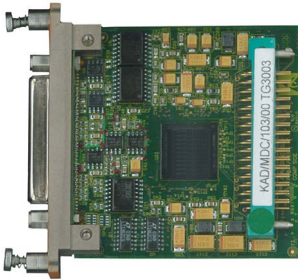


# KAD/MDC/103

Multiplexing ADC (programmable analog gain, pressure scanner, polynomial temp. compensation) - 2ch at 20ksps

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## Overview

The KAD/MDC/103 interfaces to multiplexed analog signals such as those from analog pressure scanners like the ESP-16HD, ESP-32HD, ESP-48SL or ESP-64HD with single-temperature sense option from Esterline.

The KAD/MDC/103 has two analog inputs for differential voltages and for external temperature measurements. In addition to measurement channels, the KAD/MDC/103 provides a 6-bit address for the external multiplexer.

The KAD/MDC/103 sequentially addresses up to 64 channels from an external multiplexer and measures the voltage on the outputs of pressure scanner multiplexers. The interval within which all external pressure channels are addressed is automatically set from the range 3.2ms to 512ms. For sample cycles longer than 512ms, the addressing cycle stays at the maximum value.

## Key Features

- Two differential ended temperature channels and two differential ended pressure channels
- Support for two 64-channel external multiplexers with 5V or 12V logic
- Programmable range on input channels
- Provides fourth order polynomial correction of scanner output voltage
- ±12V power and calibrated +5V excitation with sense lines
- 16-bit simultaneous sampling on each channel

## Applications

- Interfacing to single temperature sense option pressure scanners from Esterline Pressure systems (example ESP-16HD, ESP-48SL)

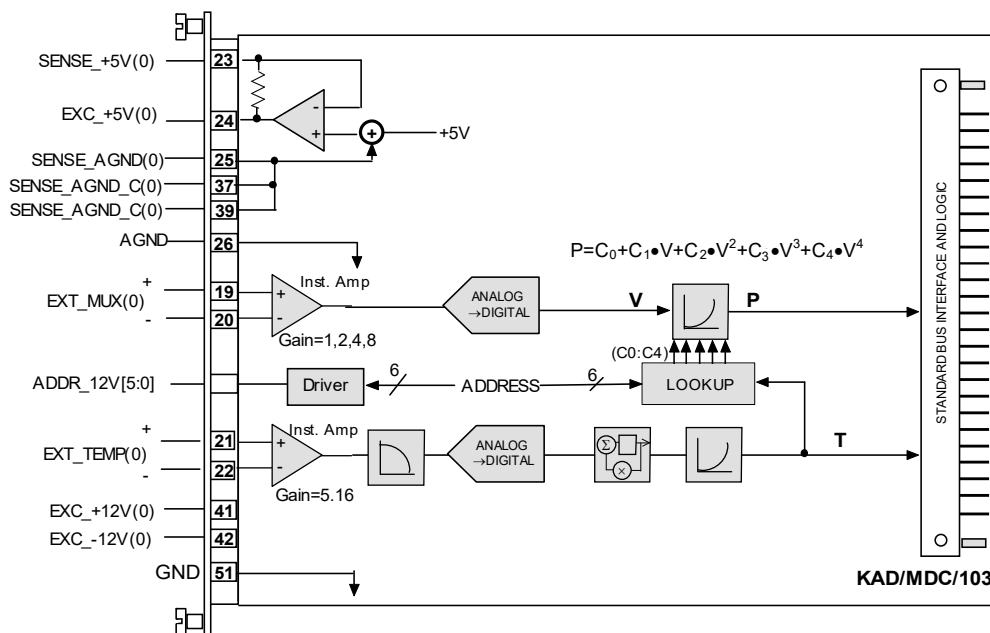


Figure 1: First pair of analog and temperature inputs with the multiplexer address bus

## Specifications

All values provided in the following specification tables are valid within the operating temperature range specified under “Environmental ratings” in the “General specifications” table. Module specifications are met for up to 97% of Full Scale Range (FSR).

