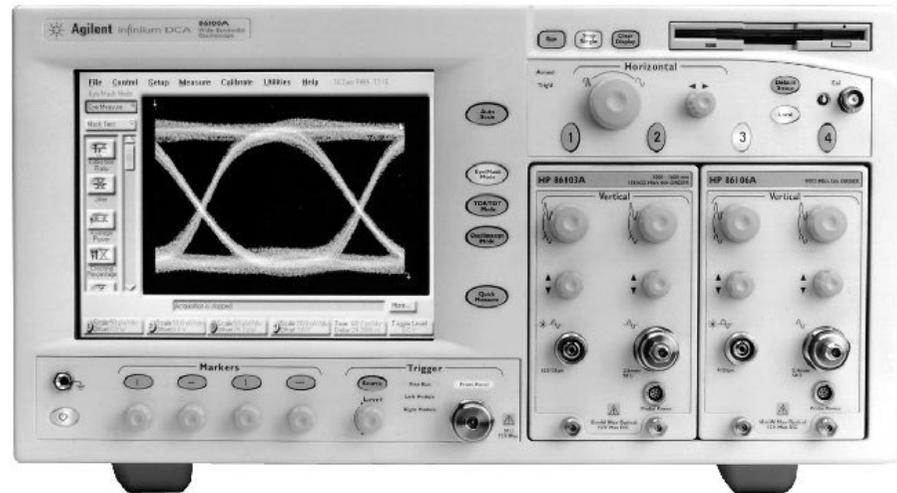


- Bandwidth to 50 GHz
- 100 Mb/s to 12.5 Gb/s and beyond
- Built-in compliance tests
- Integrated optical and electrical channels
- Familiar Windows-98 user interface
- Compatible with 83480A series modules



86100A

86100A

### 86100A Infiniium DCA – Wide-Bandwidth Oscilloscope



Agilent 86100A Infiniium DCA was designed to make accurate waveform measurements fast and simple. The Infiniium DCA can be viewed as three instruments in one. It's a general purpose equivalent time sampling oscilloscope, a digital communication analyzer, and time-domain reflectometer. Just select the instrument mode and start making measurements.

#### Familiar Windows-98 User Interface

The Infiniium DCA has an intuitive graphical user interface, so you won't have to spend a lot of time learning or relearning the instrument. Pull-down menus give you easy access to advanced features and icons provide quick access to an extensive set of common tests and measurements. Use the high-performance touchscreen or a mouse to navigate the instrument interface.

The simple, uncluttered front panel has the feel of an analog scope with dedicated scale and position knobs for each vertical channel. Trigger LEDs show you trigger status at a glance. To speed up measurements, you can configure the Quick Measure key for instant access to any four measurements in each instrument mode.

#### Measurement Speed

Measurement speed has been increased with both fast hardware and a friendlier user interface. In the lab, you can't afford to waste time figuring out how to make a measurement, the Infiniium DCA eliminates the relearning curve. In manufacturing, it is a battle to continually reduce cost per test. Infiniium DCA has fast PC-based processors, resulting in high measurement throughput and reduced test time.

#### Smaller Modular Platform

The Infiniium DCA has a large and growing family of plug-in modules designed for a broad range of data rates for optical and electrical waveforms. The Infiniium DCA can hold up to 2 modules for a total of 4 measurement channels. To protect your investment in Agilent's previous platform, all modules from the 83480A and 54750A family are forward compatible with the Infiniium DCA.

The Infiniium DCA is smaller and much lighter than the previous generation wide-bandwidth oscilloscopes. It also uses less than half the power the 83480A and 54750A used.

#### GPIB Code Compatible

The remote programming command set for the Infiniium DCA has been designed to be directly compatible with software written to control the 83480A and 54750A. (Due to improvements and updates in performance, a small set of remote commands may need minor modifications to control the Infiniium DCA.)

#### Compliance Tests

Accurate eye-diagram analysis is essential for characterizing the quality of transmitters used from 100 Mb/s to beyond 12.5 Gb/s. The Agilent Infiniium DCA was designed specifically for the complex task of analyzing digital communications waveforms. Compliance mask and parametric testing no longer require a complicated sequence of setups and configurations. The important measurements you need are right at your fingertips, including:

- Industry standard mask testing with built-in margin analysis
- Extinction ratio measurements with improved accuracy and repeatability
- Automatic eye measurements: crossing %, eye height and width, '1' and '0' levels, jitter, rise or fall times and more.

