Frequency Synthesizers
ND 1000 D

The Frequency Synthesizers ND 500 D and ND 1000 D are the most intelligent bench top instruments of our synthesizer models. This remarkable design has all the attributes demanded by Research & Development, calibration laboratories and production. All instrument settings are displayed on a LCD and can be stored in a non-volatile memory. Data entry to set frequency and output level is done via numeric keyboard, function keys or rotary control knob. The ND 1000 D is also available with a programmable output attenuator down to - 137 dBm. The excellent high spectral purity of the output signal (SSB-phase noise ≤ - 126 dBc/Hz; residual FM ≤ 0.1 Hz) allows applications as local oscillator (LO) during the R&D phase of new module designs.

Frequency Synthesizer ND 1000 D

- Frequency range 10 kHz ... 1000 MHz
- Keyboard entry or rotary control knob to set frequency, output level and LCD
- Highly-stable refer. frequency (OCXO)
- Residual FM ≤ 0.1 Hz
- SSB phase noise ≤ - 126/120 dBc/Hz
- Fast frequency switching ≤ 1 µs
- Output level - 137 dBm ... + 13 dBm
- BCD parallel control
  RS 232 and IEEE-Bus as option

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Specifications ND 1000 D

Reference Frequency:
Frequency/Type: ..... 10 MHz/OCXO
Temperature stability (+ 5 °C ... + 45 °C): ..... ≤ 3 x 10^{-8}
Ageing: ..... ≤ 2 x 10^{-8}/month
Reference frequency output: ..... 10 MHz; + 10 dBm
Reference freq. input: ..... 10 MHz, 5 MHz, 2 MHz
± 2 x 10^{-7}
Input level: ..... 0 dBm ... + 8 dBm

Synthesizer:
Frequency range: ..... 10 kHz ... 999.999 999 8 MHz
Resolution: ..... f < 500 MHz ... 0.1 Hz
f ≥ 500 MHz ... 0.2 Hz
Accuracy: ..... same as reference
Frequency setting: keyboard, rotary control, BCD-parallel
RS 232 and IEEE-Bus (option)
Switching time to new frequency: steps < 1 MHz: ... ≤ 1 µs
steps ≥ 1 MHz: ... ≤ 20 µs
Phase (< 1 MHz step width): .....phase-continuous

Spectral purity:
Harmonics (level ≤ + 13 dBm): ..... ≤ - 30 dBc
Sub-harmonics (f ≥ 500 MHz): ..... ≤ - 65 dBc
(f < 500 MHz): ..... none
Discrete spurious (f < 500 MHz): ..... ≤ - 72 dBc
(f ≥ 500 MHz): ..... ≤ - 65 dBc
Residual FM (CCITT, rms): ..... ≤ 0.1 Hz
SSB-phase noise (10 kHz offset):
f < 500 MHz ≤ - 126 dBc/Hz
f ≥ 500 MHz ≤ - 120 dBc/Hz
Noise floor: ..... f < 500 MHz ≤ - 138 dBc/Hz
f ≥ 500 MHz ≤ - 135 dBc/Hz

Output:
Output level range: ..... 0 dBm ... + 13 dBm
Frequency response: ..... ≤ ± 1.5 dB
Impedance: ..... 50 Ω
VSWR: ..... ≤ 1.8
Connector: ..... N-socket

Variable output attenuator (Version BN 86307.001):
Output level range: ..... - 137 dBm ... + 13 dBm
Resolution: ..... 0.1 dB
Accuracy (- 40 dBm ... + 13 dBm): ..... ≤ ± 0.5 dB
(- 137 dBm ... - 40 dBm): ..... ≤ ± 1.5 dB
Output level settable in: ..... dBm, dBµV, mV, µV

General data:
Display: ..... LCD-graphic display (240 x 64 dots)
Backlighting: ..... LED's, 4 brightness settings
Non-volatile memory: .... for 100 compl. instrument settings
Power supply: ..... 110 V/120 V, 220 V/240 V ± 10 %
47 Hz ... 63 Hz; 117 VA (Stand-by 9 VA)
Electrical safety: ..... EN 61010
Operating temperature: ..... + 5 °C ... + 45 °C
EMC: ..... CE-mark
Dimensions (W x H x D): ..... 447 mm x 88 mm x 450 mm
Weight: ..... approx. 13 kg

Supplied accessories:
1 ea. ..... power cord
1 ea. ..... operating manual
1 set ..... spare fuses

Ordering information:
Frequency Synthesizer ND 1000 D ..... BN 86307.000
with BCD-interface
Frequency Synthesizer ND 1000 D ..... BN 86307.001
with BCD-interface and variable output attenuator

Option:
RS 232- and IEEE-Bus interface ..... BN 86307.201

Accessory:
19" adapters for rack-mounting ..... BN 86302.101