

The HV610 is equipped with a variety of encoder expansion cards (ie PG cards). It is used as an option and is a mandatory part of the inverter for closed-loop control. The corresponding PG card is selected according to the output form of the encoder.

The specific models are as follows::

Optional accessories	description	Connection type
PG-UVW	UVW differential input PG card without frequency division output.	DB15 female
PG-DIF	UVW differential input PG card with 1:1 frequency division output.	Terminal
PG-OC	OC type PG card	Terminal
PG-RB	Resolver PG card	DB9 female
VFPG-TX	A B Z Pulse input interface、MODBUS-RTU	Terminal

Terminal signal definition
PG-UVW terminal description

No	Identification	Description
1	A+	Encoder output A +
2	A-	Encoder output A -
3	B+	Encoder output B +
4	B-	Encoder output B -
5	Z+	Encoder output Z +
6	Z-	Encoder output Z -
7	U+	Encoder output U +
8	U-	Encoder output U -
9	V+	Encoder output V +
10	V-	Encoder output V -
11	W+	Encoder output W +
12	W-	Encoder output W -
13	+5V	5V/100mA power supply
14	COM	GND
15	--	--

1. Test conditions:

- 1) Encoder: for example OIH48 Tamagawa encoder, model: TS5217-5000P8
- 2) Normal UVW-PG card: E300-VFPG-UVW- V0.0
- 3) One normal HV610 or HV610S inverter and one motor.

2. Test preparation:

- 1) Connect the UVW-PG card to the inverter main board. The inverter is correctly connected to the motor.
- 2) Connect the UVW-PG card to the rotary photoelectric encoder. As shown in Figure 1 below:
- 3) Correctly set the motor parameters and control mode (F0-01:1 closed loop vector control)

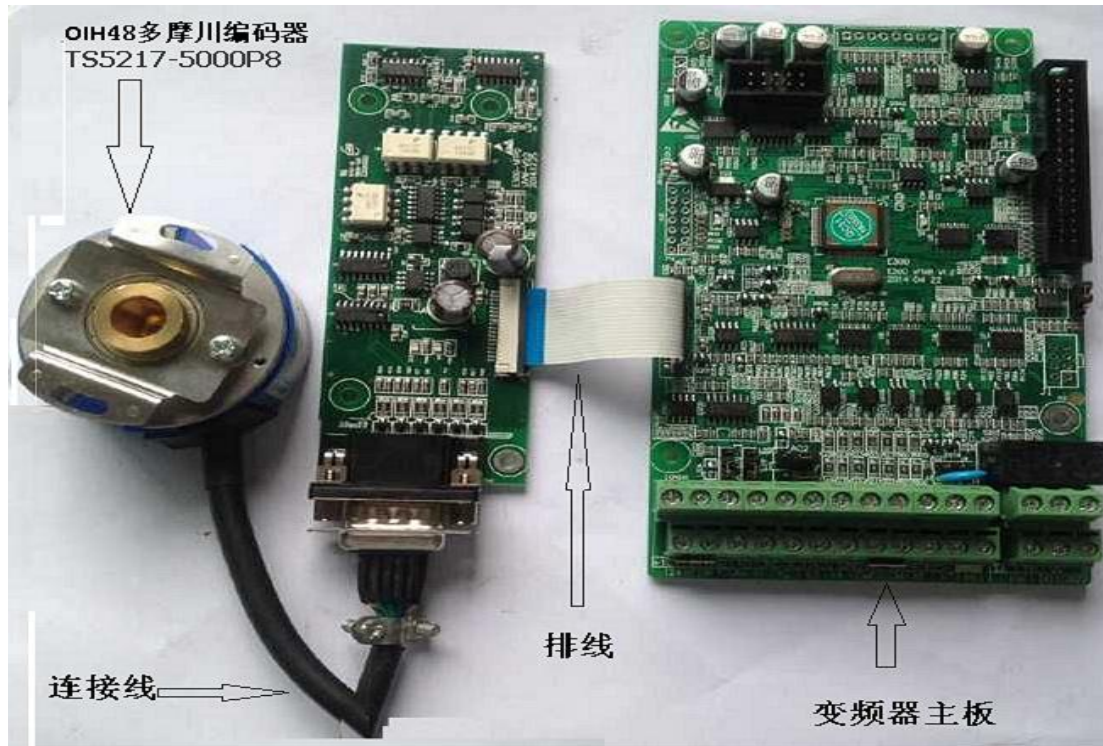


Figure 1: PG-UVW test

3、Power on and set parameters:

