



Installation Manual

Part II:
Connectors
Pinning Diagrams
Description of Connectors



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Preface

This manual contains all the information that is necessary to prepare and plan the installation of the mixing console and accessory components.

Please, read this manual carefully. We point out common mistakes and problems that are connected with the installation and provide suggestions to avoid such problems. You will save a lot of time and unnecessary start up problems by investing a couple of hours in the reading of this manual.

The first part of the manual contains everything about the power supply units and crossover devices that are necessary for fail safe power supply configurations and the implementation of the mains connections. Part 2 is about the audio installation. Besides detailed information about basic principles of audio installation and the methods of grounding, this chapter contains all pinning diagrams, pictures and graphics about the locations of the connectors, and a detailed description of their functions. Part 3 contains general information about the assembly of the console, environmental considerations, the recommended maintenance, and a couple of remarks about the operation of the console to ensure a long and problem free lifespan.

This manual concerns the stereo version of the BC4 broadcast console system, rev. 1.2

3. Connectors

3.1 Technical data of Inputs and Outputs

The characteristic data of all audio inputs and outputs of the modules are identical. Here is a listing of the basic data of the different types.

Level

The nominal level of the BC4 system is determined by the customer. It is only fixed by the adjustment of the system meters that can be set to any level between 0 dBu and +10 dBu. If no nominal level is specified by the customer, it will be set to + 6 dBu = 1.55 V RMS

Headroom

The maximum level of a particular signal chain always refers to an overall gain of 0 dB. With positive gain values, the maximum value is equivalent to the output value, with negative gain settings, the maximum value is equivalent to the input level. The design of the internal circuitry can handle the maximum level in each stage of the signal chain; however, if the internal chain adds gain stages and attenuation stages as well, the maximum level is the level of the circuit of the highest level in the chain.

Transmission Band

The entire system is designed for the transmission of audio frequencies between 40 Hz and 15 kHz in accordance to German IRT rulebook 3/5. Variations of the amplitude vs frequency (frequency response) are in accordance with this rulebook.

The worst case value for any line level signal chain is > +/- 0.5 dB

RF- and Subsonic Filters

The suppression of subsonic and RF frequencies depends on the execution of the internal filters. The default filters are adjusted for edge frequencies (- 3 dB) of < 10 Hz and > 80 kHz. Other values in accordance to customers requirements are possible.

The suppression of subsonic and RF frequencies for microphone preamp-

lifiers defaults to edge frequencies (- 3 dB) of < 15 Hz and > 40 kHz. Other values in accordance to customers requirements are possible.

Inputs

Microphone inputs

All microphone inputs are transformer balanced and floating. The input impedance is > 1kOhm in the transmission band without input pad and | > 2 kOhms with pad. CMRR in accordance to IRT standards is > 70dB at frequencies <=15 kHz.

Line inputs

Line Inputs can be implemented electronically balanced or transformer balanced and floating as an option. All insert inputs, control room source select inputs, and other line level inputs are electronically balanced unless otherwise ordered.

Electronically balanced line level inputs

Nominal level +6dB (or custom level, respectively)
Maximum level in the transmission band >= +28.5 dBu.
Input impedance in transmission band > 10 kOhm.
CMRR corresponding to IRT rulebook measurement method > 50dB, in the transmission band

Transformer balanced and floating line level inputs

(optionally available for line inputs of input channels)
Nominal level +6dB (or custom level, respectively)
Maximum level in the transmission band >= + 26 dBu,
(limited by core saturation of input transformers at 40 Hz)
Input impedance in the transmission band > 10 kOhm.
CMRR corresponding to IRT rulebook measurement method 60dB, in the transmission band

Outputs

All outputs are electronically balanced. Some outputs can be implemented transformer balanced and floating on special order. Most of the optional output transformers are mounted in the console frame, because the size of a transformer that is capable of handling levels of more than + 26 dBu

@ 40 Hz does not fit into most of the modules.

All electronically balanced outputs have a drive capacity of at least + 26 dBu into the nominal load of 600 Ohms between 40 Hz and 15 kHz (worst case condition).

Comment:

The entire system can handle line levels of + 30 dBu. The maximum output level into a load of more 2 kOhm is typically + 30 dBu. In a real-world situation, no load lower than 2 kOhm is applied to any output. However, the maximum level is limited by the power dissipation of the output drivers, that reduces the headroom to >+26 dBu into 600 Ohms, steady state. This does not affect the internal headroom, of course.

Nominal level +6dB (or custom level, respectively)

Source impedance < 60 Ohms

CMRR/IEC > 34 dB, typical value 46 dB

Transformer balanced outputs:

If transformer balanced outputs are ordered, the low frequency headroom is limited by the core saturation level of the transformer itself. The minimum value is + 26 dBu into 600 Ohms at 40 Hz.

Nominal level +6dB (or custom level, respectively)

Source impedance < 60 Ohms

CMRR/IEC > 34 dB, typical value 46 dB

CMRR/IRT > 60 dB up to 15 kHz

3.2 Connector Types

Four versions of the connector panel

The connections for each module type of series BC4 consoles are standardized. There are 4 types of connector panels.

Version 1 is used for mono and telco input modules

Version 2 is used for stereo input channels *)

Version 3 is used with group modules

Version 4 is used for the master section.

The master panel also contains the power supply connector. One of these panels is part of every BC4 console.

*) *The stereo version contains additional connectors that are used for stereo channels only - see the description of this panel for details.*

Location of the connector panels

The connector panels are mounted right behind the belonging input, group or master modules at the rear side of the frame. The connector panels are inside the frame and can be covered by additional rear sheets. The base panel of this section has a row of 75 x 50 mm oblongs that can be used for cables. A row of metric 4 mm threads allows the installation of cable clips at the rear bottom of the console frame. These clips can be used to hold the cable tree. The connector panels are mounted approximately 75 mm inside the frame.

Group and master assignment

The assignment of the group rails to the module slots is part of the frame installation. It can be changed by the rearrangement of bridges on the frame boards. See the drawings of the frame boards for details about this configuration. This configuration determines which group is in which module slot.

The module slots for the 3 possible program master modules, the control room module, the playback module and the master module are fixed; however, any of the first three slots can be assigned to one of the three program master busses. The standard configuration sets the program

master 1 on slot 2 and the program master 2 on slot 3 of the master area. Slot 1 has a blind panel, that can be used for the installation of remote switches or other control elements.

While the master section requires a total of 6 module slots to be fully functional, most frames add another two slots right next to the master section. These two slots can be used for customers remote switches, We recommend to include these two slots to have some free space available.

Pinning

Only 3-Pin XLR connectors and female 25-pin D-Sub connectors are used for all audio connections of the entire console. The only exception is the 1/4" TRS jack for the control room headphones. If a patch-bay is installed in a particular console, the type of jacks that are used depend on customers specification.

XLR 3-Pin connectors use the standard connection scheme with + on 2, - on 3 and screen on 1. The 25-pin D-Sub connectors use the common "Tascam" pinning with 8 balanced audio lines. See the drawing on the right side of this page and on the next page for details. The different pinnings of the D-Sub connectors are descibed in detail below.

All D-Sub connectors use UNC4-40 fixing nuts.

Screening

All screen contacts of all audio connectors are internally connected to ground. This means that each pin 1 of an XLR and the 8 screen pins of a 25-pin D-Sub are connected to a console internal ground network, that is bridged to audio ground. Read the chapter about the audio installation about our recommendations, what principles of wiring should be used.

As mentioned in this chapter, all screen pins are separted from ground. If the console has to installed in a very 'dirty' electric

STANDARD AUDIO CONNECTORS



3-PIN XLR - MALE

2 OUTPUT + / Phase a / hot

3 OUTPUT - / Phase b / cold

1 SCREEN connected to Ground



3-PIN XLR - FEMALE

2 INPUT + / Phase a / hot

3 INPUT - / Phase b / cold

1 SCREEN connected to Ground

ALL SCREENING PINS ARE CONNECTED TO CONSOLES CONNECTOR-GROUND

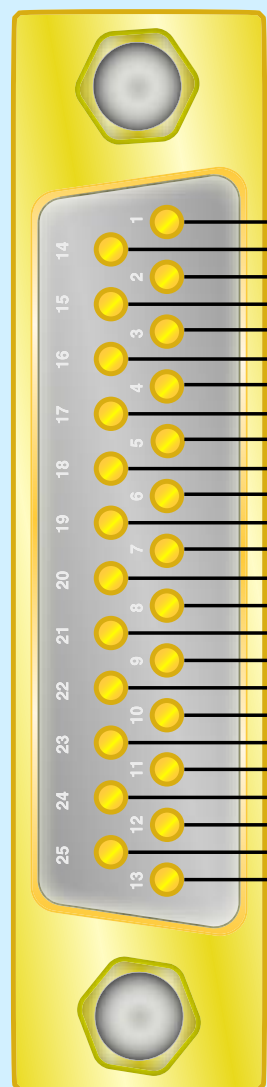


1/4"/6.3 mm JACK - USED FOR PHONES

TIP LEFT OUTPUT

RING RIGHT OUTPUT

SLEEVE COMMON / GROUND



STANDARD AUDIO LINES ON SubD-25 CONNECTORS

AUDIO 8

AUDIO 7

AUDIO 6

AUDIO 5

AUDIO 4

AUDIO 3

AUDIO 2

AUDIO 1

SubD-25 Connector
Female in Console Frame

environment, it is possible to float the entire connector ground network and connect to audio ground via a low ohm resistor of approximately 1 to 5 ohms. This will avoid any ground loop current. However, **call us for advice before you do so.**

With this principle, the **microphone input screens** are also connected to this separated connector ground. Depending on the ground loop situation, these contacts might be polluted by compensating current. Since these contacts are used for the return of the phantom power which might reduce the signal to noise ratio of a microphone in certain cases. It is not very likely that things like this happen, since such a disturbance that can cause these effects will have other effects too. However, it is possible to change the potential of the microphone input screening pins from connector ground to the audio ground of the particular channel by a jumper on the local channel PCB. Setting the screen to the ground of the local channels has the risk that different ground potentials attached to different mic inputs will compensation thru the main audio ground of the console, which is also the reference for all mix busses. Be aware that this setting should only be changed in particular channels if there is no other way to bring the system to work properly. The best choice is always to take care about a clean ground, before such compensation techniques are used. Please, ask for advice (0049 2043 51061 – support@adt-audio.com) before you change the default setting.

