

Data Sheet

GU-LCT-RY-V1-10

Part No.: AA-10276-001

Optical Input / Output: Glass Fibre

GU-LCT-RY-V1-11

Part No.: AA-10276-002

Optical Input / Output: Plastic (POF)



Picture shows AA-10276-001 (Glass Fibre)


Trigger Generator

Features

- For Series Connected Thyristors
- For Simultaneous Triggering
- Compact Design
- Immune to external EM Fields
- Optical Trigger Input Glass Fibre or Plastic (POF)
- Optical Status Feedback Glass Fibre or Plastic (POF)

Rev.	Remarks / changes	created		checked		released	
13	Initial, created from 5SYA1712-01	FF	14.08.12	AST	15.8.12	FF	15.8.12
14	Added input voltage range	AST	15.02.13	FF	15.02.13	AST	15.02.13
15	Added more information on paragraph 3.3ff	AST	03.04.13	FF	04.04.13	AST	04.04.13
16	Changed max. ambient temperature	AST	17.10.13	FF	17.10.13	AST	17.10.13
17	Changed address	AST	08.08.14	FF	08.08.14	AST	08.08.14
18	Add more information regarding SF1, SF2	AST	04.08.15	FF	04.08.15	AST	04.08.15
19	Add block diagram, add timings	AST	28.08.15	FF	28.08.15	AST	28.08.15
20	Changed optical information for HFBR-x4xx	AST	12.03.16	FF	12.03.16	AST	12.03.16

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1. Introduction

1.1. Description

The Trigger Generator AA-10276-002 is used to generate a turn-on gate pulse for series connected thyristors. An inductive coupling using a high voltage isolated closed loop cable ensures the triggering of the thyristors at different potential levels. See also Order code.

1.2. Electrical interfaces

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Auxiliary power	V _{Sup_aux}	AC, f=50/60Hz	34	40	46	VAC
	V _{Sup_aux}	DC	26	28	56	VDC
Auxiliary power consumption	P	Depends on repetition rate f	15	-	40	W
Trigger repetition rate	F	-	-	-	60	Hz
Delay time	Td	-	-	1.2	-	µs
Max number of connected Thyristors	N	-	-	-	24	Pcs

1.3. Optical interfaces

1.3.1. Optical Control Signal (CS)

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Parameter	Symbol	Condition	Min	Typ	Max	Unit
Control signal CS power hi	P _{inp_high}	HFBR-2412 @ -40°C .. +85°C	-24	-	-10	dBm
Control signal CS power lo	P _{inp_low}	HFBR-2412 @ -40°C .. +85°C	-	-	-40	dBm

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Parameter	Symbol	Condition	Min	Typ	Max	Unit
Control signal CS power hi	P _{inp_high}	HFBR-2528 @ -40°C .. +85°C	-19.5	-	-1	dBm
Control signal CS power lo	P _{inp_low}	HFBR-2528 @ -40°C .. +85°C	-	-	-42	dBm

1.3.2. Optical Status Feedback (SF1, SF2)

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Parameter	Symbol	Condition	Min	Typ	Max	Unit
Optical feedback SFx power hi ¹⁾	P _{Out_high}	HFBR-1414 @ -40°C .. +85°C	-9	-	-	dBm

1) For 1m optical cable (62.5/125 µm)

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Parameter	Symbol	Condition	Min	Typ	Max	Unit
Optical feedback SFx power hi ¹⁾	P _{Out_high}	HFBR-1528 @ -40°C .. +85°C	-7	-	-	dBm

2) For 1m optical cable

1.4.Environmental conditions

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Ambient temperature	T _{amb}	-	-25	-	+60	°C
Storage temperature	T _{store}	-	-40	-	+85	°C
Humidity	Hum	Non condensing	-	-	95	% RH
Operating altitude	Alt	-			3000	m

2. Connectors and indicators



The Trigger Generator GU-LCT-RY-Vxxx has a dangerous output voltage of 300V.
 - Do not open the Trigger Generator housing when it is powered
 - No wiring to be done when the Trigger Generator is powered

2.1.Connectors (POF model)

Parameter	Symbol	Description
Auxiliary power	40VAC	-
Optical control signal	CS	HFBR-2528 (Avago) /
Plug type on optical cable customer side	CS	HFBR-4532 (Avago)
Optical status feedback transmitter	SF1, SF2	HFBR-1528 (Avago)
Plug type on optical cable customer side	SF1, SF2	HFBR-4532 (Avago)

