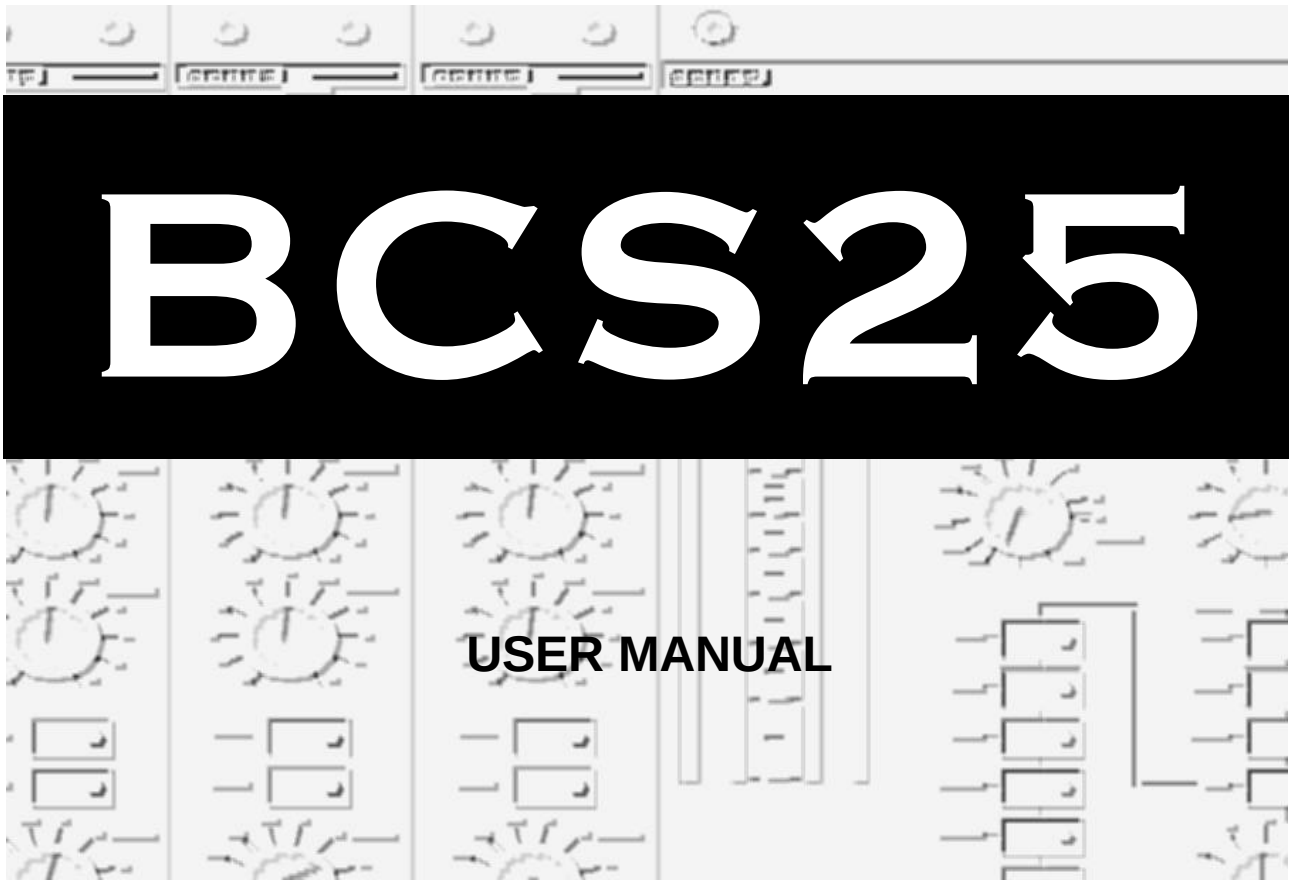

BCS25

USER MANUAL

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Safety instructions

1 All safety instructions, warnings and operating instructions must be read first.

2 All warnings on the equipment must be heeded.

3 The operating instructions must be followed.

4 Keep the operating instructions for future reference.

5 The equipment may never be used in the immediate vicinity of water; make sure that water and damp cannot get into the equipment.

6 The equipment may only be installed or fitted in accordance with the manufacturers recommendations.

7 The equipment must be installed or fitted such that good ventilation is not obstructed in any way.

8 The equipment may never be installed in the immediate vicinity of sources of heat, such as parts of heating units, boilers, and other equipment which generates heat (including amplifiers).

9 Connect the equipment to a power supply of the correct voltage, using only the cables recommended by the manufacturer, as specified in the operating instructions and/or shown on the connection side of the equipment.

10 The equipment may only be connected to a legally approved earthed mains power supply.

11 The power cable or power cord must be positioned such that it cannot be walked on in normal use, and objects which might damage the cable or cord cannot be placed on it or against it. Special attention must be paid to the point at which the cable is attached to the equipment and where the cable is connected to the power supply.

12 Ensure that foreign objects and liquids cannot get into the equipment.

13 The equipment must be cleaned using the method recommended by the manufacturer.

14 If the equipment is not being used for a prolonged period, the power cable or power cord should be disconnected from the power supply.

15 In all cases where there is a risk, following an incident, that the equipment could be unsafe, such as:

- if the power cable or power cord has been damaged
- if foreign objects or liquids (including water) have entered the equipment
- if the equipment has suffered a fall or the casing has been damaged
- if a change in the performance of the equipment is noticed

it must be checked by appropriately qualified technical staff.

16 The user may not carry out any work on the equipment other than that specified in the operating instructions.

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Introduction

The BCS 25 is specifically designed for applications requiring a full-featured mixing console while being restricted by dimensional and/or financial limits. Post-production rooms, OB vans, on-location transmission studios and secondary studios are only a few of the possible uses for the BCS 25.

The BCS 25 frame is supplied with 8 input channels (optional with or without equalizer), the build in power supply and an extensive mastersection with LED PPM's.

Input modules
The universal BCS25(E) input channel features 3 inputs (line 1, line 2 and mic), a gaincontrol, a 3-band equaliser (option: without) and a balance control. The input signal can be routed to two stereo mix-busses with the audition and program select buttons. This enables the engineer to set up two different output mixes or to use the console for two different jobs running simultaneously.
The auxiliary 1 is pre-fader and has a volumecontrol on the module. The auxiliary 2 bus sends the signal directly to the master section, the signal may be selected pre or post fader.
The cue button enables pre-fade listening of the input source. A fader/button start feature is standard (fader or button function is set by an internal jumper). The 100 mm fader is not in the audio signal path but only controls the VCA; this prevents any signal distortion and increases reliability.

Telephone hybrid
There is also a special telephone channel available with integrated analogue telephone hybrid. This channel can also be used as a remote for an external hybrid. The ON/OFF buttons can be used for the remote control for the external hybrid.
The BCS26(E) is equipped with an intelligent electronic circuit to generate a mix-minus signal (Dateq's unique TDM^2). This makes it possible to have more than one hybrid in the mixer.

BCS27 Master module
The master section is extremely well equipped. It has a 40-segment LED VU-meter with peak hold function that can be linked to PGM out or each of the other sources. In addition the BCS27 has a master fader for PGM out, an adjustable headphone output for monitoring any signal, level controls for other outputs such as aux, audition, etc.
Any signal can be selected to the monitor outputs (control room or headphone) by means of the switching matrix.
The dedicated guest and the presenter outputs have a very practical feature. The engineer is able to send a different signal mix - than the actual PGM - to each of those two outputs. This enables him/her to perform simple timesaving 'post-production-during-transmission' type of operations!

