DAS-1600
DAS-1400
DAS-1200

- **Family of three data acquisition boards:**
  DAS-1600 - 16 single-ended or 8 differential inputs with 2 analog outputs
  DAS-1400 - 16 single-ended or 8 differential inputs
  DAS-1200 - 16 single-ended or 8 differential inputs
- **Up to 100 kSamples/s max input rate**
- **12-bit resolution**
- **High speed DMA transfer capability**
- **Selectable analog input ranges**
- **Burst mode timing emulates simultaneous sample-and-hold**
- **32 digital I/O lines (DAS-1600/1200), 8 digital lines (DAS-1400)**
- **Two 12-bit D/A channels (DAS-1600)**
- **Backwards-compatible with DAS-16G Series**
- **16-bit DriverLINX software drivers for Windows 95/98—ActiveX and DLL based**

Ordering Information

DAS-1601 100kS/s Analog and Digital I/O Board with gains of 1, 10, 100, and 500

DAS-1602 100kS/s Analog and Digital I/O Board with gains of 1, 2, 4, and 8

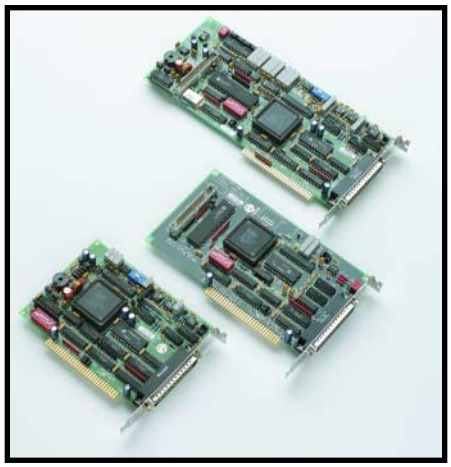
DAS-1401 100kS/s Analog and Digital I/O Board with gains of 1, 10, 100, and 500

DAS-1402 100kS/s Analog and Digital I/O Board with gains of 1, 2, 4, and 8

DAS-1201 50kS/s Analog and Digital I/O Board with gains of 1, 10, 100, 500

DAS-1202 100kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8

50–100kHz, 12-Bit Multifunction Boards



up & running software

When you need general purpose capabilities, from flexible data transfer to precision triggering, the DAS-1600/1400/1200 Series of high speed analog and digital I/O boards is the answer. This series is ideal for a wide range of product test, process monitoring, and R&D applications.

ACCESSORIES AVAILABLE

C1800	DAS-1600/1400/1200 to STA-16, STA-U, or STP-37 Cable
EXP-16 and EXP-16/A	16-Channel Multiplexer Accessory Board
EXP-1600	Signal Conditioning and Expansion Accessory Board
MB-01*	16-Channel Direct-Connection Module Mounting Rack
MB-05*	8-Channel Direct-Connection Module Mounting Rack
MS-DAS-1200	Upgrade to latest version of DriverLINX software and hardware manuals for DAS-1200 Series. Windows 95/98 only.
MS-DAS-1400/1600	Upgrade to latest version of DriverLINX software and hardware manuals for DAS-1400/1600. Windows 95/98 only.
S1600	DAS-1600/1400/1200 Series to EXP-16 cable
STA-16	Screw Terminal Accessory for main I/O connector
STA-MB	Screw Terminal Accessory for the MB-Series modules
STC-37	Screw Terminal Connector
STA-U	Universal Screw Terminal Accessory for auxiliary I/O connector
STP-37	Cost-effective Screw Terminal Panel
TESTPOINT	TestPoint Software Package

*Signal conditioning modules for the MB-01, MB-02, and MB-05 can be found in the Signal Conditioning and Accessories section.

