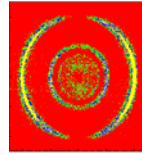# The **RoentDek** BFAMP bipolar output amplifiers

RoentDek
Handels GmbH

Supersonic Gas Jets
Detection Techniques
Data Acquisition Systems
Multifragment Imaging Systems

The **RoentDek** **BFAMP1**, **BFAMP3** and **BFAMP8c** bipolar output amplifier modules are advancements of the **FAMP** fast signal amplifiers for high frequency pulse signals (see LINK).

The **BFAMP3** module (with 3 channels) is designed as a standard 3HU case (weight 450 g, size W61mm/L122mm/H128mm, without power adapter). It comes with a mains power adapter for 100-250VDC. Power consumption is 0.4A at + 12V. Several modules can be daisy-chained via cables. The default settings are 150x amplification, 200 MHz bandwidth and 50 Ohm impedance. The **BFAMP1** unit has a width of 51 mm and 0.15A at + 12V power consumption, weight 250 g (without power adapter). The **BFAMP8c** is a special version of the **FAMP8c** signal amplifier with same form factor and power requirements.

The **BFAMP** have a bipolar signal output optimized for certain digital read-out modules such as fast ADCs (e.g. **RoentDek fADC4**) and specifically for the **RoentDek cTDCx** models. Each amplifier features re-shaping of amplified signals towards a bipolar signal trace (see signal sketches on the right). 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**.
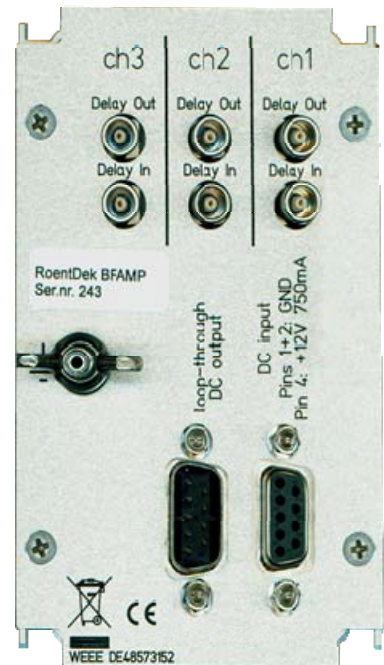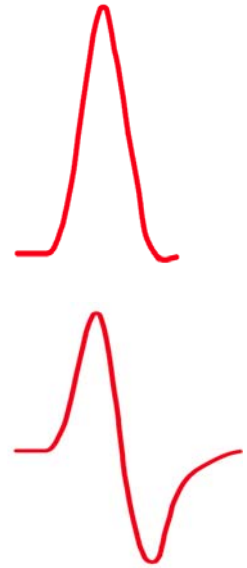
BFAMP1 and BFAMP3 modules (left), rear panel of BFAMP3 (above) with DC power input via 9-pin socket (the BFAMP1 has no loop-through DC output).

Above: Front panel view of the BFAMP8c 1HU 19"full width rack case, hosting 8 individual bipolar output amplifiers. The delay cables are placed on the rear panel (see below), it also contains the input for 12V DC from the external mains adapter with 25W power consumption (not shown).
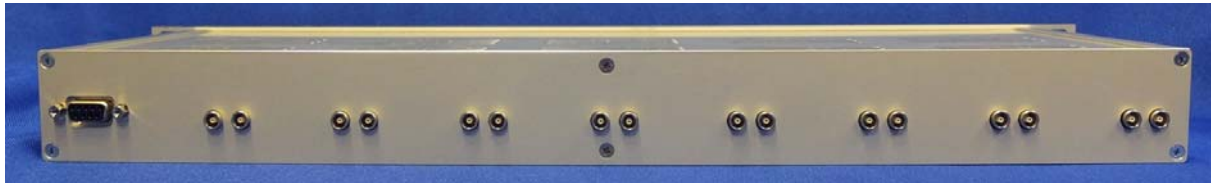
The next picture shows part of the front panel, indicating input, outputs (inverting / non-inverting) and gain potentiometer for each channel. In the standard configuration channels 7 and 8 are set to 120 MHz bandwidth and about 50x mean gain, the others according to the bandwidth and gain demands of the delay-line.

The **BFAMP** amplifiers can also be operated in combination with a special Constant-Fraction Discriminator circuit (**RoentDek bCFD8c**) to produce NIM signal transition for read-out with a standard Time-to-Digital converter such as the **RoentDek TDC8HP**.