# BCS70

**USER MANUAL**

DATEQ
audio technologies

## 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 manufacturer's 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.

DATEQ audio technologies

## Introduction

The Dateq BCS70 is a modular mixer unit which has been designed specially for use in radio studios. The mixer unit consists of a frame (a split version is also available) with external power supply, combined master / monitor module and various input modules.

**Frame**
The frame can take a maximum of 18 input modules, a script space and a master module. The input modules can be positioned where wished in the frame. The BCS78 master / monitor module is positioned at the right of the frame and the script space is positioned preferably in the middle. A meter bridge is positioned on top of the frame. This contains a BCS62 VU, a 50 segment LED-bar meter with peak hold or a 101 segment Neon-bar meter. The meter bridge can be expanded to include a BCS81 DCF-77 controlled clock / timer and a BCS68-2 extra set of 4 LED bar meters of 40 segments for reading CUE and AUD levels for example.

**Power Supply**
The BCS70 has an external power supply to prevent magnetic interference from the transformer. The power supply is 19" wide, 2HE high and is connected to the frame via a 7-pin XLR connector.

**Input modules**
There are many different modules available. All the modules (mono, stereo and telephone) are available with and without tone control. The mono and stereo modules have two inputs which are identical as regards facilities and which are available both with and without gain control. The telephone module does not have a gain control because it is assumed that the external, preferably digital, hybrid has an auto-gain function. Every module is equipped with trimmers to allow the volume of all audio inputs and outputs to be set precisely. These controls are sited on the modules' connector boards. The use of jumpers for modules is now minimal, most user functions can be set via the software using a simple Setup function.

**Microcontrollers**
Each module is controlled by its own microcontroller. This controls all audio connections and connected equipment. The microcontrollers can communicate with each other to allow 'global' functions such as the control room mute and the Setup mode. Because all 'intelligent' functions are contained within the software of the microcontroller, user-specific operation can easily be set up without hardware modifications. What the user must specify is the type of equipment connected to an input. There are a maximum of 16 preferred settings from which to choose. Controls such as pulse/continuous contact, internal or external tally can be changed by this means. Some 'non-standard' controls are pre-programmed, such as the standard setting for Nautilus JukeBox automation, 360 Systems DigiCart and Denon CD and MD players.

## Product support

If you have any questions concerning the BCS70, its accessories or other products, please contact:

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## Installing the mixer unit

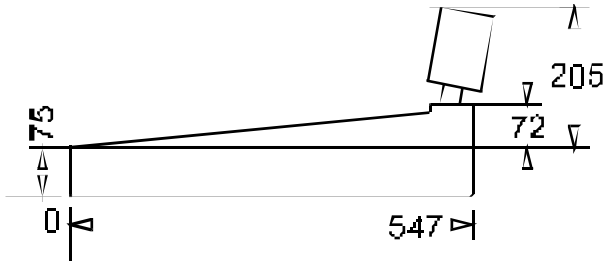
The BCS70 is supplied as standard without a cabinet or connector cables. It is possible to make cables for connection to the Sub-D connectors of the various input and output modules in-house. In that case, metal caps for the Sub-D connectors and cables with a separate screening should be used, as per the CE norms.

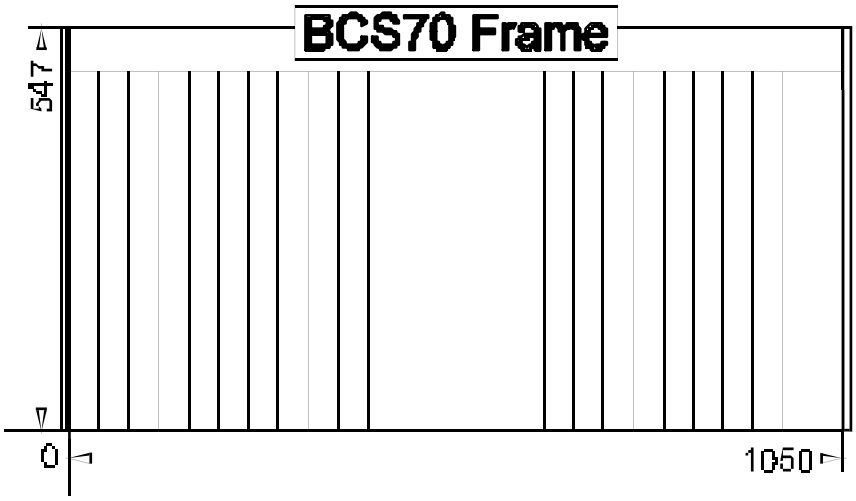
**Breakout boxes**

Another possibility for connecting the mixer unit is to make use of so-called 'breakout boxes'. All non-standard Sub-D connector on the rear of the BCS70 can be split up into more usual connector types such as XLR plugs and TSR jacks. Breakout boxes should be connected to the BCS70 using shielded Sub-D cable.

**Installation into the cabinet**

The BCS70 frame fits into an opening of 1050 x 547 x 75 mm (W x H x D). Without the meter bridge the mixer unit projects 72 mm above the table top, with the meter bridge the highest point is 205 mm. See also the dimensioned drawing below.



## Setting the type of equipment connected

Each module has a quad DIP switch for selecting the type of control of equipment connected to an input. Therefore, on the BCS71 and BCS72 you will find two sets of DIP-switches (one for each input). On the BCS73 you will find a set of DIP-switches for other functions.

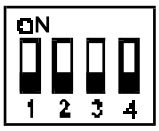
**BCS71 and BCS72 DIP-switch settings**

For each input you can select from 16 types of operation for the equipment connected. Whereas previously the only choice was pulse or continuous contacts, now equipment-specific operation can also be selected. This concerns equipment which, in addition to standard operation, also has special functions or has to be operated in a non-standard way.

As standard, a choice can be made between continuous or pulse contacts (short or long pulses), indication of internal or external tally on the ON and OFF buttons, giving a start pulse again by pressing the ON button (Restart) and activating the CUE function by putting the equipment with switched off module into the 'PLAY' state (Remote Cue).

**Equipment control patterns available:**

| Type | Description | Start / Stop | Tally | Restart | Remote Cue |
|---|---|---|---|---|---|
| 0 | Normal consumer (default) | Continuous | Internal | No | No |
| 1 | Normal consumer | Pulse 100ms | Internal | No | No |
| 2 | Normal consumer | Pulse 500ms | Internal | No | No |
| 3 | Normal pro | Continuous | External | No | No |
| 4 | Normal pro | Pulse 100ms | External | No | No |
| 5 | Normal pro | Pulse 500ms | External | No | No |
| 6 | Reserved | | | | |
| 7 | Reserved | | | | |
| 8 | 360 Systems DigiCart | Pulse 100ms | External | Yes | Yes |
| 9 | Denon DN-xxxF | Continuous | External | No | Yes |
| 10 | Tascam DA-30 | Pulse 1s | External | No | Yes |
| 11 | Reserved | | | | |
| 12 | Reserved | | | | |
| 13 | Tally switches on/off | Continuous | Internal | No | No |
| 14 | Tiesseci TS-35 | Pulse 500ms | Internal | Yes | No |
| 15 | Nautilus JukeBox | Special | Special | No | Yes |




**← Type 0 (default)**
The switches can easily be set with a ball-point pen.

**DIP switch positions corresponding to certain types of equipment:**

| Type | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 0 | Off | Off | Off | Off |
| 1 | ON | Off | Off | Off |
| 2 | Off | ON | Off | Off |
| 3 | ON | ON | Off | Off |
| 4 | Off | Off | ON | Off |
| 5 | ON | Off | ON | Off |
| 6 | Off | ON | ON | Off |
| 7 | ON | ON | ON | Off |

| Type | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 8 | Off | Off | Off | ON |
| 9 | ON | Off | Off | ON |
| 10 | Off | ON | Off | ON |
| 11 | ON | ON | Off | ON |
| 12 | Off | Off | ON | ON |
| 13 | ON | Off | ON | ON |
| 14 | Off | ON | ON | ON |
| 15 | ON | ON | ON | ON |

**Use of non-standard equipment**

One of the patterns given in the table on the previous page will suffice for most equipment. In order to be able to connect up equipment with non-standard operation or tally outputs, it is possible that other control software will be required, for example, or that any tally outputs will have to be combined. In case of doubt or for special requirements, please contact Dateq.

**BCS73 DIP-switch settings**

The BCS73 was originally designed for use with an external Telos ONE digital hybrid. Therefore, connecting the 'remote control' cable is very easy. By default, the Telos ONE is controlled by pulses. If you want to use a hybrid that must be controlled in a non-Telos way, you can use DIP-switch settings corresponding to a control-pattern from the table below:

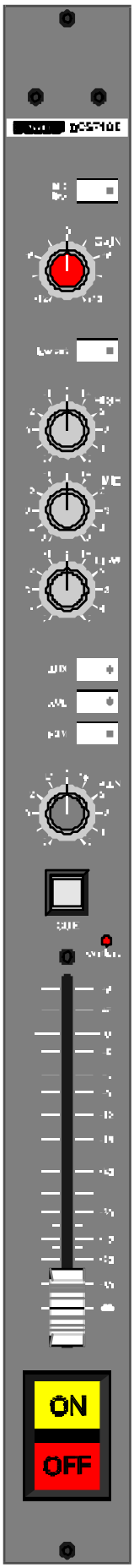
**Control patterns available:**

| DIP-switch 1 | DIP-switch 2 | DIP-switch 3 | Description | Hybrid On / Off |
|---|---|---|---|---|
| Off | Off | Off | Telos ONE (default) | Pulse 100ms |
| Off | ON | Off | Long pulses | Pulse 500ms |
| ON | - (don't care) | Off | Continuous | Continuous |
| Off | Off | ON | DATEQ TH-2 | Inverted pulse 100ms |
| Off | ON | ON | Inverted long | Inverted long pulse 500ms |
| ON | - (don't care) | ON | Continuous inverted | Continuous inverted |

The Telos ONE is a digital hybrid. If you use this type of hybrid, the rejection of return audio in your program material is so high that you may want to allow talk-back to a caller during an on-air situation. You can use DIP-switch 4 to select talk-back when on-air. If you use passive hybrids or active hybrids with a lower rejection ratio, it is advisable to disable the talk-back option. Otherwise it is possible to hear the talk-back audio in your program with possible nasty consequences...

