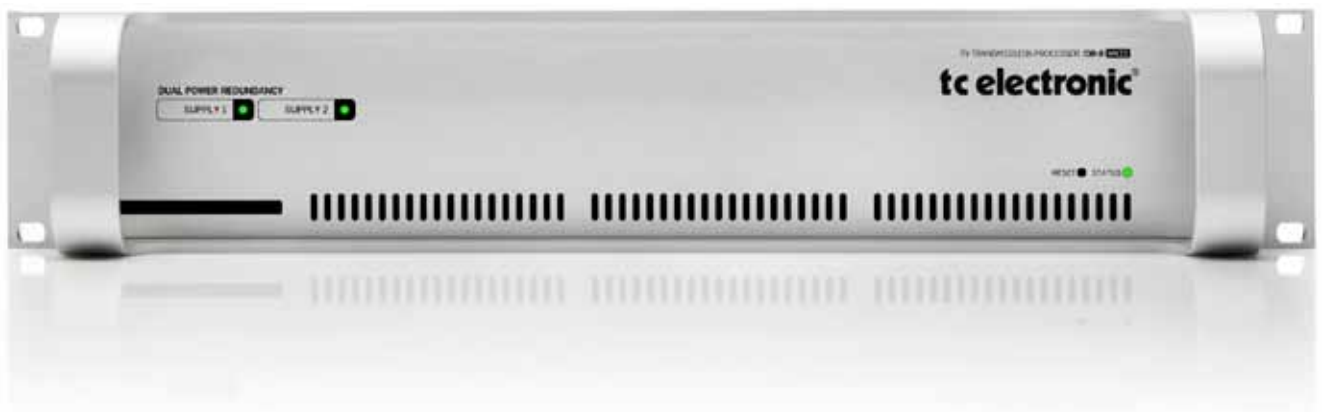


Operation manual

English

DB4/DB8 MKII



tc electronic®

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IMPORTANT SAFETY INSTRUCTIONS



The lightning flash with an arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use this apparatus near water.
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8 Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9 Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/accessories specified by the manufacturer.
- 12  Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Warning

- To reduce the risk of fire or electrical shock, do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
- This apparatus must be earthed.
- Use a three wire grounding type line cord like the one supplied with the product.
- Be advised that different operating voltages require the use of different types of line cord and attachment plugs.
- Check the voltage in your area and use the correct type. See table below:

Voltage	Line plug according to standard.
110-125V	UL817 and CSA C22.2 no 42.
220-230V	CEE 7 page VII, SR section 107-2-D1/IEC 83 page C4.
240V	BS 1363 of 1984. Specification for 13A fused plugs and switched and unswitched socket outlets.

- This equipment should be installed near the socket outlet and disconnection of the device should be easily accessible.
- Do not install in a confined space.
- Do not open the unit - risk of electric shock inside.

Caution:

- You are cautioned that any change or modifications not expressly approved in this manual could void your authority to operate this equipment.
- To completely disconnect from AC mains, disconnect the power supply cord from the AC receptacle.
- The mains plug of the power supply shall remain readily operable.
- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.
- Ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, tablecloths, curtains, etc.

Service

- There are no user-serviceable parts inside.
- All service must be performed by qualified personnel.

EMC / EMI

This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installations. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful:

"How to identify and Resolve Radio/TV interference Problems." This booklet is available from the US. Government Printing Office, Washington, DC 20402, Stock No. 004-000-0034-4.

For the customers in Canada:

This Class B Digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations. Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Licenses



If you have purchased any of the optional software Licenses or the TC Icon Software Editor, then read the License Agreements in the Appendix section prior to use.

Thank you for choosing DB8 or DB4 as your next step in audio. Even if the near future is analog we are convinced you have chosen wisely. Consistency in Loudness is the single most important audio issue to get right in broadcast today. DB8 and DB4 employ cutting edge technology to enable stations get rid of listener complaints about jumping levels, and to transmit in analog and digital with optimum processing for both feeds.

The Difference Between DB8 and DB4

- DB8 has four independent processors in one frame and thus runs 4 independent Engine algorithms simultaneously.
- DB4 has two engines but can run two processing engines PLUS a LM6 Radar meter.

DB8 is designed for large broadcast centers, while DB4 may be a more appropriate match for a regional station, but they share the same processing, the same presets and the same physical I/O structure - and even the same program to control them. Many machines of both types can be controlled from one Icon program (included with this package), and they will identify themselves over a network, be it local or remotely located machines.

Software and Manual for DB8 and DB4

Software updates for both machines are always released simultaneously, and the two machines share the same manual. The relevant differences are highlighted. Instead of both names being printed throughout the manual, "DB8" is used as a generic term.

Presets

DB8 and DB4 include a number of international standard presets ready for use. More presets are continuously made available in software updates, and from the TC web-site. Presets are based on information from broadcasters around the world. Some are subtle, some aggressive, but they all provide outstanding audio resolution, never before available in a broadcast processor.

Identify Your Opportunities

If your station is an early mover in digital and seeking to identify advantages, DB8 and DB4 will provide you with all the possibilities you need to experiment and find the right competitive angle. The processors can also adapt to your audience's changing needs, or audio strategy could even be changed from program to program.

Technical Integrity

Synchronous 48 kHz sampling and 48 bit processing throughout. Wide range, high order jitter rejection. The DB8/DB4 platform is without compromises. In fact, hundreds of machines could be cascaded without even degrading the transmitted sound.