| TABLE 1               |      | General specifications |      |       |   |  |
|-----------------------|------|------------------------|------|-------|---|--|
| PARAMETER             | MIN. | TYP.                   | MAX. | UNITS | CONDITION/DETAILS   |  |
| Slots                 | -    | -                      | 1    | -     | Can be placed in any user-slot in any combination.  |  |
| Mass                  |      |                        |      |       |   |  |
|                       | -    | 75                     | -    | g     |   |  |
|                       | -    | 2.64                   | -    | oz    | Design metric is grams.   |  |
| Height above chassis  |      |                        |      |       | For recommended clearance requirements see the <i>CON/KAD/002/CP</i> data sheet.  |  |
| bare connector        | -    | -                      | 11   | mm    |   |  |
| bare connector        | -    | -                      | 0.43 | in.   | Design metric is millimeters.   |  |
| Access rate           | -    | -                      | 2    | Msp/s | Maximum combined access rate for read and write.  |  |
| Power consumption     |      |                        |      |       |   |  |
| +5V                   | 40   | -                      | 50   | mA    |   |  |
| +7V                   | 50   | -                      | 60   | mA    | Excludes current used by excitation.  |  |
| -7V                   | 40   | -                      | 50   | mA    |   |  |
| +12V                  | 90   | -                      | 130  | mA    | Excludes current used by excitation.  |  |
| -12V                  | 50   | -                      | 80   | mA    | Excludes current used by excitation.  |  |
| total power           | 2.51 | -                      | 3.54 | W     | Particular combinations of chassis and Acra KAM-500 modules may have power or current limitations. For details, see <i>TEC/NOT/016 - Power dissipation</i> , <i>TEC/NOT/049 - Power estimation</i> , and the relevant chassis data sheet. |  |
| Environmental ratings |      |                        |      |       | See <i>Environmental Qualification Handbook</i> .   |  |
| operating temperature | -40  | -                      | 85   | °C    | Chassis base/side plate temperature.  |  |
| storage temperature   | -55  | -                      | 105  | °C    |   |  |

| TABLE 2                |       | Multiplexed analog inputs |      |       |  |  |
|------------------------|-------|---------------------------|------|-------|--|--|
| PARAMETER              | MIN.  | TYP.                      | MAX. | UNITS | CONDITION/DETAILS                                |  |
| Inputs                 | -     | -                         | 2    | -     |  |  |
| Sampling rate          |       |                           |      |       |  |  |
| EXT_MUX[1:0]±          | -     | -                         | 20   | ksps  |  |  |
| Input voltage          |       |                           |      |       |  |  |
| primary gain = 1       | -10   | -                         | 10   | V     |  |  |
| primary gain = 2       | -5    | -                         | 5    | V     |  |  |
| primary gain = 4       | -2.5  | -                         | 2.5  | V     |  |  |
| primary gain = 8       | -1.25 | -                         | 1.25 | V     |  |  |
| overvoltage protection | -40   | -                         | 40   | V     | Voltages outside of this range can damage input. |  |

