

80A06 PatternSync Trigger Module Instructions

www.tektronix.com

071-1744-00



Safety Summary

To avoid potential hazards, use this product only as specified.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

To avoid fire or personal injury

Ground the product. This product is indirectly grounded through the grounding conductor of the mainframe power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe all terminal ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the host instrument documentation for further ratings information before making connections to the host instrument.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Do not operate with suspected failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do not operate in wet/damp conditions.

Do not operate in an explosive atmosphere.

Keep product surfaces clean and dry.

Safety Terms In This Manual

CAUTION. Caution statements identify conditions or practices that could result in damage to the equipment or other property.

Safety symbols on the product



Product Description

The 80A06 PatternSync Trigger Module extends the triggering capabilities of the TDS8000 and CSA8000 series oscilloscopes and communications analyzers by providing a frame-synchronous (pattern) trigger. The pattern trigger can be created from any data-related clock, such as a recovered clock signal, a user-supplied clock, a sub-clock, or super-clock.

The 80A06 module can also be used with the 82A04 Phase Reference Module to provide down to 200 fs_{rms} timebase jitter.

The 80A06 module supports the use of the 80SJNB Advanced Jitter, Noise and BER Analysis Software. Standard acquisition and Framescan are also supported.

NOTE. The 80A06 PatternSync Trigger module requires 8000 Series Product Software version 2.4 or later.

The 80A06 module is programmable from the CSA/TDS8000 Series user interface or the GPIB interface.

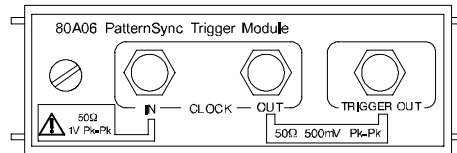


Figure 1: 80A06 PatternSync module

Installing and Removing the Module

The module is designed to install directly into any small module slot of a CSA8000 or TDS8000 Series Tektronix mainframe.

Refer to the host instrument documentation for proper installation and removal of modules.

CAUTION. Instrument modules are extremely static sensitive. Always ground yourself when handling modules.

Connector Care

Use extra care when attaching or removing SMA connectors. Turn only the nut, not the cable. Align the connectors carefully before turning the nut. Use light finger pressure to make the initial connection. Then tighten the nut lightly with a wrench. Ideally, the SMA connectors should be tightened to 56 N-cm (5 in-lb) with a torque wrench.

Operation

The primary use of the 80A06 module is to support the 80SJNB Advanced Jitter, Noise and BER Analysis Software for the CSA/TDS8000 Series Sampling Oscilloscopes. To ensure the

most accurate measurements, use a Phase Reference module installed in the CSA/TDS8200 mainframe.

The 80A06 accepts a user-supplied clock signal and divides it by a programmed amount to generate a frame trigger at the 80A06 TRIGGER OUT connector. The trigger signal is to be routed to the TRIGGER DIRECT INPUT connector of the CSA/TDS8000 series mainframe.

NOTE. The trigger signal is not internally routed to the mainframe and needs to be routed externally by the user.

The trigger user interface of the mainframe allows you to program the module to divide the input clock signal by an integral multiple of the length of the repetitive frame being applied to the device under test (DUT), generating a frame-synchronous trigger output.

The 80A06 module also provides a buffered copy of the input clock at the CLOCK OUT connector. This signal can be used for clocking other equipment or as the phase reference clock input for the 82A04 Phase Reference Module.