Foundation

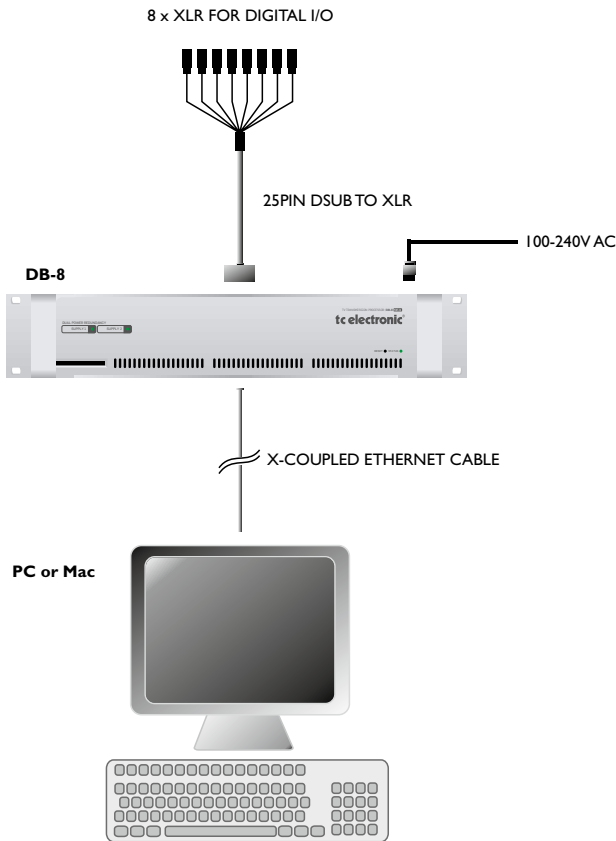
TC's involvement with high quality digital audio dates back to the mid eighties with pre-DSD technology being employed in the still ubiquitous delay, 2290. TC's commitment to digital excellence continued over the years with equipment for the music, film and mastering industries. The multichannel processing in DB8 and DB4, for instance, was originally developed for film. Those tools have been adjusted for broadcast use and are now part of your arsenal. Or dynamics control, where some of the latest end-listener distortion canceling methods originally invented for mastering have been built in. DB processors even include advanced loudness and true-peak meters, founded on ITU and EBU standards TC has been a significant contributor to.

Many years of experience with analog and digital broadcast combined with the know-how of skilled engineers is the strong base of the DB8/DB4 platform. From the purist and quality conscious hardware engineers to software writers of whom some were involved with designing the MPEG codecs, the team forms a competent, non-dogmatic design group ready to take broadcast audio to the next level. We are confident you will value your new possibilities.

GETTING STARTED

This is an illustration of how to connect a standard DB8/DB4 as it comes with one Mainframe and one TC Icon software Editor. We recommend reading through the entire Hardware & Installation section before operating.

Connections



Please note that a crossed ethernet cable (supplied) must be used in this type of setup. When the system is connected to a HUB as a part of a major network non-crossed ethernet cables must be used (not supplied).

Quick setup guide

This quick setup guide applies for a simple setup as illustrated. The setup procedure requires that your PC or Mac has a network adapter installed as well as a TCP/IP protocol.

- Unpack the Mainframe and mount in a well ventilated space.
- Connect mains power and audio-connections via the supplied 25 pin to XLR cable and use the supplied X-coupled ethernet cable to connect the Mainframe to your network adapter as illustrated.
- Boot computer and Mainframe.

Install the TC Icon Software Editor

Follow the intallation instructions.

- Open the TC Icon Software Editor and the following screen will appear.



- Press **Assign**. The System is scanned and all connected mainframes will appear on the next screen.
- Press the mainframe you wish to access.
- That's it - you are now up and running.



Latest version of Mainframe software and latest version of the TC Icon Software Editor is supplied on the CD delivered with the Mainframe and Software Editor package. However, from time to time, software updates are available. To achieve the latest software you should visit our site at www.tcelectronic.com and go to "Downloads - Software Updates - TC Icon Software Editor" and follow the instructions. You may also contact your local dealer to get the latest software.

Mainframe Front



Power Supply 1 & Power Supply 2 LEDs

DB8/DB4 features two fully independent power supplies. Each power supply has its own status LED.

- For each power supply a green LED indicates that external power is connected and the power supply is fully functioning.

- A red LED indicates a problem. Either there is no external power connected or there is a problem at certain checkpoints in the relevant power supply.

Due to the redundant design the frame will still be fully operationable, however, we advise that you address the issue and investigate the cause of the error indication at the first given opportunity.

- No light in any LEDs - no power connected.



Notice that only one power supply is necessary for DB8/4 to run. Status is also indicated in the TC Icon Editor.

Reset key

Press and hold during boot up to reset I/P address to default. Default I/P address in 192.168.1.xx - where xx is the last two digits of the frame's serial number. Press and hold approx. 5 seconds until LED blinks during operation, to reset only ethernet communication without interrupting audio.

Status LED

Green color indicates "OK".
Flashing orange LED indicates sw update in progress.
Red indicates a network problem. Check cables.

PCMCIA slot

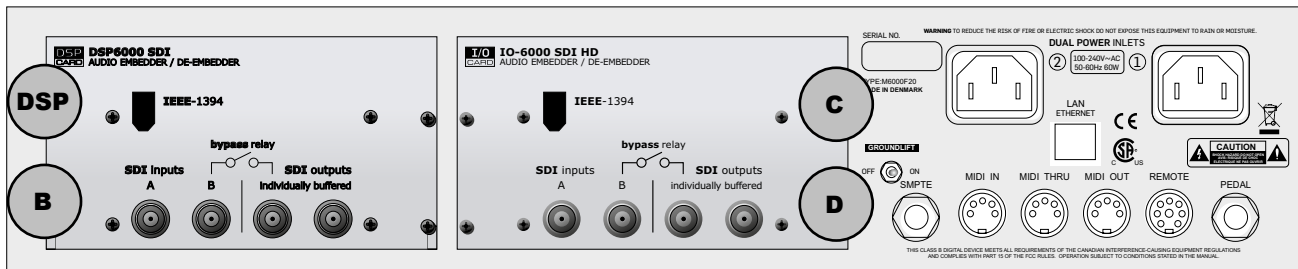
For future software facilities and handling of additional preset banks.

MAIN FRAME - REAR

Mainframe Rear

DSP6000 SDI card

I/O 6000 SDI HD - expansion card



DSP & I/O expansion slots A B C

DSP, A B, and C slots should be filled consecutively ALWAYS starting with a DSP card in the DSP slot (upper left).

Dual-space cards are installed adjacently as illustrated above.

Following DSP cards are available:

- DSP6000 SDI (dual space)
- AES3 COAX DSP
- DSP AES/EBU Eight channel (single space)

Following I/O cards are available:

- I/O-6000 SDI HD
- AES3 COAX I/O
- AES OCTAL I/O (Balanced)

Dual Power In

The Dual Power input for extended operational security and stability accepts 100-230V AC. 50/60Hz. Connect to two independent power sources to be safe in case of a fuse blow.

SMPTE

1/4" connection for SMPTE sync. Input.