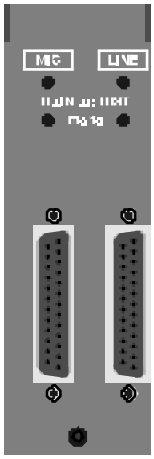
**Talkback if hybrid is on-air:**

| DIP-switch 4 | Description |
|---|---|
| Off | No talk-back if the hybrid's audio is used in your program |
| ON | Talk-back allowed, even if the hybrid's audio is used in your program |




# BCS71(GE) dual mono input module

| | |
|---|---|
| **BCS71** | Mono module without gain or tone control |
| **BCS71E** | Mono module without gain, with tone control |
| **BCS71G** | Mono module with gain, without tone control |
| **BCS71GE** | Mono module with gain and tone control |
| **Mic / Line** | Input selection. Switch pressed in is Line (LED lights up). |
| **Gain** | Volume presetting (only on the BCS71G and BCS71GE). Limited adjustment range: ± 12dB. |
| **Low Cut** | Low cut filter (20/80 Hz). Switch pressed in (LED lights up) is active. |
| **High** | High tone control (only on the BCS71E and BCS71GE). Shelving: ± 12dB @ 12kHz. |
| **Mid** | Mid tone control (only on the BCS71E and BCS71GE). Bell curve: ± 16dB @ 1.3 kHz. |
| **Low** | Low tone control (only on the BCS71E and BCS71GE). Shelving: ± 16dB @ 60 Hz. |
| **AUX / AUD / PGM** | Bus routing switches. The switch pressed in (LED lights up) indicates that the signal is being routed from the module to the bus concerned. AUX can be set to PRE or POST fader with jumpers. |
| **PAN** | Panorama control. The signal is placed at the desired position in the stereo image. |
| **CUE** | Monitoring. This button lights up green if the CUE function on this module is active. The button lights up red if an (external) mute is active. |
| **Overload** | This LED lights up if the signal level anywhere in the module is too high and distortion can or does occur (the limit is 6 dB under clip level). |
| **Fader** | 100mm long volume control. Depending on the jumper settings on the module, the volume on the AUX bus is dependent (POST) or independent (PRE) of the position of this fader. |
| **ON / OFF** | Switches with which the channel can be turned on and off (if button start was configured) and/or the equipment connected can be started / stopped. The lamps in the switches can light up dependent on the channel status (internal tally) or can be controlled by connected equipment (external tally). |




## BCS71(GE) connector board

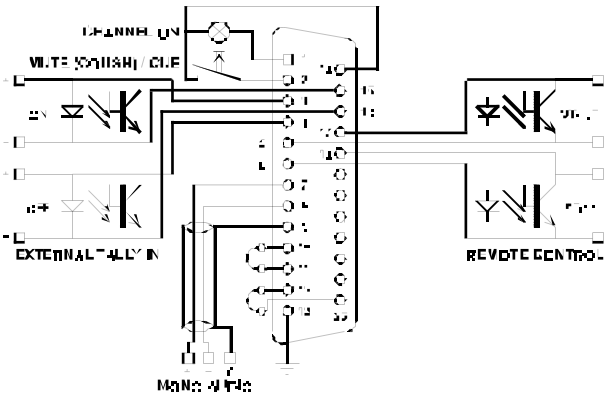
**GAIN ADJUST** The input-level can be trimmed separately for both the microphone and line input. Use a small screw driver to adjust the trimmers in the holes marked **'mono'**.

**MIC** Mono microphone input on 25-pin female Sub-D connector.

**LINE** Electronically balanced mono line input on 25-pin female Sub-D connector.

**BCS71(GE) Audio and Control Input / Output (Sub-D 25-pin female)**

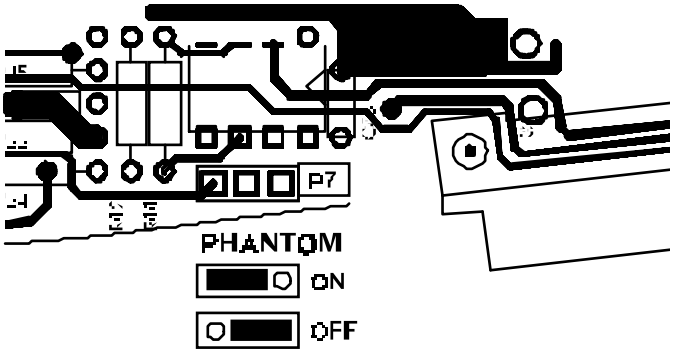
| Pin | Function | | Type |
|---|---|---|---|
| 1 | Channel ON / External CUE lamp | | Out |
| 14 | External CUE lamp / External CUE or Cough switch | | D-GND |
| 2 | External CUE or Cough switch | | In |
| 15 | External tally ON - | (opto-coupler cathode) | In |
| 3 | External tally ON + | (opto-coupler anode) | In |
| 16 | External tally OFF - | (opto-coupler cathode) | In |
| 4 | External tally OFF + | (opto-coupler anode) | In |
| 17 | Remote control Start | (opto-coupler collector) | Out |
| 5 | Remote control Start | (opto-coupler emitter) | Out |
| 18 | Remote control Stop | (opto-coupler collector) | Out |
| 6 | Remote control Stop | (opto-coupler emitter) | Out |
| 19 | - | | |
| 7 | Audio Mono + | | In |
| 20 | - | | |
| 8 | Audio Mono - | | In |
| 21 | - | | |
| 9 | Audio GND | | A-GND |
| 22 | - | | |
| 10 | Insert Send + | (no insert used: connect to pin 11) | Out |
| 23 | - | | |
| 11 | Insert Return + | (no insert used: connect to pin 10) | In |
| 24 | - | | |
| 12 | Insert Return - | (no insert used: connect to pin 25) | In |
| 25 | Insert GND | (no insert used: connect to pin 12) | Out |
| 13 | Frame GND | | FRAME |



## Phantom power supply

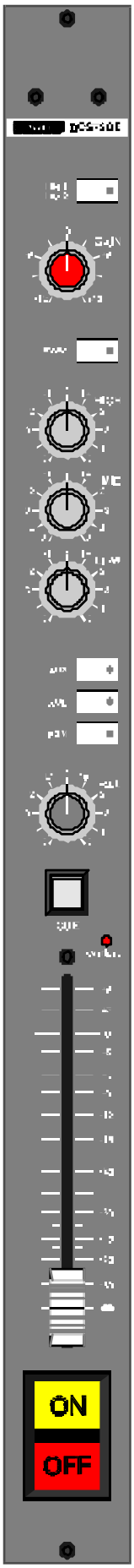
Non-dynamic microphones usually need a 48V external power supply. If this power has to be supplied by the BCS70, place jumper P7 in the 'ON' position. +48VDC (related to the (0)-input) will be supplied to both the (+) and the (-) input.

Jumper P7 is positioned next to the bus connector of the BCS71(GE) module. The factory default for this jumper is 'OFF'.




## Warning: central muting of multiple microphone channels

To prevent the line1/line2-selection of the input-modules from malfunctioning, pins #14 (common Cue / Cough) of the input-connectors can not be connected to each other. When using a system that mutes multiple microphone channels with the 'cough'-input (like FlexCom FXS-D extensions), please note that if this system uses a common ground (like the FXS-D), don't connect this ground to pin #14 (common Cue / Cough), but rather use #13 (Frame) or #25 (Ground).




## BCS72(GE) dual stereo input module

| | |
|---|---|
| **BCS72** | Stereo module without gain or tone control |
| **BCS72E** | Stereo module without gain, with tone control |
| **BCS72G** | Stereo module with gain, without tone control |
| **BCS72GE** | Stereo module with gain and tone control |

**Line 1 / Line 2** Input selection. Switch pushed in (LED is lit up) is Line 2.

**Gain** Volume presetting (only on the BCS72G and BCS72GE). Limited adjustment range: ± 12dB.

**Mono** Makes the stereo input signal mono. Switch pushed in (LED lit up) is active.

**High** High tone control (only on the BCS72E and BCS72GE). Shelving: ± 12db @ 12 kHz.

**Mid** Mid-tone control (only on the BCS72E and BCS72GE). Bell curve: ± 16dB @ 1.3 kHz.

**Low** Low tone control (only on the BCS72E and BCS72GE). Shelving: ± 16dB @ 60 Hz.

**AUX / AUD / PGM** Bus routing switches. Switch pushed in (LED lit up) indicates that the signal is being routed from the module to the bus concerned. AUX can be set to PRE or POST fader with jumpers.

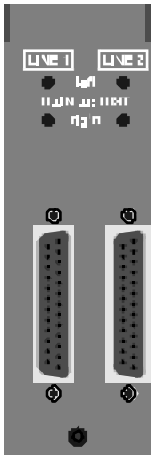
**BAL** Balance control. This is used to set the balance between the left and right channels.

**CUE** Monitoring. This button lights up green if the CUE function on this module is active. The button lights up red if an (external) mute is active.

**Overload** This LED lights up if the signal level anywhere in the module is too high and if distortion can or does occur (the limit is at 6 dB under clip level).

**Fader** 100 mm long volume control. Depending on the jumper settings on the module, the volume is dependent on the AUX bus (POST) or independent (PRE) of the position of this fader.

