



Product Type..... Integral E Integrated Drive/Step Motor

The aforementioned product complies with the requirements of directives:

EMC Directive 89/336/EEC

CE Marking Directive 93/68/EEC.

Provided the installation requirements described in this guide are met, and there are no special requirements of the installation and operating environment so that the application may be considered typical.

The above equipment conforms with the protection requirements of Council Directive 89/336/EEC as amended by Directive 92/31/EEC on the approximation of the laws of the Member States relating to Electromagnetic Compatibility when installed, operated and maintained as intended.

In accordance with IEC 61800-3:1997 (Adjustable speed electrical power drive systems) this product is of the restricted sales distribution class which meets the needs of an industrial environment when installed as directed. However, further measures may need to be taken for use of the product in a domestic environment.

The installation requirements are detailed in the Information supplied with the equipment. The equipment is sold only to competent system builders.

Compliance is demonstrated by the application of the following standards:

- BS EN 50081-2 (1994) Electromagnetic compatibility. Generic emission standard Part 2. Industrial Environment.
- BS EN 61000-6-2 (1999) Electromagnetic compatibility. Part 6-2: Generic Standards – Immunity for industrial environments.
- BS EN 61800 3 (1997) Adjustable speed electrical power drive systems. Part 3 : EMC product standard including specific test methods.

See the hardware installation guide (p/n 88-025085-01) at [www.parkermotion.com](http://www.parkermotion.com) for complete installation instructions.



### Safety Warning!



High-performance motion control equipment is capable of producing rapid movement and very high forces. Unexpected motion may occur especially during the development of controller programs. **KEEP WELL CLEAR** of any machinery driven by stepper or servo motors. Never touch any part of the equipment while it is in operation.

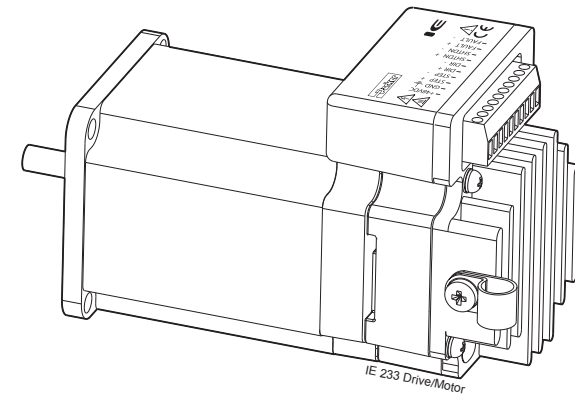
This product is sold as a motion control component to be installed in a complete system using good engineering practice. Care must be taken to ensure that the product is installed and used in a safe manner according to local safety laws and regulations. In particular, the product must be positioned such that no part is accessible while power may be applied.

This and other information from Parker Hannifin Corporation, its subsidiaries, and authorized distributors provides product or system options for further investigation by users having technical expertise. Before you select or use any product or system, it is important that you analyze all aspects of your application and review the information concerning the product in the current product catalog. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, safety, and warning requirements of the application are met.

If the equipment is used in any manner that does not conform to the instructions given in this user guide, then the protection provided by the equipment may be impaired.

# Integral E Quick Reference Guide

IE 231, IE 232, and IE 233

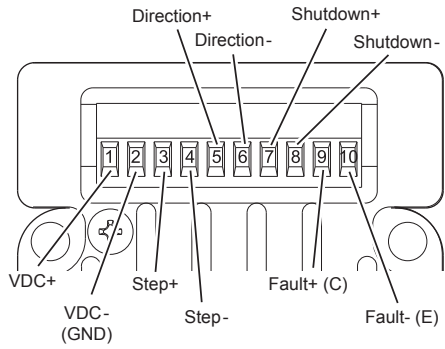


Hardware Installation Guide  
available at: [www.parkermotion.com](http://www.parkermotion.com)

Electromechanical Division  
Parker Hannifin Corporation  
p/n 88-025203-01B  
Effective: September, 2005



## Inputs and Outputs



10-position removable screw terminal connector □  
p/n 43-025025-01

### VDC+ & VDC-

Connect a DC power supply within the range of □  
24 VDC to 48 VDC to the VDC+ & VDC- connectors.

### Fault Output

FAULT+ is an open-collector (C) output and FAULT- □  
is an open-emitter (E) output from an OPTO isolator.

Electrical characteristics:

- $V_{CE0} = 30V$
- $V_{CE\ sat} = 1.0V\ max$
- Collector current = 30 mA max □
- Maximum power dissipation = 75 mW per transistor □  
(2 per SOIC-8 pkg.)

See the hardware installation guide □  
(p/n 88-025085-01) at [www.parkermotion.com](http://www.parkermotion.com) □  
for complete installation instructions.

### Step Input Specifications

**Input Current** 6.5 mA minimum  
15 mA maximum

**Input Voltage** 3.5V minimum (min. required for on or  
high signal)  
5.35V maximum\*

**Step Pulse** 200 nanosecond minimum pulse width  
200 nanosecond minimum off time  
1.5 MHz maximum pulse rate  
(40% to 60% duty cycle)

**Optically Isolated** Yes

\*You may use higher voltages if you add an external current-limiting resistor to □  
ensure that the current does not exceed the maximum input current specification.

### Direction Input Specifications

**Input Current** 6.5 mA minimum  
15 mA maximum

**Input Voltage** 3.5V minimum (min. required for on or □  
high signal)  
5.35V maximum\*

**Optically Isolated** Yes

\*You may use higher voltages if you add an external current-limiting resistor to □  
ensure that the current does not exceed the maximum input current specification.