Specifications

Electrical

| Characteristic | Specification |
|--|--|
| Mainframe interface | Tekprobe®-Sampling, Level 3. Hot switching is permitted. |
| Applicable mainframes | TDS8000, CSA8000, TDS8000B, CSA8000B, TDS8200, CSA8200 |
| Number of channels | One |
| Input and output connectors | SMA female |
| Input/output impedance | 50 Ω |
| Maximum non-destruct range | 2.5 V _{pk-pk} |
| Maximum operating range | 2.0 V _{pk-pk} |
| Maximum DC offset | ± 5.0 VDC |
| Input electrical return loss | |
| >15 dB | 150 MHz to 10 GHz |
| >10 dB | 10 GHz to 20 GHz |
| Input/output coupling | |
| CLOCK IN | AC |
| CLOCK OUT | AC |
| TRIGGER OUT | DC, ground referenced |
| Supported clock rates | |
| Minimum | 150 MHz |
| Maximum | 12.5 GHz 12.75 GHz (typical) |
| Input clock prescaler ratios ¹ | |
| >150 MHz to ≤ 3.5 GHz | 4 |
| >3.5 GHz to ≤ 7 GHz | 8 |
| >7 GHz to ≤ 12.75 GHz | 16 |
| Programmable pattern length ^{1,2} | |
| Minimum | 2 |
| Maximum | 2 ²³ (8,388,608) |

| | |
|---|---|
| Front panel output amplitudes | |
| CLOCK OUT (50 Ω, AC coupled) | |
| 150 MHz to 8.0 GHz | 500 mV _{pk-pk} (typical) |
| 8.0 GHz to 12.75 GHz | 250 mV _{pk-pk} (typical) |
| TRIGGER OUT (50 Ω, DC coupled, ground referenced) | |
| Output high level | 0 V |
| Output low level | -550 mV (typical) |
| Front panel output rise and fall times | |
| CLOCK OUT | <60 ps (typical) |
| TRIGGER OUT | <60 ps (typical) |
| System trigger jitter generation | |
| CSA/TDS8000B and CSA/TDS8200 | |
| Input clock >1.2 GHz | <1.3 ps _{rms} 850 fs _{rms} (typical) |
| Input clock ≤ 1.2 GHz | <3 mUI _{rms} 1.5 mUI _{rms} (typical) |
| CSA/TDS8000 | |
| Input clock >1.2 GHz | <1.6 ps _{rms} 1.0 ps _{rms} (typical) |
| Input clock ≤ 1.2 GHz | <3 mUI _{rms} 1.5 mUI _{rms} (typical) |
| CSA/TDS8200 with 80A06 and 82A04 modules | |
| Minimum input sensitivity | |
| 150 MHz to 8.0 GHz | 100 mV _{pk-pk} 50 mV _{pk-pk} (typical) |
| 8.0 GHz to 12.75 GHz | 200 mV _{pk-pk} 50 mV _{pk-pk} (typical) |

- CSA/TDS8000 Series mainframe user interface or GPIB configuration.
- The 80A06 is programmed to within the hardware range of the module (a pre-scaler followed by a counter with a minimum count of 30) for the least-common-multiple count.

Environmental and Mechanical

| Characteristic | Specification |
|-------------------------------|---|
| Weight | 0.4 kg (0.6 lbs) |
| Dimensions | |
| Height | 25 mm (1.0 in) |
| Width | 79 mm (3.1 in) |
| Depth | 135 mm (5.3 in) |
| Environmental conditions | Refer to the host instrument specifications |
| Electromagnetic compatibility | Refer to the host instrument specifications |

Contacting Tektronix

Tektronix, Inc.
14200 SW Karl Braun Drive or PO Box 500
Beaverton, OR 97077 USA

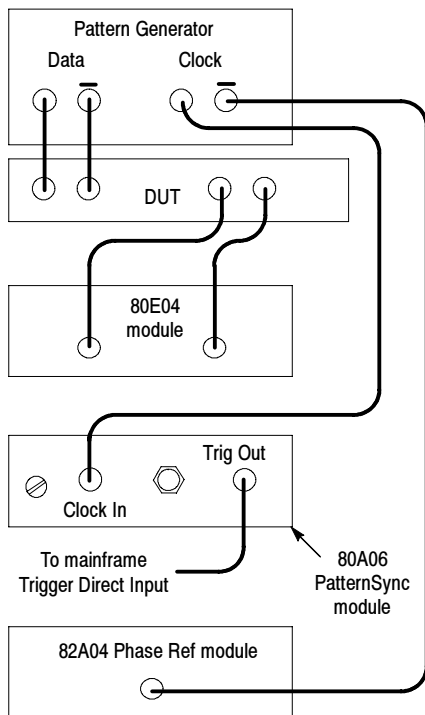
For product information, sales, service, and technical support:

