LCU

LAWO COMMENTARY SYSTEM

LAWO

FLEXIBLE
SCALABLE
NETWORKED

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THE SOLUTION FOR WORLDCLASS EVENTS

LCU — LAWO COMMENTARY UNIT

Lawo's new commentary product line is tailored to the needs of today's live broadcast productions for mid- to large-scale sports and cultural events. The fully digital system is based on RAVENNA, a real-time Audio-over-IP networking technology that enables the use of standard IP networks for interconnecting venues and devices. The Lawo solution spans the actual commentary unit, the IP-based link infrastructure and the software-based Commentary Control Room Management tools, to the convenient hand-over of the signals to all National Broadcast Partners — a complete solution from a single source. The Lawo Commentary System comprises:

- LCU Lawo Commentary Unit
- LCC Lawo Commentary Control Software
- DALLIS Centralized I/O System

KEY FEATURES

- Intuitive user interface for up to three commentators per LCU
- Lawo-quality mic pre-amps
- Uncompressed real-time Audio-over-IP with broadcast-quality (24 bit/48 kHz)
- Up to three coordination lines/intercom keys (compatible with any intercom manufacturer)
- Individual Level and Pan controls for each source
- High-level headphone outputs
- "Help" key for talking to support engineer
- Analog input/output for stand-alone/emergency mode operation
- Powered-over-Ethernet (PoE)/additional DC input for PSU redundancy

THE MAIN HIGHLIGHTS

- RAVENNA Audio-over-IP infrastructure saves installation costs and increases flexibility
- Fully digital signal flow from commentary unit to broadcaster
- Real-time monitoring and remote control for effective user support
- Intuitive Windows 8 Touch Screen GUI for technical remote operation
- Flexible use of commentary positions, change of commentator location via software
- Quick and easy set-up
- Prepared for WAN-based remote production

The Lawo commentary unit is designed to be easy-to-use for commentators, letting them focus on their task and not on the technology. It provides an intuitive user interface for up to three commentators, allowing them to set up individual headset mixes. Turning the source's rotary controls changes the volume, while push-and-turning changes the pan setting. Any activity is indicated in the backlit LCD, showing the control's label and its current setting. The unit also features three coordination lines, again with individual volume and pan settings. A "Help" key completes the user interface, giving commentators easy access to a support engineer. All settings including gain can be configured remotely from the LCC software. For emergency operation the device provides an analog Mix Out and an analog input to feed the phones' monitor mix. The Aux In can also be used to feed external sources like audio recorders locally into the LCU.
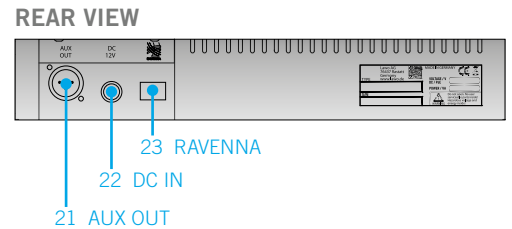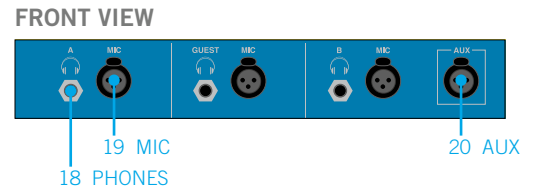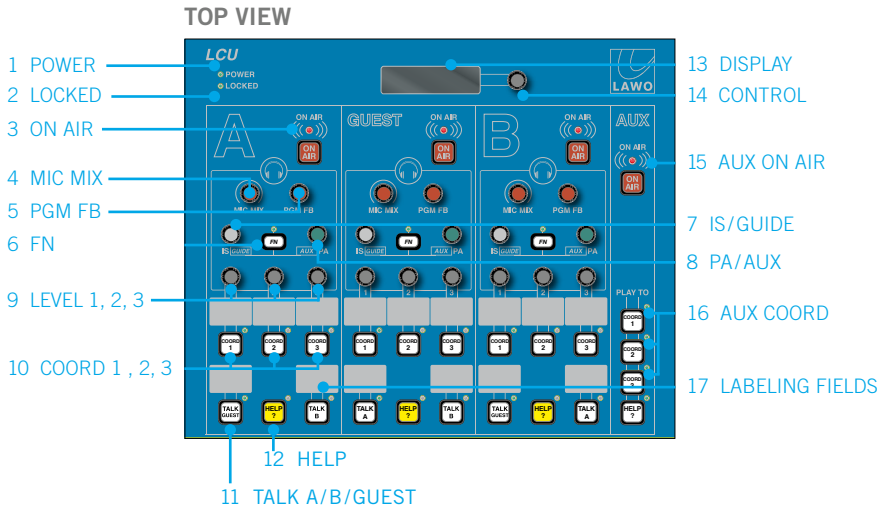
LCU

