

Model 7074 Quad Analog-to-Digital Converter

The model 7074 contains four independent 16k Wilkinson type Analog-to-Digital Converters with 100 MHz clock rate.

Description

The 7074 is ideally suited for applications in multiparameter spectrometry. In Alpha Spectroscopy the 7074 replaces analog mixers and routers. The upper and lower-level discriminator of each ADC has an output on the rear panel connector. This output can be used as a Single-Channel Analyzer in such applications as Mössbauer Spectroscopy. The economically priced 7074 is an ideal replacement for analog mixers and routers which typically degrade the resolution of the connected detectors and significantly limit the count rate capabilities of such a system. Available Multichannel Analyzers with four ADC ports: MCD4/PC, MCD-4LAP and the MPA/PC Multiparameter System. For technical data contact FAST ComTec.

Features

- Four independent Wilkinson-type ADC's with 100 MHz clock rate in a single width NIM-module
- 16k Conversion Range
- 256 to 16k Conversion Gain independently selectable for each ADC
- Instantaneous Dead-Time bar graph display for each ADC
- Lower Level and Upper Level Discriminator
- Pulse Height Analysis with automatic Peak-Detection
- Simultaneous Single-Channel Output on rear panel connector
- Designed for easy interfacing to Multichannel Analyzers and Computers
- Economically priced
- the 7074 is the solution for most applications requiring analog mixers and routers

Performance

Conversion Time: $(1.0 + 0.01 \cdot N) \mu\text{s}$, where N is the channel address generated by the 7074 ADC
ADC Deadtime: time-to-peak + $1 \mu\text{s}$ + conversion time.
 Typical ADC deadtime using a Gamma-spectrum containing I-131, Ru-103, Cs-137 and Cs-134g measured with a Germanium detector:
 Conversion Gain Average deadtime/conversion

1024	3,7 μs
2048	7,1 μs
4096	13,9 μs
8192	27,4 μs

Integral non-linearity: less than $\pm 0.05\%$ of full scale over top 99% of selected range.

Differential non-linearity: less than $\pm 0.75\%$ over top 99% of selected range.

Gain stability: better than 50 ppm/ $^{\circ}\text{C}$

Baseline stability: 50 $\mu\text{V}/^{\circ}\text{C}$

Temperature range: 0 $^{\circ}\text{C}$ to $+50^{\circ}\text{C}$

Power Requirements

+24V, 450 mA, -24V, 500 mA + 6V, 550 mA

Physical

Size: single width NIM module (1.35 x 871 inches; 3.43 x 22.13 cm) as per TID - 20893 (rev.)

Shipping weight: 1.2 kg (net 0.8 kg)

SPECIFICATIONS for each ADC

INPUTS (front panel)

Signal Input: BNC-Connector accepts $+25\text{mV}$ to $+8\text{V}$ (standard / $+10\text{V}$ optional) linear pulses, $Z_{in} = 1\text{k}\Omega$, risetime: $> 100\text{ns}$ to $100\mu\text{s}$, fall time: 200ns to $100\mu\text{s}$, $0.5\mu\text{s}$ flat top width, dc coupled.

Gate: BNC-Connector accepts positive TTL signal

OUTPUTS

Data: 14 bit binary data lines, data transfer commands, Deadtime, SCA out on PC-board connector and flat ribbon cable with 25 pin D-sub connector.

PC-BOARD CONTROLS:

Jumper selectable type of deadtime signal:

- a) conversion deadtime only
- b) conversion deadtime and duration of inp pulse

Jumper selectable gate mode:

- a) coincidence
- b) anticoincidence

FRONT PANEL CONTROLS:

Conversion Gain: Push button selects conversion gain from 256, 512, 1k, 2k, 4k, 8k and 16k channels for full scale input.

LLD: Precision potentiometer sets the lower level discriminator.

ULD: Precision potentiometer sets the upper level discriminator.

Zero: Precision potentiometer sets the „zero“ level from 0 to $\pm 200\text{mV}$.

INDICATORS:

DEADTIME: 10 LED-bar graph display indicates activity of the ADC. Range 0 to 100% deadtime

Conversion Range: 7 LED display indicates selected range from 256 to 16k channels

