

CMN-LA

Loudness Analyzer



Part of the Videotek® Compact Monitor Series, the CMN-LA loudness analyzer is a comprehensive audio monitoring tool that makes it easy to confirm compliance with the latest loudness requirements. Loudness and true peak measurements are made to the ITU-R BS.1770 standard with five times oversampling. Built-in modes offer quick setup to ATSC A/85 or EBU R 128 recommendations. Up to five days of loudness data are stored internally and easily retrieved through the USB port or internal web server. Metering of up to 16 channels simultaneously makes for rapid alignment checks.

Integrated into the CMN-LA is the TC Electronic® loudness radar meter, which shows loudness on short-term meters, graphs covering periods from one minute to 24 hours, and numeric display of the long-term center of gravity (average loudness) and consistency (loudness range). The flexible display of the CMN-LA presents data in a format most useful for the job at hand. Use the integrated TC Electronic loudness radar meter during production, the audio status display during program ingest, and the combination of loudness and true peak meters, numeric display and trend chart for master control monitoring. The chart data can be exported for compliance reporting. Adjustable audio output delay compensates for video monitor processing in critical evaluation suites.

Short mounting depth makes the CMN-LA loudness analyzer ideal in a QC monitoring rack or on the meter bridge of an audio console.

SPECIFICATIONS

Specifications are subject to change without notice.

Digital Audio Input

Audio Formats AES/EBU (optional), embedded audio
 AES Input Connector Type 8 BNC, female
 AES Input Impedance 75 ohms nominal
 AES Input Return Loss ≥25 dB, 0.1 to 6 MHz (unbalanced)
 AES Input Level 0.2 to 2 V
 AES Input Sample Rate 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
 (audio inputs are sample rate converted to 48 kHz)
 Meter Accuracy Over Frequency . . ±0.1 dB from 20 Hz to 19 kHz with 0 to -40 dBFS
 sine wave input, except for within 7 Hz of some
 submultiples of the 240 kHz oversampling frequency

FEATURES

- Loudness measurement to ITU-R BS.1770
- True peak measurement to ITU-R BS.1770 with five times oversampling
- Integrated TC Electronic® loudness radar display
- Trend chart of levels (15 seconds to 24 hours)
- Export values to a PC
- Audio status display of clips, mutes, average, high and low levels
- Meter up to 16 channels
- Alarms for levels, status and Dolby® metadata
- Two triple rate SDI inputs
- Optional eight AES inputs
- Optional Four AES and eight analog outputs
- Adjustable output delay
- Optional Dolby® AC3 and E decoding (requires AES I/O option)

PRODUCT DETAILS

The basic CMN-LA unit operates with 3G/HD/SD-SDI embedded audio sources, with a hardware option for eight AES inputs, four AES outputs and eight analog outputs. The analog outputs are meant to drive high impedance loads.

Dolby® decoding is a hardware option available at the time of order, or for field installation. The Dolby® decoder requires the AES I/O option. The AES option also includes an LTC input for time stamping of log entries.

The CMN-LA also includes internal speakers and a front-panel headphone jack for source confirmation. A mixdown mode can be applied to the headphone output when using discreet sources. The mixdown parameters are taken from VANC metadata if present, otherwise internal menu settings are used.

Digital Audio Output

AES Outputs (optional) AES outputs are derived from embedded, AES or
 Dolby® audio inputs
 AES Output Connector Type 4 BNC, female
 AES Output Impedance 75 ohms nominal
 AES Output Return Loss ≥25 dB, 0.1 to 6 MHz (unbalanced)

Analog Audio

Analog Output Frequency Response with Digital Inputs ±0.1 dB
 Analog Output SNR with Digital Inputs ≥100 dB
 Analog Output THD and Noise with Digital Inputs02%
 Crosstalk ≤-80 dB

