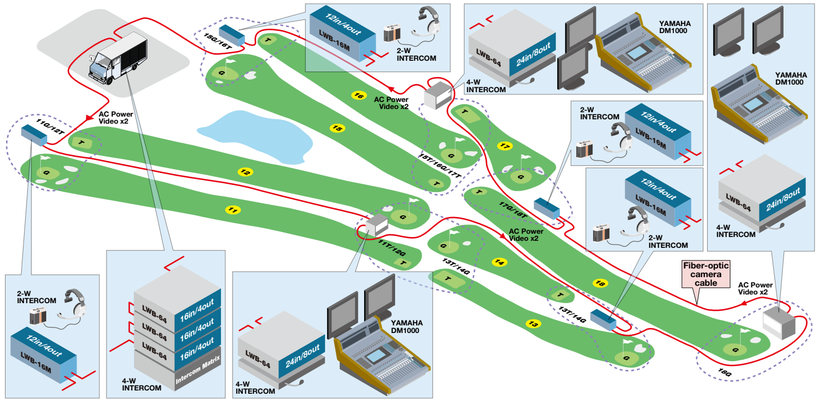
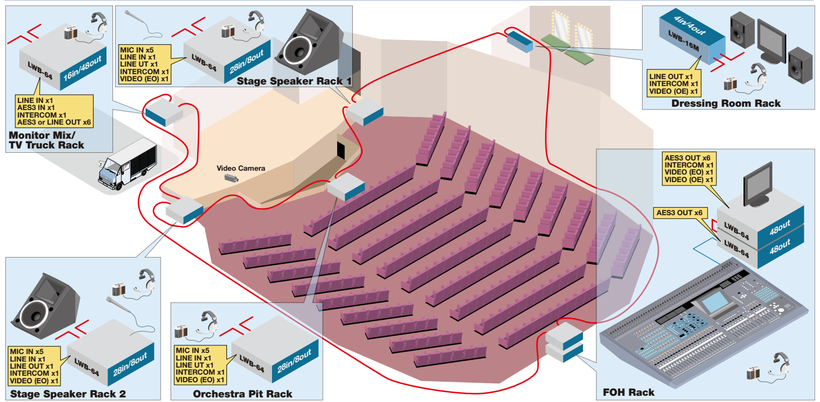
## Application Example 1: Broadcasting of Golf Tournament



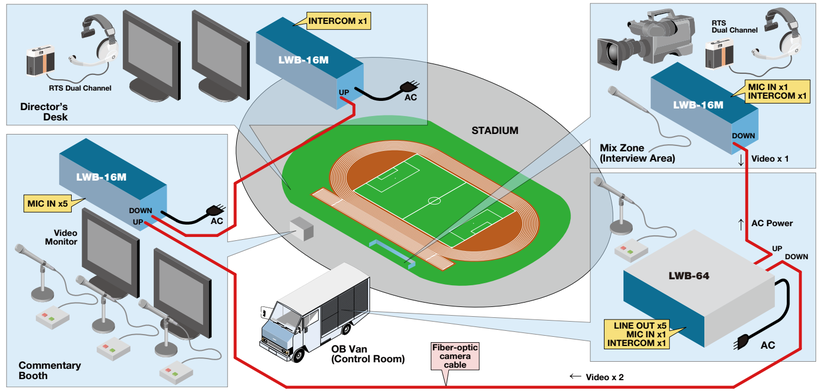

Each LWB-16M is placed under a tree or TV camera tower near the tee (T) or green (G) and each LWB-64 is placed in the temporary booth and the OB van (relay broadcast center). In total, four LWB-16Ms and six LWB-64s are used.
In each temporary booth, the audio signals of each hole are mixed and sent to the relay center. PGM mix audio and monitor video (2-channel SDI in this example) signals are sent from the relay center to the booths for the mixing engineers, announcers and commentators. Intercom signals are transmitted between each point. As shown in the illustration above, the 2-wire and 4-wire intercom types can be connected to the LWB at the same time without any converters.
To power the LWB-16M when it is hard to get power from nearby, the LWB-64 powered from the generator vehicle or generator sends AC power via the fiber-optic camera cable.
In this example, communication between the units is doubled by making a loop connection with fiber-optic camera cables.
If this doubling (redundancy) is not necessary, you can start dismantling from the finished holes. If you plan to dismantle the units and cables beforehand, you will not have to wait until the end of the tournament. This will be helpful for TV crews.

