The RoentDek FAMP3/6 fast signal amplifiers
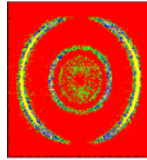
RoentDek Handels GmbH

Supersonic Gas Jets
Detection Techniques
Data Acquisition Systems
Multifragment Imaging Systems

The **RoentDek FAMP3**, **FAMP6** and **PreFAMP6** are 3-or 6-channel amplifiers for high frequency pulse signals as obtained from micro-channel plate detectors and various kinds of secondary electron amplifiers (photomultiplier, channeltron, etc.). They are similar in function to the **RoentDek FAMP8** module but the input impedance and bandwidth of the **FAMP3/FAMP6/PreFAMP6** circuits can be adjusted within 40 Ohm to 100 Ohm and 50 MHz to 400 MHz by selection of different chip sets (factory set). The amplification setting ranges from 10x to 300x nominal gain for the **FAMP3** and **FAMP6**. This gain for each channel can be individually adjusted via potentiometers between 10% and 100% of the factory setting. The **PreFAMP6** gain is factory-fixed to a value between 2x and 6x on demand. The output impedance is usually set to 50 Ohm.[*]

The **FAMP3**, **FAMP6** and **PreFAMP6** are especially designed for filtering high frequency ripple on low-bandwidth detector signals and impedance matching to 50 Ohm post-processing electronics. This makes them suitable for example for the read-out of **RoentDek LC delay-line anodes**. The **PreFAMP6** is also designed for this purpose but needs a second amplifier stage as the **FAMP8**, the **ATR19** amplifier&CFD module or custom amplifier units. A version for differential amplification of input signal supplied via *CAT6* cables is also available (**DFAMP6**).

The **FAMP6** module is designed as a standard 1/12 NIM case (W34mm/L280mm/H220mm, weight 800 g). It requires a NIM-bin for operation (+/-6V, 0.4A) or can be powered via the **RoentDek SPS1**.

Figure 1:   rear panel of FAMP6 (top) with NIM connector and signal inputs, right: front panel of FAMP6 with signal outputs.

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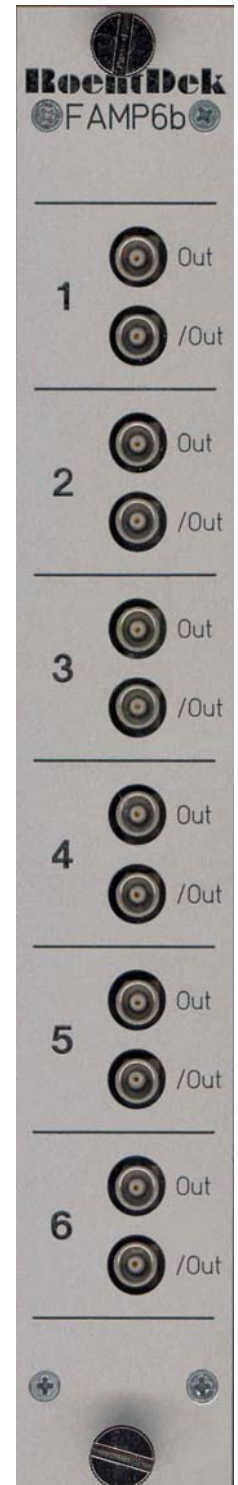
[*] Please note that not all combinations of gain, input impedance and bandwidth within the given ranges are possible.

Each channel has a lemo (00 series) input on the rear panel and both an inverted and non-inverted amplified lemo 00 series output on the front side. Amplification, bandwidth and in-/output impedance for each channel is factory-set and can not be modified without changing the internal circuits. The default settings for LC anode read-out are 300x amplification, 15 MHz bandwidth and 50 Ohm impedance.

The **FAMP3** module is designed as a standard 3HU case (W61mm/L122mm/H128mm, weight 430 g without power adapter). It comes with a mains power adapter for 100-250VDC. power consumption is 0.25A at + 12V. Several modules can be daisy-chained via power cables. The default settings for LC anode read-out are 300x amplification, 15 MHz bandwidth and 50 Ohm impedance.
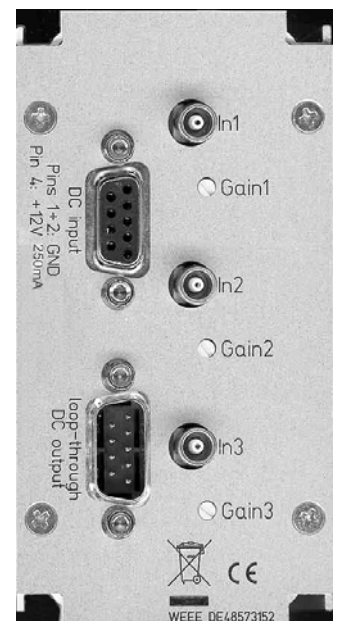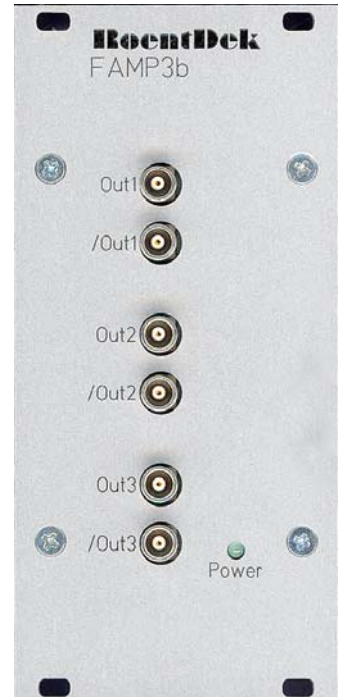

Figure 2: signal outputs are located on the FAMP3 front panel (top left), gain potentiometers, signal inputs and power in-/output are on the rear panel.

In the module version **BFAMP** (with bipolar signal output) **RoentDek** provides a special version optimized for certain digital read-out modules such as fast ADCs (e.g. **RoentDek fADC4**) and specifically for the **RoentDek cTDC**. These amplifier modules (also available as single-channel unit **BFAMP1**) feature re-shaping of amplified signals towards a bipolar signal trace. Forming the bipolar output shape from an (unipolar) input signal is accomplished by summing up the inverted and non-inverted amplified signal after introducing a specific delay between the two components. The delay is determined by the length of an external cable set on the rear panel. If no delay cable is set, the **BFAMP** circuit operates like a standard **FAMP**.

Figure 3: BFAMP1 and BFAMP3 modules (left), rear panel of bFAMP3 (above) with DC power input via 9-pin socket (the BFAMP1 has no loop-through DC output, its case width is 51 mm).

The **PreFAMP6** case (see description above) is a stand-alone box with size 115 mm x 40 mm x 105 mm, weight 300g and needs an external power input of +/-6V (0.2 A) via front panel inputs, e.g. from **SPS1b**.[*]

Figure 4: rear panel of PreFAMP6 (left) with signal inputs and DC power input via 9-pin sub-D connector or 2mm pins. Right: front panel of PreFAMP6 with signal outputs.

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[*] Please contact **RoentDek** for options how to power the **PreFamp6** via an **ATR19-6/8** unit.