

HDv-E600 series Various frequency command sources



浙江禾川科技股份有限公司

Product Function Instruction

产 品 类 型	HDv-E 系列 变频器	产 品 型 号	HDv-E600/610 全功率段	保密等级	☒ 公开 ☐ 内部分享 ☐ 保密
				文档编号	***
修订		作者	董建宁	发布日期	2024/03/10
本文档使用硬件设备和软件工具 部门：工业驱动产品线					
● HDv-E600-2S1.5B-000 ● USB 转 RS485 数据线 ● 电位器					
适用版本					
无限制					
文档更新和发布状态：					
发布日期		版本	更新内容		发布状态
2024/03/10		标准机	HDv-E 系列变频器频率命令来源使用方式		未发布
免责声明： 我们对文档内容都进行了测试与检查，但可能仍有些差错，请您谅解。如果您对本文档有个人的意见或建议，欢迎发送邮件联系作者：400@hcfa.cn。					
【文档功能说明】 1：本篇文档详细讲解了 HDv-E600/610 变频器全功率段 P00.03 【频率命令来源】 参数可选的几种频率命令来源的使用方式以及注意事项 2：通过阅读/参考本篇文档即可实现通过变频器面板/数字设定 【P00.12】 /模拟量 【AI1、AI2】 /Internal speed 来对变频器频率进行修改					

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1. Hardware version

1.1 Hard ware

VFD: HDv-E600-4T3.7B-000 Version: standard version

IM : 3 phase、380v、0.06KW、IPCS (Induction motor-TECO)