**TABLE 2** Multiplexed analog inputs (continued)

| PARAMETER                | MIN. | TYP. | MAX. | UNITS      | CONDITION/DETAILS   |
|--------------------------|------|------|------|------------|---|
| DC error                 |      |      |      |            | DC signal averaged over 200 samples without excitation. Includes pressure linearization and interpolation for scanner's temperatures between manufacturer calibration points. |
| gain = 1, 2, 4, 8        | -    | -    | 0.25 | %FSR       |   |
| Effective number of bits |      |      |      |            |   |
| gain = 1, 2, 4, 8        | 13   | -    | -    | bits       | $f_{in} < f_s / 4$ where $f_s = 312.5\text{Hz}$<br>( $f_{in}$ : input signal frequency; $f_s$ : sampling frequency).  |
| Crosstalk                |      |      |      |            |   |
| gain = 1, 2, 4, 8        | -    | -    | -80  | dB         | $f_{in} < f_s / 4$ where $f_s = 20\text{kHz}$ .   |
| Common mode              |      |      |      |            |   |
| voltage range            | -10  | -    | 10   | V          | Operational voltage range.  |
| rejection ratio          | 80   | -    | -    | dB         | $f_{in} < 500\text{Hz}$ where $f_s = 20\text{kHz}$ .  |
| Input resistance         |      |      |      |            |   |
| between inputs           | 22   | -    | -    | k $\Omega$ | Module powered off.   |
| between inputs           | 10   | -    | -    | M $\Omega$ | Module powered on.  |
| each input to GND        | 13   | -    | -    | k $\Omega$ | Module powered off.   |
| each input to GND        | 10   | -    | -    | M $\Omega$ | Module powered on.  |

**TABLE 3** Temperature inputs

| PARAMETER                | MIN.  | TYP. | MAX.  | UNITS              | CONDITION/DETAILS  |
|--------------------------|-------|------|-------|--------------------|--|
| Inputs                   | -     | -    | 2     | -                  |  |
| Sampling rate            |       |      |       |                    |  |
| EXT_TEMP[1:0] $\pm$      | -     | -    | 312.5 | sps                |  |
| Input temperature        |       |      |       |                    |  |
| full scale range         | -40   | -    | 85    | $^{\circ}\text{C}$ |  |
| DC error                 | -0.25 | -    | 0.25  | %FSR               | Temperature averaged over 200 samples. Does not include sensor accuracy. |
| Effective number of bits | 12    | -    | -     | bits               | $0 \leq f < f_c$ ( $f_c$ : filter cutoff frequency).                     |
| Crosstalk                | -     | -    | -60   | dB                 | Between channels on the same module.                                     |
| Ripple ratio             |       |      |       |                    |  |
| $0 \leq f < f_c$         | -     | -    | 0.5   | dB                 | Operational voltage range.   |
| Analog filter            |       |      |       |                    | Analog filter is Butterworth.  |
| poles                    | -     | 2    | -     | -                  |  |
| filter cutoff -3dB       | -     | 500  | -     | Hz                 |  |
| filter delay             | -     | 450  | -     | $\mu\text{s}$      |  |
| Input resistance         |       |      |       |                    |  |
| between inputs           | 100   | -    | -     | k $\Omega$         | Module powered off.  |
| between inputs           | 10    | -    | -     | M $\Omega$         | Module powered on.   |
| each input to GND        | 35    | -    | -     | k $\Omega$         | Module powered off.  |
| each input to GND        | 10    | -    | -     | M $\Omega$         | Module powered on.   |

**TABLE 4** Single ended DC voltage excitation outputs +5V

| PARAMETER              | MIN.     | TYP. | MAX. | UNITS    | CONDITION/DETAILS  |
|------------------------|----------|------|------|----------|--|
| Outputs                |          |      |      |          |  |
| EXC_+5V[1:0]           | -        | -    | 2    | -        |  |
| Output voltage         |          |      |      |          |  |
| operating range        | -        | 5    | -    | V        |  |
| compliance             | -        | -    | 80   | mA       | Per channel.   |
| short circuit current  | -        | -    | 150  | mA       |  |
| short circuit duration | $\infty$ | -    | -    | s        | To GND.  |
| DC error               |          |      |      |          |  |
| error                  | -10      | -    | 10   | mV       | Considered only with SENSE_5V and SENSE_AGND lines used across the load. |
| noise                  | -        | -    | -84  | dB       |  |
| Output resistance      | -        | 0.1  | -    | $\Omega$ | Considered only with SENSE_5V and SENSE_AGND lines used across the load. |

