CLIO 10

Presenting the CLIO 10 measurement system

Audiomatica
100% warranty from Audiomatica

CLIO10 is a complete hardware and software solution

Presenting the CLIO 10 measurement system - Audiomatica
The heart of the CLIO 10 system

FW-01 Audio Interface:
- IEEE-1394 Firewire interface
- 24-bit up to 192kHz sampling
- Ultra-stable ASIO operation
Maximum portability for On-Field Tests
CLIO10 is 100% Windows XP, Vista and 7 compliant
CLIO 10 is capable of an astounding number of measurements:

- MLS & LogChirp analysis
CLIO 10 is capable of an astounding number of measurements:

- Sinusoidal stereo sweep response
CLIO 10 is capable of an astounding number of measurements:

- FFT, RTA and ‘Live’ Transfer Function
CLIO 10 is capable of an astounding number of measurements:

- Multi-meter & programmable signal generator

![CLIO 10 measurement system](image)
CLIO 10 is capable of an astounding number of measurements:

- **Multi-meter & programmable signal generator**
  - Voltage (mV, V, dBV, dBu, dB, dBm)
  - Power (mW, W)
  - Pressure (dBSPL, dBPa, dBA, dBC)
  - Inductance (H)
  - Capacitance (F)
  - Resistance (Ohm @1kHz)
  - Frequency (Hz)
  - THD (% dB)
  - THD+N (% dB)
  - IMD (% dB)
  - SNR (dB)
  - Displacement (m, dBmeter)
  - Velocity (m/s, dBm/s)
  - Acceleration (m/s², dBm/s²)
  - Crest Factor (dB)
CLIO 10 is capable of an astounding number of measurements:

- Multi-meter & programmable signal generator
  - Sinusoid (also bursted)
  - Two Sinusoids
  - Programmable Multitones
  - All tones (256 to 256k)
  - Pink noise (256 to 256k)
  - MLS (256 to 512k)
  - Log Chirp (256 to 512k)
  - Programmable Chirp (log, lin)
  - White noise
  - Generic Wav file
CLIO 10 is capable of an astounding number of measurements:

- Waterfall plots
CLIO 10 is capable of an astounding number of measurements:

- Directivity analysis
CLIO 10 is capable of an astounding number of measurements:

- 3D data collection & balloon analysis
CLIO 10 is capable of an astounding number of measurements:

- Wavelet analysis
CLIO 10 is capable of an astounding number of measurements:

- Impedance and Thiele/Small Parameters
CLIO 10 is capable of an astounding number of measurements:

- **Acoustical Parameters & STI**

<table>
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<td>f5=12.50</td>
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STI = 0.512 ALcons = 10.6% rated Fair

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CLIO 10 is capable of an astounding number of measurements:

- Linearity and Distortion analysis
CLIO 10 is capable of an astounding number of measurements:

- Leq analysis
CLIO 10 is capable of an astounding number of measurements:

- Wow & Flutter analysis
CLIO 10
Quality Control at its best:
CLIO 10
NEW FEATURES

Standard and QC versions:
- New graphical user interface
- Displacement, velocity and acceleration tests
- Simultaneous stereo measurements
- Enhanced Sinusoidal menu
- Full exploit of QCBox Model 5 features
- Displacement laser measurements
- Non-invasive, contactless T&S parameters

QC version:
- 3-D “balloons” analysis & complete data export
- Ultra-fast single-test loudspeakers QC
- Loudspeakers QC with Fast-Track™ Rub&Buzz
- Loudness rating calculator with QC integration
- QC testing of USB audio devices
CLIO 10

New graphical user interface

Markers readings (A=Curve A, B=Overlay 3)

Ax: 245.6195 Hz  Ay: 92.7395 dB SPL
Bx: 1629.2350 Hz  By: 96.0962 dB SPL
Dx: 1333.6150 Hz  Dy: 2.6423 dB SPL
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Full exploit of QCBox Model 5 features

| Input: | Four line/microphone inputs with selectable phantom power supply (0÷24V software controlled) |
|        | TTL pedal input (RCA connector) |
|        | 5 digital inputs (DB25 connector) |

| Output: | 50W (8Ohm) power amplifier (26dB gain) with current sensing and software controlled current limiter |
|         | 6 digital outputs (DB25 connector) |

| THD (@1 kHz): | 0.004 % |

| Functions: | USB controlled internal switches for impedance measurements |
|            | Isense DC current measurement ±2.25A |
|            | DC IN measurement (IN 3 range ±2.5V, IN 4 range ±5V) |
CLIO 10

Full exploit of QCBox Model 5 features

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CLIO 10
Enhanced Sinusoidal menu

Standard and QC versions:
- Simultaneous A & B input measurements
- Displacement, velocity and acceleration units
- Ch A response & ChB impedance
- THD + 2\textsuperscript{nd}-10\textsuperscript{th} harmonic
- Difference response A/B
- Sweep Speed (Normal, Fast, Slow)