Communication between engineer, guest and presenter is completely handled by the console, offering numerous possibilities. The most interesting one is the ability to rout the communication signal to the PGM output. This option has been specifically implemented for live on-location (OB) transmissions: it presents a direct and easy communication channel with the studio engineer while news and commercials are broadcast from the home base studio!

Product support

If you have any questions concerning the BCS25, its accessories or other products, please contact:

Dateq Audio Technologies B.V.
De Paal 37
NL-1351 JG Almere
The Netherlands

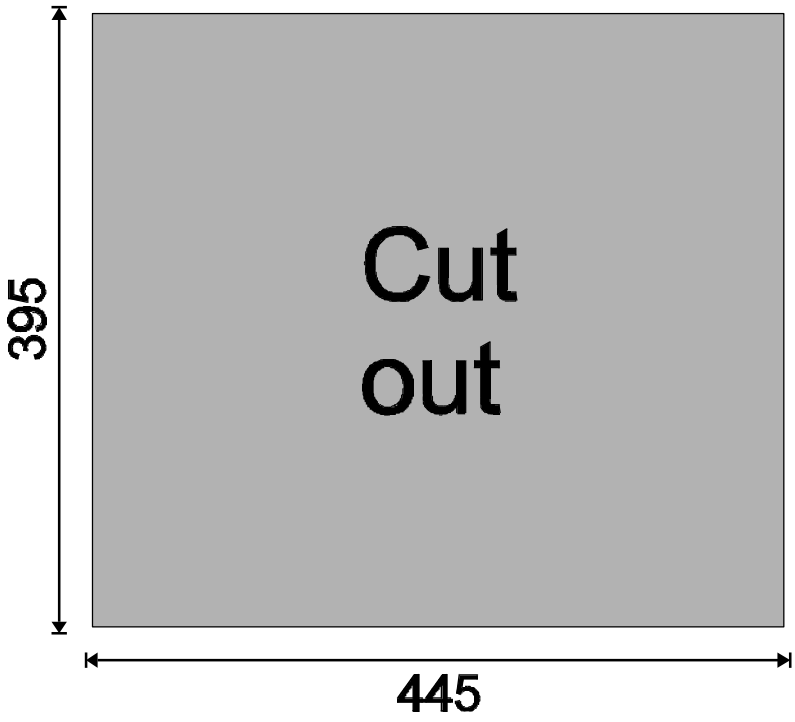
Telephone: +31 36 54 72 222
Fax: +31 36 53 17 776
E-mail: info@dateq.nl

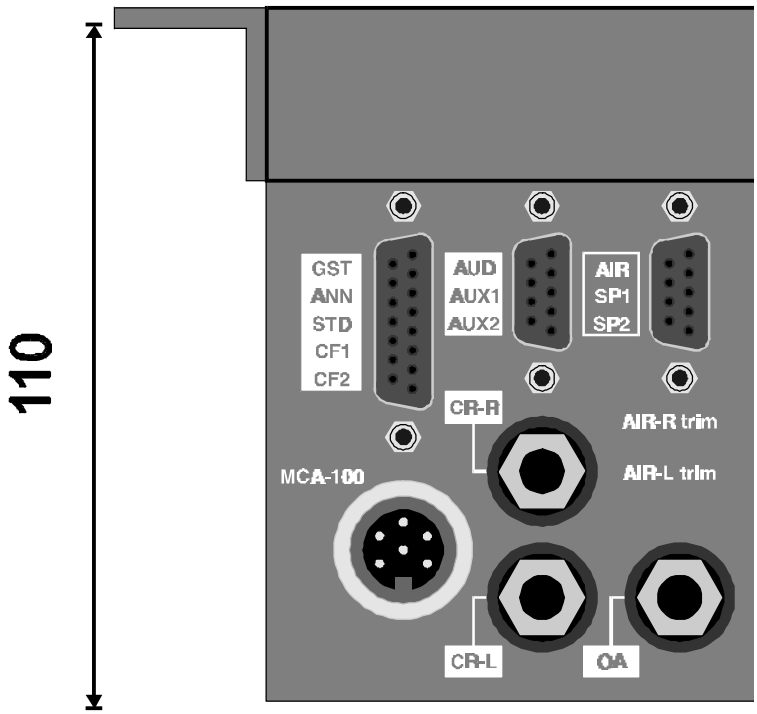
Installing the mixer unit

The BCS25 is supplied as standard without a cabinet or connector cables. It is possible to make cables for connecting to the Sub-D connectors of the various input and output modules in-house. Only use connectors with metal cans and shielded cables for optimal HF-rejection.

Installing into a cabinet

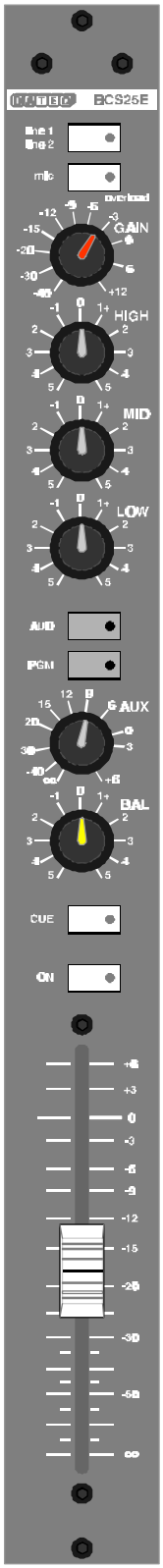
The BCS25 frame fits into an opening of 445 x 395 x 110 mm (W x H x D).





BCS25(E) dual line/ microphone input module

The BCS25(E) input module is available with or without 3 band equaliser. The module can handle up to 3 different signals: 2 stereo line and a mono microphone. Line input 1 and the microphone input of this module are electronically balanced. Line input 2 is unbalanced but can be turned into a balanced input by use of an extra pushon balanced line-input module. The microphone input is equipped with phantom power which can be switched off.



Line 1/ Line 2 Input selector. When the switch is pushed (green LED is lighted) line 2 is selected.

Mic Input selector. When the switch is pushed (green LED is lighted) the microphone input is selected, regardless of the inputselector for line 1 or line 2.

Overload The LED in the mic-switch lights up red when the signal level anywhere in the module is too high and distortion can occur (the limit is 6dB under cliplevel).

Gain Volume pre-setting. Range: -46dB to +12dB

High High-tone control (BCS25E only).
Shelving: ± 12dB @ 12kHz.

Mid Mid-tone control (BCS25E only).
Bell-curve: ± 12dB @ 1.3kHz.

Low Low-tone control (BCS25E only).
Shelving: ± 12dB @ 60Hz.

AUD/ PGM Bus-routing switches. When a switch is pushed (yellow LED is lighted) the signal will be routed to the selected output.

AUX Volume control for AUX1-level. The AUX1-bus is pre-fader.

BAL Balance-control. The signal is placed at the desired position in the stereo image.

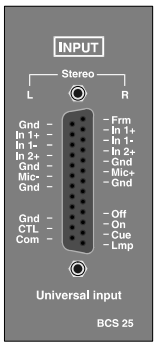
CUE Pre-fader listening. The LED lights up green when the CUE-function is activated. With an internal jumper the master-cue function can be (dis-)activated.

