

# 28000-ACCEL/VEL4

Acceleration to Velocity Integrator



## INTRODUCTION

Often in measurements of rotating machinery, it is desired to measure velocity. While this can be achieved computationally by real-time or post processing software, it is sometimes advantageous to have a dedicated analog velocity signal which can be directly measured by any arbitrary recording device. The 28000-ACCEL/VEL4 is an Acceleration to Velocity integrator intended to convert the front panel acceleration signals of the 28304/324 charge amplifier, to analog signals representative of velocity. The 28000-ACCEL/VEL4 output module mates to the front panel DIN connector of a 28304/324 card and provides velocity outputs for each of the cards 4 channels. Two output connector types are provided to allow BNC or industry standard 15-pin D-shell type connection.

Often complex measurement systems are comprised of multiple measurement devices and signals can be routed long distances to remote recording or real-time monitoring devices. If the remote device has a single-ended input, a large ground loop will occur which in severe conditions could corrupt the measurement signal. The 28000-ACCEL/VEL4 output stage has a output-ground-sense circuit which breaks the ground loop and references the velocity output signal to the ground of the remote device.

## SPECIFICATIONS

(Assumes acceleration input scaled for 100 mV/g)

**Velocity Scaling:**  
100 mV/IPS

**Unity Gain Frequency ( $V_{in} = V_{out}$ ):**  
61.45 Hz

**Full Scale Velocity Level:**  
100 IPS peak

**Linear range:**  
 $\pm 10$  Vpk

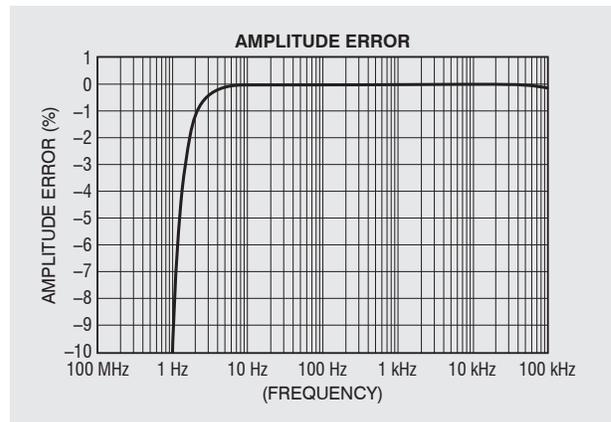
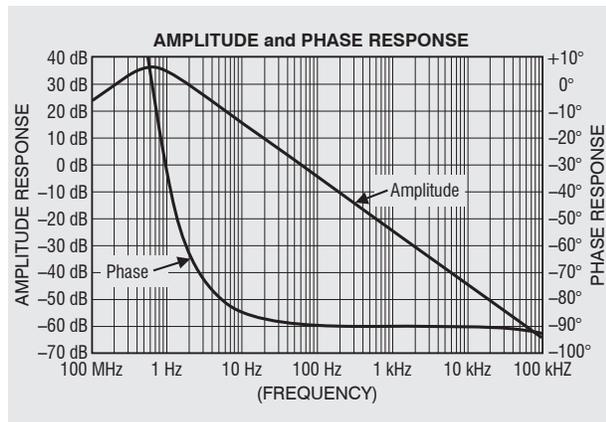
**Accuracy:**  
0.2% at 61.45 Hz

**Gain Stability:**  
50 ppm/ $^{\circ}$ C

**Bandwidth:**  
10 Hz to 50 kHz

**Phase Response:**  
-90 deg @ 61.45 Hz  
-85 deg @ 10 Hz

**Low Frequency Roll-off:**  
-6 dB/Octave below 0.5 Hz



## Output Characteristics

### Type:

Fully buffered, DC coupled, single ended with selectable output sense

### Output Connectors:

Multi-pin Connectors: High, Low, Shield (3-wire)

BNC Connectors: High and Low (2-wire)

### Output Ground Sense:

The low output should be grounded for driving differential loads and “sense” for driving grounded loads. An externally accessible rocker switch selects the per-channel sense termination.

### Impedance:

#### Hi Output:

10  $\Omega$  // 100 pF

#### Low Output (Sense Input):

1000  $\Omega$  // 100 pF or ground selectable per-channel via an externally accessible rocker switch.

#### Max Out:

$\pm 10$  Vpk,  $\pm 5$  mA pk with short circuit protection

#### Noise:

10  $\mu$ V (100 kHz Bandwidth)

#### DC Offset:

5  $\mu$ V

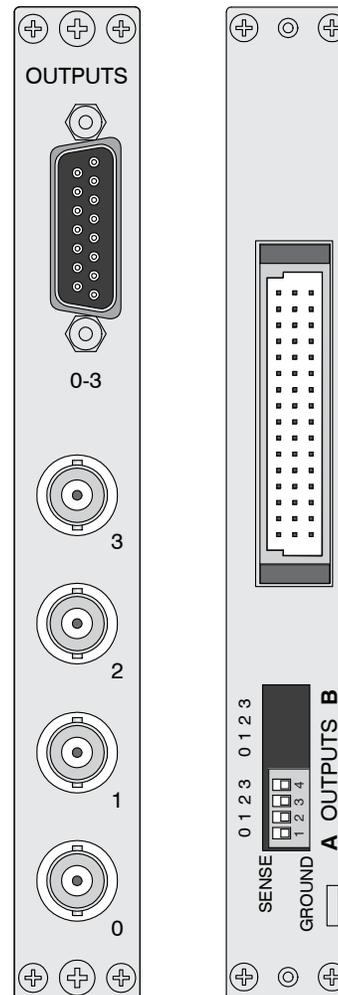
#### DC Offset Stability:

20  $\mu$ V/ $^{\circ}$ C

## Mating Connectors

**CONN-OUT-15D:** 15-Pin mating output connector, with crimp pins and strain relief backshell. PF pn A6862G2.

**CONN-OUT-15D-SC:** 15-Pin mating output connector, with solder cup pins and strain relief backshell. PF pn A6862G4.



28000-ACCEL/VEL4 Front and Rear Panels



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