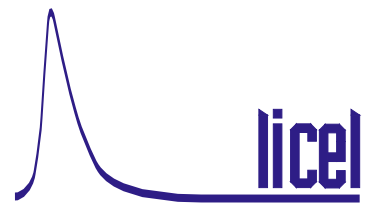


Optical Transient Recorder



Simultaneous analog and photon counting acquisition for detection of optical signals at 62.5cm range resolution.

Model TR240-14bit-3U

Concept:

The Licel transient recorder is a powerful data acquisition system, designed especially for optical signal detection. The sampling rate of previously shipped has been tripled to reach the best dynamic range together with high temporal resolution at fast signal repetition rates. This makes it especially suitable measurements above and below water surfaces, downward looking lidar systems from flying platforms.

For the first time, analog detection of the photomultiplier current and single photon counting are integrated into one acquisition system at this speed. 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:

- 14 bit-240 Ms/s ADC
- 800 MHz single photon count rate
- 62.5cm range resolution
- 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 ... -500 mV
A/D resolution:	14 bit
Sampling rate:	240 Ms/s
Bandwidth:	DC-240 MHz
A/D differential nonlinearity:	typ. 0.3 LSB max. 1 LSB @ 25°C
A/D integral nonlinearity:	typ. ± 1.0 LSB @ 25°C
Spurious free dynamic range:	75 dB
S/N single shot:	68 dB @ 100 mV input range (25 μ V)
Input impedance:	50 Ω
Coupling:	DC
Protection:	Diode clamped

Photon counting acquisition

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

Signal averaging:

Signal length:	10 – 16384 range bins
Summation memory:	2 (optional 4) channels, 64k acquisitions each
Max. repetition rate:	4.8 kHz for 16 kbin (10.2 km) 39 kHz for 2 kbin (1.28 km)

Trigger:

2 trigger inputs to acquire signals into 2 separate summation memories.	
Optional: 3 or 4 trigger inputs/memories	
Impedance:	1 k Ω
Threshold and slope	2.5 V, positive
Trigger jitter:	± 2.1 ns

In/Outputs:

Signal input:	BNC, 50 Ω front panel
PC input for -AP option:	BNC, 50 Ω front panel
Trigger A:	Camac, 1 k Ω , front panel
Trigger B:	Camac, 1 k Ω , front panel
Rack Global TriggerA:	BNC, 1 k Ω , rack front panel
Rack Global TriggerB:	BNC, 1 k Ω , rack front panel
Rack-1/-2/-8 Ethernet:	RJ45, rack rear 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 interface¹:

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

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

order number: TR240-14bit-3U-xx
xx= optional: for split input version select xx=AP



Licel GmbH
Gustav Meyer Allee 25
D-13355 Berlin
Germany

phone +49.30.283 917 37
fax +49.30.283 917 38
e-mail: info@licel.com
www.licel.com

International distribution:

Asian Pacific Rim:

Electronics Optics Res., Ltd.
3-fl., Onoda Building,
4-26-19, Koenzi-Minami-Ku
Tokyo 166, Japan
phone 03-3314-5699
fax 03-3314-2333
email: sato@eor.jp
www.eor.jp

USA:

Boston Electronics Corp.
91 Boylson Street
Brookline MA 02445
USA
phone (800) 347-5445
fax (617) 731-0935
e-mail: jjd@boselec.com
www.boselec.com

India:

Digilog Technologies Pvt. Ltd.
3/1 Royale Palm Residency
Palmgrove Road Victoria Layout
Bangalore 560047 Karnataka
India
phone +91 80 25575500
fax +91 80 41126664
email: digilogsys@gmail.com
www.digilogsys.in

United Kingdom:

Photonic Solutions Ltd.
Unit 2.2 Quantum Court
Heriot Watt University
Research Park
Currie EH14 4AP
phone 0131 664 8122
fax 0131 664 8144
email: sales@psplc.com
www.psplc.com