ON On-off switch. It is possible to select faderstart, buttonstart or a combination of both with an internal jumper. The yellow LED is lighted when the channel is on.

Fader 100mm long volume control. Depending on a jumper-setting the signal on the AUX2-bus is pre- or post-fader.

BCS25(E) connector board

DB25-F connector



All connections are made on this connector. The function of the various pins can be found in the table.

BCS25(E) Audio and Control Input / Output (Sub-D 25-pins female)

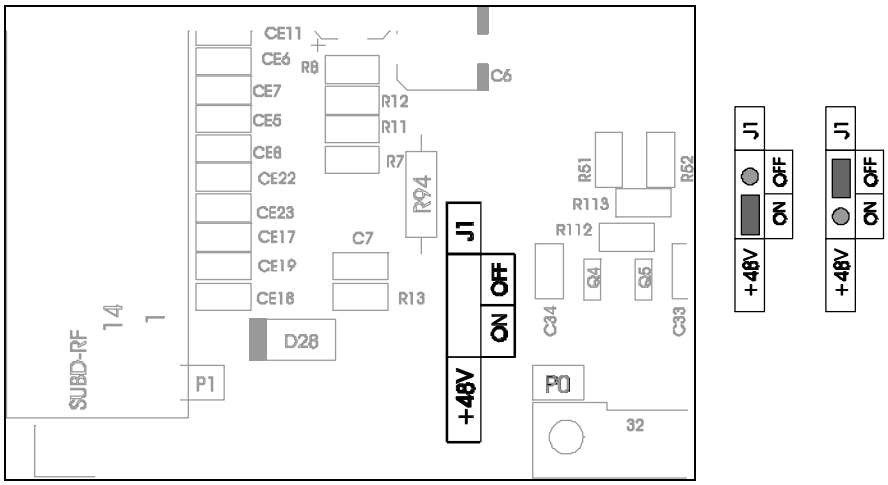
Pin	Function	Type
1	Channel on lamp (15V/ 1W max.) (Line 1)	Out
14	Common external on lamp/ external CUE (Line 1)	D-GND
2	External CUE (Line 1)	In
15	External mute	In
3	Remote Start; 15V/ 10mA (Line 1)	Out
16	GND/ Common external mute	GND
4	Remote Stop; 15V/ 10 mA (Line 1)	Out
17	Line 2 Audio left - *	In*
5	Line 2 Audio right - *	In*
18	Line 2 Audio left + *	In*
6	Line 2 Audio right + *	In*
19	Audio GND	A-GND
7	Audio GND	A-GND
20	Microphone Audio -	In
8	Microphone Audio +	In
21	Audio GND	A-GND
9	Audio GND	A-GND
22	Line 2 Audio left +	In
10	Line 2 Audio right +	In
23	Line 1 Audio left -	In
11	Line 1 Audio right -	In
24	Line 1 Audio left +	In
12	Line 1 Audio right +	In
25	Audio GND	A-GND
13	Frame GND	Frame

*: These inputs are available when the optional balanced input module, or the RIAA-correction amplifier are inserted. The line 2 unbalanced inputs are to be discarded.
When a RIAA-correction amplifier is mounted use pins 6 and 18 for the signal. Pins 5 and 17 are internally connected to the ground.

Phantom power

Non-dynamically microphones usually need an external power supply for its built in pre-amplifier. If this power has to be supplied by the BCS25, place jumper J1 in the 'ON' position. +48Vdc will be supplied to both signal wires related to the cables shielding.

Jumper J1 is situated on the left side of the bussconnector. The factory default setting for this jumper is 'OFF'. See picture below:



Dynamically microphones don't need a phantom power supply. When the correct cables are used it will not damage the microphone when the phantom power supply is turned on. So it is not really dangerous to turn the phantom power on for all types of microphones.

Faderstart/ buttonstart

The BCS25(E) module is able to remote start connected equipment by faderstart, buttonstart or a combination of these two options. By changing jumpers you easily select one of these settings. The jumpers for remote start settings can be found at the main PCB above the bussconnector (jumper J8 and J9, see drawing).

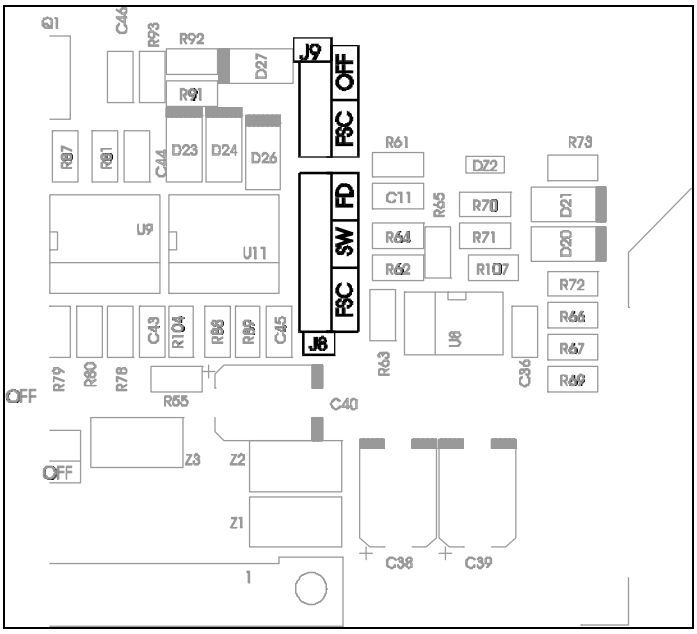


Fig. 1

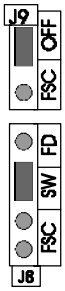


Fig. 2

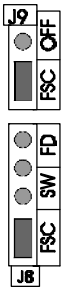


Fig. 3

Jumpers J8 and J9 select the type of operation. It is possible to choose between faderstart (figure 1), buttonstart (figure 2) or the fader-switch combinaton (figure 3).

FADER, SWITCH COMBINATION

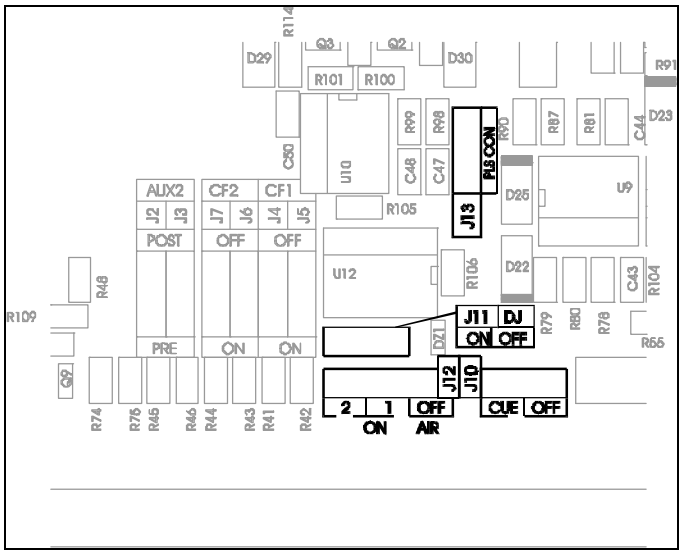
When the fader-switch combination is selected the connected equipment can be started in two different ways:

1. Pushing the startbutton when the fader is closed. The connected equipment will start as soon as the fader is opened.
2. Opening the fader. The connected equipment will start as soon as the button is pressed

To start the connected equipment 2 conditions have to be fulfilled. When just one of the conditions is fulfilled the LED in the button will light up dimmed to indicate that the equipment will be started as soon as the fader is opened/ the ON is pressed.
The equipment will stop as soon as the button is pressed or the fader is closed.