Special Terms:

* **Connector-ground:**

separate ground network that connects all the screen contacts of the audio lines

** **Audio-ground:**

the internal electrical audio reference ground of the console

3.3 Connector Panels

The connector panels for input channels and groups combine 4 module slots. The connector panel of the master section is 6 slots wide. Each connector panel is located behind the belonging modules.

Input channels

There are two different versions of connector panels for input modules. Both versions can be used with all sorts of input channels; however, stereo modules BC-IS12 contain additional inputs and outputs that require additional connectors. Version 2 is a special version for these stereo modules.

If stereo channels are used with the standard connector panel, the two stereo line level inputs and the stereo channel outputs are available. The stereo insert sends and returns requires the special version. See the next page for more details.

The connector panel for the input modules has 4 XLR females, 2 XLR males and 2 female 9-Pin D-Sub females connector for each channel.

The 3-pin XLR's plugs are named from A to F. The function of a particular connector changes with the type of the module that is installed in the corresponding slot. The assignment of the most important input modules is printed on the panel.

Mono input modules

The mono input modules do not use all available connectors. Here is the assignment:

Connector A – CH-OUT

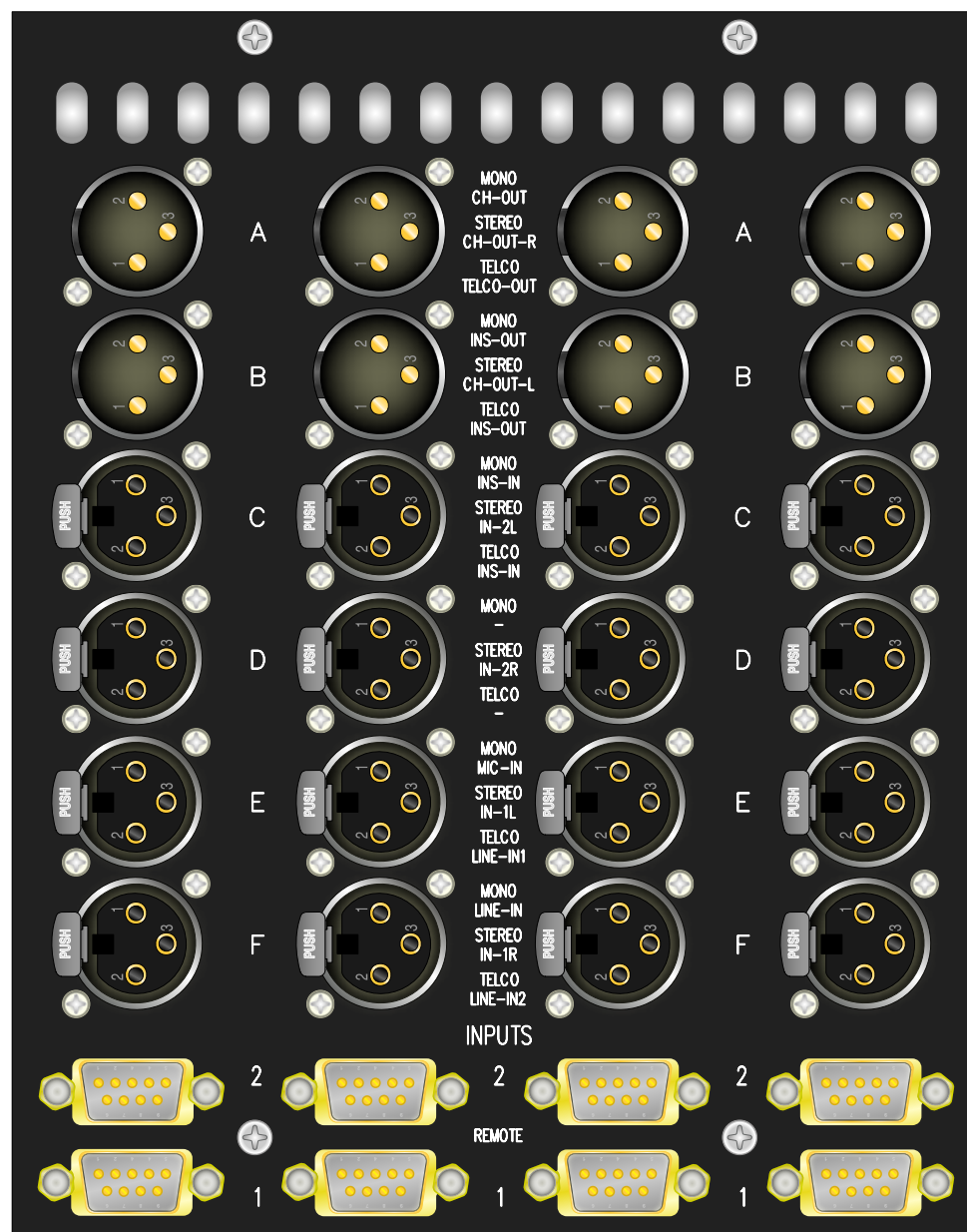
XLR-plug (male) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector B – INS-OUT

XLR-plug (male) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -



Connector C – INS-IN

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector D – not used

Connector E - MICROPHONE INPUT

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

All microphone inputs are transformer balanced and floating. Phantom power is activated by a switch per module.

Connector F – LINE-IN

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

9-Pin D-Sub Remote Connector 1

Microphone control port

9-Pin D-Sub Remote Connector 2

Line input control port

The input select switch of the module determines whether the microphone or the line control port is active.

Mono telco module with 2 line inputs

Connector A – TELCO-OUT

XLR-plug (male) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector B – INS-OUT

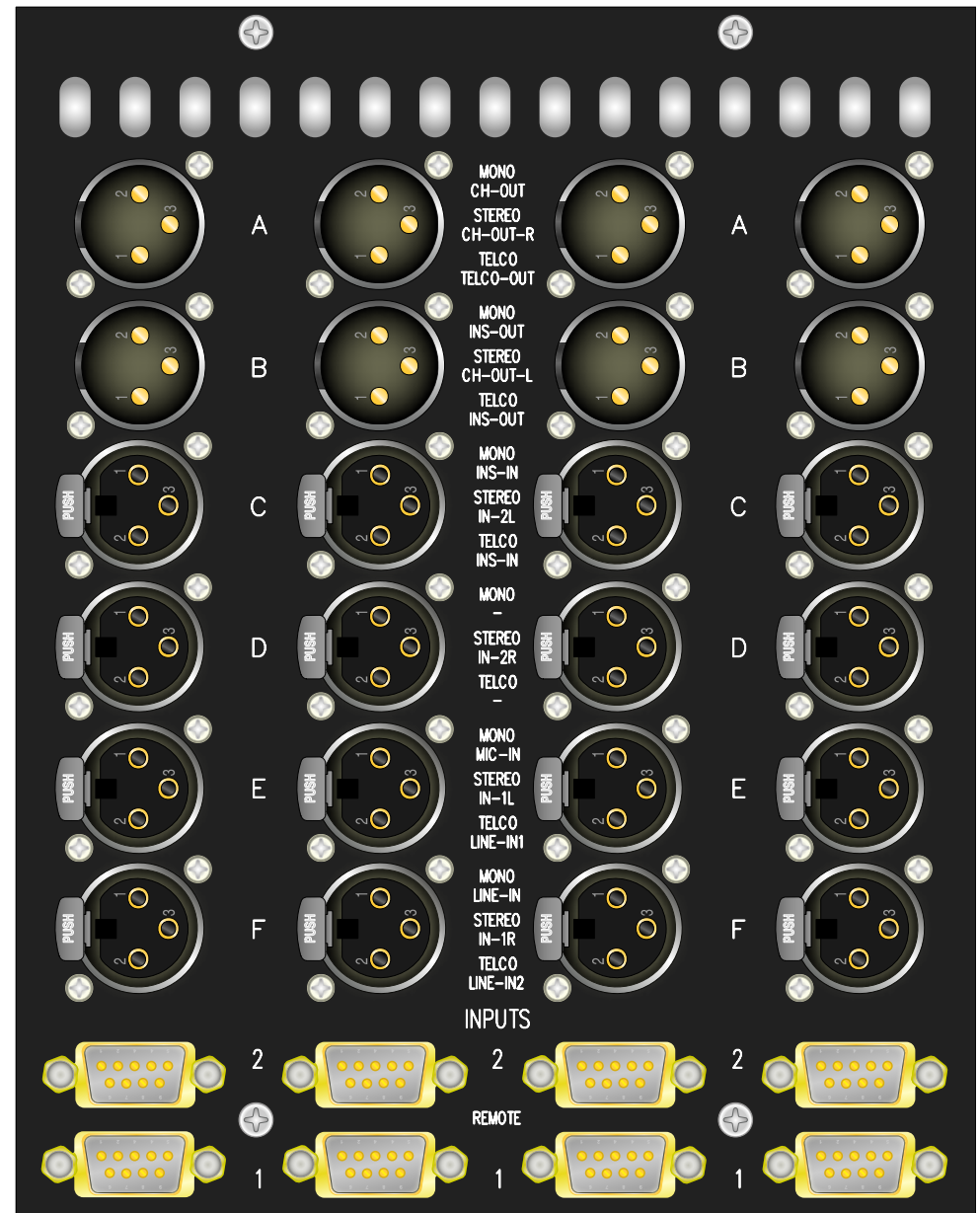
XLR-plug (male) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector C – INS-IN

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -



Connector D – not used

Connector E – LINE-IN 1

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector F – LINE-IN 2

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

9-Pin D-Sub Remote Connector 1

Control port 1, active with line input 1

9-Pin D-Sub Remote Connector 2

Control port 2, active with line input 2

The input select switch of the module determines whether the 1st or the 2nd port is active.

