Portable Data Acquisition System
Datashuttle Series

✔ **Thermocouple, RTD, or General Purpose Input**
✔ **12-Bit (2 kHz) and 16-Bit (200 Hz) Resolution Models**
✔ **8 Differential Analog Input Channels and 8 Digital I/O Lines**
✔ **Connects to Computer Parallel Port**
✔ **Optional Analog Output Models Available**

$**1095**
Basic Unit

A/IN

DI/O

IBM PC

IBM PS/2

The DataShuttle is smaller than a notebook computer, weighing less than 2 lb (1 kg). It accommodates 8 analog inputs and 8 digital I/O lines, and communicates with your PC through a high speed parallel pass-thru interface that allows you to utilize other parallel peripherals simultaneously.

For applications with a large number of inputs, up to 15 DataShuttles can be lined together using a standard printer cable for up to 120 analog inputs and 120 digital I/O signals. Sensor leads are terminated on each DataShuttle, eliminating the need for additional terminal panels.

ANALOG INPUTS
The DataShuttle can accept a variety of input signals with both 12 and 16-bit resolution. GP models are available with 12 or 16-bit resolution, capable of reading millivolt and voltage signals. TC models read thermocouples directly, as well as millivolt and volt signals. RTD models read RTD inputs directly. 12-bit resolution models feature scan rates up to 2000 samples per second when reading a single channel, and 700 samples per second when reading multiple channels. The 16-bit models provide 200 samples per second as the max. single channel scan rate and 150 samples per second when scanning multiple channels. When reading more than one channel, the multiple channel scan rate should be divided by the number of channels to provide the individual channel scan rate.

To Order *(Specify Model Number)*

Model No.	Price	Analog In Resolution	Max. Speed	Analog Inputs	Sensor Types
DS-12-8-GP	**$1095**	12-bit	2 kHz	8 diff.	mV, V
DS-16-8-GP	1495	16-bit	200 Hz	8 diff.	mV, V
DS-12-8-TC	1295	12-bit	2 kHz	8 diff.	T/C, mV, V
DS-16-8-TC	1695	16-bit	200 Hz	8 diff.	T/C, mV, V
DS-12-8-RTD	1295	12-bit	2 kHz	8 diff.	RTD
DS-16-8-RTD	1695	16-bit	200 Hz	8 diff.	RTD

Keyboard power adaptor for DataShuttle, to power directly from hostcomputer,model DS-C70 **$50.** *(not for use with models with optional analog outputs)*
DataShuttle supplied with QuickLog PC software, driver software, ac adaptor, parallel cable and operator's manual.
Note:To order DataShuttle with 2 optional analog outputs add "-AO" to the part number and add $300 to the price.
Ordering Example: *DS-16-8-TC 16-bit DataShuttle for thermocouple input,* **$1695.**

RTD Temperature Measurement

Nominal Resistance at 0°C	Range	DS-12 Models		DS-16 Models	
		Resolution	Accuracy	Resolution	Accuracy
100 Ω	-200 to 750°C	0.05 to 0.2°C	1.4°C	0.01°C	1.0°C
200 Ω	-200 to 115°C	0.02 to 0.1°C	1.0°C	0.005°C	0.8°C

Other RTD input types available. Consult Engineering for details.
QuickLog PC software supports Platinum RTDs with 0.00385 curves. Driver software supports both 0.00385 and 0.00392 curves.

Millivolt, Voltage and Current Measurement

| Range	DS-12 Models			DS-16 Models			Internal Noise (Typ. RMS)
	Reso-lution	Accuracy		Reso-lution	Accuracy		
		% range	% rdg		% range	% rdg	
-5 to 50 mV	12 µV	0.08	–	0.8 µV	0.04	–	0.5 µV
±25 mV	12 µV	0.16	–	0.8 µV	0.08	–	0.5 µV
-50 to 500 mV	120 µV	0.05	0.2	8 µV	0.01	0.05	4 µV
±250mV	20 µV	0.05	0.2	8 µV	0.01	0.05	4 µV
-1 to 10 V	2.4 mV	0.05	0.2	150 µV	0.01	0.05	50 µV
±5 V	2.4 mV	0.05	0.3	150 µV	0.01	0.10	50 µV

SOFTWARE - QUICKLOG PC

A trimmed-down version of WorkBench PC is included with each card. This version is fully functional, but limited to a maximum of 20 icons on-screen. For complete information on WorkBench PC, see Section B.

