



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 (1 minute 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
- Eight AES inputs
- Four AES and eight analog outputs
- Adjustable output delay
- Optional Dolby® AC3 and E decoding
- Optional SDI input

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. 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, embedded audio (optional) |
| 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 |

Digital Audio Output

| | |
|-------------------------------------|--|
| AES Outputs | 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) |

PRODUCT DETAILS

The basic CMN-LA unit operates with AES audio sources, with an option for de-embedding audio from SDI video up to 3 Gb/s. Eight AES inputs, four AES outputs and eight analog outputs come standard. 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. Embedded audio from SDI inputs is a keyed upgrade available at time of order, or for field installation. The SDI inputs can be ordered as SD only, HD/SD or 3G/HD/SD. SD can be field upgraded to HD or 3 Gb/s, and HD can be field upgraded to 3 Gb/s.

The CMN-LA also includes analog outputs to drive monitor speakers and a front-panel headphone jack.

Analog Audio Characteristics

| | |
|--|---------|
| Analog Output Frequency Response with Analog Inputs | ±0.2 dB |
| Analog Output Frequency Response with Digital Inputs | ±0.1 dB |
| Analog Output SNR with Analog Inputs | ≥90 dB |
| Analog Output SNR with Digital Inputs | ≥100 dB |
| Analog Output THD + Noise with Analog Inputs | .05% |
| Analog Output THD + Noise with Digital Inputs | .02% |
| Crosstalk | ≤-80 dB |

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 |

CMN-LA

Loudness Analyzer

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

| | |
|---------------------|-----------------------------|
| 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

| | |
|-------------------|----------------------------------|
| 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)

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|---|---|
| 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 + Noise (THD+N) | ≤-65 dB |

Control

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| 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, and keyboard |
| Connector | USB 2.0, type A, female |

Timecode

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

Ethernet

| | |
|--------------------|--|
| 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 |

Standard Accessories

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

CMN-LA

Loudness Analyzer

TEST AND MEASUREMENT // COMPACT MONITOR SERIES

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-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-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-DLB Dolby® decode option for the CMN-LA; adds decoding and metadata readout of Dolby® Digital (AC3) and Dolby® E streams; requires CMN-AES option
- CMN-DLB-F Dolby® decode option for the CMN-LA; adds decoding and metadata readout of Dolby® Digital (AC3) and Dolby® E streams; requires CMN-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