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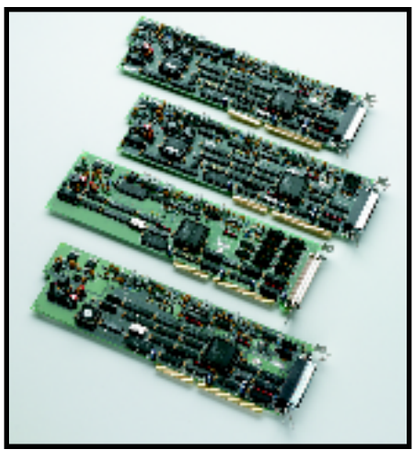
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Find the *Keithley DAS-1802HC* at our website: *Click HERE*

DAS-1700
DAS-1800

- Up to 333 ksamples/s maximum input rate
- Channel-gain queue for high-speed acquisition at different gains
- 1K word FIFO
- Programmable burst mode sampling emulates simultaneous sample-and-hold
- Pre-, post- and about-triggering
- 2 waveform-quality analog outputs (DAS-1700/1800AO)
- 2 DC analog outputs (DAS-1800 HC and DAS-1700/1800HR-DA)
- 32-bit DriverLINX drivers plus a suite of bundled software including ExceLINX, VisualSCOPE, TestPoint, and LabVIEW drivers

46–333kHz, 12/16-Bit Multifunction Boards



This family of seven high-performance boards provides analog and digital I/O, optimal performance with Windows, and continuous, gap-free data acquisition on up to 64 channels. With these boards you can sample a few high-speed signals, or you can sample a large number of medium-speed signals and monitor various sources and sensors at different voltage levels. Even when you use channels with different gains or in nonsequential order, these boards maintain their high-speed acquisition.

APPLICATIONS

- Product test
- Process monitoring
- Data logging

up & running software

DAS-1700/1800 SERIES SELECTOR GUIDE

	DAS-1700/1800AO	DAS-1800HC	DAS-1700/1800HR	DAS-1700/1800ST
Analog Inputs	16 single-ended or 8 differential	64 single-ended or 32 differential	16 single-ended or 8 differential	16 single-ended or 8 differential
Maximum Sampling Rate				
DAS-1700	160 kS/s	N/A	50 kS/s	160 kS/s
DAS-1800	333 kS/s	333 kS/s	100 kS/s	333 kS/s
Multiple Channel Aggregate Sampling Rate				
DAS-1700	150 kS/s	N/A	46 kS/s	150 kS/s
DAS-1800	312.5 kS/s	312.5 kS/s	98 kS/s	312.5 kS/s
Resolution	12-bits	12-bits	16-bits	12-bits
FIFO	1024 locations	1024 locations	1024 locations	1024 locations
External Expansion at Speed	Up to 256 inputs	N/A	Up to 256 inputs	Up to 256 inputs
Gain-Channel Queue Length	256	64	256	256
Gains				
Model 01	1, 5, 50, 250	1, 5, 50, 250	N/A	1, 5, 50, 250
Model 02	1, 2, 4, 8	1, 2, 4, 8	1, 2, 4, 8	1, 2, 4, 8
Input Ranges - Model 01	±5V, ±1V, ±100mV, ±20mV 0 - 5V, 0 - 1V, 0 - 100mV, 0 - 20mV	±5V, ±1V, ±100mV, ±20mV 0 - 5V, 0 - 1V, 0 - 100mV, 0 - 20mV	N/A	±5V, ±1V, ±100mV, ±20mV 0 - 5V, 0 - 1V, 0 - 100mV, 0 - 20mV
Input Ranges - Model 02	±10V, ±5V, ±2.5V, ±1.25V 0 - 10V, 0 - 5V, 0 - 2.5V, 0 - 1.25V	±10V, ±5V, ±2.5V, ±1.25V 0 - 10V, 0 - 5V, 0 - 2.5V, 0 - 1.25V	±10V, ±5V, ±2.5V, ±1.25V 0 - 10V, 0 - 5V, 0 - 2.5V, 0 - 1.25V	±10V, ±5V, ±2.5V, ±1.25V 0 - 10V, 0 - 5V, 0 - 2.5V, 0 - 1.25V
D/A Outputs	2 Waveform quality	2	2 optional	4 optional
D/A Update Speed	500 kS/s	500 kS/s	500 kS/s	500 kS/s
D/A FIFO Size	2048 Locations	1 Location	1 Location	1 Location
Digital Inputs	4	4	4	4
Digital Outputs	4	8	4	4

