

The mesytec MPR-Series provides a set of state of the art multichannel preamplifier modules specially designed for single or double sided multistrip silicon detectors. The MPR series can be used as stand alone modules and can also easily be combined with the mesytec STM-16 shaping-/timing filter/ discriminator module.

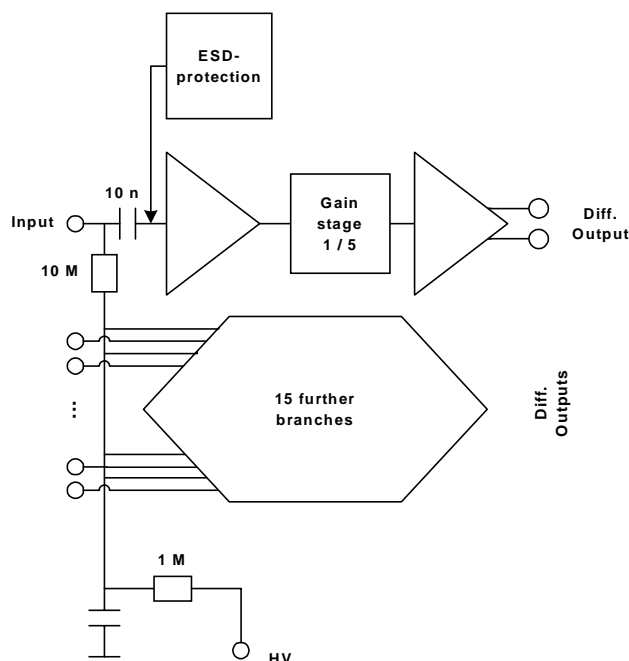
Features:

- 16 / 32 / 64 channel compact module
- Sensitivity switch, factor 5
- ESD input protection
- Differential output 50 Ω
- Pulser input
- Bias voltage up to $\pm 400V$
- PCB module available for vacuum use



Schematics:

(for MPR-16)



Technical Data: for type "5GeV", "100MeV" and type "20MeV"**Input stage**

- Input connector(s): 20 pin male connector (for a 16 channel unit)
- Pin assignment:
1,2,19,20 signal ground,
3 to 18 Input 16 to 1
- Positive and negative charge can be amplified equally.

Noise (with 1 μ s FWHM shaping amplifier)

- 4keV Si + 0.06keV/pF (1100e⁻ FWHM + 17e⁻/pF)
- maximum input capacity: 1000pF (detector + cable)

Pulser input

- Tail pulse, or square pulse, internally not terminated.
- Amplitude:
 - Type "20MeV" and "100MeV":
1.7MeV/V \pm 20% (0.08pF couple capacity)
 - Type "5GeV": 0.5 GeV/ V \pm 20% (22 pF couple capacity)
- Do not use for calibration !

Sensitivity

- Sensitivity can be changed by a switch. Together with STM16 the following max ranges (10V output at the shaper module) can be set:
 - Type "5GeV" : 0.33, 0.5, 0.65, 1.0, 1.7, 2.5, 3.3, 5.0 GeV
 - Type "100MeV" : 3.3, 10, 13, 20, 33, 50, 65, 100 MeV
 - Type "20 MeV" : 1.25, 2.5, 3.3, 5.0, 6.5, 10, 13, 20 MeV.
- Other ranges can be realised on request.

Output stage:

- Differential output for twisted pair 34 pin male header connector.
- Output amplitude: 0 to \pm 1V (headroom \pm 4V)
- Risetime TR 10..50ns, depends on detector rise time and capacity
- Decay time TD = 10 μ s
- Pin assignment of output connector:
pin 1,2 channel 1, pin 3,4 channel 2.....
pin 33, 34 output ground

Detector bias input

- Lemo connector
- Maximum voltage \pm 400V
- When detector side must be on ground level: terminate bias input with 50 Ω

Ground connections

- Ground screws on front and rear side
- There are two different ground connections: input and output ground.
- Input ground is a signal ground! Do not connect to anything else but detector back sides or very sensitive detector shieldings. Signal ground is also at the input connector
- Output ground should be used for shielding and can be connected to the vacuum vessel.

Power consumption for 16 channels: (max 1.5W)

- SubD9 connector: 1, 2 = gnd, 3 = +6V, 4 = +12V, 5 = -6V
- +6V 90mA
- -6V -80mA
- +12V 40mA

Due to the low power consumption cooling is not necessary, even not when many preamp boxes are densely packed.

Dimensions:

- Length: 180 mm
- Width: 105 mm
- Height: 46 mm (MPR-16),
67 mm (MPR-32),
92 mm (MPR-64)