Tektronix DPO4000 Series Oscilloscope
Demo Instruction Manual

www.tektronix.com

071-1887-01

Tektronix

For safety information on the DPO4000 Oscilloscope, refer to the *DPO4000 Series Digital Phosphor Oscilloscope User Manual*.

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- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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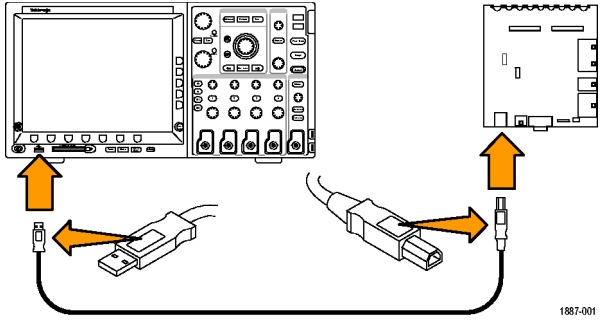
Getting Started with the DPO4000 Series

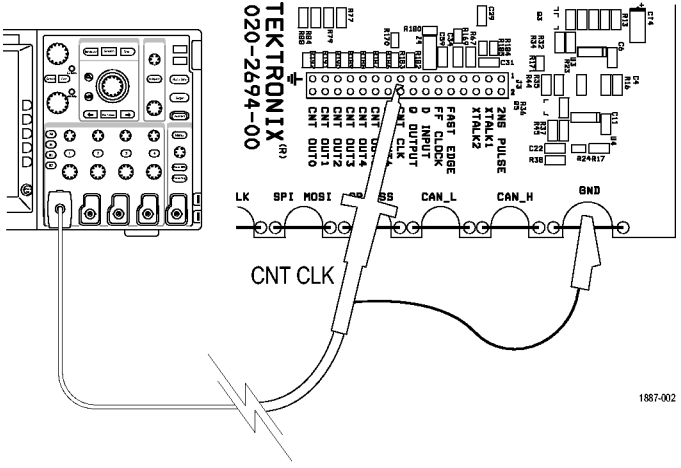
The following instructions will quickly guide you through basic controls and capabilities of the DPO4000 Series oscilloscopes. Learn about more advanced capabilities by reading the DPO4000 Series User Manual (071-1785-00).

Acquiring a Signal

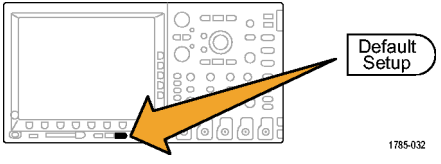
1. Connect the host side of the USB cable to the USB port on the lower-left corner of the oscilloscope front panel — or to either of the two USB host ports on the rear panel.
2. Connect the other end of the cable to the device port on the demo board. (See page 63, *Operating the Demo Board*.)
3. Confirm that the LED labeled **USB POWER** is lit on the demo board.



4. Connect a P6139A probe to channel 1. Probe the square pin labeled **CNT CLK** on the demo board. This is a clock used for a synchronous counter. Be sure to connect the ground lead to a point labeled **GND** on the demo board.

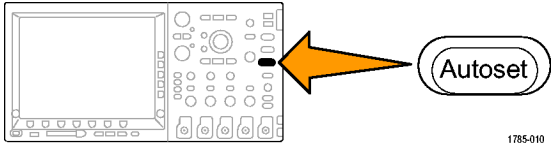


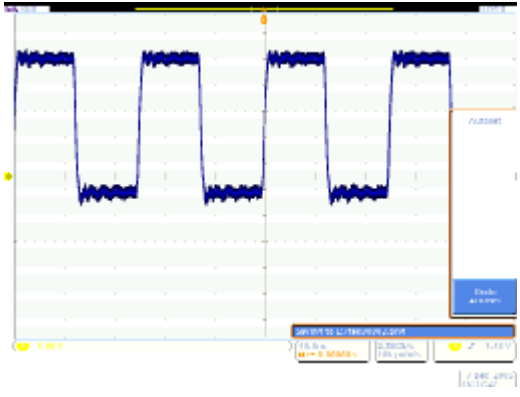
5. Push **Default Setup** to put the oscilloscope back to a known starting point. In general, this is a good thing to do anytime you are starting a new task.



6. Push **Autoset**.

Autoset automatically adjusts the horizontal, vertical, and trigger parameters to give a usable display of the signal of interest. You should now see several cycles of the clock signal.

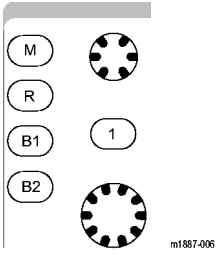




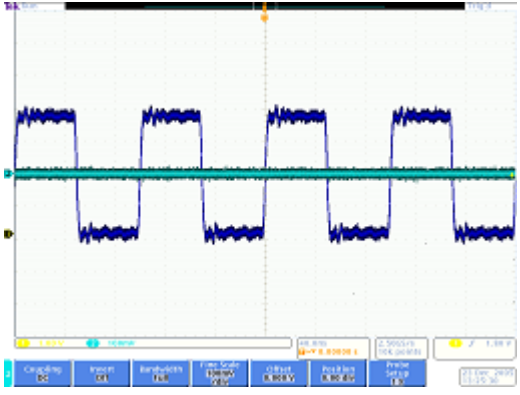
Vertical Controls

1. Turn the front-panel channel 1 Vertical **Scale** knob in both directions and observe how the display changes. Also, notice the channel 1 readout on the lower left of the display shows the current volts/div setting. Set the Vertical Scale to 1 V/div.

2. Turn the front-panel channel 1 Vertical **Position** knob in both directions and observe how the display changes. Position the waveform in the center of the display.

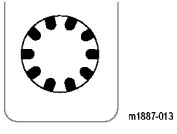


3. Push the front-panel channel **2** button to turn on channel 2. Push it again to turn off channel 2.

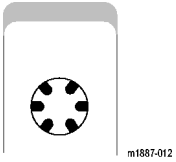


Horizontal Controls

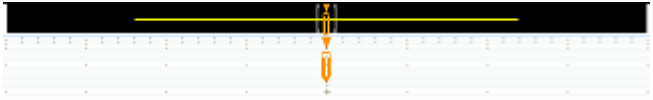
1. Turn the front-panel Horizontal **Scale** knob in both directions and observe the display. Also, notice the horizontal readout indicating the current time/div setting. Set the Horizontal Scale to 20 ns/div.



2. Turn the front-panel Horizontal **Position** knob both directions and observe the display. Notice that this affects the trigger position icon (the big T on an orange background). Return the trigger position icon to center screen.

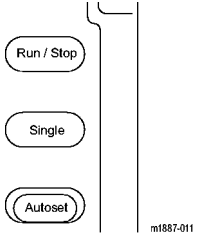


3. Take a look at the graphic shown above the graticule. The long yellow bar represents the overall acquisition while the gray brackets indicate the position of the acquisition you are looking at on the screen. More will be said about this in the Wave Inspector Demo section of this guide.



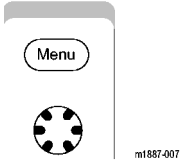
Run/Stop Controls

1. Push the **Run/Stop** button. This stops acquisitions with the last acquired waveform on the display.
2. Push **Single** to have the oscilloscope acquire a single waveform and then stop.
3. Push the **Run/Stop** button again to restart acquisitions.