**TABLE 5** Single ended DC voltage excitation outputs +12V

| PARAMETER              | MIN. | TYP. | MAX. | UNITS    | CONDITION/DETAILS   |
|------------------------|------|------|------|----------|---|
| Outputs                |      |      |      |          |   |
| EXC_+12V[1:0]          | -    | -    | 2    | -        |   |
| Output voltage         |      |      |      |          |   |
| operating range        | -    | 12   | -    | V        |   |
| compliance             | -    | -    | 120  | mA       |   |
| short circuit current  | -    | -    | -    | mA       | There is no short circuit protection on this output. Care must be taken not to short this output, otherwise damage may be caused to the module, as well as temporary disturbance to the operation of any other module(s) using the -12V line. |
| short circuit duration | -    | -    | 0    | s        |   |
| DC error               |      |      |      |          |   |
| error                  | -200 | -    | 200  | mV       |   |
| noise                  | -    | -    | -90  | dB       |   |
| Output resistance      | -    | 0.1  | -    | $\Omega$ |   |

**TABLE 6** Single ended DC voltage excitation outputs -12V

| PARAMETER              | MIN. | TYP. | MAX. | UNITS    | CONDITION/DETAILS   |
|------------------------|------|------|------|----------|---|
| Outputs                |      |      |      |          |   |
| EXC_-12V[1:0]          | -    | -    | 2    | -        |   |
| Output voltage         |      |      |      |          |   |
| operating range        | -    | -12  | -    | V        |   |
| compliance             | -    | -    | 120  | mA       |   |
| short circuit current  | -    | -    | -    | mA       | There is no short circuit protection on this output. Care must be taken not to short this output, otherwise damage may be caused to the module, as well as temporary disturbance to the operation of any other module(s) using the -12V line. |
| short circuit duration | -    | -    | 0    | s        |   |
| DC error               |      |      |      |          |   |
| error                  | -200 | -    | 200  | mV       |   |
| noise                  | -    | -    | -90  | dB       |   |
| Output resistance      | -    | 0.1  | -    | $\Omega$ |   |

**TABLE 7** Multiplexer address outputs 12V

| PARAMETER              | MIN.     | TYP. | MAX.   | UNITS    | CONDITION/DETAILS |
|------------------------|----------|------|--------|----------|-------------------|
| Outputs                | -        | -    | 6      | -        |                   |
| Signaling rate         |          |      |        |          |                   |
| ADDR_12V(0)            | -        | -    | 10     | kHz      |                   |
| ADDR_12V(1)            | -        | -    | 5      | kHz      |                   |
| ADDR_12V(2)            | -        | -    | 2.5    | kHz      |                   |
| ADDR_12V(3)            | -        | -    | 1.25   | kHz      |                   |
| ADDR_12V(4)            | -        | -    | 0.625  | kHz      |                   |
| ADDR_12V(5)            | -        | -    | 0.3125 | kHz      |                   |
| Output voltage         |          |      |        |          |                   |
| logic 0                | -        | -    | 0.5    | V        | Sinking 1mA.      |
| logic 1                | 10       | -    | -      | V        | Sourcing 1mA.     |
| short circuit current  | -        | -    | 25     | mA       |                   |
| short circuit duration | $\infty$ | -    | -      | s        | To GND.           |
| Output resistance      | -        | 470  | -      | $\Omega$ |                   |

**TABLE 8** Multiplexer address outputs 5V

| PARAMETER              | MIN. | TYP. | MAX.   | UNITS | CONDITION/DETAILS |
|------------------------|------|------|--------|-------|-------------------|
| Outputs                | –    | –    | 6      | –     |                   |
| Signaling rate         |      |      |        |       |                   |
| ADDR_5V(0)             | –    | –    | 10     | kHz   |                   |
| ADDR_5V(1)             | –    | –    | 5      | kHz   |                   |
| ADDR_5V(2)             | –    | –    | 2.5    | kHz   |                   |
| ADDR_5V(3)             | –    | –    | 1.25   | kHz   |                   |
| ADDR_5V(4)             | –    | –    | 0.625  | kHz   |                   |
| ADDR_5V(5)             | –    | –    | 0.3125 | kHz   |                   |
| Output voltage         |      |      |        |       |                   |
| logic 0                | –    | –    | 0.4    | V     | Sinking 1mA.      |
| logic 1                | 3    | –    | –      | V     | Sourcing 1mA.     |
| short circuit current  | –    | –    | 50     | mA    |                   |
| short circuit duration | ∞    | –    | –      | s     | To GND.           |
| Output resistance      | –    | 150  | –      | Ω     |                   |