LAWO COMMENTARY SYSTEM
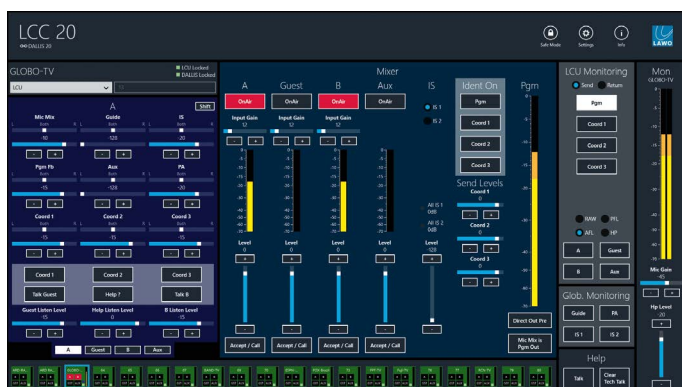
LCC — LAWO COMMENTARY CONTROL SOFTWARE

The Lawo Commentary Control Software replaces the Commentary Control Units (CCU) usually associated with two-part commentary systems, providing an integrated user interface to manage the complete commentary installation. The Windows 8 software is optimized for touch-screen operation, providing easy and efficient support for up to 20 commentators per screen. It shows the real-time status of all connected devices and manages all DALLIS I/Os and LCUs within the network. The LCC allows the support engineer to listen to any signal of any LCU while its remote control functionality allows to resolve most help requests with the ease of a mouse-click. The LCC is completed by an integrated Ident Player with Text-to-Speech functionality and a sophisticated offline mode allowing the preparation of large commentary set-ups.

