

**■ FD 9000 ROTATIONAL AND ZERO SPEED MONITOR**

**Highlights**

- Rotation speed monitor
- Zero speed detection
- Input for start-up inhibit
- Simple adjustments by DIP-Switches
- 2 Relay outputs
- Low power consumption
- High reliability
- Standard housing for DIN rail mounting



**General**

The FD 9000 can be used to detect over speed, under speed or for zero speed detection. To achieve fast response times the FD 9000 operates on a pulse-width measurement. At slow frequency the digital system measures the time between two consecutive pulses and at high frequency the shortest measurement time is 16 ms.

**Input channels**

There are 3 optically isolated input channels A, B, and C provided. Their threshold voltage can be selected between 5, 12, or 24 V. Applied sensors must have pnp or push-pull output circuits (source currents  $\geq 5$  mA). Max. input frequency for input channel A is 50 kHz. Input channel C can be used for start-up inhibit. Input B is not used.

**Relay outputs**

Two relays are provided. Relay output contact 1 is used to signal overspeed or underspeed. The selection between the signaling of overspeed or underspeed is made by an internal jumper setting. Relay output contact 2 is used to signal a zero speed. The contact rating for both relays is 250 VAC / 3 A.

**Digital adjustment**

There are two internal 8-pol DIP-switches provided for the digital adjustments. Possible adjustments:

- A 3-decade value for speed level adjustment (BCD-code)
- Four speed level multipliers can be set with 2 additional DIP-switches (x0,1/x1/x10/x100)
- The zero speed detection works with four selectable measuring times at input A. A detected zero speed will close relay output 2.

**Power supply**

The FD 9000 is designed for power supplies voltages of 5, 12, or 24V DC. See ordering key for details. The power supply input is isolated from all input and output channels.

**Housing**

The FD 9000 is provided for DIN-rail mounting according to EN 50022. The case is of Polyamid PA 6.6. For connecting inputs, outputs and power supply there are 12 screw terminals provided.

**Technical specifications**

**Input channels**

- Input voltage level : 24 V, 12 V, 5 V selectable
- Tolerance : +/-20% of selected level
- Isolation : opto isolated 500 V
- Input current :  $\geq 5$  mA, pnp or push-pull
- Input channel A, frequency : 0,1... 50.000 Hz
- Input channel B : reserve
- Input channel C : start-up inhibit

**Limit adjustment**

- 3-decade : 1...999
- Range : 0,1, 1, 10, 100, selectable
- Hysteresis, fixed : 3% of selected setpoint

**Zero speed detection**

- Time for no pulses at input A : 0.1/ 1/ 2/ 10 sec, selectable

**Relay outputs**

- Speed monitoring : contact of relay 1
- Relay function : selectable by jumper
- Zero speed detection : contact of relay 2
- Contact ratings : 3 A / 250 VAC

**Power supply**

- Voltage : see ordering information
- Current : max. 40 mA (24VDC)

**Case**

- Dimensions : 99 x 114,5 x 17,5 mm
- Screw terminals : 12
- Protection : IP40
- Mounting : EN 50022 (DIN-rail mount.)

**Environmental**

- EMV : EG-direction 89/336/EWG
- Operating temperature : -5 to +55 °C

**Ordering Information**

FD 9000	-	X	0	0	
					Reserved
					Reserved
					<b>Power supply</b>
			0		4.5 ... 9 V DC, (option)
			1		9 ... 18 V DC, (option)
			2		18 ... 36 V DC, (standard)
			3		36 ... 48 V DC, (option)