LapNMR

Transmitter

• Frequency range of 40 kHz to 120 MHz; optional 2 kHz to 125 MHz
• 0.1 Hz frequency resolution
• 90° phase shifting ≤ 100 ns
• Absolute phase reset
• 1-bit programmable attenuation (0 to 60 dB in 0.1 dB steps)
• Pulse rise time ≤ 30 ns (10 to 90%)
• Nominal 1 Vpp output
• Optional class AB linear RF power amplifier (20W to 2kW)

Digital Receiver

• 14-bit 50 MHz ADC with oversampling providing an effective dynamic range of up to 16-bits
• Direct digitization at the intermediate frequency (12.5 MHz) with digital quadrature detection
• 3.3 MHz receiver bandwidth using the RF receiver section over a frequency range of 0.1 to 125 MHz
• Digital filtering with bandwidth from 48 Hz to 12.5 MHz
• Fast <1 µs receiver recovery time
• 66-dB of variable gain with > 80-dB of total gain (without preamplifier)
• Burst Mode: up to 4096 complex points can be acquired at 80 ns per complex point
  (12.5 MHz spectral width)
• Normal Mode: up to 16382 points are acquired at up to 1 µs per complex point (1 MHz)
• Direct Digital Detection available over a frequency range of DC to 120 MHz with a 12.5 MHz
  bandwidth (80 ns per complex point; bypasses the RF receiver section; user-supplied anti-alias filter
  required)
• Optional low noise figure, fast recovery preamplifiers

Signal Averager

• Uses host CPU memory
• Ultra-fast real-time display for adjusting instrument control settings and experiment monitoring
• High-speed (480 Mbits/s) USB 2.0 interface for uploading of data

Pulse Programmer

• Pulse widths from 160ns to 85s
• 20 ns timing resolution
• 1024 sequence events
• Hardware and software looping; unlimited number of loop counters
• No hidden delays
• WYSIWYG graphical pulse sequence creation and editing
• Fast minimum acquisition recycle delay of 10 ms
• External trigger
• Eight extra user-assignable control lines
• High-speed (480 Mbits/s) USB 2.0 interface for loading the pulse programmer

LapNMR

Single-Axis Gradient Control Option
• 3072 point waveform memory
• Opto-coupled 20-bit high-speed DAC
• Digital pre-emphasis calculated on-the-fly
• 5 sets of pre-emphasis values (time constant, amplitude and offset)
• Optional linear or switched gradient amplifiers

Laptop Computer Option
• Dell Latitude D630, 1.3" x 13.3" x 9.4" ((33 mm x 338 mm x 239 mm), weight 4.4 lbs. (2.0 kg)
• Core 2 Duo processor T7300 (2.00GHz/800MHz FSB)
• 2 Gbyte of RAM, DDR2 SDRAM 2 Dimms
• 14.1-inch wide TFT WXGA active-matrix display with up to 1280 x 800 resolution
• 128MB NVIDIA® Quadro NVS 135M
• 120 Gbyte hard disk 7200 RPM
• 8X DVD+/-RW drive
• Integrated 10/100 network card (RJ-45 port) and modem
• Dell 1390 internal wireless (802.11 b/g, 54Mbps)
• 9-cell Lithium Ion battery (85 WHr); Approximate operating time: 9.4 hours per battery
• Windows XP Professional SP2
• Dell Nylon carrying case
• Dell USB mouse with scroll
• Fast FFT, 1k x 1k in < 1s; 256 x 256 x 8 in < 0.5s

   The Laptop is sold separately and can be purchased from Tecmag or other vendors.

NTNMR Software Site License
• NTNMR software for instrument control and processing of spectroscopy data
• Graphical sequence editing and creation
• Graphical window-based data processing and analysis tools
• NMRscripts for automating any task. Includes a suite of NMRscripts
• NMRwizard automation software
• Pulse sequence library of spectroscopy sequences including 1pulse, spin-echo, quad-echo, T1, T1rho,
  T2 CPMG, COSY and NOESY

Environmental
• Single board, OEM configuration power requirements:
       +5 V @ 1.5 A
      +15 V @ 1.0 A
       -5 V @ 0.2 A
• Portable configuration with battery and AC power adapter, power requirements for charger:
      AC line voltage - 115/230 VAC, ±10%, single phase, 47-63 Hz

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Tecmag, Inc.   Ph: 713-667-8747   info@tecmag.com
10161 Harwin Dr., Suite 150 Fx: 713-667-3180   www.tecmag.com
Houston, TX 77036 USA