DALLIS — CENTRALIZED I/O FOR CONNECTING THE OUTSIDE WORLD

The DALLIS frame serves as the heart of the Lawo commentary system, providing complete connectivity for up to 20 commentary units in a 3RU package. The modular I/O system can be equipped with a broad range of analog and AES3 I/O cards for convenient interfacing of the commentary system to the outside world, i.e. program sound, international sound and 4-wire connections to intercom systems and external line devices (VoIP, ISDN or telephone). The mounting frame is connected to the LAN/WAN* network and therefore to all commentary units within the network via a RAVENNA master card. The hardware is designed for maximum reliability allowing the operation of redundant RAVENNA master cards and redundant power supplies.
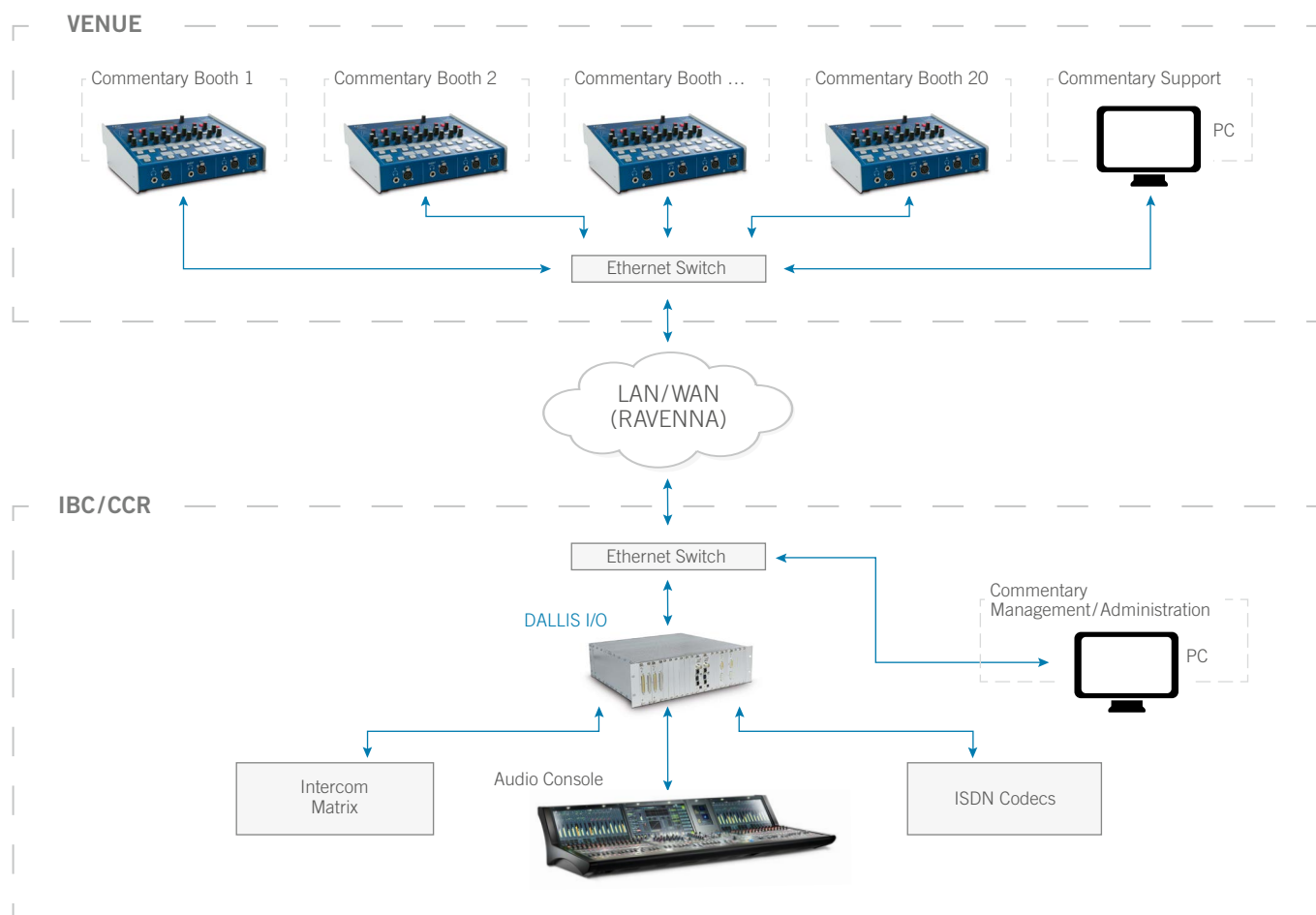
TOP VIEW

1 POWER
2 LOCKED
3 ON AIR
4 MIC MIX
5 PGM FB
6 FN
9 LEVEL 1, 2, 3
10 COORD 1, 2, 3
12 HELP
11 TALK A / B / GUEST

13 DISPLAY
14 CONTROL
15 AUX ON AIR
7 IS / GUIDE
8 PA / AUX
16 AUX COORD
17 LABELING FIELDS

FRONT VIEW

19 MIC
18 PHONES
20 AUX

REAR VIEW

23 RAVENNA
22 DC IN
21 AUX OUT

1	Power LED
2	Connected to RAVENNA network
3	On-air key (latching) with control LED
4	Adjust side-tone
5	Adjust volume for feedback from 4-wire
6	Shift function for IS / PA encoder
7	Adjust volume for International Sound or Guide (FN)
8	Adjust volume for PA or Aux (FN)
9	Adjust volume for Coordination Lines / Intercom
10	Talk keys for Coordination Lines / Intercom
11	Internal talk key for talking to other commentator
12	Help key for talk-back to commentary support engineer
13	LCD showing label and setting of selected volume controller or device setup menu

14	Rotary control for device set-up (password protected)
15	On-air key with control LED for external analog source
16	Play ext. source to coordination lines 1, 2, 3 or Help line
17	Areas for labeling the talk keys
18	Stereo 6.3 mm connector for commentary headphones
19	Lawo-quality mic input (XLR 3 / 12 V phantom power*), gain control via LCC remote software
20	Mono line input (electronically balanced, 6 dBu)
21	Mono line output of MIC A + B + Guest + Aux (mixed)
22	Additional 12 V DC input for power-supply redundancy
23	CAT5 connector for IP network connectivity (optional: BNC-to-CAT5 converter for longer cable runs)

LCU & LCC
SYSTEM OVERVIEW

VENUE

Commentary Booth 1 Commentary Booth 2 Commentary Booth … Commentary Booth 20 Commentary Support

PC

Ethernet Switch

LAN/WAN
(RAVENNA)

IBC/CCR

Ethernet Switch

Commentary
Management/Administration

PC

DALLIS I/O

Intercom
Matrix

Audio Console

ISDN Codecs

LINK INFRASTRUCTURE.
THE BASIS FOR FLEXIBILITY AND COST-EFFECTIVENESS.

