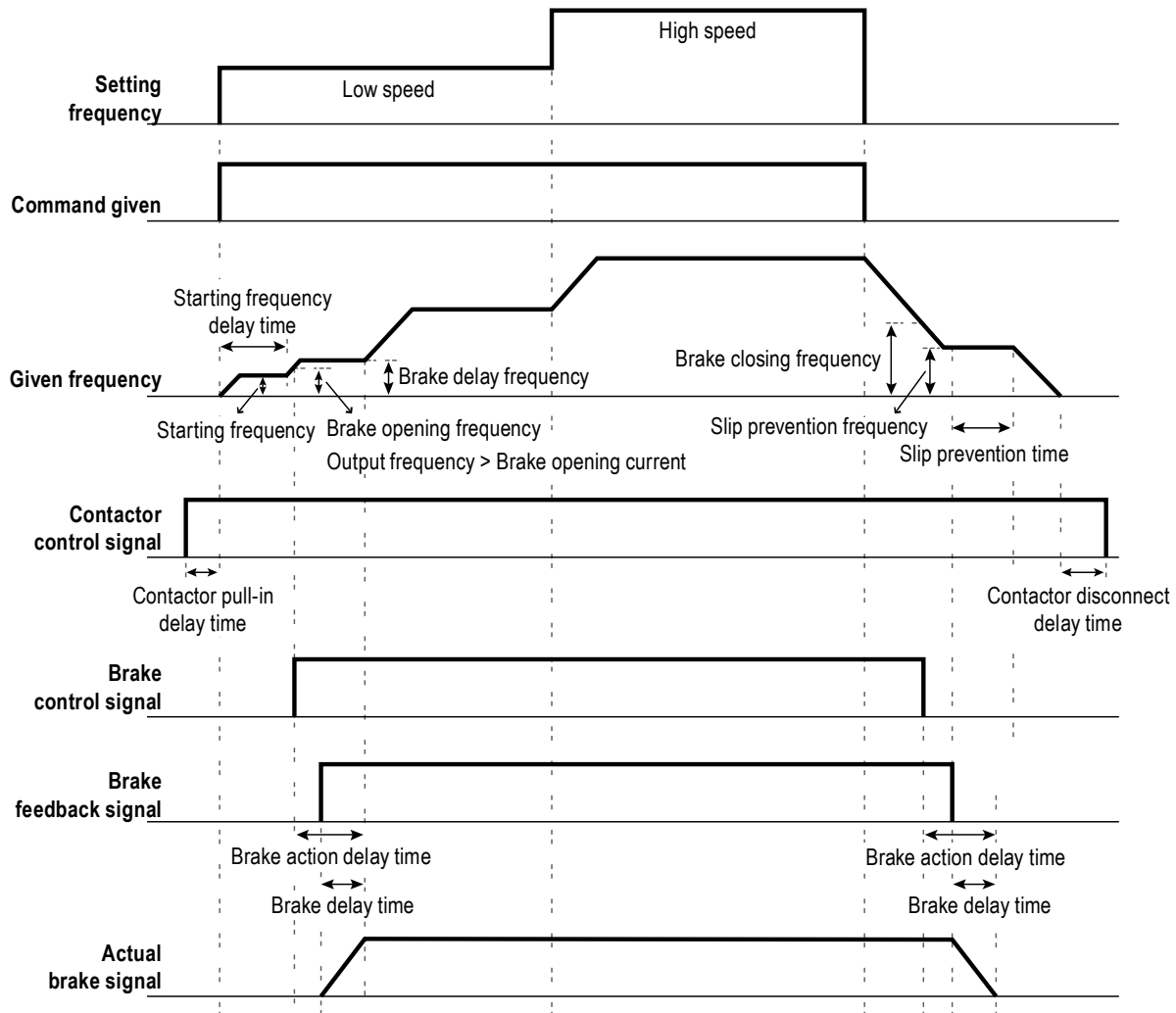
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| Parameter | Function | Setting Range | Factory Default | Property Change |
|-----------|---|---------------|-----------------|-----------------|
| | <ul style="list-style-type: none"> When inverter actual load < release rope coefficient (F25.02) or > the maximum load (F25.04), the maximum allowable output frequency of the inverter is: motor rated frequency (F08.03). When release rope coefficient (F25.02) < actual load < light load coefficient (F25.03), the maximum allowable output frequency of the inverter is: weak magnetic magnification (F25.00) × motor rated frequency. When light load coefficient (F25.03) < actual load < maximum load (F25.04), the maximum output frequency allowed by the inverter is the interpolation of the two. At this time, the inverter final output frequency is: the highest frequency × upward correction (F25.07) or the highest frequency × downward correction (F25.08). | | | |




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3.2 Brake Control Sequence



- In the upward, when the frequency reaches upward brake release frequency (F24.02), the output current reaches upward brake release power (F24.03), and the output torque reaches upward brake release torque (F24.29), the brake output terminal outputs the brake release signal; When the frequency is less than upward brake closing frequency (F24.06), the brake output terminal outputs brake closing signal.
- In the downward, when the frequency reaches the downward brake release frequency (F24.09), the output current reaches the downward brake release power (F24.10), and the output torque reaches the downward brake release torque (F24.30), the brake output terminal outputs the brake release signal; When the frequency is less than the down brake closing frequency (F24.13), the brake output terminal outputs the brake closing signal.
- In the upward, after detecting the upper limit signal, the inverter will stop freely, and at the same time the brake output terminal will output the brake closing signal. At this time, the inverter cannot go up, but it can go down.
- In the downward, after detecting the lower limit signal, the inverter will stop freely, and at the same time the brake output terminal will output the brake closing signal. At this time, the inverter cannot go down but can go up.
- When it detects that the upper/lower limit signal is valid, the inverter will stop freely, and the brake output terminal will output the brake closing signal. At this time, the inverter can neither go down nor go up. It can only run after removing this signal.

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3.3 Causes and Countermeasures of Brake Logic Related Faults

| Fault | | Fault Reason | Fault Countermeasure |
|-------|----------------------|--|---|
| E0040 | Brake feedback fault | <ul style="list-style-type: none"> Terminal function select No. 204 function: brake feedback input, but the brake feedback signal is not connected The brake feedback input is connected to a open normally contact The brake contactor is abnormal | <ul style="list-style-type: none"> Cancel off setting No. 204 terminal function or connect the brake feedback signal correctly The terminal is connected to the normally-closed contact of brake contactor Check the contactor or replace it |
| E0042 | Brake opening fault | <ul style="list-style-type: none"> Release brake current or torque setting is too large Unconnected motor | <ul style="list-style-type: none"> Reduce appropriately according to actual situation (F24.03, F24.10, F24.29, F24.30) Check motor wiring |

Note: As for hoisting loads, releasing brake conditions should at least meet frequency reach and current reach.

3.4 Other Parameters

Other function parameter settings are the same as standard HD50 series products, please refer to "HD50 High Performance Series Vector Control Inverter User Manual".