2.2.Connectors (ST model)

Parameter	Symbol	Description
Auxiliary power	40VAC	-
Optical control signal	CS	HFBR-2412 (Avago) /
Plug type on optical cable customer side	CS	01-H200/VJZ-D26
Optical status feedback transmitter	SF1, SF2	HFBR-1414 (Avago)
Plug type on optical cable customer side	SF1, SF2	01-H200/VJZ-D26

2.3.Terminal Block



Parameter	Symbol	Description
Electrical output	1,2	1 is near GND / 2 on potential (~300V)

2.4.Indicators

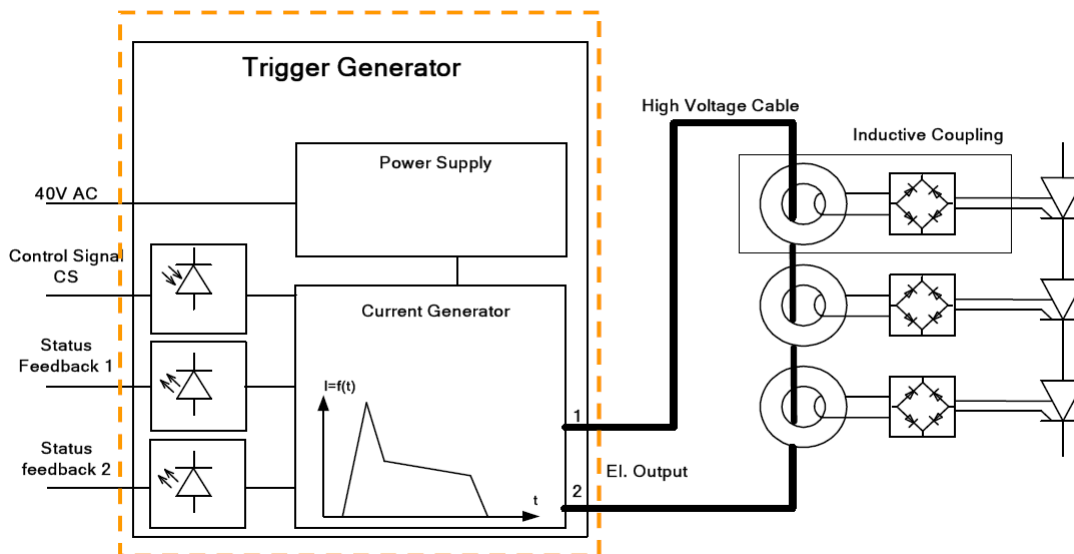
Parameter	Symbol	Description
LED (yellow)	CS_LED	Lit when CS is P _{INP_High} Dark when CS is P _{INP_Low}
LED (green)	SF2_LED	Lit when the trigger generator is ready Dark when the trigger generator is not ready