Function code	Value	Description
F0-01	1	FVC, closed loop vector control
F1-01 to F1-05	----	Motor parameters (set according to actual values)
F1-27	-----	Encoder line number (set according to the actual value)
F1-28	1	UVW Incremental encoder
F1-29	--	Self-learning mode selection

PG-DIF terminal description

No	Identification	Description
1	A+	Encoder output A +
2	A-	Encoder output A -
3	B+	Encoder output B +
4	B-	Encoder output B -
5	Z+	Encoder output Z +
6	Z-	Encoder output Z -
7	+5V	5V/100mA power supply
8	COM	GND
9	PE	Shield

DIF : 1:1 frequency division output.

No	Identification	Description
1	A+	1:1 frequency division output A+
2	A-	1:1 frequency division output A-
3	B+	1:1 frequency division output B+
4	B-	1:1 frequency division output B-
5	Z+	1:1 frequency division output Z+
6	Z-	1:1 frequency division output Z-
7	COM	GND
8	Null	Reserved

1. Test conditions:

- 1) Encoder: for example Tamagawa encoder, model: TS5308N512-1024
- 2) DIF differential input PG card : E300 VFPG RE/InDif V0.1
- 3) HV610 or HV610S inverter and one motor.

2. Test preparation:

- 1) Connect the PG-DIF card to the inverter main board. The inverter is correctly connected to the motor.
- 2) Connect the PG-DIF card to the encoder. As shown in Figure 2 below:
- 3) Correctly set the motor parameters and control mode (F0-01:1 closed loop vector control)

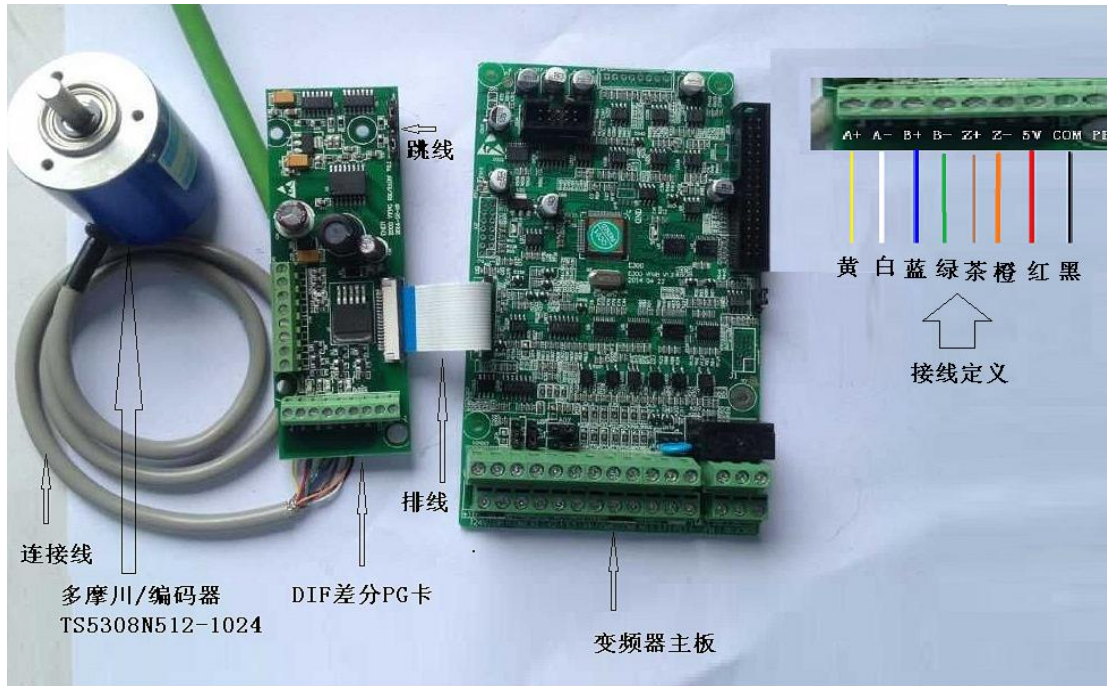


Figure 2: PG-DIF test

3、Power on and set parameters::

