Oscillator Section

Frequency	10 μHz to 2 MHz, Setting resolution : 10 μHz Accuracy : ±10 ppm (operating on the internal reference clock)
AC Signal Amplitude	0 to 10 Vpk Setting resolution of 3 digits or 0.01 mVpk, whichever is greater
DC Bias	−10 V to +10 V, Setting resolution : 10 mV
Output Impedance	50 Ω ±2% (1 kHz)
Maximum Output (AC + DC)	Voltage : ±10 V Current : ±100 mA
Sweep	Sweep density : 3 to 20,000 steps/sweep Sweep type : Linear or log, selectable Sweep time : Fastest 0.5 ms (per frequency point)
Output Control	QUICK : Immediately changes to the set voltage or to 0 V SLOW : Changes to the set voltage or to 0 V gradually over a period of about 10 seconds Function for turning off and changing the frequency at 0° phase Possible to turn the AC and DC on / off at the same time or to turn off the AC independently Possible to turn on automatically at the start of measurement and to turn off automatically at the end of measurement
Connector	Insulated BNC (front panel, OSC)
Isolation	600 V CAT II / 300 V CAT III (BNC grounded to the enclosure)
DC BIAS OUT (rear panel)	When the DC BIAS OUT is set as the output connector for the DC bias. Connector : BNC Setting Range : −10 V to 10 V Output resistance : 600 Ω ±2%

Analysis Input Section

Input Channels	2 (CH1, CH2)
Input Connector	Insulated BNC
Input Impedance	1 MΩ ±2%, 20 pF ±5 pF
Measurement Range	10 ranges (30 m/100 m/300 m/1/3/10/30/100/300/600 Vrms) or Auto range (setting CH1 and CH2 independently)
Maximum Input Voltage	600 V CAT II / 300 V CAT III
Maximum Measurement Voltage	600 Vrms (when using bundled signal cables)
Dynamic Range	140 dB (10 Hz to 1 MHz), 80 dB (1 MHz to 2 MHz)
IMRR	120 dB or more (DC to 60 Hz)
Isolation	600 V CAT II / 300 V CAT III (BNC grounded to the enclosure)

Measurement Processing Section

Measurement Operations	UP SWEEP (In order of increasing frequency), DOWN SWEEP (In order of decreasing frequency), SPOT (At the current frequency, no sweep), REPEAT (Repeatedly measurement), SINGLE (A single measurement)
Integration Function	Integration on measurement data to remove the effects of noise
Delay Function	Delays the beginning of a measurement after the frequency is changed.
Start Delay Function	Delays the beginning of a measurement only from the start of a sweep or spot measurement
Automatic Integration	Repeats the integration process until the variation in the measurement values falls below a set value
Amplitude Compression	Controls the level of oscillation so that the amplitude level of DUT may stay at a certain value.
Automatic High Density Sweep	When measured data changes greatly, sweep density is made higher around the frequency area automatically.
Sequence Measurement	Measurements according to the content of a condition memory

Analysis Processing Section

Measurement Accuracy

Fixed Range

Measurement accuracy = Relative accuracy + Calibration accuracy

Relative accuracy =
±(|Basic accuracy| + |Dynamic accuracy| + |Inter-range accuracy × N|)

Calibration accuracy :
Accuracy of external equipment that is connected to the instrument, such as a shunt resistor or probe, or the accuracy of the calibration standard equipment

Basic accuracy (excerpt) : Gain (ratio) / Phase
≤200 kHz and 30 mV to 30 V ranges : ±0.01 dB / ±0.06°
≤100 kHz and 600 V ranges : ±0.2 dB / ±1.2°
≤2 MHz and 30 mV to 30 V ranges : ±0.1 dB / ±0.6°
[Conditions]
- At least 30 cycles of integration
- Fixed and the same measurement range for both channels.
- The gain and phase error for when the signal input is at the full scale of the measurement range for both channels

Dynamic accuracy (excerpt) : Gain (ratio) / Phase
≤100 kHz and 300 mV to 600 V ranges : ±0.1 dB / ±0.6°
≤2 MHz and 100 mV to 10 V ranges : ±0.2 dB / ±1.2°
[Conditions]
- At least 30 cycles of integration
- Fixed and the same measurement range for both channels.
- Gain and phase variation for when the signal level changes from full-scale of measurement range to 1/10. The input signal level is 1:1 or 1:0.1 between channels.