## Setting up the KAD/MDC/103

### Setting up parameters

For 2x64 parameters from EXT\_MUX(0) and EXT\_MUX(1)

| SET-UP DATA  | CHOICE                 | DEFAULT       | NOTES  |
|--------------|------------------------|---------------|--|
| Name         | No limit to characters | MyPressure    |  |
| Base unit    | Pascal                 | Pascal        |  |
| maximum      | No limits              | 82737.09      | Defaults are set for $\pm 12$ PSI scanner FSR.                         |
| minimum      | No limits              | -82737.09     | Defaults are set for $\pm 12$ PSI scanner FSR.                         |
| Data format  | Offset binary          | Offset binary |  |
| Size in bits | 4 to 16                | 16            |  |
| Offset       | No limits              | 0             | Re-zero offset. See "Getting the most from the KAD/MDC/103" on page 8. |

For parameters from MUX\_TEMP(0) and MUX\_TEMP(1)

| SET-UP DATA  | CHOICE                 | DEFAULT       | NOTES |
|--------------|------------------------|---------------|-------|
| Name         | No limit to characters | MyTemperature |       |
| Base unit    | Celsius                | Volt          |       |
| maximum      | -40 to 85              | 85            |       |
| minimum      | -40 to 85              | -40           |       |
| Data format  | Offset binary          | Offset binary |       |
| Size in bits | 4 to 16                | 16            |       |

**NOTE:** It is recommended that names are less than 20 characters, have no white space or contain any of the following five characters "/><\".

### Setting up instrumentation

This module uses the X-Module-ExternalMultiplexer-Controller XidML schema. (See <http://www.xidml.org>).

For 2 x 64 parameters from EXT\_MUX(0) and EXT\_MUX(1)

| SET-UP DATA    | CHOICE             | DEFAULT      | NOTES                          |
|----------------|--------------------|--------------|--------------------------------|
| Manufacturer   |                    |              |                                |
| name           | ACRA CONTROL       | ACRA CONTROL |                                |
| part reference | KAD/MDC/103        | KAD/MDC/103  | ACRA CONTROL part number.      |
| serial number  | Fixed 6 characters | FE1234       | Unique number for each module. |

### Setting up algorithms

This module uses the X-Module-ExternalMultiplexer-Controller XidML schema. (See <http://www.xidml.org>).

For 2 x 64 parameters from EXT\_MUX(0) and EXT\_MUX(1)

| SET-UP DATA  | CHOICE         | DEFAULT         | NOTES  |
|--------------|----------------|-----------------|--|
| AlgorithmSet |                |                 |  |
| input        | No limitations | Calibration.txt | URL of calibration file for each pressure scanner. The URL of each calibration file must be specified. |
| output       | No limitations | Rezero.txt      | URL of rezero file. If not specified re-zero offset calibration won't be applied.                      |

## Getting the most from the KAD/MDC/103

In typical operation, the multiplexer’s address is set to 000000<sub>2</sub> at the start of an acquisition cycle. If for example, 80µs later, the multiplexer output is sampled, the address increments to 000001<sub>2</sub> and the output is sampled again. After 5.12ms the address reads 111111<sub>2</sub> and all 64 channels have been sampled. Because sampling is sequential, all channels are sampled at the same rate.

Voltage input is provided to monitor the temperature output of the external multiplexer. The external temperature channel is sampled with the first pressure channel and then digitally filtered. The temperature read from the pressure scanner determines the selection of a fourth order polynomial for each of 64 external channels; this is used to linearize pressure according to a calibration file provided by the manufacturer of the pressure scanner.