## Application Example 2: Installation in Concert Hall




Although the concept of the LWB is mainly directed at outside broadcasting applications, it is also suitable for fixed installations in concert halls, theaters, etc. Here is an example for installation in a concert hall with an orchestra pit for opera performances.
In a fixed installation, since each LWB unit can easily be provided with an AC power feed, it is not necessary to transfer AC power via camera cables. In this example, instead of fiber-optic camera cables, OpticalCon cables are used and a loop of the signal link is made by closing the connection circle. The OpticalCon cable has a smaller diameter than a fiber-optic camera cable and features automatic protection of the fiber end when the connector is disconnected.
The four LWB-64s are placed in the orchestra pit rack, at the left and right stage side speaker racks, near the truck dock for OB vans, and the two additional units are installed for the FOH mixing console. One LWB-16M is placed in the dressing room.
In addition to audio signals, the LWB system transmits video monitor signals that cover the whole stage and the conductor in the orchestra pit, as well as the intercom signals important for backstage communications during rehearsals and performances, such as between a lighting operator and a stage director.

## Application Example 3: Broadcasting of Track-and-Field Event




This is an example of broadcasting a large scale track-and-field event from a stadium. The LWB-16Ms are placed at the commentary booth, the mix zone (interview area) and the director desk and connected via the fiber-optic camera cable to the LWB-64 installed in the OB van (relay broadcast center) parked near the stadium.
The LWB-16M placed at the mix zone is powered from the LWB-64 in the OB van via the camera cable.

## Specifications

**LWB Common Specifications**

| | | |
|---|---|---|
| **Optical I/O** | Fiber-optic Cable Type | SMF (single mode fiber) |
| | Connector Type | Hybrid fiber-optic camera cable (ARIB-LEMO type/TAJIMI OPS type selectable) |
| | | Fiber-optic cable (ST/SC/OpticalCon® selectable) |
| | Transmission Distance | Max. 10 kilometers (between LWB units) |
| **Audio Functions** | Number of Channels | 256 (fs 48 kHz) or 128 (fs 96 kHz). (Including intercom channels) |
| | Number of Quantization Bits | 24 |
| **Miscellaneous** | Number of Connection Points | Max. 16 |
| | External Synchronization | 48/96-kHz wordclock, 48/96-kHz AES3id reference clock, video blackburst |
| | Power Supply | 100–240 VAC, single phase 50/60 Hz. Fed via hybrid fiber-optic camera cable or AC power cord |
| | Operating Environment | Temperature: -10 to +50 °C (Higher than 0°C for cold start. Avoid direct sunlight) |
| | Options | HD-SDI module (2 chs for upstream and 2 chs for downstream) |
| | | External sync to AES reference clock or video blackburst (factory option) |

**LWB-16M**

| | |
|---|---|
| **Number of Audio Channels** | Max. 20 |
| **Number of Audio I/O Module Slots** | 5 |
| **Headphone Output** | 1/4" Stereo phone jack x 1 |
| **Host Connection** | USB |
| **External Clock** | BNC x 2 (IN/OUT) |
| **Serial Communication Port** | D-sub 9-pin female x 1 |
| **Power Consumption** | 1.0–0.4 A |
| **Weight** | 4.0 kg (without I/O modules) |
| **Dimensions (W x H x D)** | 482 x 136 x 160 mm (H = 132 mm by removing front strips) |

**LWB-64**

| | |
|---|---|
| **Number of Audio Channels** | Max. 72 |
| **Number of Audio I/O Module Slots** | 9 |
| **Headphone Output** | 1/4" Stereo phone jack x 1 |
| **Host Connection** | USB |
| **External Clock** | BNC x 2 (IN/OUT) |
| **Serial Communication Port** | D-sub 9-pin female x 1 |
| **Power Consumption** | 1.6–0.6 A |
| **Weight** | 6.8 kg (without I/O modules) |
| **Dimensions (W x H x D)** | 482 x 132 x 330 mm |

Specifications are subject to change without prior notice.

