

EXP-1800

16-Channel Multiplexer and Signal Conditioning System



- Flexible expansion and signal conditioning
- Scanning at up to 312 kilosamples/s
- Integrated packaging
- Voltage or current measurements
- Thermocouple measurements
- Easy setup on the bench or in the field

Ordering Information

EXP-1800 EXP for DAS-1800ST/
AO/HR

APPLICATIONS

- Temperature logging
- Process monitoring
- Product test
- Energy management

Keithley's EXP-1800 is a multiplexer/amplifier accessory for use with DAS-1800 Series data acquisition boards. For thermocouple applications, the EXP-1800 offers cold junction compensation (CJC), open-TC detection, and low pass filtering. With a range of gain options, flexible packaging, and high performance, the EXP family offers a simple solution for a wide range of signal conditioning requirements.

Each EXP-1800 turns one single-ended input of your DAS board into 16 differential inputs.

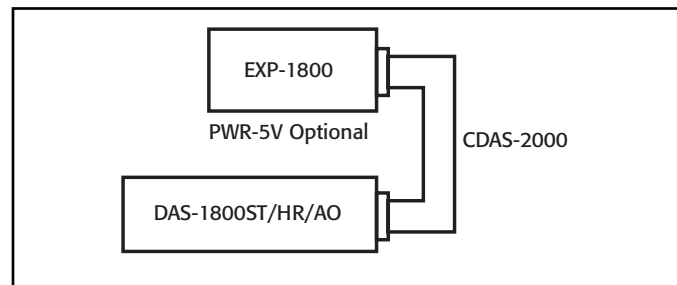
The architecture of the EXP-1800 offers several features which increase flexibility and make application setup easier. Each unit uses per-channel switches instead of confusing jumpers or messy solder gaps.

Signal Conditioning

The EXP-1800 provides gains of 1 and 50 which are software-selectable on a per-channel basis. These gains can be combined with those of the DAS-1800 to provide a wide set of input ranges.

CONNECTIONS: TO DAS BOARDS, MULTIPLE EXPS, EXTERNAL POWER

NOTE: All DAS board input channels must be configured as single-ended.



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EXP-1800

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SPECIFICATIONS EXP-1800

NOTE: EXP-1800 can be used with the DAS-1802HR 16-bit A/D board, resulting in 12-bit accuracy and 16-bit resolution. Adding EXP-1800 to a DAS board will degrade the accuracy and noise specifications of the DAS board.

OF ANALOG INPUTS: 16 single-ended or 16 differential (any combination).

AMPLIFIER

CONFIGURATION: Two selectable instrumentation amplifiers with gains of 1 and 50.

GAIN ACCURACY: $\pm 0.01\%$ of reading, typical; $\pm 0.02\%$ of reading, max.

RELATIVE ACCURACY: $\pm 0.001\%$ of reading, typical.

INPUT CHARACTERISTICS

INPUT OFFSET CURRENT: 0.6nA max. @ 25°C; 50nA max. @ 0 to 70°C.

INPUT BIAS CURRENT: 1nA max. @ 25°C; 100nA max. @ 0 to 70°C.

CMRR

90dB typical @ gain = 1; 110dB typical @ gain = 50.

INPUT FILTER RESPONSE

Single-pole RC @ 80Hz $\pm 20\%$.

Two 1k Ω resistors connected differentially across 1 μ F capacitor.

TEMPERATURE COEFFICIENTS

GAIN: ± 5 ppm/°C.

OFFSET: $\pm 10\mu$ V for gain = 1, typical; $\pm 2\mu$ V for gain = 50, typical.

BANDWIDTH (NO FILTER)

FULL-POWER BANDWIDTH:
330kHz @ gain = 1; 200kHz @ gain = 50.

SMALL-SIGNAL BANDWIDTH:
3MHz @ gain = 1; 3MHz @ gain = 50.

SYSTEM THROUGHPUT: 312kHz @ G = 1; 150kHz @ G = 50 (same gain on all channels, DAS gain = 1).

NOISE

RMS: 500 μ V @ gain = 1; 10 μ V @ gain = 50.

P-P: 3mV @ gain = 1; 70 μ V @ gain = 50.

CJC

On EXP board or on FWA (switch-selectable).

OUTPUT: +10mV/°C.

ACCURACY @ 25°C: $\pm 0.4^\circ$ C, typical; $\pm 1.0^\circ$ C, max.

POWER REQUIREMENTS

+5V @ 300mA, typical; ± 15 V <30mA.

SPECIFICATIONS EXP ACCESSORIES

PWR-5V

OUTPUT: +5V @ 4A (cable lengths will limit output capability to powering 4 EXP boards maximum).

EQUIVALENT CONNECTOR: SWITCHCRAFT part # S760.

GENERAL

OPERATING TEMPERATURE: 0°C to 50°C.

STORAGE TEMPERATURE: -20°C to 70°C.

HUMIDITY: 0 to 90%, noncondensing.

DIMENSIONS: 6.3" \times 9.2" \times 1.2" (standard Eurocard 6U \times 6HP).

ACCESSORIES AVAILABLE

CACC-2000 Daisy-chain cable between STA-3108-A1 and EXP-1800

CDAS-2000 Cable from DAS-1800 to 1st EXP (24')

PWR-5V Power supply, 115/230VAC to 5VDC

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