#### Time Domain Reflectometer (TDR)

TDR measurements are focused on high-speed applications where it is necessary to optimize electrical system components, such as microstrip lines, PC board traces, SMA edge launchers and coaxial cables where imperfections cause signal distortion and reflections. Signal integrity is a critical requirement in high-speed digital signal transmission.

#### Built-in Information System

Infiniium DCA's built-in information system puts measurement assistance at your fingertips. You'll no longer have to look for the manual when you need help setting up the DCA or making complex measurements. A set-up guide gives you step-by-step instructions for many measurements and procedures. Links on the measurement screen take you directly to the information you need in the on-line manual.

#### Internal Hard and Floppy Disk Drives

Use the internal 3 GB hard drive or the 3.5 inch, 120 MB SuperDisk floppy disk drive to store instrument setups, waveforms, or screen images. Screen images can be stored in many standard industry file formats. LAN access is supported for network access and file sharing.

#### Gated Triggering

Rear panel trigger gating port allows easy external control of data acquisition for circulating loop or burst-data experiments. Use TTL-compatible signals to control when the instrument does and does not acquire data.

#### Stimulus Response Testing Using the 86130A BitAlyzer

Error performance analysis represents an essential part of digital transmission test. The Infiniium DCA and 86130A BitAlyzer error performance analyzer come together to create a powerful test solution where two instruments together can perform measurements that would not be possible. For more information on the 86130A BitAlyzer see page 406.

86100A Series



86100A with plug-in modules

### Modules for the 86100A Infiniium DCA

The Infiniium DCA has a large family of plug-in modules designed for a broad range of data rates for optical and electrical waveforms. The Infiniium DCA can hold up to 2 modules for a total of 4 measurement channels. All optical measurement plug-in modules also have a dual bandwidth electrical channel.

The Agilent 86101A and 86103A modules incorporate an optical channel with over 2.85 GHz of bandwidth and a 20 GHz electrical channel. The electrical channel has both a 20 GHz mode for better waveform fidelity, and a 12.4 GHz mode for optimum noise performance. The calibrated, integrated optical channel has over 2.85 GHz bandwidth for easy, precise single-mode and multimode optical measurements. The 86101A and 86103A utilize switchable reference filters for transceiver compliance testing at OC-3, OC-12, OC-48, Fibre Channel, 1063, and Gigabit Ethernet 1250 data rates. The 86101A operates over the 750 nm to 860 nm wavelength range, and the 86103A operates over the 980 nm to 1625 nm wavelength range.

The 86105A module incorporates a single-mode optical channel with over 20 GHz of bandwidth and a 20 GHz electrical channel. The electrical channel has both a 20 GHz mode for better waveform fidelity, and a 12.4 GHz mode for optimum noise performance. The 86105A utilizes switchable reference filters for transceiver compliance testing at OC-3, OC-12, OC-48, and OC-192 data rates.

The 86106A module incorporates a 10 Gb/s optical reference receiver and a 40 GHz electrical channel. The electrical channel also has a reduced bandwidth setting of 18 GHz for improved noise performance. It includes a reference receiver path for 10 Gb/s transmitter test that has been designed to meet OC-192/STM-64 standards.

The 86109A module incorporates a 30 GHz optical measurement channel and a 40 GHz electrical channel. The electrical channel has a reduced bandwidth setting of 18 GHz for improved noise performance. The optical channel frequency response is designed to minimize distortion of the displayed optical pulse and does not include any provision for switching a SDH/SONET filter into the channel.

The 86112A electrical module provides two measurement channels with user selectable bandwidths. The 12.4 GHz bandwidth mode provides better noise performance for accurate measurement of small signals. The 20 GHz bandwidth mode provides high fidelity display and measurement of very high speed waveforms.

The 83484A electrical module provides two measurement channels with user selectable bandwidths. The 26.5 GHz bandwidth mode provides better noise performance for accurate measurement of small signals, and 50 GHz bandwidth mode provides higher fidelity for very high speed waveforms.