### Wiring

The 5V voltage excitation (EXC\_+5V(x)) for the scanner bridges and temperature sensor is provided individually for each channel. EXC\_+5V(x) has a SENSE\_+5V(x) line to correct for voltage drops across the excitation line. A SENSE\_+5V(x) line must be connected to the +V<sub>S SENSE</sub> output of the scanner. EXC\_+5V(x) also contains correction for voltage drop across the AGND connection between the module and pressure scanner. To compensate for this drop, connect the SENSE\_AGND(x) line to the GND<sub>SENSE</sub> output of the scanner.

The ESP-16HD, ESP-32HD, ESP-48SL and ESP-64HD pressure scanners must be used with the address lines ADDR\_12V(x). They are to be shared if two pressure scanners are connected.

For the ESP family of scanners, positive input of the pressure channel must be connected with V<sub>o</sub> output of the scanner and negative input with GND<sub>SENSE</sub> output.

For the temperature channel, positive input must be connected to V<sub>T</sub> and negative to GND<sub>SENSE</sub>. To minimize the wiring between the pressure scanner and the module, connect the GND\_SENSE\_COPY(x) pins to EXT\_MUX(x)- and EXT\_TEMP(x)- (if the scanner output voltage is referenced to GND, such as for the ESP family of scanners).

The following figure shows a wiring example for connecting an ESP pressure scanner to the KAD/MDC/103. Note, V<sub>S RTN</sub> (pin 9) of the pressure scanner must not be connected for correct operation of the scanner with the KAD/MDC/103.

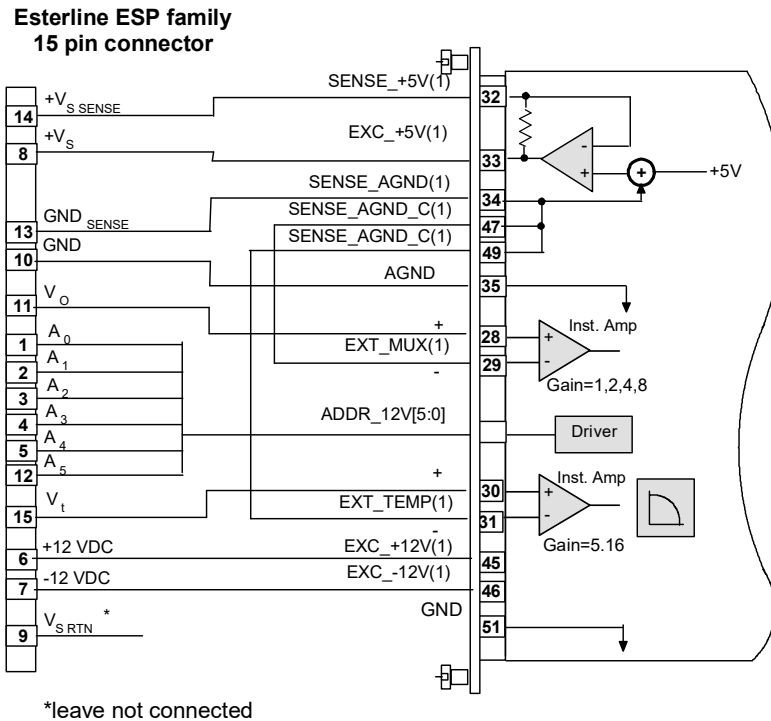


Figure 2: Wiring the ESP pressure scanner to the second channel of the KAD/MDC/103



Pressure scanners guarantee the best accuracy only when regular re-zero calibration of aging offset is carried out. In order to compensate for this, the system can be programmed without re-zero files specified and readings from each multiplexed channel treated as new re-zero offsets. Then the module can be programmed with those new values, and any aging error will be excluded from measurement. The re-zero file syntax is a multiple line file with a single floating point re-zero offset value per line. There are up to 64 values to be entered. The first line is related with multiplexed address 0, the following lines contain re-zero offsets for consecutive addresses. Offsets are to be entered in Pascals.