Remote control output

The BCS25(E) module can generate a continues or pulsed start/stop signal. Jumper J13 at the main PCB (above the busconnector in the middle) selects between a continue- or pulse signal at the remote output.



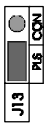


Fig. 4

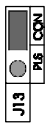
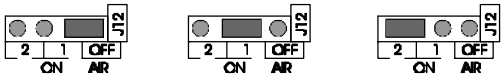


Fig. 5

In the pulse position the remote outputs will generate a pulse of 100msec. When the continues mode is selected the on-output will provide a high level signal when the channel is switched on and a low level signal as soon as the channel is switched off. The remote outputs only work when line input 1 is selected.

On-air channels

The BCS25 has two on-air groups. This makes it possible to drive an indicator to indicate that the microphones are opened. The output will be activated when one or more channels that belong to the on-air group are opened.
With jumper J12 a channel is configured as on-air 1 or on-air 2 channel. When a channel is configured as on-air 1 the studio output will be muted when the channel is active. The on-air 1 output on the master also will be activated. A channel configured as on-air 2 will not mute the studio, but only activate the on-air 2 output on the master.

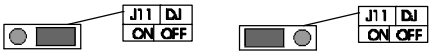


Master-cue

Each channel can activate the master-cue function. When the cue-button is pressed the master module automatically selects the CUE-bus as input. This function can be activated with J10.

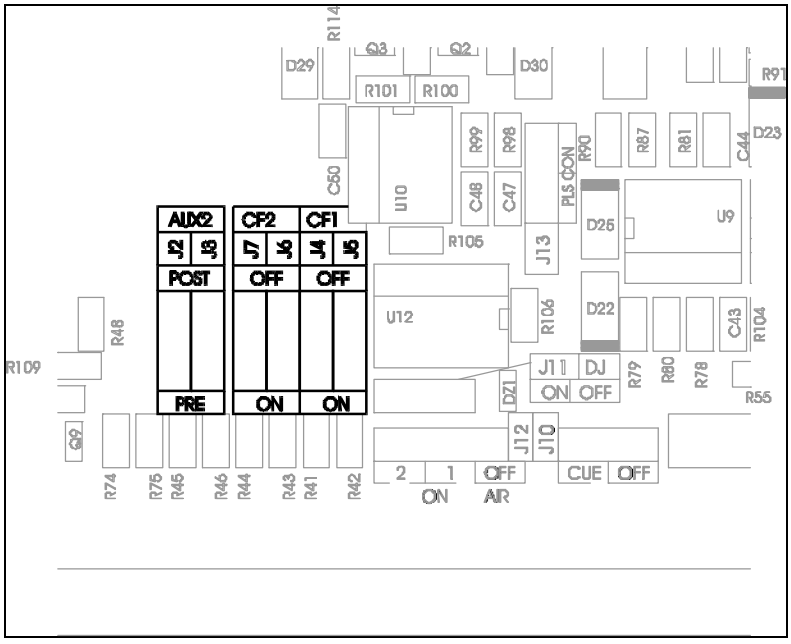
DJ-Mode

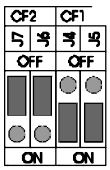
In a self-support configuration the control room has to be muted when the microphone is opened. The announcer has to use a headphone, so that acoustical feedback is impossible.
When jumper J11 is set to DJ, the control room will be muted when the channel is activated, all CUE-functions will be turned off and the master module will select program or audition, depending on the routing switches.



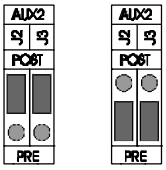
Cleanfeeds en Auxiliary bus

The BCS25(E) module contains 2 (mono) bus outputs which can be used to create a return signal to, for example, an ISDN codec. The signal at these busses is post-fader. At each individual channel of the console can be selected if they belong to one or both of the cleanfeeds by setting jumpers J4…J7 in the right position.
In the example below the signal of this channel is send to cleanfeed bus 1 only.



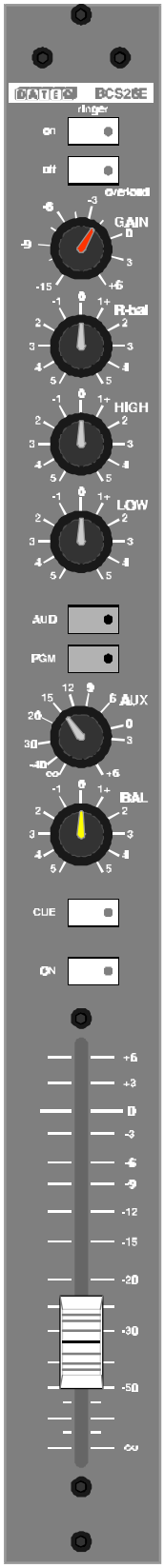


Beside the cleanfeeds the BCS25(E) module has 2 auxiliary busses. The first auxiliary is always pre-fader. Auxiliary 2 can be switched between pre- and postfader by jumper J2 and J3.



BCS26(E) telephone input module

The BCS26(E) telephone input module is available with or without 2 band equaliser. The module is equipped with a built-in analogue telephone hybrid. Telephone lines can be directly connected to this channel. Besides the built in hybrid an external hybrid or talk-show system can be connected. In that case, the BCS26(E) channel operates as remote control only.



On/Off Switches the (external) hybrid on or off. The green LED will light up at an incoming ringer signal.

Overload The LED in the off-switch lights up red when the signal level anywhere in the module is too high and distortion can occur (the limit is 6dB under cliplevel).

Gain Volume pre-setting. Range: -15dB to +6dB

R-bal Compensation for the resistive part of the line-impedance.

High High-tone control (BCS26E only).
Shelving: ± 12dB @ 3.5kHz.

Low Low-tone control (BCS26E only).
Shelving: ± 12dB @ 600Hz.

AUD/ PGM Bus-routing switches. When a switch is pushed (yellow LED is lighted) the signal will be routed to the selected output.

AUX Volume control for AUX1-level. The AUX1-bus is pre-fader.

BAL Balance-control. The signal is placed at the desired position in the stereo image.

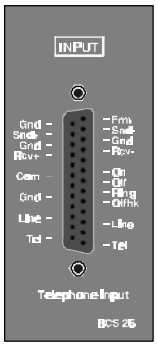
CUE Pre-fader listening. The LED lights up green when the CUE-function is activated. With an internal jumper the master-cue function can be (dis-)activated.

ON On-off switch. It is possible to select faderstart, buttonstart or a combination of both with an internal jumper. The yellow LED is lighted when the channel is on.

Fader 100mm long volume control. Depending on a jumper-setting the signal on the AUX2-bus is pre,- or post-fader.