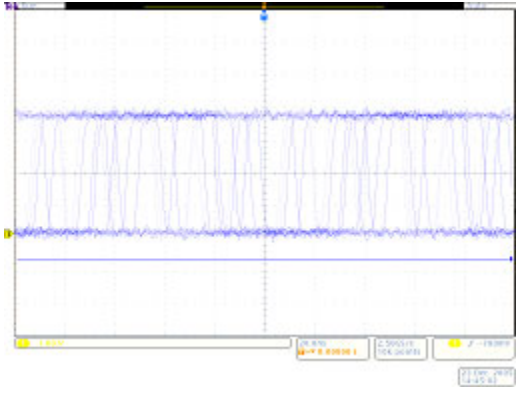


Trigger Controls

1. Turn the Trigger **Level** knob in both directions and observe the display. Turn it far enough to move the trigger level off the waveform.



Notice that the oscilloscope loses its stable trigger and the waveform now appears to randomly scroll by.



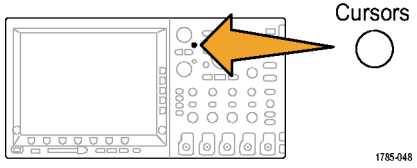
2. Push the **Force Trig** button once and notice that the oscilloscope shows a single acquisition for a moment. This gives you an idea of what the waveform looks like so you can set an appropriate and stable trigger.

3. Push the **Set to 50%** button. This automatically sets the trigger level to the midpoint of the signal for a stable trigger.

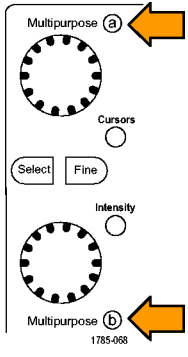
Using Cursors

1. Push the front-panel **Cursors** button.

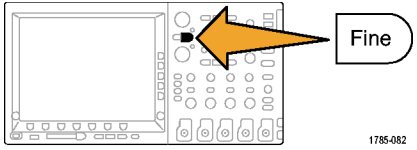
   Two vertical bar cursors now appear in the graphic above the graticule. The corresponding cursor readout displays the time of each cursor relative to the trigger and amplitude along with the deltas between the cursors.



2. Using the multipurpose **a** and **b** knobs, bring the cursors on screen.



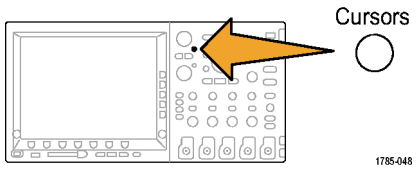
Hint: To move the cursors faster, turn off fine mode by pushing the **Fine** button, if lit, on the front panel between the two multipurpose knobs.



3. Place one cursor at the midpoint of the first falling edge. Place the other cursor at the midpoint of the second falling edge to measure the signal's period. The cursor readout should show a difference between the cursors of approximately 100 ns.

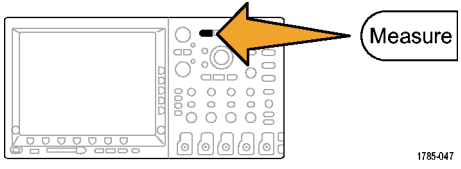
   Hint: To move the cursors slower, turn the fine mode back on by pushing the **Fine** button, if unlit, on the front panel between the two multipurpose knobs.

4. Push **Cursors** two more times to turn them off.

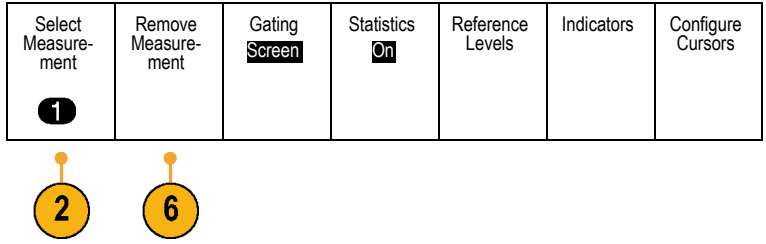


Taking Measurements

1. Push the front-panel **Measure** button.

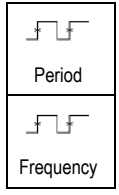


2. Push the lower-bezel **Select Measurement** button.

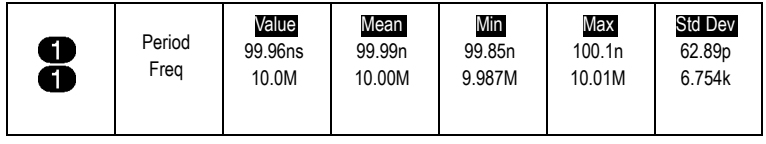


3. Push the side-bezel **Period** button.

4. Push the side-bezel **Frequency** button.



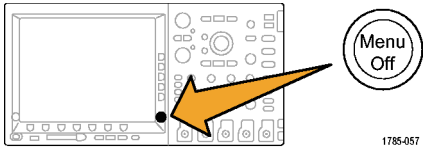
5. Observe the measurement readout. The readout indicates frequency and period as well as mean, minimum, maximum, and standard deviation.



6. Push the lower-bezel **Remove Measurement** button.

7. Push the side-bezel **Remove All Measurements** button.

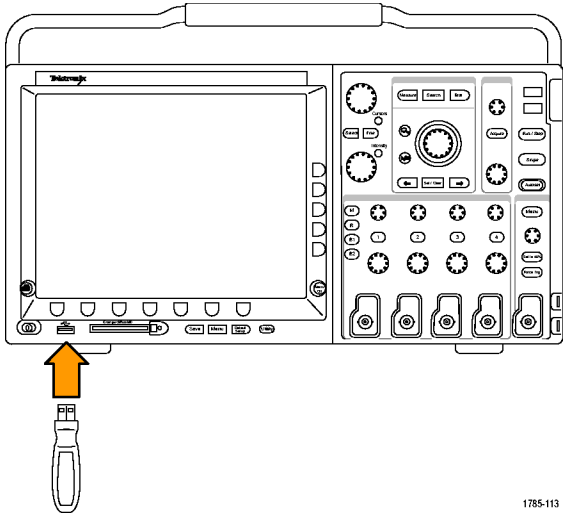
8. Push **Menu Off** to the lower-right of the display to remove the side menu. Push it again to remove the lower-bezel menu.



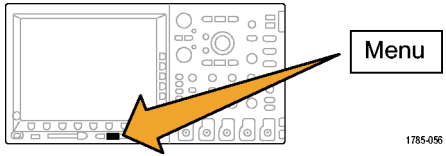
Saving a Screen Image

1. Insert either a USB flash drive or a CompactFlash card.

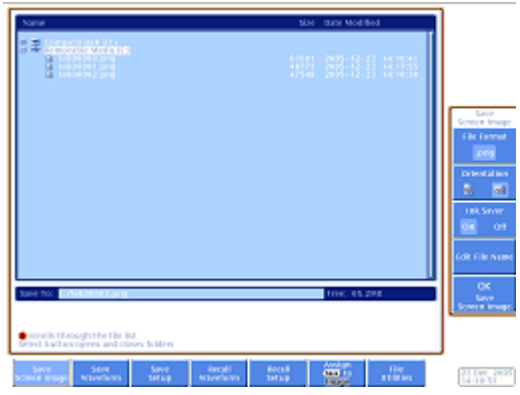
   Hint: There is one USB 2.0 Host port on the front and two more on the rear of the oscilloscope.



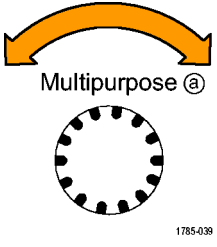
2. Push the front-panel Save/Recall **Menu** button.