**ON / OFF** Switches with which the channel can be turned on and off (if button start is configured) and/or the connected equipment can be started / stopped. The lamps in the switches can light up dependent on the channel status (internal tally) or can be controlled by connected equipment (external tally).




## BCS72(GE) connector board

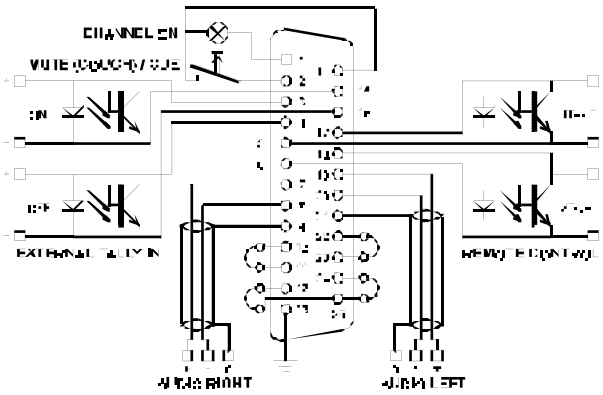
**GAIN ADJUST** The input level can be trimmed separately for both channels of both inputs. Use a small screw driver to adjust the trimmers in the holes marked '**left**' and '**right**'.

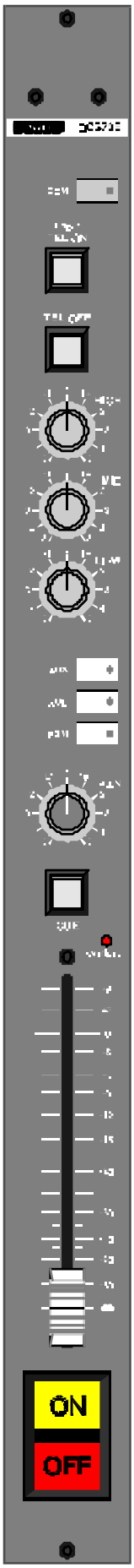
**LINE 1** First stereo line input on 25-pin female Sub-D connector.

**LINE 2** Second stereo line input on female 25-pin Sub-D connector. Identical facilities to the first line input.

**BCS72(GE) Audio and Control Input / Output (Sub-D 25-pin female)**

| Pin | Function | | Type |
|---|---|---|---|
| 1 | Channel ON / External CUE lamp | | Out |
| 14 | External CUE lamp / External CUE or Cough switch | | D-GND |
| 2 | External CUE or Cough switch | | In |
| 15 | External tally ON - | (opto-coupler cathode) | In |
| 3 | External tally ON + | (opto-coupler anode) | In |
| 16 | External tally OFF - | (opto-coupler cathode) | In |
| 4 | External tally OFF + | (opto-coupler anode) | In |
| 17 | Remote control Start | (opto-coupler collector) | Out |
| 5 | Remote control Start | (opto-coupler emitter) | Out |
| 18 | Remote control Stop | (opto-coupler collector) | Out |
| 6 | Remote control Stop | (opto-coupler emitter) | Out |
| 19 | Audio Left + | | In |
| 7 | Audio Right + | | In |
| 20 | Audio Left - | | In |
| 8 | Audio Right - | | In |
| 21 | Audio Left GND | | A-GND |
| 9 | Audio Right GND | | A-GND |
| 22 | Insert Send Left + | (no insert used: connect to pin 23) | Out |
| 10 | Insert Send Right + | (no insert used: connect to pin 11) | Out |
| 23 | Insert Return Left + | (no insert used: connect to pin 22) | In |
| 11 | Insert Return Right + | (no insert used: connect to pin 10) | In |
| 24 | Insert Return Left - | (no insert used: connect to pin 25) | In |
| 12 | Insert Return Right - | (no insert used: connect to pin 25) | In |
| 25 | Insert GND | (no insert used: connect to pins 12 and 24) | Out |
| 13 | Frame GND | | FRAME |






# BCS73(E) external hybrid input module

**BCS73** Telephone module without tone control
**BCS73E** Telephone module with tone control

**Com** Switches the signal from the telephone hybrid to the COM bus, and switches the return signal from the COM bus to the hybrid (see also QDM²).

**TEL ON (ringer)** Switches the external hybrid on (the lamp in this button flashes quickly if a ring is detected).

**TEL OFF** Switches the external hybrid off if the channel is off (keep pressed for 1 second to prevent operating errors).

**High** High tone control (only on the BCS73E). Shelving: ± 12dB @ 3 kHz.

**Mid** Mid tone control (only on the BCS73E). Bell curve: ± 16dB @ 1.3 kHz.

**Low** Low tone control (only on the BCS73E). Shelving: ± 16dB @ 600 Hz.

**AUX / AUD / PGM** Bus routing switches. Switch pressed in (LED lit up) indicates that the signal is being routed from the module to the bus concerned. AUX can be set on PRE or POST fader with jumpers.

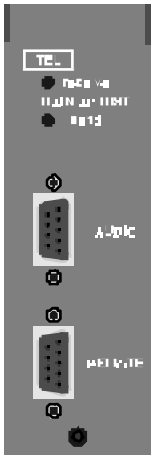
**PAN** Panorama control. The signal is positioned at the desired place in the stereo image with this.

**CUE** Monitoring. This button lights up green if the CUE function on this module is active. The hybrid then gets the CUE bus as return (see also QDM²). CUE can not be selected if the channel is on. The button lights up red if a mute is active.

**Overload** This LED lights up if the signal level anywhere in the module is too high and distortion can or does occur (the limit is 6 dB under clip level).

**Fader** 100 mm long volume control. Depending on the jumper settings on the module the volume is dependent on the AUX bus (POST) or independent (PRE) of the position of this fader.

**ON / OFF** Switches with which the channel can be turned on and off (if button start is configured) and / or the equipment connected can be started / stopped. The lamps in the switches light up dependently of the channel status (intern tally).



## BCS73(E) connector board

**GAIN ADJUST** The levels of the audio signal from the external hybrid (receive) and the return audio signal to the external hybrid (send) can be trimmed. Use a small screw driver to adjust the trimmers in the holes marked **'send'** and **'receive'**.

**AUDIO** Electronically balanced audio input and output for audio coming from the external hybrid and return audio to the external hybrid (QDM² return) on 9-pin female Sub-D connector.

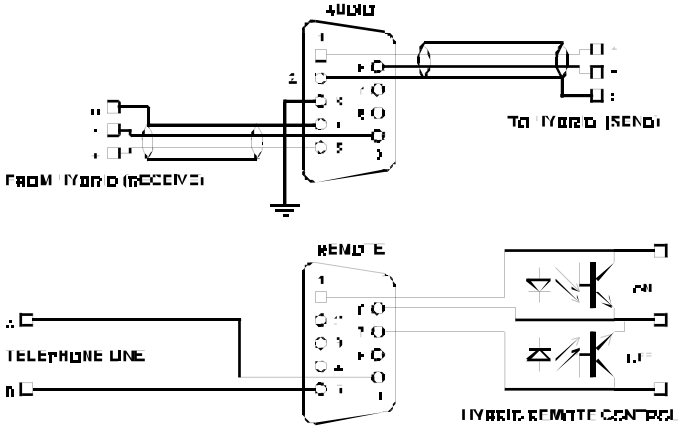
**REMOTE** Remote control for the external hybrid on 9-pin male Sub-D connector.

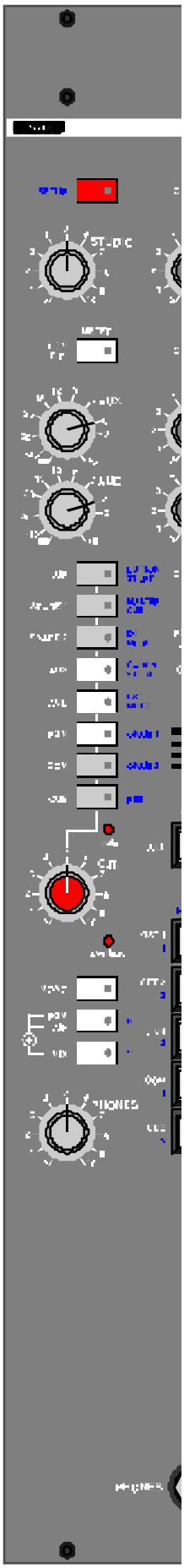
**BCS73(E) Audio (Sub-D 9-pin female)**

| Pin | Function | | Type |
|---|---|---|---|
| 1 | Audio Send + | (audio to external hybrid) | Out |
| 6 | Audio Send - | (audio to external hybrid) | Out |
| 2 | Audio Send GND | | A-GND |
| 7 | GND | | A-GND |
| 3 | Frame GND | | FRAME |
| 8 | GND | | A-GND |
| 4 | Audio Receive GND | | A-GND |
| 9 | Audio Receive - | (audio from external hybrid) | In |
| 5 | Audio Receive + | (audio from external hybrid) | In |

**BCS73(E) Remote (Sub-D 9-pin male, Telos ONE compatible)**

| Pin | Function | | Type |
|---|---|---|---|
| 1 | External hybrid ON switch | (opto-coupler collector) | Out |
| 6 | External hybrid ON / OFF switch common | (opto-couplers emitter) | Out |
| 2 | - | | |
| 7 | External hybrid OFF switch | (opto-coupler collector) | Out |
| 3 | - | | |
| 8 | - | | |
| 4 | - | | |
| 9 | Telephone line 'A'-lead | (used for ring-detector only) | In |
| 5 | Telephone line 'B'-lead | (used for ring-detector only) | In |





## BCS78 master (monitor) module

The master module is constructed using a new concept, with microprocessor control and audio matrix to take care of routing to the various outputs. Many of the buttons have a double function (see blue print) which is used in the Setup mode.

**SETUP** This is used to select the Setup mode. The LED in this button flashes in Setup mode.

**STUDIO** Volume control for the Studio output.

**METER PGM / C.R.** Source selection for the meter in the meter bridge: the PGM signal or the signal selected for the Control Room (switch pushed in).

