EPC-PG37B

Isolated Single-Loop PG Feedback Card
Differential Encoder Feedback / 24 V Digital Pulse Reference
Expansion Card User Manual

Use the EPC-PG37B PG feedback card when a differential-output encoder with a 5 V supply is used for speed feedback and the pulse reference is a 24 V digital input. The card is compatible with the GK900, GK960, and GK980 series drive platforms.

Product	Encoder Signal Input	Pulse Reference Input	Frequency-Divided Output
EPC-PG37A	12 V digital input	24 V digital input	Open collector
EPC-PG37B	5 V differential	24 V digital input	Open collector
EPC-PG37C	12V Differential	24V Digital input	Open-Collector

EPC-PG37B provides three frequency-divided outputs: O/A, O/B, and O/Z. All three are open-collector outputs.

1. Product Appearance

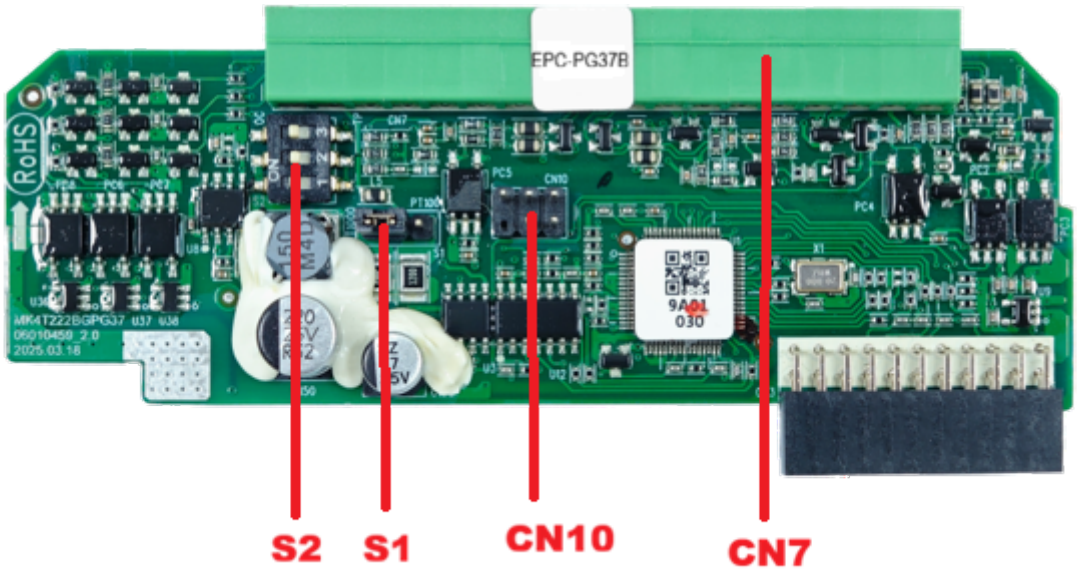


Figure 1 EPC-PG37B Card Appearance

2. Wiring Terminals and Jumper Settings

2.1 Wiring Terminals

Connector	Description
CN7	Encoder feedback, pulse reference input, open-collector frequency-divided outputs, and motor temperature input
CN10	Programming cable connector

2.2 Jumper Settings

Jumper	Description	Factory Setting
S1	Temperature sensor selection (TEMP channel): 1. For a PT100 or KTY84 motor temperature sensor, set S1 to PT100. 2. For a PT1000 or NTC motor temperature sensor, set S1 to PT1000.	PT1000
S1 Notes	Set S1 to the applicable position and set function code d0-25 as follows: PT100: d0-25 = 01 PT1000: d0-25 = 11 KTY84: d0-25 = 21 NTC: d0-25 = 31 For a PT100 or KTY84 sensor, S1 may alternatively remain at the factory-default PT1000 position: PT100: d0-25 = 03 KTY84: d0-25 = 23 For PT100 and KTY84 sensors, measurement error is greater with S1 set to PT1000 than with S1 set to PT100, although it still meets the temperature measurement accuracy requirement. For higher accuracy, set S1 to PT100.	
S2	Pulse reference input supply selection. Use OC for the factory-default 24 V digital input; select TP when an external supply is used.	OC

