WE7311
1 GS/s Digital Oscilloscope Module

Overview

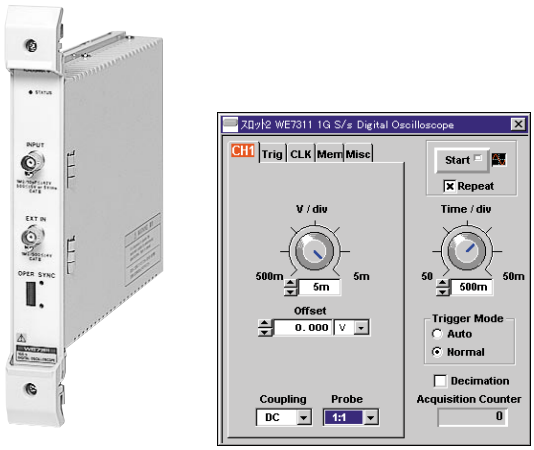
This module contains a digital oscilloscope and digitizer with a range of basic functions. Its flash memory contains setup information required for module operations, such as ranges, time axes, and triggers. The setup information is transferred to the PC when the module is connected.

FEATURES

- 1 GS/s, A/D 8-bit resolution
- 400 MHz analog bandwidth (real time samples only)
- 2M-word memory
- Sequential store
- Synchronized operations between adjacent WE7311 modules

Standard Specifications

- Measurement input section
  Number of Input Channels: 1
  Input Coupling: DC (1 M/50 Ω), AC (1 M/50 Ω), GND
  Connector Type: BNC
  Input Impedance: 1 MΩ ± 1% (approx. 10 pF) or 50 Ω ± 1%
  Input Voltage Range: During oscilloscope mode: 5 mV/div to 500 mV/div (in 1-2-5 steps) During digitizer mode: ±25 mV to ±2.5 V range (in 1-2.5-5 steps)
  Vertical Resolution: 8 bits
  Maximum Input Voltage: When the input impedance is 1 MΩ ±42 V (DC + peak AC < 10 kHz) When the input impedance is 50 Ω ±5 VDC (500 mW) or 5 Vrms (see Note 1) Overvoltage Category CAT I and II
  Frequency Characteristics (see Note 2) (see Note 3): For 10 mV/div to 500 mV/div or ±50 mV to ±2.5 V range: DC to 400 MHz. For 5 mV/div or ±25 mV range: DC to 250 MHz
  –3dB point in the low frequency region during AC coupling:
  10 Hz or less
  Voltage Axis DC Accuracy (see Note 2): ±(2% of input voltage range (full scale) + offset voltage accuracy)
  DC Offset Setting Range:
  For 5 mV/div to 50 mV/div or ±25 mV to ±250 mV range: ±2 V (0.1 mV resolution).
  For 100 mV/div to 500 mV/div or ±500 mV to ±2.5 V range: ±20 V (1 mV resolution)
  Offset Voltage Accuracy (see Note 2):
  For 5 mV/div to 50 mV/div or ±25 mV to ±250 mV range: ±(1% of the specified value + 1 mV).
  For 100 mV/div to 500 mV/div or ±500 mV to ±2.5 V range: ±(1% of the specified value + 10 mV)



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  Residual Noise Level:
  For 5 mV/div to 50 mV/div or ±25 mV to ±250 mV range: ±2.0 mV or ±2 LSB, whichever is larger (typical value (see Note 4).
  For 100 mV/div to 500 mV/div or ±500 mV to ±2.5 V range: ±20 mV or ±2 LSB, whichever is larger (typical value (see Note 4))
  Significant Bits
  >6.5 bits (DC-50 MHz) (typical value (see Note 4))
  >6.0 bits (50 MHz-100 MHz) (typical value (see Note 4))
  Skew between Modules (see Note 5): Within 1 sampling interval (typical value (see Note 4))
  Isolation between Channels (see Note 5): –40 dB@100 MHz (typical value (see Note 4) in the same range)
- Trigger Mode
  NORMAL: Acquire the waveform only when a trigger occurs.
  AUTO: Automatically acquire the waveform if the trigger does not occur for a prescribed time period.
  Trigger Source: Input signal (includes input signal from linked WE7311 modules), external input (EXT IN), and bus trigger (BUSTRG1/ BUSTRG2) signal of the WE bus
  Trigger Coupling: DC, LF Rejection (approx. 50 kHz)
  Trigger Type: Edge
  Trigger Slope: Rising edge or falling edge
  Trigger Level Setting Range: Within the input voltage range (when using DC coupling, 0.5% resolution)