Stereo input modules

The picture shows the special connector panel for stereo modules BC-IS12. The only difference is the additional 25-Pin D-Sub female connector. This connector holds the insert inputs and output of two channels. The pinning of this connector is on the next page.

Remarks:

Only the stereo insert input and output is affected. The two stereo inputs and the stereo channel output works with the standard panel as well.

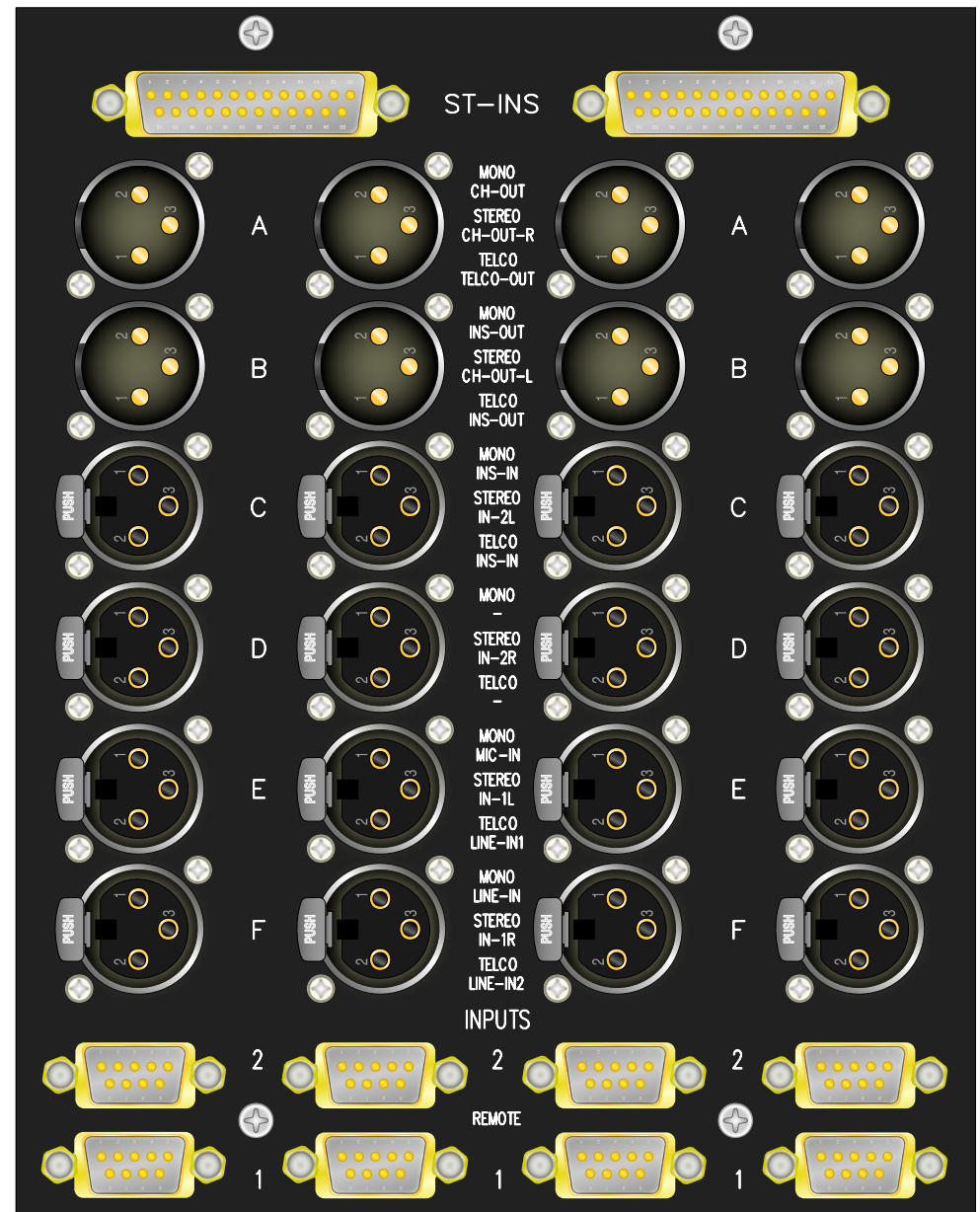
Apart from the different connector panel, a different sort of frame PCB is required. The position of these frameboards must be fixed with the order.

Mono or Telco channels can be installed on these slots with no problems. The 25-Pin D-Sub is unused in this case.

Connector A – CH-OUT-R

XLR-plug (male) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -



Connector B – CH-OUT-L

XLR-plug (male) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector C – LINE-IN 2 L

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector D – LINE-IN 2 R

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

Connector E – LINE-IN 1 L

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

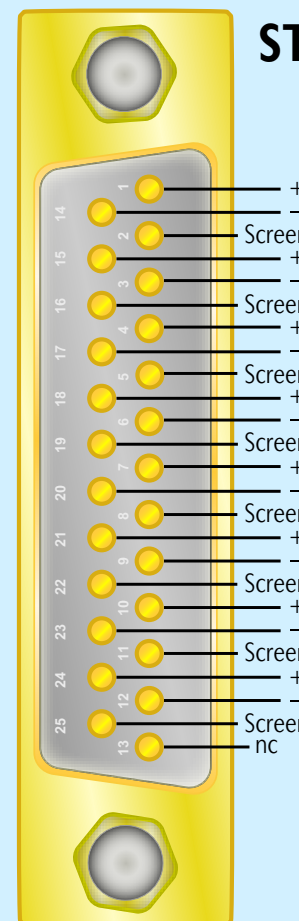
Connector F – LINE-IN 1 R

XLR-plug (female) standard pinning

1 = screen, 2 = core a / +, 3 = core b / -

The female 25-Pin D-Sub connector holds the inserts of a pair of stereo channels. See the pinning diagram on the right side of the page for details. All insert inputs and outputs are balanced.

The position of the line switch determines, which of the 2 remote control interfaces is active. Port 1 is active when line 1 is selected, port 2 when line 2 is active. Selecting the oscillator disables both the control ports.



STEREO CHANNEL INSERTS

ODD CHANNEL INS OUT LEFT

ODD CHANNEL INS OUT RIGHT

ODD CHANNEL INS IN LEFT

ODD CHANNEL INS IN RIGHT

EVEN CHANNEL INS OUT LEFT

EVEN CHANNEL INS OUT RIGHT

EVEN CHANNEL INS IN LEFT

EVEN CHANNEL INS IN RIGHT

SubD-25 Connector
Female in Console Frame

The remote control ports

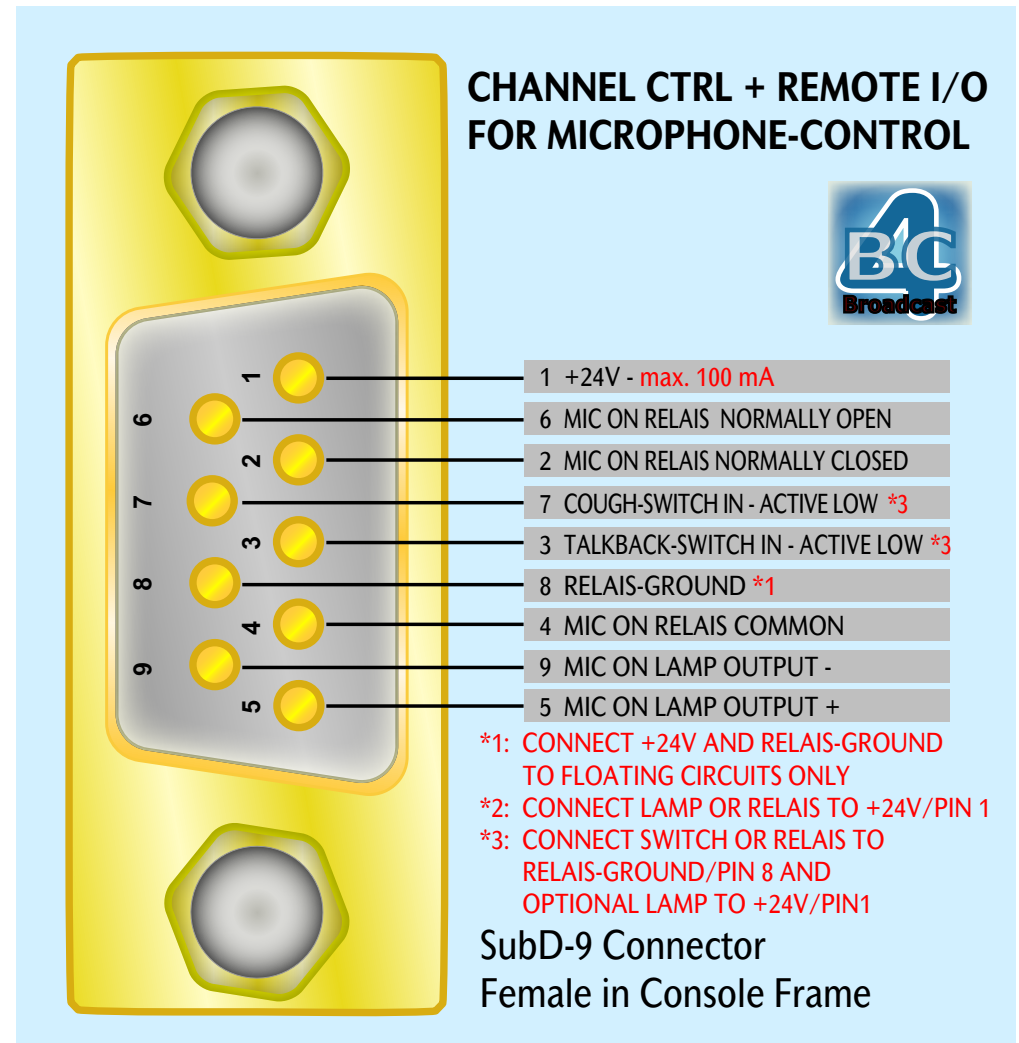
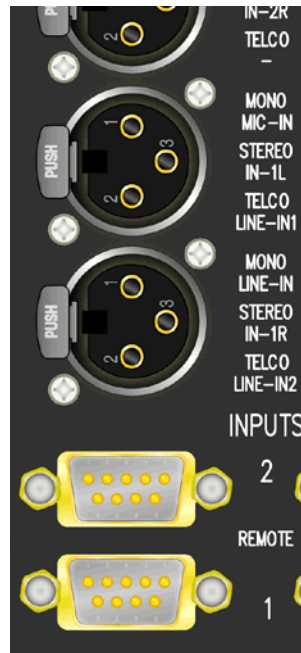
Each module has 2 remote control ports. Depending on the module version that is installed in the particular slot, these ports have different functions. With mono input channels, port 1 controls the microphone and port 2 is a remote port for external devices that is active when the line input is selected. All other modules that only have line inputs use the two ports as remote control connectors. The selection of the active port is coupled with the input selector of the module. Selecting the oscillator disables all remote ports.