Ethernet/LAN

Connection for external control devices such as a computer with installed net adaptor or the TC Icon. The type is 32 bit PCI Ethernet interface fully compliant with IEEE 802.3u 10/100 Mbps CSMA/CD standards. The connector type is a 100 Base-T RJ-45 (CN13)

Ground Lift

Use this standard chassis ground lift if you encounter problems with "hum."

MIDI In, Thru and Out

5 pin DIN connectors.

Remote

This connection is for service and test purposes only.

Pedal

General Purpose Input (GPI). GPI input for switching of up to 8 presets.

Rackmounting Advice

- The DB8/DB4 mainframe should not be placed in an environment with a temperature exceeding 50 degrees celsius.
- Do not cover the ventilation openings on the sides of the frame.



The cooling fans are activated according to the temperature inside.



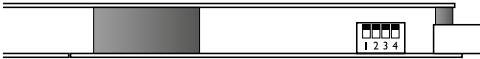
Warning

Do NOT mount an ADA 24/96 card in any of the card slots. DB4/DB8 MKII does NOT support the ADA 24/96 card and the card will be damaged if mounted in a DB4/DB8 MKII frame!

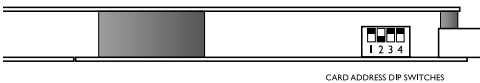
I/O Cards

I/O cards MUST be mounted in slots A, B and C consecutively starting in slot A. Dip-switches must be correctly set on the I/O cards.

For DSP cards all jumpers must be set to off (up position)



For I/O cards jumper 2 must be set to on (down-position)



Removing Modules

Before removing any card from your Mainframe, unplug the mains power cable. Unplug all other connections from the module before unscrewing the two screws securing the module in the Mainframe. When removing a module from a Mainframe, the card should be mounted directly in another Mainframe or placed in an anti-static shielded bag.

Mounting Modules

Before mounting modules in your DB8/DB4, unplug the mains power cable. Remove the dummy-panel or original module from the slot where you want to install the module. The module should then be removed from the shielded bag and mounted directly in the Mainframe by handling the rear panel of the module only. Avoid touching any components on the PCB-Board.

To install a DSP or I/O expansion card in your Frame.

1. Switch OFF the unit and disconnect the mains power cord.
2. Remove the DUM-1 option plate(s) or module by loosening the 2 screws.
3. Insert the card gently and mount the two screws.

Static Electricity

As all computer hardware can be sensitive to static electricity, certain precautions must be taken to protect it from damage during storage and handling.

Storage

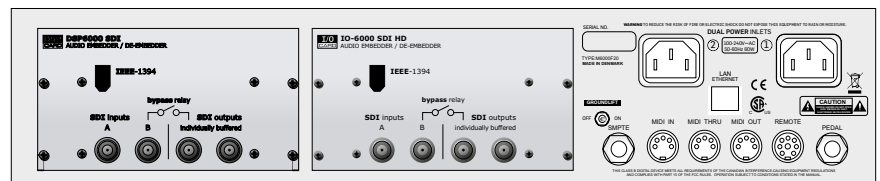
Non-mounted modules should always be stored in anti-static shielded bags.

General Handling

When inserting or removing any modules, avoid touching the circuit board by handling only the rear panel of the module. To minimize the static potentials that can cause damage to the electronic circuits, you should observe precautionary grounding techniques such as touching a grounded DB4/DB8 Mainframe immediately before inserting modules.

Caution!

The servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock do not perform any servicing other than that in the operation instructions unless you are qualified to do so.



DSP & CARD CONNECTION

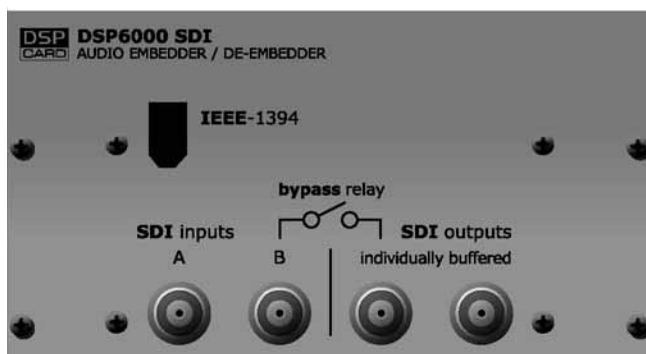
SDI cards

The SDI card for DB4/DB8 supports all commonly used SD and HD formats. While de-embedding and embedding 8 channels of audio (48 kHz, 24 bit), selectable from the four SDI Groups in chunks of four audio channels, it passes the video side untouched.

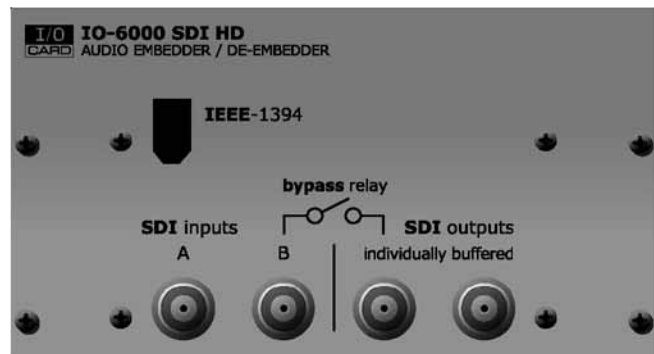
Processing may be inserted on any two of the four SDI Groups, and re-embedding may take place on any two groups. Consequently, the machine enables cross patching of audio and format conversion between SDI Groups. The design features two separate SDI inputs, of which one is active at a time, and two parallel, separately buffered outputs.

The DB's present an attractive SDI solution with massive jitter rejection, 48 bit processing and low latency. They also feature bit transparent, synchronous data handling, enabling routing of data reduced audio, such as AAC, DTS or Dolby E.