**AUX** Volume control for the AUX output.

**AUD** Volume control for the AUD output.

**AIR..CUE** Selection of the signal on the Control Room output (and on the Phones output). The active selection can be seen from the LED which lights up under a button. In Setup mode these LED's flash when the associated Setup option is selected. The LED's in the AIR and PGM button are dimmed when MASTER-CUE is used in combination with MIX.

**Mute** This LED lights up if the Control Room output is automatically switched off.

**C.R.** Volume control for the Control Room output.

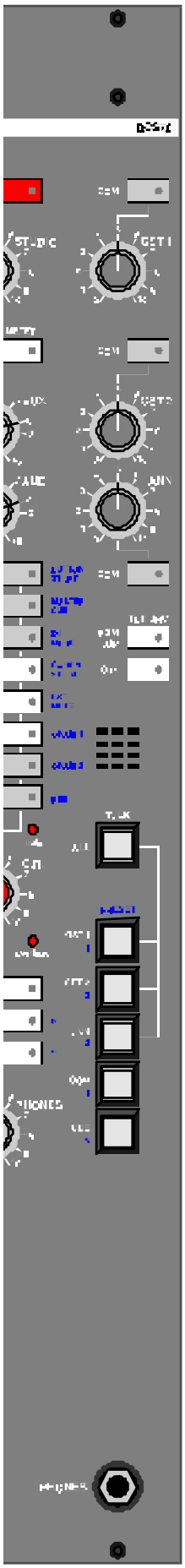
**Overload** This LED lights up if the signal level in the master module is too high.

**Mono** Switches the signal from the Control Room to mono.

**PGM / AIR** This is used to select to which signal the DJ will automatically listen if a DJ channel is on: AIR or PGM. This selection also determines which of these signals is mixed if another of the signals from the CR selector panel is being monitored in combination with the MIX function.

**MIX** Mixes the dimmed signal chosen with the PGM/AIR button with the signal selected with the CR selector panel.

**PHONES** Volume control for the Phones output.



## BCS78 master (monitor) module

**COM (guest 1)** Switches the signal from the COM bus to the headphone output of Guest 1 and the signal from the input module(s) configured as Guest 1 to the COM bus.

**GST 1** Volume control for the Guest 1 headphone output.

**COM (guest 2)** Switches the signal from the COM bus to the headphone output of Guest 2 and the signal from the input module(s) configured as Guest 2 to the COM bus.

**GST 2** Volume control for the Guest 2 headphone output.

**ANN** Volume control for the Announcer headphone output.

**COM (announcer)** Switches the signal from the COM bus to the announcer headphone output and the signal from the input module(s) configured as Announcer to the COM bus.

**PGM / AIR (tbk src)** Selects the PGM or AIR signal as source for the phones outputs of Guest 1, Guest 2 and Announcer. The LED under this button lights up if AIR is selected.

**C.R. (tbk src)** Selects the signal selected on the Control Room selector panel as the source for the headphone outputs of Guest 1, Guest 2 and Announcer. The LED under this button lights up if CR is selected, and the selection made with PGM / AIR is canceled.

**MIC** Built-in microphone for talkback

**TALK ALL** The DJ / technician can talk to Guest 1, Guest 2 and Announcer at the same time.

**TALK GST 1** The DJ / technician can talk to Guest 1 using this button.

**TALK GST 2** The DJ / technician can talk to Guest 2 using this button.

**TALK ANN** The DJ / technician can talk to the Announcer using this button.

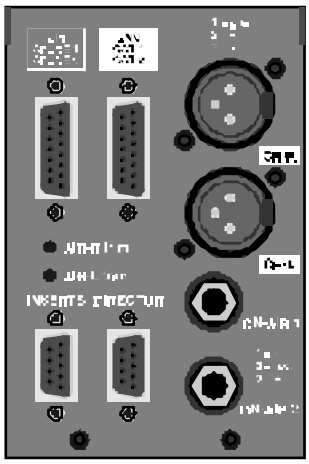
**TALK COM** The DJ / technician can talk to everyone who is routed to the COM bus.

**TALK CUE** The DJ / technician can talk to all telephone modules on which the CUE function is active (these modules have the CUE bus as return, see also QDM²).

**PHONES** Headphone output for the DJ / technician.

## BCS78 connector board

The BCS78 master (monitor) module has a number of connectors for audio inputs and outputs and on-air indicating on the connector board.



**AIR / SPARES** 15-pin female Sub-D connector to which the balanced audio signals for AIR, SPARE 1 and SPARE 2 can be connected. These inputs are not electrically isolated. If a tuner which is connected to a cable network is connected up this can lead to an earth loop. To prevent this it is advisable to have an isolating transformer in the aerial or audio cable(s). These inputs can, for example, also be used for post-tape check with recordings.

**ANN / GST 1 / GST 2** 15-pin female Sub-D connector with three independent stereo outputs to which headphones of Announcer, Guest 1 and Guest 2 can be connected directly. Also unbalance stereo Studio output.

**INSERTS** Balanced insertion points in the stereo PGM signal.

**CR-L / CR-R** Electronically balanced male XLR-3 outputs. These are used for connecting the amplifier to the speakers in the Control Room. The Control Room selector switches are used to select which signal can be heard via this output. The volume of this output is determined with the C.R. volume control. The Control Room output is automatically switched off to prevent acoustic feedback.

**AIR-L / AIR-R TRIM** The level of the AIR input can be trimmed. Use a small screwdriver to adjust the trimmers.

**DIRECTOR** 15-pin female Sub-D connection for an optional director's post.

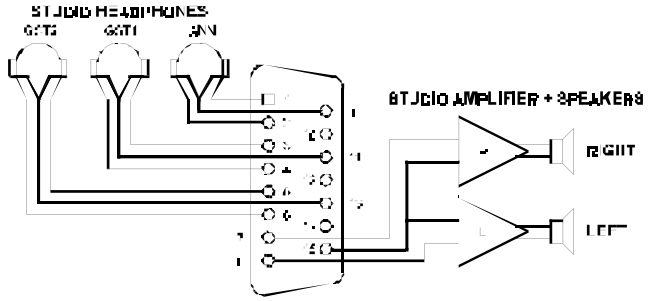
**ON-AIR 1 / ON-AIR 2** The ON AIR outputs are intended for connecting indicators, such as an 'ON AIR' lamp. The modules which these ON AIR outputs activate can be set using the Setup mode. If there are microphones in two rooms, for example a DJ microphone in the Control Room and other microphones in the studio, then a separate 'ON AIR' indication can be connected for each room. Configure the DJ microphone channel as ON AIR 2 and the other microphone channels as ON AIR 1.

### BCS78 Director (Sub-D 9-pin female)

| Pin | Function | Type |
|---|---|---|
| 1 | BCSBus | Data |
| 6 | Audio GND | A-GND |
| 2 | +12V power supply | POWER |
| 7 | D-GND power supply | POWER |
| 3 | Audio Right | Out |
| 8 | Audio Left | Out |
| 4 | Audio GND | A-GND |
| 9 | Director Mic + | In |
| 5 | Director Mic - | In |

### BCS78 Ann / Guest1 / Guest2 / Studio (Sub-D 15p female)

| Pin | Function | Type |
|---|---|---|
| 1 | Announcer Headphones Right | Out |
| 9 | Announcer Headphones Common | Out |
| 2 | Announcer Headphones Left | Out |
| 10 | - | |
| 3 | Guest 2 Headphones Right | Out |
| 11 | Guest 2 Headphones Common | Out |
| 4 | Guest 2 Headphones Left | Out |
| 12 | - | |
| 5 | Guest 1 Headphones Right | Out |
| 13 | Guest 1 Headphones Common | Out |
| 6 | Guest 1 Headphones Left | Out |
| 14 | - | |
| 7 | Studio Output Right | Out |
| 15 | Studio GND | A-GND |
| 8 | Studio Output Left | Out |




### BCS78 CR-L / CR-R (XLR 3p male)

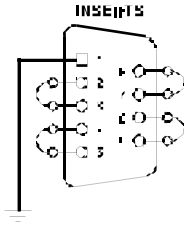
| Pin | Function | Type |
|---|---|---|
| 1 | Audio GND | A-GND |
| 2 | Audio + | Out |
| 3 | Audio - | Out |

### BCS78 ON-AIR 1 / ON-AIR 2 (TRS Jack 3p)

| Pin | Function | Type |
|---|---|---|
| Tip | On-Air Opto coupler collector | Out |
| Ring | - | |
| Sleeve | On-Air Opto-coupler emitter | Out |

### BCS78 Inserts (Sub-D 9-pin female)

| Pin | Function | | Type |
|---|---|---|---|
| 1 | Frame GND | | FRAME |
| 6 | Send Right + | (no insert used: connect to pin 7) | Out |
| 2 | Return Right - | (no insert used: connect to pin 3) | In |
| 7 | Return Right + | (no insert used: connect to pin 6) | In |
| 3 | Audio GND | (no insert used: connect to pin 2) | A-GND |
| 8 | Send Left + | (no insert used: connect to pin 9) | Out |
| 4 | Return Left - | (no insert used: connect to pin 5) | In |
| 9 | Return Left + | (no insert used: connect to pin 8) | In |
| 5 | Audio GND | (no insert used: connect to pin 4) | A-GND |