To prevent degraded system performance, use individual shielded cables for analog signals, excitations, and address lines.

## Power consumption

In cases where high-current pressure scanners are used (such as the ESP-64HDs), current consumption from the KAD/MDC/103 excitation lines exceeds the value normally assigned to the +12V, -12V and +7V (used for EXC\_+5V(x)) lines of the occupied slot. This is acceptable as long as the total current drawn from all occupied slots does not exceed that of the Acra KAM-500 chassis power supply.

If the maximum current of the Acra KAM-500 chassis power supply is exceeded, use an external  $\pm 12V$  and +5V power supply. The GND of an external power supply must be connected with the GND of the chassis. To prevent degradation of system accuracy, it is crucial to have a stable and accurate +5V supply.

Contact Curtiss-Wright support ([acra-support@curtisswright.com](mailto:acra-support@curtisswright.com)) if an external power supply is to be used.

## Connector pinout of the KAD/MDC/103

| PIN | NAME            | SEE SPECIFICATIONS TABLE                        | COMMENT   |
|-----|-----------------|---|---|
| 1   | ADDR_12V(0)     | Multiplexer address outputs 12V                 | LSB of address to pressure scanner; CMOS 0 to 12 volt logic levels  |
| 2   | ADDR_12V(1)     | Multiplexer address outputs 12V                 |   |
| 3   | ADDR_12V(2)     | Multiplexer address outputs 12V                 |   |
| 4   | ADDR_12V(3)     | Multiplexer address outputs 12V                 |   |
| 5   | ADDR_12V(4)     | Multiplexer address outputs 12V                 |   |
| 6   | ADDR_12V(5)     | Multiplexer address outputs 12V                 | MSB of address to pressure scanner. CMOS 0 to 12 volt logic levels. |
| 7   | DNC             |   | Do not connect  |
| 8   | DNC             |   | Do not connect  |
| 9   | GND             | Digital ground                                  |   |
| 10  | ADDR_5V(0)      | Multiplexer address outputs 5V                  | LSB of address to pressure scanner. TTL 0 to 5 volt logic levels.   |
| 11  | ADDR_5V(1)      | Multiplexer address outputs 5V                  |   |
| 12  | ADDR_5V(2)      | Multiplexer address outputs 5V                  |   |
| 13  | ADDR_5V(3)      | Multiplexer address outputs 5V                  |   |
| 14  | ADDR_5V(4)      | Multiplexer address outputs 5V                  |   |
| 15  | ADDR_5V(5)      | Multiplexer address outputs 5V                  | MSB of address to pressure scanner. TTL 0 to 5 volt logic levels.   |
| 16  | DNC             |   | Do not connect  |
| 17  | GND             | Digital ground                                  |   |
| 18  | DNC             |   | Do not connect  |
| 19  | EXT_MUX(0)+     | Multiplexed analog inputs                       | From scanner pressure Mux output                                    |
| 20  | EXT_MUX(0)-     |   |   |
| 21  | EXT_TEMP(0)+    | Temperature inputs                              | From scanner temperature output                                     |
| 22  | EXT_TEMP(0)-    |   |   |
| 23  | SENSE_+5V(0)    |   | See "Getting the most from the KAD/MDC/103"                         |
| 24  | EXC_+5V(0)      | Single ended DC voltage excitation outputs +5V  | See "Getting the most from the KAD/MDC/103"                         |
| 25  | SENSE_AGND(0)   |   | See "Getting the most from the KAD/MDC/103"                         |
| 26  | AGND            |   |   |
| 27  | DNC             |   | Do not connect  |
| 28  | EXT_MUX(1)+     | Multiplexed analog inputs                       | From scanner pressure output  |
| 29  | EXT_MUX(1)-     |   |   |
| 30  | EXT_TEMP(1)+    | Temperature inputs                              | From scanner temperature output                                     |
| 31  | EXT_TEMP(1)-    |   |   |
| 32  | SENSE_+5V(1)    |   | See "Getting the most from the KAD/MDC/103"                         |
| 33  | EXC_+5V(1)      | Single ended DC voltage excitation outputs +5V  | See "Getting the most from the KAD/MDC/103"                         |
| 34  | SENSE_AGND(1)   |   | See "Getting the most from the KAD/MDC/103"                         |
| 35  | AGND            | Analog ground                                   |   |
| 36  | DNC             |   | Do not connect  |
| 37  | SENSE_AGND_C(0) |   | See "Getting the most from the KAD/MDC/103"                         |
| 38  | DNC             |   | Do not connect  |
| 39  | SENSE_AGND_C(0) |   | See "Getting the most from the KAD/MDC/103"                         |
| 40  | AGND            |   | Do not connect  |
| 41  | EXC_+12V(0)     | Single ended DC voltage excitation outputs +12V | See "Getting the most from the KAD/MDC/103"                         |
| 42  | EXC_-12V(0)     | Single ended DC voltage excitation outputs -12V | See "Getting the most from the KAD/MDC/103"                         |
| 43  | DNC             |   | Do not connect  |
| 44  | AGND            | Analog ground                                   |   |
| 45  | EXC_+12V(1)     | Single ended DC voltage excitation outputs +12V | See "Getting the most from the KAD/MDC/103"                         |
| 46  | EXC_-12V(1)     | Single ended DC voltage excitation outputs -12V | See "Getting the most from the KAD/MDC/103"                         |
| 47  | SENSE_AGND_C(1) |   | See "Getting the most from the KAD/MDC/103"                         |
| 48  | DNC             |   | Do not connect  |
| 49  | SENSE_AGND_C(1) |   | See "Getting the most from the KAD/MDC/103"                         |
| 50  | DNC             |   | Do not connect  |
| 51  | GND             | Digital ground                                  |   |
| 52  | CHASSIS         | Chassis   | Double-density connector only                                       |