### Shutdown Input Specifications

**Input Current** 2.5 mA minimum  
30 mA maximum

**Input Voltage** 3.5V minimum (min. required for on or  
high signal)  
13V maximum  
5V maximum reverse voltage

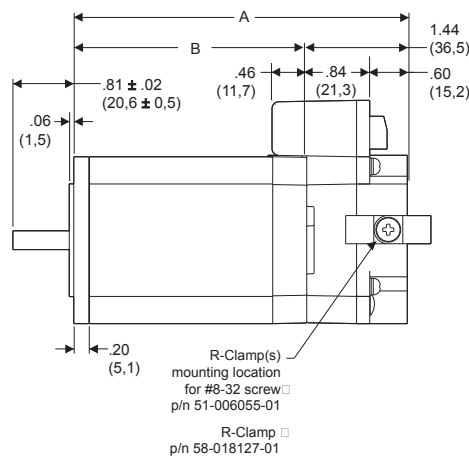
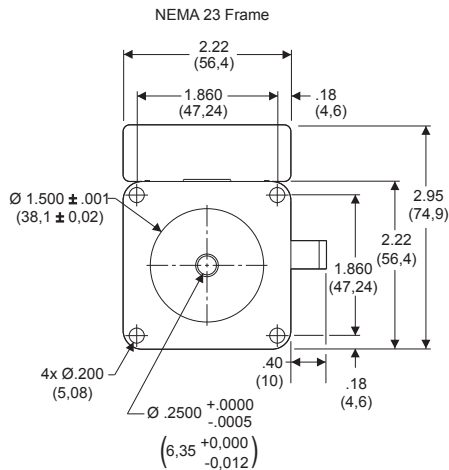
**Active Level** While voltage is applied, current to motor is  
shut down. When voltage is removed, normal  
operations resume.

**Time** 250 nanosecond minimum width

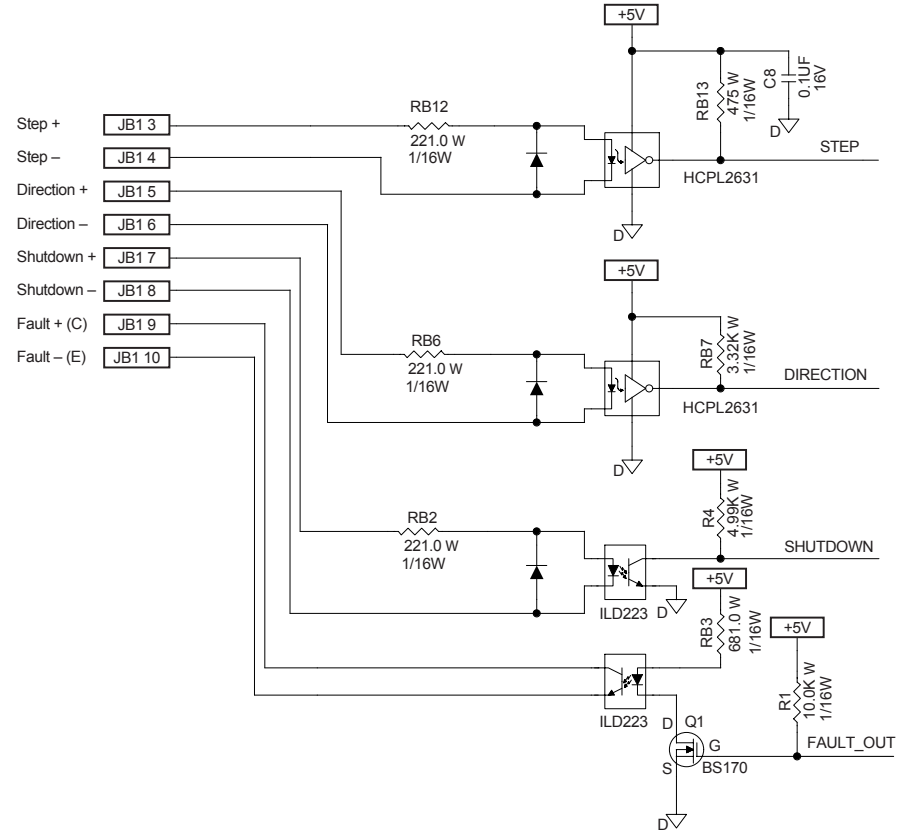
**Optically Isolated** Yes

## Dimensions

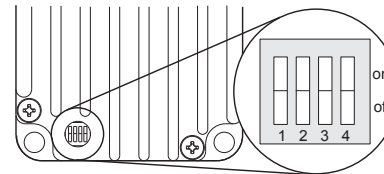
Model □	Dimension A Inch (mm)	Dimension B Inch (mm)
IE231	3.17 (80,5)	1.73 (44)
IE232	3.61 (91,7)	2.17 (55)
IE233	4.54 (115,3)	3.10 (78,7)



## I/O Schematic



## DIP Switch Settings



Use a small screw driver or the end of a paper clip to □  
move switches up and down in the four-position □  
DIP switch. Set DIP switch 4 to the on (up) position □  
to enable the automatic test. Switches 1, 2, and 3 □  
should be off (down)—the factory default.

	1	2	3	4
<b>Automatic Standby</b>				
Enabled	on			
Disabled	off			
<b>Drive Resolution</b>				
3,600		on	on	
36,000		off	on	
2,500		on	off	
25,000		off	off	
<b>Automatic Test*</b>				
Enabled				on
Disabled				off

\*1 rps for 2 revolutions in each direction until shutdown or power removed

## Environmental Specifications

Ambient Temperature	0°C to 40°C (32°F to 104°F)
Overtemperature Shutdown Fault	70°C (158°F) internal ambient
Storage Temperature	-40°C to 80°C (-40°F to 176°F)
Humidity	0 to 95%, non-condensing