



Phase Synchronization of two Rigol Arbitrary Waveform Generators

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Solution: Here are instructions on phase synchronization of two Rigol Arbitrary Waveform generators. These instructions were created using DG4000 series instruments, but the basic steps are applicable to DG1000 and DG5000 products.

Required Hardware:

1. Qty 2 Rigol Arbitrary Waveform Generators (DG1000, DG4000, DG5000)
2. Qty 5 BNC cables
3. 4 channel oscilloscope (optional)

Setup:

1. Plug in and power up all instruments.
2. Designate one of the arbs as ARB1, the other as ARB2.
3. Using one of the BNC cables, connect the 10MHz In/Out of ARB1 to the 10MHz In/Out of ARB2.

NOTE: The 10MHz In/Out connections are located on the instrument rear panel.

4. Configure ARB2 to utilize the external clock connection.
Press Utility > System > ClockSou(Ext)



5. Press Sine on ARB2 to exit Utility menu.
6. Connect the arb output channels to the 4 channel scope input channels using the remaining BNC cables.
7. Configure the output waveform frequencies of ARB1 and ARB2.
8. Set the amplitude values of Channel 1 and Channel 2 for each ARB to a low value. 10mV for example.
9. Enable outputs of ARB1 and ARB2 by pressing all of the Output keys.
10. Adjust the scope such that each waveform is visible.
11. Press Align Phase on ARB1 and ARB2. This will align the phases of each ARB with each other within that ARB.

NOTE: Each ARB phase is independent. Aligning the phase on ARB1 will not effect the phases of ARB2.

12. Adjust Start Phase on each channel until desired phase difference between each channel is set. Use the scope to verify the changes.
13. Adjust each amplitude to the desired value.

NOTE: Steps 13 and 14 will have to be performed each time the output for any channel is changed. The phase differences are only set amongst enabled channels.



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