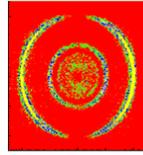


# LET1+ timing discriminator



**RoentDek**  
Handels GmbH  
Supersonic Gas Jets  
Detection Techniques  
Data Acquisition Systems  
Multifragment Imaging Systems

The **RoentDek LET1+** is a single channel leading-edge discriminator with internal amplifying stage for simple and convenient read-out of signals from timing/counting devices like the **RoentDek DET** detectors and similar MCP-based detectors, or generally for any type of fast avalanche counter like channeltrons, photo-multipliers, -diodes or even gas-filled detectors. After adjusting a threshold level via a potentiometer for discriminating against electronic noise, the **LET1+** will produce a “logic” signal (usually of NIM-level) for every detected particle (or photon). The output signal width is fixed, but can be varied with a second potentiometer. This signal can be used as input for a counter or trigger device. Optionally the unit can be supplied with one TTL output (at position of OUT B in figure below) and/or one output of variable length, corresponding to the time over threshold (ToT, NIM only, at position of OUT A in figure below). Information on the arrival time is presumed with a precision on the order of signal rise time (typically 1 to 5 ns FWHM temporal resolution when used with a **RoentDek DET** detector). The ToT can give information about the input pulse height.



**Figure: LET1 module. The LET1+version is similar but biased via an USB socket.**

In standard configuration a 50 Ohm impedance socket (Lemo00) requires positive input signals < 100 mV (with linear response up to 50 mV, AC-coupled, 30 dB internal amplification, bandwidth 350 MHz). This makes the **LET1+** especially suitable for direct read-out of MCP signals from a **RoentDek** detector (after AC-decoupling, e.g. with a **FT4TP**), without need of pre-amplification.

The **LET1+** can be configured to also operate with negative and/or amplification factor 1. Alternatively, **RoentDek** can provide a passive inverter plug (**pInv**), likewise, a **pAtt** attenuator plug to adjust for operation with higher signal levels and/or different polarity, i.e. signals from a photodiode or pre-amplified signals. The **LET+** can also be used as **TTL-NIM** (or **NIM-TTL**) signal converter. Specifically configured factory settings can be chosen to allow for direct operation in different modes.

The unit has a power consumption of about 3 W (0.6 A at +5 V) via a USB socket as power input (no data connections). We strongly recommend using a standard external USB power supply (i.e. 5 V/1 A, not included) instead of connecting the **LET1+** to a PC.

Size (approx.): 110 mm x 65 mm x 40 mm, weight: 300 g (without power adapter).