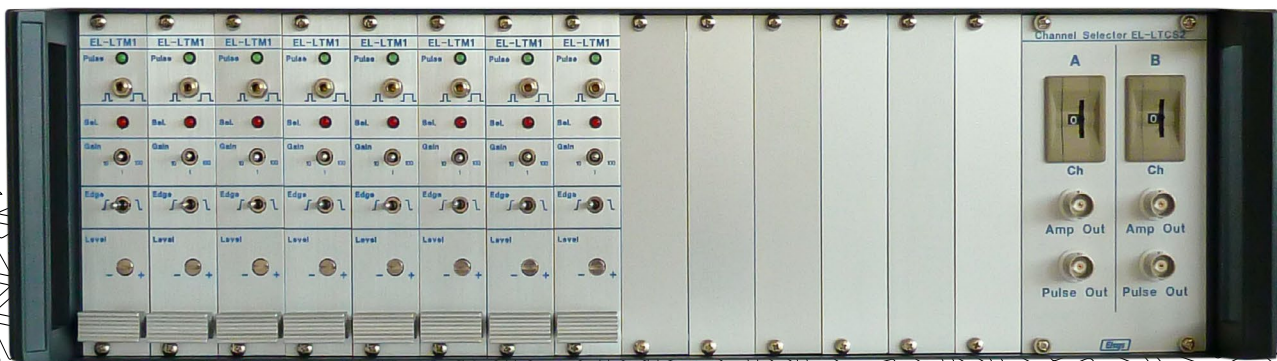


# EL-BULT14

Level Trigger



The device EL-BULT14 is able to produce TTL trigger pulses out of analog signals from optical (Laser), reluctance, capacitive and eddy-current sensors. The main application of the EL-BULT14 is to convert sensor signals to TTL pulses in structural health monitoring and vibration measurements of compressors and turbine blades.

Each of the up to 14 channels has a corresponding input (Probe In) and trigger pulse out (Pulse Out) BNC connector on the rear side of the device.

The channel selectors can be used to route the amplified input signal as well as the trigger output pulse from one of the 14 channels to the front BNC connectors for monitoring purposes.

Elsys AG  
Mellingerstrasse 12  
CH-5443 Niederrohrdorf  
Switzerland

Phone: +41 56 496 01 55  
Email: [info@elsys.ch](mailto:info@elsys.ch)  
[www.elsys-instruments.com](http://www.elsys-instruments.com)

## Content

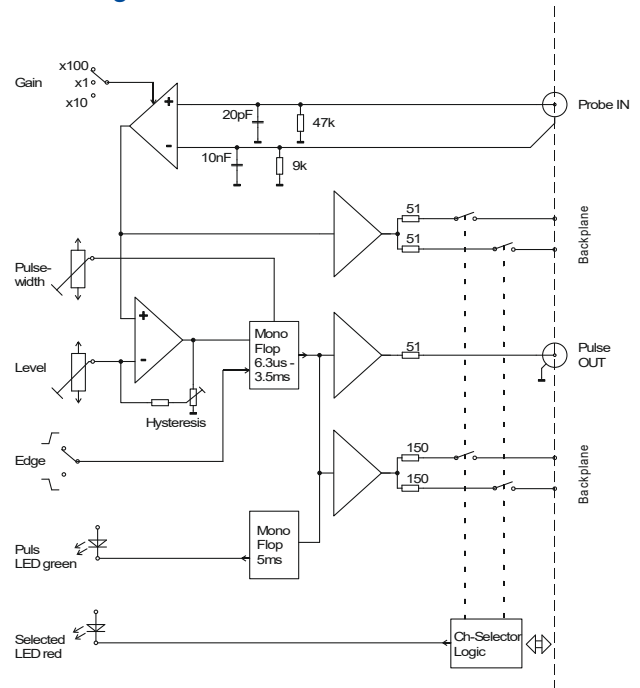
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# TTL Trigger Generator

## Key Capabilities

- Gain factors 1, 10, 100
- Trigger on negative or positive slopes
- Trigger level from (-9 to +9 V) / Gain
- Adjustable hysteresis
- Bandwidth DC to 400 kHz
- Max input voltage  $\pm 42$  V

## Block Diagram



## EL-LTM1 Plug-In Module



### Control Elements Trigger-Module

#### Green LED

The green LED will flash at each generated trigger pulse.

#### Red LED

The red LED indicates that this channel is selected by at least one of the two channel selectors.

#### Trimmer Pulse Width:

Adjustable output pulse width from 6.3  $\mu$ s up to 3.5 ms

#### Toggle switch: GAIN

This switch adjusts the gain for one channel. Possible gain factors are 1, 10, 100.

