System 8000
StrainSmart® Data Acquisition System

8 Software-Selectable Input Channels

Features

Eight software-selectable input channels
Up to 16 scanners can be used concurrently
Supported inputs include:
  - Strain gage (quarter-, half-, and full-bridges)
  - Strain-gage-based transducer
  - High-level voltage signal
  - Thermocouples
RJ45 input connectors for each input channel
Scanning rates:
  - 1000, 500, 200, 100, and 10 samples/second
Compact size and ruggedized enclosure
Ethernet network architecture
Optional self-calibration functionality available

Datasheet is available on our website at:
http://www.vishaypg.com/doc?11272
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  ▪ Strain-gage-based transducer
  ▪ High-level voltage signal
  ▪ Thermocouples
• RJ45 input connectors for each input channel
• Scanning rates are 1000, 500, 200, 100, and 10 samples/second
• Compact size and ruggedized enclosure
• Ethernet network architecture
• Optional self-calibration functionality available

DESCRIPTION
System 8000 from Micro-Measurements is a versatile, precision data acquisition system. It is intended for static and dynamic test and measurement applications. The system includes a scanner with 8 channels of data acquisition. An RJ45 Ethernet cable is also included. The scanners can be used separately or in combination, providing a maximum capacity of 128 channels.

Each channel can be configured, via software, to accept signals from strain gage or strain-gage-based transducers, thermocouples, or high-level voltage sensors. Strain gage channels accept full-, half-, or quarter-bridge configurations and have the required bridge correction components for 120-, 350-, and 1000-ohm bridges. Each channel can be defined, via software, to be one of four operational modes: independent, multiple scanners are not synchronized.

The data is processed in a modern 24-bit digital signal processor and filtering is performed using Finite Impulse Response (FIR), multi-stage filters. This provides excellent noise rejection and stability and unsurpassed measurement accuracy.

The Model 8000-8-SM Scanner communicates with a host personal computer (PC) via an Ethernet connection. Micro-Measurements’ StrainSmart® software is optional for configuring, controlling, and acquiring data from the System 8000. A Programmer’s Reference Kit provides documentation, programming examples, and instrument drivers to assist with custom software development.

SUPPORTED SENSORS
Each channel can be defined, via software, to be one of the following sensor types:
• Strain gage (quarter-, half-, full-bridges)
• Strain-gage-based transducer
• High-level voltage signal
• Thermocouples

SCALING
All channels in each scanner are sampled simultaneously. Each channel’s 24-bit analog-to-digital converter provides superior strength and durability. A rack mount kit is also available.

SCANNING RATES
The system provides numerous scanning rates and Finite Impulse Response (FIR) filters are automatically selected to provide suitable filtering at each rate to avoid aliasing. Sampling rates for the Model 8000-8-SM are 1000, 500, 200, 100, and 10 samples/second.

COMPACT, RUGGEDIZED ENCLOSURE
The Model 8000-8-SM has 8 channels in a 1U (1.72 inch) height enclosure. The aluminum-alloy enclosure provides superior strength and durability. A rack mount kit is also available.

RJ45 INPUT CONNECTORS
Each channel input connector is an 8-pin TIA/EIA RJ45.

RELAY OUTPUT
A relay output is provided to control external hardware.

ETHERNET NETWORK ARCHITECTURE
The system communicates over an IEEE-802.3u 10Base-T or an IEEE-802.3 10Base-T Ethernet Network. The firmware uses separate command and data ports and employs a reliable TCP-based protocol to prevent data loss.

DC OPERATION
Model 8000 operates on non-isolated DC voltage. This can be from the included power supply or by using a separate AC-to-DC converter or DC supply such as a battery.

MODEL 8000-8-SM POWER SOURCE
The Model 8000 is a DC-powered instrument. The system accommodates DC input voltages from 10 to 32 volts. The included power supply provides the required AC-to-DC conversion and up to 30 watts of power to the system. An alternate DC power source can be provided to supply enough power to meet the system and excitation power requirements.

ENCLOSURE
The Model 8000-8-SM enclosure is constructed of aluminum alloy. The enclosure is designed to provide superior strength, durability, and to minimize RF emissions and susceptibility.

A123 SYSTEM VOLTAGE CALIBRATION CARD (OPTIONAL)
The Micro-Measurements A123 System Voltage Calibration Card is available as an accessory and provides the ability to perform a system-level calibration of the entire measurement circuit without the need to return the system to the manufacturer or metrology standards. The gain and offset of each channel can be calibrated.

The A123 is calibrated at the factory to NIST Traceable standards and does not need to be present in the system during normal operation. A benefit of on-board system calibration is that it adjusts for the system under actual operating conditions, thereby minimizing errors due to environmental conditions.

SPECIFICATIONS—GENERAL
All specifications are nominal or typical at +23°C unless noted. Performance may be degraded in the presence of high-level electromagnetic fields. For CE compliance, Micro-Measurements recommends that all cables be limited to 30 meters in length.

Environmental
Temperature: 0°C to +50°C
Humidity: Up to 90%, non-condensing

Enclosure
Material: A356-T6 aluminum casting
Dimensions (all dimensions are nominal):
- 1.72 H x (1.96 with feet) x 11.0 W x 10.18 D inches
(43.68 x 279.4 x 256.66 mm)

Configurations:
- Bench-top, stackable, rack-mountable

Weight: 3.85 lbs (1.75 kg)

For technical questions, contact micro-measurements@vpgsensors.com

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