3. Push the lower-bezel **Save Screen Image** button.

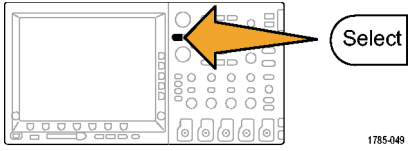


4. If needed, use multipurpose knob **a** to select the drive that you are using.



5. Push the front-panel **Select** button.

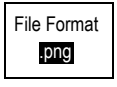
   This lets you expand or contract your view into the contents of the drive that you are using.



Expanded list

Contracted list

6. Select the desired file format with the side-bezel button.

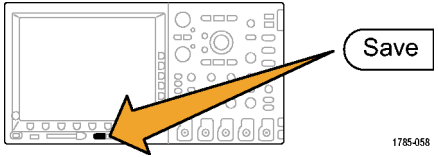


7. Push **OK Save Screen Image**.

8. To easily save multiple images, push the lower-bezel **Assign Save to ...** button.

9. Push the side-menu **Screen Image** button.

Now, whenever you push the front-panel **Save** button, a screen image with an automatically incremented filename will be saved to the storage location you specified.



Giving Demos of Advanced DPO4000 Features

This section demonstrates a few features that set the DPO4000 Series Oscilloscope apart from any other oscilloscope on the market.

Overall Package

- **Large 10.4 Inch XGA Display:** Oscilloscopes are visual tools and, as such, work well with large, bright displays.
- **Knob-per-Channel Vertical Controls:** Many oscilloscopes multiplex the vertical controls so you have to select a channel before changing its vertical scale or position. A separate adjustment knob for each channel makes the oscilloscope more efficient and intuitive.
- **Front-panel USB and CompactFlash Ports:** These ports make it easy to transfer screen images, oscilloscope setups, and waveform data from the oscilloscope to your workstation.
- **Only 5.4 Inches Deep:** The DPO4000 Series takes up an amazingly small amount of bench space, especially given its performance level, allowing customers to set their device under test in front of it.
- **Portable:** Only 11 pounds and a sturdy handle make the DPO4000 Series easily portable.
- **Localization:** The user interface of the DPO4000 oscilloscope is available in 11 languages. These are: English, French, German, Italian, Spanish, Portuguese (Brazilian), Russian, Japanese, Korean, Simplified Chinese, and Traditional Chinese.

Performance

Product	DPO4104	DPO4054	DPO4034	DPO4032
Bandwidth	1 GHz	500 MHz	350 MHz	350 MHz
Channels	4	4	4	2
Sample Rate (all channels)	5 GS/s	2.5 GS/s	2.5 GS/s	2.5 GS/s
Record Length (all channels)	10M	10M	10M	10M

5X Oversampling on All Channels. All DPO4000 series oscilloscopes offer ≥ 5x over-sampling on all channels with sin(x)/x interpolation standard. This ensures full single shot bandwidth on all channels. Oscilloscopes with lower sample rates and/or linear interpolation often can only offer full single shot bandwidth on one-half or one-quarter of the channels.

10M Record Lengths on All Channels. All DPO4000 series oscilloscopes offer standard 10M record lengths on all channels. Not only is this more than any other midrange oscilloscope's standard offerings, it is also more than many offer even with very expensive options.

Wave Inspector Demos

The following are general demo procedures that cover the key points of Wave Inspector and Serial Triggering and Analysis.

I. Background.

- Digital oscilloscope record lengths have gone from 500 points in the early 1980's to millions of points today.
- The DPO4000 places emphasis not only on the quantity of record length provided but also on the usability of it. Imagine trying to find what you are looking for on the Web these days without search engines like Google.
- As record lengths have gotten longer, virtually every digital oscilloscope has implemented a zoom model. However, most zoom models are operated with controls buried in menus or front-panel controls that are multiplexed with other functions. The DPO4000 zoom controls are easily accessible on the front panel.

Proceed to initialize the oscilloscope to the default setup, using the steps described below.

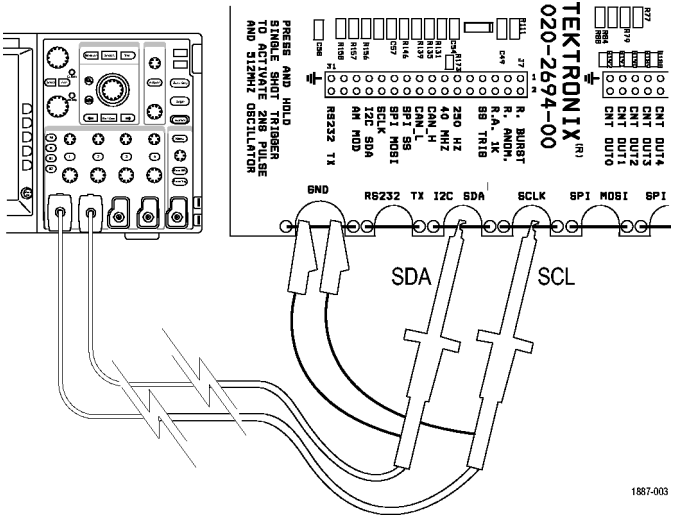
II. Set Up the Demo.

1. Connect a P6139A probe from channel 1 on the oscilloscope to the **SCLK** test point on the demo board.

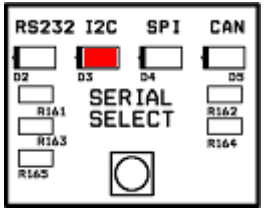
   Connect the ground lead to a point labeled **GND** on the demo board.

2. Connect another P6139A probe from channel 2 on the oscilloscope to the **I2C SDA** test point on the demo board.

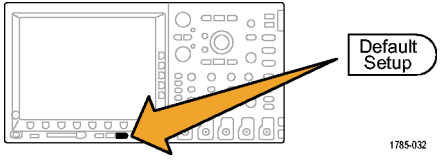
   Connect the ground lead to a point labeled **GND** on the demo board.



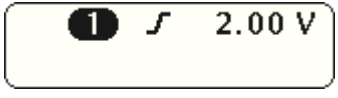
3. Check that the I²C LED on the demo board is lit. If it is not, press the **SERIAL SELECT** button on the demo board as many times as needed to light the I²C LED.



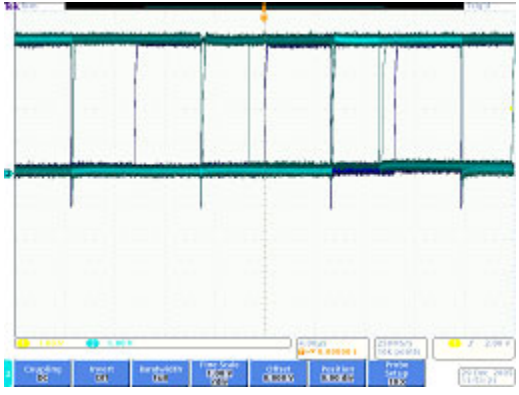
4. Push the front-panel **Default Setup** button.



