

### Voltage-to-Frequency/Frequency-to-Voltage Converters

Voltage-to-Frequency Converters (VFCs) convert analog voltage or current levels to pulse trains or square waves in logic compatible form (usually TTL) at frequencies that are accurately proportional to the analog quantity. The output continuously tracks the input signal, responding directly to changes in the input signal. Frequency-to-Voltage Converters (FVCs) perform the inverse operation; they accept a wide variety of periodic waveforms and produce an analog output

proportional to frequency. Combining adjustable threshold, gain and output offset with low linearity error, F/V converters offer economical solutions to a wide variety of applications where it is required to convert frequency to an analog voltage. Applications of both forms of conversion, as appropriate to specific device types, are illustrated with varying degrees of detail on the individual product datasheets.

#### Voltage-to-Frequency Converters

Mfr.'s Type	Full-Scale Frequency (MHz)	Linearity Max. (%)	FS Calib. Error % Typ.	Output Format	Input Range V
AD652AQ	2.00	±0.020	0.50	Pulse Train	0 to 10, ±5, 0 to -10
AD652BQ	2.00	±0.010	0.25	Pulse Train	0 to 10, ±5, 0 to -10
AD650JN	1.00	0.005	5.00	Pulse Train	0 to 10, ±5, 0 to -10
AD654JN	0.50	0.100	10.00 Max.	Square Wave	0 to (Vs)
AD654JR	0.50	0.100	10.00 Max.	Square Wave	0 to (Vs)
AD537JD	0.15	0.150	5.00	Square Wave	-Vs to (+Vs -4)
AD537JH	0.15	0.150	5.00	Square Wave	-Vs to (+Vs -4)

#### Frequency-to-Voltage Converters

Mfr.'s Type	Linearity Input Range (kHz)	Response Time Max. (%)	Comments
AD650JN	0-1000	0.005	Low Nonlinearity, Multiple Input Ranges F-V Converter
AD650KN	0-1000	0.005	Low Nonlinearity, Multiple Input Ranges F-V Converter

### Thermal Management

#### Voltage Output Temperature Sensors

Mfr.'s Type	Voltage Output @ +25°C (V)	Output Scale Factor	Accuracy @ +25°C Typ.	Linearity (°C)	Operating Range (°C)	Supply Range (V)	Iq Typ. (µA)
TO-92							
AD22100AT	1.375	22.5 mV/°C	±1.0	0.50%	-50 to +150	+4.0 to +6.0	500.00
AD22100KT	1.375	22.5 mV/°C	±0.5	0.50%	-50 to +150	+4.0 to +6.0	500.00
AD22100ST	1.375	22.5 mV/°C	±1.0	1.00%	-50 to +150	+4.0 to +6.0	500.00

#### Current Output Temperature Sensors

Mfr.'s Type	Current Output @ +25°C	Output Scale Factor	Accuracy @ +25°C	Linearity (°C)	Operating Range (°C)	Supply Range (V)	Iq (µA)
TO-52							
	Flat Pack						
AD590JH	298.2 µA	1 µA/°K	±5.0 µA	±1.50	-55 to +150	+4 to +30	Iout = Iq
AD590KH	298.2 µA	1 µA/°K	±2.5 µA	±0.80	-55 to +150	+4 to +30	Iout = Iq
AD590LH	298.2 µA	1 µA/°K	±1.0 µA	±0.40	-55 to +150	+4 to +30	Iout = Iq
AD590MH	298.2 µA	1 µA/°K	±0.5 µA	±0.30	-55 to +150	+4 to +30	Iout = Iq
AD592AN*	298.2 µA	1 µA/°K	±2.5 µA	±0.50	-55 to +150	+4 to +30	Iout = Iq
AD592CN*	298.2 µA	1 µA/°K	±0.5 µA	±0.35	-55 to +150	+4 to +30	Iout = Iq

\*TO-92 Package.

#### Thermocouple Signal Conditioners

Mfr.'s Type	Package	Voltage Output @ +25°C (V)	Output Scale Factor	Accuracy @ +25°C	Operating Range (°C)	Digital Output	Supply Range (V)	Iq (µA)
TO-116	CERDIP							
	SOIC							
AD594AD	AD594AQ	0.250	10 mV/°C	±3	+25 to +100	1 Open Collector	+5 to ±15	300
AD594CD	—	0.250	10 mV/°C	±1	+25 to +100	1 Open Collector	+5 to ±15	300
—	AD595AQ	0.250	10 mV/°C	±3	+25 to +100	1 Open Collector	+5 to ±15	300
—	AD595CQ	0.250	10 mV/°C	±1	+25 to +100	1 Open Collector	+5 to ±15	300
AD597AH*	—	0.282	10 mV/°C	±4	+25 to +100	1 Open Collector	+5 to ±15	160

\*TO-100.

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### Signal Conditioners

#### 4-to-20 mA Transmitter Signal Conditioners

Mfr.'s Type	Power (+Vcc Volts)	CMV Volts (rms)	CMR Min. (dB)	Accuracy ±% Max.	Input Range (Volts)	Int. (VREF)	Output Range (mA)
1B22AN	±15 @ 7.5 mA	1500	90	0.050	0-+5/10	N	0, 4-20
AD693AQ*	+12-+36 @ 0.7 mA	Vcc-4 V	80	0.050-0.07	@ 30 mV/60 mV	Y	0, 4-20
AD694JN	+4.5-+36 @ 2.0 mA	—	—	0.015-0.30	or 0 to +2	Y	0, 4-20

\*Loop powered, no local supply needed.

#### Strain Gage Signal Conditioners

Mfr.'s Type	No. of Ports	Power Supply (Volts)	Power Supply (mA)	CMRR @ Av = 1000 @ 60 Hz dB Min.	Bandwidth AV = 1	Linearity ±% Max.	Gain Error @ +25°C ±%	Output Offset +25°C ±mV Max.	Output Offset TC ±µV Max.
1B32AN	0	±15	+4/-1	140	4 Hz	0.005	0.1	40.0	0.2
1B31AN	0	±15	±10	100	1 kHz	0.005	3.0	0.2	2.0

Prices Subject To Change — We Always Ship At The Lowest Price In Effect

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