3. Function

3.1. Instructions for use

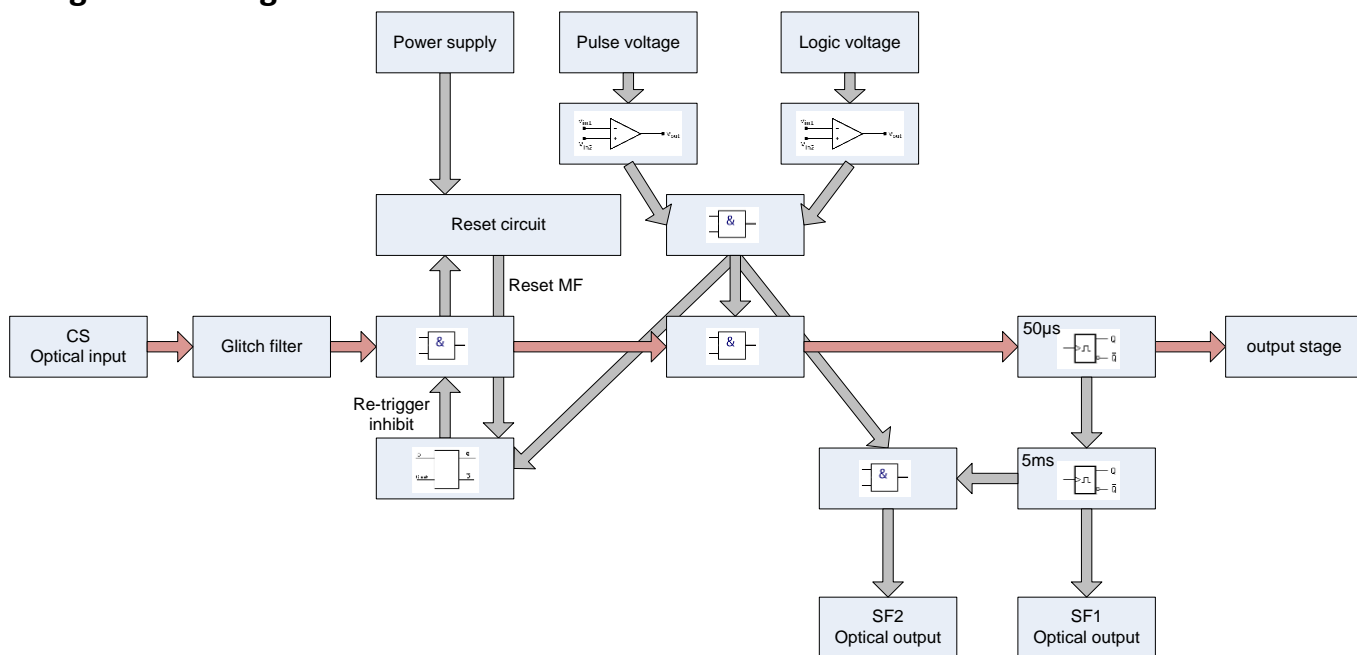
- Make sure that the device works correctly before using in a critical application.
- Consult the according datasheet for the correct optical power for the application you want to operate with this device

3.2. Main block diagram

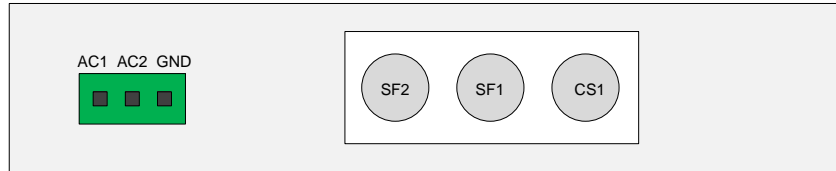


Inductive couplings and HV cable do not belong to scope of supply. To be ordered separately..

3.3. Logic block diagram



3.4. Power supply and optical IO



3.5. Timing diagrams

- Control signal = Trigger input from external source
- SF1 = Status feedback 1
- SF2 = Status feedback 2
- Electrical out = Current output to inductive coupling

3.5.1. Trigger pulse < 780ns

If the pulse on the control signal input has duration of less than 780ns no output pulse will be generated.

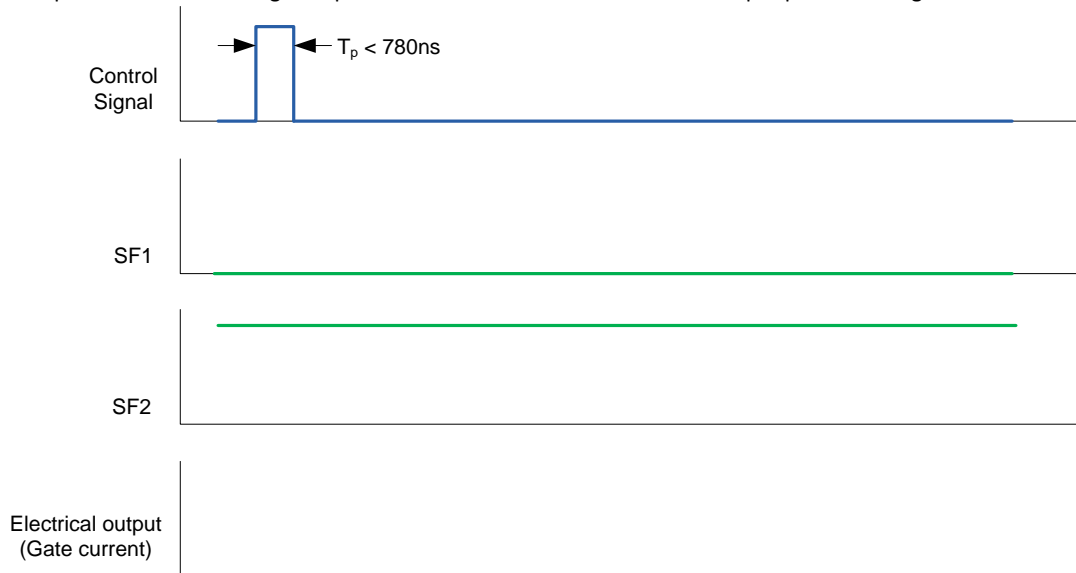


Fig. 1: Trigger pulse < 780ns

3.5.2. 780ns < Trigger pulse < 7ms

If the pulse duration lies between the minimum acceptable duration and 7ms the following output is generated.