5. Turn the front-panel Trigger **Level** knob to set the trigger level to approximately 2 V.

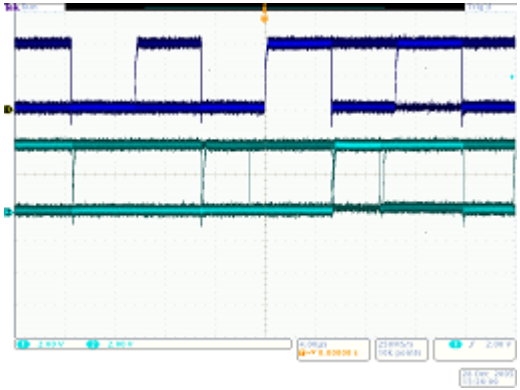


6. Push the front-panel channel **2** button to turn on channel 2.



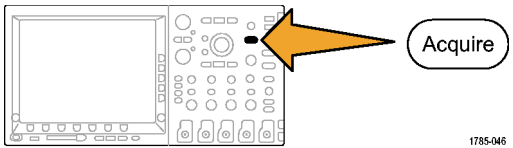
7. Turn the front-panel channel 1 and channel 2 Vertical **Scale** knobs so that both channel 1 and channel 2 are set to 2.0 V/div.

8. Turn the channel 1 and channel 2 Vertical **Position** knobs to position channel 1 near the top of the graticule and channel 2 near the middle.

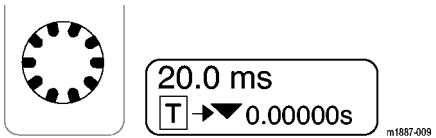


9. Set the record length to 1M.

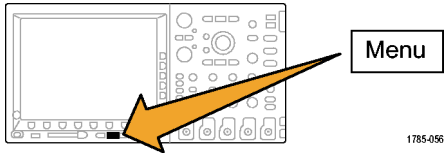
Push the front-panel **Acquire** button, the lower-bezel **Record Length** button, and the side-bezel **1M** button.



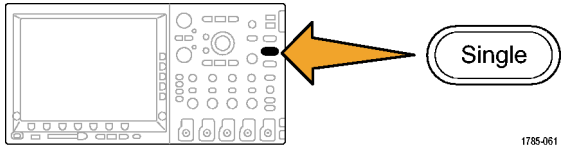
10. Turn the front-panel Horizontal **Scale** knob to set the horizontal scale to 20.0 ms/div.



Hint: To save this setup so that you can recall it at the beginning of each demo, press the front-panel Save/Recall **Menu** button and the lower-bezel **Save Setup** button.

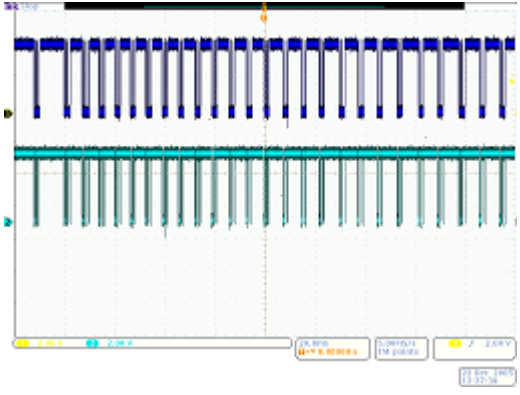


11. Push the front-panel **Single** button to acquire a single acquisition.



You are now looking at the clock (yellow ch1) and data (blue ch2) lines of an I^2C bus.

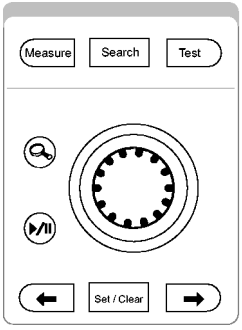
Hint: If the waveforms do not look like the display to the right, go back to step 1 and confirm that you connected both probes to the correct pins on the demo board.



II. Demo the Wave Inspector's Zoom and Pan Functionality

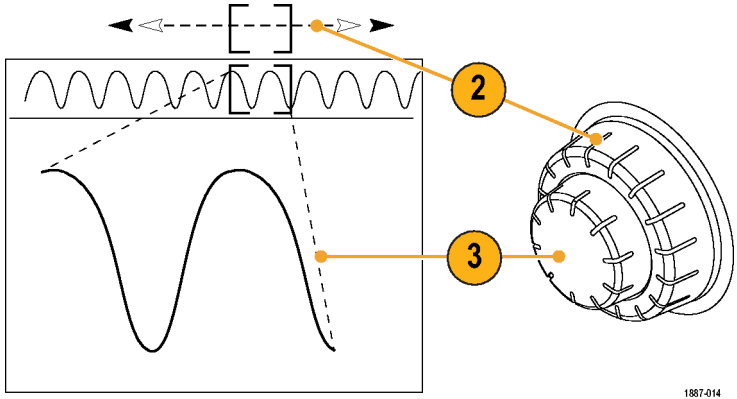
This section shows how to use the Wave Inspector's Zoom-Pan knob to demo zoom and pan functionality.

1. Notice the Wave Inspector portion of the front panel. This set of dedicated controls makes navigating and analyzing waveforms easier.

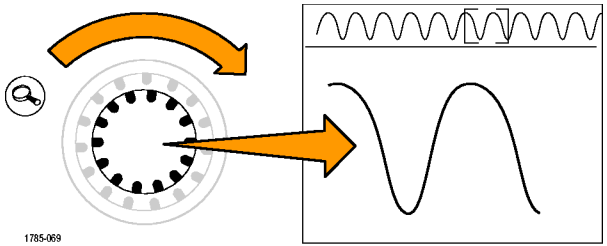


The pan-zoom control consists of the following:

2. An outer pan knob.
3. An inner zoom knob.



4. Turn the zoom (inner) knob a few clicks clockwise. The zoom feature should turn on. You are seeing:
   - The entire acquisition in the top window.
   - What you are zooming in on within the gray top window brackets.
   - The zoomed view in the bottom window.

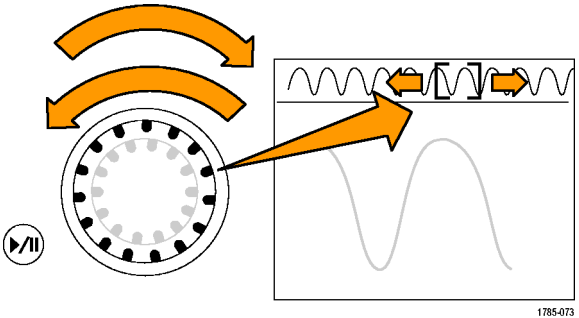


5. Zoom in and out to illustrate how the center knob works. End in a spot where you are zoomed in on a single burst of clocks.

   Notice that you do not have to turn a horizontal position control many times to move the zoom window to the beginning of the acquisition, nor do you have to zoom way back out so you could move the window quickly, and then zoom back in when you arrived at the new location. This is where the DPO4000 pan function helps.

6. Turn the pan (outer) knob counterclockwise a bit. Notice the extremely intuitive nature of the zoom/pan controls.

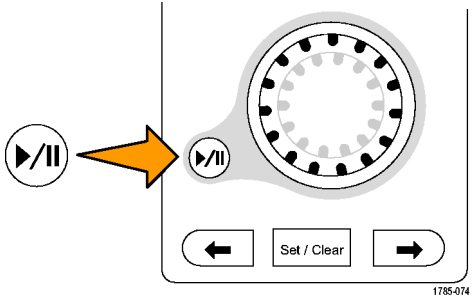
   - Counterclockwise turning moves the zoom box left.
   - Clockwise turning moves the zoom box right.
   - The further you turn the pan knob, the faster the zoom box moves.
   - You can move from one end of the acquisition to the other end in a couple of seconds even with a 10M record length!



7. If you do not want to hold the pan knob while looking through the waveform, the play/pause feature will direct the oscilloscope to scroll the waveform automatically for you.