DSP6000 SDI



I/O6000 SDI HD



HD Audio

- Embedded audio multiplexer and demultiplexer
- Supports 38 HD video formats
- Supports eight audio channels at one time
- Fully SMPTE 299M compliant & compatible with common non-compliances
- Up to eight bit errors can be corrected in each audio data packet
- Full support for 48 kHz synchronous or asynchronous 16-bit, 20-bit and 24-bit audio
- All four audio groups can be deleted
- Any two audio groups can be replaced when operating in multiplexer mode

SD Audio

- Embedded audio multiplexer and demultiplexer
- Supports 6 SD video formats
- Supports eight audio channels at one time
- Compliant to SMPTE 272M A and C & compatible with common non-compliances
- Full support for 48 kHz synchronous 16-bit, 20-bit and 24-bit audio
- Programmable audio sample distribution
- All four audio groups can be deleted
- Any two audio groups can be replaced when operating in multiplexer mode

Automatic Bypass

The DSP6000 SDI card (bypass version) features automatic bypass at power-down or at loss of power. Even at boot-up audio and video is passed lossless to transmission.

SDI I/O Expansion card

- With the SDI expansion card installed up to 16 I/O channels can be handled either in 1 TV stream with 16 channels or in 2 TV streams with 8 channels each.

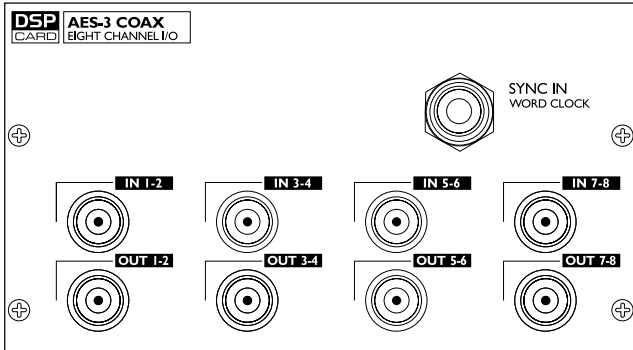
Technical notes

Max recommended cable length is 60 meters to and from DB8/DB4. Cable type should comply to SMPTE standards, such as Belden 1694 or better.

Note that in bypassed mode the total cable length pre AND post the unit should not exceed 60 meters.

When an installation is finished, please check bypass functionality by turning off the DB processor in situ to take cable types and cables lengths into account.

AES3 COAX - DSP



Caution!

The servicing instructions are for use by qualified personnel only. To reduce the risk of electric shock do not perform any servicing other than that in the operation instructions unless you are qualified to do so.

Introduction

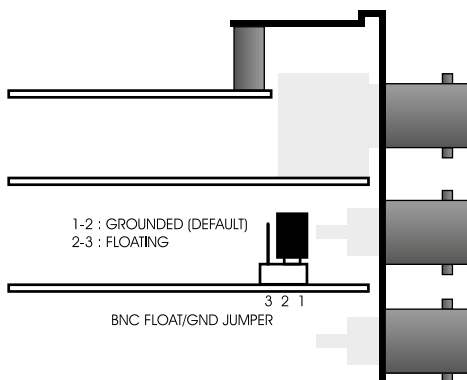
The optional AES-3 Coax card with 8 BNC connections is especially designed for broadcast installations as they often prefer the 75 Ohm unbalanced BNC connections that support considerably longer cables.

Grounding

A jumper on the card determines grounding to chassis status. Per default the card is grounded to chassis.

If you need to change the grounding status, follow this procedure:

- Disconnect mains power cord.
- Loosen the two screws holding the DSP card and remove the card gently.
- Move the jumper to pins:
2-3 : Floating (not grounded)
1-2 : Grounded (default)
- Insert the card gently in the DSP slot and remount the screws.



Hardwire Bypass at power off

At power off the frame is hardwire-bypassed via relays ensuring NO signal loss.

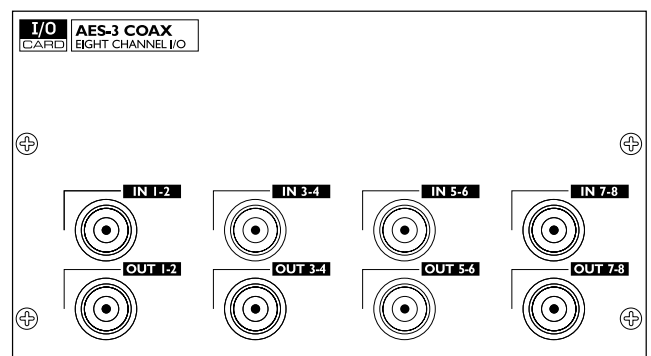
SYNC IN, WORD CLOCK

Refer to information on next page.

General Handling

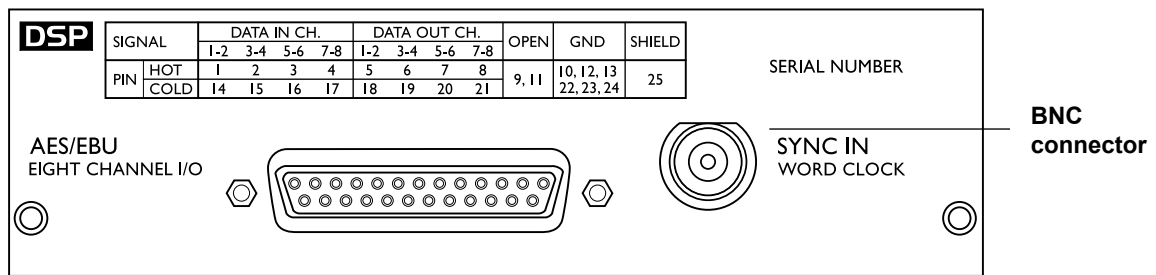
When inserting or removing any modules, avoid touching the circuit board by handling only the rear panel of the module. To minimize the static potentials that can cause damage to the electronic circuits, you should observe precautionary grounding techniques such as touching a grounded Mainframe immediately before inserting modules.

AES OCTAL - Expansion



Eight channel I/O expansion card on with BNC connectors.

DSP & CARD CONNECTION



Use the supplied cable to connect the AES/EBU Inputs/Outputs.

Cable type is twisted pair (12 pairs) with common screen. Recommended impedance: 110 Ohm.

One end is equipped with an AES/EBU 25 pin D-Sub connector, the other end is equipped with four male XLR's and four female XLR's.

Male XLR's are marked with: Out - 1 to 4.

Female XLR's are marked with: IN- 1 to 4.

Extension cables must be constructed according to AES/EBU-3 standards.