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DAS-1700
DAS-1800

46–333kHz, 12/16-Bit Multifunction Boards

Connector Pin Assignments

The analog input, analog output, and digital input and output connections of the DAS-1700/1800AO, DAS-1700/1800HR, and DAS-1700/1800ST are made with a 50-pin D-type connector at the rear of the computer. The analog input, analog output, and digital input and output connections of the DAS-1800HC are made with a 100-pin D-type connector at the rear of the computer.

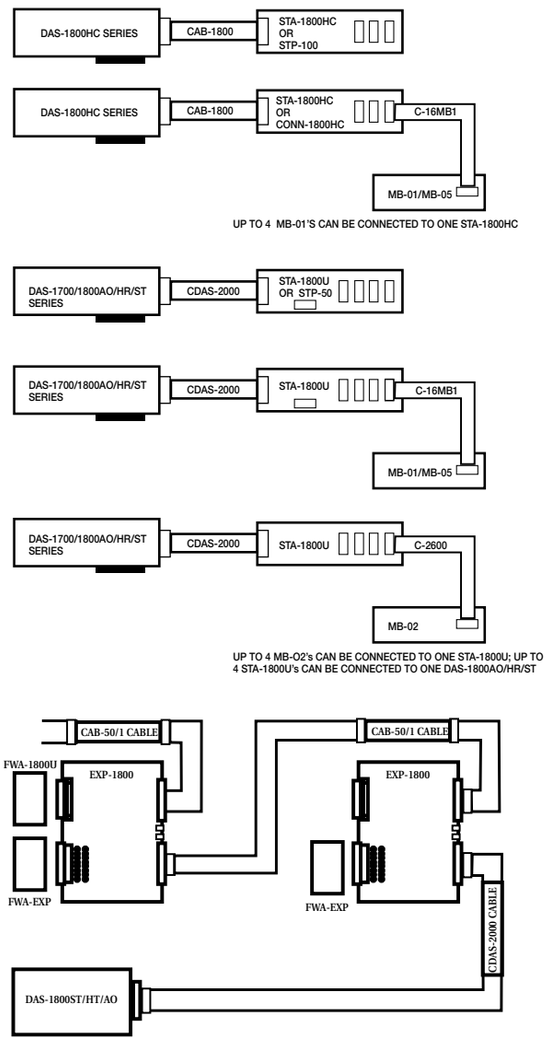
	Bank A Pin	Bank B Pin	
AGND	1	1	AGND
CH16 HI	2	2	CH00 HI
CH16 LO / CH48 HI	3	3	CH00 LO / CH32 HI
CH17 HI	4	4	CH01 HI
CH17 LO / CH49 HI	5	5	CH01 LO / CH33 HI
CH18 HI	6	6	CH02 HI
CH18 LO / CH50 HI	7	7	CH02 LO / CH34 HI
CH19 HI	8	8	CH03 HI
CH19 LO / CH51 HI	9	9	CH03 LO / CH35 HI
CH20 HI	10	10	CH04 HI
CH20 LO / CH52 HI	11	11	CH04 LO / CH36 HI
CH21 HI	12	12	CH05 HI
CH21 LO / CH53 HI	13	13	CH05 LO / CH37 HI
CH22 HI	14	14	CH06 HI
CH22 LO / CH54 HI	15	15	CH06 LO / CH38 HI
CH23 HI	16	16	CH07 HI
CH23 LO / CH55 HI	17	17	CH07 LO / CH39 HI
AGND	18	18	AGND
CH24 HI	19	19	CH08 HI
CH24 LO / CH56 HI	20	20	CH08 LO / CH40 HI
CH25 HI	21	21	CH09 HI
CH25 LO / CH57 HI	22	22	CH09 LO / CH41 HI
CH26 HI	23	23	CH10 HI
CH26 LO / CH58 HI	24	24	CH10 LO / CH42 HI
CH27 HI	25	25	CH11 HI
CH27 LO / CH59 HI	26	26	CH11 LO / CH43 HI
CH28 HI	27	27	CH12 HI
CH28 LO / CH60 HI	28	28	CH12 LO / CH44 HI
CH29 HI	29	29	CH13 HI
CH29 LO / CH61 HI	30	30	CH13 LO / CH45 HI
CH30 HI	31	31	CH14 HI
CH30 LO / CH62 HI	32	32	CH14 LO / CH46 HI
CH31 HI	33	33	CH15 HI
H31 LO / CH63 HI	34	34	CH15 LO / CH47 HI
AGND	35	35	AGND
DAC1 OUT	36	36	DAC0 OUT
-15 V	37	37	+15 V
DGND	38	38	DGND
NC	39	39	DI0 / XPCLK
SSHO	40	40	DI1 / TGIN
TGOUT	41	41	DI2
DOSTB	42	42	DI3
DO4	43	43	DO0
DO5	44	44	DO1
DO6	45	45	DO2
DO7	46	46	DO3
+5 V	47	47	+5 V
+5 V	48	48	+5 V
DGND	49	49	DGND
DGND	50	50	DGND