3. Terminal Block and Signal Definitions

3.1 18-Position Terminal Block

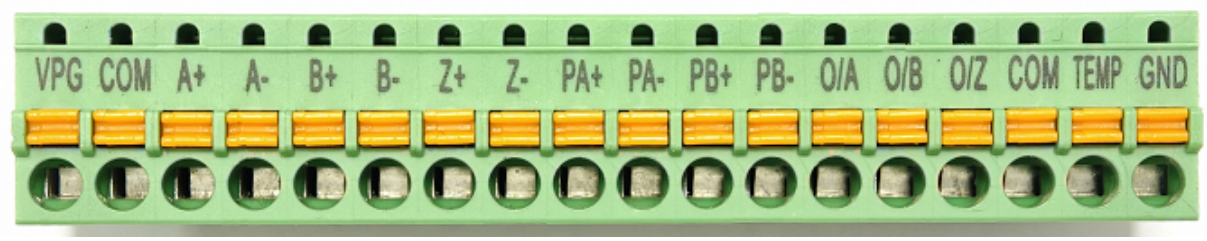


Figure 2 18-Position Terminal Block

3.2 Shield PE Connection



Figure 3 PE Connection Point for the Cable Shield

Ground the cable shield at the drive end only. Leave the shield open at the encoder, PLC, or CNC end.

3.3 Terminal Signal Definitions

Signal Group	Terminal / Definition
Encoder feedback	A+
Encoder feedback	A-
Encoder feedback	B+
Encoder feedback	B-
Encoder feedback	Z+
Encoder feedback	Z-
Pulse reference input	PA+ (leave unconnected; factory-set to 24 V through S2)
Pulse reference input	PA-
Pulse reference input	PB+ (leave unconnected; factory-set to 24 V through S2)
Pulse reference input	PB-
Frequency-divided output	O/A
Frequency-divided output	O/B
Frequency-divided output	O/Z
Encoder supply	VPG (5 V encoder supply)
VPG reference ground	COM
Temperature input	TEMP (temperature acquisition channel)
TEMP reference ground	GND

4. Encoder Signal Input Circuit

4.1 Encoder Wiring

Figure 4 shows twisted-pair, single-shield wiring for a differential-output encoder. Leave the shield open at the motor end and connect it to PE at the drive end, as shown in Figure 3. Connect the positive encoder supply lead to VPG (5 V) and the negative lead to COM. Connect encoder signals A+, A-, B+, B-, Z+, and Z- to the corresponding drive terminals through CN7.

