9500C



Tuote

Tuotekoodi: 5336261

Tekniset tiedot

The Fluke 9500C Oscilloscope Calibrator: A Paradigm Shift in Calibration Automation

In many calibration laboratories, automating oscilloscope calibration represents a significant leap in productivity. Traditionally, this process demands extensive time from skilled operators performing repetitive tasks. While semi- or partial automation solutions offer some relief, they often introduce their own set of complications.

Adapting to the Evolution of Oscilloscope Technology

Over recent years, oscilloscopes have evolved from simple two-channel instruments to complex four-channel devices. Calibrating these advanced instruments typically involves moving the calibration signal across different channels, which traditionally required manual cable adjustments. This method, especially with high-performance instruments, risks introducing measurement uncertainties due to cable and connector handling. Switching matrices, an alternative for signal routing, can lead to issues such as signal reflections and path differences, affecting calibration accuracy.

Innovative Active Heads and Full Automation with the 9500C

The Fluke 9500C effectively addresses these challenges, offering true, full automation through its innovative Active Heads. In the 9500C system, all necessary signals for comprehensive oscilloscope calibration are generated by detachable heads, which are remotely connected to the calibrator mainframe. These heads directly interface with the oscilloscope inputs, eliminating the need for additional cabling. Control and waveform switching are seamlessly managed by the mainframe, with the process occurring within the head itself – positioned just millimeters away from the oscilloscope input and amplifiers. Each 9500C mainframe can control up to five heads, enabling the calibration of a 4-channel oscilloscope with an external trigger. This design ensures that all required signals are supplied, controlled, and switched without any need for operator intervention or external switching mechanisms.

Key Features of the Fluke Oscilloscope Calibrator 9500C:

• Seamless Full Automation: Eliminates manual tasks, significantly boosting laboratory productivity.
• Advanced Active Head Technology: Ensures direct and accurate signal delivery to the oscilloscope.
• Simultaneous Multi-Channel Calibration: Reduces the time and complexity involved in calibrating each channel.
• Minimal Measurement Uncertainties: Avoids the errors commonly associated with manual cable handling and switching matrices.
• Versatility and Efficiency: Capable of calibrating modern, multi-channel oscilloscopes with minimal operator input.

The Fluke 9500C represents a revolutionary step in oscilloscope calibration technology, combining efficiency, precision, and user-friendliness. It stands as a testament to Fluke Calibration's commitment to advancing the field of calibration and ensuring that laboratories can keep pace with the ever-evolving demands of oscilloscope technology.

Complete Functionality of the Fluke 9500C Oscilloscope Calibrator

Upgrading from the 9500B? You're Closer Than You Think

Your existing 9500B procedures are compatible with the 9500C, so there's no need to start from scratch. That makes upgrading simple, with minimal impact on your workflow.

Vertical and Horizontal Deflection Bandwidth:

• The 9500C checks the pulse response and bandwidth of an oscilloscope's vertical deflection/acquisition amplifiers with fast return-to-ground edges, offering amplitudes between 4.44 mV and 3.1 V and rise/fall times of 70 ps, 150 ps, or 500 ps.
• High-level edges up to 210 V pk-pk evaluate the dynamic performance of input attenuators.
• Leveled sine waves up to 4 GHz, with an amplitude range of 4.44 mV to 5.56 V pk-pk into 50Ω, enable direct calibration of oscilloscope bandwidth, including Z-axis and horizontal deflection bandwidth.
• Dual sine outputs facilitate the calibration of the oscilloscope's trigger sensitivity and other functions that typically require a splitter in the connecting cable.

Vertical Deflection Gain:

• DC levels and square waves from 10 Hz to 100 kHz are adjustable up to 220 V, with 5-digit amplitude resolution at 0.025% accuracy for DC and 0.05% for square waves, sufficient for calibrating vertical deflection ranges of 12-bit digitizing and 14-bit interpolating oscilloscopes.
• The 9500C checks the oscilloscope's input impedance before applying high voltages to protect 50Ω input terminations.

Timebase Accuracy:

• Timing markers cover calibration of timebase ranges from 0.2 ns to 50 s per division, with a choice of four styles and the option to highlight every tenth marker for enhanced visibility on both analog and digital storage oscilloscopes.
• The square and pulse markers are used for calibrating timebase jitter, supported by a high-stability crystal reference, providing timing accuracy of ± 0.25 ppm.

Auxiliary Calibration Functions:

The 9500C's auxiliary functions calibrate additional oscilloscope features often overlooked by other calibrators:

• DC and square wave currents up to 100 mA for calibrating current probes.
• Composite video signals for testing TV sync separator functions.
• Linear ramps for calibrating trigger level markers and checking DSOs for missing bits.
• High current pulses (5 V to 20 V) for testing 50Ω terminator protection.
• Zero skew for accurate alignment of pulse edges, evaluating channel delays in multi-channel scopes.
• AUX IN to route external calibration waveforms to an Active Head's BNC/SMA connector.
• Resistance and capacitance functions for directly measuring oscilloscope input impedance.
• Short/open circuit outputs for testing oscilloscope input leakage current.