BCS26(E) connector board

DB25-F connector



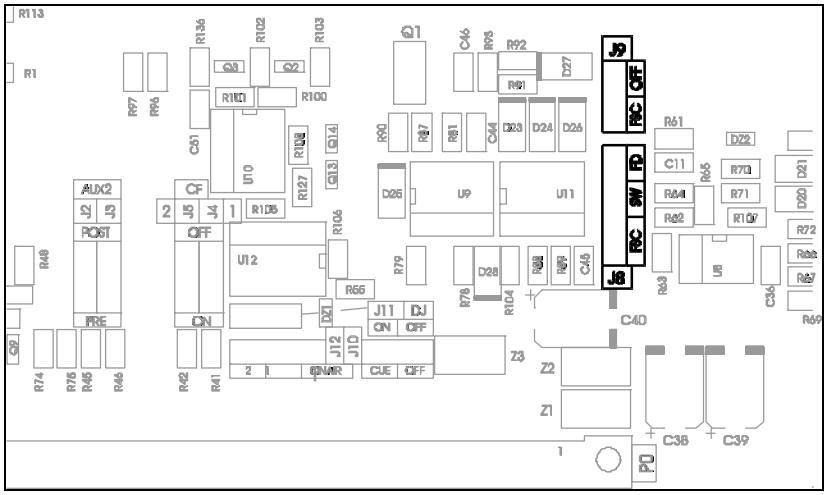
All connections are made on this connector. The function of the various pins can be found in the table.

BCS26(E) Audio and Control Input / Output (Sub-D 25-pins female)

Pin	Function	Type
1	Phone: A (telephone line)	Out
14	Phone: B (telephone line)	Out
2	-	-
15	-	-
3	Line: A (telephone line)	In
16	Line: B (telephone line)	In
4	-	-
17	-	-
5	Off-hook (On); 15V/ 10 mA	Out
18	GND	GND
6	Ring; 15V/ 10 mA	Out
19	-	-
7	Remote hybrid out; Optocoupler output +	Out
20	Common -	GND
8	Remote hybrid on; Optocoupler output +	Out
21	-	-
9	-	-
22	Receive audio +	In
10	Receive audio -	In
23	Audio GND	A-GND
11	Audio GND	A-GND
24	Send audio +	Out
12	Send audio -	Out
25	Audio GND	A-GND
13	Frame GND	Frame

Faderstart/ buttonstart

The BCS26(E) module is able to remote start connected equipment by faderstart, buttonstart or a combination of these two options. By changing jumpers you easily select one of these settings. The jumpers for remote start settings can be found at the main PCB above the bussconnector (jumper J8 and J9, see drawing).



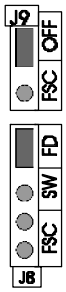


Fig. 6

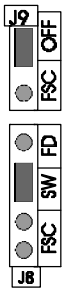


Fig. 7

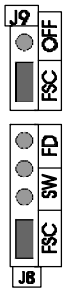
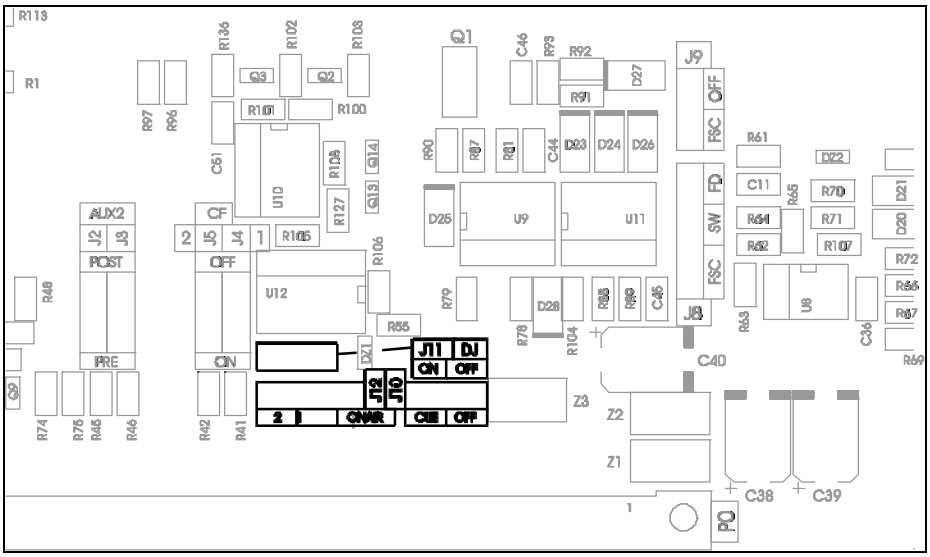


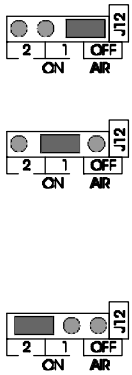
Fig. 8

Jumpers J8 and J9 select the type of operation. It is possible to choose between faderstart (figure 6), buttonstart (figure 7) or the fader-switch combinaton (figure 8).

On-air channels

The BCS25 has two on-air groups. This makes it possible to drive an indicator when the microphones are opened. The output will be activated when one or more channels that belong to the on-air group are opened.
With jumper J12 a channel is configured as on-air 1 or on-air 2 channel. When a channel is configured as on-air 1 the studio output will be muted when the channel is active. The on-air 1 output on the master also will be activated. A channel configured as on-air 2 will not mute the studio, but only activate the on-air 2 output on the master.





Master-cue

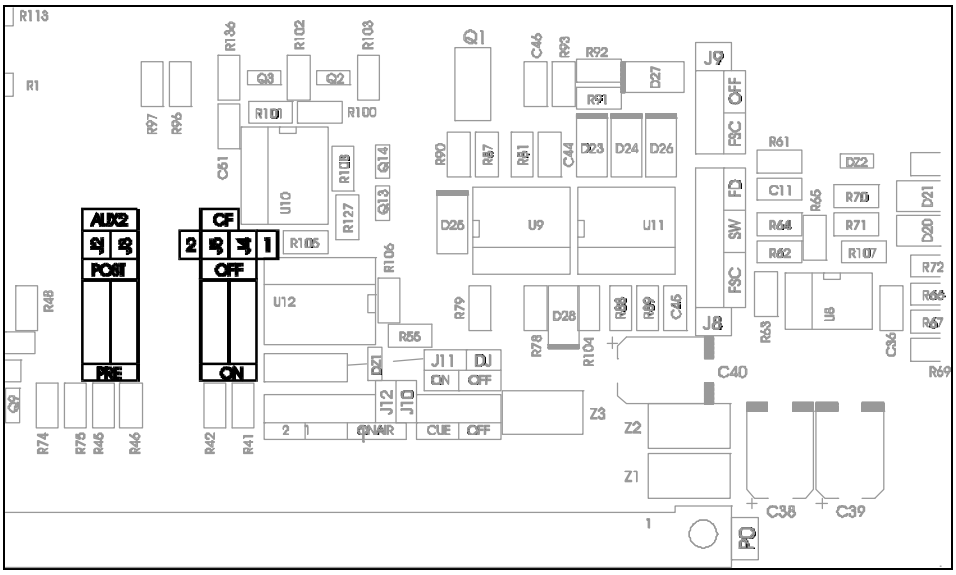
Each channel can activate the master-cue function. When the cue-button is pressed the master module automatically selects the CUE-bus as input. This function can be activated with J10.