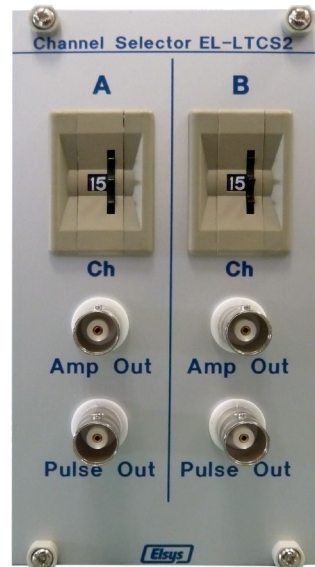
#### Toggle switch: Edge

This switch defines the slope of the input signal to generate a trigger pulse.

#### Level setting

Defines the amplified level at which a trigger pulse is generated.

## Channel Selector



The Channel Selector is an optional module for accessing all installed LTM1 output signals and amplified input signals from the front-side of the rack chassis.

There are two identical groups A and B. The rotary switch defines which trigger module will be connected to the front BNC connectors of the corresponding channel selector. The signals were routed over the backplane to the channel selector. The channel numbers correspond to the slot numbers of the installed trigger modules.

For channel number 0 and 15 the front BNC connectors are open.

# Specification

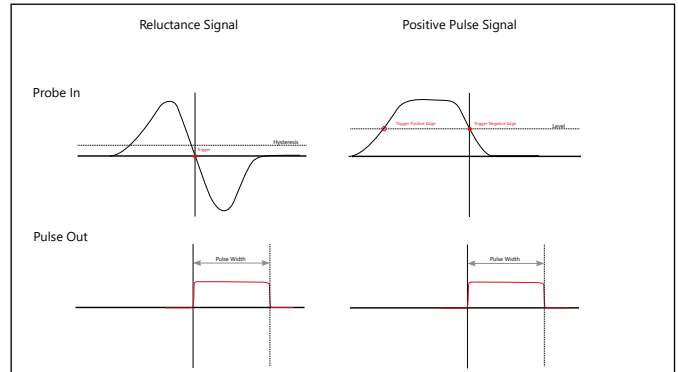
## Channel Specifications

Input Amplifier	Differential type with isolated BNC connector
Input Range	+/-10 V, +/-1 V, +/-0.1 V (Gain = 1, 10, 100)
Input impedance	Pos. Signal path: approx. 47 kΩ    20 pF Neg. BNC shield: approx. 9 kΩ    10 nF
Max. Input Voltage	±42 V (short peaks up to 250 V)
Input Sensitivity	Trigger level can be set between (-9 ...+9 V) / gain
Hysteresis	Standard approx. 2.5 % of the input range. Can be adjusted by a Trim-Poti on the upper side of the module board. With a jumper inside of the plug in module the hysteresis can be magnified by a factor of approx. 3. This may be useful when the module is connected to a Reluctance Sensor.
Bandwidth	DC to 400 kHz (200 kHz @ Gain=100)
Pulse Output	TTL (0.4 ... 3.5 V) impedance approx. 100 Ω
Outputs at Ch. Selectors	BNC for amplified analog signal. Impedance approx. 50 Ω BNC for trigger pulse. Impedance approx. 150 Ω Outputs are protected for up to +/-10 V

## Specifications of the Base Unit

Number of channels	One per plug-In module (up to 14 in one chassis)
Supply voltage	100 .. 240 VAC, fused with two fuses 3.15ATL
Dim. of rack chassis	19"; 480 x 134 x 260 mm (W x H x D)
Weight	Rack chassis with 14 channels: 5.3 kg one plug-In channel: approx. 0.23 kg

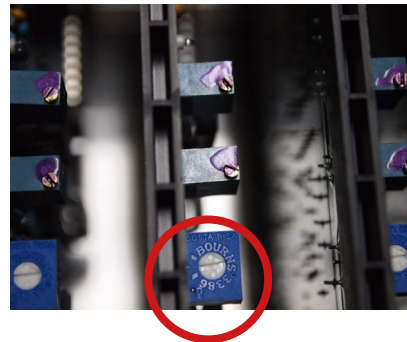
## Signals



### Adjusting of the Hysteresis

The value of the hysteresis can be adjusted by a potentiometer. It is accessible by removing the top cover of the EL-BULT14 rack.

Turning clockwise increases the hysteresis. The value of the hysteresis can be set between approx. 0,35 to 4,5 % of the amplifier range (e.g. 10 mV to 500 mV at gain=1).



By installing the jumper J2, the hysteresis will be increased by a factor of approx. 3 (e.g 30 mV to 1.5 V at gain=1). This may be helpful at the use of reluctance sensors.