Inter-range accuracy (excerpt) : Gain (ratio) / Phase
≤100 kHz and ≤300 V range : ±0.05 dB / ±0.3°
≤2 MHz and ≤30 V range : ±0.05 dB / ±0.3°
[Conditions]
- At least 30 cycles of integration
- Fixed measurement range for both channels
- The gain and phase error for when the measurement range difference between channels is 1, the input signal levels of both channels are equal, and equal to the range full scale level of the smaller range.

Auto Range

Measurement accuracy = Relative accuracy + Calibration accuracy

Relative accuracy = ±(|Basic accuracy| + |Dynamic accuracy|)

Calibration accuracy :
The accuracy of external equipment that is connected to the instrument, such as a shunt resistor or probe, or the accuracy of the calibration standard equipment.

Basic accuracy (excerpt) : Gain (ratio) / Phase
≤200 kHz and signal level of 7 Vrms : ±0.02 dB / ±0.12°
≤2 MHz and signal level of 7 Vrms : ±0.1 dB / ±0.6°
[Conditions]
- At least 30 cycles of integration
- Auto-range for both channels
- The gain and phase error for when the input signal level is the same for both channels.

Dynamic accuracy (excerpt) : Gain (ratio) / Phase
≤100 kHz and signal level of 30 Vrms to 600 Vrms : ±0.1 dB / ±0.6°
≤2M Hz and signal level of 100 mVrms to 30 Vrms : ±0.2 dB / ±3.0°
[Conditions]
- At least 30 cycles of integration
- Auto-range for both channels
- The gain and phase variation for when input signal level with the greater signal level channel changes from 7 Vrms to the value of the table, when the input signal level between channel is 1:1 or 1:0.1.

Error Correction Function	Corrects for measurement errors that arise within the instrument itself (Calibration)
Analysis Modes	Ratio : CH1/CH2, CH2/CH1 Amplitude : CH1, CH2
Graph Types	Bode plot, Nyquist plot, Nichols plot
Measurement Items	dBR (gain dB), θ (phase), GD (group delay) R (absolute gain/amplitude) a (real part of gain/real part of amplitude) b (imaginary part of gain/imaginary part of amplitude)
Error Correction Function (Equalizing)	This function obtains the characteristics for DUT alone by measuring the frequency characteristics of the measurement system (sensors, cables, etc.) in advance and then eliminate that error components.

Display Section

Display Unit	8.4-inch color TFT-LCD (SVGA) with touch screen
Graph Display Styles	SINGLE or SPLIT (Two graphs are displayed on the screen, one above the other.)
Data Traces	Reference data trace (REF) or measurement data trace (MEAS)
Auto Scaling	On or Off (automatically optimizes the graph display scale)
Marker Search Function	Search items : Max, Min, Peak, Bottom, Next Peak, Next Bottom, Value, ΔValue, X Value Possible to automatically perform a search at the end of a sweep measurement.

Others

Memory	Measurement data (MEAS) : Up to 20 sets Reference data (REF) : Displayed on a graph together with the measurement data (on/off) Error correction data, Measurement conditions : Up to 20 sets
External Memory	USB memory (Front panel, USB-A connector) File system : FAT, Screen capture : BMP
Interface	GPIB (IEEE488.1, IEEE488.2), USB (USBTMC), LAN (10/100 Base-T), RS-232 (4800 to 230400 bps)
External Monitor	VGA (Rear panel)
Reference Clock	Input : Within 10 MHz ±100 ppm, 0.5 Vp-p to 5 Vp-p Output : Within 10 MHz ±10 ppm, 1 Vp-p / 50 Ω
DC Power Output	For Signal Injector Probe 5055 (option), ±24 V
Power Requirements	AC100 V to 230 V±10% (250V or less), 50 Hz/60 Hz ±2 Hz
Power Consumption	100 VA or less
Ambient Temperature and Humidity	+5°C to +40°C, 5 to 85%RH (absolute humidity 1 to 25 g/m^3, no condensation)
Dimensions (mm)	430 (W) × 177 (H) × 350 (D) (excluding protruding parts)
Weight	Approx. 8.5 kg
Safety Standards and EMC	EN 61010-1, EN 61010-2-030 EN 61326-1 (Group 1, Class A), EN 61326-2-1
RoHS	Directive 2011/65/EU

Note : The contents of this catalog are current as of November 6th, 2024
- Products appearance and specifications are subject to change without notice.
- Before purchase contact us to confirm the latest specifications, price and delivery date.

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