DJ-Mode

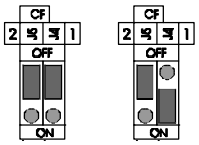
When jumper J11 is set to DJ, the control room will be muted when the channel is activated, all CUE-functions will be turned off and the master module will select program or audition, depending on the routing switches.

Cleanfeeds en Auxiliary bus

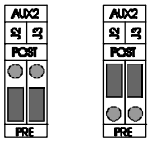
The BCS26(E) module contains 2 (mono) bus outputs which can be used to create a return signal to, for example, an ISDN codec. The signal at these busses is post-fader. At each individual channel of the console can be selected if they belong to one or both of the cleanfeeds by setting jumpers J4 and J5 in the right position.



The first example shows a channel that doesn't belong to a cleanfeed. The second example belongs to cleanfeed one and not to cleanfeed two.

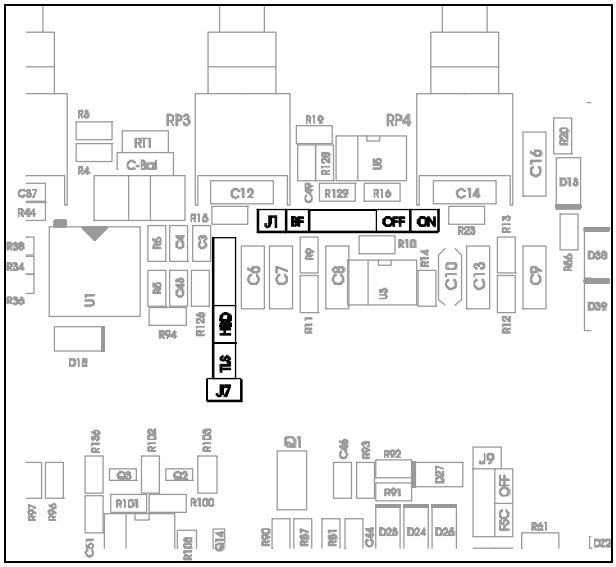


The BCS25 had two auxiliary busses. The first bus is always pre-fader; the second bus can be configured to be pre,- or post fader. This is done with J2 ad J3.



Internal or external hybrid

The BCS26(E) module handles incoming telephone calls over the built-in hybrid, but is also able to remote control an external (digital) hybrid or talk show system.
With jumper J6, J7 and J1 it's possible to select the type of operation. Jumper J6 and J7 are used to switch between the internal or external hybrid, J1 switches the bandpass filter on or off. When a hybrid with built in band pass filter is connected J1 should be placed in the OFF position.
(The drawing below only shows J1 and J7. J6 can be found above the transformer; see the autogain drawing at the bottom of this page).



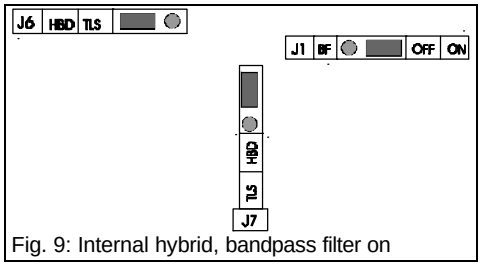


Fig. 9: Internal hybrid, bandpass filter on

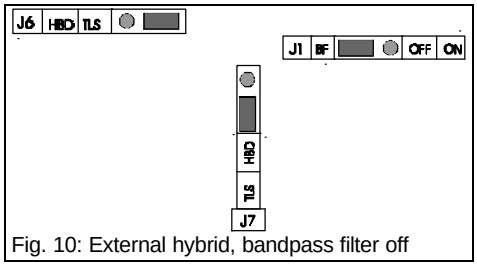
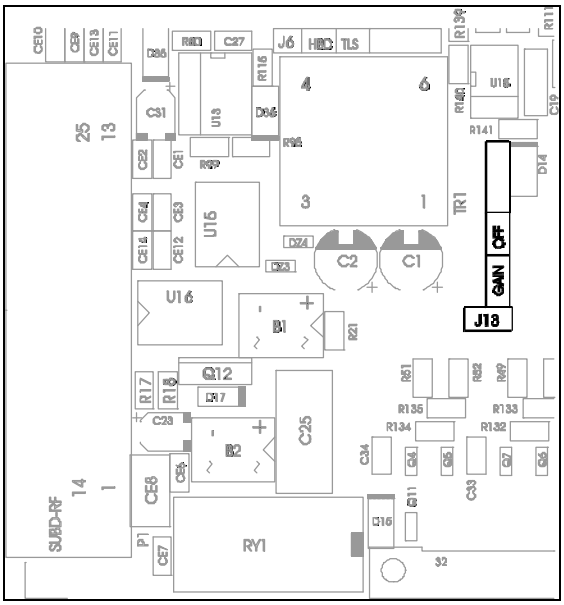
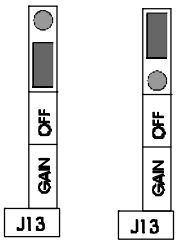


Fig. 10: External hybrid, bandpass filter off

Autogain

The BCS26(E) is equipped with a special feature that reduces the signal from the hybrid by 6dB when audio is sent from the mixer to the hybrid. This means that the caller is dimmed by 6dB when the announcer in the studio speaks. This feature improves the side tone reduction with 6dB, so creating the best possible speech intelligibility. The consequence of this auto-gain feature is that when the caller and announcer are talking at the same time ("double talk"), the announcer in the studio will slightly drown the voice of the caller.
This function can be disabled with jumper J13. In the first example the autogain function is enabled.



