

Frequency to Voltage Electronics

Model MSCF2V04

FLEXIBLE INPUTS

- Accepts most encoders and magnetic pickups
- Four fully differential "frequency signal" inputs, accommodate a wide range of signal amplitudes
- Two additional digital inputs, for position index signals from quadrature encoders
- One analog input, allows calibration to an external reference (e.g., analog fifth wheel)



CONFIGURABLE INPUTS

- Very FAST: outputs are updated on every period of the input signal
- Provides both velocity & position analog outputs when in quadrature mode
- All inputs and outputs fully scalable, using USB port and included Windows® software
- LED display, with four channel selector

Description

Michigan Scientific's *MSCF2V04* is one of the most versatile frequency to voltage converters available today. With a digital signal processor at its heart, the *MSCF2V04* can process up to four frequency inputs simultaneously at a rate of up to 120 kHz aggregate between the channels. The outputs are updated within 6 μ s to 36 μ s at every period of the input signal, providing the most accurate frequency measurement possible. Using the supplied interface software, the user can quickly and easily configure the *MSCF2V04* for just about any frequency to voltage application using any Windows 98, 2000, or XP machine with a USB port. The inputs can be configured to accept either digital square-wave pulses with a TTL threshold or magnetic reluctance type sensors with a minimum 350 mV amplitude. The inputs can be individually offset by up to ± 10 V and can be as large as ± 120 V in amplitude. An analog input is available to synchronize one or more of the channels to an external device such as a fifth wheel. The outputs are scalable to almost any range within the available ± 10 V, and the sensitivity is adjustable to almost any value as well. The minimum measurable frequency can be adjusted to anywhere from about 0.15 Hz to 610 Hz. The maximum measurable frequency is 120 kHz for high-speed mode, 85 kHz for quadrature mode, and 35 kHz for standard mode. In quadrature mode, an index pulse is used to set the zero position. If no index pulse is used, the zero position corresponds to the position of the encoder at power-up. For wheel speed applications, an ABS algorithm can be used to quickly detect wheel lock-up. The display can be configured to display output voltage (1 mV minimum resolution) for each channel, trigger status of each channel, or rotational velocity and position (quadrature mode only).

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Rev: 7/25/11

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Specifications

PARAMETER	SPECIFICATIONS
OUTPUTS	
Voltage Range	-10V to +10 V (Bipolar)
Short Circuit Current	-15mA to +15mA
Resolution	16 Bit
Output Error	0.05% max of full scale
	(0-20kHz)
	(20-80kHz)
	(80-120kHz)
Response time	6 to 36 μ sec
Encoder Excitation	+12Vdc typ., 410mA max
PULSE INPUT	
Frequency, aggregate max	
	Pulse Count mode
	High Speed mode
	Normal mode
	Quadrature mode
Input Voltage Range, absolute max	-120V to +120V
Input-Offset Voltage "V _{io} " range, config. by software	-10V to +10V
Switching thresholds, typ.	
	("TTL" mode)
	("Mag Pickup" mode)
	$V_{IL} = (1.35V - V_{io}), V_{IH} = (1.45V^* - V_{io})$
	$V_{IL} = (0.00V - V_{io}), V_{IH_min} = (0.35V^* - V_{io})$
	*V _{IH} self-adjusts to signal amplitude
ANALOG INPUT	
Analog input Range	0 to 10V
Analog input Resolution	16 Bit
USB PORT	
USB communication port	USB 2.0 compatible
POWER REQUIREMENTS	
Voltage @ 25°C	+9 to +36 VDC
Current	1A Max
ENVIRONMENT	
Operation	-40 to +85 °C (-13 to +185 °F)
Storage	-55 to +125 °C (-67 to +257 °F)
MECHANICAL	
Weight	1 lbs 12 oz.
Size (H x W x L)	1.625 x 6.5 x 5.75 in (4.13 x 16.5 x 14.6 cm)

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