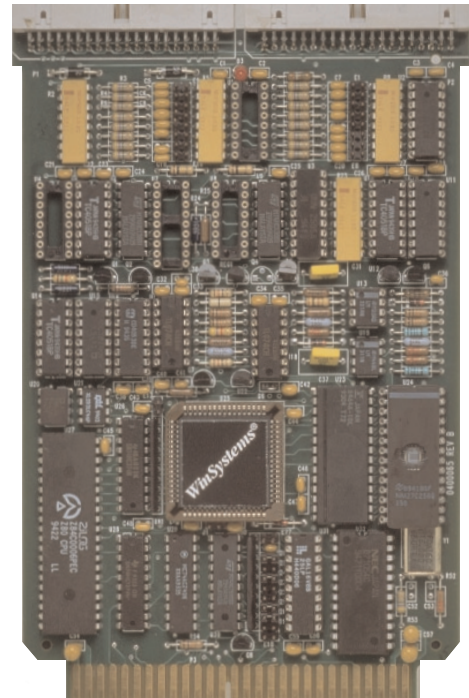


### FEATURES

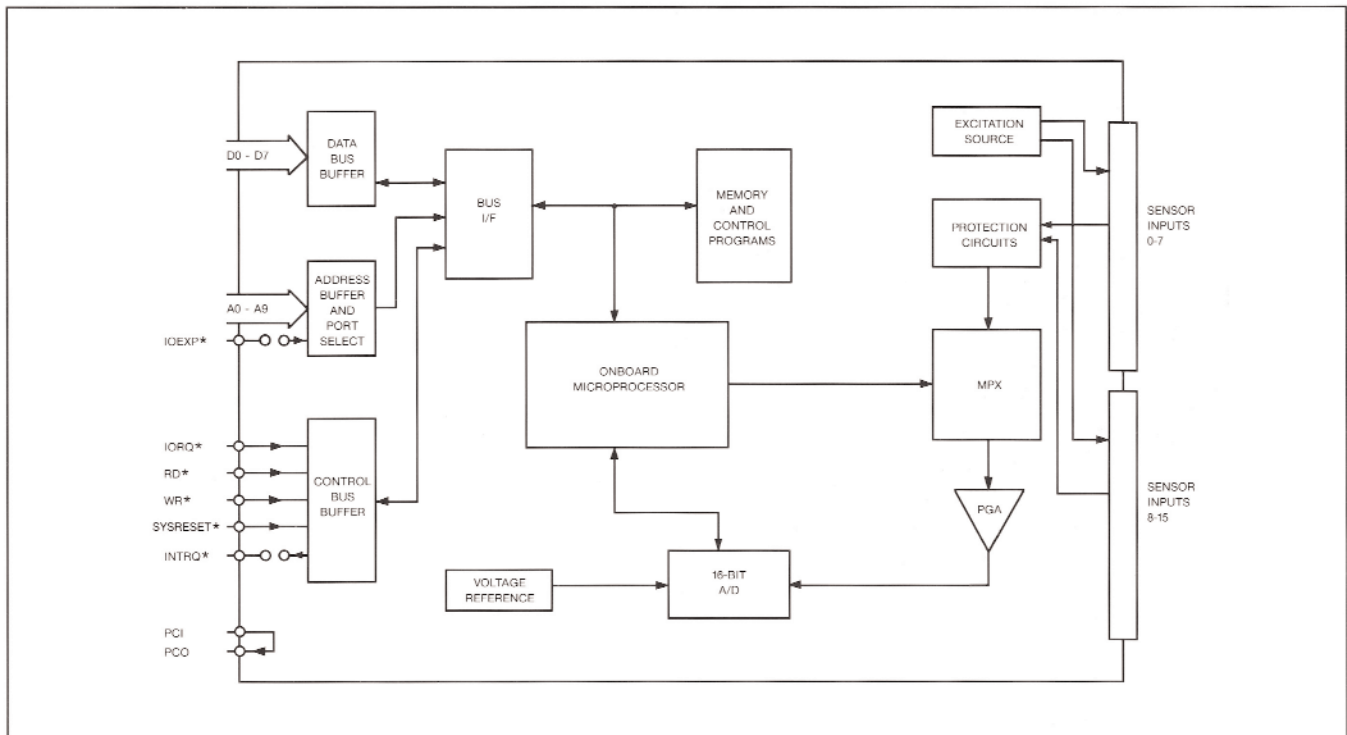
- “Intelligent” STD Bus 8 and 16 channel sensor interface
- Supports any combination of RTD’s, thermocouples, strain and pressure gages, thermistors, resistors, or voltage inputs
- Onboard uP intelligence unburdens STD Bus system CPU by performing control, linearization, and conversion to engineering units
- 16-Bit A/D resolution
- True four-wire circuits for resistive sensors
- Pulsed excitation source reduces self-heating in resistive sensors
- Totally electronic calibration - no trimpots to adjust
- Backward compatible with Sensoray’s 7408 and 7409
- Low power required

