A readout channel based on commercial active components has been developed to detect individual ionization clusters in a drift chamber. The reading channel is characterized by high linearity, low distortion, and a bandwidth adequate to the expected spectral density of the signal. Furthermore, the readout electronics have been designed to have an easily variable amplification to have a signal that is always suitable for the digitizer, despite the changes in the working point of the detector. The input network provides decoupling and protection, while signal amplification is realized with a double gain stage made from LMH6881 and THS4509, both from Texas Instruments: Variable gain LMH6881 is a high-speed, high-performance fully differential programmable amplifier with a bandwidth of 2.4GHz, a high linearity of 44dB OIP3 and a low noise (2.3 mV/√Hz) The THS4509 is used as a second gain stage and output driver. It is a wide-band (1.9GHz), fully differential operational amplifier with a low noise (1.9 mV/√Hz) and low harmonic distortion (75 dBc HD2 and -80 dBc HD3 at 100 MHz).

High-speed layout design techniques have been implemented to ensure optimum stability and performance.