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3G-SDI Input

| | |
|-------------------------|-----------------------------|
| Input Type | 2 active looping inputs |
| Input Connector Type | BNC, female |
| Input Impedance | 75 ohms nominal |
| Signal Source Amplitude | 800 mV nominal |
| Signal Source DC Offset | ±0.5 V |
| Input Return Loss | ≤-10 dB, 1.485 to 2.97 GHz |
| Cable EQ | ≥262 ft (80 m) Belden 1694A |

HD-SDI Input

| | |
|-------------------------|-------------------------------|
| Input Type | 2 active looping inputs |
| Input Connector Type | BNC, female |
| Input Impedance | 75 ohms nominal |
| Signal Source Amplitude | 800 mV nominal |
| Signal Source DC Offset | ±0.5 V |
| Input Return Loss | ≤-15 dB, 270 MHz to 1.485 GHz |
| Cable EQ | ≥100 m, Belden 8281 |

SD-SDI Input

| | |
|-------------------------|-------------------------|
| Input Type | 2 active looping inputs |
| Input Connector Type | BNC, female |
| Input Impedance | 75 ohms nominal |
| Signal Source Amplitude | 800 mV nominal |
| Signal Source DC Offset | ±0.5 V |
| Input Return Loss | ≤-25 dB, 5 to 270 MHz |
| Cable EQ | ≥300 m, Belden 8281 |

3G/HD/SD-SDI Output

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|---------------------|-----------------------------|
| Output Impedance | 75 ohms |
| Output Return Loss | ≤-15 dB, 5 MHz to 1.485 GHz |
| Output Return Loss | ≤-10 dB, 1.485 to 3 GHz |
| Output Signal Level | 800 mV ±10% |
| Output DC Offset | 0 V ±0.5 V |

DVI Output

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|-------------------|----------------------------------|
| Output Connector | DVI-I connector supporting DVI-D |
| Output Resolution | 1024×768 (XGA) |
| Digital Levels | Per DDWG DVI rev 1 |
| Pixel Rate | 65 Mp/s |

Analog Monitoring Output (Headphone)

| | |
|---------------------------------------------|-------------------------------------------------|
| Number/Connector | 1 stereo output, 1/8-in. (3.5mm) headphone jack |
| Load Impedance | 16 ohms nominal |
| Maximum Output Level | 44 mW RMS |
| Total Harmonic Distortion and Noise (THD+N) | ≤-65 dB |

Control (optional)

| | |
|-----------------------|----------------------------------------------------------------------------------------------------|
| GPI | 4 total with 2 input and 2 preset recall selections or individually user configured as alarm input |
| GPO | 1 alarm, user-configured |
| Connector | 15-pin HD (high-density) D-sub, female |
| Input Impedance | 10 k ohms returned to +3.3 VDC |
| Alarm Output | Relay closure |
| Maximum Relay Current | 100 mA @ 50 VDC |
| Peripheral Interface | USB 2.0 supporting storage devices |
| Connector | USB 2.0, type A, female |

Timecode

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|-------|-----------------------------------------------------------------------------------------------------------|
| Input | (Optional) LTC via back-panel connector Ancillary timecode (HD only) DVITC extracted from SD inputs |
|-------|-----------------------------------------------------------------------------------------------------------|

Communication Interfaces

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|----------|-----------------------------------------------------|
| Ethernet | 1 Ethernet port, RJ-45 connector, 10/100Base-T |
| USB | 1 USB 2.0 host port |
| LTC/GPIO | 1 LTC/GPIO connector 15-pin female D-sub (optional) |

Ethernet

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|--------------------|------------------------------------------------------------|
| Standard | 10/100Base-T conforms to IEEE802.3 |
| Connector | RJ-45 |
| Performance Metric | Transfer a captured frame to a PC in 30 sec, dedicated LAN |

Power Requirements

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|-------------------------|--------------------------------------------------|
| Power Connector | 15 VDC nominal 11 VDC minimum, 17 VDC maximum |
| Power Consumption | 25 W nominal |
| Over-Voltage Protection | ±50 VDC nominal |