- SF1 shows the active period of the GU-LCT
- SF2 shows the vital state of the Gateunit. Check before trigger. If there is no light the GU-LCT has a major problem and triggering is NOT allowed. See also 3.4.4.

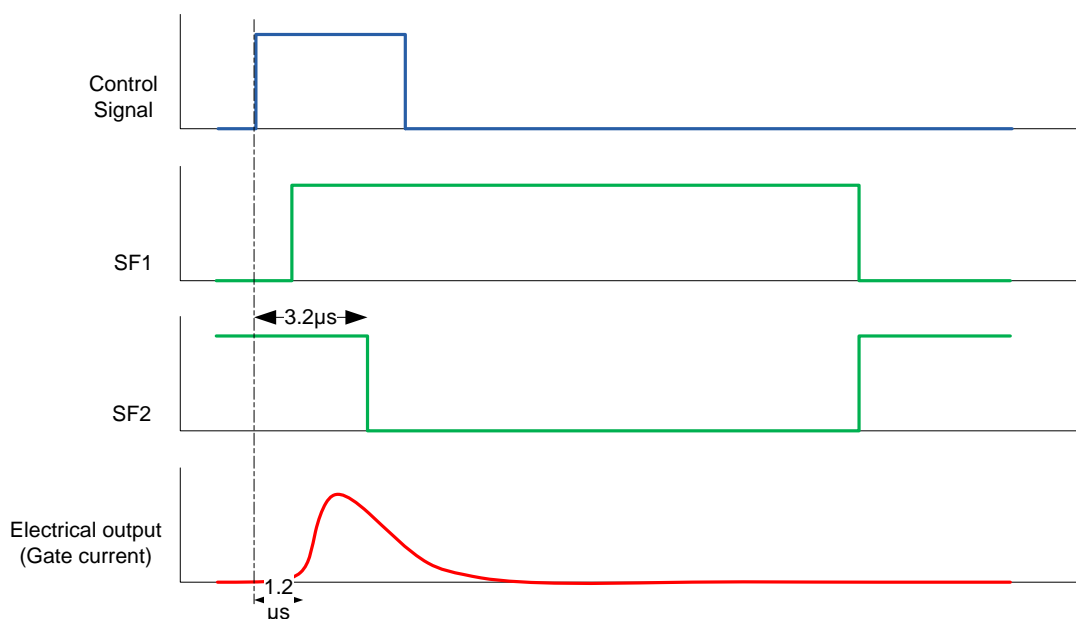


Fig. 2: 780ns < Trigger pulse < 7ms

3.5.3. Trigger pulse > 7ms

If the trigger pulse lasts longer than 7ms on the opto input there will be a post trigger every 7ms as long as the trigger input sees light (is in the On State).

