



Minstruments

for Digital Audio Signals

Digilyzer

Digirator



DR2 DIGIRATOR

Digital Audio Signal Generator



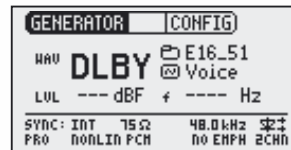
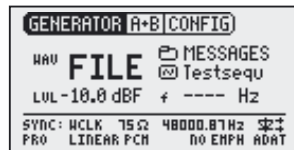
- Up to 192 kHz / 24 Bit
- AES3, S/PDIF, TOSLINK & ADAT
- Sync Input (AES3, Word Clock, Video)
- Supports Dolby Digital, E, PL II, DTS
- Channel Transparency Check
- Channel Delay Measurement



The Digirator DR2 is a reference grade digital audio signal generator with transformer balanced AES3, S/PDIF and ADAT outputs. Beside a comprehensive set of audio test signals, the DR2 also supports surround sound test sequences for verification and adjustment of professional Dolby Digital, Dolby E and DTS installations. The internal low jitter clock generator can be synchronized to AES3, DARS, Word Clock and Video signals. Measurement of channel transparency, channel propagation delay and sample frequency is supported.

Sine Wave, Noise, Polarity

A full range of digital audio test signals for maintenance, repair and calibration of professional audio equipment is generated. User test signals may be stored as uncompressed WAV-files in the DR2 memory.

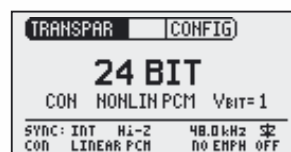


Dolby Digital, Dolby E and DTS

The DR2 wave file player can play back multi channel bit stream files. A set of 5.1 test sequences for the verification and optimization of surround sound equipment and installations is stored on the unit's flash disc.

Multi Format SYNC Input

The DR2 accepts AES3, DARS, Word Clock and Video Black Burst (PAL and NTSC) synchronization signals. The input impedance of the sync input may be switched between 75 Ohm, 110 Ohm and High Z.

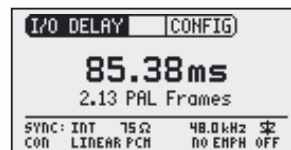


Channel Transparency Check

The DR2 tests whether a transmission channel is transparent for non linear PCM signals and indicates if Dolby E, Dolby Digital and/or DTS bit streams can pass. This test is also suitable for any digital audio recording device.

Channel Status Monitoring

Channel status information can be generated in professional and consumer format and the most important parameters may be manipulated manually. Display of incoming channel status data is also supported.



Channel Delay Measurement

The propagation delay between any DR2 digital audio output and the XLR sync input (which accepts AES3 signals) may be measured and displayed in seconds or video frames.

Technical Data DR2

Frame	Consumer/Professional, up to 24 bit audio	
Output Sampling Frequency	XLR, RCA:	32, 44.1, 48, 88.2, 96, 176.4, 192 kHz
	Optical:	up to 96 kHz
	ADAT:	up to 48 kHz
Outputs	<ul style="list-style-type: none"> • AES3 (110 Ohm) XLR • S/PDIF (75 Ohm) RCA • TOSLINK: Stereo and ADAT • AES3id (75 Ohm) using optional adapter 	
Inputs	XLR Sync input for: <ul style="list-style-type: none"> • AES3, DARS • Video (NTSC, PAL) • Word Clock using BNC to XLR adapter (included) 	
Linear PCM Wave Forms	Sine, Polarity Test Signal, Delay Test Signal, Pink Noise (crest factor = 4.42), White Noise (crest factor = 3.47), Playback of Wave Files	
Multi Channel	A comprehensive library of multi channel data streams is supplied in the following formats: <ul style="list-style-type: none"> • Dolby Digital • Dolby E • Dolby ProLogic II • DTS 	
Wave File Format	Sampling freq.:	48 kHz
	Resolution:	16, 20, 24 Bit, Mono + Stereo
Frequency Setting	Range:	10 Hz - 20 kHz
	Increment:	in 1 digit steps
	Accuracy:	0.001%
Stepped Sweep Function	Freq. range:	freely selectable, 10 Hz - 20 kHz
	Increment:	1/1, 1/3, 1/6, 1/12 octave
	Sweep speed:	selectable, 0.5 - 5 seconds per step
Continuous Sweep (Chirp) Function	Freq. range:	freely selectable, 20 Hz - 20 kHz
	Increment:	Linear / Logarithmic
	Chirp speed:	1.0 - 99 seconds per cycle
Level Units	dBFs, %	
Output Level Range	-100 to 0.00 dBFs	
THD+N	of generated sine wave: -138 dB (22 Hz - 22 kHz, average, @ 1 kHz, typical)	
USB Functionality	<ul style="list-style-type: none"> • Firmware update • Mass Storage Device 	
Flash Memory	512 MByte for storing wave files and configurations	
Display	Graphical, with back light	
Auto-Power-Off	10, 30, 60 minutes or OFF	
Batteries	3 x AA Alkaline dry cells or rechargeable equivalents Battery Life: 10 hours	
Temperature Range	0° to 45° C (32° to 113° F)	
Humidity	< 90% rel. humidity, non-condensing	
Dimensions (LxWxH)	152 x 81 x 43 mm (incl. protective shock jacket)	
Weight	310 g (11 oz.) incl. batteries	

