Quick Start Guide

Understanding Basic Pulse Parameters

Step 3

Step 2

Step 1
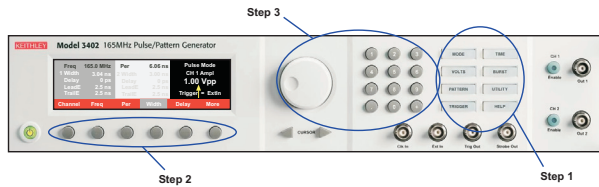
Setting your pulse parameters is a simple three step process:

1. Choose your high level configuration with the menu keys.
2. Select the desired parameter with the Soft Keys.
3. Enter the desired value with the control knob or numerical keypad.

Front Panel Setup Example

The following information demonstrates how to properly connect a Keithley Instruments Model 340x Pulse Pattern Generator to an oscilloscope[1] and how to navigate the front panel menu. The information depicts how to adjust the most common pulse parameters, including pulse amplitude, offset, width, period, and leading and trailing edges.

### Power On the Model 340x Pulse Pattern Generator:

1. Enable rear panel power switch ("ON" position).
2. Press front panel on/off switch.

Make Connections Between Pulse Generator & Oscilloscope:

Connect a BNC-BNC cable between CH 1 output and CH 1 input of the oscilloscope.

Configure Oscilloscope:

1. In trigger menu of scope:
   a. Configure scope to trigger on rising edge of CH 1.
   b. Set trigger level to +0.25V.
2. In vertical menu of scope:
   a. Set input impedance to 50 or use a 50 feed through, such as the Keithley Instruments Model 7755.
   b. Set voltage scale to 500mV/division.
3. In Horizontal menu of scope, adjust the time scale to 400ns.

Turn on output Channel 1 of the pulse generator by pressing the CH 1 Enable button and verify that you have the following signal:
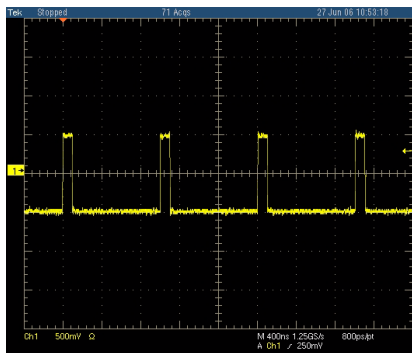
Adjust Output Pulse:

Unit should power up in "Mode" display window.
1. Press "Pulse" soft key.
2. Press VOLTS menu key.
3. Verify Channel 1 is selected. (NOTE: The dark gray area should appear on left side of display and a "1" should appear in the top left corner of display.)
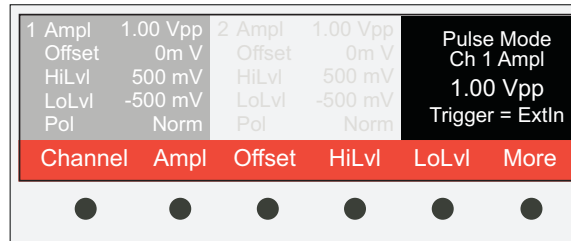

4. Set amplitude to 1.50Vpp:
   a. Press "Ampl" soft key. If "Ampl" soft key is not visible, first press the "More" soft key.
   b. Use knob to adjust amplitude value to "1.50 Vpp."
NOTE: Field "HiLvl" should read "750mV" and "LoLvl" should read "-750mV."

5. Set offset to 750mV:
   a. Press "Offset" soft key.
   b. Use numeric keys to enter "0.75." NOTE: Units appear above the soft keys.
   c. Press soft key that corresponds to "V."
NOTE: Field "HiLvl" should read "1.5V" and "LoLvl" should read "0mV."

6. Press TIME menu key.
7. Change pulse width to 500ns:
   a. Press "Width" soft key.
   b. Use knob to scroll to 500ns.
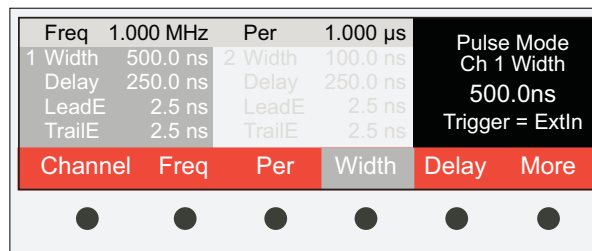
8. Adjust leading and trailing edges:
   a. Press "More" soft key.
   b. Press "LeadE" soft key.
   c. Use numeric keys to enter "100."
   d. Press "ns" soft key.
   e. Press "TrailE" soft key.
   f. Use numeric keys to enter "250" then press the "ns" soft key.

9. Change period to 2µs:
   a. Press "More" soft key.
   b. Press "Per" soft key.
   c. Use knob to change the period to 2µs.
Oscilloscope should now display the following waveform:
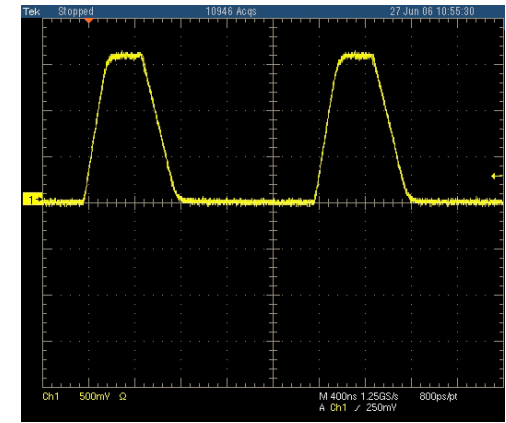
Other Notes:

- These steps can be repeated using CH 2. Use the "Channel" soft key in TIME and VOLTS menus to select CH 2 and adjust its parameters. To enable CH 2 output, press the CH 2 Enable key.
- The TRIG OUT terminal of the Model 340x may be used to trigger the scope. The Trig Out signal is a TTL signal at 50% duty cycle this has the same pulse repetition frequency as the output channel(s). Please refer to section 5 of the User's manual for details on triggering.