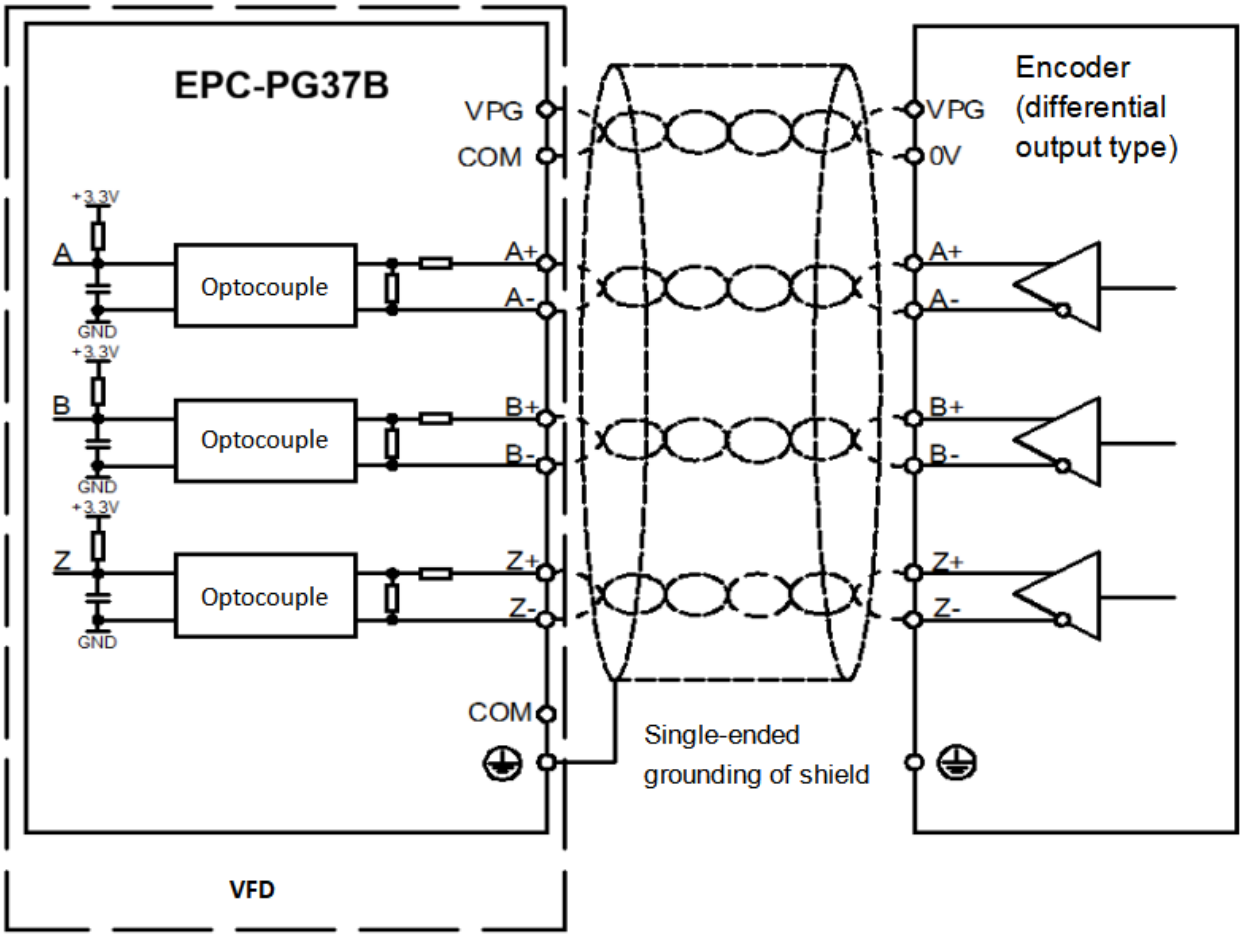


Figure 4 Single-Shield Wiring for a 5 V Differential-Output Encoder

4.2 Encoder Signal Input Specifications

Terminal	Function	Response Frequency	Input Type
A+/A-	Encoder signal input	0-500 kHz	5 V differential
B+/B-	Encoder signal input	0-500 kHz	5 V differential
Z+/Z-	Encoder signal input	0-500 kHz	5 V differential

5. Pulse Reference Input Circuit

5.1 Open-Collector and Push-Pull Pulse Reference Wiring

The following figures show single-shield wiring for 24 V open-collector and 24 V push-pull pulse reference signals. Leave the shield open at the PLC or CNC end and connect it to PE at the drive end, as shown in Figure 3. Connect the PLC or CNC signal reference ground to COM on the PG card. Connect PA- and PB- to the corresponding drive terminals through CN7. PA+ and PB+ are factory-set to 24 V through S2.