Tools: potentiometer, USB to RS485 Converter

PLC: Q1-1200D

2. Digital setiing (P00.12)

2.1 Set P00.03=0/1 (0: not retain after power failure, 1: retain after power failure)

地址	参数名	*	当前值
P00.03	主频率源X选择	/	数字设定 (掉电不记忆) 0

2.2 Set the frequency value via P00.12 (preset frequency)

地址	参数名	*	当前值
P00.12	预置频率	/	50

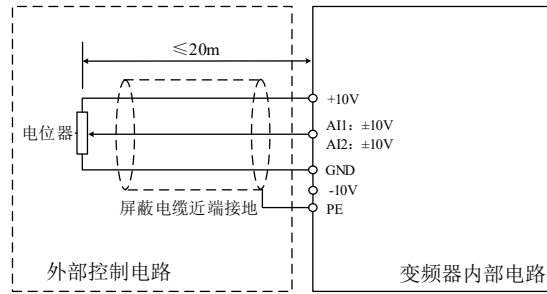
3. Analog input AI1 voltage setting

3.1 Set P00.03=2 (Given by AI1)

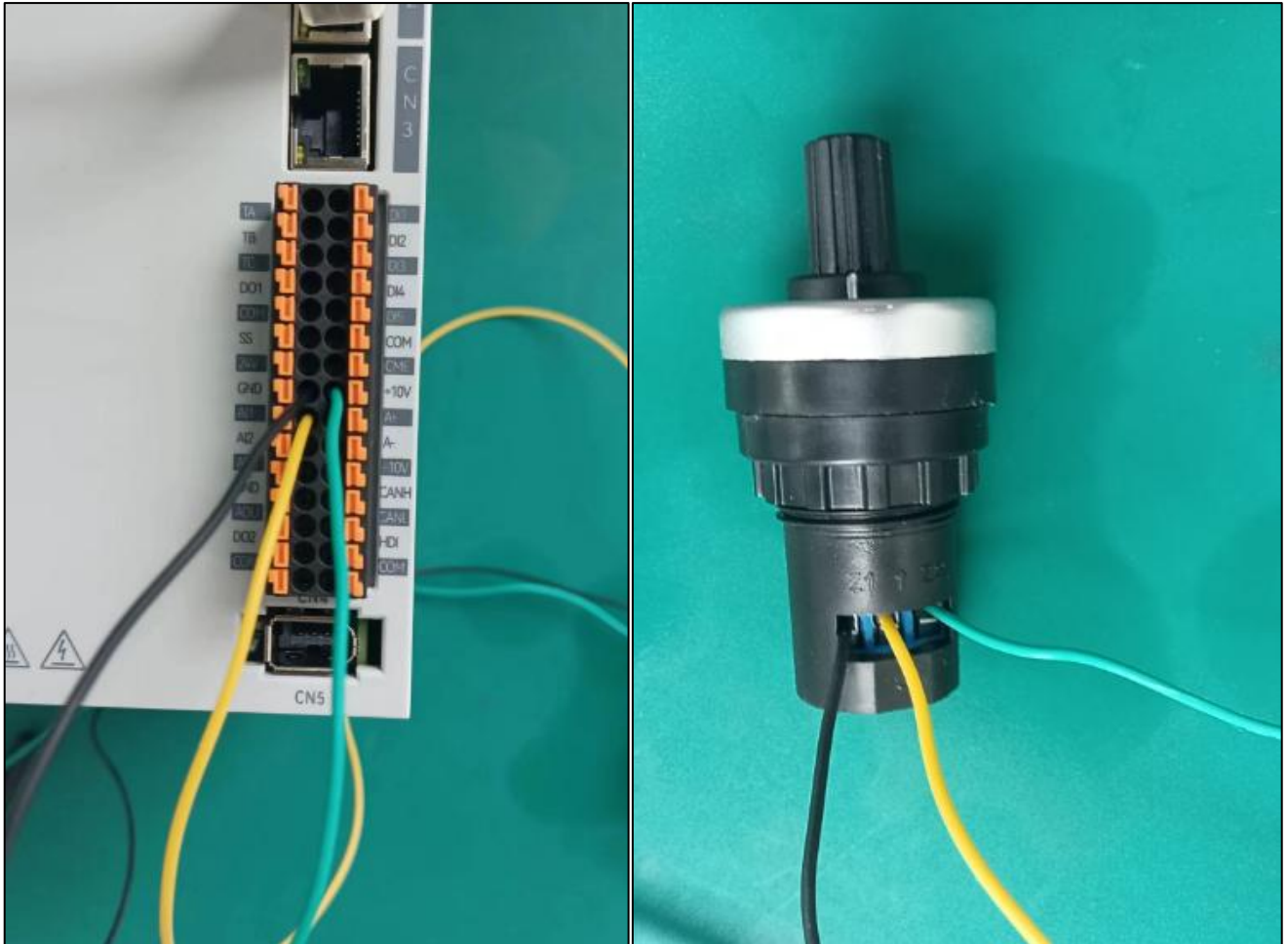
地址	参数名	*	当前值
P00.03	主频率源X选择	-	AI1 2

3.2 Wire according to the diagram below: AI1 supports $\pm 10V$ voltage input. This experiment demonstrates the configuration for an internal 0-10V voltage input.

Green: +10V Black: GND Yellow: AI1 Input Signal Wire



模拟量输入端子输入电压信号屏蔽双绞电缆接线示意图



3.3 AI1 Voltage Correction

The AI1 voltage software uses a two-point correction method. After connecting the wires as shown in the figure above, use a multimeter set to the DC range to measure the voltage between the green and yellow wires of the potentiometer.

3.3.1 Rotate the potentiometer until the output voltage is 2V, then check parameter P28.27 (AI1 voltage).

地址	参数名	*	当前值
P28.27	AI1电压	-	1.96

3.3.2 Then set P05.61 (AI1 Pre-Correction Voltage 1) to 2 and P05.62 (AI1 Post-Correction Voltage 1) to the parameter value of P28.27 (AI1 Voltage), which is 1.96.