The female 9-Pin D-Sub connectors have a different pinning for microphone control and remote control. Both versions provide a 24 V supply voltage with a current capacity of 100 mA for external relays, lamps, and switches. This current is internally limited by a semiconductor fuse that resets if a shortage or overload is removed.

Most of the functions of the remote controls are determined by jumpers on the module. It is also possible to disable the entire port of a particular module.

Control ports for microphones

With microphone inputs port 1 is used. See the pinning diagram on the right side of the page. The interface has two outputs that are both active when the microphone channel is open. The condition for 'open' is determined by the jumper configuration of the module. It is possible to use only the channel on switch, or the channel-on switch and the fader switch to control this output. Output 1 is a relay that connects pin 4 and pin 6 when the microphone is open and pin 4 and pin 2 when it is off. Output 2 is an open collector output that can sink up to 100 mA to Relay Ground. It is active when the microphone is open. This output is available between pin 5 (+) and pin 9 (switched -). In addition, there are two, active low inputs for external switches. Both inputs are pulled to +24V. The switch current



is less than 1mA. The inputs are protected against overvoltage. Both inputs are active when connected to Relay Ground.

To avoid ground loops, please use floating relay or switches for control.

The Cough input mutes the microphone preamplifier remotely when active. The Talkback input routes the output signal of the microphone preamplifier to the console's 'Listen-Bus'. This function makes it possible to use the microphone for incoming talkback. A jumper can block this functions with fader open or in general. In addition, it is possible to mute the main signal chain automatically with talkback.

Remote control and telephone

This type of control port is installed with all line level inputs of mono, stereo and telephone inputs modules.

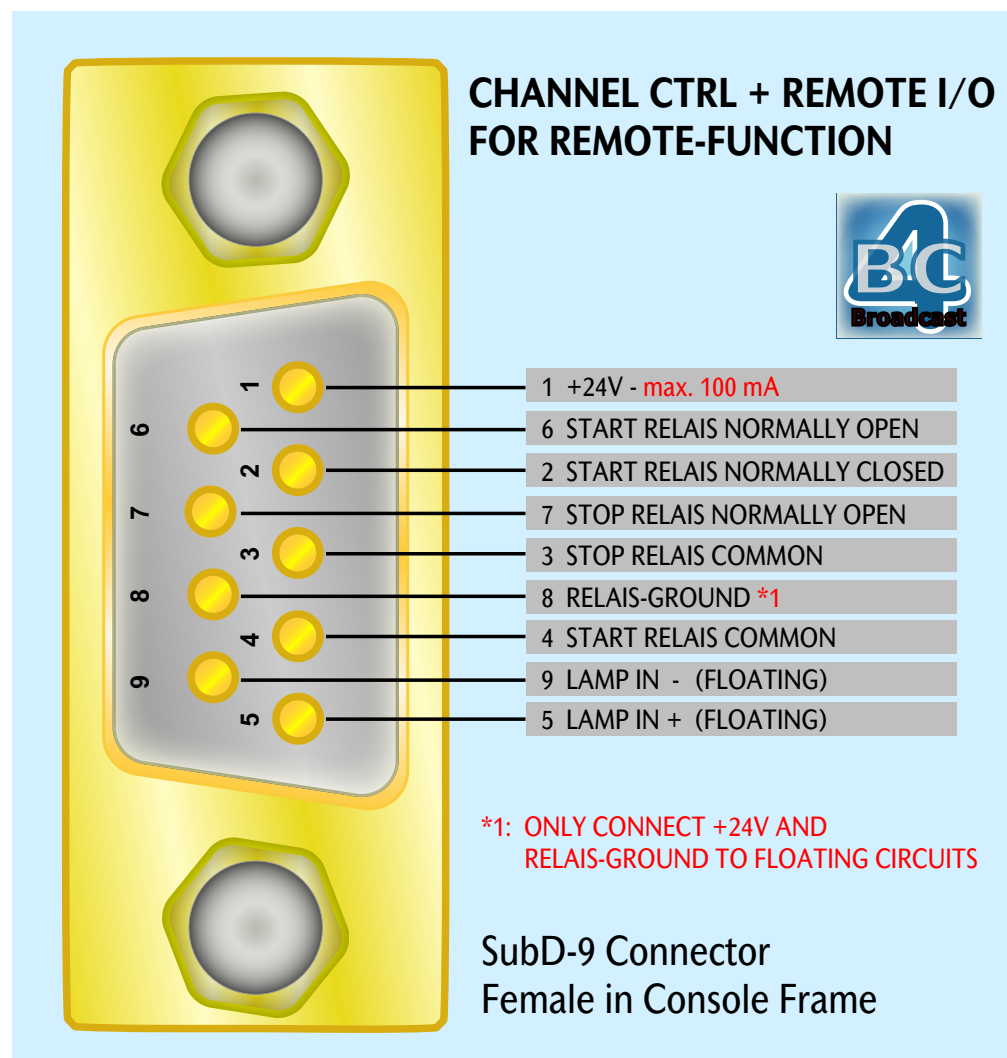
The remote control interface has two relays and an control input. The operation of the relays depends on the configuration of the particular module. Both relays are fully floating, can handle voltages of 30 V and current of up to 50 mA.

The port can be set to pulsed or static operation by jumpers. In addition, it is possible to disable a particular port. With both modes the port can be controlled by the channel-on switch alone or in combination with the fader switch. With static mode, The stop relay is normally closed and the start relay is in off position. Pins 4 and 2 are connected. When the module is in start mode (fader open, channel on, start switch pressed), the stop relay opens and the start relays connects pin 4 and pin 6.

With pulsed mode, both relays are off unless start is activated. When start is activated, the start relay connects pin 4 and pin 6 for approximately 100 ms. When the module changes from start to stop mode, the stop relay closes for 100 ms. The time is determined by internal capacitors.

The START switch of the module can toggle the state of the start/stop control all the time to make possible that an external device can be started before the fader is opened and stopped without closing the fader. This functions can be disabled as well.

The 'Lamp In' input can be used to remote control the start LED of the module by the external device. It is implemented as an opto coupler and can be used with an input voltage in the range from approx. 10 to 30 Volts. With 5 Volts a resistor has to be changed.



Another jumper determines, if the internal start logic or the lamp input is used to drive the start LED.

Interferences on the remote port

The design of the remote ports considers all common problems with the control of external devices to avoid any trouble that can be caused by the connection of the external device. However, there are some 'don't do's', that should be mentioned:

Ground Loops:

Please, make shure that you do not connect the ground of the external device to the 'Relay-Ground' of the remote port galvanically. There is no reason to do this. All relay outputs of the remote port are floating and the input of the lamp control is a floating optocoupler. If you need to use the internal 24 V supply, make sure that you use a relay or an optocoupler to separate the grounds.

High Voltages:

Case that very high voltages of more than 30 Volts are necessary to control the external device, please, use separate relays for the high voltage circuitry. Such voltages might cause click noise or other interferences in the audio path of the module.