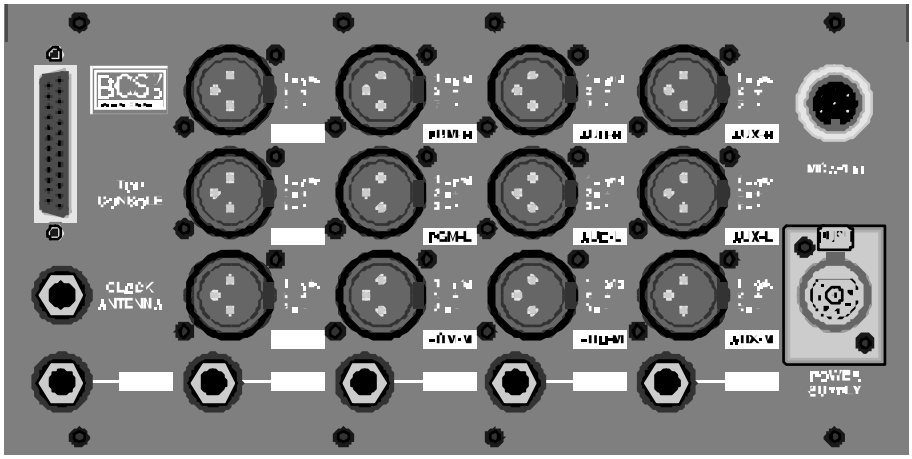



### BCS78 Air / Spare 1 / Spare 2 (Sub-D 15p female)

| Pin | Function | Type |
|---|---|---|
| 1 | Air GND | A-GND |
| 9 | Air Right + | In |
| 2 | Air Right - | In |
| 10 | Air Left + | In |
| 3 | Air Left - | In |
| 11 | Spare 1 GND | A-GND |
| 4 | Spare 1 Right + | In |
| 12 | Spare 1 Right - | In |
| 5 | Spare 1 Left + | In |
| 13 | Spare 1 Left - | In |
| 6 | Spare 2 GND | A-GND |
| 14 | Spare 2 Right + | In |
| 7 | Spare 2 Right - | In |
| 15 | Spare 2 Left + | In |
| 8 | Spare 2 Left - | In |

## BCS70 Connector board

At the back of the script space there are, in addition to the audio outputs of the BCS70, various other connectors. There is also space for expansions such as extra audio outputs or special accessories.



**PGM-L/R/M** ProGraM outputs (Left, Right and Mono). The PGM output is the mixer unit's main output. These balanced outputs are electrically isolated using transformers and are therefore suitable for carrying signals to cable modulators, transmitters and music lines, for example.

**AUD-L/R/M** AUDition outputs (Left, Right and Mono). All channels for which the AUD switch is pushed in can be heard on the AUD output. The AUD output can, for example, be used as decor output, as post-fader effect send, as extra output for a second edition of a programme, or to quickly record a telephone interview whilst the broadcast carries on normally over the PGM output. The AUD control on the master module controls the total AUD level.

**AUX-L/R/M** AUXiliary outputs (Left, Right and Mono). These outputs can be used to connect special-effects equipment, for example. Whether a channel can be heard on the output is dependent on the setting of the AUX-routing switches. In addition, the PRE / POST jumpers can be used to select whether a channel must be mixed independent of or dependent on the fader status on the AUX output. The AUX control on the master module controls the total AUX level. Return signals from effects equipment can be sent to the PGM output via a normal input module.

**CLOCK ANTENNA** If a Dateq BCS81 clock / timer is used, the external DCF-77 aerial can be connected here.

**TOP CONSOLE** 25-pin female Sub-D connector for the meter bridge.

**MCA-100** Connector for Dateq 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.

**POWER SUPPLY** 7-pin XLR connector for the external power supply.

### BCS70 PGM-L/R/M / AUD-L/R/M / AUX-L/R/M (XLR 3p male)

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

### BCS70 CLOCK ANTENNA (TRS stereo jack)

| Pin | Function | Type |
|---|---|---|
| Tip | Antenna + | In |
| Ring | Antenna - | In |
| Sleeve | Frame GND | FRAME |

### BCS70 TOP CONSOLE (Sub-D 25p female)

| Pin | Function | Type |
|---|---|---|
| 1 | Extra Meter 1 Left | Out |
| 14 | Extra Meter 1 GND | A-GND |
| 2 | Extra Meter 1 Right | Out |
| 15 | Extra Meter 2 Left | Out |
| 3 | Extra Meter 2 GND | A-GND |
| 16 | Extra Meter 2 Right | Out |
| 4 | Extra Meter 3 Left | Out |
| 17 | Extra Meter 3 GND | A-GND |
| 5 | Extra Meter 3 Right | Out |
| 18 | -15V Power Supply | POWER |
| 6 | Extra Meter 4 Left (2nd function: Timer Control 1) | Out |
| 19 | Extra Meter 4 GND | A-GND |
| 7 | Extra Meter 4 Right (2nd function: Timer Control 2) | Out |
| 20 | +12V Power Supply | POWER |
| 8 | +12V Power Supply | POWER |
| 21 | Main Meter Left | Out |
| 9 | Main Meter GND | A-GND |
| 22 | Main Meter Right | Out |
| 10 | GND Power Supply | D-GND |
| 23 | GND Power Supply | D-GND |
| 11 | DCF Antenna Signal + | Out |
| 24 | DCF Antenna Signal - | Out |
| 12 | BCSBus | Data |
| 25 | Digital Ground | POWER |
| 13 | BCSBus | Data |

## Setup-mode

The settings on the mixer unit can be changed using the Setup mode. This applies in particular to the settings which used to have to be made with jumpers on all modules. The great advantage is, of course, that the user can make changes in the use of the console quickly without having to unscrew the modules.

The Setup mode is activated by pressing the very noticeable red SETUP button. The LED under this button and the ON and OFF button on all modules start to flash. The LED in the AIR button on the CR selector panel flashes. BUTTON START appears next to this in blue. This indicates that those channels that must work with button start can now be set. Should a channel work with button start? If so, press the ON button on the channel concerned. Press the channel's OFF button if that channel should be set as fader start.

The following settings can be made in the same way (see blue print):

**BUTTON START** Select ON if a channel should be switched on and off with the ON and OFF button. Select OFF if the channel should be switched on and off with the fader.

**MASTER CUE** Select whether a channel automatically sets the Control Room selection on CUE when CUE is pressed (select ON), or whether this must be done manually (select OFF).

**DJ MODE** If a channel is for an announcer who is also the technician, select ON. The Control Room speakers will then automatically be muted if this channel is open. For the other non-DJ channels select OFF.

**COUGH > COM** If the external mute on a microphone or line module is active (by pressing the cough / talk button), the module automatically switches to CUE (if OFF is selected) or to COM (if ON is selected). In this last case, any 'coughing' is to the COM bus. In this way one can, for example, speak directly to the director, instead of to the technician.

**EXT MUTE** Select ON if the channel must be muted if an external switch is pressed (cough / talk button). Select OFF if the external switch is used as a remote CUE switch (positioned, for example, near a turn-table to set the mixer unit to CUE by remote control).

**ONAIR 1** Select ON if a module should be part of on-air group 1, select OFF if it should not be part of this group.

**ONAIR 2** Select ON if a module should be part of on-air group 2, select OFF if it should not be part of this group.

**RES** Reserved for a BCS81 clock / timer (if installed). Select ON if a module must be able to start and stop the timer when the module is turned on and off. Select OFF if the module may not start or stop the timer.

**NORMAL / SPLIT** During CUE the technician can choose whether the signal from the Control Room selector panel comes to the Phones output normally (select N) or as a split signal (select S). In this last case, the PGM signal goes to one earphone and the CR signal selected to the other earphone of the headphones.

**GST 1 COM** To route Guest 1 to the COM bus, the mixer unit must know which module(s) belong to Guest 1. Select ON on these modules (thus making a Guest 1 group!), OFF on the other modules.

**GST 2 COM** The same for Guest(s) 2.

**ANN COM** The same for the Announcer(s).

**Advanced module control**
For special operation modes or in situations where the normal module audio control circuitry is 'too slow' (or the controls are too fast) for your application, it is possible to disable the channel mute and introduce a startup-delay. Enter the setup-mode and select one of the following setup-options (buttons just above the built-in talkback microphone):

**PGM / AIR** If you enable this setup-option on a module, you let the fader control the channel mute, independent from the equipment or channel On/Off status. If the fader is up, audio is enabled to the PGM, AUD and AUX (post-fader) outputs. If the fader is closed, the channel is muted. In this mode, starting and stopping equipment is most useful in combination with button-start.

**C.R.** Equipment start-delay (100ms). If you enable this setup-option on a module and you open the channel (either with fader- or button start), the equipment connected to the module is started after a delay of about 100ms. This ensures that the channel is completely open (mute and VCA) as soon as the equipment gives audio.

**Setup-mode time-out**
If no buttons are pressed to change a setting for a period of ten seconds, then the Setup mode will automatically be terminated. If an operation is carried out in Setup mode which has nothing to do with this mode (moving a fader or pressing a CUE-button on a module, for example), Setup mode is terminated immediately.

**Is the Setup mode dangerous?**
Should the Setup button be accessible to all users? The button could of course be replaced by a key switch, but the question is whether that is really necessary. The settings that can be made in the Setup mode are, after all, not so dangerous that they would affect the audio processing of the mixer unit (as far as that is concerned, the routing switches on all modules are really much more dangerous). For all these sorts of buttons, you must know what you are doing. To indicate that the Setup button can be 'dangerous' for untrained users, it has been made a very noticeable red color.

**Virtually identical Setup facilities for mono and stereo modules**
All the inputs of a mono or stereo module have virtually the same Setup facilities. Only the functions relating to the COM bus are unavailable on the BCS72(GE) and cannot, therefore, be set in the Setup mode. It is, however, possible to use a stereo module to which a microphone pre-amplifier / processor is connected as a DJ channel without modification. The switch which on a stereo module would normally be used as an external cue button can be given the function of 'cough' button.

**Identical Setup facilities for both inputs**
In the Setup mode the first line input (or Mic input for a BCS71(GE) module) can be configured differently to the second line input. Select the Setup function required (for example button start) and set this for the required input (for example, line 2). Now switch over to the other input (in this case, Line 1) and set the function as required. The settings made are also stored as Presets independently for Input 1 and Input 2 (Mic and Line).