DAS-1700/1800HC

	Pin	Pin	
(User Common Mode)U_CM MD	1	26	CH00HI
CH00LOor CH08HI	2	27	CH01HI
CH01LOor CH09HI	3	28	CH02HI
CH02LOor CH10HI	4	29	CH03HI
CH03LOor CH11HI	5	30	CH04HI
CH04LOor CH12HI	6	31	CH05HI
CH05LOor CH13HI	7	32	CH06HI
CH06LOor CH14HI	8	33	CH07HI
CH07LOor CH15HI	9	34	LLGND
(DAS-1700/1800ST-DA) 0DAC 2	10	35	0DAC 0 (DAS-1700/1800AO/HR-DA/ST-DA)
(DAS-1700/1800ST-DA) 0DAC 3	11	36	0DAC 1 (DAS-1700/1800AO/HR-DA/ST-DA)
+15V	12	37	-15V
LLGND	13	38	LLGND
DGND	14	39	GEXT
DI1	15	40	DI0
DI3	16	41	DI2
DO1	17	42	DO0
DO3	18	43	DO2
DOSTB	19	44	XPCLK
TGOUT	20	45	SSHO
MUX03	21	46	TGIN
MUX05	22	47	MUX04
MUX07	23	48	MUX06
+5V	24	49	+5V
DGND	25	50	DGND

DAS-1700/1800HR/ST

Configuration Guide



Adding EXP-1800 will degrade the accuracy and noise specifications of the DAS-1700/1800.

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DAS-1700
DAS-1800

46–333kHz, 12/16-Bit Multifunction Boards

Analog Inputs (DAS-1700AO/ST and DAS-1800AO/HC/ST)

NUMBER OF CHANNELS:
8 differential or 16 single-ended; software-configurable with software selectable remote sense (DAS-1700/1800AO/ST).
32 differential or 64 single-ended; software-configurable (DAS-1800HC).

A/D FIFO BUFFER SIZE: 1024 words.

CHANNEL/GAIN QUEUE LENGTH:
256 locations (DAS-1700/1800AO/ST); 64 locations (DAS-1800HC).

RESOLUTION: 12 bits.

INPUT GAINS:
DAS-1701AO/ST, DAS-1801AO/HC/ST: 1, 5, 50, 250.
DAS-1702AO/ST, DAS-1802AO/HC/ST: 1, 2, 4, 8.

INPUT RANGES:	BIPOLAR	UNIPOLAR
DAS-1701/AO/ST	±5V, ±1V, ±100mV	0 - 5V, 0 - 1V
DAS-1801AO/HC/ST	±20mV	0 - 100mV, 0 - 20mV
DAS-1702/AO/ST	±10V, ±5V, ±2.5V	0 - 10V, 0 - 5V
DAS-1802AO/HC/ST	±1.25V	0 - 2.5V, 0 - 1.25V

INPUT RANGE SELECTION: Software programmable.