## Ordering information

| PART NUMBER | DESCRIPTION  |
|-------------|--|
| KAD/MDC/103 | Multiplexing ADC (programmable analog gain, pressure scanner, polynomial temp. compensation) - 2ch at 20ksps (with 52-way connector) |
| KAM/MDC/103 | Multiplexing ADC (programmable analog gain, pressure scanner, polynomial temp. compensation) - 2ch at 20ksps (with 51-way connector) |

By default, the standard mating connector (CON/KAD/002/CP for KAD modules; or ACC/CON/008/04 for KAM modules), is included with each module in the shipment. Its part number will be added to the Confirmation of Order unless an alternative option is specified (see the *Cables* data sheet).

The KAD/MDC/103 uses power from the  $\pm 7V$  for excitation and therefore cannot be used with the KAM/CHS/04L, KAM/CHS/05F, KAM/CHS/03F, or KAM/CHS/02F chassis. In this data sheet, KAD/MDC/103 refers to both the KAD and KAM version of the module.

## Revision history

| REVISION    | DIFFERENCES   | STATUS                       |
|-------------|---------------|------------------------------|
| KAD/MDC/103 | First release | Recommended for new programs |

## Supporting software

| MODULE       | DETAILS   |
|--------------|---|
| DAS Studio 3 | User interface for setup and management of data acquisition, network switches, recorders and ground stations in an integrated environment |
| KSM-500      | This module is supported by the KSM-500 suite of software tools   |

## Related documentation

| DOCUMENT    | DETAILS                              |
|-------------|--------------------------------------|
| DOC/DBK/001 | Acra KAM-500 Databook                |
| DOC/MAN/018 | KSM-500 Databook                     |
| DOC/GBK/002 | Environmental Qualification Handbook |
| DOC/MAN/030 | DAS Studio 3 User Manual             |
| TEC/NOT/016 | Power dissipation                    |
| TEC/NOT/049 | Power estimation                     |

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