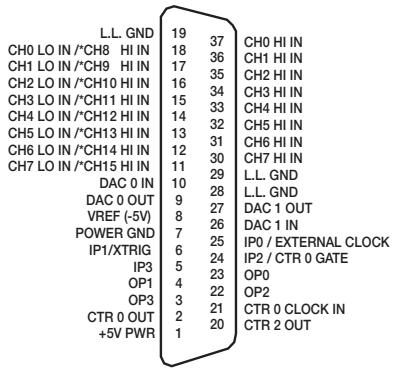
DAS-1600/1400/1200 SERIES SELECTION GUIDE

	DAS-1600	DAS-1400	DAS-1200
Analog Inputs	16 single-ended or 8 differential	16 single-ended or 8 differential	16 single-ended or 8 differential
Maximum Speed			
Model 01	100kS/s	100kS/s	50kS/s
Model 02	100kS/s	100kS/s	100kS/s
Resolution	12 bits	12 bits	12 bits
Input Ranges			
Unipolar	0 to +10V	0 to +10V	N/A
Bipolar	±10V	±10V	±5V
Gain Selection	Programmable	Programmable	Switch
Gains			
Model 01	1, 10, 100, 500	1, 10, 100, 500	1, 10, 100, 500
Model 02	1, 2, 4, 8	1, 2, 4, 8	1, 2, 4, 8
D/A Outputs	2	0	0
Digital I/O Lines	32	8	32

DAS-1600
DAS-1400
DAS-1200

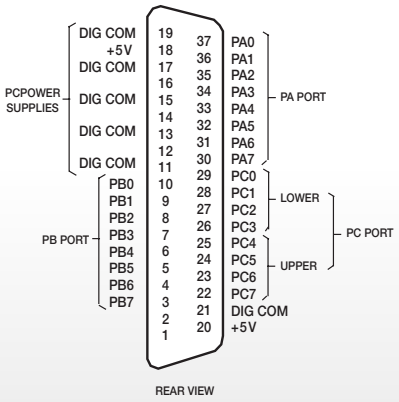
50–100kHz, 12-Bit Multifunction Boards

Main I/O Connector

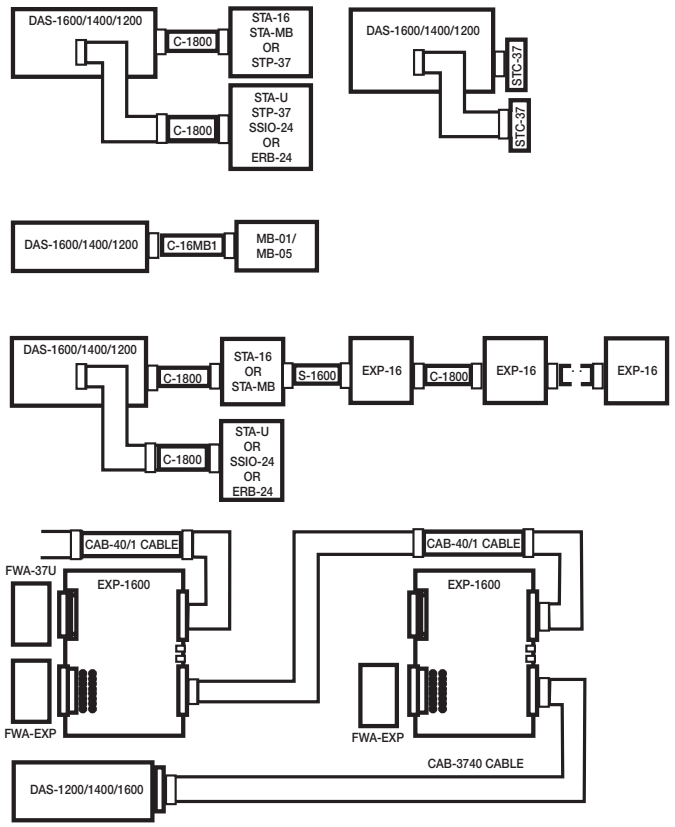


Note: Pins 9, 10, 26, and 27 have no connections on the DAS-1200 and DAS-1400.