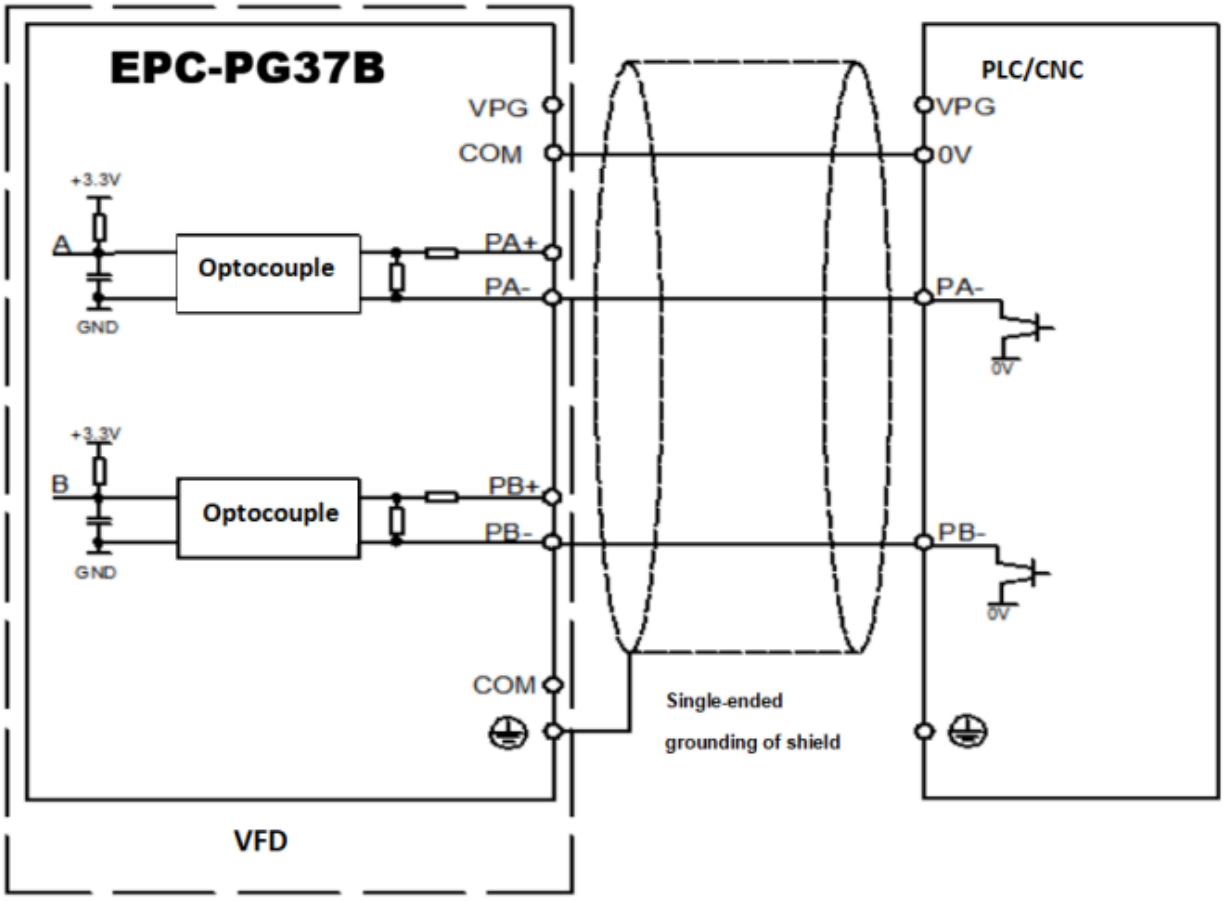


Figure 5 Single-Shield Wiring for a 24 V Open-Collector Pulse Reference

PA+ and PB+ are factory-set to 24 V through S2.