INPUT OVERVOLTAGE:
±15V continuous, powered; ±15V continuous, unpowered.

INPUT BIAS CURRENT:
±40nA max. @ 25°C; ±60nA max. over operating temperature.

INPUT IMPEDANCE: >100MΩ in parallel with 90pF.

THROUGHPUT–SINGLE CHANNEL: 333kS/s for DAS-1800 and 160kS/s for DAS-1700, for any gain or range.

THROUGHPUT–DAS-1701/AO/ST, DAS-1801AO/HC/ST
(multiple channels, at the same gain):

	BIPOLAR INPUTS		UNIPOLAR INPUTS	
GAIN	DAS-1700	DAS-1800	DAS-1700	DAS-1800
1	160 kS/s	312.5 kS/s	160 kS/s	312.5 kS/s
5	160 kS/s	312.5 kS/s	160 kS/s	312.5 kS/s
50	160 kS/s	312.5 kS/s	96 kS/s	200 kS/s
250	36 kS/s	75 kS/s	39 kS/s	60 kS/s

THROUGHPUT–DAS-1700/AO/ST, DAS-1802AO/HC/ST
(multiple channels, at the same gain): 150kS/s for the DAS-1700 and 312.5kS/s for the DAS-1800 for all ranges.

LINEARITY: **Integral:** ±½ LSB typical, ±1 LSB max.
Differential: ±1 LSB.

ABSOLUTE ACCURACY:
±0.01% of reading ±1 LSB for all ranges, typical.
±0.02% of reading ±1 LSB for gain < 250, max. @ 25°C.
±0.03% of reading ±1 LSB for gain = 250, max. @ 25°C.

TEMPERATURE COEFFICIENTS:
Offset - unipolar: ±10μV/°C ± (14μV/°C ÷ gain) max.
Offset - bipolar: ±10μV/°C ± (12μV/°C ÷ gain) max.

GAIN: **Gain < 50:** ±20ppm/°C of FS max.
Gain = 50: ±30ppm/°C of FS max.
Gain = 250: ±35ppm/°C of FS max.

CONVERSION TIME: 3.0μs max.

NOISE (DAS-1701AO, DAS-1801AO/HC/ST):

Gain	Bipolar (counts)	Unipolar (counts)
1	p-p = 1; rms = 0.1	p-p = 1; rms = 0.1
5	p-p = 1; rms = 0.1	p-p = 1; rms = 0.1
50	p-p = 4; rms = 0.5	p-p = 6; rms = 0.9
250	p-p = 8; rms = 1.0	p-p = 9; rms = 1.4

NOISE (DAS-1702AO/ST, DAS-1802AO/HC/ST): p-p = 1; rms = 0.1, for all gains and ranges.

COMMON MODE REJECTION RATIO: **Gain = 1:** 74dB.
Gain = 2, 4, 5: 80dB.
Gain = 8: 86dB.
Gain =1 50, 250: 100dB.

DATA TRANSFER MODES: DMA (single or dual channel), interrupt, or programmed I/O.

Analog Inputs (DAS-1700/1800HR)

NUMBER OF CHANNELS: 8 differential or 16 single-ended; software-configurable with software selectable remote sense.

A/D FIFO BUFFER SIZE: 1024 locations.

CHANNEL/GAIN QUEUE LENGTH: 256 locations.

RESOLUTION: 16 bits.

INPUT GAINS: 1, 2, 4, 8.

INPUT RANGES:
Bipolar: ±10V, ±5V, ± 2.5V, ±1.25V.
Unipolar: 0 to + 10V, 0 to +5V, 0 to +2.5V, 0 to +1.25V.

INPUT RANGE SELECTION: Software programmable.

INPUT OVERVOLTAGE: ±15V continuous, powered; ±15V continuous, unpowered.

INPUT BIAS CURRENT: ±40nA max. @ 25°C; ±60nA max. over operating temperature.

INPUT IMPEDANCE: >100MΩ in parallel with 90pF.