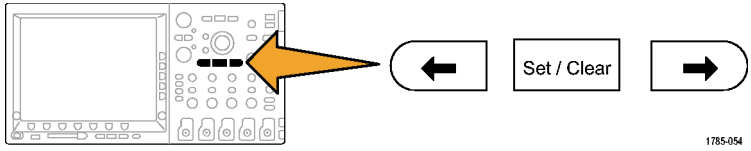
To show this, push the play/pause button. The waveform should start scrolling by.

- Play speed is adjusted by turning the pan knob.
- To pan in the other direction, just turn the pan knob the other way to slow the zoom box down and have it change direction.
- To quickly jump to another portion of the record and resume playing when done, turn the pan knob all the way in that direction. This is pan on top of play/pause.
- Push the play/pause button again to stop when there is something (anything) of interest on the screen.

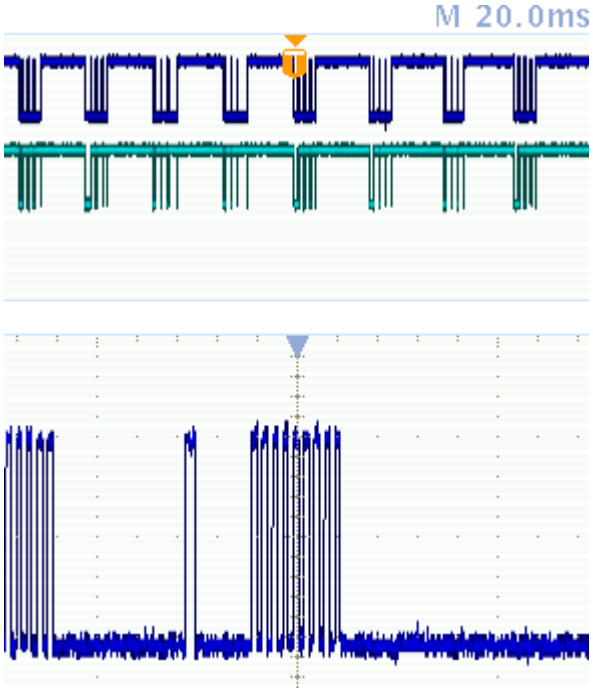


8. When you have found something in the waveform that you are interested in, mark it for further reference.

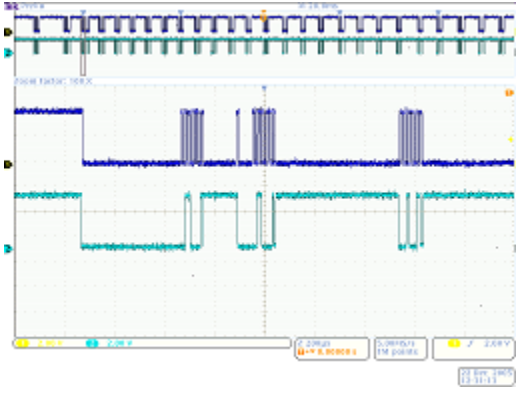
   To do this, push the **Set/Clear** button on the front panel to place a mark.



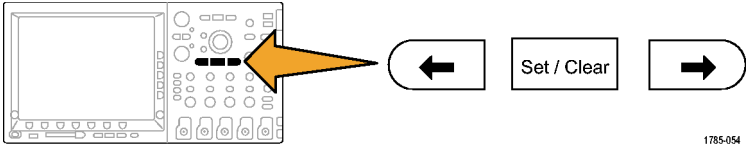
- Notice the solid white triangle that appears on the display. Later, you will see why the triangles are solid.
- This triangle is like a bookmark on the waveform.



9. Use the pan (outer) knob to quickly move to a few other interesting points in the waveform and place marks on them.



10. Use the front-panel ← (previous) and → (next) arrow buttons (arrows around **Set/Clear**) to navigate back and forth between marks instantly.



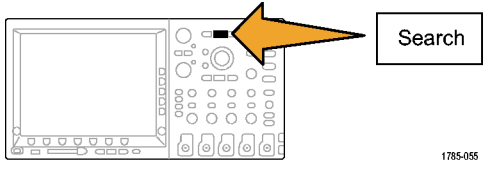
11. Push the **Set/Clear** button to remove a mark from the waveform.

The zoom, pan, play/pause, setting/clearing/navigating of marks are all very useful features for *manually* navigating and inspecting the waveform.

III. Demo the Wave Inspector's Search Functionality

This section shows how to use the powerful search engine to find events for you.

1. Push the front-panel **Search** button.



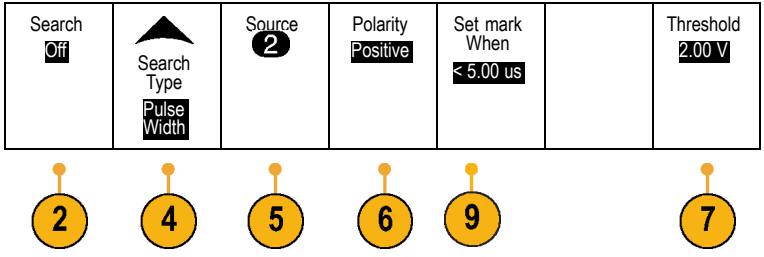
2. Push the lower-bezel **Search** button.

3. Push the side-bezel **Clear All Marks** button.

You are removing the marks that you manually placed on the waveform.

4. Push the lower-bezel **Search Type** button repeatedly to select **Pulse Width** search from the pop-up menu.

5. Push the lower-bezel **Source** button and the side-bezel **2** button. This specifies the source as channel 2.



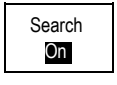
6. Confirm the polarity is positive.

   The lower-bezel **Polarity** button should include the word **Positive** below it. If not, push **Polarity** and then the side-bezel **Positive** button.

7. Push the bottom-bezel **Threshold** button.

   Then turn multipurpose knob **a** to set the threshold to approximately the midpoint of the channel 2 waveform.

8. Push the lower-bezel **Search** button.



If needed, then push the side-bezel **Search Marks** button so that **On** is highlighted.

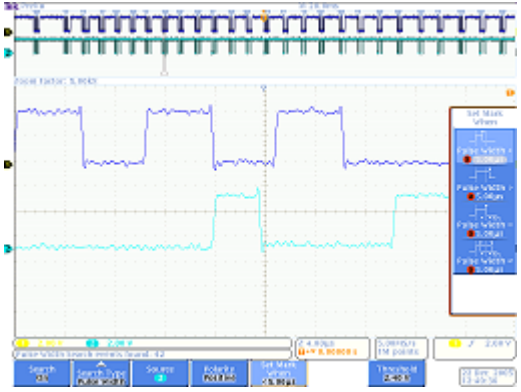
9. Push the lower-bezel **Set Mark When** button and then the side-bezel **Pulse Width < 4.00 ns** button.

10. Using the multipurpose knob **a**, dial up the pulse width to somewhere around 5 µs. This is where you should begin seeing marks.

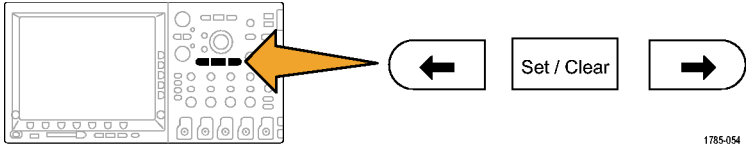
Hint: To get to 5 µs faster, first push the front-panel **Fine** button, if lit, to turn off the Fine function.