Auxiliary I/O Connector
(DAS-1600 and DAS-1200 only)



Configuration Guide



DIGITAL I/O (DAS-1600/1400/1200)

(8 bits on main 37-pin D connector)

OUTPUTS (STANDARD LSTTL):

OUTPUT BITS: 4.

OUTPUT LOW: V_{OL} = 0.5V max @ I_{OL} = 8.0mA.

OUTPUT HIGH: V_{OH} = 2.4V min @ I_{OH} = –0.4mA.

INPUTS (AND INTERRUPTS) (LSTTL):

INPUT BITS: 4.

INPUT LOW: V_{IL} = 0.8V max; I_{IL} = –0.2mA max.

INPUT HIGH: V_{IH} = 2.0V min; I_{IH} = +10μA max.

DIGITAL I/O (DAS-1600/1200)

(24 bits on Auxiliary Connector)

TYPE: 82C55A-5.

I/O: 24 bits.

INPUT LOW: V_{IL} = 0.8V max; I_{IL} = –10μA max.

INPUT HIGH: V_{IH} = 2.0V min; I_{IH} = +10μA max.

OUTPUT LOW: V_{OL} = 0.45V max @ I_{OL} = 1.7mA.

OUTPUT HIGH: V_{OH} = 2.4V min @ I_{OH} = –200μA.

GENERAL ENVIRONMENTAL

OPERATING TEMPERATURE: to 70°C.

STORAGE TEMPERATURE: –20 to 70°C.

HUMIDITY: 0 to 95%, non-condensing.

EMC: Conforms to European Union Directive 89/336/EEC.

SAFETY: Meets EN61010-1/IEC 1010.

DAS-1600 DIMENSIONS: 9in L × 4.25in H × 0.90in D (22.9cm × 10.8cm × 2.3cm).

DAS-1400 DIMENSIONS: 5.5in L × 4.25in H × 0.75in D (14.0cm × 10.8cm × 1.9cm).

DAS-1200 DIMENSIONS: 7in L × 4.25in H × 0.90in D (17.8cm × 10.8cm × 2.3cm).

DAS-1600
DAS-1400
DAS-1200

50–100kHz, 12-Bit Multifunction Boards

Specifications

ANALOG INPUTS (DAS-1600 AND DAS-1400)

NUMBER OF CHANNELS: 8 differential or16 single-ended; software-selectable.

ACCURACY: 0.01% of reading ±1 bit.

CONVERTER TYPE: Successive approximation.

RESOLUTION: 12 bits.

CONVERSION TIME: 8μs max (7.5μs typ).

ACQUISITION TIME: 1.4μs.

MONOTONICITY: Guaranteed over operating temperature range.

LINEARITY: ±1 bit.

CODING: Offset binary (bipolar), True binary (unipolar).

OVERVOLTAGE: ±35V max powered; ±20V unpowered.

INPUT CURRENT: 250nA max (125nA type) @ 25°C.

INPUT IMPEDANCE: Greater than 25MΩ.

TEMPERATURE COEFFICIENT:

GAIN DRIFT : ±50ppm/°C max of full scale.

ZERO DRIFT : ±10μV/°C ±200μV/gain (bipolar).
±10μV/°C ±50μV/gain (unipolar).

MODEL DAS-1601 AND DAS-1401

GAIN	UNIPOLAR INPUT RANGE	BIPOLAR INPUT RANGE	THROUGHPUT
1	0 to +10 V	±10 V	100 kS/s
10	0 to +1 V	±1 V	100 kS/s
100	0 to +100 mV	±100 mV	70 kS/s
500	0 to +20 mV	±20 mV	30 kS/s

MODEL DAS-1602 AND DAS-1402

GAIN	UNIPOLAR INPUT RANGE	BIPOLAR INPUT RANGE	THROUGHPUT
1	0 to +10 V	±10 V	100 kS/s
2	0 to +5 V	± 5 V	100 kS/s
4	0 to +2.5 V	±2.5 V	100 kS/s
8	0 to +1.25 V	±1.25 V	100 kS/s