地址	参数名	*	当前值
P05.61	AI1校正前电压1设定	/	2
P05.62	AI1校正后电压1设定	-	1.96

3.3.3 Rotate the potentiometer until the output voltage reaches 8V, then check the parameter P28.27 (AI1 Voltage)

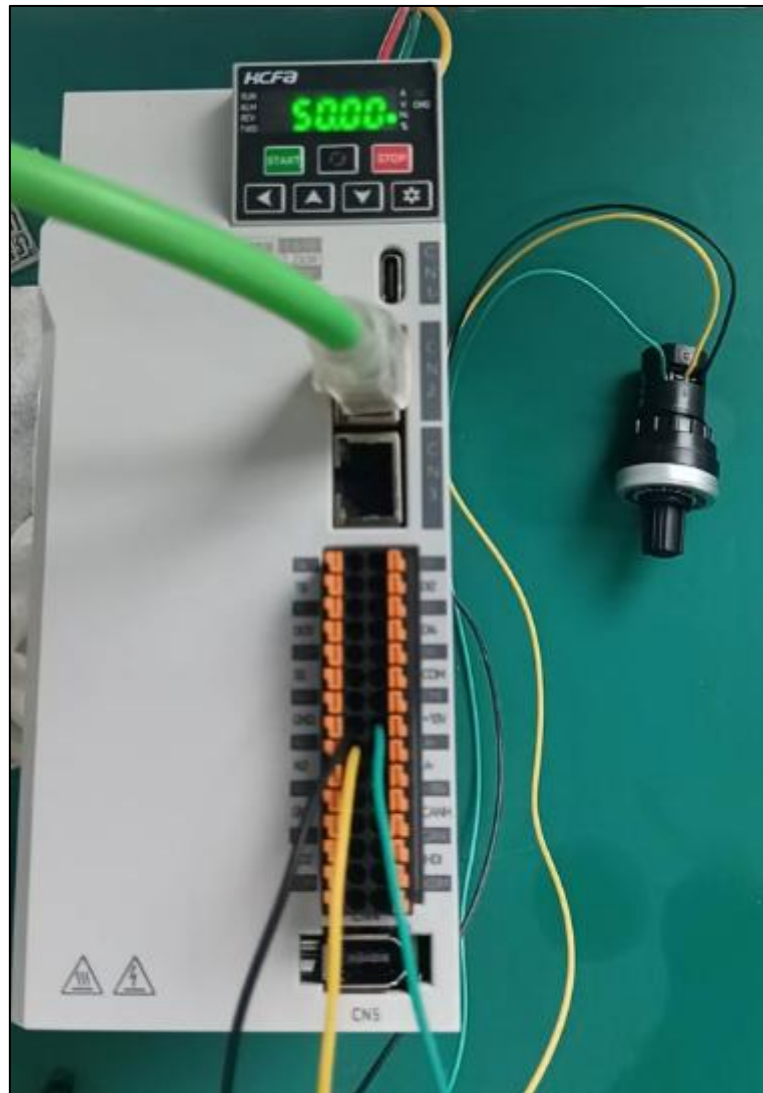
地址	参数名	*	当前值
P28.27	AI1电压	\	8.84

3.3.4 Then set P05.63 (AI1 Pre-Correction Voltage 2) to 8 and P05.64 (AI1 Post-Correction Voltage 2) to the parameter value of P28.27 (AI1 Voltage), which is 8.84

3.3.5 Set the upper and lower limits of the frequency corresponding to the AI1 input voltage and the AI1 voltage input filter time

地址	参数名	*	当前值
P05.15	曲线1最小输入	\	0
P05.16	曲线1最小输入对应设定	\	0
P05.17	曲线1最大输入	\	10
P05.18	曲线1最大输入对应设定	\	100
P05.19	AI1滤波时间	\	0.1

3.3.6 After setting the parameters according to the above steps, the AI1 input 0-10V voltage corresponds to the 0-50HZ frequency.