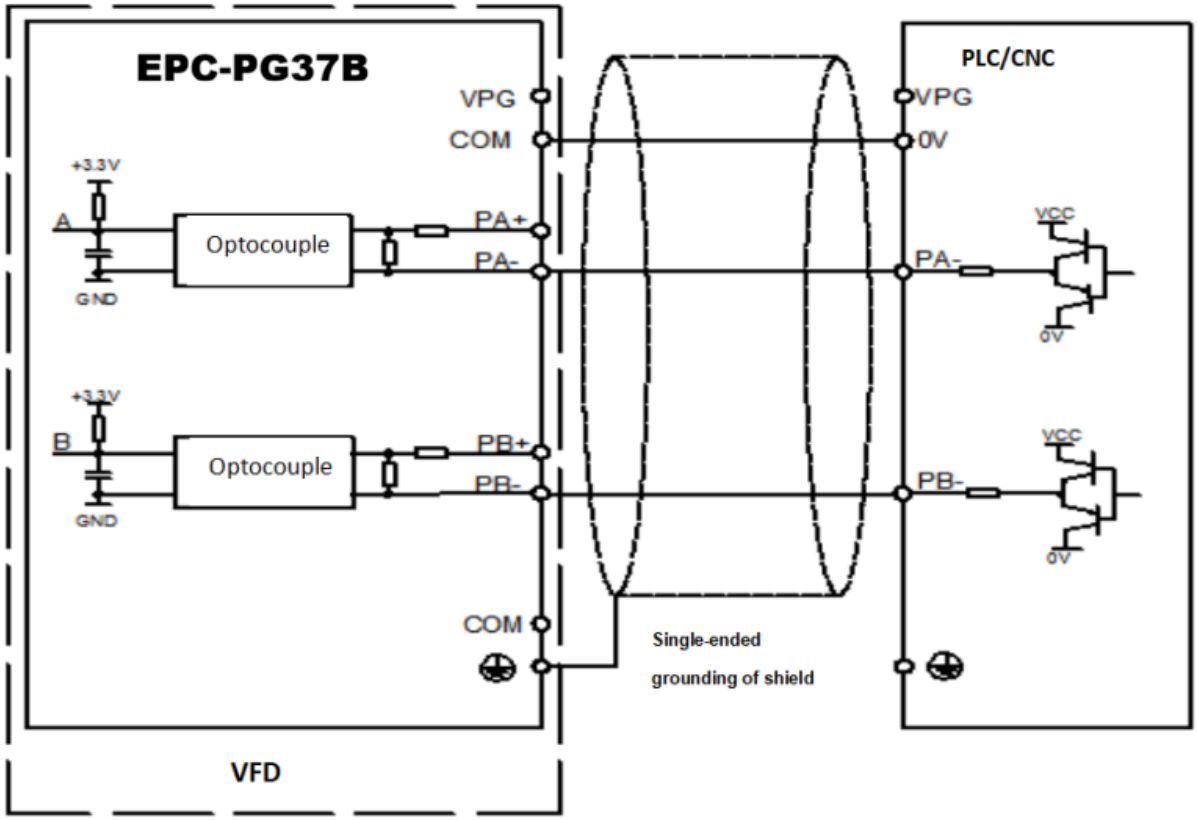


Figure 6 Single-Shield Wiring for a 24 V Push-Pull Pulse Reference

PA+ and PB+ are factory-set to 24 V through S2.

5.2 Emitter-Output Pulse Reference Wiring

For a 24 V emitter-output pulse reference, leave the shield open at the PLC or CNC end and connect it to PE at the drive end. Connect the PLC or CNC signal reference ground to PA- and PB- on the PG card, and connect PA+ and PB+ to the corresponding drive terminals through CN7.