AC Voltage:

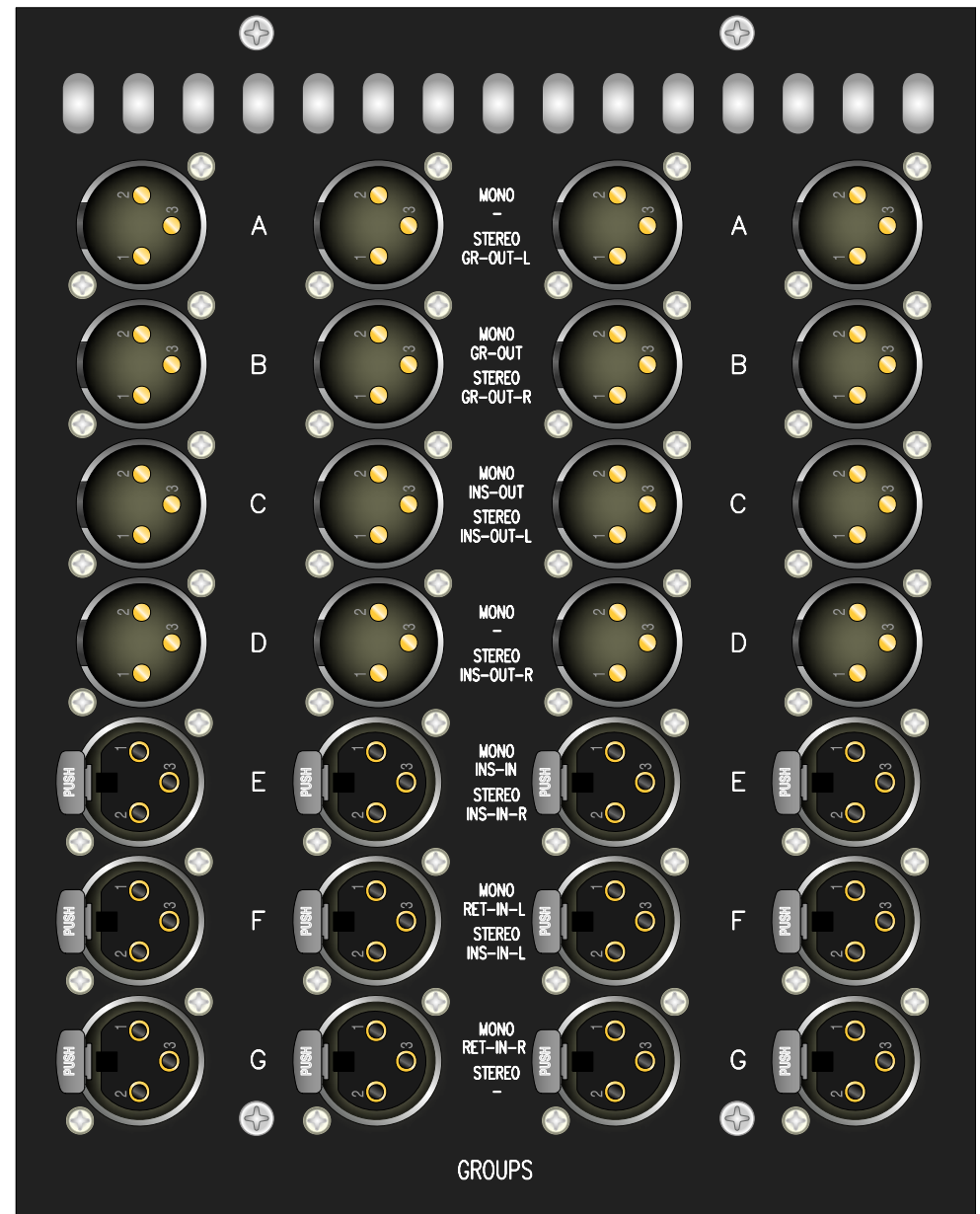
Please to not connect AC voltage to the relays of the remote section. High AC voltages can cause hum and other interferences.

Bouncing:

All inputs are protected against bouncing appropriately. However, if very old switches or relays are used in the external devices, it might happen that you need to add additional time delay to suppress bouncing. Call us or email us about such problem.

Group Connector Panel

The group panel combines all connectors for four group channels. There are 4 male and 3 female XLR connector for each group. This panels operates with all mono and stereo modules of the BC4 system. Since the standard group module of this series is the BC-MG12 mono modules, we focus here on the use of the connectors for this module. The 3-Pin XLR plugs are mar-



ked from A to G.

Connector A – not used

Connector B – GR-OUT

XLR-plug (male) pinning standard

1 = screen, 2 = core a / +, 3 = core b / -

Connector C – INS-OUT

XLR-plug (male) pinning standard

1 = screen, 2 = core a / +, 3 = core b / -

Connector D – not used

Connector E – INS-IN

XLR-plug (female) pinning standard

1 = screen, 2 = core a / +, 3 = core b / -

Connector F – STEREO-RETURN-IN LEFT

XLR-plug (female) pinning standard

1 = screen, 2 = core a / +, 3 = core b / -

Connector G – STEREO-RETURN-IN RIGHT

XLR-plug (female) pinning standard

1 = screen, 2 = core a / +, 3 = core b / -

Master section

The connector panel of the master section also includes the power connector. It combines 3-Pin XLR connectors for the main inputs and outputs and all 25-Pin D-Sub connectors that are required for the operation of the entire console. The different connectors are described in detail below.

XLR connectors

The most important inputs and outputs of the master section are installed on 3-Pin XLR connectors. These are the outputs of the program masters A, B, and - if installed - C, the outputs of all auxiliary sends and the stereo cue sends, the main control room speaker outputs, the extension select I/O's 9 and 10 and the output of the test tone oscillator.

All XLR connectors use the standard pinning with:

1 = screen, 2 = core a/+, 3 = core b / -

While there is nothing special with most of these inputs and outputs, it is necessary to point out some details about these connectors:

OSC

The test tone oscillator is always available on this connector when it is switched on. It is simply the direct, electronically balanced output of the oscillator.

SEL2-L, SEL2-R, SEL3-L, SEL3-R

These 4 connectors are the outputs of the extension connectors ,Select 2' and Select 3' that are installed in the BC-STU4b Playback module and the BC-TBO4b Talkback module. Depending on internal bridges on the console's frame board they can be used to access the output of these switchblocks or to drive the SEL2 and SEL3 inputs of the selector block installed in the control room module. Using the connectors as output makes it possible to use the particular switch block for another function.

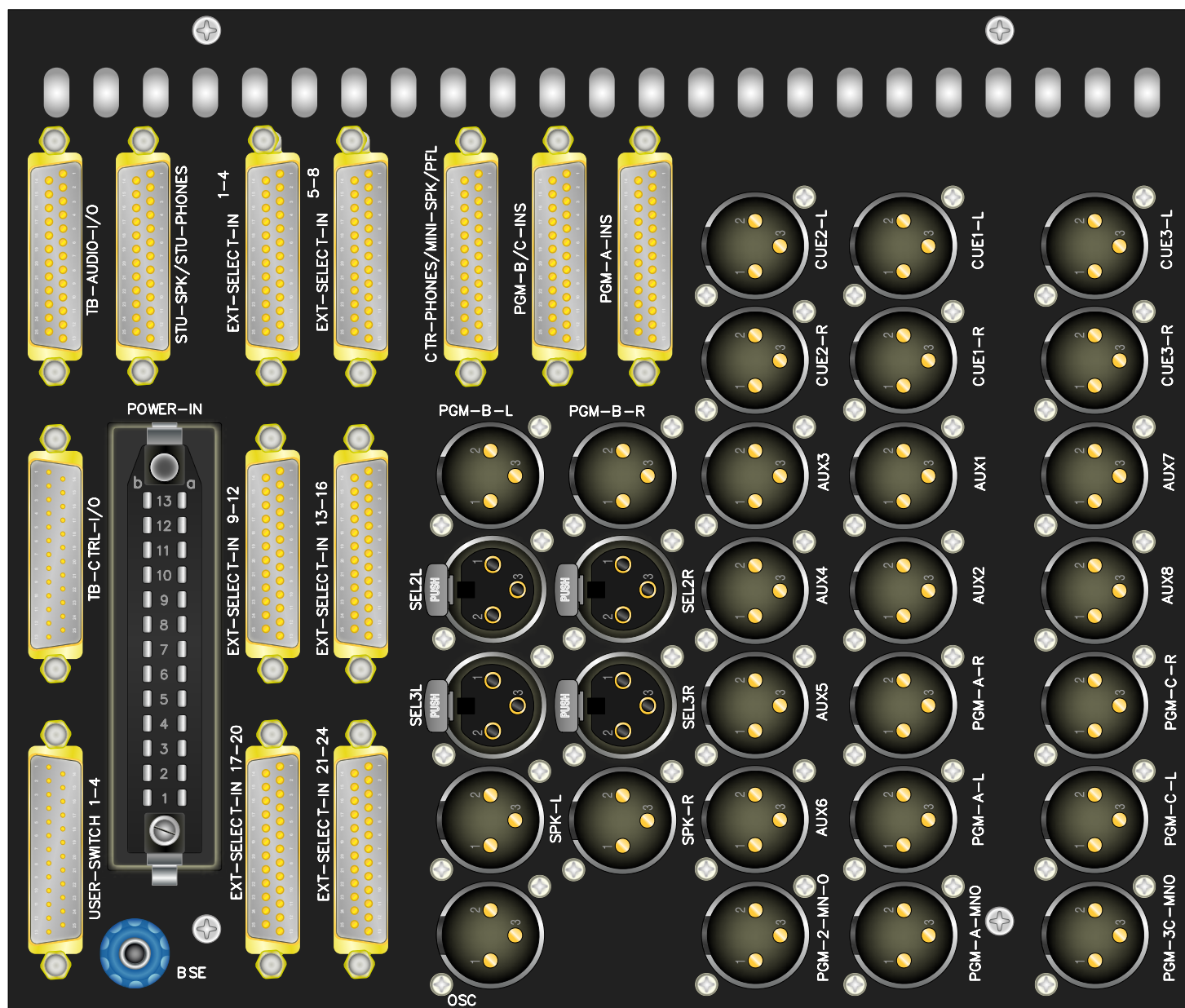
These connectors are only used with console setups with 3 program master modules and modules with special routing and auxiliary sections. However, they are fully wired.

There are 11 25-Pin D-Sub connectors in total. All connectors are female. The connectors combine inputs and outputs of a particular signal group. The pinning of these connectors is shown on the next pages.

Apart from the headphone outputs of the playback module and the parallel output of the control room headphone, all inputs and outputs are electronically balanced, or transformer balanced if such an option was ordered.

The power connector, a 26-Pin, DIN41618/41622 ,Siemens' version is installed in this panel as well. This connector is described in detail in the part I of this manual.