Note: AI2 voltage setting

4. MODBUS communication

4.1 Set P00.03=9(given by MODBUS communication)

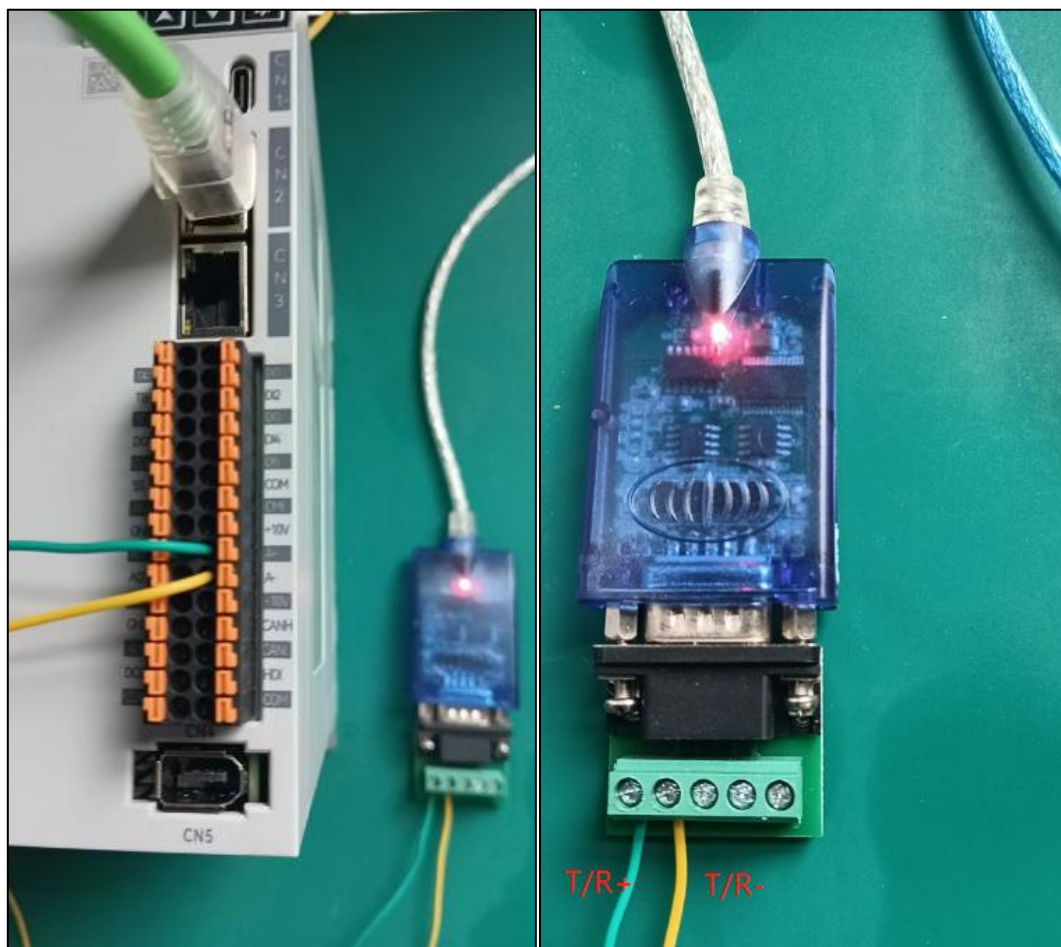
地址	参数名	*	当前值
P00.03	主频率源X选择	/	通讯给定 9

4.2 设 Set the drive communication parameters: station number, baud rate, data format, etc.

(The baud rate and data format must be consistent with the host computer side. The local address must not be duplicated, otherwise communication failure may occur.)

地址	参数名	*	当前值
P15.02	波特率	\	115200
P15.03	数据格式	\	无校验(8-N-2)
P15.04	本机地址	\	1
P15.05	应答延迟	\	2

4.3 Connect the host computer to the drive using a USB-to-RS485 serial cable according to the diagram below. Connect T/R+ to A+ and T/R- to A-.



4.4 Open the serial port debugging software, set the communication parameters, and connect to the slave station (must be consistent with the drive side, otherwise connection failure may occur).

串口调试软件:



串口调试软件.zip



4.5 Notes on setting the communication frequency

- 1、The communication set value 0-5000 corresponds to a frequency of 0-50 Hz.
- 2、Communication frequency address: 5000H
- 3、Function code: 03; read multiple registers, 06; write to registers

4.6 After setting the parameters and wiring according to the above steps, configure the message transmission to achieve frequency setting via MODBUS communication

Note: When setting the frequency via communication, to prevent interference and other factors, please use shielded twisted-pair cables for wiring, with the shield grounded.