QuickLog is a comprehensive easy-to-use icon driven data acquisition
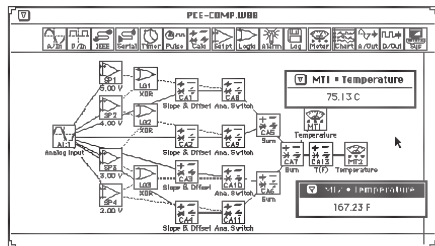
software. By interconnecting icons, data acquisition, process control and data analysis functions can
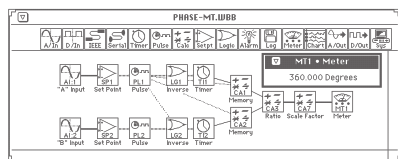
be easily and quickly implemented. QuickLog PC features include:

• Acquisition of analog or digital data

• On-screen display in numerical and/or graphical formats

• Log data to disk at pre-set intervals. The data is stored in ASCII format which is compatible with most spreadsheets and data bases including Lotus 123, Microsoft Excel, or dBase III.

• Use icons and pop up menus for truly intuitive operation.

PROGRAM DEVELOPMENT TOOLS

For those writing their own software drivers which provide easy access to all board functions are also provided at no charge. The drivers support most common programming languages for DOS and Windows, including GW BASIC, Visual Basic, Turbo Pascal, and C.
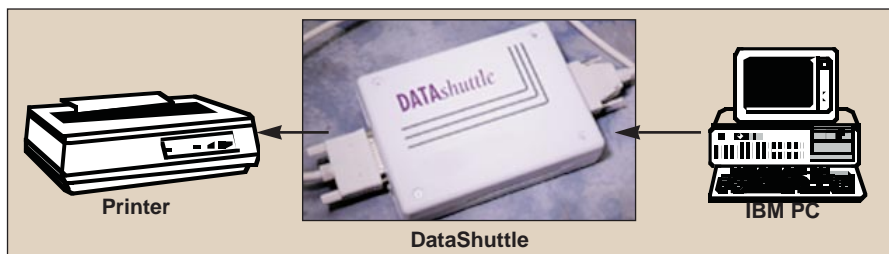
Specifications

Analog Inputs: 8 channels, 12 or 16-bit dynamic resolution

MAX. SCAN RATE

Single Channel: 2,000 Hz @ 12-bits, 200 Hz @ 16-bits

Multiple Channel: 700 Hz @ 12-bits, 150 Hz @ 16-bits

(scan rates given for an IBM PC 386 DX

Printer **DataShuttle** **IBM PC**

DataShuttle attaches to your PC through a high speed parallel pass-thru interface, so you don't have to disconnect your printer.

running at 33 MHz)

Input Protection: 50 V differential continuous, 150 V momentary

Input Impedance: >1000 MΩ

Digital I/O: 8 channels; each line individually selected for input/output

Digital Inputs: TTL/CMOS compatible

Digital Outputs: high voltage open collector: low level: 50 mA max, <0.7 V at 40 mA (sink); high level: 30 V max, <250 µA (source)

Counter/Timer: 1 channel, 16-bit up to 3 MHz

Interface: standard parallel port, high speed pass-thru

Sensor Termination: integrated; no additional hardware required

Power: 5-9 Vdc, 250 mA via included ac adaptor

Dimensions: 19 x 14 x 5 cm (7.5" x 5.5" x 2")