Digirator DR2 Connectors & Formats



NTI article codes

Digirator DR2

600 000 320

Includes protective shock jacket, test signal backup DVD, BNC-XLR adapter for word clock input, RCA-BNC adapter for AES3id, hand strap, USB cable, operating manual.

DL1 DIGILYZER

Digital Audio Analyzer



Digital Audio Monitoring

Channel Status Analysis

Interface Carrier Measurements

Dual Domain Functions

Up to 96 kHz, 24 Bit

AES3, S/PDIF, TOSLINK & ADAT



The Digilyzer DL1 is a powerful but easy to use digital audio analyzer. Testing, monitoring and troubleshooting digital audio interfaces is fast and straight forward using this compact tool. Virtually all digital audio formats including ADAT and sampling frequencies up to 96 kHz are supported. With features like the DL1 unique integrity check, the integrated speaker, event & data logging, audio lens and many more digital audio becomes transparent and easy to debug.

Simple selection of functions, input format and input channel using pull down menus.

LEVEL	S/PDIF A+B	SET MEN
44100.23 Hz		PRE-EMPH
3.9 Upp		
-10.9 dBFA		
-10.9 dBFB		
PRO	44.1kHz	2-CHN 24BIT

Interface Carrier Measurements:
Uncovers inaccurate sample rates, bad carrier levels and faulty data promptly!

The PPM gives an indication of what's coming in

Measurement - in this example the peak level of channel A and B.

The "Quick Status" shows you the most important values of the received channel status information.

CH. STAT.	AES3	CH A	SET MEN
44100.17 Hz			
3.5 Upp			
PROFESSIONAL		NO EMPHAS.	
LINEAR PCH		2-CHANNEL	
LOCK NO ID		UDAT NO ID	
FS=44.1kHz		AUX 24BIT	
FS x 1.000		WLEN 24BIT	

Channel Status

The complete channel status information is displayed in an easy-to-understand plain text format - according to the latest standards. Interface-carrier frequency and level is available on nearly every screen.

BIT STAT.	AES3	A+B	SET MEN
AUDIO	U	U	C
20BIT	0	0	0
20BIT	0	0	0
AUX LSB			
AUDIO DATA			
0000	#####	#####	#####
PRO	44.1kHz	STEREO	20BIT

Bit Statistics

Measuring the audio resolution, finding stuck-bit failures and monitoring the activity of the user data bit are some important applications of the bit statistics function. Basic channel status information is visible on the bottom line.

Analyzing & debugging digital audio interfaces and signals requires looking at completely different parameters at the same time:

- Interface carrier related parameters like level & sample frequency
- Channel Status - related parameters like professional/consumer mode
- Audio related parameters like audible content and level

The Digilyzer shows all these important parameter at one glance. Additionally, the built in integrity check even alerts if protocol inconsistencies, which could cause serious troubles, are detected.

LOGGER	AES3	A+B	SET MEN
MASK	3412	Σ	Δt:01m REC
0:00:00			LOG START
			CR NO LOCK
0:35:56			CR LOCKED
1:04:57			FR PARITY
1:56:22			194 AU OVERLOAD
CARRIER			

Event Logger

Intermittent faults are usually hard to find. The event logger tracks every change of the input signal (carrier, channel status or audio related) and allows long term checking and highlighting of possible problems.

Integrity Check

When receiving incorrect Channel Status information the behavior of a device could be unpredictable. The Integrity Check compares measured parameters with the indicated status and warns if any discrepancies are found.

Audio Monitoring

Beyond all the measurement power, the built in converter & speaker is one of the most important tool of the DL1. Featuring high quality headphone output, automatic gain control and monitoring of analog input signals.

Scope

The auto trigger and auto ranging scope gives a detailed view of the input audio signal in the time domain. DC offset problems and polarity issues are visible. Also ideal for understanding sampling peculiarities.

