

SCOUT

Transmitter

- One or two transmitters
- Frequency range of DC to 300 MHz
- Phase shifting ≤ 10 ns with 8-bit (1.41°) phase resolution
- Phase continuous frequency switching ≤ 20 ns over 300 MHz
- Absolute phase reset
- Pulse rise time ≤ 20 ns (10 to 90%)
- Amplitude switching ≤ 20 ns
- Amplitude control over a 40-dB range with 8-bit (0.4%) amplitude resolution
- 64 million point waveform memory (amplitude & phase)
- Waveform sample interval of 10 ns to 43 s
- Simultaneous amplitude, phase and frequency shape any RF pulse
- Frequency resolution of 0.19 Hz
- 5×10^{-10} /day frequency stability
- Nominal 1 V (+4dBm) output
- Optional class AB linear RF power amplifier (5W to 4kW)

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 300 MHz
- Digital filtering with bandwidth from 1600 Hz to 12.5 MHz
- Fast <1 μ s 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 4 million points are acquired at up to 1 μ s 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

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Pulse Programmer

- Minimum pulse width of 100 ns with 10 ns resolution
- 3071 sequence events
- 64 million point waveform memory for each RF (amplitude & phase) or gradient channel
- No hidden delays
- WYSIWYG graphical pulse sequence creation and editing
- Fast minimum acquisition recycle delay of 10 ms
- Four user-assignable control lines
- High-speed (480 Mbits/s) USB 2.0 interface for loading the pulse programmer
- Optional external trigger dongle

Gradient Control System Options

- Single or triple axis version
- 64 million point waveform memory for each axis
- Opto-coupled 20-bit high-speed DACs
- Digital pre-emphasis calculated on-the-fly
- 5 sets of pre-emphasis values (time constant, amplitude and offset) for each gradient
- Gradient rotation for oblique imaging with up to 80 angles
- Auto-shim Z, X & Y through the gradient coils
- Optional digital B₀ compensation
- Optional linear or switched gradient amplifiers with 25 to 700 A

Laptop Computer Option

- Dell Latitude E6400, 1.2" x 13.1" x 9.4" ((31 mm x 335 mm x 238 mm), weight 4.3 lbs. (1.95 kg)
- Core 2 Duo processor P8800 (2.53GHz/1066MHz FSB)
- 4 Gbyte of RAM, DDR2 SDRAM 2 Dimms
- 14.1-inch wide TFT WXGA active-matrix display with up to 1280 x 800 resolution
- 256MB NVIDIA® Quadro NVS 160M
- 250 Gbyte hard disk 7200 RPM
- 8X DVD+/-RW drive
- Integrated 10/100 network card (RJ-45 port) and modem
- Dell 1397 internal wireless (802.11 b/g, 54Mbps)
- 9-cell Lithium Ion battery (85 WHr); Approximate operating time: 9.4 hours per battery
- Windows 7 Professional 64-bit
- 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.

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TNMR Software Site License

- TNMR software for instrument control and processing of spectroscopy data on Windows 7 64-bit computers
- 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 and imaging sequences

Environmental

- Single master cluster, 6.5" x 7" x 10" (165 mm x 178 mm x 254 mm) with external power supply, 6" x 3" x 10" (152 mm x 76 mm x 254 mm). The power supply supports two clusters.
- Optional slave cluster, 6.5" x 7" x 10" (165 mm x 178 mm x 254 mm) for gradient control or second transmitter
- Cooling - Internal forced air
- Operating temperature - +15°C to 30°C with a humidity range of 20% to 80%
- AC line voltage - 100 - 240 VAC, single phase, 47-63 Hz, 0.15 KVA

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