THROUGHPUT, SINGLE CHANNEL: 48kS/s for the DAS-1700 and 100kS/s for the DAS-1800, for any gain or range.

THROUGHPUT, MULTIPLE CHANNELS: 47kS/s for the DAS-1700 and 98kS/s for the DAS-1800, at the same gain, all ranges.

THROUGHPUT, MULTIPLE CHANNELS: 29kS/s for the DAS-1700 and 60kS/s for the DAS-1800, with gain change.

LINEARITY DIFFERENTIAL: ±1LSB. Monotonicity guaranteed over operating range.

ABSOLUTE ACCURACY:
Typical, all ranges: ±0.005% of reading ±1 LSB.
Maximum for gain = 1: ±0.005% of reading ±1.5 LSB.
Maximum for gain > 1: ±0.001% of reading ±1.5 LSB.

RELATIVE ACCURACY:
Typical: ±0.001% of reading ±1 LSB.
Maximum for 0–70°C: ±0.001% of reading ±1.5 LSB.

TEMPERATURE COEFFICIENTS:
Offset: ±5μV/°C max.
Gain: ± 7.5ppm/°C of FS max.
Conversion time: 8μs max.

NOISE:

Gain	Bipolar (counts)	Unipolar (counts)
1	p-p = ±2 ; rms = 0.5	p-p = ±2 ; rms = 0.6
2	p-p = ±2 ; rms = 0.5	p-p = ±2 ; rms = 0.6
4	p-p = ±2.5 ; rms = 0.6	p-p = ±2.5 ; rms = 0.7
8	p-p = ±2.5 ; rms = 0.7	p-p = ±3 ; rms = 0.8

COMMON MODE REJECTION RATIO: **Gain = 1:** 74dB.
Gain = 2, 4: 80dB.
Gain = 8: 86dB.

DATA TRANSFER MODES: DMA (single or dual channel), interrupt, or programmed I/O.

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DAS-1700
DAS-1800

46–333kHz, 12/16-Bit Multifunction Boards

Analog Outputs
(DAS-1700/1800AO only)

NUMBER OF CHANNELS: 2.

RESOLUTION: 12 bits.

RANGE: ±5V, ±10V, software programmable.

FIFO: 2048 words.

OUTPUT DRIVE CURRENT: ±15mA max.

CAPACITIVE LOAD DRIVE: 100µF max.

GAIN ACCURACY: Adjustable to zero.

OFFSET ACCURACY: Adjustable to zero.

LINEARITY: **Integral:** ±0.25 LSB typical, ±0.75 LSB max.
Differential: ±0.75 LSB max.

POWER-UP STATE: 0.0V

SAMPLE CLOCK: Internal clock, 7S/s to 500kS/s, A/D clock or external clock.

SETTLING TIME: 3µs for 20V step, typical; 1.8µs for LSB of major carry, typical.

THROUGHPUT: 500kS/s max. for the DAS-1700 and 500kS/s max., per channel in recycle mode.

GLITCH ENERGY: Zero glitch feedthrough.

TRIGGER SOURCES: Internal, external trigger, or external gate.

DATA TRANSFER MODES: DMA, interrupt, or programmed I/O.

ANALOG OUTPUTS
(DAS-1800HC ONLY)

NUMBER OF CHANNELS: 2.

RESOLUTION: 12 bits.

RANGE: ±10V

ABSOLUTE ACCURACY: ±1 LSB max.

OUTPUT DRIVE CURRENT: ±5mA max.

CAPACITIVE LOAD DRIVE: 100µF.

LINEARITY: Integral: ±¼ LSB typ.; ±½ LSB max.

POWER-UP STATE: 0.0V.

GLITCH ENERGY: 300nV·seconds.

DATA TRANSFER MODES: Interrupt or programmed I/O.

ENVIRONMENTAL

OPERATING TEMPERATURE: °C to +50°C

STORAGE TEMPERATURE: –20°C to +70°C

HUMIDITY: 0 to 95% (non-condensing)

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

SAFETY: Meets EN61010-1/IEC 1010.

DIMENSIONS: 13.3in L × 4.25in H × 0.75in D (33.8cm × 10.8cm × 1.9cm).