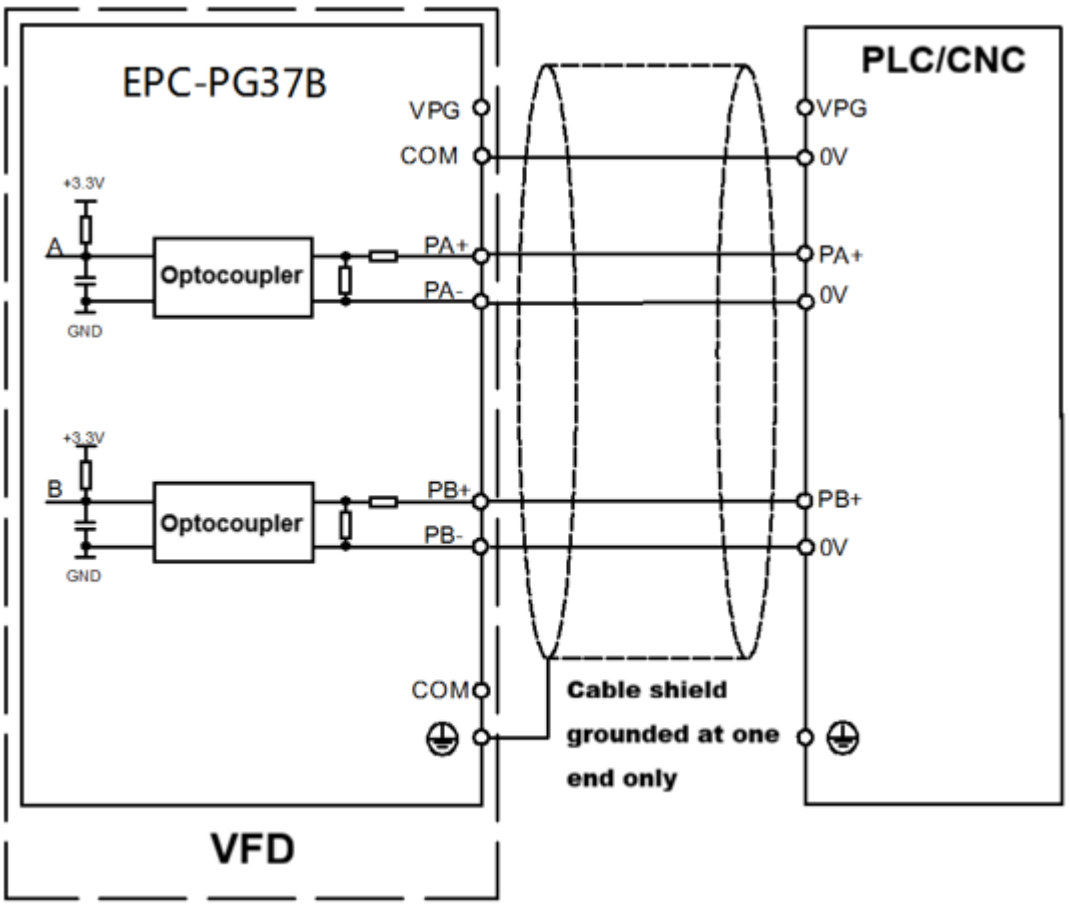


Figure 7 Single-Shield Wiring for a 24 V Emitter-Output Pulse Reference

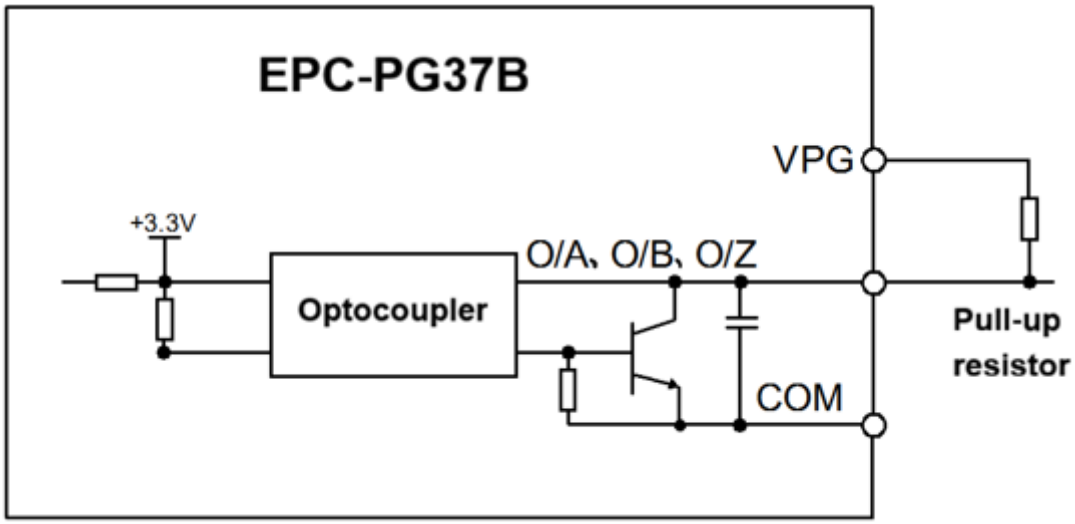
5.3 Pulse Reference Input Specifications