## Presets

The settings entered in the Setup mode can be stored as preferred settings and can, of course, be recalled. As standard, there is room for five settings. There is also a 'factory preset' available with which the unit can always be configured to the basic setting. It should be noted that the settings are not so critical that the unit would no longer work!

**Recalling presets**
Select Setup mode with the SETUP button. Then quickly press (for less than two seconds) one of the preset buttons (the talk buttons on the master section). The preset concerned is printed in blue: GST 1 is preset 1, CUE is preset 5. The factory preset is special: this is the ALL button.

**Storing presets**
Select the Setup mode with the SETUP button. Then press long (longer than two seconds) on one of the preset buttons (the talk buttons on the master section). The preset concerned is printed in blue: GST 1 is preset 1, CUE is preset 5. The factory preset can not be overwritten.

## The COM-bus

The BCS71 and BCS73 modules can put their audio signals onto the COM bus. The output of the COM bus can be routed to all headphone outputs (Announcer, Guest 1, Guest 2), to the technician and director monitoring the COM bus, and to the output from the external hybrids which are connected to the BCS73 modules.

**Linking the announcers and guests to the COM bus**
In contrast to the BCS73(E), there is no COM button on the microphone modules to put the signal from that module onto the COM bus and to take it off again. The Setup mode comes into action again for this. Select the Setup mode and press the COM button by the Announcer's volume control. Then select which module(s) belong to the Announcer. The same can be done for Guest 1 and Guest 2.

Now leave the Setup mode and press, for example, the Announcer's COM button. The LED in this button now indicates that the Announcer has been routed to the COM bus. The signal from the microphone module(s), which has just been designated as Announcer microphone in the Setup mode, is now switched to the COM bus. Also, the Announcer will listen via the headphones to the COM bus. The same procedure applies to the COM button of the volume controllers for Guest 1 and Guest 2.

**Conferring using the COM bus**
It is very easy to arrange for the announcers and callers to confer without this being broadcast using the COM bus. Using the COM switch next to the volume control for the Announcer's headphone, switch the Announcer to the COM bus. The microphone(s) of the Announcer(s) now supplies (supply) a signal to the COM bus and the signal on the COM bus can now be heard on the headphones which are connected to the Announcer output. Now switch the required hybrid(s) to the COM bus with the COM switch on the BCS73(E) module(s). The announcers and callers can now talk to each other.

The announcer and guests can be linked together in the same way.

**Talking and coughing to the COM bus (Cough > Com)**
Normally an announcer or guest can set the corresponding module in the mixer unit to CUE using the cough button and at the same time mute the channel. In combination with the MASTER CUE cue function, the DJ / technician can then be spoken to.

In the BCS70 it is also possible to have this form of communication going not via the CUE bus but via the COM bus. Configure the required modules as COUGH > COM using the Setup mode. Now, if the cough button is pressed, the channel is muted -and the user can still cough- but the module's signal is sent to the COM bus and thus to everyone who is listening to the COM bus (the director, for example). The DJ / technician is then not disturbed unnecessarily.

## QDM²

The external hybrid automatically gets the correct N-1 return from the COM, CUE, AUD or PGM bus. This is the so-called Quadruple Dynamic Mix-Minus system, shortened to QDM². Since the BCS73 generates the N-1 signal itself, separate 'clean feeds' are not necessary. The number of BCS73 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 used.
If AUD is selected as well as PGM, the return from the PGM bus has priority over the return from the AUD bus. The LED in the PGM button lights up more brightly than that in the AUD button in this case.

CUE has a higher priority than AUD or PGM. As soon as CUE is selected on a BCS73 module, the external hybrid gets the return from the CUE bus. This is only possible if the module is switched off.

COM has the highest priority if the channel is switched off. If the COM button of a BCS73 module is pressed, the signal from the connected hybrid is routed to the COM bus. The LED in the COM button then lights up and everyone listening to the COM bus can hear the external hybrid. The external hybrid also gets the return signal from the COM bus so that the person on the other end of the telephone line can listen to what is being said on the COM bus. Press on the COM button again to switch the hybrid away from the COM bus again. The LED in the COM button goes out.

If COM has been selected and the channel is on, then, depending on the routing set, the module gets the return from the PGM or AUD bus. To indicate that COM does not give a return in this situation, the LED in the COM button starts to flash.

If the channel is turned off and COM and CUE are both active, the module gets the return from both these busses.

## Automation

Because most of the functions of the BCS70 are determined by microcontrollers, existing and new automatic functions could be implemented.

**CUE reset when a channel is opened**
To reduce the possibility of making mistakes, in this case listening to the CUE-signal in stead of your program, the CUE-function on a module is reset if you open the channel.

**CUE reset if you select a source other than CUE**
As soon as you select a control-room source on the master module which is not the CUE source, all active CUE's on the input modules are reset. This ensures you of listening to the selected source, even with master-CUE configured on one or more modules.

**Remote CUE function without external CUE switch**
If a module has been configured with the Remote Cue function, then it is possible to put that module on CUE by setting the connected equipment in the PLAY mode. This (software) function makes an external CUE button superfluous. The reverse (starting the equipment if CUE is pressed with the channel switched off) is also possible, although this is not implemented as standard in the module's operating software. Please contact Dateq if you really need this option for your application.

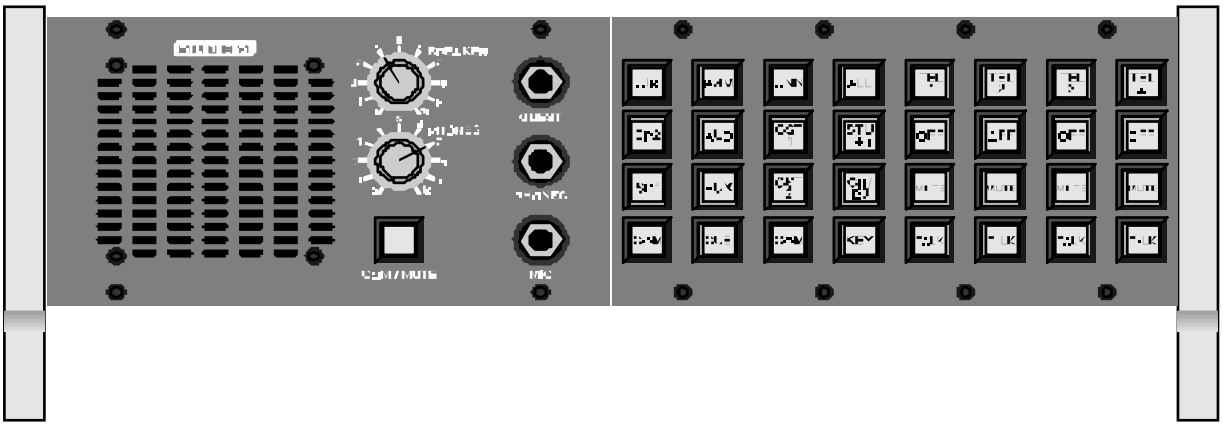
**Control Room output is switched off**
The signal to the Control Room output is automatically switched off as soon as there is a possibility that there will be feedback from a microphone via the speakers connected to this output. This can happen if, for example, a DJ channel is on, if CUE and MASTER CUE on a DJ channel are active or if the technician is speaking to the COM bus or to the CUE bus when the bus concerned has been selected on the Control Room selector panel.

**Switching Control Room and Phones to AIR or PGM**
To prevent mistakes, the Control Room automatically switches to the AIR or PGM signal at the moment that a DJ channel is switched on. This guarantees that the DJ is listening to the correct signal if he is about to go on air. The Control Room selection made earlier is restored when the DJ channel is switched off again.

**Equipment connected is stopped if input-selection changes**
If you switch over from -for instance- input 1 to input 2, the equipment connected to input 1 is stopped first before the module switches over to input 2.

# BCS80 program director module

Especially for setups with a separate engineer and program director, an optional program director unit is available. With this unit, the program director is able to choose his monitor source independent from the source selected by the engineer, and the director is able to communicate independently to all destinations (guest1, guest2, announcer, COM, etc.).



## *Control*

**Internal loudspeaker** The selected monitor source can be heard on the external speaker. During communication, the speaker signal will be temporarily muted, to prevent unwanted background noise in the program director signal.

**Internal microphone** The internal microphone is located in the low right corner of the speaker. There is no need to be close to this microphone for communications: the volume of your voice will be automatically adjusted to a fixed level. Just look in the direction of the FXS-station while talking, even from a distance of more than an armlength, the intelligibility will be more than sufficient.

This is the volume-control of the internal speaker. Turn this control fully counterclockwise if you don't want to have the monitor-source audible on the speaker.

This is the volume-control of the headphones. Both the PHONES-output and the GUEST-output are adjusted with this control.

Headphones output

Extra phones output. To adjust your headphone level, use the PHONES-volume control.

Connection for an external microphone, for example in a headset. The built-in microphone is switched off as soon as a jack connector is inserted in the MIC-input. Another way of connecting an external microphone is by looping your normal broadcast microphone through the XLR-input/output at the rear of the FXS-station. In that case, the switch at the back of the FXS-station has to switched from "int" to "ext".

Pressing the "COM/MUTE"-button will initiate talkback from the program director to the COM-bus.

### *Keypad*


The **monitor selection keys** offer the program director the possibility to select to which signal is monitored: AIR, SPARE1, SPARE2, COM, PGM, AUD, AUX or CUE.

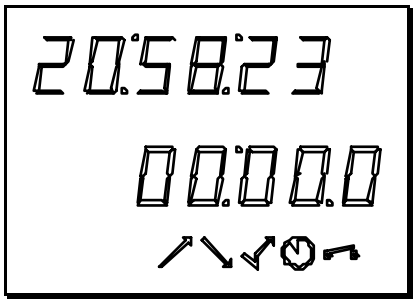

With the **talkback keys** the director is able to talk to the different talkback-destinations: ANN (announcer), GST1, GST2 (the guests), the COM-bus, the CUE-bus, DJ/CR (the discjockey or engineer), the STUDIO-output, or all destinations at the same time (ALL).


