



FOUR CHANNEL "AA" FREQUENCY CONDITIONER

For use in System 10 & SPS6000 The Model **AA41-4** is a 2- or 4- channel conditioner for measuring rpm, flow, and other phenomena that can be sensed by pulse transformer transducers with 2-wire isolated windings (tachometer pickups, turbine flowmeters, etc.), transistor or logic-circuit drivers, "zero-velocity" (true digital output) sensors, and similar frequency-generating transducers. This card accepts a wide range of waveshapes and voltage levels. As with the 10A41-2C, the "Smart Schmitt" threshold level for each input channel may be individually selected via internal jumper connections, depending on the expected peak voltage input: 0.1-2 V; 0.5-10 V; 2.5-50 V; or 10-200 V. This ensures reliable triggering when the input is at the low end of the voltage range. All ranges are protected against an overload of up to 200 V. Standard AA-card "F1" programmable filter tiles let you tailor the dynamic frequency range and signal response of each **AA41** channel to your application's requirements. Setting a frequency channel's programmable filter to the 1.6-Hz cutoff provides the following input ranges:

- 10% to 100% of full scale for a range of 250 or 500 Hz
- 2% to 100% of full scale for a range of 1 or 2 kHz
- 1% to 100% of full scale for a range of 4, 8, 16, or 32 kHz

If a faster response is more important than dynamic range, you may select a higher "F1" bandwidth value (0.2 to 200 Hz). However, programmable filter settings above 25 Hz are not recommended for use with the **AA41**, because of inadequate usable dynamic frequency range. Capacitive coupling of 0.1 or 10 microfarads is provided for low-frequency inputs, to eliminate false triggering by signal noise and/or any positive or negative DC offset that exists for the frequency signal.* A special trigger-level control guarantees reliable triggering when the input is at the low end of the frequency range. When the manufacturer-supplied full-scale rating of the frequency source (or the highest frequency expected to be measured) is known, an **AA41** channel can be quickly and easily calibrated by "calculated" calibration. In System 10, this procedure involves entry of an appropriate FREQUENCY CALIBRATION (FRO) command. A precise 2.4576-MHz crystal frequency reference ensures accuracy of all calibrations, whether "absolute," "calculated," or "twopoint." Unlike most other AA cards, the **AA41** makes only "postfilter" outputs available on wire-wrap pins.

SPECIFICATIONS

Number of Input Channels: Two or four (specify AA41-2 or AA41-4, respectively)

Inputs: Type: Any AC or unipolar pulse signal, grounded or floating, irrespective of waveform

Threshold Level: Accommodates signals from 100 mV to 200 V

Frequency Ranges: Nominal 250, 500, 1000, 2000, 4000, 8000, 16000, or 32000 Hz, full-scale, with dynamic frequency range dependent on the selected analog filtering (see above); automatically selected—on an individual channel basis—when the channel is configured

* Noise suppression is always recommended when using a magnetic pickup as the frequency source.

MODEL AA41-2 or 4

TWO OR FOUR CHANNEL FREQUENCY CONDITIONER
["A" CARD SERIES]

SPECIFICATIONS (cont)

Amplifier (per channel):

Normal-Mode Range: ± 200 V operating and without instrument damage

Common-Mode Range: ± 50 V operating; ± 100 V without instrument damage

Common-Mode Rejection Ratio: DC and at 60 Hz: -100 dB

Input Impedance: Differential: 200 k Ohm; Common-Mode: 125 k Ohm

Offset: Initial: $\pm 0.02\%$ of full scale; vs. Temperature: ± 20 ppm/ $^{\circ}\text{C}$; vs. Time: ± 10 ppm/month

Gain Accuracy: $\pm 0.02\%$ of full scale

Gain Stability: vs. Temperature: ± 50 ppm/ $^{\circ}\text{C}$; vs. Time: ± 50 ppm/month

Filter (per channel): Programmable or fixed (10 Hz); F1 - Programmable 0.2 to 200 Hz

Auxiliary Outputs: Nominal ± 5 V-DC signals representing filtered channel readings (only) available on wire-wrap pins (System 10) or as input to an Analog Signal Processor Card (SPS6000)

Power-Supply Slot Allotment: Maximum consumption of supply and excitation current from the Conditioner Card Slot is 120 mA