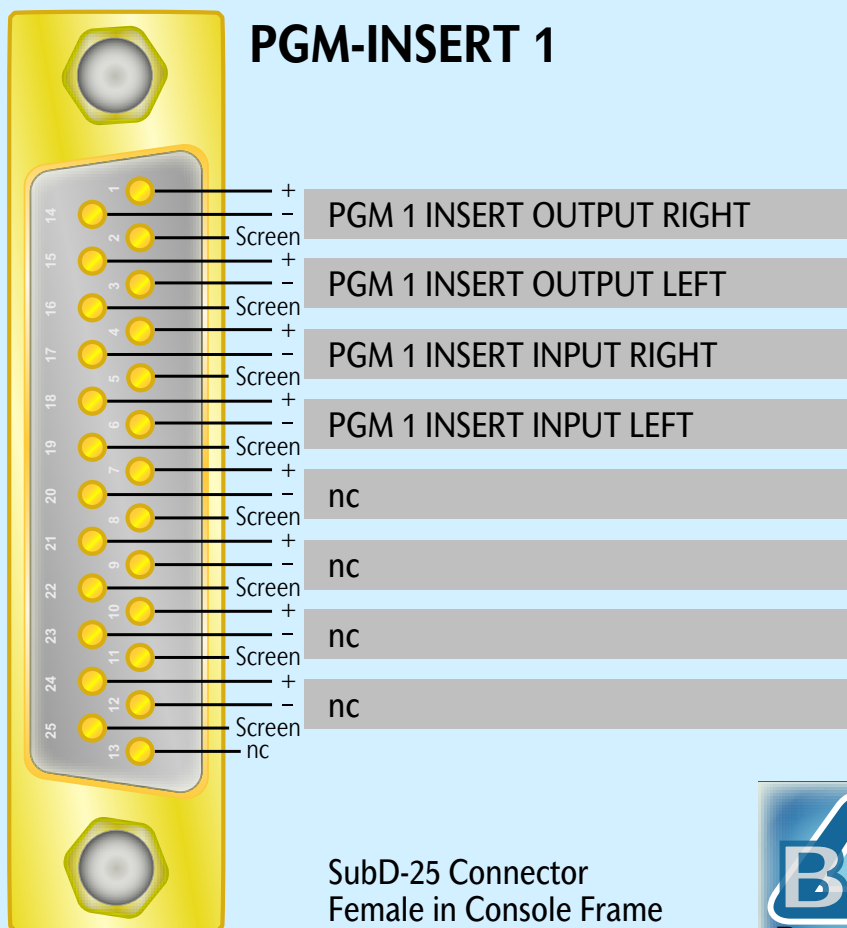
This is a high cross-section connection to the console's internal ground node. It should be used for potential equalization of the console. Connect this terminal with a high cross-section wire to your central ground node to make sure that the console has a solid ground.



PGM-INS

These connectors hold the stereo insert inputs and outputs of the program master modules. There are two different connectors, PGM-A-INS and PGM-B/C-INS. While PGM-A-INS contains the inserts of the first program master modules. The 2nd and 3rd program master module must not be installed necessarily. If the particular module is installed, the inserts are available on this connector.

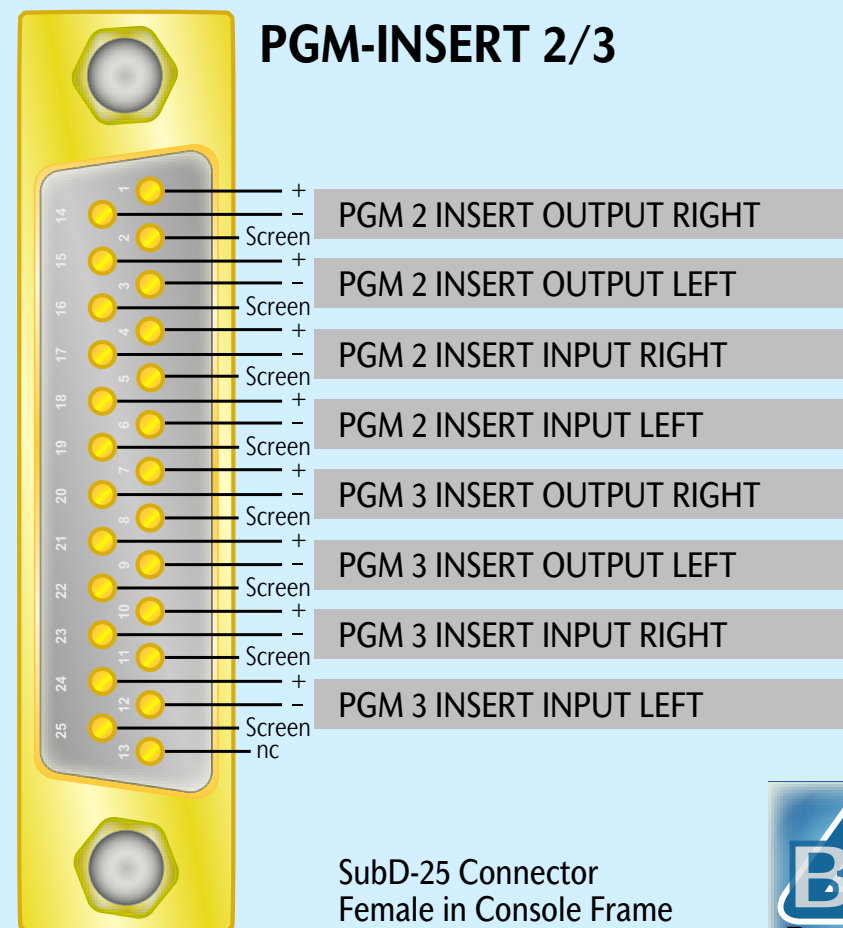
PGM-INSERT 1



SubD-25 Connector
Female in Console Frame



PGM-INSERT 2/3



SubD-25 Connector
Female in Console Frame



CTR-PHONES/MINI-SPK/PFL

Apart from the main speaker outputs that are available on XLR connectors, this connector combines all outputs and inputs of the control room monitor section.

Mini Speakers

The outputs of the mini speakers left and right are wired to the meter bridge of the frame. This speakers are normally used for PFL and incoming Talkback. However, if no internal speakers are installed, external, active speakers can be used for this purpose. It is also possible to use these outputs as ,alternates', since the input selection of the mini speaker section includes the output control room source selector. It depends on the setting of the control room module, if both outputs are active are only the left or right one. Jumpers make it possible to use this system in mono or stereo, with one or two speakers.

CTR Headphones

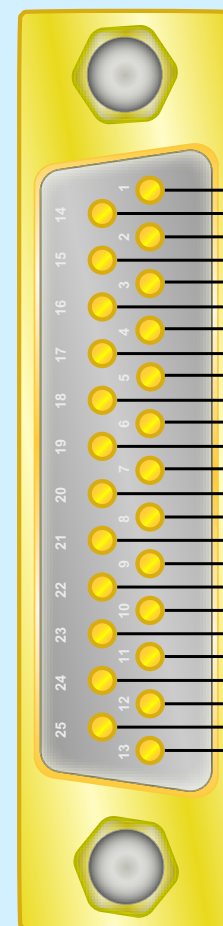
The output is unbalanced for the direct connection of a headphone. It is in parallel to the console's internal headphone jack. Please, observe the special pinning of this output.

AIR-IN

The AIR-INPUTS are used for ,post transmitter' control with live broadcasting. With BC4 consoles with two program master modules, these selector switches are used for the program master 2 by default. However, the Air input is still available and can be used alternatively. What internal connections are installed depends on your special configuration. The default setting is AIR for consoles with one program master and PGM-B for consoles with 2 program master modules.

PFL

This is the direct, calibrated, electronically balanced output of the stereo PFL bus for external use.



