

50M20 Programmable D-A Converter

- 12-Bit Resolution
- Voltage or Current Mode
- 20- μ s (Maximum) Conversion Time
- 250 V RMS Isolation
- Mnemonic Instructions
- Self-Test and Error Indicators
- UL 1244 Listed

The 50M20 converts digital data to either analog voltage or current. The voltage or current mode is selectable manually via an on-board switch.

Data format is 12 bits, sent in two sequential 7-bit words. Data can be sent via the IEEE Standard 488 (GPIB) using the MI 5010 as the interface, or from an external (front connector) bus for high-speed data transfer (with appropriate handshake lines). On-board firmware will convert commands and data to the proper format to perform the required digital-to-analog conversion. Two lines at the front-panel connector are provided to handshake data into the 50M20 from the user's external system.

System commands sent to the MI 5010 microprocessor, along with specialized programming commands unique to the 50M20, control the source and the format of the digital data. The 50M20 can be programmed to respond to either external or internal system triggers.

CHARACTERISTICS

VOLTAGE MODE

- Range**— -10.240 to $+10.235$ V.
Accuracy— ± 10.0 mV ($+20$ to $+30^\circ\text{C}$) ± 15 mV (0 to $+50^\circ\text{C}$).
Resolution (1 LSB)— 5 mV.
Total Conversion Time (Maximum)— 20 μ s.
Output Ripple and Noise— < 5 mV p-p at 5 -MHz BW.
Output Current Range— 0 to ± 5 mA.

CURRENT MODE

- Range**— -20.48 to $+20.47$ mA.
Accuracy— ± 20 μ A ($+20$ to $+30^\circ\text{C}$) ± 40 μ A (0 to $+50^\circ\text{C}$).
Resolution (1 LSB)— 10 μ A.
Total Conversion Time (Maximum)— 20 μ s.
Output Ripple and Noise— < 15 μ A, p-p, at 5 -MHz BW.
Compliance Voltage— ± 11 V.
Isolation— 250 V RMS maximum to ground.
Digital-Data Transfer Format— 12 -bit word transferred in two bytes, high byte first. Lower six bits of each byte contain data, seventh bit is high byte/low byte indicator, eighth bit is unused.

ORDERING INFORMATION

50M20 Digital-to-Analog Converter Card **\$910**
 Includes: Interfacing cable; Instruction manual (070-3724-01); Reference guide.

50M30

Programmable Digital Input/Output Card

- 16 Digital Input and 16 Digital Output Lines
- Data Entry/Output Formats in Decimal, Binary, or Hex
- Triggered Externally or On Command
- Mnemonic Instructions
- Self-Test and Error Indicators
- UL 1244 Listed

The 50M30 provides 16 digital input and 16 digital output lines. The digital inputs accept data from pushbuttons, switches, contact closures, and most digital devices capable of supplying TTL output levels. The digital outputs provide TTL levels to control various types of test and measurement instruments, relays, indicators, etc. The digital outputs can be configured for open-collector outputs by positioning internal jumpers and using power supplied by the user.

System commands sent to the MI 5010 microprocessor, along with specialized programming commands unique to the 50M30 control the selection of the data input/output channels and the arming/trigger functions of the card.

Four lines at the front-panel connector operate as input/output pairs to handshake data with the user's external system. One handshake pair allows the user's data source to be synchronized with the 50M30 data-input register and the other handshake pair allows the user's data storage device to be synchronized with the 50M30 data output register.

CHARACTERISTICS

Data Outputs Using Internal Supply— 16 open-collector TTL with 2 k Ω pullup resistors. Logical "1": $+5$ V $\pm 2\%$ (open circuit). Source current is -2.5 mA $\pm 7\%$ maximum. Logical "0": 0.2 V. Sink current is -40 mA maximum.

Data Outputs Using External (User) Supply—Maximum Voltage: $+15$ V. Pullup Resistors: 2 k Ω . Logical "1" equal to external supply voltage (open circuit). Source current is 7.5 mA $\pm 5\%$ plus external supply tolerance. Logical "0": 0.2 V. Sink current is 40 mA maximum.

Data Inputs—Input Buffers: 16 Schmitt triggers. Logical "1" ($+V$ Threshold): $+1.6$ V $\pm 25\%$. Source current is -0.14 mA nominal, -0.16 mA maximum. Logical "0" ($-V$ Threshold): $+0.8$ V $\pm 40\%$. Source current is -0.18 mA nominal, -0.21 mA maximum.

ORDERING INFORMATION

50M30 Digital Input/Output Card **\$495**
 Includes: Interfacing cable; Instruction manual (0707-3722-00); Reference guide.

50M40

Programmable Relay Scanner Card

- 16 Mercury-Wetted Relay Contacts
- User-Configurable 1, 2, 4 Groups
- Triggered Externally or On Command
- Mnemonic Instructions
- Self-Test and Error Indicators
- UL 1244 Listed

The 50M40 provides 16 independent, normally open relay contacts. The relay contacts can be used as switch closures to supply power to several external points from one source, or scan several sources and supply various inputs to a single measurement device.

The desired relay switch pattern is configured by the user with internal jumpers. When the configuration has been established, the relay-scanning sequence, open and close operations, and triggering events are programmed over the IEEE Standard 488 (GPIB) Bus.

Two logic signal lines on the front-panel connector are provided for externally controlling the 50M40—one as an output (Ready) to indicate to the user when the relays have settled, and the other as an input (Ext Trig) to tell the MI 5010 microprocessor that the user is ready for the relay switch configuration to close. Three possible configurations are:

- 4 groups of 4 individual relays
- 2 groups of 8 individual relays
- 1 group of 16 individual relays