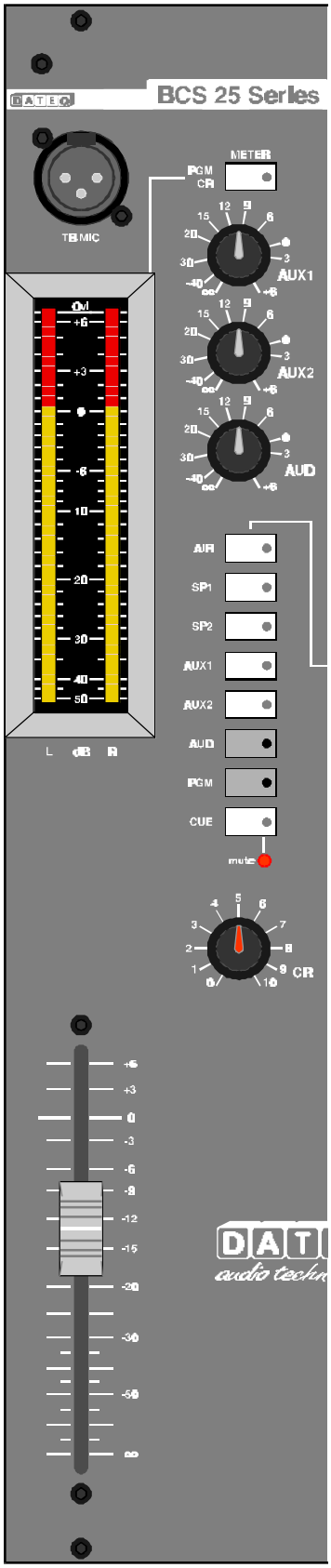


TDM²

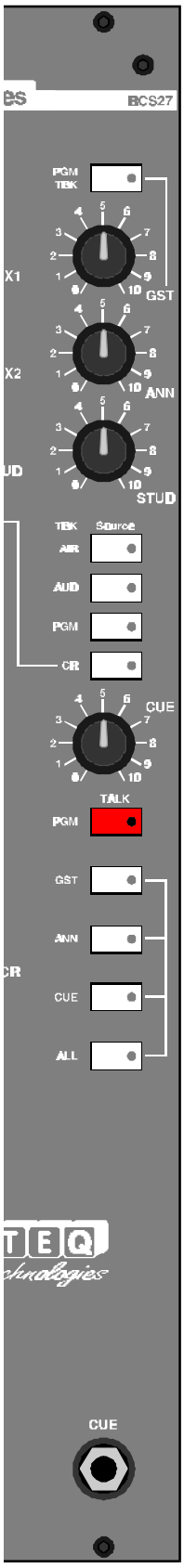
The hybrid automatically gets the correct N-1 return from the CUE, PGM or AUD bus. This is the so-called Triple Dynamic Mix-Minus system, shortened to TDM^2. Since the BCS26 generates the N-1 signal itself, separate cleanfeeds are not necessary. The number of BCS26 modules which can be used at the same time is therefore theoretically unlimited. In practice, the number of telephone lines which can be used at the same time is limited by the quality of the telephone hybrids being used.
If AUD is selected as well as PGM, the return from the PGM bus has priority over the return from the AUD bus.
CUE has the highest priority when the channel is off. As soon as CUE is selected on a BCS26 module, the hybrid gets the return from the CUE bus.

BCS27 Master-module

The BCS27 master-module has a microprocessor that handles the audio-matrix. This matrix routes the audio outputs. The second function of the microprocessor is controlling the VU-meter.



TB-MIC	Connector for the Talk-Back microphone.
Meter	Source selector for the VU-meter. The meter switches between PGM of control room.
AUX1	Volume control for the auxiliary 1 output.
AUX2	Volume control for the auxiliary 2 output.
AUD	Volume control for the audition output.
Air...Cue	Selection of the signal on the control room and the CUE output. The active selection is indicated with a yellow LED under the button.
Mute	The LED lights up RED if the control room output is automatically switched off.
CR	Volume control for the control room output.
VU-meter	The VU-meter indicates the level of the selected source. The upper LED's will blink when the level in the master module is too high (the limit is 6dB under clip level).
Fader	100mm long volume control for the program signal.



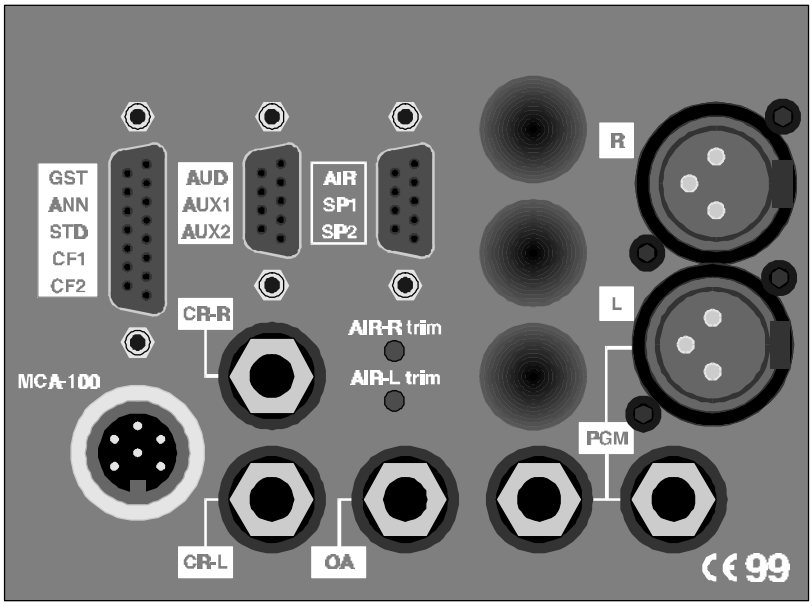
PGM/TBK	Source selector for the guest output. Switches between program and talkback.
GST	Volume control for the guest headphone output.
ANN	Volume control for the announcer headphone output.
STUD	Volume control for the studio output.
AIR...CR	Source selector for the studio, announcer and guest outputs.
CUE	Volume control for the CUE (headphone) output.
PGM...ALL	Talk buttons. These buttons enable the talkback function to the selected source. The ALL button talks to Guest, announcer, CUE and CF when this function is enabled.
CUE	Headphones output.

Special functions

- The studio output can be toggled to follow the program signal or the selection indicated on the source selector. Toggle between these functions by pressing the AIR and the CR button simultaneously.
  By default the studio output will follow the program signal.
- It is possible to enable or disable the ‘talk to program’ function. This is done by simultaneously pressing the AIR and talk-to-program buttons. When the talk to program function is activated the control room will be muted.
  By default this function is disabled.
- The guest output can be used as an external communication channel for example to a second studio. This function can be enabled by simultaneously pressing the AIR and talk-to-guest buttons. The guest output will be muted. The only signal on the guest output is the talk-signal.
  By default this function is disabled.
- It is possible to enable or disable the ‘talk to cleanfeed’ function. This is done by simultaneously pressing the AIR and talk-to-cue buttons. When the talk-to- cue button is pressed the talkback signal will be routed to the cue and the cleanfeed buss.
  By default this function is disabled.

BCS27 connector board

The BCS27 connector board has the connectors for the in,- and outputs. There are three spares for extra jack-connectors.



GST/ ANN/ STD/ CF1/ CF2

15-pins female sub-D connector with the signals for the guest, announcer, studio and two cleanfeeds. The guest and announcer outputs have headphones drivers. The studio and cleanfeed outputs are at line-level.

AUD/ AUX1/ AUX2

9-pins female sub-D connector. On this connector the outputs for the audition, auxiliary 1 and auxiliary 2 can be found.

AIR/ SP1/ SP2

9-pins female sub-D connector to which the air, spare 1 and spare 2 signals can be connected. The level of the air-input can be adjusted with two trimmers; one for the left signal level and one for the right signal level.

MCA-100

Connector for Dateq's MCA-100 headphone amplifiers so that more headphones for announcers and guests can be connected - each with their own volume control and cough/ speak button.

CR-R & CR-L

Balanced control room outputs.

OA

On-air outputs. On-air indicators, such as Dateq's OA1, can be connected.

PGM

XLR-3 male: Balanced program outputs.
Jack: Two unbalanced stereo program outputs.