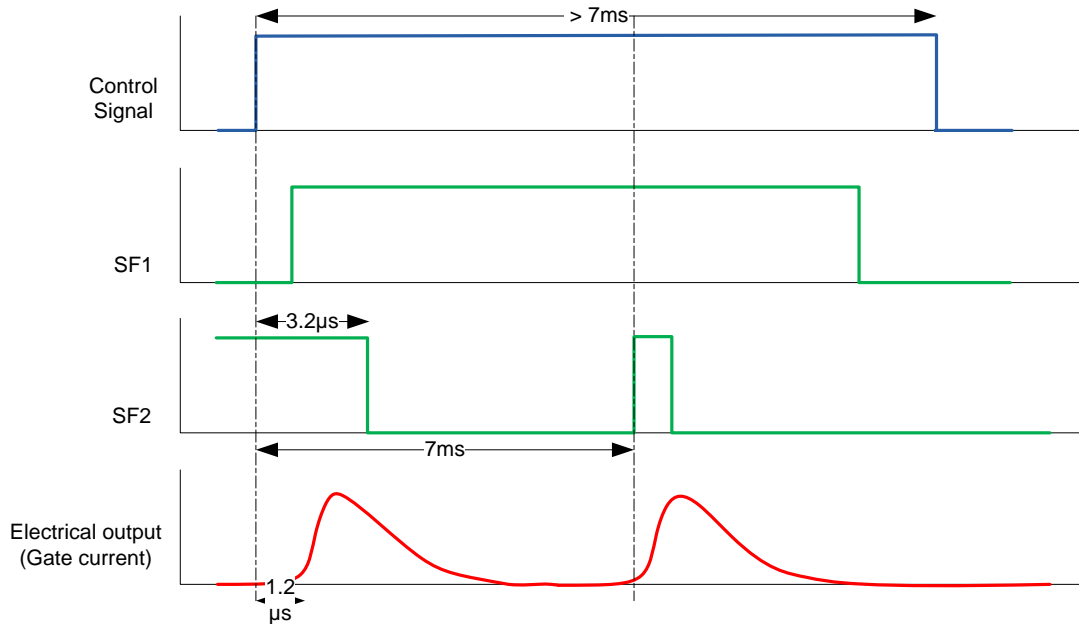
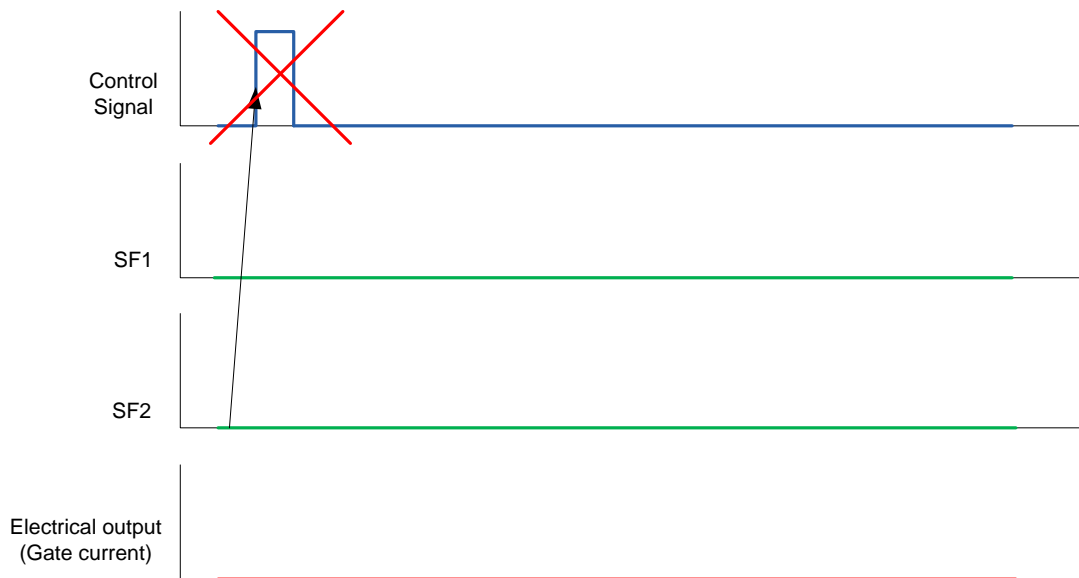