Function code	Value	Description
F0-01	1	FVC, closed loop vector control
F1-01to F1-05	----	Motor parameters (set according to actual values)
F1-27	1024	Encoder line number (set according to the actual value)
F1-28	0	UVW Incremental encoder
F1-29	--	Self-learning mode selection

PG-OC terminal description

No	Identification	Description
1	A	Encoder output A
2	B	Encoder output B
3	Z	Encoder output Z
4	+15V	5V/100mA power supply
5	COM	GND
6	COM	GND
7	A1	1:1 output A
8	B1	1:1 output B
9	PE	Shield

1. Test conditions:

- 1) Omron Rotary Encoder, Model: E6C2-CWZ6C/1000P/R
- 2) PG-OC card : E300- VFPG RE_InOc V0.1
- 3) HV610 inverter and one motor.

2. Test preparation:

- 1) Connect the PG-OC card to the inverter main board. The inverter is correctly connected to the motor.
- 2) Connect the PG-OC card to the encoder. As shown in Figure 3 below:
- 3) Correctly set the motor parameters and control mode (F0-01:1 closed loop vector control)

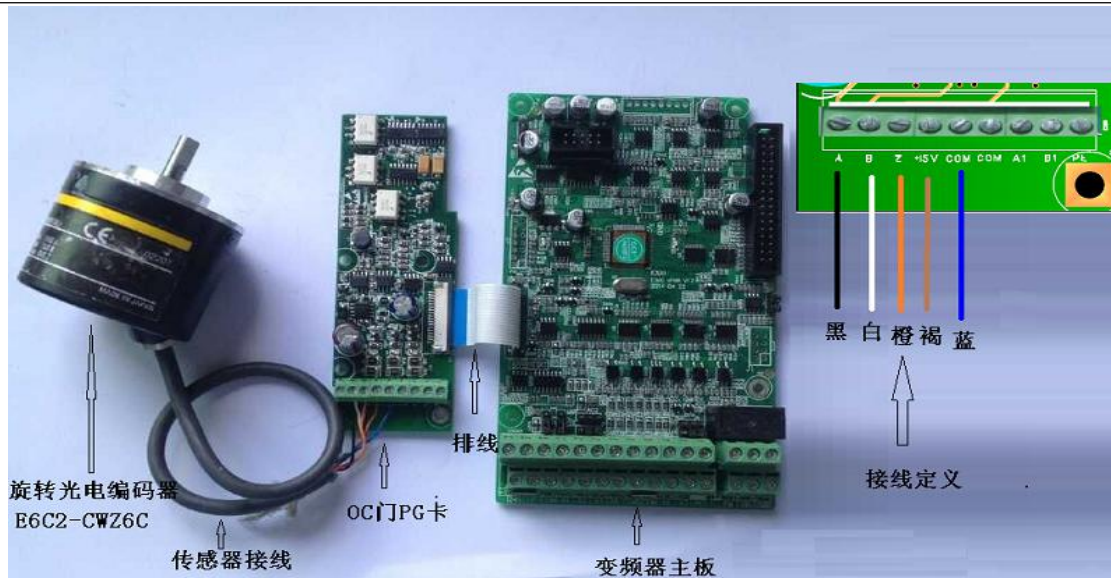


Figure 3: PG-OC test

3、Power on and set parameters::

Function code	Value	Description
F0-01	1	FVC, closed loop vector control
F1-01to F1-05	----	Motor parameters (set according to actual values)
F1-27	1024	Encoder line number (set according to the actual value)
F1-28	0	UVW Incremental encoder
F1-29	---	Self-learning mode selection

PG-RB terminal description

No	Identification	Description
1	EXC1	Resolver excitation -
2	EXC	Resolver excitation +
3	SIN	Resolver feedback SIN +
4	SINLO	Resolver feedback SIN -
5	COS	Resolver feedback COS +
6--8	---	----
9	COSLO	Resolver feedback COS -

1、 Test conditions:

- 1) One resolver
- 2) PG-RB: E300-VFPG4-V0.1
- 3) HV610 or HV610S inverter and one motor.