Following is the pin-out:

Pin number	Cable pair number	XLR	XLR-pin	Assignment
1	1a	Female 1	2	Input 1/2 +
2	2a	Female 2	2	Input 3/4 +
3	3a	Female 3	2	Input 5/6 +
4	4a	Female 4	2	Input 7/8 +
5	5a	Male 1	2	Output 1/2 +
6	6a	Male 2	2	Output 3/4 +
7	7a	Male 3	2	Output 5/6 +
8	8a	Male 4	2	Output 7/8 +
9	No connection			No connection
10	9a	Female 1	1	Common
11	No connection			No connection
12	9b	Female 2	1	Common
13	10a	Female 3	1	Common
13	10b	Female 4	1	Common
14	1b	Female 1	3	Input 1/2 -
15	2b	Female 2	3	Input 3/4 -
16	3b	Female 3	3	Input 5/6 -
17	4b	Female 4	3	Input 7/8 -
18	5b	Male 1	3	Output 1/2 -
19	6b	Male 2	3	Output 3/4 -
20	7b	Male 3	3	Output 5/6 -
21	8b	Male 4	3	Output 7/8 -
22	11a	Male 1	1	Common
23	11b	Male 2	1	Common
24	12a	Male 3	1	Common
24	12b	Male 4	1	Common
25	Shield	no connection		Common

Sync In Word Clock

For connections to external clock via the standard BNC connector (see illustration above).

When several devices are connected in a chain and synced via Word Clock, termination on the last device of the chain is necessary.

As the DB8/DB4 is expected to be the last unit in such a chain (or the only), the factory default setting on the DSP card is: TERMINATED (75 Ohm).

If you need to terminate the Word Clock signal elsewhere in the chain you will need to un-terminate the DSP card. To do this you must remove the DSP card from the mainframe and remove the termination jumper:

- Switch off the power and disconnect main power cord.
- Loosen the two screws holding the DSP card and remove the card gently.
- Remove the terminating jumper near the BNC plug.
- Insert the card gently in the DSP slot and remount the screws.

Termination jumper



Pins connected via jumper : Terminated (75 Ohm).
Pins NOT connected via jumper : Not Terminated



Twisted cable pairs must be respected

The following section describes the TC ICON hardware remote control.

Up to 8 mainframes can be controlled via the TC ICON hardware remote but DB8/DB4 units are most often controlled via PC or Mac using the free TC Icon Software Editor. When using up to four instances of the TC Icon Software Editor; 32 frames can be controlled simultaneously. Please find descriptions of both in the following manual sections.

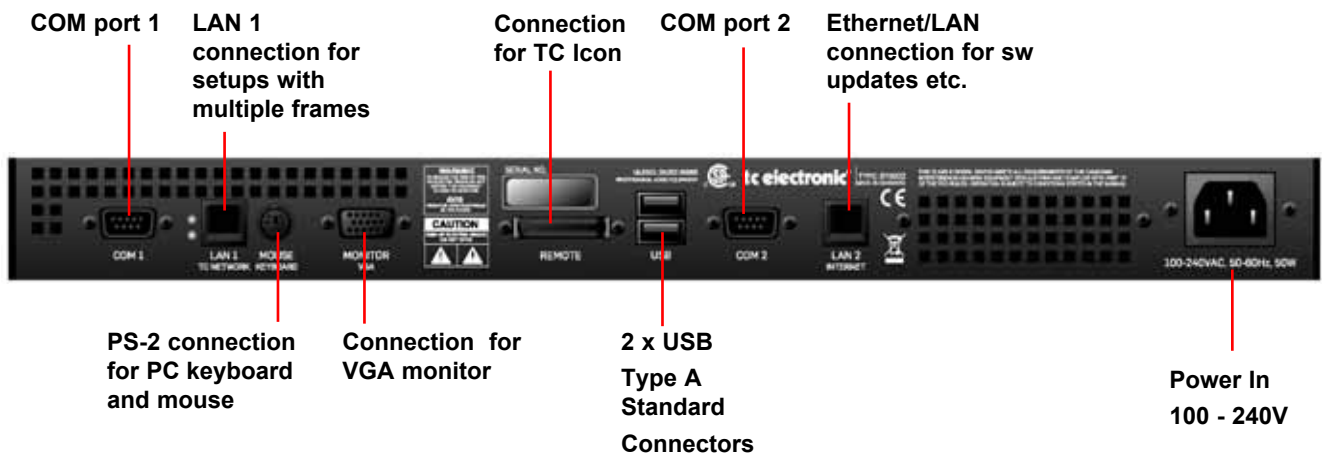
Remote CPU front panel



Power Key

Switches power On/Off. Green LED indicates power on state.

Remote CPU rear panel



Ethernet Connection

32 bit PCI Ethernet interface fully compliant with IEEE 802.3u 10/100 Mbps CSMA/CD standards. The connector type is a 100 Base-T RJ-45 (CN13)

Connection for PC keyboard or mouse

A standard PS2 Y-splitter must always be used when connecting a PS2-mouse, a keyboard or both. This cable is not supplied with the unit.

Connection for TC Icon

36 pin multi-cable connection for TC Icon.



TC Connection Cable.

Use the special TC Icon cable supplied with the unit ONLY !

USB Connection

USB connection for some TC products with USB connection. E.g. LM2

Monitor

By connecting a monitor via this standard 15 pin D-Sub you can have the exact same picture as displayed on the TC Icon, running in parallel with the Icon. Color depth is 24 bit with a screen resolution of 640 x 480 pixels at 60Hz.

Power

Connect 100-240V AC, 50/60Hz auto-select.

Rack-mounting Advice

- The CPU unit should not be placed in an environment with a temperature exceeding 50 degrees celsius.
- Do not cover the ventilation openings on the back of the Remote CPU.



