Option -TZ50

for Quantum Composers PDGs

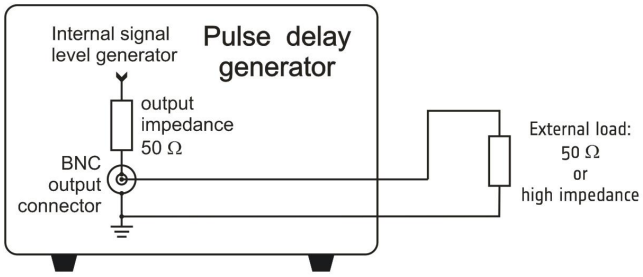
Option -TZ50 is an output impedance adaption to drive a 50 Ω load in fast TTL-output mode

A standard PDG unit provides two output modes:

- TTL level (max. 5 V into high impedance)
- Adjustable mode (2 - 20 V into high impedance)

All units are also suitable for driving loads down to 50 Ω.

Standard output scheme:



Output impedance of a standard TTL / Adjustable mode output channel is 50 Ω.

Into high impedance load all output voltage drops over the external high impedance load (fig. 1 red and fig. 3 blue graph).

If load impedance is 50 Ω output voltage is divided over output impedance of 50 Ω and load impedance of 50 Ω by a ratio 1:1:

An external 50 Ohm load 'sees' a voltage drop in

- TTL mode of <2.5 V (picture 1, blue) and in
- Adjustable mode between ca. 1 - 10 V, means half of the user set voltage level of 2 - 20 V (compare fig. 3: Red and blue graph)

If 50 Ω load application expects logical TTL level >3.3 V: By output impedance adaption option TZ50 allows to rise output level in TTL mode to >4 V into a 50 Ω load (fig. 1 yellow graph).

Due to impedance mismatch TZ50 adapted TTL outputs should not be used into high impedance loads (picture 2 blue graph).

The TZ50 adaption of each pulse generator module just affects the output behaviour in TTL mode. The 'adjustable mode' is NOT limited in any way and can still be used into any load between high impedance and 50 Ω.

Please ask our product management in case of any questions !

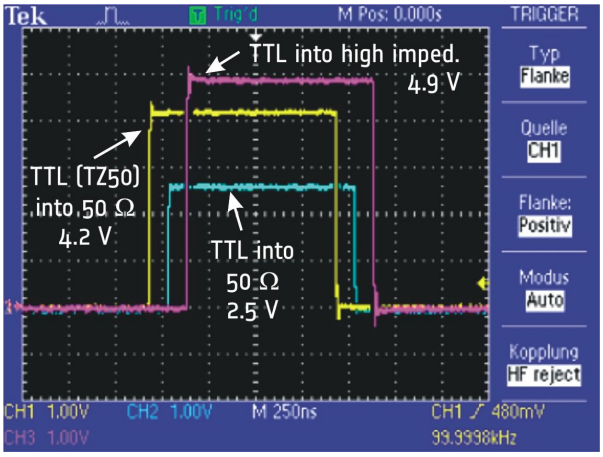


Fig. 1
Red: Normal TTL-mode: ca. 4.9 V into high impedance
Blue: Normal TTL-mode: ca. 2.5 V into 50 Ω
Yellow: TTL mode + option TZ50: ca. 4.2 V into 50 Ω

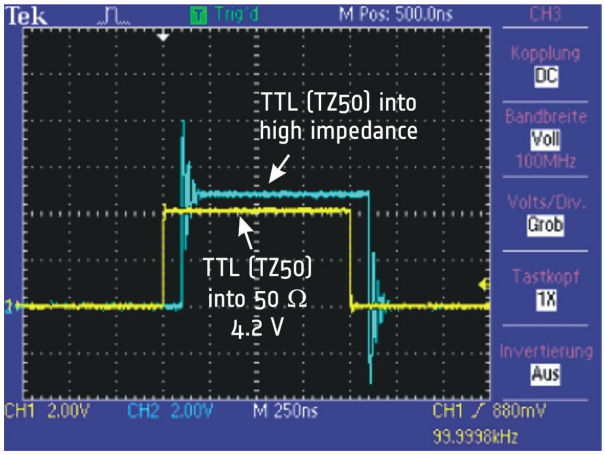


Fig. 2
Blue: TTL (TZ50) into high impedance -> Ringing at rising and falling edge due to impedance mismatch
Yellow: TTL (TZ50) in to 50 Ω: ca. 4.2 V

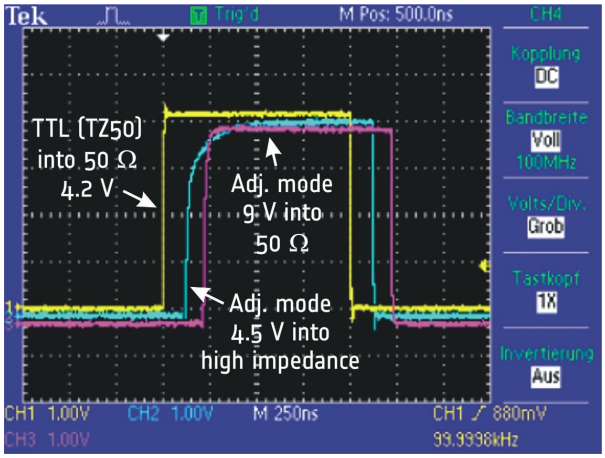


Fig. 3
Yellow: TTL mode + option TZ50: ca. 4.2 V into 50 Ω
Blue: Adj. mode 4.5 V into high impedance
Red: Adj. mode 9 V into 50 Ω

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