5. High-speed pulse setting

5.1 Set P00.03=5 (high-speed pulse setting)

地址	参数名	*	当前值
P00.03	主频率源X选择	-	PULSE脉冲设定 5

5.2 Set P05.00 (DI1 terminal function)=30; high-speed pulse frequency input

地址	参数名	*	当前值
P05.00	DI1端子功能选择	I	PULSE (脉冲) 频率输入 30

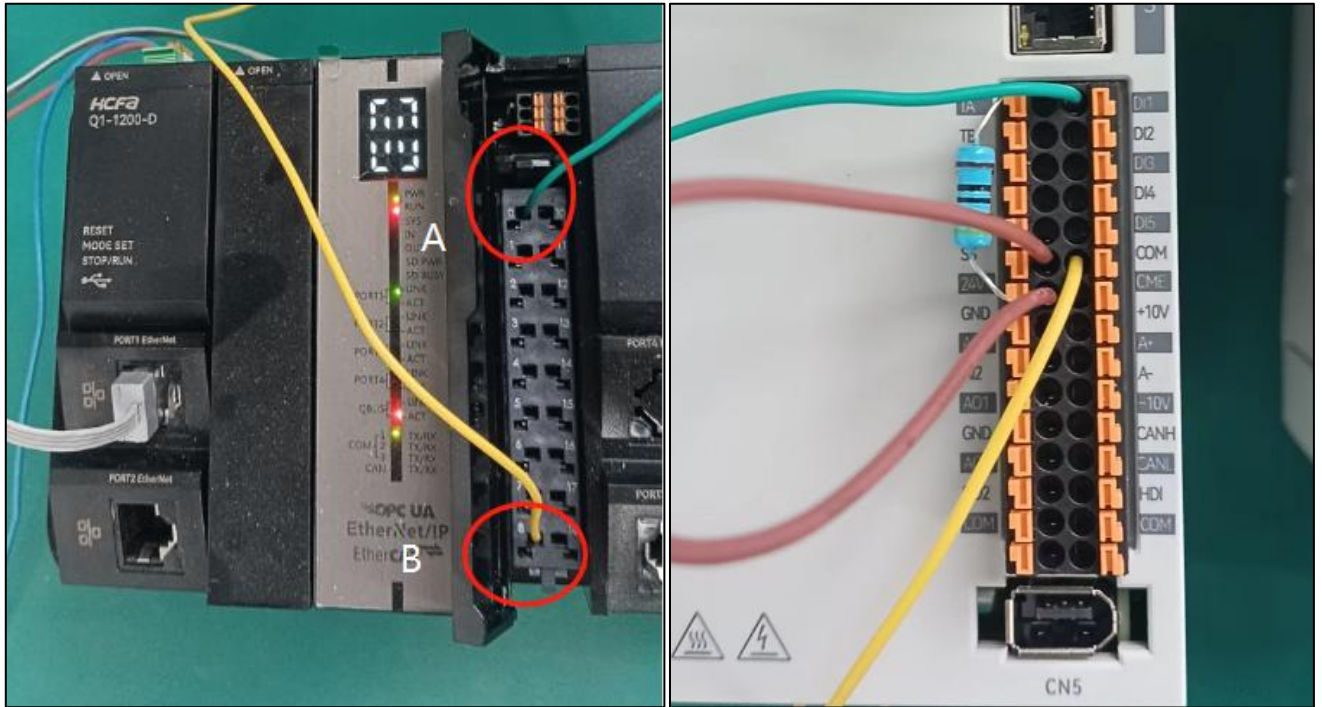
5.3 Set parameters such as upper and lower limit frequency values for pulse input and pulse input filter time

地址	参数名	*	当前值
P05.30	PULSE最小输入	\	0
P05.31	PULSE最小输入对应设定	\	0
P05.32	PULSE最大输入	/	50
P05.33	PULSE最大输入设定	/	100

P05.30/P05.31: High-speed pulse frequency 0K corresponds to frequency 0Hz

P05.32/P05.33: High-speed pulse frequency 100K corresponds to frequency 50Hz

5.4 Wiring according to the diagram below.



The SS port of the driver is short-circuited to 24V, and the DI1 terminal is a high-speed pulse input port.

Note: When the DI1 terminal is used as a high-speed pulse input, a 500Ω pull-up resistor must be connected between the DI1 port and the 24V port.

A: Q1-1200D high-speed pulse output port - connected to the DI1 port of the driver

B: Q1-1200D high-speed pulse output common port - connected to the COM port of the driver

5.5 After setting the parameters and connecting the wires according to the above steps,

PLC sends a high-speed pulse of 50 kHz to the driver.

P28.24 and P28.25 read the current pulse input frequency,

and P28.05 displays the frequency value corresponding to the current pulse.

```

//Axis1_高速脉冲输出
● AXIS1_HMC_JOG_HSO(
    hsoAxis:=hso_axis1,
    bJogBackward TRUE:=axis1_b_fwd_jog TRUE,
    bJogForward FALSE:=axis1_b_rev_jog FALSE,
    dVelocity 50000:=DINT_TO_UDINT(axis1_d_velocity 50000),
    //dVelocity:=INT_TO_UDINT(System_DATA.I_AD04_Value[1]*1000),
    dAcceleration 100000:=100000,
    dDeceleration 100000:=100000,
    bInVelocity TRUE=>axis1_b_velocity_done TRUE,
    bBusy TRUE=>axis1_b_busy TRUE,
    bError FALSE=>axis1_b_err FALSE,
    eErrorID NO_ERROR=>axis1_w_errid NO_ERROR);

```

P28.44	PULSE输入脉冲频率	/	50000
P28.45	PULSE输入脉冲频率	\	50

地址	参数名	*	当前值
P28.05	设定频率	\	50

6. Internal speed setting

6.1 Set P00.03 = 6 (Internal speed)

地址	参数名	*	当前值
P00.03	主频率源X选择	I	多段指令 6

6.2 Set P11.00 (Internal speed command 0) frequency setpoint mode. For this experiment, select 0 (Given by digital P11.01).

