

Optical Transient Recorder

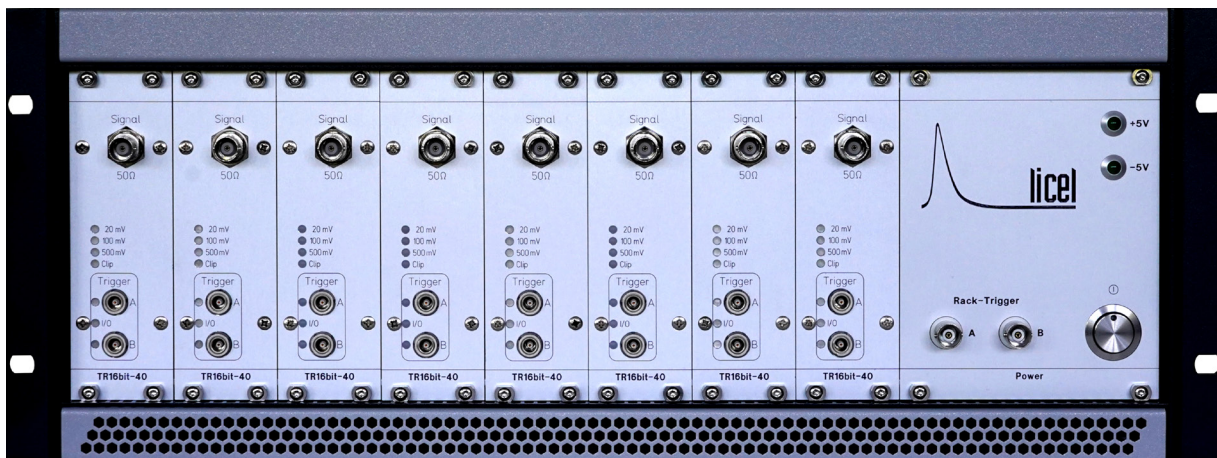
Simultaneous analog and photon counting acquisition
for detection of optical signals

Model TR40-16bit-3U

Concept:

The Licel transient recorder is a powerful data acquisition system, designed especially for optical signal detection. A new concept was developed to reach the best dynamic range together with high temporal resolution at fast signal repetition rates. For the first time, analog detection of the photomultiplier current and single photon

counting are integrated into one acquisition system. The licel transient recorder comprises a fast transient digitizer with on-board signal averaging, a discriminator for single photon detection and a multichannel scaler together with preamplifiers for both systems.



Features:

- 16 bit-40 Ms/s ADC
- 800 MHz single photon count rate
- Pretrigger mode
- Integrated preamplifiers
- 10^5 dynamic range by combination of
- Analog and single photon counting acquisition
- 64k shots on board summation
- High repetition rate for kHz lasers

Specifications

Analog acquisition:

Signal input ranges:	+2 mV...-20 mV +5 mV...-100 mV +5 mV...-500mV
A/D resolution:	16 bit
Sampling rate:	10 Ms/s, 20 Ms/s, 40 Ms/s
Bandwidth:	DC-5 MHz /10 MHz/20 MHz
A/D differential nonlinearity:	typ. 0.5 LSB max. 4 LSB @ 25°C
A/D integral nonlinearity:	typ. ±3.0 LSB @ 25°C
Spurious free dynamic range:	88 dB
S/N single shot:	74 dB @ 100 mV input range (20 µV)
Input impedance:	50Ω
Coupling:	DC
Protection:	Diode clamped

Photon counting acquisition

Max. count rate:	800 MHz, no deadtime or overlap between range bins
Discriminator threshold:	0...-25mV, 0...-100mV 64 levels, software-controlled

Signal averaging:

Signal length:	10 - 32768 range bins
Pretrigger:	1/16 of signal length
Summation memory:	2 (optional 3) channels, 64k acquisitions each
Standard deviation:	4000 range bins analog and photon counting stddev output
Max. repetition rate:	4.8 kHz for 4 kbin (15.36km) 19.5 kHz for 1 kbin (3.84 km)

Trigger:

2 trigger inputs to acquire signals into 2 separate summation memories.	
Optional: 3 or 4 trigger inputs/memories	
Impedance:	1kΩ
Threshold and slope	2.5V, positive
Trigger jitter:	±12.5 ns

In/Outputs:

Signal input:	BNC, 50Ω front panel
PC input for -AP option:	BNC, 50Ω front panel
Trigger A:	Camac, 1kΩ, front panel
Trigger B:	Camac, 1kΩ, front panel
Rack Global TriggerA :	BNC, 1kΩ, rack front panel
Rack Global TriggerB :	BNC, 1kΩ, rack front panel

Rack/Power supplies¹:

Rack-1:	1 TR + 1 PMT module
Rack-2:	2 TR + 2 PMT modules
Rack-8:	up to 8 TR or up to 4 TR + 4 PMT modules

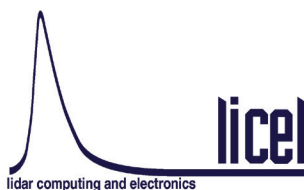
PC interface ¹:

Ethernet I/O	10/100 Ethernet interface
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¹ for a complete system please order:

1 pc. rack-1/-2/-8
1 pc. Ethernet I/O
1...8 pcs. transient recorders

order number: TR40-16bit-3U-xx
xx= optional: for split input version select xx=AP



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