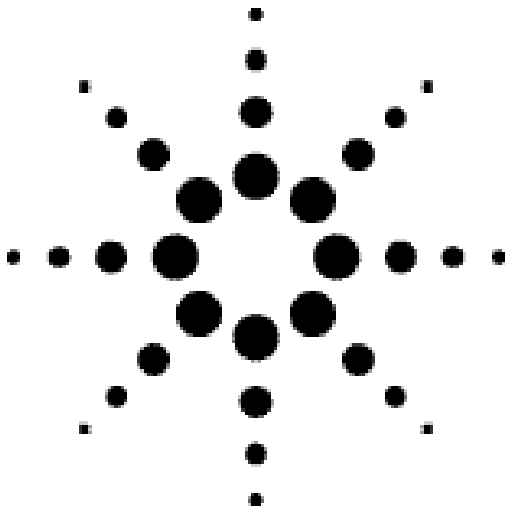




**35665A 2-Channel DC to
102.4 kHz Dual Channel
Dynamic Signal Analyzer**
Data Sheet



Product Specifications

Frequency

RANGE

One Channel Mode (CH. 1): 102.4 kHz
Two Channel Mode (Ch 1 & 2): 51.2 kHz

RESOLUTION

100, 200, 400 or 800 lines resolution
Frequency resolution = frequency span/number of lines resolution
Minimum frequency resolution
One Channel Mode: 244 uHz
Two Channel Mode: 122 uHz

SPANS

One Channel Mode: 102.4 kHz to 0.19531 Hz
Two Channel Mode: 51.2 kHz to 0.097656 Hz

ACCURACY ±30 ppm

Real Time Bandwidth
Fast Average On: ≥ 12.8 kHz

MEASUREMENT RATE

401 point FFT display, fast average on
One Channel mode: ≥ 33 averages/second (typical)
Two channel mode: ≥ 15 averages/second (typical)

DISPLAY UPDATE RATE: ≥ 8 updates/second (typical)

401 point FFT display, fast average off

Amplitude/Phase

**INPUT RANGES (full scale): +27 dBVrms (31.7 Vpk) to
-51 dBVrms (3.99 mVpk)
in 2 dB steps**

AMPLITUDE RESOLUTION: 0.016% of full scale (typical)

ABSOLUTE AMPLITUDE ACCURACY: $\pm 2.92\%$ (0.25 dB) of reading
 $\pm 0.025\%$ of full scale

CROSS-CHANNEL GAIN ACCURACY

Source = Full scale: $\pm 0.04\text{dB}$

Source = -20dB full scale: $\pm 0.08\text{dB}$

CROSS-CHANNEL PHASE ACCURACY

Source = full scale: $\pm 0.5\text{ deg}$

Source = -20 dB full scale: $\pm 0.5\text{ deg}$

Dynamic Range

FULL SPAN FFT NOISE FLOOR

Input Range 27 to -35 dBVrms: $< -76\text{ dBfs}$ (-85 dBfs typical)

Input Range -37 to -51 dBVrms: $< (-112 - \text{Range})\text{ dBfs}$

SPURIOUS FREE DYNAMIC RANGE: $< -72\text{ dBfs}$

(Includes Spurs, Harmonic Distortion, Intermodulation Distortion, Alias Products)

Zoom Mode Alias Responses

1.5% to 98.5% of the Frequency Span: $< -72\text{ dBfs}$

Lower and Upper 1.5% of Frequency Span: $< -65\text{ dBfs}$

INPUT NOISE LEVEL

Above 1280 Hz: $< -140\text{ dBVrms} / (\text{Sq. R})\text{Hz}$

160 Hz to 1.28 kHz (6.4kHz span): $< -130\text{ dBVrms} / (\text{Sq. R})\text{Hz}$

Input

INPUT RANGES: -51 dBVrms to +27 dBVrms

INPUT IMPEDANCE: 1M ohm $\pm 30\%$

$< \text{or} = 100\text{ pico Farad}$

Low Side to Chassis Impedance

Floating Mode: 1M ohm $\pm 30\%$ (typical)

$< 0.01\text{ micro Farad}$ (typical)

AC COUPLING: $< 3\text{ dB}$ Rolloff at 1Hz

COMMON MODE REJECTION

-51 dBVrms to -11 dBVrms Ranges: $> 80\text{ dB}$ (typical)

-9 dBVrms to +9 dBVrms Ranges: $> 60\text{ dB}$ (typical)

+11 dBVrms to +27 dBVrms Ranges $> 40\text{ dB}$ (typical)