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

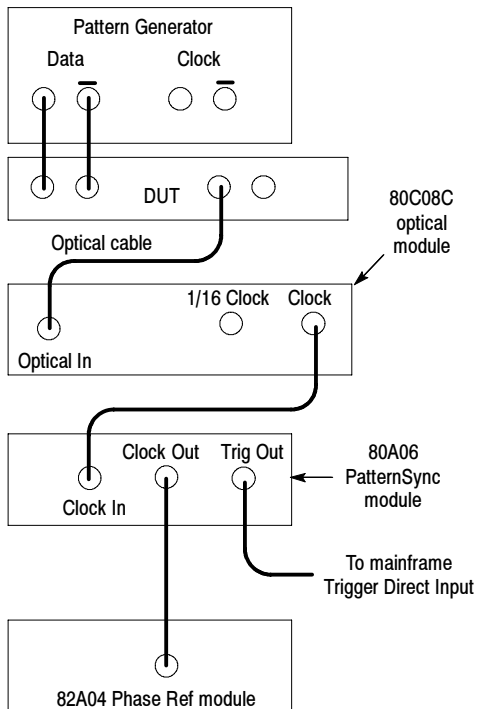
Setup Diagrams

The following illustrations show typical setup configurations that use the 80A06 PatternSync Module with other module types installed in a TDS or CSA8000 series mainframe.

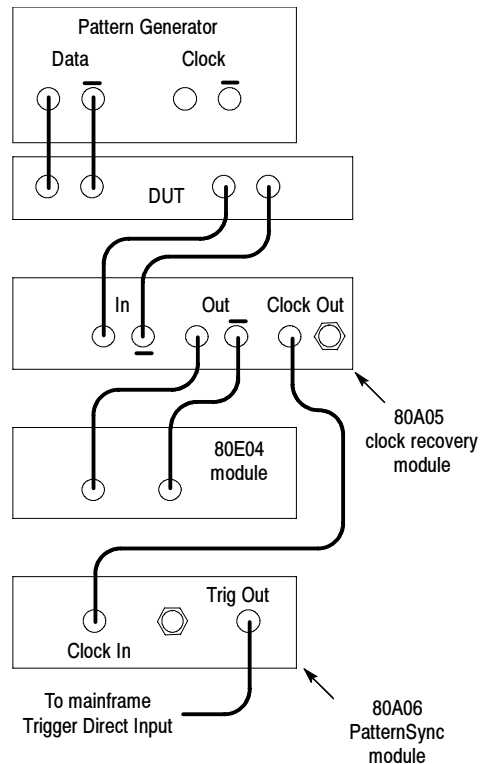
Differential data setup



Optical data setup



Clock recovery setup



Accessories

The following accessories are shipped with the 80A06 PatternSync Trigger module:

- 80A06 Instructions 071-1744-xx
- 8000 Series Product Documentation CDROM 020-2543-xx
- (2) 12 inch SMA cables 174-1364-xx

Functional Check

Use the following procedure to verify that the 80A06 PatternSync module is recognized by the host mainframe.

- After installing the module, power on the mainframe and wait for the scope application to fully boot.
- Select the Utilities menu and then select System Properties.
- Click the Modules tab.
- Click the + next to the channel number where the 80A06 module is installed.
- Verify that the module nomenclature and serial number are listed.

Warranty Information

For warranty information, go to www.tektronix.com, click Support, and then select Look Up Tektronix Warranty.