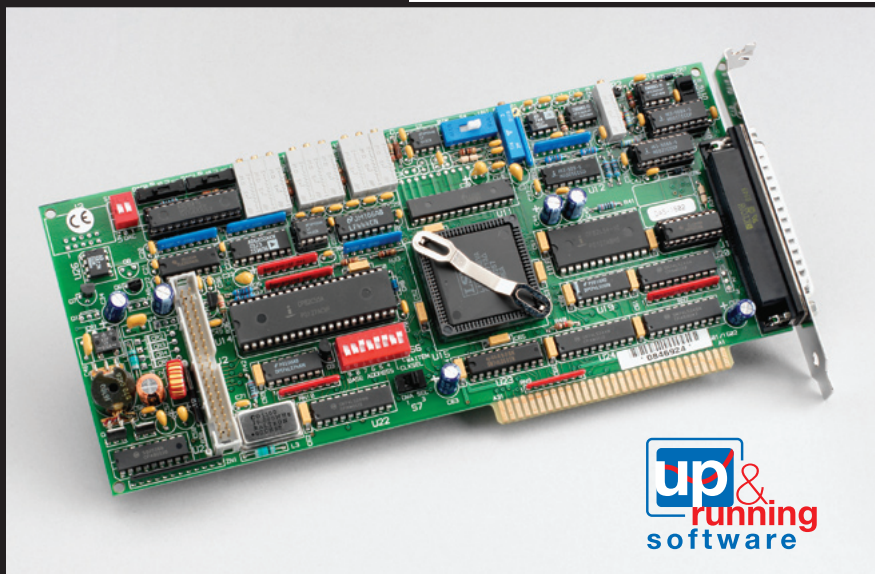


DAS-1600

50–100kHz, 12-Bit Multifunction Boards

General purpose capabilities



When you need general purpose capabilities, from flexible data transfer to precision triggering, the DAS-1600 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.

Specifications

ANALOG INPUTS: 16 single-ended or 8 differential.

MAXIMUM SPEED: Model 01: 100kS/s.
Model 02: 100kS/s

RESOLUTION: 12 bits.

INPUT RANGES: Unipolar: 0 to +10V.
Bipolar: $\pm 10V$.

GAIN SELECTION: Programmable.

GAINS: Model 01: 1, 10, 100, 500.
Model 02: 1, 2, 4, 8.

D/A OUTPUTS: 2.

DIGITAL I/O LINES: 32.

- 16 single-ended or eight differential inputs with two analog outputs
- Up to 100 kSamples/s maximum 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
- Two 12-bit D/A channels
- Backwards-compatible with DAS-16G Series
- 16-bit DriverLINX[®] software drivers for Windows[®] 95/98—ActiveX and DLL based

ACCESSORIES AVAILABLE

C1800	DAS-1600 to STA-16, STA-U, or STP-37 Cable
EXP-16	16-Channel Multiplexer Accessory Board
MB-01*	16-Channel Direct-Connection Module Mounting Rack
MB-05*	8-Channel Direct-Connection Module Mounting Rack
SI600	DAS-1600 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

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

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

1.888.KEITHLEY (U.S. only)

www.keithley.com

KEITHLEY

DATA ACQUISITION PRODUCTS

DAS-1600

50–100kHz, 12-Bit Multifunction Boards

Main I/O Connector

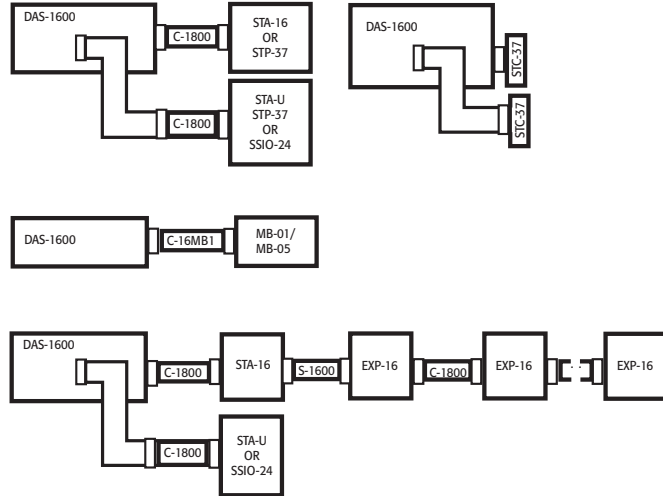
LL GND	19	37	CH0 HI IN
CH0 LO IN /*CH8 HI IN	18	36	CH1 HI IN
CH1 LO IN /*CH9 HI IN	17	35	CH2 HI IN
CH2 LO IN /*CH10 HI IN	16	34	CH3 HI IN
CH3 LO IN /*CH11 HI IN	15	33	CH4 HI IN
CH4 LO IN /*CH12 HI IN	14	32	CH5 HI IN
CH5 LO IN /*CH13 HI IN	13	31	CH6 HI IN
CH6 LO IN /*CH14 HI IN	12	30	CH7 HI IN
CH7 LO IN /*CH15 HI IN	11	29	LL GND
DAC 0 IN	10	28	LL GND
DAC 0 OUT	9	27	DAC 1 OUT
VREF (-5V)	8	26	DAC 1 IN
POWER GND	7	25	IP0 / EXTERNAL CLOCK
IP1/XTRIG	6	24	IP2 / CTR 0 GATE
IP3	5	23	OP0
OP1	4	22	OP2
OP3	3	21	CTR 0 CLOCK IN
CTR 0 OUT	2	20	CTR 2 OUT
+5V PWR	1		

