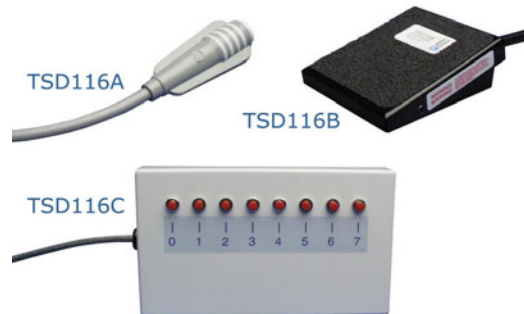


## Application Note 159 TSD116 Series Hand Switch and Foot Switch

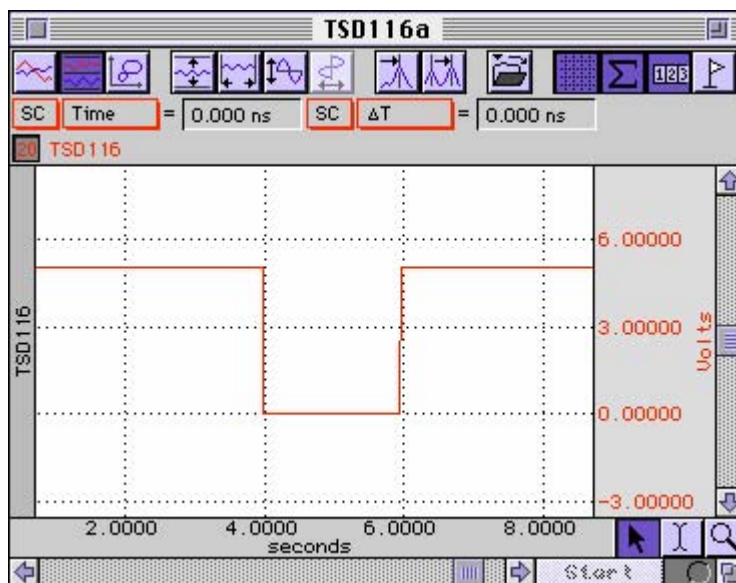
### Overview



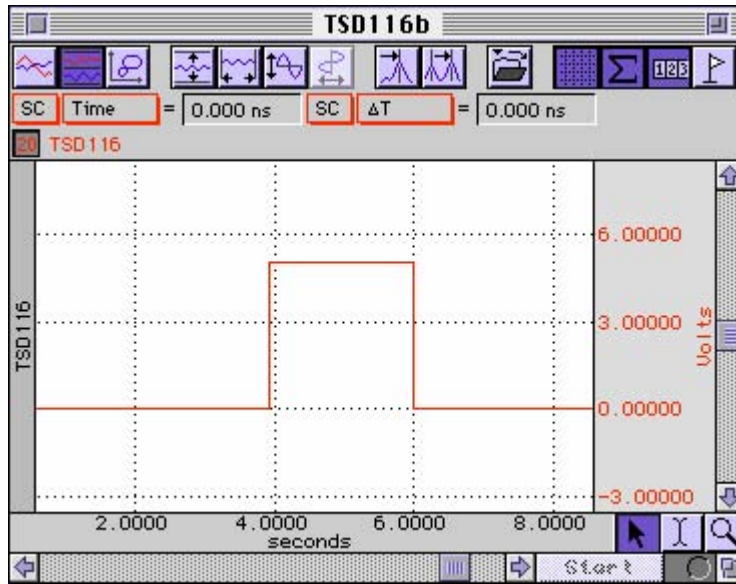
This Application Note describes how to set-up and use the TSD116 Series hand and foot switches. The TSD116 series is used for externally triggering data acquisition, remote event marking, or psychophysiological response tests. The switches can be monitored as input channels.

- **TSD116A** — single channel hand switch that connects to an HLT100C, AMI100D, or UIM100C.
- **TSD116B** — single channel foot switch that connects to an HLT100C, AMI100D, or UIM100C.
- **TSD116C** — compact eight-channel digital marker box that connects to a UIM100C only, the TSD116C allows users to independently mark events, or provide responses, on up to eight channels simultaneously. Because digital channels can be interleaved with analog channels when using *AcqKnowledge*, it's easy to assign separate digital channels as event markers for individual analog input channels.
- **TSD116D** — eight-channel marker box that connects to the 25-pin connector on the back of the STP100C only. Ships with a Y-splitter cable to allow the parallel port to be connected to a stimulation presentation system. TSD116D terminates in a 25-pin DSub pass-through connector with the ground line (pin 18) of the box and each of the switches wired to the appropriate digital input pin of the DSub connector (pin 2 through 9).

The TSD116A or B will connect directly to the 2 mm pin plugs located on the back of the UIM100C. One of the 2 mm pin plugs connects to the GND D and the other 2mm pin plug connects to any of the Digital I/O channels. Select Set Up Data Acquisition > Channels from the MP menu and turn on the corresponding digital channel. A digital signal has only two voltage levels: 0 and +5 volts. Zero volts is considered to be a binary 0 and +5 volts is considered a binary 1. A positive edge is a 0 to 1 transition and a negative edge is a 1 to 0 transition. The MP digital I/O lines have internal pull-up resistors so that unconnected inputs will read 1. This is shown in the example below.



If this is being done with a STM100C attached to the left side of the UIM100C, AMI100D, or HLT100C, then one 2 mm pin plug is attached to the +5 V and the other 2 mm pin plug is attached to any of the digital I/O channels, located on the back of the UIM100C. This is shown in the example below.



The TSD116A or B can also be used as a trigger to start an acquisition. To do this, connect one 2mm pin plug to the TRIG and connect the other 2mm pin plug to the GRN D, located on the back of the UIM100A. To setup the software, select Setup Trigger from the MP menu. Set the Source to External and select either Neg Edge or Pos Edge. This will start the acquisition with a push of the TSD116A or B.

## TSD116 Series Specifications

Switch Type:	Pushbutton: (ON) – OFF
Dimensions	
TSD116A:	19 mm (dia) x 63 mm (long)
TSD116B:	69 mm (wide) x 90 mm (long) x 26 mm (high)
TSD116C:	19 cm (wide) x 11 cm (deep) x 4 cm (high)
TSD116D:	19 cm (wide) x 11 cm (deep) x 4 cm (high)
Cable Length	
TSD116A:	1.8 meters
TSD116B:	1.8 meters
TSD116C:	3 meters
TSD116D:	3 meters
Connector Type	
TSD116A:	2 mm pin plugs (includes CBL124 adapter for connection to HLT100C)
TSD116B:	2 mm pin plugs (includes CBL124 adapter for connection to HLT100C)
TSD116C:	Stripped and tinned wires
TSD116D:	25-pin DSub
Interface:	
TSD116A:	HLT100C, AMI100D, or UIM100C
TSD116B:	HLT100C, AMI100D, or UIM100C
TSD116C:	UIM100C
TSD116D:	STP100C
TEL100C Compatibility:	SS10 Hand switch