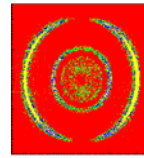


The RoentDek RDiv1

150 MHz rate divider

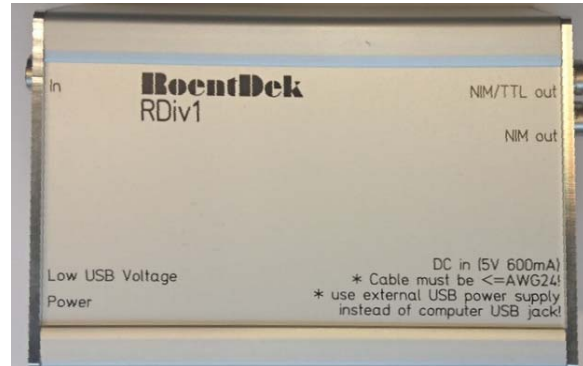


RoentDek
Handels GmbH

Supersonic Gas Jets
Detection Techniques
Data Acquisition Systems
Multifragment Imaging Systems

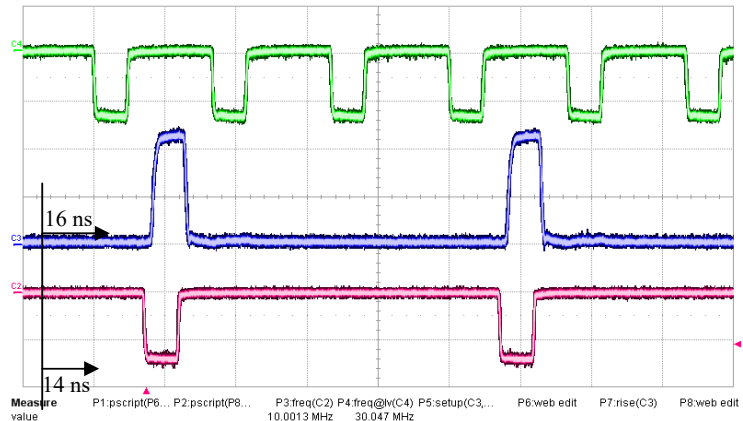
The **RoentDek RDiv1** rate divider is a module to reduce the frequency of incoming digital signals (NIM or TTL), i.e. from a clock or a trigger output of a pulsed device (for example a Laser driver) by a selectable (integer) factor R (R is the ratio of output frequency to input frequency).

The **RDiv1** can operate up to > 150 MHz input frequency (connected via lemo socket), R can be selected between 1:2 and 1:256. Lemo sockets provide NIM and TTL (or 2x NIM) outputs depending on internal jumper setting. Power is supplied via USB cable. The case measures 104 mm x 65 mm x 36 mm (without sockets). Opening the top let allows board access for adjusting jumpers to set the output level, signal width and to the dip switches for setting R.



Output signal width can be increased from approx. 10 ns to about 35 ns (the latter only if output frequency allows). Minimum input signal width is 3.5 ns. Screen shots below show the response of the **RDiv1** to an input frequency of about 30 MHz for R = 1:3 and 170 MHz for R = 1:4.

Right picture: Screen shot of input trace (green) and TTL/NIM output traces (blue/red) at 30 MHz input frequency and R = 1:3.



The trigger level for 50Ω NIM input is -0.35 V, for TTL +1.7 V (+1.4 V at 2 kΩ input impedance). There is virtually no lower input frequency limit for the rate divider counting circuit. The output signal is delayed towards the input signal by about 15 ns.

Next picture: when input frequency (fast TTL Oscillator, green trace) is pushed to 170 MHz (R is set to 1:4) both the TTL (blue trace) and NIM (red trace) output frequency show distinct transitions, however, signal shapes develop somewhat slower raising/falling characteristics once the specified maximum output frequency of about 80 MHz is approached.