	DAS-1601/1401	DAS-1602/1402
Bipolar electrical noise (in counts)		
	Gain=1: p-p=1; rms=0.1	Gain=1: p-p=1; rms=0.1
	Gain=10: p-p=1; rms=0.1	Gain=2: p-p=1; rms=0.1
	Gain=100: p-p=2; rms=0.2	Gain=4: p-p=1; rms=0.1
	Gain=500: p-p=3; rms=0.5	Gain=8: p-p=1; rms=0.1
Unipolar electrical noise (in counts)		
	Gain=1: p-p=1; rms=0.1	Gain=1: p-p=1; rms=0.1
	Gain=10: p-p=1; rms=0.1	Gain=2: p-p=1; rms=0.1
	Gain=100: p-p=2; rms=0.2	Gain=4: p-p=1; rms=0.1
	Gain=500: p-p=3; rms=0.5	Gain=8: p-p=1; rms=0.1

ANALOG INPUTS (DAS-1200)

NUMBER OF CHANNELS: 8 differential or 16 single-ended; switch-selectable.

CALIBRATED ACCURACY: 0.01% of reading ±1 LSB typ (applies to gain range calibrated).

UNCALIBRATED ACCURACY: 0.8% of reading ±1 LSB max.

CONVERTER TYPE: Successive approximation.

RESOLUTION: 12 bits.

CONVERSION TIME: 8μs max.

ACQUISITION TIME: 1.4μs.

MONOTONICITY: Guaranteed over operating temperature range.

LINEARITY: ±1 bit.

CODING: Offset binary (bipolar), True binary (unipolar).

OVERVOLTAGE: ±35V max powered; ±20V unpowered.

INPUT BIAS CURRENT: ±2.0nA max (DAS-1201).
±2.0nA max (DAS-1202).

INPUT IMPEDANCE: Greater than 25MΩ.

TEMPERATURE COEFFICIENT:

GAIN DRIFT : ±100ppm/°C max (DAS-1201).
±150ppm/°C max (DAS-1202).

ZERO DRIFT : (1+115/Gain) μV/°C max (DAS-1201).
(10+200/Gain) μV/°C max (DAS-1202).

MODEL DAS-1201

GAIN	INPUT RANGE	THROUGHPUT
1	± 5V	50kS/s
10	± 0.5V	50kS/s
100	± 50mV	50kS/s
500	± 10mV	10kS/s

MODEL DAS-1202

GAIN	INPUT RANGE	THROUGHPUT
1	± 5V	100kS/s
2	± 2.5V	100kS/s
4	± 1.25V	100kS/s
8	± 0.625V	100kS/s

NOISE*

Bipolar electrical noise typical (in counts)
Gain = 1 : p-p = 1; rms = 0.1
Gain = 10 : p-p = 1; rms = 0.1
Gain = 100 : p-p = 2; rms = 0.2
Gain = 500 : p-p = 4; rms = 0.5

Bipolar electrical noise (in counts)
Gain = 1 : p-p = 1; rms = 0.1
Gain = 2 : p-p = 1; rms = 0.1
Gain = 4 : p-p = 1; rms = 0.1
Gain = 8 : p-p = 2; rms = 0.2

* Note: The DAS-1200 Series directly uses the +12V power from the PC. Some computers will cause higher levels of noise to be seen on the DAS-1200 Series.

D/A CONVERTERS (DAS-1600 ONLY)

NUMBER OF CHANNELS: 2 independent.

RESOLUTION: 12 bits.

VOLTAGE RANGE: 0 to 5V, 0 to 10V, ±5V, ±10V; switch-selectable (other ranges possible with external reference).

OUTPUT DRIVE CURRENT: ±5mA max.

SETTLING TIME: 20μs to 0.01%.

LINEARITY: ±½ bit.

MONOTONICITY: Guaranteed.

OUTPUT IMPEDANCE: Less than 0.1Ω.