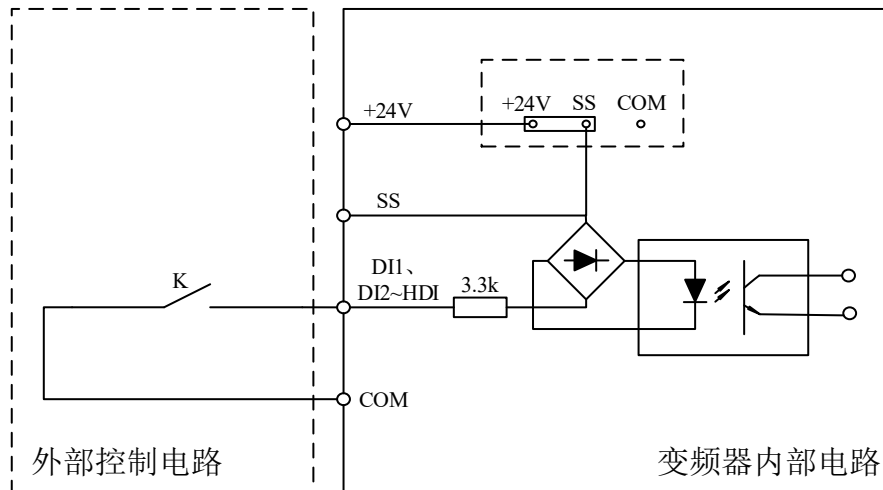
地址	参数名	*	当前值
P11.00	多段指令0给定方式	\	数字给定 0

6.3 Set P05.00=12, P05.01=13, P05.02=14, (DI1~DI3) functions as Internal Speed Command 1~Internal Speed Command 3

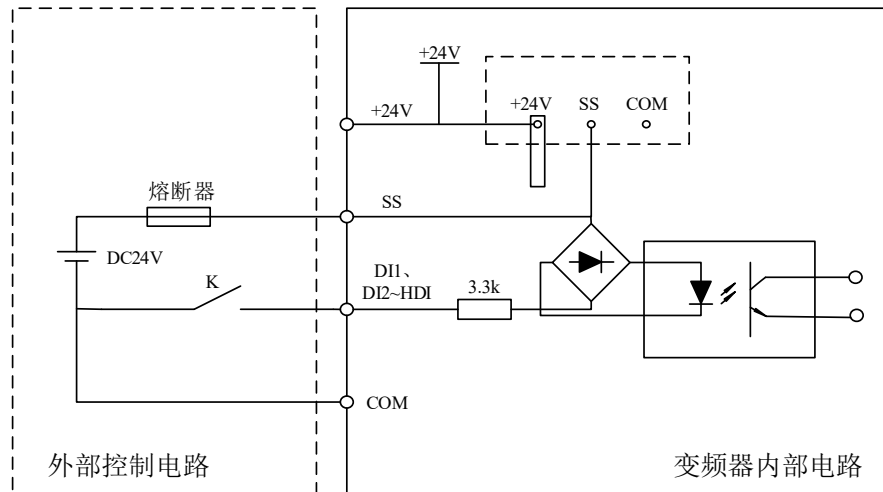
Supports Internal Speed Command 1 to Internal Speed Command 4, totally 16 speed segments. This experiment only uses Internal Speed Command 1 to Multi-Speed Command 3, totally 9 speed segments.

地址	参数名	*	当前值
P05.00	DI1端子功能选择	-	多段指令端子1 12
P05.01	DI2端子功能选择	-	多段指令端子2 13
P05.02	DI3端子功能选择	/	多段指令端子3 14

