Synchronizer v2

Overview:

High speed multi purpose timing unit

- 16 trigger outputs (TTL compatible)
- 8 trigger inputs (TTL compatible)
- 8 channels logic analyzer
- freely configurable routing of all channels
- Pulse to Pulse resolution: 20ps
- Maximum repetition rate: 7.4 MHz
- Sequence duration up to several weeks
- Compact casing
- Incremental encoder mode
- Ethernet connectivity
- Ultra low Jitter (< 1ps)
- Rise/Fall time <2ns
- High power TTL outputs
- Pulse voltage adjustable on request
- Signals individually switchable (on / off / invert)
- Free configurable trigger logic (AND / OR / XOR / NOT)
- Free configurable trigger window and trigger delay
- Ultra quick response of external triggers
- Status LEDs for each signal
- Including advanced graphical interface (windows)
- iLA_5150 warranty: 2 years

Versions:

	Channel																Option
	OUT																IN								Logic Analyzer
Version	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4	5	6	7	8	
LED Basic	✓	✓	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	✓	⊖	⊖	⊖	⊖	⊖	⊖	⊖	○
PIV	✓	✓	✓	✓	✓	✓	✓	✓	⊖	⊖	⊖	⊖	⊖	⊖	⊖	⊖	✓	✓	⊖	⊖	⊖	⊖	⊖	⊖	○
PIV Advanced	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	○

Data Sheet
June 2024

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Features:

All input channels feature the following preparation (trigger preparation)

- 2 times freely routable input selection among all 8 inputs
- combining as OR, AND, XOR
- variable prescaler
- variable edge selector

All output channels feature

- free routing selection of:
  triggers
  - sequence outputs
  - combinations of both (OR, AND, XOR)
- customizable gating with free routing selection among all triggers
- gating selectable as synchronous or asynchronous
- selectable „stop-after counter“ with free input routing of
  - sequence outputs
  - triggers
- sequence-stop by a combination of gating and pulse-counter (OR, AND, XOR) or software

All sequencers feature

- selectable trigger type (normal, incremental encoder) with free rotable inputs among all triggers
- window function with free routable inputs
  - triggers
  - sequence pulses
  - run enable
- configurable „start-after“ counter
- configurable „delay“ counter
- configurable sequence „go“ with routable inputs (software, triggers)
  - ON, OFF, INVERT for triggers
  - combinable with software (OR, AND, XOR)

Almost any thinkable sequence can be realized:

- standard repeating sequences
- burst sequences
- repeating burst sequences with variing patterns
- repeating dependent sequences
- all internally or externally triggered

Logic analyzers feature

- selectable input (raw input, generated trigger, sequence output)
- selectable trigger source (raw input, generated trigger, sequence output)
- 1024x32bit mem depth

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Features:

Complex examples that are easily realised with the iLA_5150 Synchronizer:

- ✓ „I'd like to have a sequence that starts after my TTL-trigger"
- ✓ „I need a burst of 10 pulses and then after 395ns a second burst of 23pulses, everything should be triggered by my external trigger"
- ✓ „We have a measurement system that needs to be synchronized with ns precision but only needs a defined pulse or burst sequence once every minute"
- ✓ „We use an incremental encoder on our rotating turbine and need to trigger on 37° to start our complex pulse sequence to synchronize our lasers and camera systems"
- ✓ „We'd like to build our own trigger combining several sources and output this final trigger to our oscilloscope and also use it as sequence start."
- ✓ „Our continuing sequence filled with pulses should be gated by an external signal but the sequence should complete before stopping or starting following the gate"
- ✓ „An external gate signal should asynchronously cut our complex sequence whenever the gate occurs"
- ✓ „We use a LED system that should asynchronously follow our fast and jittery trigger signal every 105th time"
- ✓ „Long sequence with short and long pulses"

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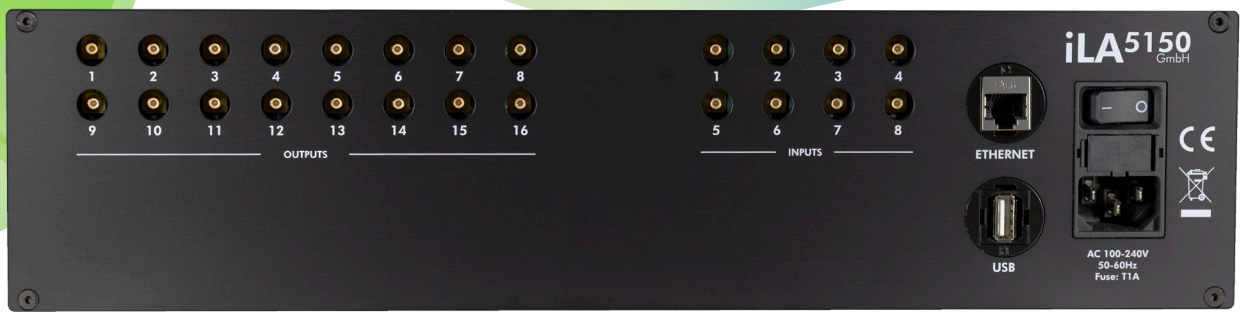

I/Os:

parameter	condition	qty
input channels		8
output channels		16
sequencers		16
pulses	per sequencer channel	8
logic analyzers		8

Resolution:

parameter	condition	min	typ	max	unit
resolution	pulse to pulse	20			ps
	sequence edges	5			ns
pulse width		35			ns
trigger delay	ext. event to output		95		ns
sequence	repetition rate	7.105e-7		7.4e6	Hz
	repetition period	135e-9		1.41e6	s

Electrical:

parameter	condition	min	typ	max	unit
AC input	Voltage	100		240	V
	Frequency	50		60	Hz
Fuse			1		A
Outputs					
rise time	50R terminated, 10% to 90%		1.9		ns
fall time	50R terminated, 10% to 90%		1.9		ns
level	50R terminated		4.4		Vpp
Inputs					
level	TTL-compatible	3.3	5	5.5	V

Dimensions:

Width	Hight	Depth	Weight
364mm	95mm	210mm	3,5kg

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