



NAVISUITE SEISMIC TRIGGER

USER MANUAL

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1 System Description

1.1 Introduction

The EIVA NaviSuite Seismic Trigger box provides a variety of output switch functions upon a given input. Upon receipt of an input, which if used with the EIVA NaviPac Integrated Navigation Software is typically an ASCII character, the NaviSuite Seismic Trigger will provide a predefined output switch function, which will be made available on four output channels for distribution to external equipment. The predefined output switch function can be selected among four different switch functions:

- Falling/rising edge output
- High/Low pulse output
- +5/ +15 VDC output
- Pulse output/contact closure

1.2 Applications

The NaviSuite Seismic Trigger is used for distribution of switch functions to external equipment, e.g. in connection with shot control of an air gun during seismic survey operations or for any event generation required during marine survey operations. If used with the EIVA NaviPac Integrated Navigation Software event generation can be performed in one of three ways:

- Manually by operator
- By distance interval
- By time interval

The NaviSuite Seismic Trigger also allows for use as a controller for synchronization of external equipment from one common base, e.g. GPS PPS signal.

1.3 Connections

The NaviSuite Seismic Trigger features a front panel and a rear panel. The front panel provides a power on/off switch as well as LED's for indication of power on/off and output signal on the four available channels.

1.3.1 Front panel

Front panel controls	Name	Type
	On/off switch	Flip-switch
	Output 1-4 indicator	LED
	On/off indicator LED	LED (in On/Off switch)

Table 1 Front panel controls



Figure 1 NaviSuite Seismic Trigger front panel

1.3.2 Rear panel

The rear panel holds the power connection, input connection and controls and connection and control for four output channels. Channels 1 - 4 (left to right) are identical and independent.

Rear panel controls	Name	Type
1	AC power input	IEC C14
2	Fuse	1,5 Amp (slow blow)
3	Trigger input	BNC connector
4	Treshold adjust (Ri)	Turn switch
5	Trigger edge select (SW 1)	Flip switch
6	Trigger output	BNC connector
7	Trigger output select (SW X1 -SW X4)	4 x DIP switch / 8 x DIP switch
9	Output pulse adjust (R1 - R4)	Potmeter

Table 2 Rear panel controls



Figure 2 NaviSuite Seismic Trigger rear panel. Numbers are referenced to Table 2

1.3.3 Connection to NaviPac PC

Connecting the Seismic Trigger to NaviPac, for event control is done via RS-232 with a DB9 to BNC cable as described in Figure 3 below.

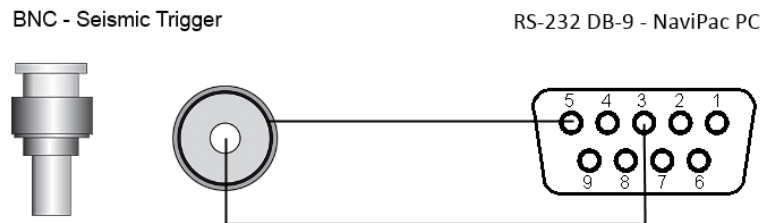


Figure 3 - Connect pin 5 (ground) with BNC shield and pin 3 (TX) with core

Setting up event triggers in NaviPac is done under **Config > Options > Event Settings**. From there you can set-up different kinds of events.

- **Time-based events**
Events generated with fixed time-interval
- **Distance-based events**
Events generated with fixed KP
- **Manual events**
Events generated by the operator in online mode:
 - From the „Online“ program – this is the traditional approach
 - From the special NaviEvent module (see below in Figure 37)
- **External events**
Events generated by external input

For more information on setting up event triggers in NaviPac, see EIVA NaviPac Manual or EIVA 2D Seismic Tutorial.

2 Technical Specifications

	Type	Value
Power	Input Voltage	110 - 230 Vac \pm 10%
	Frequency	50/60 Hz
	Max. power consumption	20 W
Input	Max. input level	\pm 15 VDC
	Trigger level	+2.5 VDC to +3.5VDC
	Min pulse width	100 ns
	Load	4,7 k Ω
	Detection	Switch selectable rising/falling edge
	Output	Selectable Voltage
Selectable Polarity		Active High (HI) Active Low(LO)
Variable pulse-time		10-500 ms
Max. Load		+5/+15 VDC 400 mA peak short-circuit proof
Relay switch (non inductive load)		10 VA
Dimensions	1U 19" Rack	
	Width	485 mm
	Height	43 mm
	Depth	380 mm
Weight		4,1 kg

Table 3 Technical configurations

3 Setup and configuration

Setup of NaviSuite Seismic Trigger is done independently for every channel

3.1 Input configuration:

Triggering edge	SW1 position
Rising Edge	▲
Falling Edge	▼

Table 4 Input switch configurations

Input trigger level can be adjusted between +2,5 VDC and +3,5 VDC by turning Ri.

3.2 Output configuration:

The triggerbox can be configured to various output levels for each channel. At the same time the trigger delay can be set for each channel.

3.2.1 Setting input and output level

Important: When changing output level the triggerbox must be switched off, if not there is a risk to damage the unit.

3.2.1.1 Triggerbox revision 1

The output level can be set by the four DIP switches assigned for each channel

HI/LO Out	Output	SW X1	SW X2	SW X3	SW X4
HI	5 VDC	▼	▲	▼	▲
HI	15 VDC	▼	▼	▼	▲
HI (closed)	CC	▲	–	▲	▲
LO	5 VDC	▼	▲	▼	▼
LO	15 VDC	▼	▼	▼	▼
LO (open)	CC	▲	–	▲	▼

Table 5 Output level setup

Output switch configurations

▲/▼ = switch arm up/down

CC = Contact closure

X = channel number

– = Don't Care Other configurations are illegal

3.2.1.2 Triggerbox revision 2

The output level can be set by the eight DIP switches assigned for each channel

HI/LO Out	Output	SW X1	SW X2	SW X3	SW X4	SW X5	SW X6	SW X7	SW X8
HI	5 VDC	Off	On	On	Off	Off	On	On	Off
HI	15 VDC	Off	On	Off	On	Off	On	On	Off
HI (closed)	CC	On	Off	Off	Off	On	Off	On	Off
LO	5 VDC	Off	On	On	Off	Off	On	Off	On
LO	15 VDC	Off	On	Off	On	Off	On	Off	On
LO (open)	CC	On	Off	Off	Off	On	Off	Off	On

Table 6 Output level setup

3.2.2 Setting timing

The output delay can be set by the potentiometer assigned for each channel

Channel	Potentiometer	Range
1	R1	10 - 500 ms
2	R2	10 - 500 ms
3	R3	10 - 500 ms
4	R4	10 - 500 ms

Table 7 Pulse duration potentiometer configuration

4 Version descriptions

Version	Date	Author	Description
1.0	08/10-2013	KNI	Document created
2.0	10/10-2013	KNI	Document released
2.1	15/04-2019	RUP	Table corrected
2.2	08/11-2019	MKR	Added rev 2 configuration to Section 3.2, added version description