Weight: less than 1 kg (2 lb)

Expansion: up to 15 units may be daisy chained on a single parallel port for 120 analog input channels

Software Support: QuickLog PC (supplied) or WorkBench PC (optional), WorkBench for Windows (optional)

Thermocouple Temperature Measurement

Thermocouple Type	Range	DS-12-TC		DS-16-TC	
		Resolution	Accuracy	Resolution	Accuracy
Iron-Constantan J	-210 to -100°C -100 to 0°C 0 to 880°C	0.1-0.3°C 0.05°C 0.05-0.2°C	±2.3°C ±1.2°C ±1.0°C	0.02-0.04°C 0.02°C 0.01°C	±1.2°C ±0.7°C ±0.5°C
CHROMEGA®-ALOMEGA®-K	-250 to -75°C -75 to 1260°C 0 to 900°C	0.15-1.0°C 0.07-0.3°C 0.06-0.2°C	±8°C ±1.4°C ±1.2°C	0.03-0.15°C 0.03°C 0.02°C	±4°C ±1°C ±0.7°C
CHROMEGA-Constantan E	-250 to -70°C -70 to 100°C 100 to 680°C	0.1-0.5°C 0.04°C 0.04-0.15°C	±4°C ±1.0°C ±0.8°C	0.08-0.01°C 0.01°C 0.01°C	±2°C ±0.6°C ±0.4°C
Copper-Constantan T	-250 to -50°C -50 to 10°C 10 to 150°C 150 to 400°C	0.15-0.8°C 0.02-0.8°C 0.06°C 0.06-0.1°C	±6°C ±1.4°C ±1.2°C ±1.0°C	0.03-0.1°C 0.02-0.03°C 0.01-0.02°C 0.01°C	±3°C ±0.9°C ±0.7°C ±0.5°C
Pt/10%Rh-Pt S	-50 to 120°C 120 to 380°C 380 to 1770°C	0.4°C 0.3°C 0.2-0.6°C	±10°C ±5°C ±4°C	0.1-0.2°C 0.1°C 0.08°C	±5°C ±3°C ±2°C
Pt/13%Rh-Pt R	-50 to 250°C 250 to 800°C 800 to 1770°C	0.2-0.4°C 0.2°C 0.2-0.4°C	±10°C ±4°C ±3°C	0.1-0.2°C 0.1°C 0.08°C	±5°C ±3°C ±2°C
Pt/30%Rh-Pt/6%Rh B	200 to 300°C 300 to 500°C 500 to 1000°C 1000 to 1820°C	0.7-1.0°C 0.4-0.7°C 0.2-0.4°C 0.2-0.4°C	±20°C ±13°C ±8°C ±4°C	0.25-0.4°C 0.15-0.25°C 0.08-0.15°C 0.08°C	±10°C ±6°C ±4°C ±2°C
W-W/26%Re G	25 to 200°C 200 to 2315°C	0.2-1.0°C 0.15-0.8°C	±15°C ±4°C	0.08-0.3°C 0.08°C	±8°C ±2°C
W/3%Re-W/25%Re D	-20 to 2315°C 150 to 2000°C	0.2-1.0°C 0.15-0.6°C	±4°C ±3°C	0.04-0.08°C 0.04°C	±2°C ±1.3°C
W/5%Re-W/26%Re C	-20 to 2315°C 100 to 1500°C	0.15-1.0°C 0.15-0.4°C	±4°C ±3°C	0.04-0.08°C 0.05°C	±2°C ±1.5°C
OMEGALLOY® Nicrosil-Nisil N	-200 to -100°C -100 to 1300°C	0.7-1.4°C 0.4-0.7°C	±5°C ±3°C	0.05-0.1°C 0.02-0.05°C	±3°C ±1.5°C

Conditions: 25°C ambient at the interface board, source resistance less than 1kΩ. Includes linearity, drift, offset, resolution and calibration error. Does not include the accuracy of the thermocouple itself.