The **TEL1..TEL4 keys** will switch the corresponding telephone hybrid on-line. This is indicated with green LED's in these keys. The telephone hybrids in the BCS70-console will be numbered TEL1..TEL4 from left to right (TEL3 and TEL4 are optional keys).

The **OFF key** switches the hybrid off-line. Green LED's in these keys indicate that the hybrid is off-line.

The **MUTE key** mutes the hybrid signal on-air.

By pressing the **TALK key** the director talks back to the corresponding hybrid. This is done by switching the hybrid-return temporarily to the COM-bus, and letting the director talk to that COM-bus.




## BCS81 clock/timer module

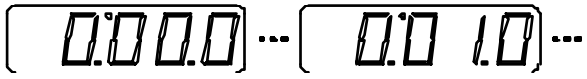
The BCS81 clock/timer-module receives its time-of-day-information from the German DCF77-transmitter at Mainflingen (near Frankfurt). The range of this transmitter is approximately 1000 miles. Besides extreme accuracy, the BCS81 keeps track of daylight-saving-time etc. Unique is the infra-red remote control for selecting operation mode and entering time.

### *Timer*

The timer can be used counting up or down. The [MODE]-key selects the desired mode:

**TIMER COUNTING UP**

In the initial mode the BCS81 counts upwards from 0:00.0. This mode can be useful for keeping track of the elapsed time since the last record, jingle or other item was started. Triggering the timer with a microphone-channel can be useful to monitor the length of the 'spoken' parts of a radio-program.

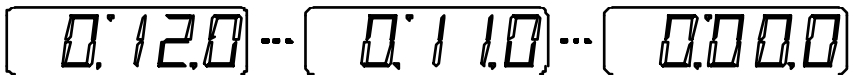



**TIMER COUTING DOWN**

To indicate the (approaching) end of a pre-recorded item, for example, the BCS81 can be set in the countdown-mode. The timer will count down from a set point to 0:00.0. This time can be entered with the remote control, for example:

*[1] [2] [ENTER]*

The timer will start counting down from 0:12.0.

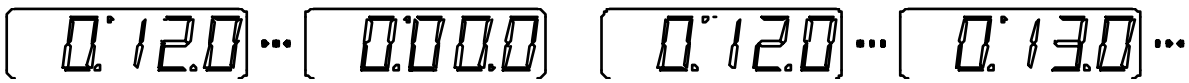



**TIMER COUNTING UP/DOWN**

During an intro of a (music-) item the timer will count down to indicate the (approaching) end of the intro. When 0:00:0 is reached, the timer switches to indicating the elapsed time from the point where the timer was triggered. The intro-time can be set from the remote control the same way, for example:

*[1] [2] [ENTER]*

The timer will start counting down from 0:12:0 to 0:00:0, then counting up from 0:12:0.



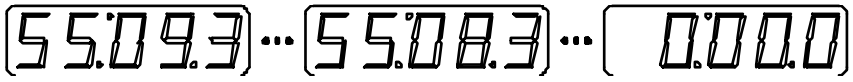
### TIMER COUNTING DOWN TO A SET TIME

In this mode the timer indicates the remaining time until a set time is reached, for example the starting-time of commercials and/or news. Enter this time from the remote control unit, for example:

*[1] [7] [5] [7] [3] [4] [ENTER]*

...to count down to 17:57:34. There is an important distinction between this mode and the other modes. This mode can be run in 'background', independent from the other timer-modes. Once the set-time is programmed, the timer can be started, stopped and reset in all other modes, while the countdown timer keeps running. If you switch back to this mode, the remaining time will be displayed again.

In case the set time is approaching with the timer in a different mode, a small blinking dot is displayed on the left of the timer-display for the last 30 seconds, to draw the users attention.



### INPUT-MASK-MODE

For external triggering of the timer 8 switch-signals can be connected to the BCS81. Since it is not always desired to trigger the timer with all connected signals, each signal can be individually blocked out with the mask-option. In the initial situation all inputs are enabled, so the display will show '**1234/ 5678**'. With the [1] .. [8] - keys of the remote control unit each channel can be disabled or enabled. For example by pressing

*[3] [5] [6]*

the display will show '**12-4 / --78**'. This means channels 3, 5 and 6 are disabled. Inputs 1, 2, 4, 7 and 8 are enabled.

Please note that the BCS70 uses input 1 and 2 to control the timer, so only inputs 3 through 8 are available for user-specific signals. You should always have input 1 enabled. Input 2 can be enabled or disabled to use the timer in two different operating modes. If you enable input 2, each channel on the BCS70 which is configured to control the timer (by means of the **RES** setup-option) will restart the timer as soon as the channel is opened. If you disable input 2, the timer will run as long as there is at least one open channel on the BCS70 with the timer control setup-option selected.

*Setting the time*

During normal reception-conditions the clock will be synchronized within 2 minutes, and the right time will appear on the display. It is also possible to use the clock with the antenna not connected ('free running'). In this case setting the clock to the right time can be done by entering the time from the remote control unit, by pressing [0] [0] [0] when in input mask mode. When this is done, **' / SEt '** will appear. For example:

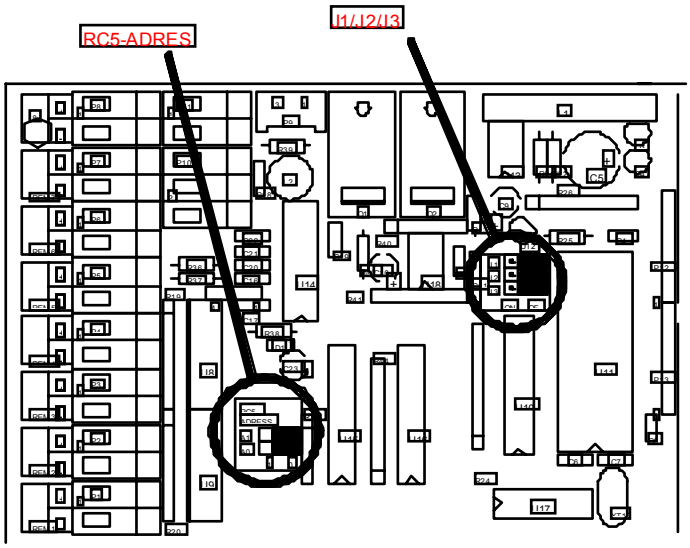
*[1] [7] [2] [8] [0] [0] [ENTER]*

The clock starts running from 17:28:00 as soon as the [ENTER] key is pressed.

When the clock is a little slow or fast it can be synchronised by pressing the [C] key at the whole hour when the timer is in counting-up-mode. This function is only available when no valid DCF-signal is received and the time-deviation is less than 3 minutes.

This function is available when your clock has firmware version 1.5 or higher. To check your firmware version go to the input-mask-mode and press the [C] key!

## BCS81 jumpers



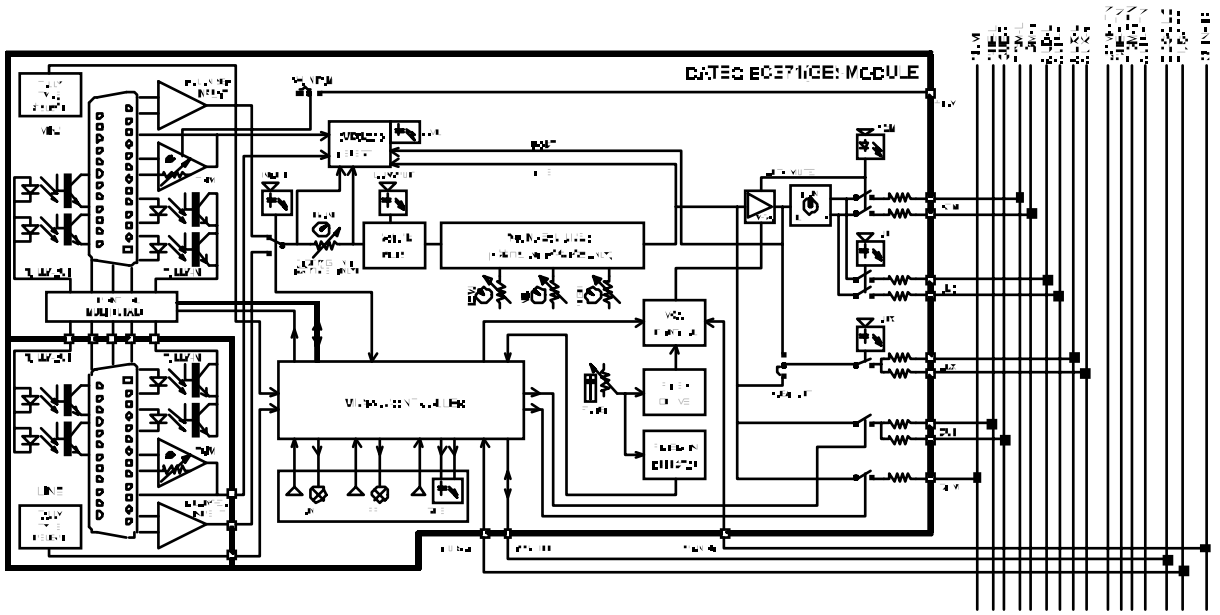

| Jumper | On/Off | Function |
|---|---|---|
| J1 | ON | BCS81 configured as slave (using another Dateq clock/timer-unit as master) |
| | OFF | BCS81 configured as master (default) |
| | ON | 12-hour time format with AM/PM (default in the USA) |
| | OFF | 24-hour time format (default in Europe) |
| J2 | | (not used) |
| J3 | A0 = 0<br>A1 = 1 | Address 0 remote control (default) |
| | A0 = 1<br>A1 = 0 | Address 1 remote control (when using multiple Dateq clock/timer-units in one room, it is recommended to use different remote control addresses) |
| | A0 = 0<br>A1 = 1 | Address 2 remote control |
| | A0 = 1<br>A1 = 1 | Address 3 remote control |

