FV3 Frequency to Voltage Converter

- Delivers 0 to +10 VDC or 4-20 mA outputs proportional to input pulse rate (frequency).
- Accepts variable pulse rate inputs from a variety of sensors.
- Linearity ±0.2% maximum.
- An FV3 and an encoder replace a DC Tachometer when precision feedback is required.

**APPLICATION/INDUSTRY**
Dynapar FV3 frequency-to-voltage converter, when used with a Dynapar encoder, converts the frequency output of the encoder to an analog signal for operating chart recorders, or for supplying velocity feedback in closed loop speed control systems.

**DESCRIPTION**
Dynapar FV3 frequency-to-voltage converter measures a pulse input frequency and converts it to an analog 0 to +10 VDC or 4-20 mA output proportional to machine or process speed. When used with a Dynapar encoder, it converts the frequency content of the encoder to an analog signal for operating chart recorders, or for supplying velocity feedback in closed loop speed control systems. A wide range of digital pulse transducers, application speed ranges, and converter response times can be configured via jumpers. The FV3 also includes 12 VDC transducer supply power.

**FEATURES AND BENEFITS**
- Delivers 0 to +10 VDC or 4-20 mA outputs proportional to input pulse rate (frequency).
- Accepts variable pulse rate inputs from a variety of sensors.
- Linearity ±0.2% maximum.
- An FV3 and an encoder replace a DC Tachometer when precision feedback is required.

**SPECIFICATIONS**

**STANDARD OPERATING CHARACTERISTICS**

**Electrical**

- Input Power Requirements: 115/230 VAC ±10%, 50/60 Hz; 120 mA @ 115 VAC, 60 mA @ 230 VAC. Externally fuse with Sto-Blo type 1/8 A for 115 VAC or 1/16 A for 230 VAC.
- Available Power for the Transducer: 12 VDC ±5%, 75 mA max.
- Input Signal: (Field-Selectable) 2.5 to 15 V single-ended; or magnetic 1.5 to 15 V peak-to-peak
- Input Frequency Range: (Adjustable) Unidirectional: 0.03 to 0.1 kHz; 0.1 to 0.3 kHz; 0.3 to 1 kHz; 1-3 kHz; 3-10 kHz; 10-30 kHz; 20-60 kHz.
- Analog Output: 0 to +10V unidirectional @ 25 mA
- Voltage Output Linearity: ±0.1% of full scale
- Current Range: 4-20 mA into load resistance range of 0-800 ohms
- Current Linearity: ±0.2% max.
- Output Overrange: 10% min. (volt. or current)
- Output Offset: Adjustable
- Speed Detector/Alarm Output (Optional): This feature monitors transducer speed and can be adjusted—5% to 100%—from a front panel potentiometer to trip at a specific speed. The output is a relay contact, field selectable via an internal jumper as N.O. or N.C. Contact rating is 1.25 Amp AC/DC, 125 Volts.
- Environmental Operating Temperature: 0 to 60°C
- Storage Temperature: -18” to +85°C
- Relative Humidity: to 90% non-condensing

**APPLICATION CONSIDERATIONS**

- **Transducer Selection:** The FV3 operates on the frequency content of a sinusoidal, triangular, or square waveform. Typical transducers include:
  1. A magnetic pick-up detecting a passing keyway, gear teeth, etc.
  2. A photo eye which scans alternating opaque and transparent slots.
  3. A digital tachometer or encoder.
- For fast response of FV3 outputs, it is important that the transducer be located toward the high speed end of the drive train. For slow shaft speeds, the transducer must be capable of delivering a high number of cycles or pulses per revolution. The transducer should also be capable of delivering a usable output for the entire speed range through maximum speed.

**APPLICATION CONSIDERATIONS**

- **Field-selectable range adjustment via jumpers (refer to technical manual).**
- **Response time is required for the output to reach 99% of final value when the input frequency changes from 0 to full scale.**

**Typical Application**

Unidirectional with 0 to +10V output
Mounting Dimensions (inches/mm)

Front View

Top View

NOTE: This unit may be mounted horizontally or vertically.

Electrical Connections

<table>
<thead>
<tr>
<th>FV3-0 Functions</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Input</td>
<td></td>
</tr>
<tr>
<td>115/230 VAC</td>
<td>L1</td>
</tr>
<tr>
<td>115 Neutral/230 VAC</td>
<td>N/L2</td>
</tr>
<tr>
<td>Case Ground</td>
<td>GND</td>
</tr>
<tr>
<td>Transducer Input &amp; Supply</td>
<td></td>
</tr>
<tr>
<td>Encoder Supply V+</td>
<td>1</td>
</tr>
<tr>
<td>Encoder Supply Common</td>
<td>2</td>
</tr>
<tr>
<td>Signal A or Magnetic</td>
<td>3</td>
</tr>
<tr>
<td>Speed Detector Output (Optional)</td>
<td>4 or 5</td>
</tr>
<tr>
<td>Analog Outputs</td>
<td></td>
</tr>
<tr>
<td>4-20 mA</td>
<td>6</td>
</tr>
<tr>
<td>Common</td>
<td>7</td>
</tr>
<tr>
<td>+10V</td>
<td>8</td>
</tr>
</tbody>
</table>

*Circuit is field selectable as normally open or normally closed output, via internal jumper selection.

Ordering Information

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>FV3-0-S-00</td>
<td>Frequency-to-Voltage Converter</td>
</tr>
<tr>
<td>FV3-1-S-00</td>
<td>Frequency-to-Voltage Converter with Speed Detection Option</td>
</tr>
<tr>
<td>845-26*</td>
<td>Technical Manual</td>
</tr>
</tbody>
</table>

*A technical manual is automatically shipped with each FV3. Use this publication number to order extra copies.