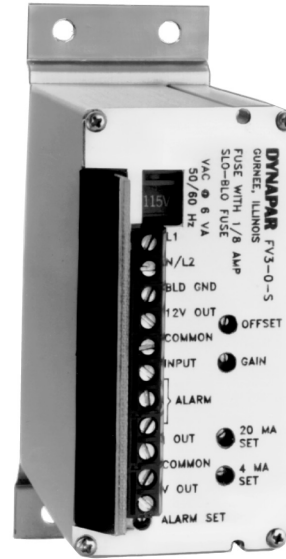# SERIES FV3

Dynapar™ brand

Frequency to Voltage Converter

Key Features

- **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 Slo-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 15V single-ended; or magnetic 1.5 to 15V 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% to100%—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 key-way, 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.
The following formula is convenient for relating machine speeds and sensor frequency output:

$$\text{FRQ (CPS or Hz)} = \frac{\text{RPM} \times \text{PPR}}{60}$$

Where:
RPM is the speed of the shaft where the sensor is located in revolutions per minute.
PPR is the number of pulses (or cycles) produced by the sensor for one shaft revolution.

FV3 Performance: The FV3 range adjustment allows the unit to deliver full-scale output for any input frequency within the limits of each range rating. It will provide a better combination of fast response and low ripple when input frequencies for full scale output are at least 3 kHz and above. The FV3 is provided with the capability for field-installed capacitance to optimize response time vs. ripple if required (see the technical manual).

| Full-Scale Range Adjustment[1] | | Response Time[2] |
Min.	Max.	
30 Hz	100 hZ	5.1 sec.
100 Hz	300 hZ	1.7 sec.
300 Hz	1 kHz	0.52 sec.
1 kHz	3 kHz	13 msec.
3 kHz	10 kHz	10 msec.
10 kHz	30 kHz	6 msec.
20 kHz	60 kHz	6 msec.

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

Typical Application

Unidirectional with 0 to +10V output
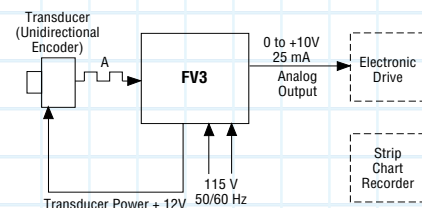
Ordering Information

Model No.	Description
FV3-0-S-00	Frequency-to-Voltage Converter
FV3-1-S-00	Frequency-to-Voltage Converter with Speed Detection Option
845-26*	Technical Manual

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