# BC-TBO4b

## Broadcast Talkback/Oscillator Module

BC4 Broadcast

In addition to another 8 channel source select extension block and two VCA group master sections, the Talkback/Oscillator module contains the entire talkback system, the listen system that handles incoming talkback signals and the oscillator section. The 'On-Air' and status control section is also installed in the BC-TBo4b. If none of the included functions is needed for the use in this particular console the Talkback/Oscillator module can be left out.

- Control source selection extender with 8 stereo inputs
- Talkback system with build-in electred condenser microphone and input for external mic or line sources
- Listen System for incoming talkback with many options
- Oscillator section and routing
- On-Air control section and status remote section
- Two VCA group masters

The BC4 Broadcast Console System by adt-audio in Germany covers the range of medium to large format consoles for any kind of applications. The rich featureset includes all special functions for broadcasting.

The BC4 console system combines high reliability, long lifespan and professional technical qualities in combination with excellent sound performance,

In addition to a couple of standard input, group, and master modules, BC4 is a versatile base for custom build broadcast consoles at affordable prices. The system limits offer the choice to make custom modules that use up to 36 bus rails, which can be used as main masters, group masters and sends in many different ways.

### Source Selector

The eight channel extension source selector is actually part of the control room source section, however, is can also be used as an independent, separate selector block. A switch block with eight, mutually released switches makes possible to select one of eight balanced stereo sources. The output of the selector is available on two XLR connectors. With the standard console configuration, the output is connected to the SEL2 switch of the main extension select unit.

### Talkback Section

**In addition to the build-in condenser microphone, an external microphone or line signal can be used. The Talkback Routing uses illuminated large format pushbuttons. Seven separate output lines are available.**

The **internal microphone** is an electret condenser microphone with omni directional characteristic that is an adequate solution for most applications. The Int-Mic pot controls the gain from approx. 30 to 60 dB. A second input can be used to connect an external microphone input or line signal. The internal and the external signals can be mixed. Of course, it is also possible to use the internal or external talkback signals only. While the external input must be expressly enabled either by the ON switch or by a control voltage that is applied to an opto coupler input, the internal signal can be muted by a jumper. Actually, the external audio input is a balanced zero ohm amplifier that offers a maximum of 50 dB gain with an input resistor of 500 ohms per phase. It can be used to mix any number of external talkback sources of different levels only by uses appropriate resistor values for the particular source signal. The mixed talkback signal feeds seven talkback routing switches.

The TB-EXT1 and TB-EXT2 switches drive electronically balanced output amplifiers that are used as external talkback outputs. Alternative, one or both of these switches can be used to mix talkback to the program master busses with separate switches. The talkback to program masters defaults to the talkback group bus. Talkback to Aux enables the internal aux/cue talkback bus. TB-GRP and TB-CH enable the talkback group bus that also feeds the program masters in the default configuration and the talkback to channel outputs bus. The local TB switches determine if a particular master or channel output is enabled or not. TB-TELCO is an additional internal console bus that is used for the outputs of the Telco channels only. It makes possible to talk to incoming callers without affecting another system. The TB-Studio circuit sends talkback towards all headphone outputs and the studio speaker output in the studio/playback module BC-STU4b. All talkback switches are non-latching. Latching versions for particular functions can be installed if you specify this with your order. The talkback master function can control any number of talkback switches with the TB ALL switch The particular talkback switches can be assigned to this Talkback ‚Group' by the ‚+' switches, next to each talkback switch. TB all also operates non-latched, however, when ‚alternate' is pressed, this switch operates in latched mode.

Active Talkback can be used to activate the ‚Autodim' and/or the ‚Autocut' bus. The Talkback Remote control input that is used to enable the external talkback input can be used alternatively to remote any number of talkback switches. Single jumpers for each talkback switch and the external talkback determine this function that can be changed at any time.

### Listen Section

The Listen section handles incoming talkback. There are two inputs for external talkback and an additional stage that the internal ‚listen' system uses microphones for incoming talkback in combination with the microphone remote section. All three sources can be enabled separately and mixed.

The external listen input is a balanced zero ohm input that makes possible to mix input singles of any level, just by selecting appropriate input resistors. This input can be used for microphones without external preamplifiers with a source resistor of 50 ohms per phase. The input can be enabled by the local switch or a remote control input alternatively. The external listen line input is used for line level signals. An internal level detector can be activated that generates a control signal if the input level is above an internally adjustable threshold. Threshold and hold time can be adapted to the local situation by trim pots. The pot controls the mix level of this input. The ‚Int Listen Bus' signal uses the output of the internal listen audio bus. This bus is driven from all inputs by the ‚Talkback' function of the microphone remote port. See the description of the mono inputs for details. A switch enables this signal. The internal listen master amplifier mixes all enabled sources and drives an electronically balanced output amplifier. The listen state is indicated by an orange LED. The OFF switch makes possible to disable the entire listen section. In addition to the listen output amplifier the listen output signal can be routed to the consoles PFL system by the ‚TO PFL BUS' switch. In this case, listen operates just like any other PFL, however, is affected by the ‚PFL Single Mode' or the PFL Reset. It is also possible to select the listen signal as separate source at the mini speaker section and the control room headphone section. See the description of the BC-CTR4 control room module for details. Listen can also activate the ‚Autodim' control bus that is available on the studio speaker and the control room speaker section, by an additional switch.