Notice both the hollow white triangles placed in the graticule and the number of search events found, shown in the lower left corner of the display. Hollow triangles show search results and solid triangles show user placed marks.

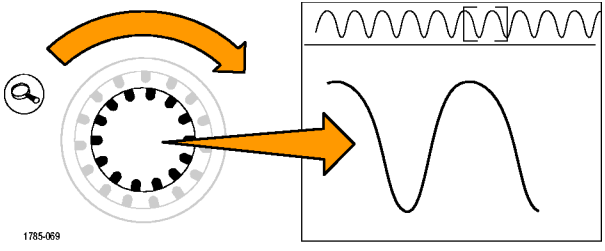
Dial up the pulse width to 11 µs to show that as you adjust the search criteria, the search results update. Then dial it back down to 5 µs.



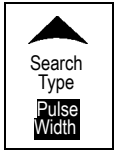
11. Jump from mark to mark using the front-panel ← (previous) and → (next) arrow buttons.



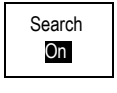
12. Turn the zoom (inner) knob, if needed, to zoom in to a zoom factor of 5.00 kX. This will give you a good view of each pulse that met the criteria.



13. Push the lower-bezel **Search Type** button to review all the choices available and the flexible search capability of the DPO4000.

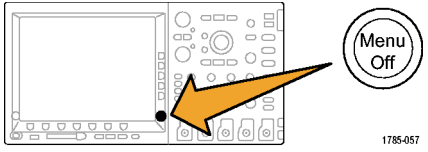


14. When you finish this demo, turn off Search by pushing the lower-bezel **Search** button.



If needed, then push the side-bezel **Search Marks** button so it highlights **Off**.

15. Push **Menu Off** to the right of the display to remove the side menu. Push it again to remove the lower-bezel menu.



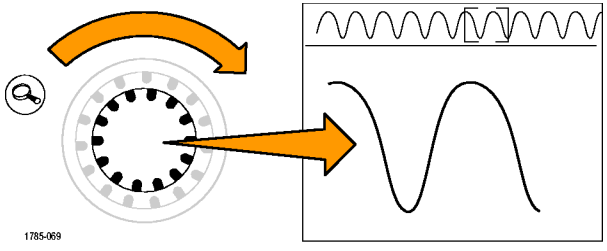
IV. Demo Serial Triggering and Analysis

This demo will show a much easier and more efficient way to analyze your serial buses.

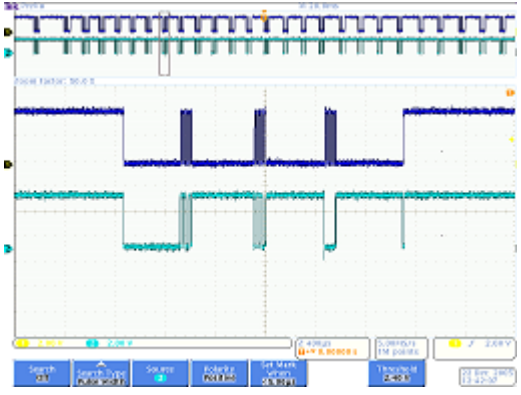
Start from where you left off the last demo.

1. Turn the zoom (inner) knob to adjust your zoom factor to 50.0 X.

   Hint: The oscilloscope will display the zoom value near the upper-left corner of the display.

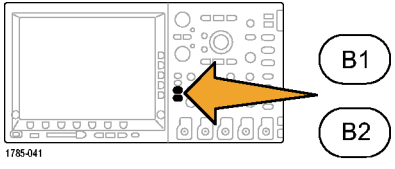


2. Pan the zoom window, if needed, so that the screen looks like the one shown to the right.

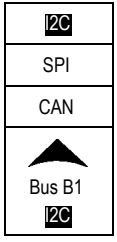


Notice how easy it is to set up a bus on the DPO4000 Series while you do steps 3 through 9.

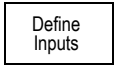
3. Push the **B1** button.



4. Push the lower-bezel **Bus** button to illustrate the types of buses that the DPO4000 supports. Select **I2C**.

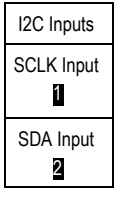


5. Push the lower-bezel **Define Inputs** button.

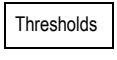


6. On the side-menu, confirm that the SCLK signal is set to channel 1

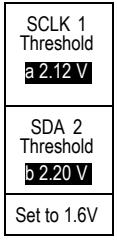
   and that the SDA signal is set to channel 2.



7. Push the lower-bezel **Thresholds** button.

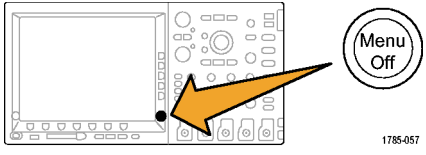


8. Turn multipurpose knobs **a** and **b** to set the thresholds at about the midpoint of each waveform.



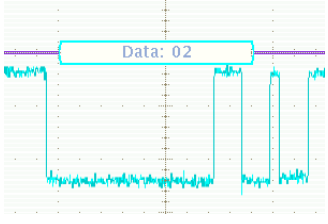
9. Push the front-panel **Menu Off** button once to remove the side menu.

This extremely simple setup procedure (steps 3 through 7) has just enabled you to define and decode a serial bus.

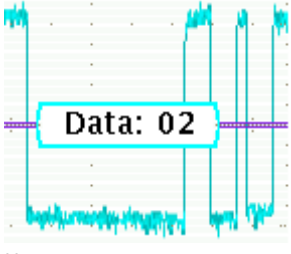


10. Using the pan/zoom controls, zoom in on the different parts of the bus display. Notice what the oscilloscope is showing.

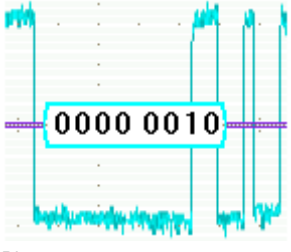
- Start of packet, as indicated by a green vertical bar.
- Address. The yellow box shows the address. **R** is read. **W** is write.
- Data. The cyan box shows the Data content.
- Missing Ack, as indicated by a red box with an exclamation point in it.
- Stop (end of packet, as indicated by a red vertical bar.



11. Push the lower-bezel **Bus Decode** button. Select **Binary** from the side-bezel menu to show that you can decode into either Hex or Binary. Switch back to **Hex**, as it is easier to view.

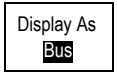


Hex



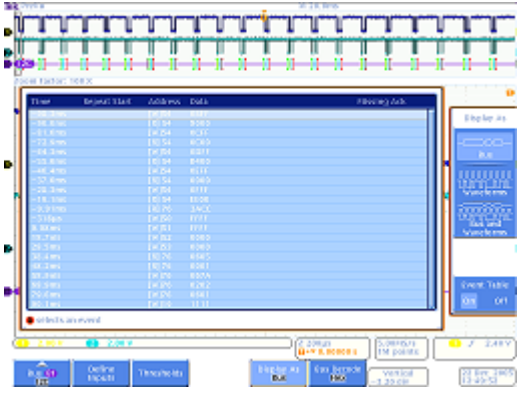
Binary

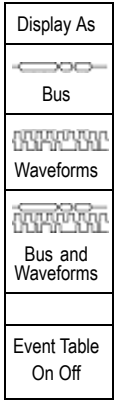
12. Push the lower-bezel **Display As** button.