Auxiliary I/O Connector

DIG COM	19	37	PA0
+5V	18	36	PA1
DIG COM	17	35	PA2
DIG COM	16	34	PA3
DIG COM	15	33	PA4
DIG COM	14	32	PA5
DIG COM	13	31	PA6
DIG COM	12	30	PA7
DIG COM	11	29	PC0
PB0	10	28	PC1
PB1	9	27	PC2
PB2	8	26	PC3
PB3	7	25	PC4
PB4	6	24	PC5
PB5	5	23	PC6
PB6	4	22	PC7
PB7	3	21	DIG COM
	2	20	+5V
	1		

REAR VIEW

Configuration Guide



Specifications

ANALOG INPUTS

- NUMBER OF CHANNELS: 8 differential or 16 single-ended; software-selectable.
- ACCURACY: 0.01% of reading ± 1 bit.
- CONVERTER TYPE: Successive approximation.
- RESOLUTION: 12 bits.
- CONVERSION TIME: 8 μ s max (7.5 μ s typ).
- ACQUISITION TIME: 1.4 μ s.
- MONOTONICITY: Guaranteed over operating temperature range.
- LINEARITY: ± 1 bit.
- CODING: Offset binary (bipolar), True binary (unipolar).
- OVERVOLTAGE: ± 35 V max powered; ± 20 V unpowered.
- INPUT CURRENT: 250nA max (125nA type) @ 25°C.
- INPUT IMPEDANCE: Greater than 25M Ω .

TEMPERATURE COEFFICIENT:

GAIN DRIFT : ± 50 ppm/ $^{\circ}$ C max of full scale.

ZERO DRIFT : $\pm 10\mu$ V/ $^{\circ}$ C $\pm 200\mu$ V/gain (bipolar).
 $\pm 10\mu$ V/ $^{\circ}$ C $\pm 50\mu$ V/gain (unipolar).

MODEL DAS-1601

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

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		DAS-1602	
Bipolar electrical noise (in counts)			
Gain=1: p-p=1; rms=0.1	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=10: 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=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=2: p-p=1; rms=0.1	Gain=4: p-p=1; rms=0.1
Gain=10: 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=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		

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

D/A CONVERTERS

NUMBER OF CHANNELS: 2 independent.

RESOLUTION: 12 bits.

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

OUTPUT DRIVE CURRENT: ± 5 mA max.

SETTLING TIME: 20 μ s to 0.01%.

LINEARITY: $\pm 1/2$ bit.

MONOTONICITY: Guaranteed.

OUTPUT IMPEDANCE: Less than 0.1 Ω .

DIGITAL I/O

(8 bits on main 37-pin D connector)

OUTPUTS (STANDARD LSTTL):

OUTPUT BITS: 4.

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

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

INPUTS (AND INTERRUPTS) (LSTTL):

INPUT BITS: 4.

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

INPUT HIGH: $V_{IH} = 2.0$ V min; $I_{IH} = +10\mu$ A max.

DIGITAL I/O

(24 bits on Auxiliary Connector)

TYPE: 82C55A-5.

I/O: 24 bits.

INPUT LOW: $V_{IL} = 0.8$ V max; $I_{IL} = -10\mu$ A max.

INPUT HIGH: $V_{IH} = 2.0$ V min; $I_{IH} = +10\mu$ A max.

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

OUTPUT HIGH: $V_{OH} = 2.4$ V min @ $I_{OH} = -200\mu$ A.

GENERAL ENVIRONMENTAL

OPERATING TEMPERATURE: to 70 $^{\circ}$ C.

STORAGE TEMPERATURE: -20 to 70 $^{\circ}$ C.

HUMIDITY: 0 to 95%, non-condensing.

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

SAFETY: Meets EN61010-1/IEC 1010.

DIMENSIONS: 9 in L \times 4.25 in H \times 0.90 in D
 (22.9cm \times 10.8cm \times 2.3cm).