BCS25 GST/ ANN/ STD/ CF1/ CF2 (DB15-F connector)

Pin	Function	Type
1	Announcer headphone right out	Out
9	Audio GND	A-GND
2	Announcer headphone left out	Out
10	Audio GND	A-GND
3	Guest headphone right out	Out
11	Audio GND	A-GND
4	Guest headphone left out	Out
12	Audio GND	A-GND
5	Studio right	Out
13	Audio GND	A-GND
6	Studio left	Out
14	Audio GND	A-GND
7	Cleanfeed 2	Out
15	Audio GND	A-GND
8	Cleanfeed 1	Out

BCS25 AUD/ AUX1/ AUX2 (DB9-F connector)

Pin	Function	Type
1	Audition right	Out
6	Audio GND	A-GND
2	Audition left	Out
7	Aux 1 right	Out
3	Audio GND	A-GND
8	Aux 1 left	Out
4	Aux 2 right	Out
9	Audio GND	A-GND
5	Aux 2 left	Out

BCS25 AIR/ SP1/ SP2 (DB9-F connector)

Pin	Function	Type
1	Air right	In
6	Audio GND	A-GND
2	Air left	In
7	Spare 2 right	In
3	Audio GND	A-GND
8	Spare 2 left	In
4	Spare 1 right	In
9	Audio GND	A-GND
5	Spare 1 left	In

BCS25 MCA-100 (DIN 6p 270º female)

Pin	Function	Type
1	Stereo 1 Left (default: Announcer Left)	Out
2	Stereo 1 Right (default: Announcer Right)	Out
3	GND combined for audio and power supply	A-GND
4	Stereo 1 Left (default: Guest 1 Left)	Out
5	Stereo 1 Right (default: Guest 1 Right)	Out
6	+12V DC (do not connect when an external supply is being used)	POWER

BCS25 control room (2x TRS Jack 3p)

Pin	Function	Type
Tip	Audio +	Out
Ring	Audio -	Out
Sleeve	Audio GND	A-GND

BCS25 On-air (2x TRS Jack 3p)

Pin	Function	Type
Tip	On-air 2 (15V/ 10mA)	Out
Ring	On-air 1 (15V/ 10mA)	Out
Sleeve	GND	GND

BCS25 Program (2x XLR 3p male)

Pin	Function	Type
1	Audio GND	A-GND
2	Audio +	Out
3	Audio -	Out

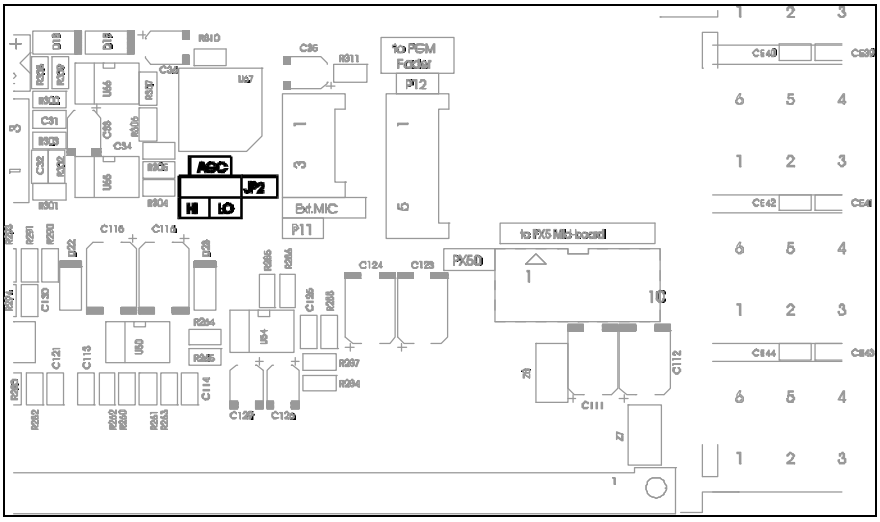
BCS25 Program (2x TRS Jack 3p)

Pin	Function	Type
Tip	Program left	Out
Ring	Program right	Out
Sleeve	Audio GND	A-GND

Talkback functions

AUTOGAIN

The talkback input has an autogain function. The amplification can be adjusted with JP2. When ‘low’ is selected the autogain range is 10dB. When ‘high’ is selected the range is 30dB. When jumper JP2 isn’t placed an external microphone source can be connected to the EXT.MIC connector.



Technical specifications

INPUTS

MIC ..... electronically balanced, 300 Ohm (nominal)
- level ..... -54...-16dBm
- noise ..... <-127dB
- gain ..... -46...+12dB

LINE 1 ..... electronically balanced, 20 kOhm (nominal)
- level ..... -12...+20dBm/ 0dBm nominal
- noise ..... <-80dB
- gain ..... -46...+12dB

LINE 2 ..... unbalanced, 24 kOhm (nominal)
- level ..... -18...+20dBm / -6dBm nominal
- noise ..... <-80dB
- gain ..... -46...+12dB

AUX1
- source ..... pre-fader
- level ..... variable

AUX2
- source ..... pre or post fader
- level ..... fixed

HYBRID/TELOS

HYBRID
- gain ..... -15...+6dB
- R-balans ..... externally adjustable
- C-balans ..... internally adjustable
- TDM² ..... Triple Dynamical Mix Minus
- Trans-hybrid loss ..... <-30dB @ 300...3kHz

TELOS ..... electronically balanced, >20 kOhm
- send ..... balanced, 0dBm @ 600 Ohm
- noise ..... <-80dB

MASTER/MONITOR INPUTS/ OUTPUTS

AIR ..... unbalanced, 12 kOhm (nominal)
- level ..... -14...+6dB pre-trimmer

SPARE1, SPARE 2 ..... unbalanced, 22 kOhm (nominal)
- level 0dB

PGM ..... electronically balanced and unbalanced
- level ..... +6dBm @ 600 Ohm/ 0dBm @ 600 Ohm

AUD ..... unbalanced, variable
- level ..... 0dBm @ 600 Ohm

AUX1, AUX2 ..... unbalanced, variable
- level ..... 0dBm @ 600 Ohm

CR ..... electronically balanced, variable
- level ..... 0dBm @ 600 Ohm

ANN, GUEST1, GUEST2 .... stereo headphone, variable
level..... 2x 0.5 W @ 4 Ohm

STUDIO ..... unbalanced, variable
level..... 0dBm @ 600 Ohm

CLEANFEED1, 2 ..... unbalanced
level..... 0dBm @ 600 Ohm

LOW CUT FILTERS

MIC 6dB/octave
-3dB point..... 80 Hz, fixed
LINE 6dB/octave
-3dB point..... 10 Hz, fixed

EQUALIZER ('E' version only)

MIC/LINE
HIGH ..... +/-12dB @ 12 kHz, shelving
MID ..... +/-12dB @ 1.3 kHz, bell
LOW ..... +/-12dB @ 60 Hz, shelving

TEL
HIGH ..... +/- 12dB @ 3.5 kHz, shelving
LOW ..... +/- 12dB @ 600 Hz, shelving

GENERAL

Frequency response
Mic to master ..... 80 Hz - 30 kHz, +0/-0.5dB
rest to master ..... 20 Hz - 30 kHz, +0/-0.5dB
THD + IM..... 0.05 % nominal
Crosstalk L <> R..... <-73dB @ 1 kHz
Crosstalk 1 <> 2 ..... <-80dB @ 1 kHz
Noise ..... <-100dB (inputs OFF)
<-80dB (inputs ON)
Overload indication..... 6dB below clip level
Clip level ..... +20dB

METER
type/range ..... Peak-Hold/-40...+6dB
barlength..... 40-LEDs

INPUT CONTROL I/O
ON Lamp-output ..... 15Vdc, 100mA (line 1 only)
CUE button input..... 50 kOhm, normally open (line 1 only)
Remote outputs..... solid-state driver, 15Vdc, 10 mA
ON-AIR lamp output..... solid-state driver, 15Vdc, 10 mA

SUPPLY
Supply voltage ..... 90 to 260 Vac/ 50...60 Hz/ 30 Watt

GENERAL
Dimensions ..... 445 x 395 x 110 mm (W x H x D)
Weight ..... 7.9 kg (nett.)