13. Push the side-bezel menu **Event Table** button to select **On**. The event table:

- Is similar to a state listing window in a logic analyzer display,
- Allows you to easily view the contents of every packet captured in the acquisition to trace system activity,
- Includes timestamps for each packet. This makes relative timing measurements easy.

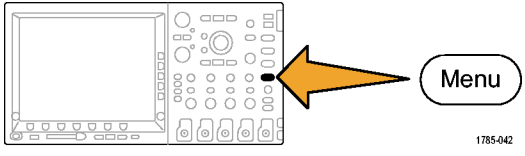




14. Push the side-bezel menu **Event Table** button to select **Off**.

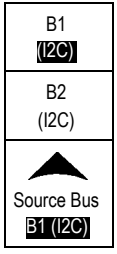
15. There is more to the DPO4000 serial solution than just decoding and bus waveforms though. There is also triggering and searching.

Push the front-panel Trigger **Menu** button.

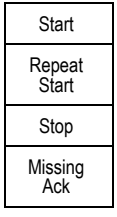


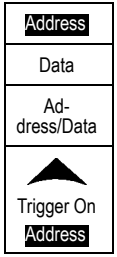
16. Push the lower-bezel **Type** button repeatedly to select **Bus**.

17. Push the lower-bezel **Source Bus** button.



You only have to define a bus once. The rest of the oscilloscope, like the trigger menu, now knows what it is so you do not have to assign channels or thresholds again in this menu.



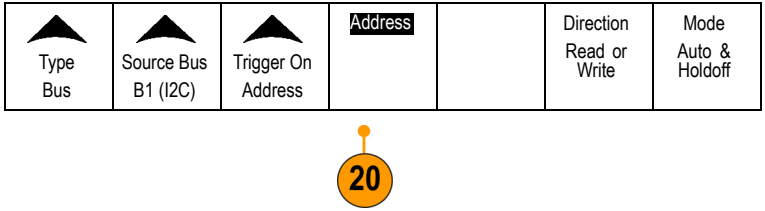


18. Push the lower-bezel **Trigger On** button.

Notice the list of trigger choices. The key thing is that you can trigger on all the important components of an I²C packet. Prior to this, you had to hope that the acquisition you were making contained the data of interest. Now you can guarantee it by specifying it as the trigger condition.

19. Repeatedly press **Trigger On** until you select **Address** from the pop-up menu.

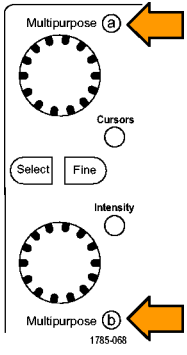
20. Push the lower-bezel **Address** button.



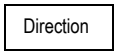
21. Push the side-bezel **Address** button.

22. Turn multipurpose knobs **a** and **b** to enter a hex address of 50.

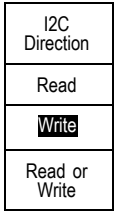
While doing this, point out the pre-programmed addresses.



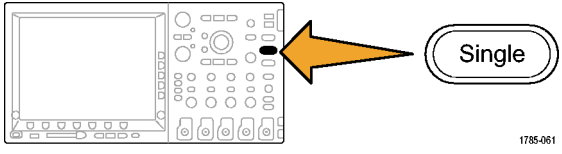
23. Push the lower-bezel **Direction** button.



24. Select the side-bezel **Write** button.

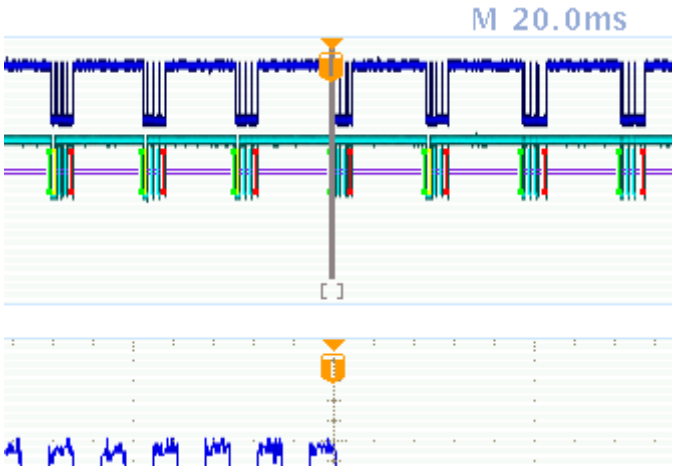


25. Push **Single** to make an acquisition.

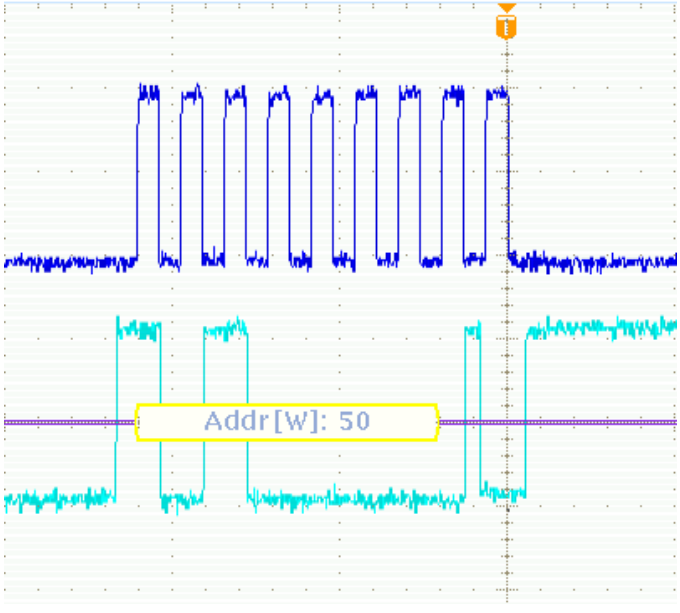


26. Turn the zoom (inner) knob to a zoom factor of 500, if needed, so that you can read the bus address values found.

27. Turn the pan (outer) knob to move the zoom box (the gray bars at the at the top of the screen) to the trigger position icon (the T on an orange background) to reveal what you have triggered on.



The waveform found illustrates that you have triggered on what you specified.

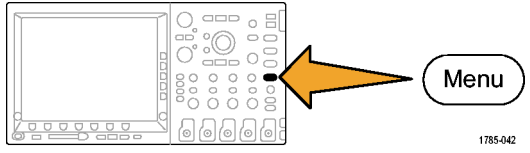


V. Demo Searching on Serial Signals

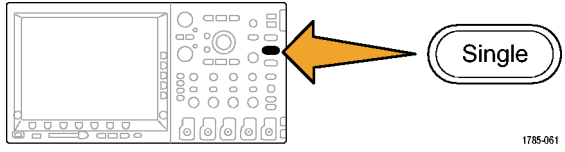
This demo shows how to search on serial bus signals.

1. Push the front-panel Trigger **Menu** button. Push the lower-bezel **Type** button repeatedly to select **Edge**.

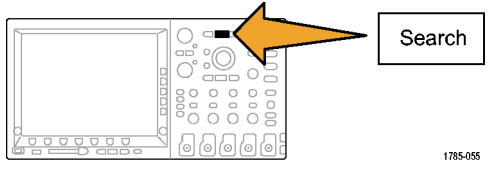
   Setting the trigger back to Edge will help return random data for the search exercises described below.