CTR-OUT/AIR-IN

MINI SPEAKER OUTPUT LEFT

MINI SPEAKER OUTPUT RIGHT

AIR INPUT LEFT / PGM2 LEFT

AIR INPUT RIGHT / PGM2 RIGHT

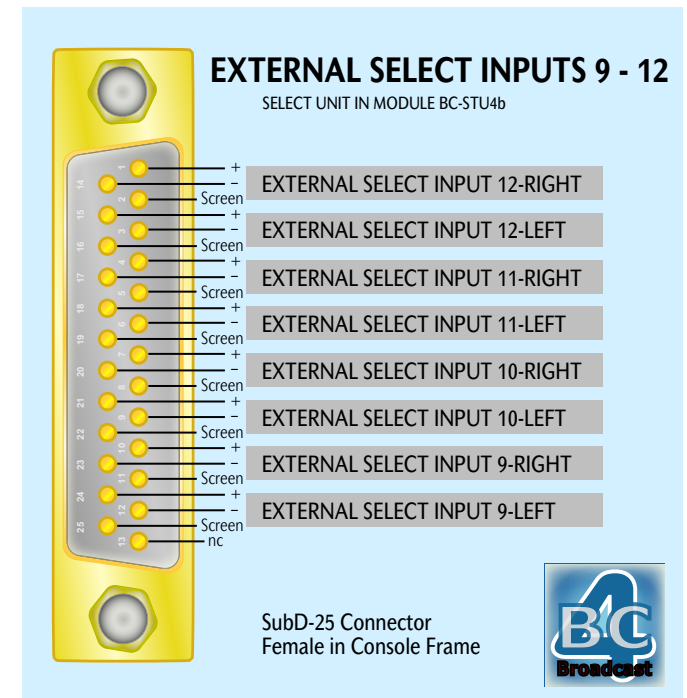
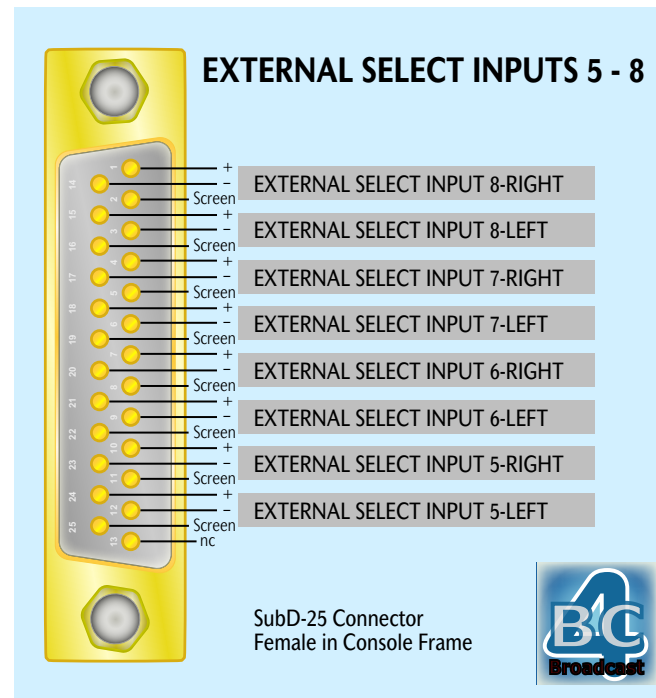
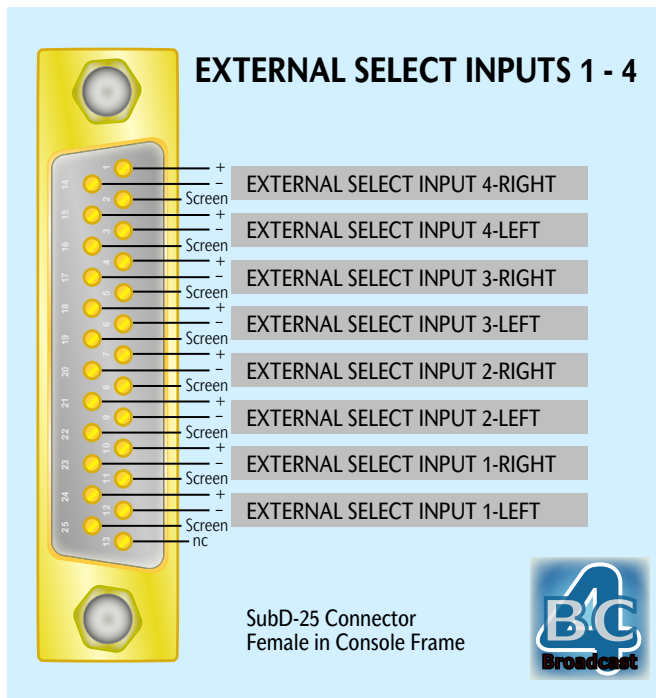
PFL OUTPUT RIGHT

PFL OUTPUT LEFT

nc

CTR PHONES OUTPUT

SubD-25 Connector
Female in Console Frame



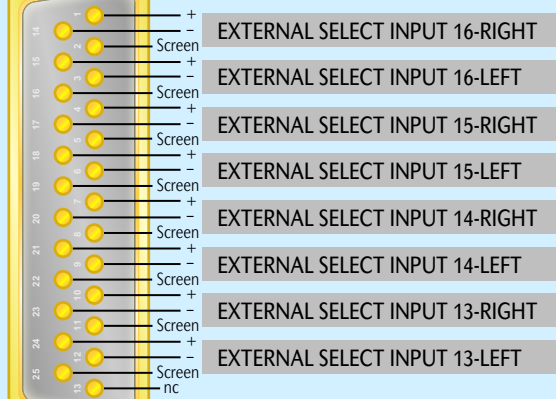
EXT-SELECT-IN 1-4, 5-8, 9-12, 13-16, 17-20, and 21-24

The 24 stereo inputs of the extension source selector of the control room monitor section are available on 6 female 25-Pin D-Sub connectors in groups of 4 stereo sources each. The connectors EXT-SEL 1-4 and EXT-SEL 5-8 access the switch block that is installed in the control room module. EXT-SEL 9-12 and EXT-SEL 13-16 connect the octal switch block of the selector in the playback module BC-STU4b while EXT-SEL 17-20 and EXT-SEL 21-24 are used for the switch block in the talkback module BC-TBO4b. All connections are balanced. The entire select system is passive. The switches have a break before make delay. All switches are implemented with electrical, mutual locking to avoid that several outputs can be connected inadvertently.

The outputs of the switch blocks 2 and 3 in the playback and the talkback module are separately available on the XLR connectors SEL2 and SEL 3 , left and right.

EXTERNAL SELECT INPUTS 13-16

SELECT UNIT IN MODULE BC-STU4b

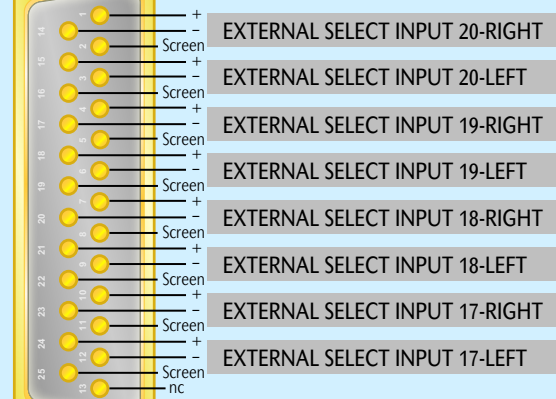


SubD-25 Connector
Female in Console Frame



EXTERNAL SELECT INPUTS 17-20

SELECT UNIT IN MODULE BC-TBO4b

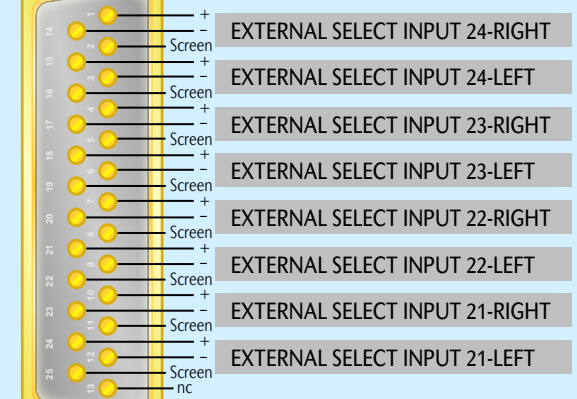


SubD-25 Connector
Female in Console Frame



EXTERNAL SELECT INPUTS 21-24

SELECT UNIT IN MODULE BC-TBO4b



SubD-25 Connector
Female in Console Frame



TB-AUDIO-I/O

This connector combines all inputs and outputs of the talkback, listen and oscillator section of the console. See the pinning diagram on the next page for details.

The 'Oscillator Direct Output' is in parallel to the XLR connector 'OSC-OUT'. An additional output, 'OSC SWITCHED OUTPUT' is only active when the OSC to Group output is enabled.

The TALKBACK EXTENSION input can be used to couple the internal talkback microphone with an external talkback mic or use the external mic alternatively. It is also possible to couple the console's talkback system with an external talkback system, since this input is implemented as a balan-

ced zero-ohm input. With an external microphone, 2 470 ohms resistors should be used. If line level sources are connected to the input, 2 100k resistors should be used per input. Of course, it is possible to change these values to increase or decrease the overall gain.

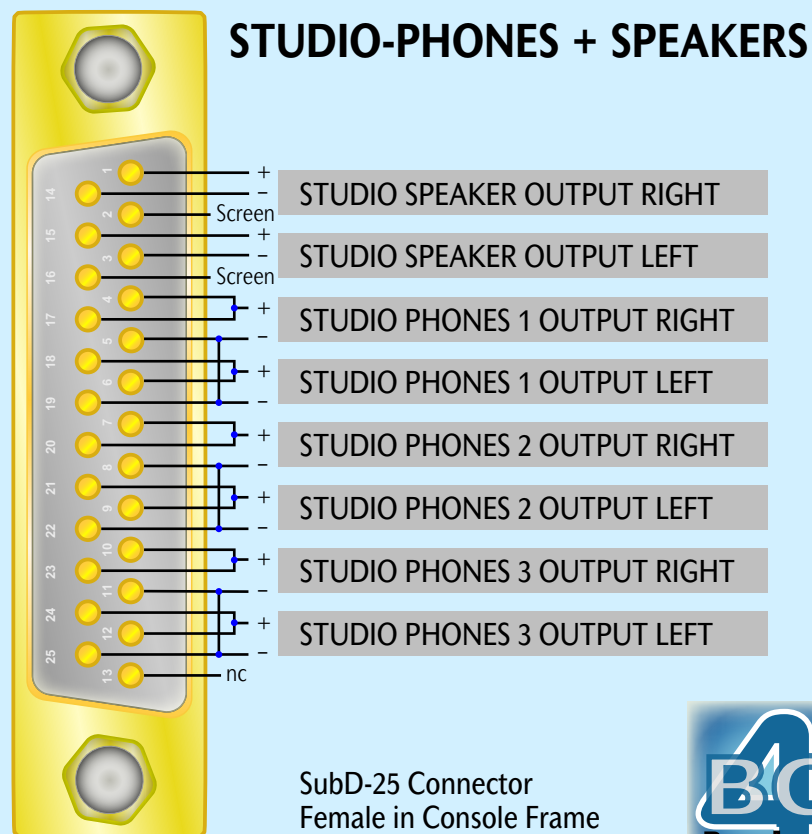
The Talkback Extension input has its own rotary level control and can be enabled by a local switch or a remote control input. See the 'Talkback Control Connector' for details.

There are 2 external inputs for the extension of the LISTEN system that handles incoming talkback signals. The EXTERNAL LISTEN MIC INPUT is identical to the external talkback input and uses the same zero ohm technique. See the description above for details. The input EXTERNAL LISTEN LINE INPUT is a standard electronically balanced, high level input. This input has can be used in steady mode or the additional gate function can be used to activate the input. The function is active when the DETECT switch

on the top plate of the BC-TBO4b module is pressed.

With this function, an input signal above threshold releases the listen signal than can feed the PFL system, the mini speakers, the control room headphone and/or the external listen output.