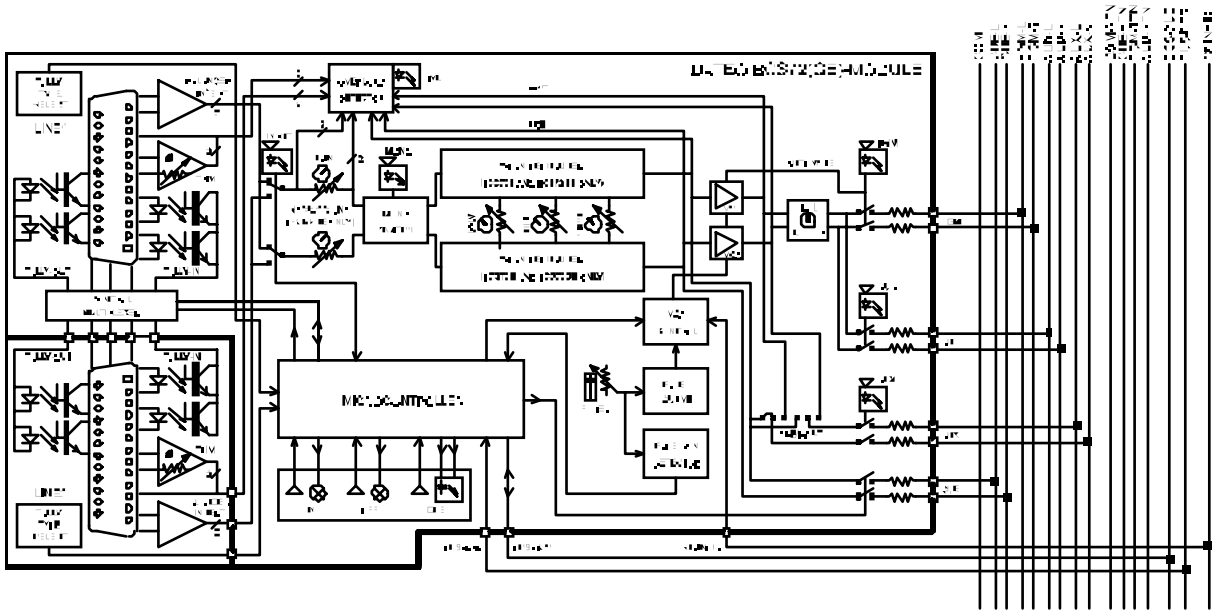
## BCS81 antenna

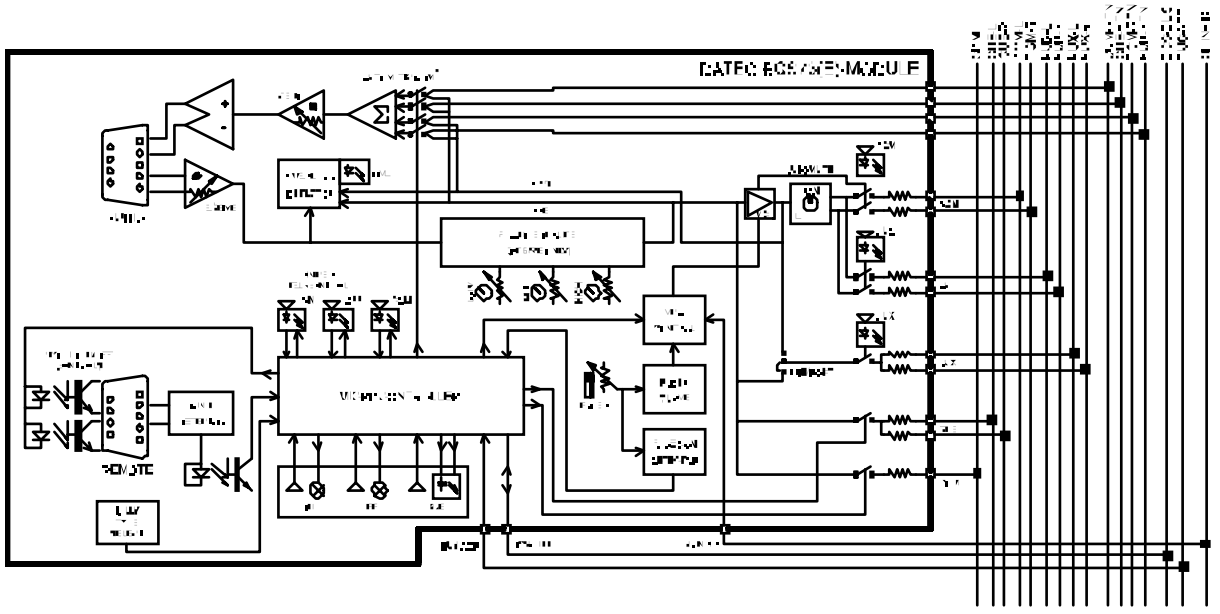
The cable of the supplied DCF77-antenna can be extended without any problem (up to a maximum of 100 meters, 300 feet). Mount the antenne in a position where reception quality of the DCF77-transmitter is good. Be aware of the fact that the direction of the antenna is important. If the reception of the transmitter is good, the LED on the antenne will blink every second on a regular basis. If the LED doesn't blink, or blinks irregularly, reception is bad. The cause for a bad reception can often be found in computer-equipment nearby, or steel constructions in the building, blocking the long-wave signal of the transmitter.

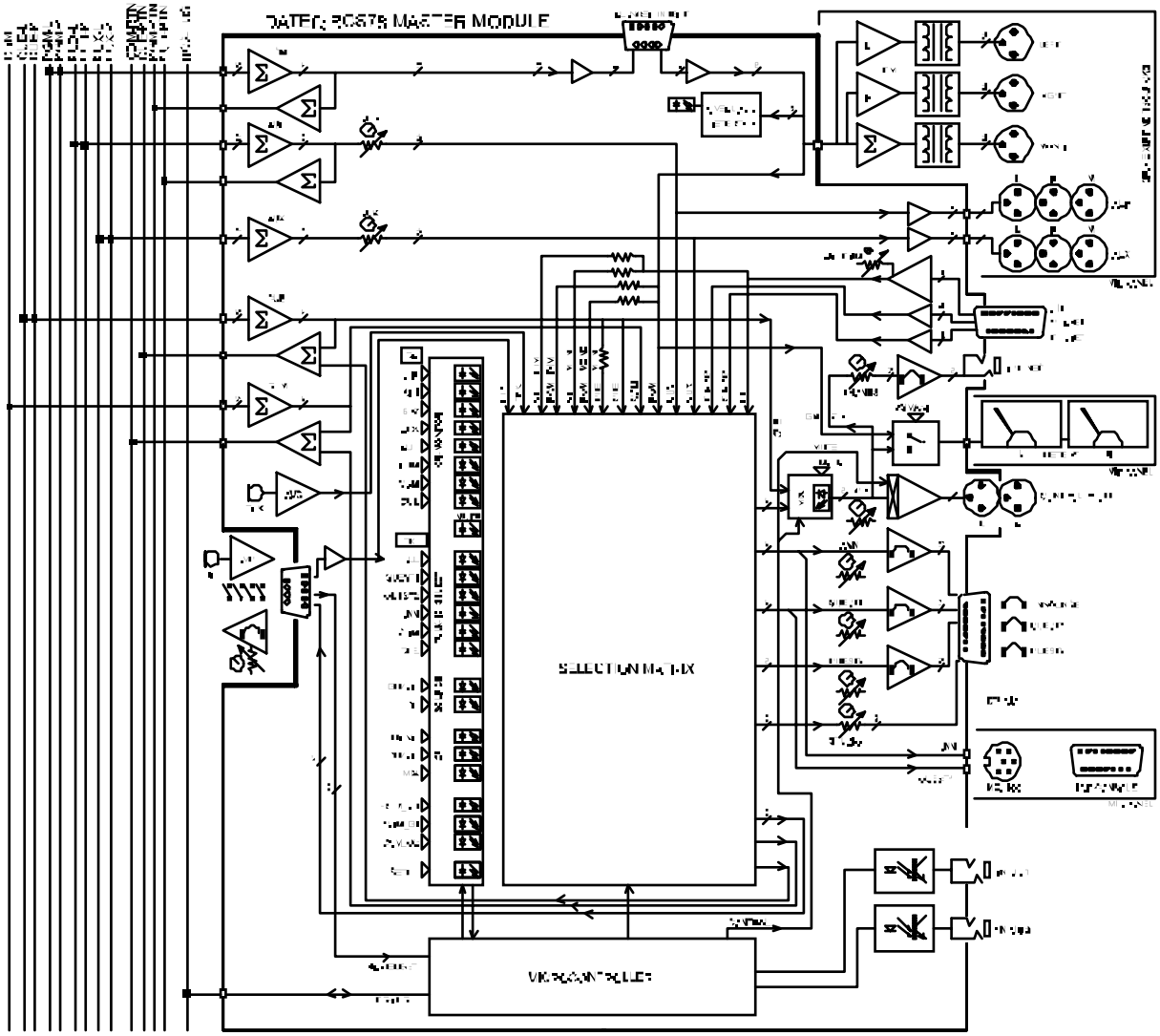
**CAUTION:** The supplied antenna is not suitable for outside-mounting. The antenna is not waterproof, and the built-in electronic circuit will not operate properly below the freezing point and above 50 degrees Celsius.

# Dateq BCS70 block diagrams








SELECTION MATRIX
MICROCONTROLLER