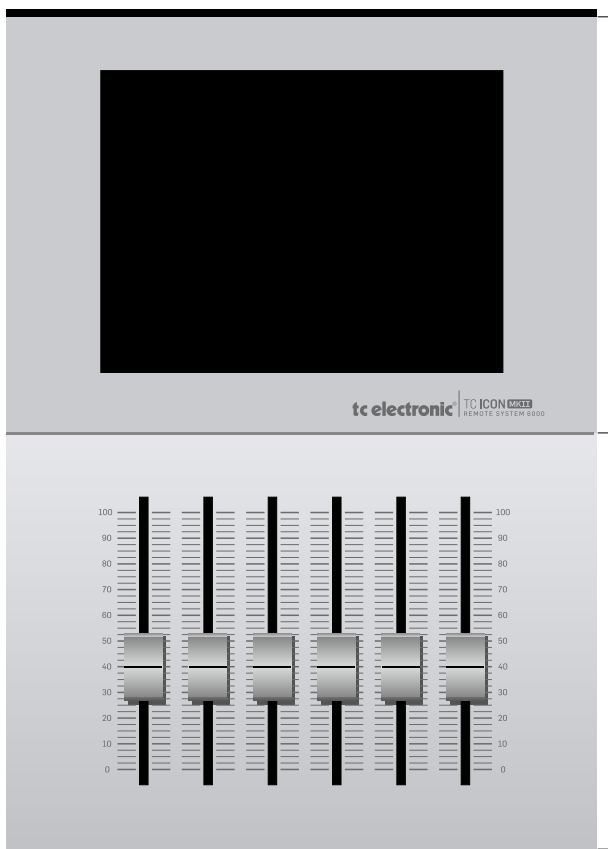
The cooling fan is activated according to the temperature inside.

Com ports / RS232

For connection of TC units with RS232 interface. E.g. P2 and DB2.

TC ICON

TC Icon Front



Screen

The TC Icon screen is a touch-sensitive capacitive screen. Touch calibration as well as brightness and colors can be adjusted/selected in the TC Icon Setup menu.

Maintenance

The touch screen must be cleaned only with a soft cloth slightly moistened with water or a mild detergent solution.

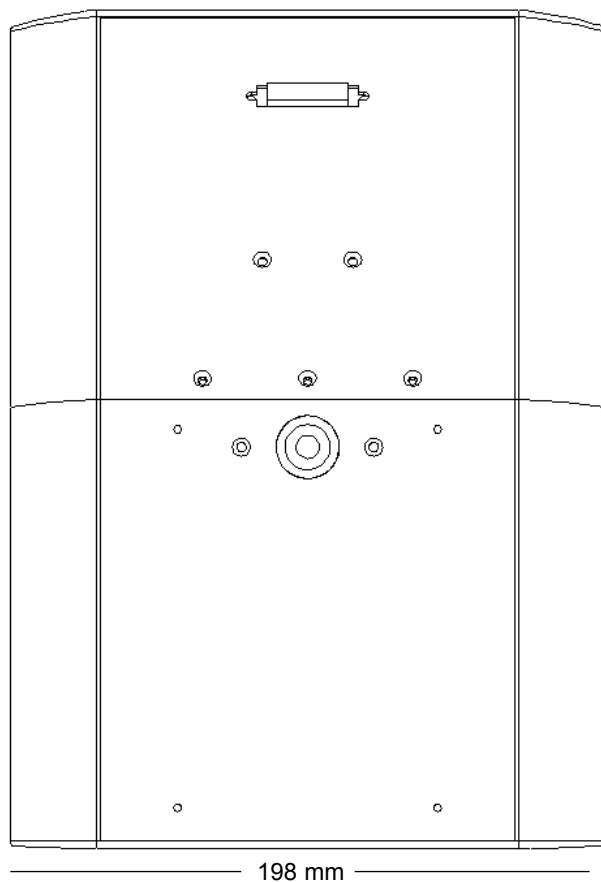


Do not spray liquids directly on the screen.

Faders

The Faders are touch-sensitive. The sensitivity of the Faders can be adjusted so response to movement is achieved only when operated with your finger-tips. This way unintended movement of the Faders with e.g. a sleeve etc. will not result in changes in parameter values. The sensitivity can be adjusted in the TC Icon Setup menu.

TC Icon Rear



TC Connection Cable.

Use the special TC Icon cable supplied with the unit **ONLY!** No other cables can be used. The 7.5 meters (22 feet) cable cannot be extended as this will reduce the power for the Icon supplied via the cable!

Mic stand mounting

There are two standard threads. 3/8" and 5/8". The TC Icon can be mounted on both types without further accessories.

Mounting of plate.

Mount the supplied plate on the rear of the TC Icon, to assure stable operation when placed on a table or similar. This is easily done using the 4 screws and screwdriver supplied with the unit.

Dimensions

D: 279mm
W: 198mm
H front: 33mm

Keeping your software updated

DB4/DB8 is a constantly evolving platform and updating software is a standard procedure to keep the system up-to-date. Depending on your setup, software-updates can be done in a couple of different ways described on the following pages.

Software types

There are three types of software in a DB4/DB8 mainframe, one for the TC Icon Remote CPU MKII and then the TC Icon Software Editor for PC and Mac, that can be used instead of a TC Icon (hardware version)

- Frame software
- Net (Ethernet) software
- DSP software

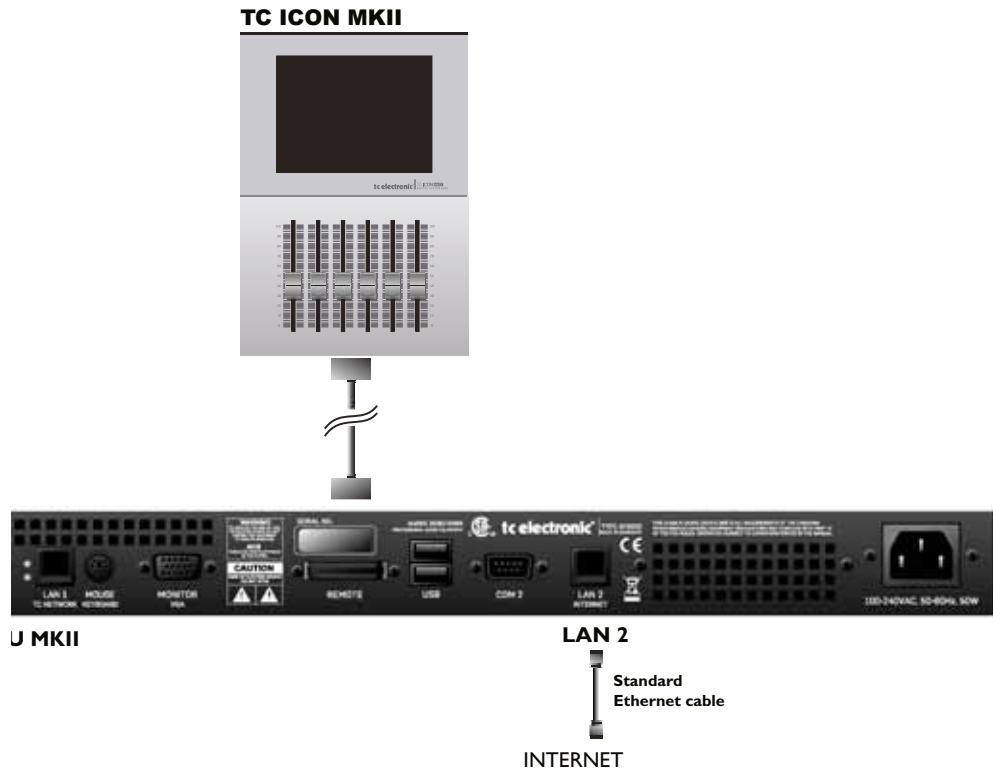
- Software for the TC Icon Remote CPU MKII
- TC Icon Software Editor form Mac or PC