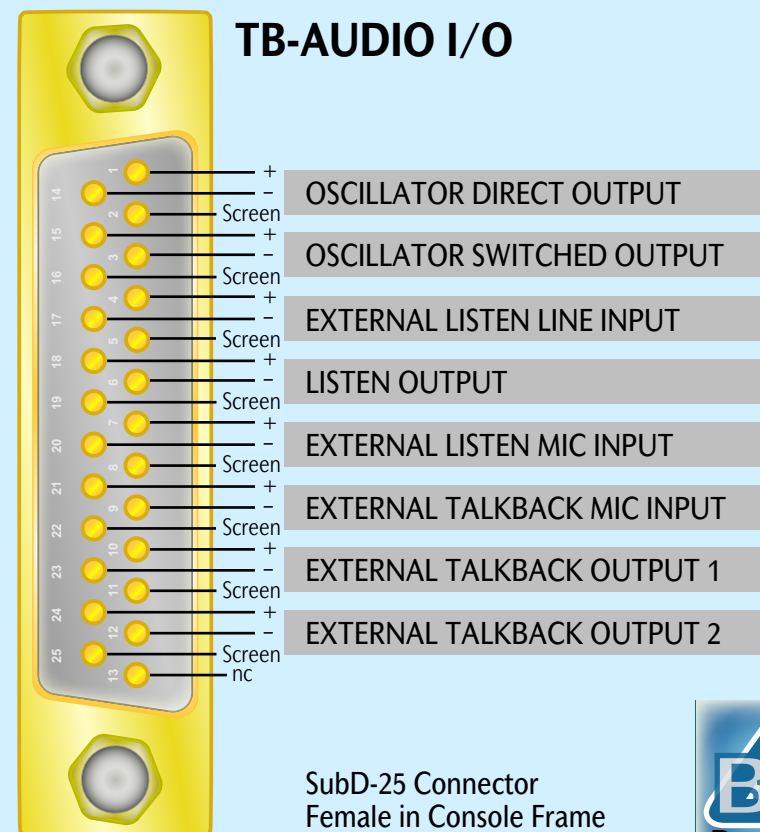
The LISTEN OUTPUT is electronically balanced. It can be used to install external spekaers.



The two outputs, EXTERNAL TALKBACK OUTPUT 1 and EXTERNAL TALKBACK OUTPUT 2 are electronically balanced, line level outputs. They are activated by the corresponding talkback switches in the BC-TBO4b modules. It is possible that one or both of these lines are used internally for talkback to program master busses. These options can be installed on customer request. Please check, if such an option was ordered before you use these outputs.

STU-SPK/STU-HEADPHONES

This connector combines the 3 playback headphone outputs and the studio speakers outputs of the playback module BC-STU4b. While the studio speakers outputs are standard, electronically balanced, line level outputs, the headphone



outputs are unbalanced to drive headphones directly. Each output can drive approx. 3 headphones in parallel. Please, make sure that headphone that are attached to the same driver have the same impedance. Otherwise, different volume differences are possible. Please note the special pinning of these headphone outputs.

25-Pin D-Sub Control Connectors

There are two, male 25-pin D-Sub connectors for talkback, listen and on-air control connections. The secon connector holds floating connection to 4 ‚User‘ switches that can be used for special application by the customer.

TB-CTRL-I/O

The connections on this plug are used to remote control the console's logic functions and external equipment. All control inputs and outputs are floating. All outputs are relay contacts, all inputs are opto couplers that can be used with a voltage between approx. 9 V and 30 V. The input resistance is 1,5 k Ohm. If 5 Volt control in necessary, an internal resistor be be changed. The output relay can handle currents up to 50 mA and voltages of 30 V. Please, use only ‚clean‘ DC voltages, no AC voltages and **BY NO MEANS MAINS VOLTAGE OF 115V OR 230V.**

EXTERNAL LISTEN CTRL INPUT

Remote controls the external listen line input that can also be controlled by the level detector circuit,

EXTERNAL LISTEN MIC CTRL INPUT

Remote control of the zero ohms external listen input.

EXTERNAL TALKBACK MIC CTRL INPUT

This input remote controls the zero ohm input for external talkback sources.

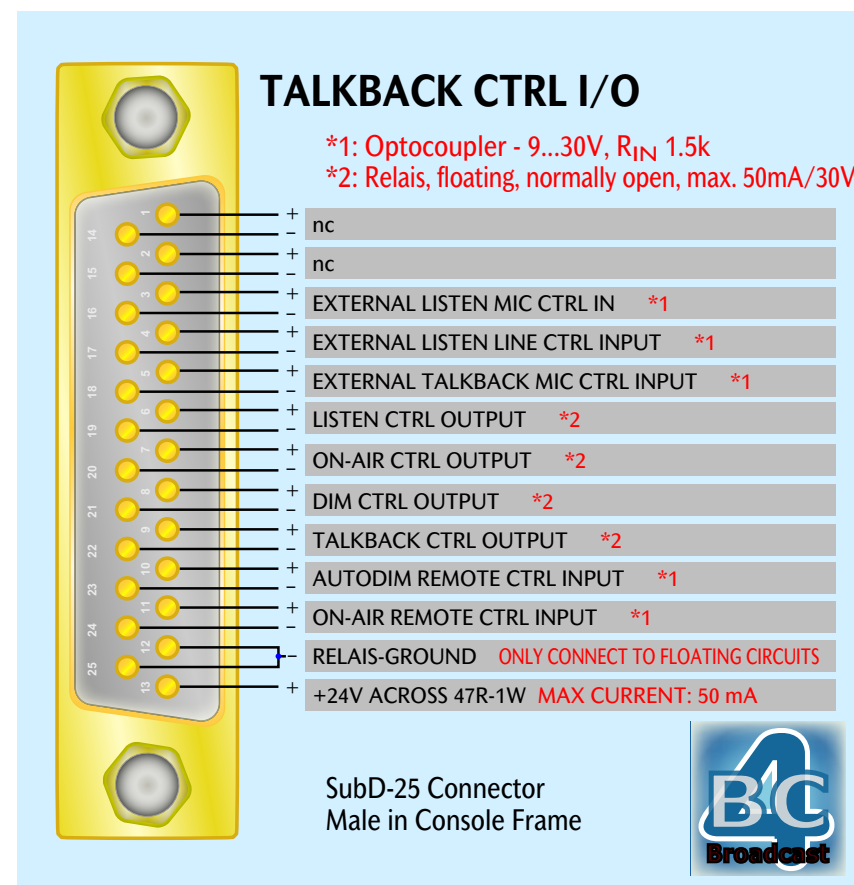
AUTODIM REMOTE CTRL INPUT

This input makes it possible to activate the Autodim Bus by an external voltage.

ON-AIR REMOTE CTRL INPUT

This input sets the console in ON-AIR mode when active.

The LISTEN-CTRL-OUTPUT is active, when the listen-system of the console is active.



The DIM-CTRL-OUTPUT is active, when the AutoDim function of the console is activated.

The ON-AIR-CTRL-OUTPUT is active when the console is in On-Air mode.

The TALKBACK-CTRL-OUTPUT is active, when at least one of the talkback buttons is pressed. It is possible to isolate particular TB switches from this function.

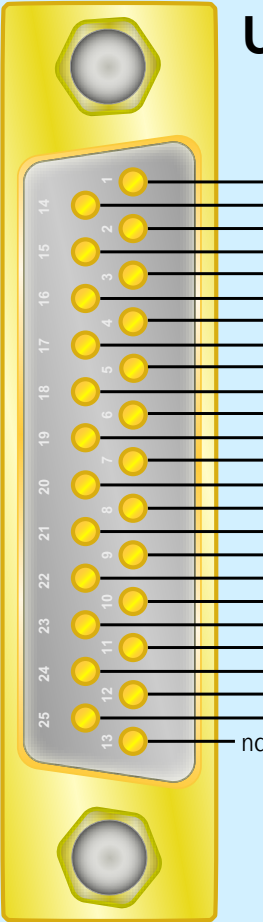
Please consider, that almost all inputs and outputs on this connector can be used differently on customers demand. Please check your order information if there are any changes that concerns these functions. We will inform you in a special bulletin about any custom configuration and changes in the functions of a particular signal.

USER-SWITCH 1-4

4 switches are installed in the BC-TBO4b talkback modules that can be used for customers remote controls or other local functions. With the standard configuration, 2 of the switches are non-locking versions while the other two are locking versions. This assignment can be changed by special order. The entire connector is fully floating. Each contact and the LED can be accessed. Each switch has ,NO', normally open, and an ,NC' normally closed contact. The ,Lamp' is a multi-LED that operates with 2V or 24V DC. The color and the engraved lettering of the caps and the color of the LED's can be fixed with order. The contacts can handle voltages of 30 V and DC currents of 50 mA.

Only "clean" direct voltages may be used. If there are AC voltages or ,dirty' DC connected, interferences in the audio system are possible.

Special configuration of the ON-AIR system or other control sections of the console may use these switches for internal functions. Please check your order if something like this is installed with your console, before using these switches.



USER-SWITCH 1 - 4

Switches: max. 50 mA / 30V
Lamps: 14V/100mA or 28V/40mA or Led's
ALL DEVICES ARE FLOATING

SWITCH 4 - LAMP
SWITCH 4 - CONTACT - NORMALLY OPEN
SWITCH 4 - CONTACT - NORMALLY CLOSED
SWITCH 3 - LAMP
SWITCH 3 - CONTACT - NORMALLY OPEN
SWITCH 3 - CONTACT - NORMALLY CLOSED
SWITCH 2 - LAMP
SWITCH 2 - CONTACT - NORMALLY OPEN
SWITCH 2 - CONTACT - NORMALLY CLOSED
SWITCH 1 - LAMP
SWITCH 1 - CONTACT - NORMALLY OPEN
SWITCH 1 - CONTACT - NORMALLY CLOSED

SubD-25 Connector
Male in Console Frame