THD+N, Level, Frequency

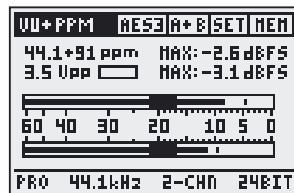
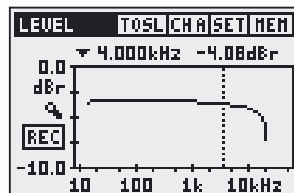
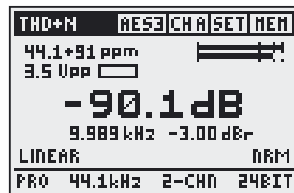
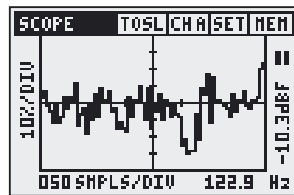
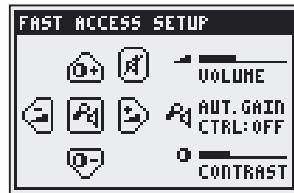
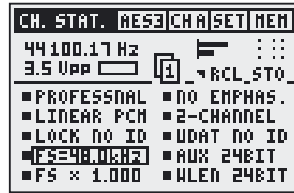
Beside Level Peak measurements, the DL1 is equipped with RMS measurement techniques including THD+N and high pass filters, allowing easy verification and debugging of dual domain devices like AD converters.

Frequency Sweep

The DL1 automatically triggers to a sweep sequence with any step width and records the frequency response. Any stepped sweep may be used as signal source. After capture all sweep data is available.

VU + PPM

The combined vu + PPM meter (vu = volume unit) with numerical maximum hold and over indicators helps identifying leveling problems and clipping. Reference grade performance with up to 40 screen updates per second.



Technical Data Digilyzer DL1

Frame	Consumer/Professional, up to 24 bit, Sampling Frequency $f_s = 32-96$ kHz Also supports: Interleaved 96 kHz mode on all inputs (single channel double sampling frequency modes)
Measurements	Signal Level-FS, Level-RMS, Overload Detection, Scope, Signal Frequency, Frequency Sweep, vu+PPM, THD+N
Interface	Carrier Sampling Frequency (acc. ± 2.5 ppm), Level Frame Channel Status acc. to AES3 (ed. 2003) and IEC 60958-3, Bit Statistics, Consistency Check
Event Logger	Records Signal-, Carrier- and Frame Events
Input Connectors	AES3 (110 Ohm) XLR, S/PDIF (RCA), TOSLINK, ADAT, AES3id (75 Ohm) BNC using optional adapter, phantom power resistant
Monitor	Built-in speaker, headphone connector
Display	Backlit graphic LCD
Power Supply	3x AA size dry batteries (alkaline), typically 8 hours External DC power 7.5 VDC
Dimensions (LxWxH)	163 x 86 x 42 mm (6.4 x 3.38 x 1.63")
Weight	300 g (10.5 oz) incl. batteries
Temperature	0° to +45° C (32° to 113° F)

MiniLINK

DL1/ML1 USB Interface

The MiniLINK USB interface transforms the Minstruments into a new set of affordable and connected measurement tools. MiniLINK is a standard feature of the Acoustilyzer and is available as upgrade kit for all existing Minilyzers and Digilyzers.

MiniLINK supports documentation and data acquisition of the entire analyzer functionality in conjunction with the MiniLINK PC software. Communication and power supply is enabled as soon as the supplied Mini USB cable is connected to the PC. Alternatively to store data and bitmaps into the analyzers memory, MiniLINK supports online data logging for most measurement functions. MAC compatibility cannot be guaranteed.

NTI article codes:

Digilyzer DL1	600 000 200
Digilyzer DL1 incl. MiniLINK USB PC Interface	600 000 230

Accessories for Digirator DR2



Mains Power Adaptor
for MR2/DR2 (EURO Type)
NTI Art.No 600 000 301



Pouch MR2/DR2
Soft pouch with belt-loop
NTI Art.No 600 000 302



System Case for
Minstruments + Access.
NTI Art.No 600 000 020



Calibration Certificate
for Digirator DR2
NTI Art.No 600 000 323

Accessories for Digilyzer DL1



MiniLINK USB PC Interface for DL1, Software
NTI Art.No 600 000 033



Mains Power Adaptor
for DL1 (EURO Type)
NTI Art.No 600 000 210



Pouch for DL1
Soft pouch with belt-loop
NTI Art.No 600 000 012



System Case for
Minstruments + Access.
NTI Art.No 600 000 020



Calibration Certificate
for Digilyzer DL1
NTI Art.No 600 000 016



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