Mechanical

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|------------------------|--------------------------------------------------|
| Dimensions (H x W x D) | 5.22 x 8.46 x 5.8 in. (13.26 x 21.49 x 14.73 cm) |
| Weight | 5 lbs (2.27 kg) |

Environmental

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|---------------------------|----------------------------------------------------------------------|
| Operating Temperature | 32° to 122° F (0° to 50° C) |
| Storage Temperature | -22° to 149° F (-30° to 65° C) |
| Humidity (non-condensing) | Operating: 20% to 80% Non-operating: 5% to 90% |
| Transportation | 24 in. (9.5 cm) impact-drop survivable in original factory packaging |
| Altitude | 6562 ft (2000 m) |
| Pollution Degree | 2 |

Standard Accessories

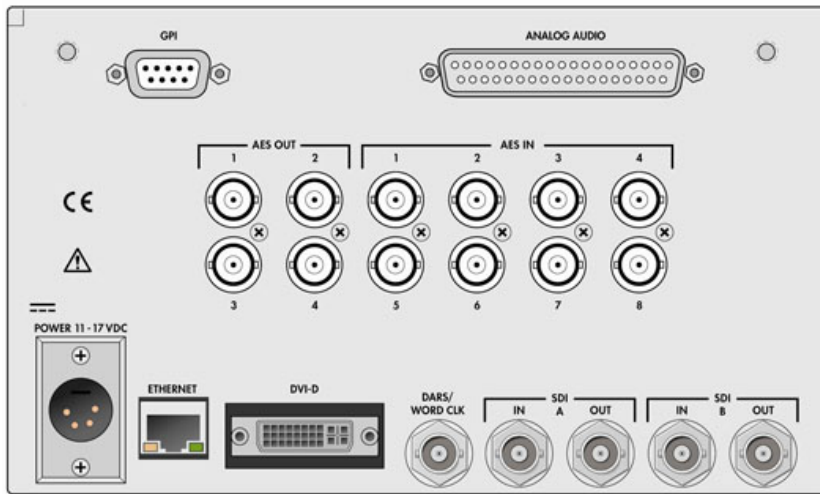
| |
|-------------------------------------------|
| Installation and operation handbook on CD |
| Breakout connector for LTC/GPI |
| 1 power cord |
| 1 power supply assembly |

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TEST AND MEASUREMENT // AUDIO LOUDNESS AND MONITORING

IMAGES/DIAGRAMS



ORDERING INFORMATION

- CMN-LA Compact Monitor Series loudness analyzer with 2 SD/HD/3G SDI inputs; metering of up to 16 channels of embedded audio, BS.1770 loudness measurement, TC Electronic radar display, trending chart and logging
- CMN-LA-OPT-AES AES I/O option for the CMN-LA; adds 8 AES inputs and 4 AES/8 analog outputs along with LTC input and GPIO to the CMN-LA
- CMN-LA-OPT-AES-F AES I/O option for the CMN-LA; adds 8 AES inputs and 4 AES/8 analog outputs along with LTC input and GPIO to the CMN-LA, field install
- CMN-LA-OPT-DLB Dolby® decode option for the CMN-LA; adds decoding and metadata readout of Dolby® Digital (AC3) and Dolby® E streams; requires CMN-LA-OPT-AES option
- CMN-LA-OPT-DLB-F Dolby® decode option for the CMN-LA; adds decoding and metadata readout of Dolby® Digital (AC3) and Dolby® E streams; requires CMN-LA-OPT-AES option, field install
- PTC-3A Portable case with handle and tilt bail
- DRC-3 Dual rackmount adapter; mount 1 or 2 CMN-LA or CMN-91 in a 19 in. (48.2 cm) equipment rack, 3RU high
- BLK-1 Blank panel for unused side of a DRC-3