Before diving into the actual update procedures, you should check whether you have the latest software installed already.

UPDATING DB4/DB8 MKII SOFTWARE

Updating Remote CPU MKII software

Update Remote CPU 2



Remote CPU MKII software is updated directly via the internet.

- Connect Remote CPU MKII LAN 2 to your internet router using a standard ethernet cable
- Go to the Setup/Update page and press the UPDATE FROM TC WEBSITE button
- That's it!

If you see a message "Download from web failed", go to the Setup/Net page and ensure that it says: "Connected. TC Website Available", under Internet DHCP Connection (LAN 2)

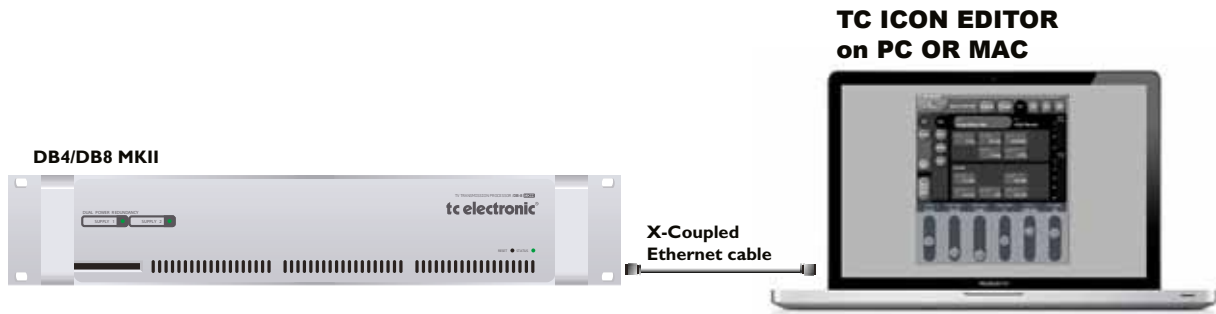


If the message is: "Connected. TC Website Not Available" or "LAN 2 Not Connected", then check cables and try again. If the problem continues you may need to look into firewall issues with your network administrator.



UPDATING DB4/DB8 MKII SOFTWARE

Updating Mainframe 6000 MKII software



- Download and install TC Icon Editor on a Mac or a PC
- Download Frame, DSP & Net software to a folder on your computer.

PC example:

Create a folder in the root directory (C), and call the folder DB8kupdate. The path for this folder is then "**C:\DB8update**".

Unzip and place the Frame, DSP & Net software in this folder.

Mac example:

Create a folder on your Macintosh HD and call the folder s6kupdate.

The path is then "**//Volumes/Macintosh HD/DB8update**".

Unzip and place the Frame, DSP & Net software in this folder.

- Disconnect your computer from your internet router
- Connect the DB8 MKII LAN port to your computer's netcard using a X-coupled ethernet cable
- Open the TC Icon Editor, select the Frame to update and go to the Frame/System/Update page
- Enter the path for the software:
"**C:\DB8update**" (for Windows)

The Icon Editor shows the update status via a progress bar.

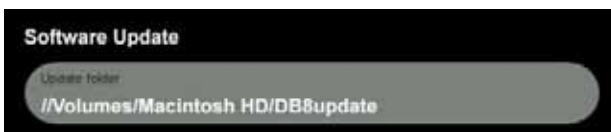
A log file of the update can be obtained for service purposes. The file is saved at the location where the software is updated from. The file lists the result of the operation and can be opened with most text editors.



TIP To verify correct update-procedure has taken place, check the software version numbers both before and after an update. These version numbers are located on the Frame/System/Version page.