Reset Model 340x to Factory Defaults:

1. Press UTILITY menu key.
2. Press "Recall" soft key
3. Press "Default" soft key. (Instrument will now reset to factory defaults.)

For additional help, please review the Model 340x User's Manual. You may also view FAQs or submit a request for a consult with an Applications Engineer on the Keithley Instruments website at www.keithley.com.

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1. In order to observe the fastest rise times of the Model 340x Pulse Pattern Generator, an oscilloscope with 500MHz bandwidth is recommended.

Keithley Instruments 3402 Front panel

NOTE: Front panel controls and connectors for the Keithley 3401 single-channel pulse/pattern generator are similar except there is only one channel.
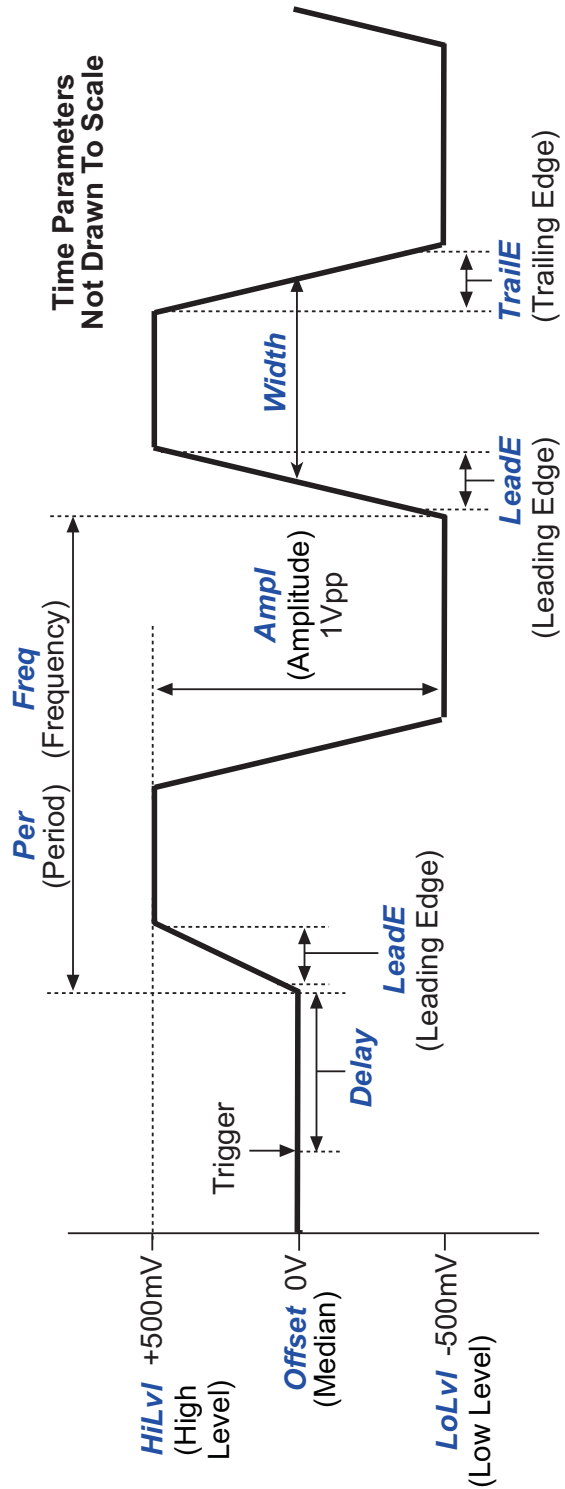
8 Output Enable

9 Pulse/Pattern Output Connectors (BNC)

3 Menu Keys

6 Numeric Keypad

For the Model 340x-R Rear Panel Output option, item 10 connectors are moved to the rear panel.

5 Rotary Knob

7 Cursor Keys

10 Clock, Trigger and Strobe Connectors (BNC)

2 LCD Display

4 Soft Keys

2c Selected Parameter

Soft Key Options

Channel 2 Parameters 2b

Model 3402 165MHz Pulse/Pattern Generator

Freq	165.0 MHz	Per	6.06 ns
1 Width	3.04 ns	2 Width	3.00 ns
Delay	0 ps	Delay	0 ps
LeadE	2.5 ns	LeadE	2.5 ns
TrailE	2.5 ns	TrailE	2.5 ns

Pulse Mode
Ch 1 Width
3.04 ns
Trigger = PLL

Channel Freq Per Width Delay More

2a Channel 1 Parameters

1 On/Off Switch

Pulse Parameters Example

Time Parameters Not Drawn To Scale

Width

TrailE (Trailing Edge)

LeadE (Leading Edge)

Ampl (Amplitude) 1Vpp

Per (Period)   *Freq* (Frequency)

LeadE (Leading Edge)

Delay

LeadE (Leading Edge)

Trigger

HiLvl +500mV (High Level)

Offset 0V (Median)

LoLvl -500mV (Low Level)

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