Terminal	Function	Response Frequency	Input Type
PA	Pulse reference signal input	0-100 kHz	24 V digital input
PB	Pulse reference signal input	0-100 kHz	24 V digital input

6. Frequency-Divided Output

6.1 O/A, O/B, and O/Z Output Wiring

a) Pull-Up to the Internal VPG Supply (5 V)



Note: The EPC-PG37B card provides an internal 5 V supply. For any other pull-up voltage, use an external supply.

b) Pull-Up to an External Supply

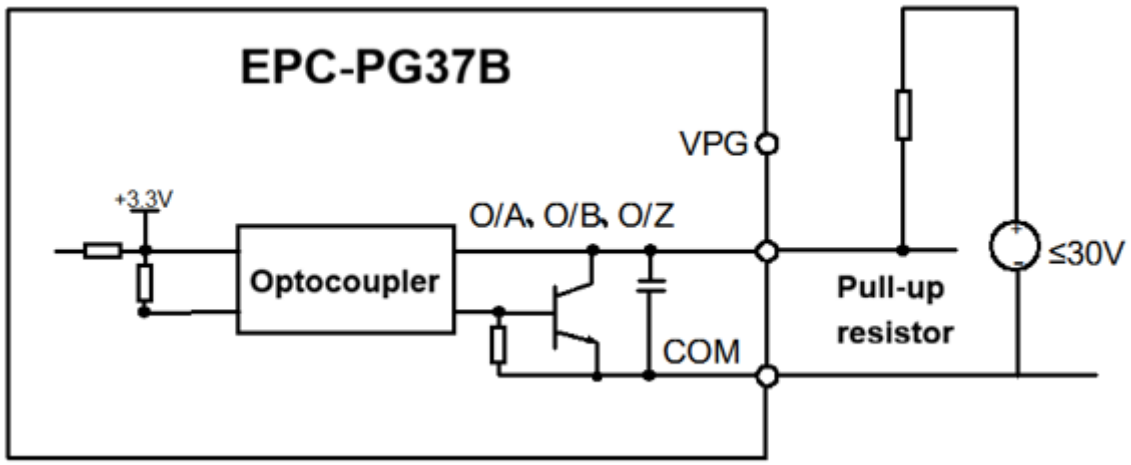


Figure 8 O/A, O/B, and O/Z Frequency-Divided Outputs

CAUTION

Select the pull-up resistance according to the pull-up supply voltage. Ensure that the open-collector output current remains below 50 mA and that the resistor is adequately derated.

6.2 Frequency-Divided Output Specifications

Terminal	Function	Response Frequency	Output Type	Max. Current	Division Range
O/A	Frequency-divided signal output	0-500 kHz	Open collector	50 mA	1 to 4 x encoder pulses/rev.
O/B	Frequency-divided signal output	0-500 kHz	Open collector	50 mA	1 to 4 x encoder pulses/rev.
O/Z	Frequency-divided signal output	0-500 kHz	Open collector	50 mA	1 to 4 x encoder pulses/rev.

6.3 Frequency Division Setting

Set function code F4-12 = n (n = 0, 1, 2, 3, 4, ... 16000) from the keypad to determine the output pulse count for O/A, O/B, and O/Z. The factory default is F4-12 = 0, which disables frequency division. When n is set from 1 to 16000, the frequency-divided output pulse count is n.

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