COMMON MODE RANGE (floating mode): $\pm 4\text{ V pk}$

IEPE SIGNAL CONDITIONING

Current Source: $4.25 \pm 1.5\text{ mA}$

Open Circuit voltage: +26 to +32 Vdc

Trigger/Tachometer

TRIGGER MODES: Internal, External TTL, Source, HP-IB

MAXIMUM TRIGGER DELAY

Post Trigger: 8191 seconds

Pre Trigger: 8191 samples

PULSES PER REVOLUTION: 0.5, 1 to 2048 (Integer Steps)

RPM ACCURACY: ± 100 ppm

TRIGGER LEVEL RANGE

Low Range: -4V to +4V

High Range: -20V to +20V

TRIGGER LEVEL RESOLUTION

Low range: 100 mV

High Range: 500 mV

RPM RANGE: $5 < \text{RPM} < 220,759$

MAXIMUM TRIGGER PULSE RATE: 800 kHz

Source Output

AMPLITUDE RANGE: ± 5 V peak

AMPLITUDE RESOLUTION

Voltage ≥ 0.2 Vrms: 2.5 mVpeak

Voltage < 0.2 Vrms: 0.25 mVpeak

RESIDUAL DC OFFSET: ± 10.0 mV

OUTPUT IMPEDANCE: < 5 ohms

SOURCE TYPE: Sine, random, pink noise, chirp

Options

COMPUTED ORDER TRACKING

Pulses per Revolution: 0.5, 1 to 2048 (integer steps)

(Max Order x Max RPM) / 60

On line (real-time)

1 Channel Mode: \leq to 25,600 Hz

2 Channel Mode: \leq to 12,800 Hz

Capture playback

1 Channel Mode: \leq to 102,400 Hz

2 Channel Mode: \leq to 51,200 Hz

Specified for $5 < \text{RPM} < 220,759$ RPM (on line)

$5 < \text{RPM} < 491,519$ RPM (capture playback);

and Number of Orders $< \text{or} = 200$.

Software Limits at $5 < \text{or} = \text{RPM} < \text{or} = 491,519$;
and Number of Orders ≤ 200
Delta Order: 1/128 to 1/1

Resolution
(Maximum Order) / (Delta Order): < 200

RPM Accuracy: ± 100 ppm

Maximum RPM Ramp Rate: 750 RPM/second (typical)
1 and 2 Channel Mode
1000 to 10,000 RPM Run-up
Maximum Order = 10
Delta Order = 0.1
RPM Step = 30

REAL TIME OCTAVE ANALYSIS - OPTION 1D1

STANDARDS

ANSI Standard S1.11 - 1996, Order 3, Type 1-D, Extended and
Optional Frequency Ranges
IEC Standard 651-1979 Type 0 Impulse, and ANSI S1.4

1/1 OCTAVE RANGE (at centers): 0.0613 Hz to 16 kHz

1/3 OCTAVE RANGE (at centers): 0.08 Hz to 32 kHz

1/12 OCTAVE RANGE (at centers): 0.09145 Hz to 12.338 kHz

1/3 OCTAVE UPDATE RATE

1 Channel Mode
16 kHz Bandwidth 12 Updates/Second (Typical)
32 kHz Bandwidth 5 Updates/Second (Typical)
2 Channel Mode 8 Updates/Second (Typical)
(16 kHz, 32 kHz Bandwidths)

1/3 OCTAVE DYNAMIC RANGE

2 Second Stable Average: > 80 dB as per ANSI S1.11-1986
Total power limited by the for full scale ranges from
input noise level 50 m V_{peak} to 31.7 V_{peak}

STABLE AVERAGE RANGE

One Channel Mode Real-Time Bandwidth = 32 kHz
Two Channel Mode Real-Time Bandwidth = 16 kHz

SWEPT SINE MEASUREMENTS - OPTION 1D2

DYNAMIC RANGE: > 130 dB (typical)
Input auto range on
100 msec integration

SWEEP TIMES:

51.2 Hz to 51.2 kHz span
11 dBV rms source level

100 ms integration time approximately 76 sec (typical)
10 ms integration time approximately 25 sec (typical)
5 cycle integration time approximately 16 sec (typical)
100 cycle integration time approximately 25 sec (typical)

CROSS-CHANNEL AMPLITUDE/PHASE ACCURACY

Ch. 1 range = Ch. 2 range: ± 0.04 dB
 ± 0.5 deg

Abbreviations

Zoom mode = Start frequency > 0 Hz

dBVrms = dB relative to 1 Volt rms.

dBfs = dB relative to full scale amplitude range.

Full scale is approx. 2 dB below ADC overload.

FS is fs = Full Scale; synonymous with Input Range.

RS = Resistance of source or termination connected to Agilent 35665A's input (from high to low).

Vs = voltage applied to Agilent 35665A's input.

Vpk = Peak of the ac Voltage

Rload = Load resistance connected to Agilent 35665A's source

CF = center frequency

Typical = typical, non-warranted, performance

specification included to provide general product information