Signal matching system MK4

Signal matching system MK4 (hol493)

Description

The signal matching system MK4 is a flexible connecting element between the real input quantities and the optimum input range of an A/D card.

There is a large number of powerful measuring and signal analysis programs whose purpose it is to acquire analog signals and to prepare or evaluate them digitally. The signal is read into the computer through high-quality measurement cards. However, many cards provide only one voltage input with a fixed level for max. resolution and also no anti-aliasing filter for different polling rates. Not paying attention to Shannon's theorem will certainly lead to problems in the digital signal processing of any kind.

In the real world, not only is the voltage of interest, but also the current or the resistance as DC or AC with a - sometimes considerable - offset. Signals are normally not band-limited and the signal level rarely matches the A/D card.

In order that the capability of an A/D-card can be exploited fully, the signal matching system MK4 has been developed. The device offers the following features:
- signal level matching for exploiting the accuracy of the A/D converter
- tunable low-pass filter to avoid the aliasing during the digital processing
- measurement quantity converter to be able to measure the current, resistance, AC and DC voltage
- 4 input channels, which can each be adjusted independently of each other
- ICP® sensors can be connected directly

Application fields

In the case of all technical applications, for which analog signals have to be made compatible with the downstream evaluation circuits. Here are a few examples:

• measurement cards with analog inputs in desktop or mobile computers
• different sound cards, provided the software supports them

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Technical Data

Voltage supply	For flexible use and for optimum interference suppression, the instrument is supplied internally through batteries. 3 X 10 cells = +24V / -12V, IP65 Charging through external charger,
Inputs	4 channels, analog input
Connection	Connection is optionally achieved with the BNC-socket, banana sockets or screw terminals
measuring value	DC voltage AC voltage: F_u = 0.1Hz, R_i = 470kΩ Current measurement: The unknown current is directed over known resistances and the voltage drop is evaluated. R_{sens} = 10Ω / 100Ω / 1000Ω, adjustable. Resistance measurement: By passing a known constant current through an unknown resistance, the resistance can be determined by measuring the voltage drop. I_{const} = 4mA/10mA at $U_{max.}$ = 22V
ICP®-supply	ICP®-sensors can be connected and optionally supplied with 4 or 10mA The signal is de-coupled with a high-pass filter with Hf_u = 0.1Hz. F_o is determined by the anti-aliasing filter.
Level adjustment	The amplification is adjustable in the stages.0,01 / 0,1 / 1 / 10 / 100
Input impedance	470kΩ at AC, 470kΩ, 47kΩ, or 4.7Ωk adjustable at DC
Anti-Aliasing-Filter	Adjustable low-pass filter, Butterworth characteristic with 60dB/dec Can be adjusted in 7 stages and 4 zones. Stages: 4,6 / 6,3 / 8,8 / 12 / 17 / 24 / 33Hz Zones: x1 / x10 / x100 / x1000
Signal output	Signal output is optionally achieved through a BNC socket or D-sub-connector, suitable for the A/D-card
Voltage output	GND / ±5 V stabilized / ±12V battery / +24V battery with limited capacity for supplying external components