### Oscillator

The console oscillator is a stable function generator that can be operated in calibrated or uncalibrated mode. A stepper switch is used to select one of five fixed frequencies, 40 Hz, 100 Hz, 1 kHz, 10 kHz and 15 kHz. The calibrated output level can be adjusted by an internal trim pot in a wide range. Settings of -9 dB are possible as well as all commonly used nominal levels. The LEVEL POT ON switch overrides the calibrated mode. The actual level with this mode is determined by oscillator level pot in a range from off to + 20 dBu. Unless the OSC ON switch is pressed the oscillator is totally disabled. No output signal is generated. This features makes possible to avoid any kind of oscillator cross talk with unclear setups. When the oscillator is on, the output signal is always available on an electronically balanced XLR ouput. The console routing of the oscillator output signal is determined by three switches. AUX enables the bus along all aux and cue sends, GROUP/PGM feeds the signal to the groups and the program master modules and CH feeds the bus that can be accessed by the OSC input select switches of the modules. If a particular auxiliary, group or program master is enabled or not depends on the local OSC switches.

### Status Control

The console status system uses three so-called ‚fader open' busses. All input modules can be assigned to one or more channel open bus. This setting depends on the input select of the particular module. If a fader open bus is fed or not depends also on the state of the channel, and this actually depends on the local configuration of channel on switch and fader switch. We will call a state that enables the channel, ‚On' and the state that disables the channel ‚Off'. The default configuration assigns the microphone inputs to the ‚fader open' bus 1, and the line inputs to bus 2. Bus 3 is normally used for either telephone channels or a different sort of microphone channels, as it is necessary with DJ mode settings. The particular bus is active when at least one of the attached channels is in ‚On' state. This means, that one or more open microphone channels activate the ‚fader open' bus one and one or more open line channels activate the ‚fader open' bus two, while ‚fader open' bus, two is active when one or more telephone channels are open. These busses do nothing in the first step; they just collect three different sorts of channels that are on at a time. Each of the busses can be assigned to several control circuits. The most important control circuits are the ON-AIR output, the Autocut and Autodim lines, and the TelCo Auto line. In addition to the ‚fader open' busses, some of these control circuits can be also driven by other sources. The Dim signal that is generated by the talkback switches can control the Autodim bus for instance. This basic principle allows the configuration of very complex logic functions without the need of custom build logic controls or additional hardware. Almost all special custom functions can be accomplished by jumper settings. Since almost all functions use conventional 24 V electro mechanic circuits with a minimum of logic circuitry, using the ‚wired or' principle where ever it is possible, functions that are not implemented in the standard setup possibilities, can be added by external wiring or an additional diode. With the standard setup, the fader open bus 1, mic, controls the ON-AIR bus and the autocut bus. The fader open bus 2, line, controls a separate output that can be used to control an attention signal. On our experience, the special functions are different from customer to customer. Please, let us know what special functions you need. Almost all required function would be possible without additional cost.

### User Switches

In addition to the ON-AIR switch and lamp that is normally used to display the Microphone On state of the console, there are four additional, free switches. Normally, two of theses switches are latching, the other two non-latching versions. Without any additional features, these switches can be used for external function. All NC and NO contacts and 24 V LED lamps contacts are available on a 25-pin D-Sub connecter. With special logic setting that requires additional switches and/or lamps, these switches are used to accomplish these functions. In this case, the 25-pin connector might be used for additional logic control inputs and outputs.

### Connectors

Apart from the main oscillator output that is available on XLR, all outputs and inputs of the Talkback/ Oscillator module are available on 25pin D-Sub connectors. There is one female connector for the audio inputs and outputs and two additional, male connectors for the logic control inputs, output, and the additional switches. The inputs of the extension source selector are available on two 25pin D-Sub connectors. Each of these connectors contains four stereo inputs. Custom versions of the connector panel, using other multipin connectors than 25pin D-Sub are possible; however, the available space is limited. Please ask for details. All logic inputs are either floating, polarity independent opto coupler inputs or ‚active low' inputs that require a floating switch or open collector output that can withstand 24 V DC. All outputs are either floating relay contacts or 24 V, active low voltage outputs that can be loaded with a maximum current of 100 mA. These outputs are fused by a polyfuse that automatically resets after the overload is removed. All relay contacts or low power contacts that can be used with voltages lower than 40 Volts and currents up to 100 mA.

### The VCA Group Master Section

A dual VCA Group Master Section is included with the BC-TBO4b. It is used for the VCA-Groups 5 and 6. The group master fader is a conductive plastic, VCA law fader with 100 mm stroke that offers a maximum gain of 10 dB. Faders with 126.5mm stroke and +15 dB gain are optionally available, please ask. The scale accuracy is better than 1 dB from + 10 to - 20 dB. The zero point is internally calibrated to pinpoint accuracy. The VCA-Group On switch controls the On state of the channels that are assigned to the particular group. If the VCA group is not switched on, all assigned channels or groups are also in channel off mode.