6.4 Wiring as the follow diagram shows

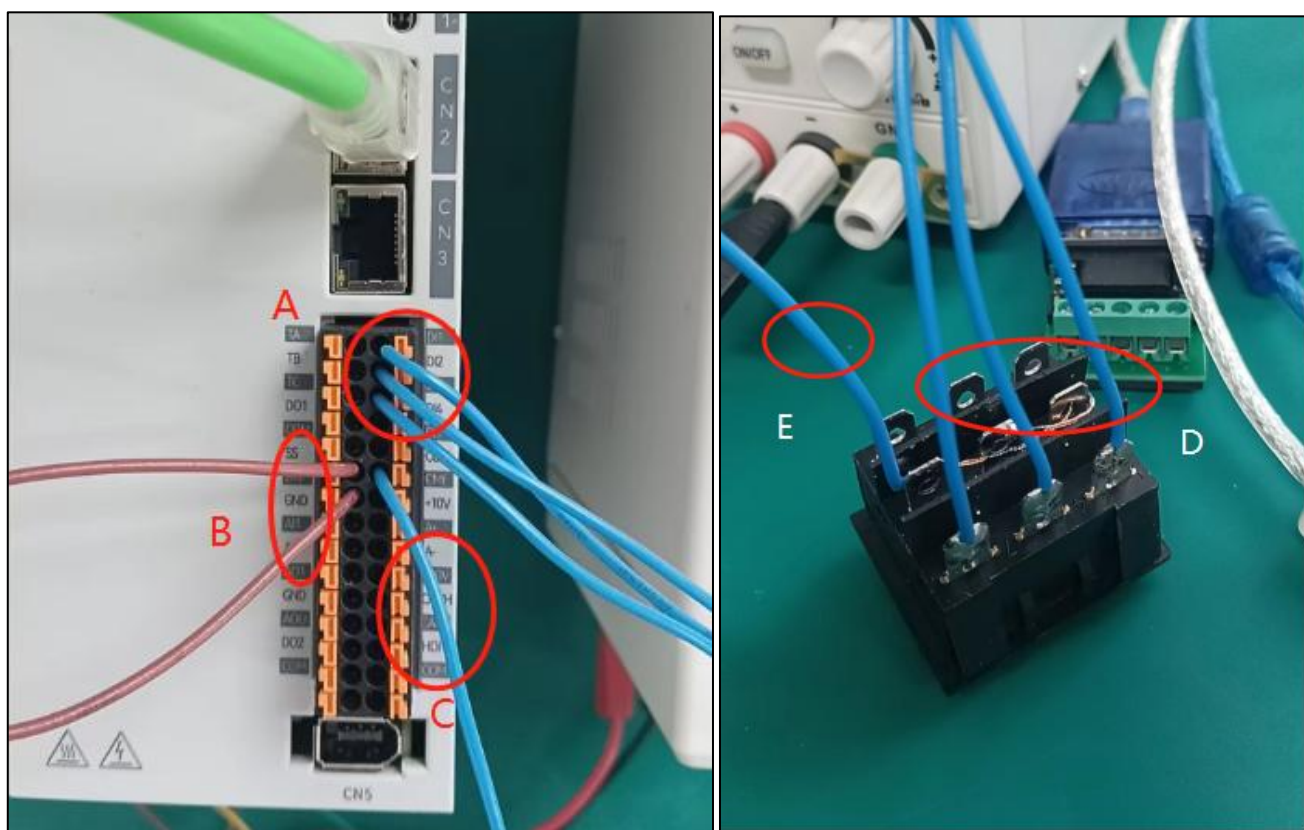


数字量输入端子使用变频器内部电源接线示意图



数字量输入端子使用变频器外部电源接线示意图

This tests uses an NPN wiring method for the internal power supply of the driver.



A: Connect terminals DI1 to DI3 to the D part of the button.

B: Short-circuit the SS terminal of the driver to the 24V terminal.

C: Short-circuit the COM terminal of the digital input to the E part of the button.

6.5 设定 Internal speed 0-Internal speed 8 (P11.01~P11.09) 的频率值

地址	参数名	*	当前值
P11.01	多段指令0	\	5
P11.02	多段指令1	\	10
P11.03	多段指令2	\	15
P11.04	多段指令3	\	20
P11.05	多段指令4	\	25
P11.06	多段指令5	\	30
P11.07	多段指令6	\	35
P11.08	多段指令7	\	40
P11.09	多段指令8	\	45

6.6 After setting the parameters and connecting the wires according to the above steps, close

the DI terminals in the order of 000, 001, 010, 011, 100, 101, 110, and 111 to switch between the nine frequency values.

Note: The internal speed frequency P11 group parameter value is a percentage, with 0-100% corresponding to 0-P00.08 (maximum frequency).

7. PID function

Please refer to the PID Function Technical Manual.

8. Simple PLC

Please refer to the Simple PLC Function Technical Manual.