QC version:
- Fast-Track\textsuperscript{TM} Rub&Buzz detection
- TTL pulse synced with sweep
CLIO 10
Enhanced Sinusoidal menu

QC version:
- Fast-Track™ Rub&Buzz
  - Removes low order ‘good’ distortion
  - Removes unwanted noise
  - Tracks high harmonics
  - Detects click and pops
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Displacement Laser measurements

- Direct measurement of displacement
- Direct measurement of velocity
- Single-pass non-invasive T&S parameters evaluation
- Dynamic large signal T&S parameters evaluation
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Non-invasive, contactless T&S parameters
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Ready for large signal T&S parameters

Draft IEC 62458 Ed.1
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3-D “balloons” analysis & complete data export

Automated Loudspeaker Balloon Measurement
M. Bigi, M. Jacchia, D. Pontoggia – Audiomatica

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Ultra-fast single-test loudspeakers QC

Parameters measured in a single sinusoidal QC test:
- Frequency response
- Impedance response
- Average (or single frequency) level
- Polarity
- Total harmonic distortion response
- Single harmonic response (from 2nd to 10th)
- Fast-Track™ Rub&Buzz response
- T&S parameters
  (Fs, Qt, Qe, Qm, Cms, Mms, Mmd, Vas, Bl, dB SPL, ZMin)
- Loudness Rating (RLR, SLR, STMR)
- Sensitivity (average or up to eight frequencies)

Sweep time control is achieved by:
- Frequency resolution
- Frequency start and stop
- Sweep speed (Normal, Fast, Slow)
- Sweep Sync TTL Output Signal
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Loudspeakers QC with Fast-Track™ Rub&Buzz
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Telephone testing with LR

- Equalized output signal generation for mouth compensation
- Interactive loudness rating calculator
- Integration under QC scripts
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QC testing of USB audio devices

- Possibility of controlling input or output wave devices
- On-the-fly integration under QC scripts permits single-test of duplex devices
Quality Control TCP/IP Server

- The choice of TCP/IP approach presents several advantages:
  1) No additional learning curve as same CLIO QC script commands are used
  2) Prevents the engineer to deal with complex API programming
  3) It is independent from the Operating System, Programming Language and kind of PC.
  4) It can be run locally or from another network connected PC
  5) It is possible to write applications that control more than one QC test workstation
Quality Control TCP/IP Server

- Execute measurements with any standard telnet application
Quality Control TCP/IP Server

- Example

1 - Connection to the server
Quality Control TCP/IP Server

- 3 - Execute MLS test and receive result
Quality Control TCP/IP Server

- 4 - Sample C++ application code

```c
/* clio client c - code for example client program that uses TCP */
#include <windows.h>
#include <winsock.h>
#include <stdio.h>
#include <string.h>
define PROTOPORT       1234            /* default protocol port number */
extern int errno;
char localhost[] =   "localhost";    /* default host name */
#define string_length(char str[]) int string_length(char str[]);
main(argc, argv) int     argc;char    *argv[ ]; {        struct  hostent  *ptrh;  /* pointer to a host table entry */
struct  protoent *ptrp;  /* pointer to a protocol table entry */
struct  sockaddr_in sad; /* structure to hold an IP address */
int     sd;              /* socket descriptor */
int     port;            /* protocol port number */
char    *host;           /* pointer to host name */
int     n;               /* number of characters read */
char    ibuf[100];       /* buffer for data from the server */
char    obuf[100];       /* buffer for data to the server */
char    *argv[ ];

void(*client_type)(int argc, char *argv[ ]);}

int string_length(char str[]) {        int n;        n = strlen(str);        return n;}

int socket(int domain, int type, int protocol) {        return sd;}

int connect(int sockfd, const struct sockaddr *address, socklen_t addrlen) {        return sd;}

int send(int sockfd, const void *buffer, size_t count, int flags) {        return n;}

int recv(int sockfd, void *buffer, size_t count, int flags) {        return n;}

/* Check command-line argument for protocol port and extract */
/* port number if one is specified. Otherwise, use the default */
/* port value given by constant PROTOPORT */
if (argc > 2) {                 port = atoi(argv[2]);   /* convert to binary */
} else {                 port = PROTOPORT;       /* use default port number */
}

if (port <= 0) {                 fprintf(stderr,"bad port number %s\n",argv[2]);
exit(1);         }

/* Check host argument and assign host name. */
if (argc > 1) {                 host = argv[1];         } else {                 host = localhost;        }

/* Convert host name to equivalent IP address and copy to sad. */
ptrh = gethostbyname(host);        if (((char *)ptrh) == NULL) {                 fprintf(stderr,"invalid host: %s",host);
exit(1);         }

memcpy(&sad.sin_addr, ptrh->h_addr, ptrh->h_length);
```
1984 - 2009
since its birthday
AUDIOMATICA celebrates
25 Years of Excellence!
1991 - 2009

since CLIO’s birthday

AUDIOMATICA celebrates

10000 CLIO systems sold!
Thank you!

For more info:
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