The 54753A is a two channel electrical plug-in with a TDR step generator built into channel one. The TDR channel has 18 GHz of bandwidth while the second channel has 20 GHz of bandwidth. The 54754A is a differential TDR with two channels, each of which have a built-in step generator and 18 GHz of bandwidth.

The 8349XA series of clock recovery modules provide a recovered clock and recovered data output, and the ability to trigger on data for slower rates. The 83491A accepts electrical inputs, the 83492A accepts multimode fiber inputs, and the 83493A accepts single mode fiber inputs. The new 83494A clock recovery module provides clock recovery for both 2.488 and 9.953Gb/s testing. All four clock recovery modules support standard telecom and/or enterprise data rates.

| Plug-in Module         | Electrical Channels    |  | Optical Channel                      |   |                                    |  |  |  |
|------------------------|------------------------|--|--------------------------------------|---|------------------------------------|--|--|--|
|                        | Number                 | Bandwidth GHz  | Fiber Input                          | Wavelength                                  | Unfiltered Bandwidth GHz (typical) | Filters                                    | Filter Rates Mb/s                      | Mask Test Sensitivity (Characteristic) |
| <b>83484A</b>          | 2                      | 26.5/50  |                                      |   |                                    |  |  |  |
| <b>86101A</b> (83487A) | 1                      | 12/20  | 62.5/125 um                          | 750–860 nm                                  | 2.85 (>3.0)                        | 2 or 3                                     | 155, 622, 1063, 1250, 1563, 2125, 2488 | (–17 dBm)                              |
| <b>86103A</b> (83486A) | 1                      | 12/20  | 62.5/125 um                          | 980–1625 nm                                 | 2.85 (>3.0)                        | 2 or 3                                     | 155, 622, 1063, 1250, 2125, 2488       | (–20 dBm)                              |
| <b>86105A</b> (83485A) | 1                      | 12/20  | 9/125 um                             | 980–1625 nm                                 | 20                                 | 1, 2 or 3                                  | 155, 622, 2488, 3125, 9953             | (–10 dBm)                              |
| <b>86106A</b> (83485B) | 1                      | 18/40  | 9/125 um                             | 980–1625 nm                                 |                                    | 1  | 9953                                   | (–8 dBm)                               |
| <b>86109A</b> (83482A) | 1                      | 18 & 40  | 9/125 um                             | 980–1625 nm                                 | 30                                 |  |  |  |
| <b>86112A</b> (83483A) | 2                      | 12 & 20  |                                      |   |                                    |  |  |  |
| <b>54753A</b>          | 1 TDR/ Elec. & 1 Elec. | 12/18 and 12/20  |                                      |   |                                    |  |  |  |
| <b>54754A</b>          | 2 TDR/ Elec.           | 12/18  |                                      |   |                                    |  |  |  |
| Clock Recovery         | Input                  | Operating Input Power Level for Clock Recovery           | Insertion Loss                       | Data Rates for Clock recovery               | Tracking/ Acquisition Range        | Module Contributed Jitter (Characteristic) |  |  |
| <b>83491A</b>          | 50 Ohm Electrical      | –10 to +3 dBm  | DC-2500 MHz: 7 dB<br>4500 MHz: 10 dB | 155, 622, 1060, 1250, 2125, 2488, 2500 Mb/s | ±0.1%                              | <0.0125 UI RMS (<0.01 UI RMS)              |  |  |
| <b>83492A</b>          | 62.5/125 um            | 750–860 nm: –10 to +3 dBm<br>1000–1600 nm: –13 to +3 dBm | ≤5.0 dBm max                         | 155, 622, 1060, 1250, 2125, 2488, 2500 Mb/s | ±0.1%                              | <0.0125 UI RMS (<0.01 UI RMS)              |  |  |
| <b>83493A</b>          | 9/125 um               | 1000–1600 nm: –20 to +3 dBm                              | ≤1.5 dBm max                         | 155, 622, 1250, 2488, 2500 Mb/s             | ±0.1%                              | <0.0125 UI RMS (<0.01 UI RMS)              |  |  |
| <b>82494A</b>          | 9/125 um               | 1000–1600 nm: –10 to +3 dBm                              | ≤1.5 dBm max                         | 2488 and 9953 Mb/s                          |                                    |  |  |  |