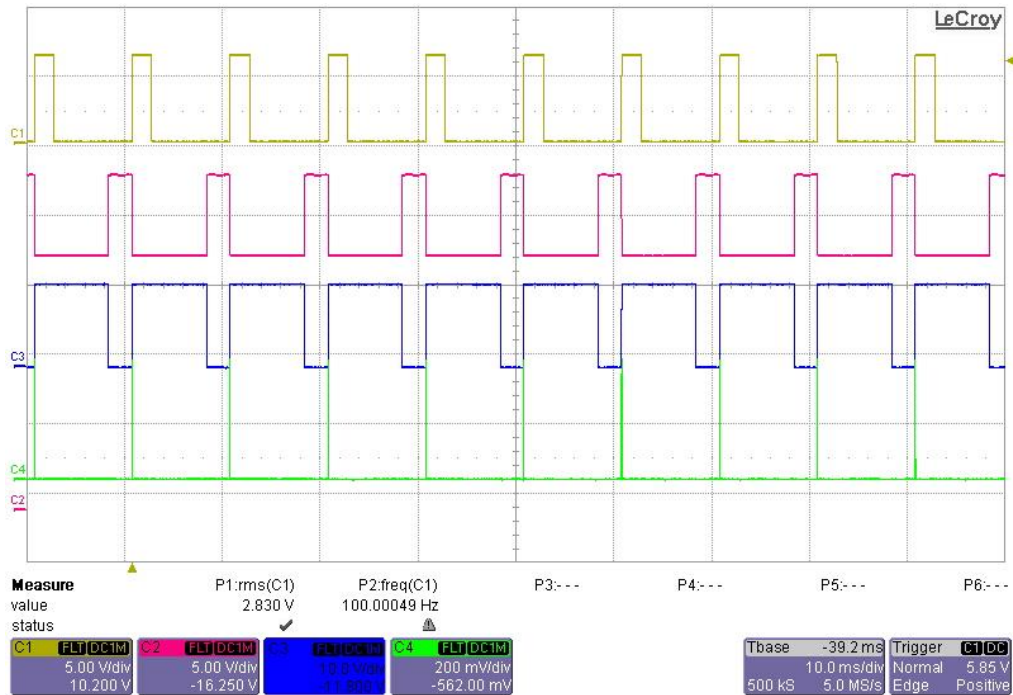
Fig. 3: Trigger pulse > 7ms

3.5.4. SF2 inactive (no light)

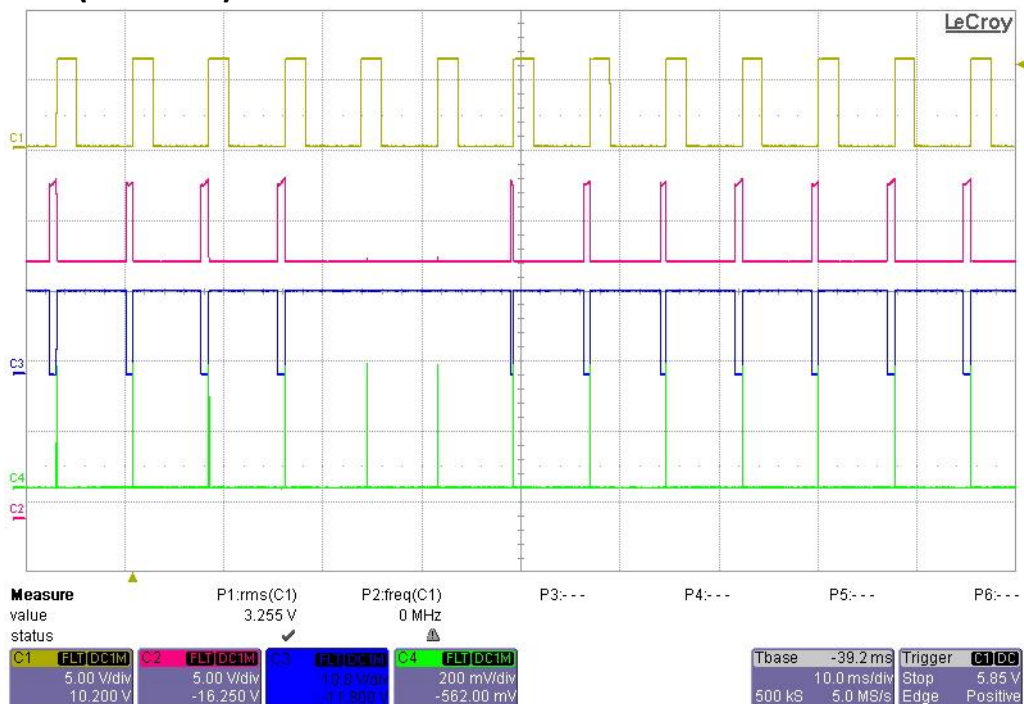
If SF2 is inactive (no light) there is a major problem in the GU-LCT (eg. Pulse voltage Generator, power supply or logic defective). If so, triggering in this state is prohibited but it is still possible.