**Otari, Inc.**
4-33-3 Kokuryo-cho, Chofu-shi,
Tokyo, 182-0022, Japan
Phone: +81/42-481-8626
Fax: +81/42-481-8633
e-mail: sales@otari.co.jp

**Otari Singapore Pte, Ltd.**
34 Jalan Jintan Singapore 229021
Phone/Fax: +65 6738-7807
e-mail: sales@otari.com.sg

**Otari U.S.A. Sales Inc.**
21110 Nordhoff Street, Suite G/H,
Chatsworth, CA 91311
Phone: (818) 734-1785
Fax: (818) 734-1786
e-mail: sales@otari.com

OTARI®
**www.otari.com**



OTARI®

# Lightwinder
BROADCASTING

## Multichannel Wiring System
# LWB-16M & LWB-64

OB van photo, Courtesy of Game Creek Video

# LWB-16M

The Otari Lightwinder LWB-16M is a portable field unit that can have up to 20 channels of audio inputs/outputs. The most suitable I/O configuration for the application can be easily arranged by just changing the modules inserted in the 5 slots.

LWB-16M with MIC IN, LINE IN, LINE OUT and 2-wire INTERCOM modules (video transmission module and converters are optional)

## I/O Modules for LWB-16M

**MIC IN [CB-7AZ]**
4 channels
XLR3 F x 4

**LINE IN [CB-7AX]**
4 channels
XLR3 F x 4

**AES3id IN [CB-7BA]**
4 channels
BNC x 2

**LINE OUT [CB-7AY]**
4 channels
XLR3 M x 4

**AES3id OUT [CB-7BB]**
4 channels
BNC x 2

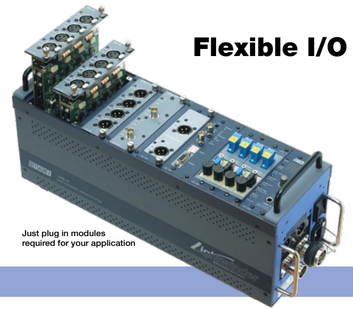
**AES3 IN/OUT [CB-7BR]**
2 channels (in/out)
XLR3 F x 1 + XLR3 M x 1

**SW REMOTE/ ARCNET [CB-7BK]**
BNC x 2

**2-W INTERCOM [CB-7BM]**
2 lines (Dual channel supported)
XLR3 M x 2

**4-W INTERCOM [CB-7BN]**
2 lines
XLR3 M x 2 + XLR3 F x 2

**2-W INTERCOM [CB-79P]**
2 lines
XLR3 M x 2



Just plug in modules required for your application

# LWB-64

The Otari Lightwinder LWB-64 is a rack-mount type unit for OB van installation and can house up to 72 channels of audio inputs/outputs. The most suitable I/O configuration for the application can be easily arranged by just changing the modules inserted in the 9 slots.

LWB-64 with MIC IN, LINE IN, LINE OUT, AES3 IN, AES3 OUT and 2-wire INTERCOM modules (video transmission modules and converters are optional)

## I/O Modules for LWB-64

**MIC IN [CB-79L]**
4 channels
D-sub 25 F x 1

**LINE IN [CB-79J]**
8 channels
D-sub 25 F x 1

**AES3 IN [CB-79M]**
8 channels
D-sub 25 F x 1 or BNC x 4

**LINE OUT [CB-79K]**
8 channels
D-sub 25 F x 1

**AES3 OUT [CB-79N]**
8 channels
D-sub 25 F x 1 or BNC x 4

**AES3 IN/OUT [CB-7BS]**
4 channels (in/out)
D-sub 25 F x 1 or BNC x 4

**SW REMOTE/ ARCNET [PB-7BL]**
BNC x 2

**4-W INTERCOM [CB-7BP]**
2 lines
D-sub 25 F x 1

## Flexible I/O Configuration Tailored to Demand

All of the front connector type audio I/O modules for the LWB-16M can also be used on the LWB-64.

**VIDEO UP [CB-79S]**
2 channels
Multi-rate SDI (HD-SDI) with E/O & O/E converters

**VIDEO DOWN [CB-79R]**
2 channels
Multi-rate SDI (HD-SDI) with E/O & O/E converters

**VIDEO UP [CB-7BH]**
2 channels
Multi-rate SDI (HD-SDI) with E/O & O/E converters

**VIDEO DOWN [CB-7BJ]**
2 channels
Multi-rate SDI (HD-SDI) with E/O & O/E converters

## Choices in Fiber-Optic Cable Receptacles

In addition to various audio I/O modules, the Otari LWB offers further flexibility in system configuration: the LWB units can be connected to each other with hybrid fiber-optic camera cables (TAJIMI type, LEMO type, etc.) or with fiber-optic cables having SC, ST or OpticalCon® connectors. (Specify the connector panel when ordering.) Selections of fiber-optic cable receptacles are also applicable to the LWB-64.

