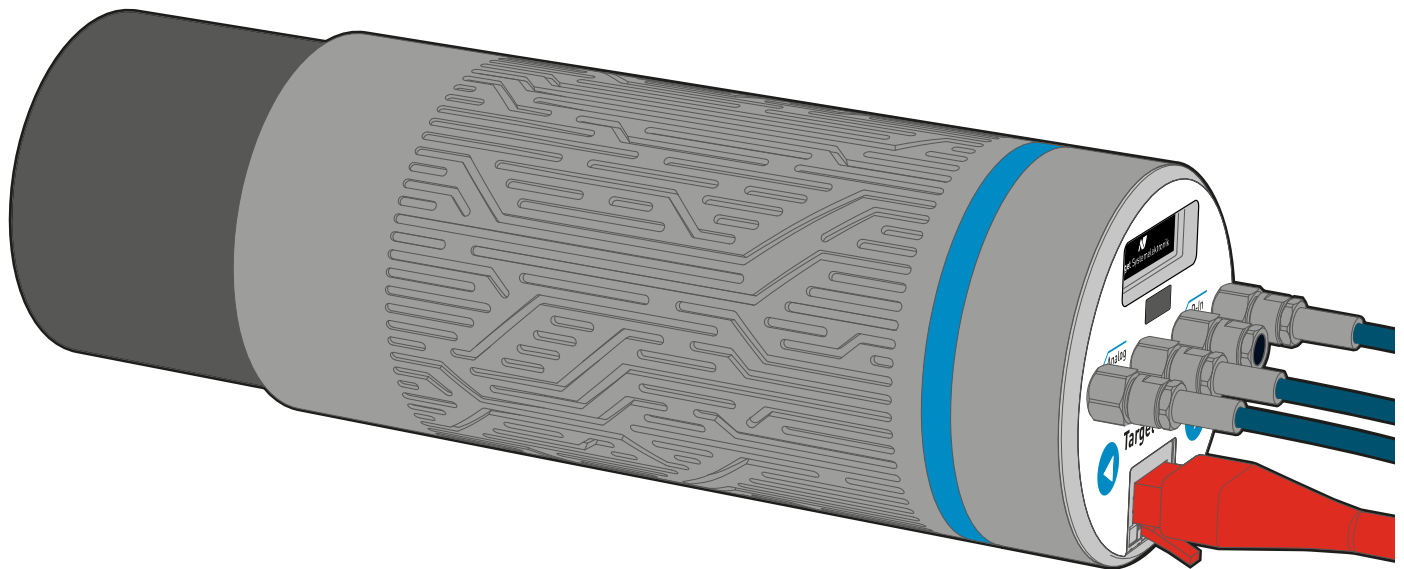




Target Systemelektronik



Target U100

Data Sheet

Version: 2.0-20191212

Fully Integrated Ultra High Speed PMT-Base for Scintillation Detectors

The Target U100 is the most advanced digital tube base for a variety of scintillator based radiation measurement applications. It provides outstanding performance in single detector monitoring applications as well as in highly sophisticated multi-parameter settings. Two high precision 310 MHz ADCs digitize both anode and dynode signals with 14 bit resolution. The unique design allows for digital signal processing accuracy and features which have not been available in conventional systems. Thus a dynamic range of 1:1,000,000, e.g. 100 eV to 100 MeV, can be achieved with a single detector attached. The timing accuracy with external triggering is in the picosecond range. Time tagged events are transferred as list mode data over the Gigabit Ethernet connection at more than 1 million cps throughput.

A ground breaking patented gain stabilization works without LEDs or radioactive sources. It compensates for PMT temperature effects as well as high count rate shifts. The onboard dual core ARM processor runs the built-in browser based MCA software package. No external drivers or other software packages are required. Any web browser application connected via Ethernet is sufficient. The Target U100 comes with a HTTP REST interface for state of the art integration into third party application software and larger multi-parameter system structures.

FEATURES

- Supports fast and slow scintillator materials ($\text{Cs}_2\text{LiYCl}_6$, CeBr_3 , $\text{LaBr}_3(\text{Ce})$, $\text{NaI}(\text{Tl})$, PVT, etc.)
- Ultra high speed digital signal processing with up to 2 x 310 MHz sampling rate
- GBit PoE Ethernet interface
- Network accessible embedded MCA software
- Picosecond timing resolution
- List mode data acquisition
- Novel gain stabilization (patented)
- Easy system integration by HTTP REST interface
- Positive or negative detector supply, up to 1500 Volt (please specify)
- 8 - 10 dynodes support (please specify pinout)
- Configurable voltage divider chains (at factory)

Performance	
Energy range (Gamma)	10 keV - 20 MeV (CeBr ₃)
Linearization	Real-time linearization of gamma energy
Spectrum length	512, 1024, 2048, 4096, 8192 channels
Typical resolution at 662 keV with NaI detector at 20 °C	6 % - 8 % FWHM
Max throughput in PHA mode	>1000 kcps (CeBr ₃)
Max throughput in List mode	>1000 kcps (CeBr ₃)
Integral non-linearity	<0,01 %
Differential non-linearity	<0,02 %
Dead time accuracy	<1 % up to 100k cps
Detector high voltage	0 - 1500 V in steps of 0,05 V
Offset drift	<5 ppm/°C
Gain drift	<50 ppm/°C
True triangular shaping time	50 ns - 50 μs
Timing accuracy (Sigma)	<100 ps for CeBr ₃ @ 1 MeV
Presets	
Livetime	0 - 1010 s in 10 ns increments
Realttime	0 - 1010 s in 10 ns increments
Physical	
Dimensions	Ø 64 mm x 156 mm (Ø 2,5" x 6,1")
Weight	≤ 600 g
Housing material	Aluminum, anodized
Environmental	
Operating temperature	10 °C - 35 °C (50 °F - 95 °F)
Storage temperature	5 °C - 50 °C (40 °F - 120 °F)
Relative humidity	10 - 80 %, non condensing

Protection rating according to IEC 60529	IP10
Power Supply	
PoE (power over Ethernet)	48 V
Typical power consumption	5 W
Maximum power consumption	PoE Class 3
Input/Output	
Socket	B14A Diheptal socket for 2" PMT base
Network	1 Gbit Ethernet
Sync	Digital input with Schmitt-Trigger for external clock signal
Analog	Output for amplified detector signal or input for additional external detector signal
D-Out	Digital trigger output
D-In	Digital input for coincidence and gating

All technical data are subject to change without further notice.