Trigger Sensitivity:
DC to 1 MHz: 10% of the input voltage range (full scale)
DC to 300 MHz: 20% of the input voltage range (full scale)
DC to 400 MHz: 70% of the input voltage range (full scale)
Trigger Level Accuracy (see Note 1)
±5% of the input voltage range (full scale)
Trigger Position (During the Oscilloscope Mode):
±5 div
Pretrigger (During the Digitizer Mode): 0 to 100% of the acquisition sample
Trigger Delay: During the oscilloscope mode: 0 up to 300 s
During the digitizer mode: 0 to 200 M samples (however, the maximum value is the value corresponding to 300 s when converted into delay time)
Trigger Output Able to output the acquisition trigger to the trigger bus (BUSTRG1/BUSTRG2) of the WE bus.
Output Trigger Input Impedance (see Note 2): 1 MΩ or 50 Ω
External Trigger Input Frequency Bandwidth (see Note 2): DC to 400 MHz (minimum voltage: 3 Vp-p)
External Trigger Input Voltage Range (see Note 2): ±4 V
External Trigger Level Setting Range: ±4 V (0.1 V resolution)
The external trigger input and external clock input share the same connector.

•Time Axis
Time Axis Setting Range (During Oscilloscope Mode)
10 ns/div to 50 s/div (in 1-2-5 steps)
Sampling Interval (During the Digitizer Mode)
1 ns to 10 ms (in 1-2-5 steps) (For API, 1-2-2.5-4-5 steps)
Time Axis Accuracy (see Note 1): ±(25 ppm + 1 sampling interval)
External Clock Input/Output (see Note 2): Able to input an external input signal (EXT IN) as a sampling clock. Able to input an external input signal (EXT IN) or the time base (CMNCLK) signal of the WE bus as a reference clock. Able to output the 10-MHz internal reference clock to the time base (CMNCLK) of the WE bus.
External Clock Input Impedance: 1 MΩ or 50 Ω
External Clock Input Voltage Range: ±4 V
External Clock Input Threshold: ±2 V (0.1 V resolution)
External Sampling Clock Input: Frequency Range / Minimum Voltage: 10 MHz to 500 MHz/3 Vp-p
External Reference Clock Input Frequency Range/ Minimum Voltage: 10 MHz/800 mVp-p

• Functions
Record Length: 100 to 2 MWord (1 Word unit, 1,000,001 words or more are only for single acquisition)
Sequential Store: Memory partition (1 to 4096, 2^n steps), store count can be specified.
Auto Setup: Automatically sets the voltage axis, time axis, trigger level, etc.
Calibration: Auto calibration and manual calibration available

■ General Specifications

Standard operating conditions
Ambient temperature: 23 ± 2°C
Ambient humidity: 50 ± 10% RH
Warm-up time: Minimum 30 minutes
Operating conditions: Same as that of the measuring station
Storage conditions
Storage temperature range: –20 to 60°C
Storage humidity range: 20 to 80% RH (no condensation)
Power consumption: 18 VA (typical value (see Note 4) at 100 V/50 Hz,
External dimensions: About 33 (W) × 243 (H) × 232 (D) mm (protruding areas not included)
Weight: About 0.8 kg
Number of dedicated slots: 1
Accessories: Module link connector (1 set), User's Manual (1)

Note 1: When overvoltage is applied, the protective circuit is activated, and the input coupling is switched to GND.
Note 2: Value measured with the time base set to internal clock under standard operating conditions after warm-up time has elapsed and after calibration.
Note 3: The –3 dB point when the input coupling is set to DC 50 Ω with a 100-kHz sine wave with an amplitude corresponding to ±3 divisions used as a reference.
Note 4: Typical value represents a typical or average value. It is not strictly guaranteed.
Note 5: Measured using the same range with the time base set to internal clock under linked operation

AVAILABLE MODELS

Model	Description
707311/HE	1 GS/s Digital Oscilloscope Module

Special Accessories (sold separately)

Accessory	Model	Description	Order quantity
Module link connector	B9952RB		1
Passive probe	700944	10 : 1 10 MΩ 300 MHz bandwidth	1

■ Dimensions