3.6.Example 1 (ok)



3.7.Example 2 (SF2 fault)



- C1 = CS
- C2 = SF2
- C3 = SF1
- C4 = Output pulse

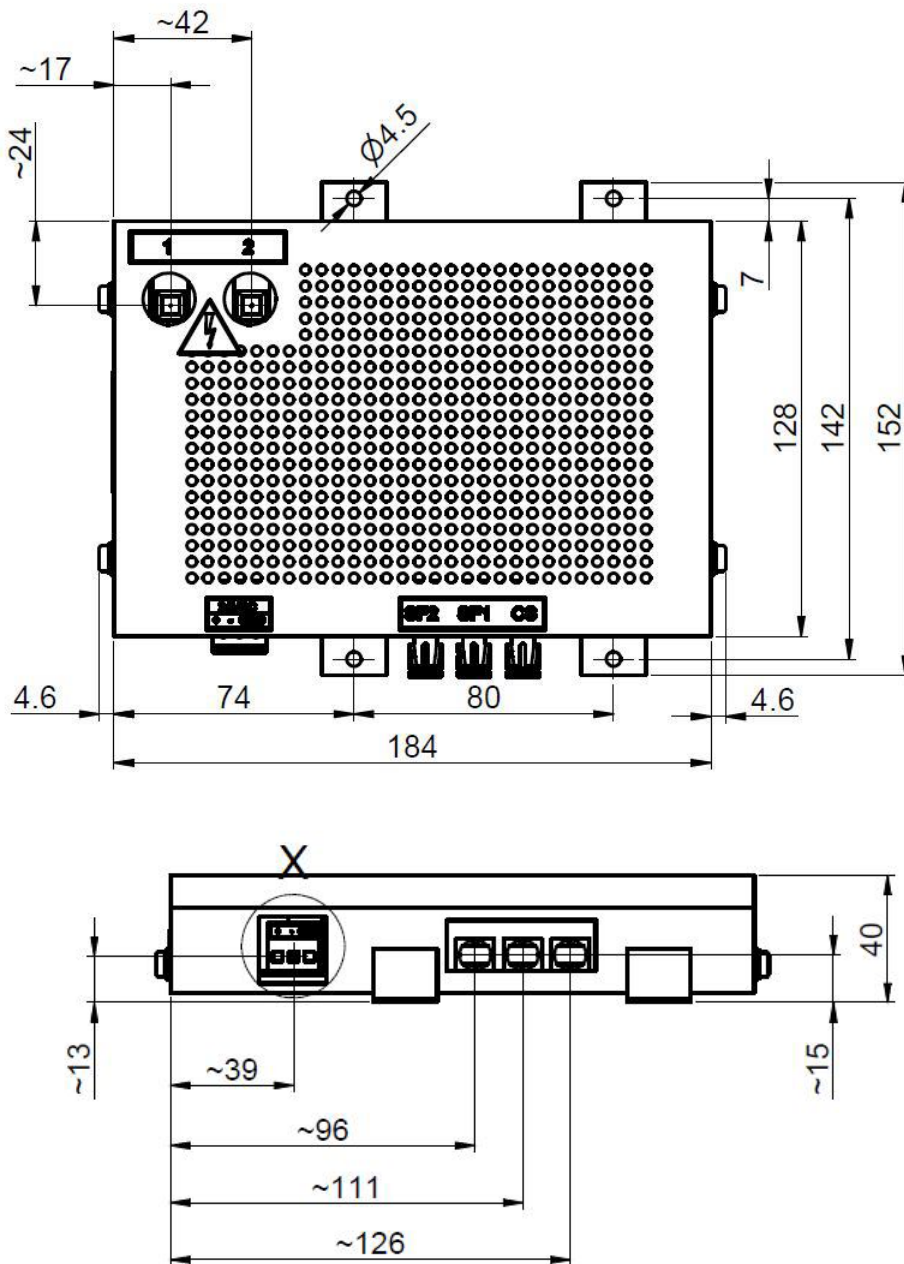
In this example one can see that SF2 shows a fault (constantly low). In this state the overall controller must supervise this signal and inhibit the "CS" trigger pulse.

4. Mechanical

4.1. Parameters

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Weight	m	-		0.9		kg
Dimensions	WxDxH	-	(184 x 152 x 40)			mm

4.2. Mechanical Drawing



4.3. Labels

4.3.1. Front side

- Nothing

4.3.2. Rear side

- Nothing

4.3.3. Bottom side

- Type label with serial number

4.3.4. Top side

- Terminal (1, 2)
- CS
- SF1, SF2
- Aux. power

5. Order code

AA-10276-001
AA-10276-002

GU-LCT-RY-V1-10 Optical Input / Output Glass Fibre
GU-LCT-RY-V1-11 Optical Input / Output Plastic (POF)

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