CR10X Specifications

PROGRAM EXECUTION RATE
Program is synchronized with real-time up to 64 Hz. One channel can be measured at this rate with uninterrupted data transfer. Burst measurements up to 750 Hz are possible over short intervals.

ANALOG INPUTS
NUMBER OF CHANNELS: 6 differential or 12 single-ended, individually configured. Channel expansion provided by AM16/32 or AM416 Relay Multiplexers and AM25T Thermocouple Multiplexers.

DIFFERENTIAL MEASUREMENTS
- DC COMMON MODE REJECTION: >140 dB
- INPUT NOISE VOLTAGE (for ±2.5 mV range): 0.3 µV rms
- INPUT SAMPLE RATES: Includes the measurement of input transitions. Larger input transitions are required at high frequencies. Signals up to 400 kHz will be counted if present, up to ten SDI-12 sensors can be synchronized with real-time up to 64 Hz. One channel can be measured at this rate with uninterrupted data transfer. Burst measurements up to 16 kHz, eight-bit or 1 six-bit; software selectable as binary inputs or control outputs. 3 ports can be configured to count pulses up to 16 kHz. Channels are scanned at 8 or 64 Hz (software selectable). Minimum pulse width: 1.2 µs. Maximum Bounce Time: 1 ms open without being counted. Minimum Switch Closed Time: 5 ms. Maximum Switch Open Time: 6 ms.
- MAXIMUM COUNT RATE: 16 kHz, sixteen-bit counter; high frequency pulse, and low level ac.

PULSE COUNTERS
NUMBER OF PULSE COUNTER CHANNELS: 2 eight-bit or 1 sixteen-bit; software selectable as switch closure, high frequency pulse, and low level ac.

PERIOD AVERAGING MEASUREMENTS
The average period for a single cycle is determined by measuring the duration of a specified number of cycles. Any of the 12 single-ended analog input channels can be used. Signal attenuation and ac coupling are typically required.

PERIOD AVERAGING MEASUREMENTS
- Signal peak-to-peak
  - 500 mV: 5.0 V
  - 10 mV: 2.0 V
  - 5 mV: 2.0 V
  - 2 mV: 2.0 V
- Pulse width: 2.5 µs - 100 µs
- Frequency: 200 kHz - 5 kHz

INPUT FREQUENCY RANGE:
- Signal peak-to-peak
  - 500 mV: 5.0 V
  - 10 mV: 2.0 V
  - 5 mV: 2.0 V
  - 2 mV: 2.0 V
- Pulse width: 2.5 µs - 100 µs
- Frequency: 200 kHz - 5 kHz

PULSE COUNTERS
NUMBER OF PULSE COUNTER CHANNELS: 2 eight-bit or 1 sixteen-bit: software selectable as switch closure, high frequency pulse, and low level ac.

MAXIMUM COUNT RATE: 16 kHz, sixteen-bit counter; high frequency pulse, and low level ac.

MAXIMUM COUNTER RATE: 16 kHz, eight-bit counter; 400 Hz, sixteen-bit counter. Channels are scanned at 8 or 64 Hz (software selectable).

SWITCH CLOSURE MODE
Minimum Switch Closed Time: 5 ms. Minimum Switch Open Time: 6 ms. Maximum Bounce Time: 1 ms open without being counted.

HIGH FREQUENCY PULSE MODE
Minimum Pulse Width: 1.2 µs. Maximum Input Frequency: 400 kHz. Voltage Thresholds: Count upon transition from below 1.5 V to above 3.5 V at low frequencies. Larger input transitions are required at high frequencies because of input filter with 1.2 µs time constant. Signals up to 400 kHz will be counted if centered around ±2.5 V with deviations ≥±2.5 V for ≥1.2 µs. Maximum Input Voltage: ±20 V

LOW LEVEL AC MODE
(Typical of magnetic pulse flow transducers or other low voltage, sine wave outputs.)
- Input Hysteresis: 14 mV
- Maximum ac Input Voltage: ±20 V

SYSTEM POWER REQUIREMENTS
VOLTAGE: 5.0 to 16 V
TYPICAL CURRENT DRAW: 1.3 mA quiescent, 13 mA during processing, and 46 mA during analog measurement.

DIGITAL I/O PORTS
8 ports, software selectable as binary inputs or control outputs. 3 ports can be configured to count switch closures up to 40 Hz.

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OUTPUT VOLTAGES (no load): high 5.0 V, low <0.1 V

OUTPUT RESISTANCE: 500 ohms

INPUT STATE: high 3.0 to 5.5 V; low -0.5 to 0.8 V

INPUT RESISTANCE: 100 kohms

SDI-12 INTERFACE STANDARD
Digital I/O Ports C1-C8 support SDI-12 asynchronous communication. Up to ten SDI-12 sensors can be connected to each port. Meets SDI-12 Standard version 1.2 for datalogger and sensor modes.