2、 Test preparation:

- 1) Connect the PG-RB card to the inverter main board. The inverter is correctly connected to the motor.
- 2) Connect the PG-RB card to the encoder. As shown in Figure 4 below:
- 3) Correctly set the motor parameters and control mode (F0-01:1 closed loop vector control)

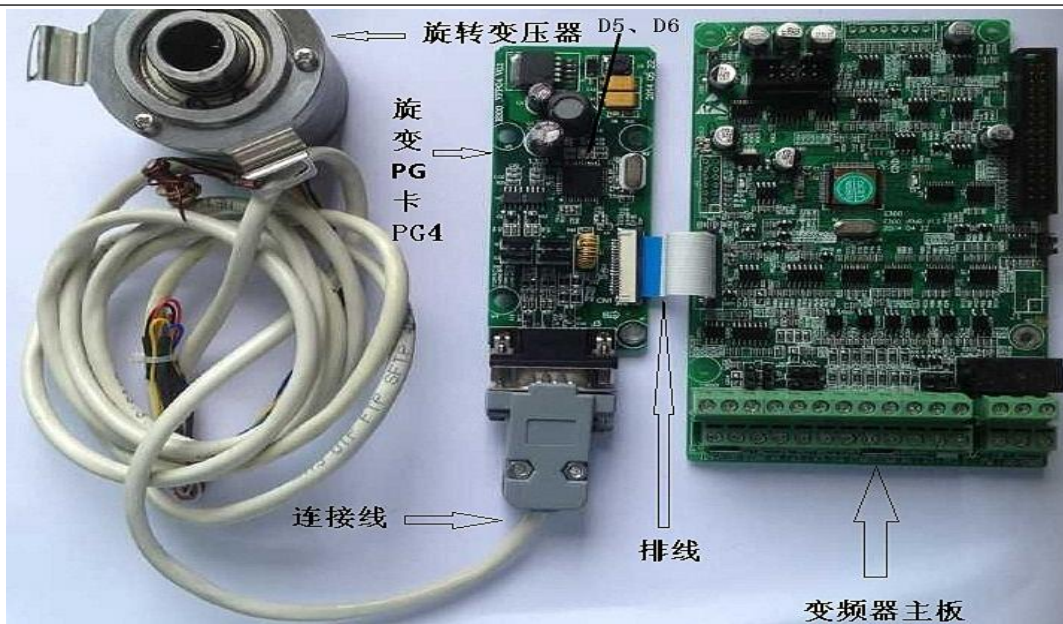


Figure 4: PG-RB test

4、 Power on and set parameters:

Function code	Value	Description
F0-01	1	FVC, closed loop vector control
F1-01 to F1-05	----	Motor parameters (set according to actual values)
F1-28	2	Resolver
F1-34	1	Pole pairs
F1-29	--	Self-learning mode selection

VFPG-TX terminal description (Special for spindle)

No	Identification	Description
1	485+	MODBUS-RTU protocol communication input and output signals, isolated input
2	485-	
3	+5V	5V/100mA power supply
4	COM	GND
5	A+	Encoder output A +
6	A-	Encoder output A -
7	B+	Encoder output B +
8	B-	Encoder output B -
9	Z+	Encoder output Z +
10	Z-	Encoder output Z -
--	J1. J2	Pulse input type selection jumper: Differential encoder two orthogonal pulse (QUA), Pulse + direction input
--	J3. J4	RS485 terminal resistance selection

Please refer to HV610Z for details