Events with 20, 40 or even more commentary positions have special demands in the infrastructure of the commentary installation. The choice of the appropriate link infrastructure for the commentary solutions has a significant impact on the installation costs. Lawo has taken a radical new approach to connecting the commentary units, which significantly reduces cabling and installation while increasing the system's flexibility. The Lawo solution is based on RAVENNA, a technology for real-time distribution of audio and other media content in IP-based network environments. The Power-over-Ethernet capability makes local power-supplies obsolete. This reduces the overall cabling effort and allows cost-effective venue cabling with generic BNC/Coax cables at a very early stage. At the same time, the IP network-based approach keeps full flexibility for future applications and last-minute expansions. The Lawo commentary solution allows easy changes at any time: a commentator changing his position results with just an ID change of the unit — no physical patching is needed.

ABOUT RAVENNA. THE OPEN STANDARD FOR REAL-TIME IP MEDIA NETWORKING.

RAVENNA is a technology for real-time distribution of audio and other media content in IP-based network environments. Utilizing standardized network protocols and technologies, RAVENNA can operate on existing network infrastructures. RAVENNA is designed to meet the strict requirements of the pro audio and broadcast markets, and features low latency, full signal transparency and high reliability. While primarily targeting the professional broadcast market, RAVENNA is also suitable for deployment in other pro audio market segments like live sound, install and recording. Possible fields of application include (but are not limited to) in-house signal distribution in broadcasting houses, theaters, concert halls and other fixed installations, flexible set-ups at venues and live events, OB van support, inter-facility links across WAN connections, and in production and recording applications. Unlike most other existing networking solutions, RAVENNA is an open technology standard without a proprietary licensing policy. RAVENNA is fully compatible with the emerging AES67 standard.

SPECIFICATIONS

OVERALL

- Operating Temperature: 0°C to +40°C (32°F to +104°F)
- Power Requirements: 12 V DC / 1.3 A
  (PoE, Power-supply redundancy via external PSU)
- Dimensions (H x W x D): 110 mm x 313 mm x 266 mm
  (4.3" x 12.3" x 10.5")
- Weight: 2.6 kg (5.7 lbs.)

MIC IN (A, B, GUEST)

- Coupling: Electronically balanced
- Phantom Power: 12 V*
- Impedance: 2.7 kohm
- Gain Range: +4..+75 dB
- Maximum Input Level: +10 dBu
- High-Pass Filter: 80 Hz
- Input Noise Voltage: -128 dBu @ 150 ohm source
- CMRR: typ. 60 dB (20 Hz..20kHz)
- THD&N: 0.0006% (+8dBu, 1kHz)
- Frequency Range: 80 Hz..23.8 kHz (-3dB)
- Dynamic Range: 119 dB(A)

HEADPHONE (A, B, GUEST)

- Load: >8 ohm
- Maximum Output Level: +14 dBu
- Output Noise Voltage: -100 dBu(A)
- THD+N: 0.001% (+7dBu, 200 ohm, 1kHz)
- Frequency Response: 20 Hz..20kHz (-0.3 dB, 200 ohm)
- Dynamic Range: 116 dB(A)

AUX IN

- Coupling: Electrically balanced
- Impedance: 10 kohm
- Maximum Input Level: +14 dBu
- Input Noise Voltage: -118 dBFS(A) (20Hz..20kHz)
- CMRR: typ. 60dB (20Hz..20 kHz)
- THD+N: 0.0004% (+8dBu, 1kHz)
- Dynamic Range: 119 dB(A)

AUX OUT

- Coupling: Servo-electronically balanced
- Impedance: 53 ohm
- Maximum Output Level: +14 dBu
- Output Noise Voltage: -101 dBu(A) (20 Hz..22 kHz)
- THD+N: 0.0007% (+8dBu, 1 kHz)
- Dynamic Range: 116 dB(A)

NETWORK CONNECTION

- Max. Distance via CAT5: 100 m (330 ft)
- Max. Distance via BNC** (optional): 500 m (0.3 mi)

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*Optimized for the following headset models: Beyerdynamic DT797, Sennheiser HDE25 & HDE26, AKG HSC171   **RG 59U or better

LCU

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SYSTEM

HEADQUARTERS

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