ACCESSORIES AVAILABLE

C2600	26-inch ribbon cable for the MB Series signal conditioning rack
C-16MB1	MB01 backplane to STA-1800HC or STA-1800U cable
CAB-1800	DAS-1800HC to STA-1800HC 100-pin, 18-inch cable
CAB-1801	DAS-1800HC to STA-1800HC 100-pin, 36-inch cable
CAB-1802	DAS-1800HC to STA-1800HC 100-pin, 72-inch cable
CAB-1800/S	DAS-1800HC to STA-1800HC 100-pin, 18-inch shielded cable
CAB-1801/S	DAS-1800HC to STA-1800HC 100-pin, 36-inch shielded cable
CAB-1802/S	DAS-1800HC to STA-1800HC 100-pin, 72-inch shielded cable
CDAS-2000	DAS-1700/1800AO, DAS-1700/1800HR or DAS-1700/1800ST to STA-1800U cable
CONN-1800HC	Connector Accessory for the DAS-1800HC
EXP-1800	Signal Conditioning and Expansion Accessory Board
MB-01*	16-Channel Direct-Connection Module Mounting Rack
MB-02*	16-Channel Multiplexed Module Mounting Rack
MB-05*	8-Channel Direct-Connection Module Mounting Rack
MS-DAS-1700	Upgrade to latest version of DriverLINX software and hardware manuals for DAS-170x.
MS-DAS-1800ST/HR	Upgrade to latest version of DriverLINX software and hardware manuals for DAS-180xST/HR.
MS-DAS-1800HC	Upgrade to latest version of DriverLINX software and hardware manuals for DAS-1801HC/1802HC.
MS-DAS-1800AO	Upgrade to latest version of DriverLINX software and hardware manuals for DAS-1801AO/1802AO.
SDAS-2000	DAS-1700/1800AO, DAS-1700/1800HR or DAS-1700/1800ST to STA-1800U shielded cable
STA-1800HC	Screw Terminal Accessory for the DAS-1800HC Series w/CJC for Thermocouples
STA-1800U	Universal Screw Terminal Accessory for the DAS-1700/1800AO, DAS-1700/1800HR and DAS-1700/1800ST
STP-100	Screw Terminal Panel for 100-pin connectors
STP-50	Screw Terminal Panel for 50-pin connectors
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.

Ordering Information

DAS-1701AO
160 kS/s Analog and Digital I/O Board with gains of 1, 5, 50, 250 and two waveform quality analog outputs

DAS-1702AO
160 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8 and two waveform quality analog outputs

DAS-1702HR
High Resolution 50 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, and 8

DAS-1702HR-DA
High Resolution 50 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, and 8 and two analog outputs

DAS-1701ST
Standard 160 kS/s Analog and Digital I/O Board with gains of 1, 5, 50, 250

DAS-1701ST-DA
Standard 160 kS/s Analog and Digital I/O Board with gains of 1, 5, 50, 250 and four analog outputs

DAS-1702ST
Standard 160 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8

DAS-1702ST-DA
Standard 160 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8 and 4 analog outputs

DAS-1801AO
333 kS/s Analog and Digital I/O Board with gains of 1, 5, 50, 250 and two waveform quality analog outputs

DAS-1802AO
333 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8 and two waveform quality analog outputs

DAS-1801HC
High Channel Count 333 kS/s Analog and Digital I/O Board with gains of 1, 5, 50, 250

DAS-1802HC
High Channel Count 333 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8

DAS-1802HR
High Resolution 100 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, and 8

DAS-1802HR-DA
High Resolution 100 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, and 8 and two analog outputs

DAS-1801ST
Standard 333 kS/s Analog and Digital I/O Board with gains of 1, 5, 50, 250

DAS-1801ST-DA
Standard 333 kS/s Analog and Digital I/O Board with gains of 1, 5, 50, 250 and four analog outputs

DAS-1802ST
Standard 333 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8

DAS-1802ST-DA
Standard 333 kS/s Analog and Digital I/O Board with gains of 1, 2, 4, 8 and 4 analog outputs

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