The MCM-7418/7419 board is a complete 8/16 channel analog subsystem designed to offer a simple and inexpensive way to acquire high precision sensor data for any STD based system. It is optimized for temperature and low level signal measurements and includes signal filtering, sensor excitation and linearization on all channels. The onboard CPU performs all data acquisition control and preprocesses the data, thus reducing the software overhead by the STD Bus host CPU.



### FUNCTIONAL CAPABILITY

**STD Bus Interface** - Full data, address, and control line buffering is provided to and from the STD Bus. The card is I/O mapped and supports 10-bit addressing and IOEXP\*. 74HCT type data bus receivers and



74HCT type data bus transmitters permit the board to work with either STD or CMOS STD Bus systems.

**Sensor Input** - The MCM-7418 supports eight and the MCM-7419 supports sixteen independent, differential sensor channels with 16-bit resolution. Each channel is over-voltage protected and may be directly connected to an unconditioned sensor. Complete signal conditioning is provided for thermocouples, RTD's, strain and pressure gages, resistors, thermistors, and voltage inputs. A pulsed constant voltage source supplies excitation to other resistive sensors. Constant current excitation combined with true four-wire circuits completely eliminates lead-loss errors for RTD's, thermistors, and resistors.

#### Sensor Types Supported

Type E thermocouple	10K Ohm thermistor
Type J thermocouple	User-defined resistor
Type K thermocouple	Voltage input 0-100mV
Type T thermocouple	Voltage input 0 to +5V
Type S thermocouple	120 ohm strain gage
Type R thermocouple	4-20 mA current input
Type 385 RTD	Pressure gage/load cell
Type 392 RTD	No sensor

The onboard microcomputer continuously scans the 8 or 16 sensor channels. Each channel is amplified, filtered, digitized, linearized, converted to engineering units, tested against minimum/maximum limits, and stored in onboard memory, independent of the main STD Bus host CPU's activity. Reference junction compensation is automatically performed for thermocouples using a reference transducer on the ADP-7409TA termination board. This reference transducer uses a special dedicated channel so that all sensor channels remain free for application use.

The MCM-7418/7419's internal CPU is programmed to recognize a small but powerful set of commands. One of the Commands, Define Channel Sensor, declares the type of sensor connected to a channel so that the specified channel will automatically be setup properly. This also permits any combination of sensors to input the MCM-7418/7419 card in any mix.

The board periodically calibrates itself by measuring internal references. Reference data is stored in a EEPROM so that the MCM-7418/7419 boards may be quickly interchanged without hassle. Board calibration is easily performed with the aid of a menu-driven calibration procedure.

**Field Wiring** - The ADP-7409TB screwdriver termination board is available for terminating field wiring for 8 sensor channels. Two units are required for all 16 channels. The ADP-7409TB includes an Isothermal terminal block and temperature sensor that is monitored by the MCM-7418/7419 CMOS microprocessor to perform exact cold compensation for thermocouples. The MCM-7418/7419 and ADP-7409TB are connected by the CBL-126-2, a 24 inch 40-pin ribbon cable.

#### SPECIFICATIONS

##### Electrical

STD Bus and CMOS STD Bus Compatible

Common Mode Rejection: 80 dB minimum,  
@ CMV < 5VDC

A/D converter: 16-bit, 16.67mS conversion time

Scan Rate: 20mS per channel

Input protection: 63 VAC common mode voltage

Power:  $\pm 12$  VDC to  $\pm 15$  VDC  $\pm 5\%$ , 35mA  
 $+5$  VDC  $\pm 5\%$ , 100mA

##### Mechanical

Size: 4.5" X 6.5"

##### Connectors

Sensor Input: Two, 40-pin on 0.100" centers

##### Environmental

Operating Temperature: -25°C to +85°C

#### ORDERING INFORMATION

MCM-7418	8-Channel Sensor Interface
MCM-7419	16-Channel Sensor Interface
ADP-7409TB	8-channel field termination panel
CBL-126-2	40-pin, 24 inch ribbon cable