2. Push **Single** to make an acquisition.

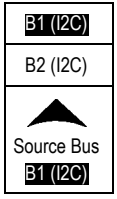


3. Push the front-panel **Search** button.



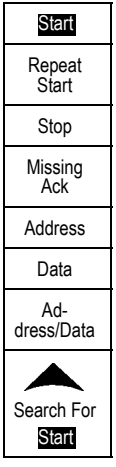
4. Push the lower-bezel **Search Type** button repeatedly to select **Bus**.

5. Push the lower-bezel **Source Bus** button.

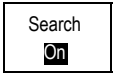


The pop-up menu source should already be set to **B1**. You have already defined the bus so you do not need to do it again here.

6. Push the lower-bezel **Search For** button. The resulting pop-up menu shows all of the criteria that you can search on. Select **Start**.

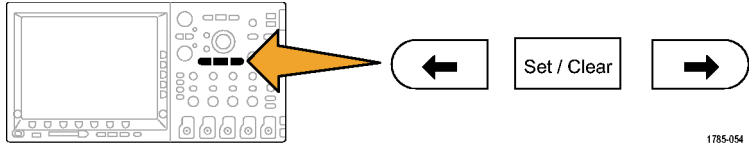


7. Push the lower-bezel **Search** button.

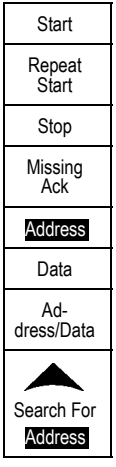


If needed, push the side-bezel **Search Marks** button so that **On** is highlighted.

8. Use the front-panel ← (previous) and → (next) arrow buttons to jump from one mark to the next. This shows how easy it is to move from packet to packet.



9. Push the lower-bezel **Search For** button and select **Address** from the pop-up menu.



10. Push the lower-bezel **Address** button.

11. Push the side-bezel **Address** button.

12. Turn multipurpose knobs **a** and **b** to enter a hex address of **76**.

Notice that there are fewer results now.

Again jump around using the front-panel ← (previous) and → (next) arrow buttons.

13. Push the lower-bezel **Search** button and the side-bezel **Save All Marks** button.

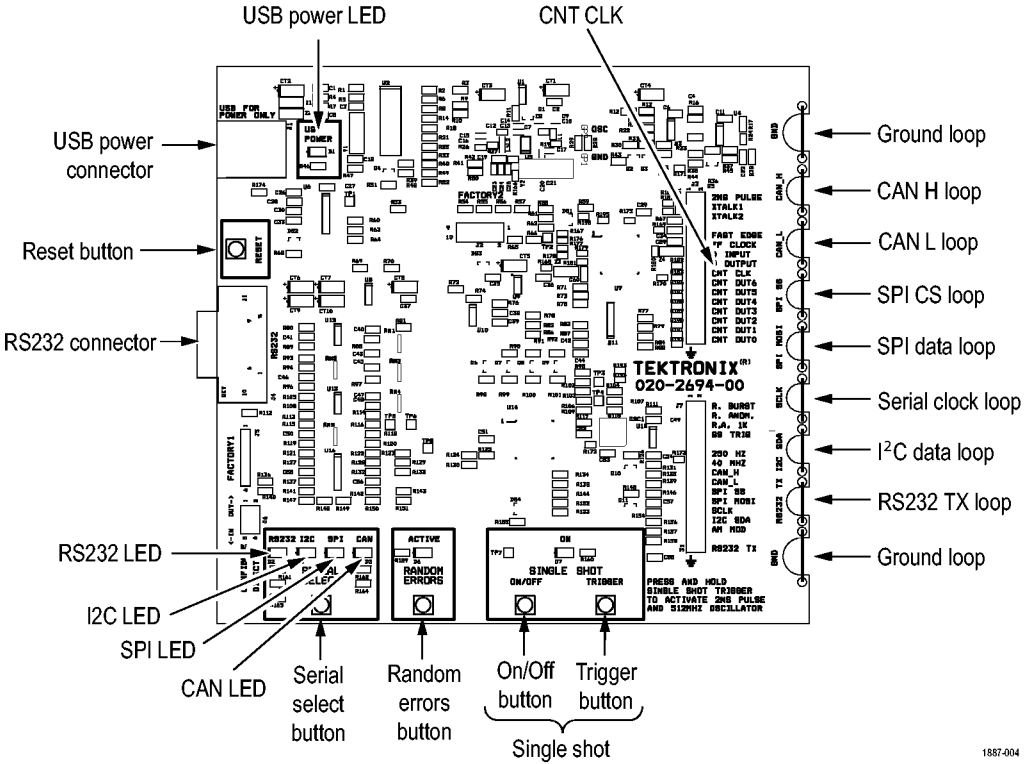
The hollow search marks became filled in. They are now saved. You could run a new search while keeping the old search results marked. Very powerful!

14. Point out that Search and Trigger capabilities are very similar.

Triggering is used while running to obtain a stable display and to ensure that the event you are looking for is in the acquisition when you push the front-panel **Run/Stop** button. Triggering does nothing for you after you have stopped acquiring though. That is where search comes in.

Search allows you to find what you are looking for in a mass of data. To make it easier for you to harness the power of both Triggering and Searching, the DPO4000 links the two so you can quickly copy your search settings into the trigger engine (usually to acquire new data centered around the event of interest) or copy your trigger settings into the search engine (typically to see if any other trigger events occurred in the acquisition).

Operating the Demo Board



Operating the Board

Select a serial standard and interpret the LED. Push the **Serial Select** button at the bottom of the demo board. Notice that each time you push it, the board makes a different serial standard active (RS232, I²C, SPI, and CAN). Also, notice that I²C and SPI signals share the same connection point on the right side of the board for their clock signals.

Create random error. Push the **Random Errors** button at the bottom of the demo board. This automatically generates random error signals. The glitch frequency is random within a 1 to 10 ns range. The glitch duration varies randomly between around 500 ns to 50 µs.

Select between single-shot serial streams and continuous stream. Push the **SINGLE/SHOT ON/OFF** button at the bottom of the demo board.

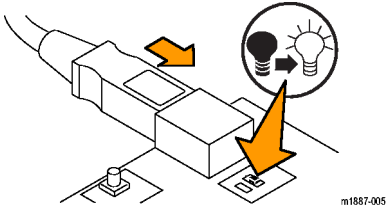
Activate the 2 ns pulse and the 512 MHz oscillator. Press and hold the **Single Shot** trigger button.

Troubleshooting the Demo Board

If your demo board does not appear to work, perform the following checks:

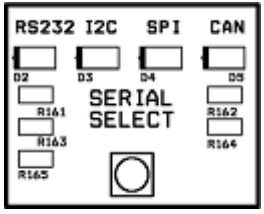
1. Check the power.

   If the demo board is receiving power, the power indicator will be lighted. If it is not, try gently pushing in the power cable on the USB Device port.



2. Check the settings.

   Look at the serial select indicator lights and determine if they are set as you want them to be set.



3. Reset the demo board. Push the **Reset** button on the demo board.

If the demo board is still not acting properly, the following is a “master” reset procedure that you can try.

1. Push and continue to hold down the On/Off switch in the board’s Single Shot Box.
2. Push and release the Reset switch.
3. In the Serial Select Box, all four LEDs (RS232, I2C, SPI, and CAN) should now turn on.
4. When all four LEDs (RS232, I2C, SPI, and CAN) in the Serial Select Box go out, release the On/Off switch.
5. A moment later, all four LEDs (RS232, I2C, SPI, and CAN) should flash several times. Then only the I2C LED will be lit.