SC Type



ST Type



Neutrik® "OpticalCon®"

Variations of Fiber-Optic Cable Receptacles (without AC Power Transmission)

TAJIMI Type

LEMO Type

Variations of Hybrid Fiber-Optic Camera Cable Receptacles (with AC Power & Control Signal Transmission)

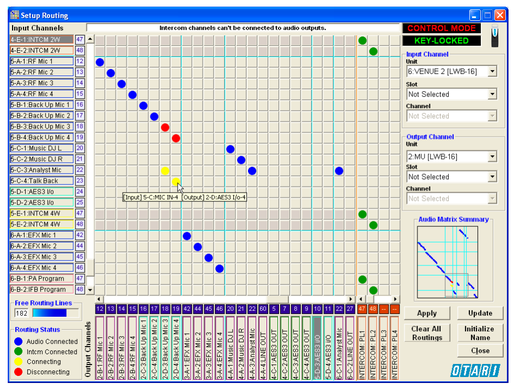
## LWB System Features

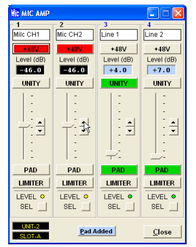
- Compact and light-weight audio/video signal transmission system for outside broadcasting.
- Available in two models: portable field unit LWB-16M and rack mount unit LWB-64 for OB van installation.
- Flexible system configuration from a minimum system of two LWB-16Ms (one facing pair) to a 16-unit system (including LWB-64s). 256 channels of audio signals can be handled by combining multiple units.
- Easy setup without PC.
- Maximum transmission length is 10 kilometers (unit to unit, with single mode fiber-optic cable).
- Signal transmission redundancy is realized by a ring connection: By adding one more fiber-optic cable to close the connection circle, the entire audio data transmission is protected from a fiber cable fault.
- Hybrid fiber-optic camera cables can transmit AC power as well as audio signals. Power supply redundancy is realized by receiving power from the AC inlet and the camera cable receptacle.
- Optical power level monitor via 3-color LED.
- Control lines in a hybrid fiber-optic camera cable can be used for additional signals.
- Audio signals can be monitored with headphones.
- Key Lock-Out function to prevent unintentional changes
- Microphone head amplifier gain and on/off of +48-volt power, pad and limiter can be controlled locally and remotely.
- 3-color LED level monitoring (with selectable clip holding) and +48-volt power indication on each mic channel.
- LED dimmer.
- Video transmission via multi-rate SDI (HD-SDI) can be supported by installing optional interface.
- Support for 2-wire and 4-wire intercom systems.
- RS485/422 serial signal transmission.
- Real-time transmission of channel status and users bits of AES3 signals.

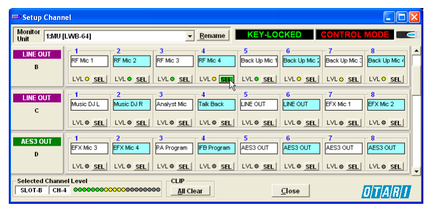
# Lightwinder Director

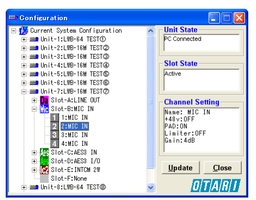
The optional Remote Control/Monitor GUI Software (Lightwinder Director) runs on a Windows® PC connected to the HOST connector (USB) on any LWB unit in the system and provides remote controlling and monitoring of the whole LWB system.
Although the LWB system is designed to run without any PC control, GUI control/monitoring of the entire system has been desired. With Lightwinder Director, operators can:

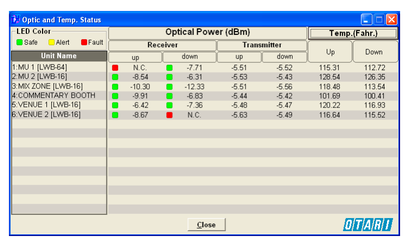
- Watch the status of the entire system including the optical power level and temperature of the optical transmitters
- Set, change and monitor the routing of the audio and intercom channels in an intuitive matrix
- Control all of the channel parameters remotely
- Store multiple routing/channel parameter settings as setup files and recall any of them to apply (since the setup file is in CSV format, you can quickly edit it with spreadsheet software or a text editor).


Supported languages: English and Japanese

PC Requirements
Windows® 2000/XP/Vista, Two unused USB ports, XGA (1024x768) video monitor