or "**//Volumes/Macintosh HD/S6kupdate**" (for Mac) as Update Folder path



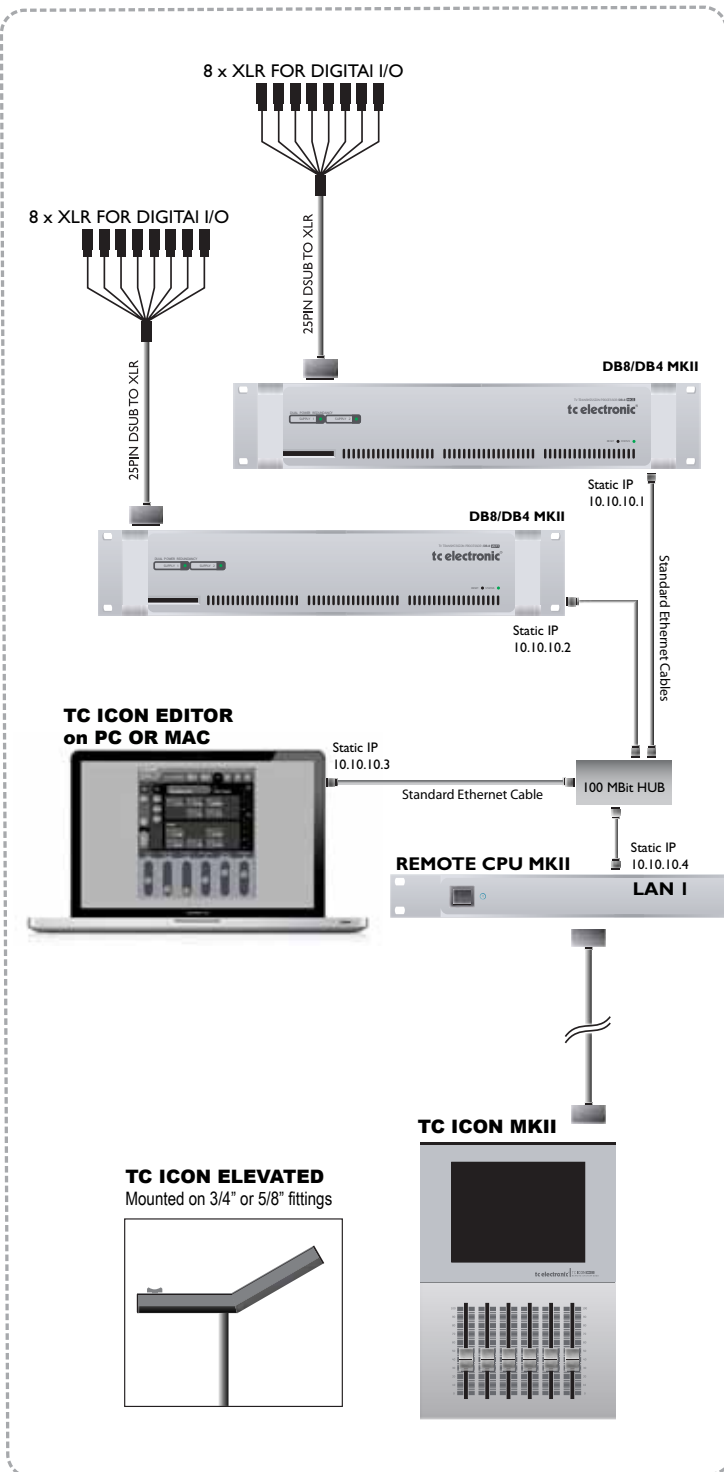
- Select Frame and press Update SW
- Select Net and press Update SW
- Select DSP and press Update SW

UPDATING DB4/DB8 MKII SOFTWARE

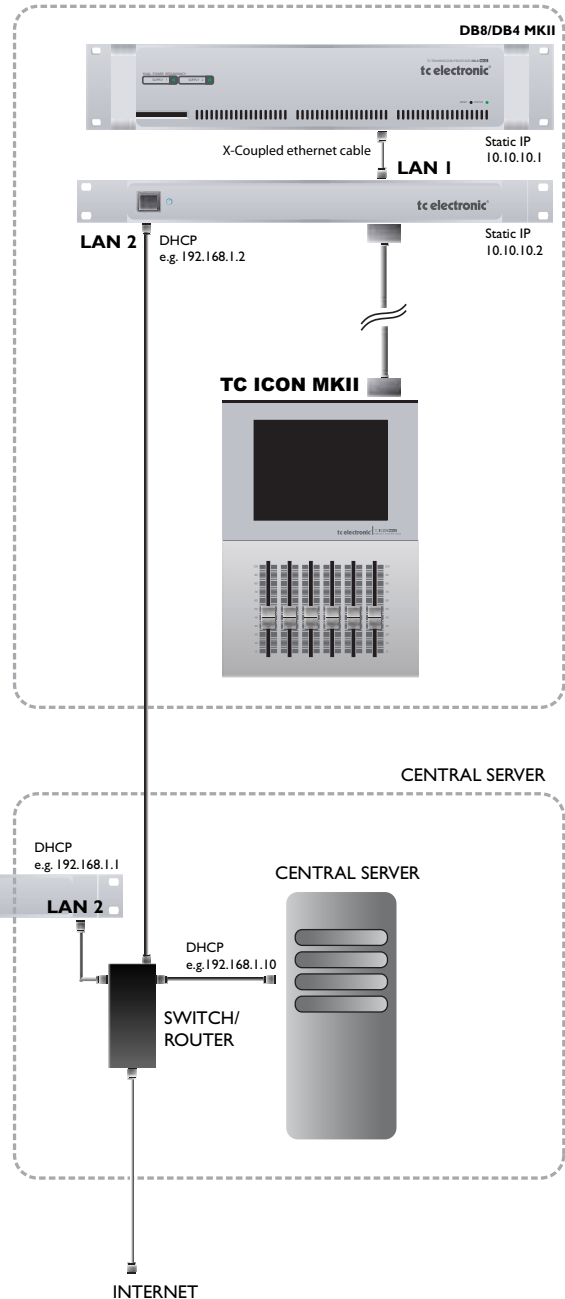
Advanced setup

- Central Server setup for software for update and preset handling

"TC NETWORK" (Static IP) - STUDIO A



"TC NETWORK" (Static IP) - STUDIO B



Central Server (MotherShip) setup

This is a typical setup in larger studio facilities with several rooms, where you place software updates and e.g. a preset vault on a central server/computer in a shared folder.

The illustration on the previous pages shows two studios and a central server with internet access.

LAN 1 TC Network connects:

- Local DB4/DB8 Mainframes
- Local Remote CPU LAN 1
- E.g. PC/Mac running the TC Icon Editor

LAN 2 Internet

- Connects to central server and internet

To learn about shared folders please refer to the sections:

- **Shared folders PC - basics**
- **Shared folders Mac - basics**

Two networks - two sets of IP addresses

This setup includes two networks. The static "TC Network" and the DHCP. Each network must use its own unique group of IP addresses.

We assume that the Router in the uses the standard group of IP addresses: 192.168.1.xx, and we must therefore give TC Icon Remote CPU MKII's LAN1 and all DB4/DB8 mainframes its own group.

E.g. 10.10.10.xx, where x is unique for each unit.
(please see illustration on the previous page)

- First change the IP address of the DB4/DB8 Mainframes to 10.10.10.x via the TC Icon Editor.
Reboot each frame
- Then change the LAN 1 IP address on the Remote CPU MKII to e.g. 10.10.10.x
Reboot the Remote CPU MKII

Updating your software:

- Download the software from:
<http://www.tcelectronic.com/system6000support.asp>
and place the software in a **shared** folder on the "central server".
- Select the frame you are about to update
- Go to the Frame-System-Update-Frame page
- Then set the Update Folder path to the shared folder
- Press Update SW
- Repeat for DSP and NET (Ethernet)

Example: PC update folder path



Example: MAC update folder path



Log File,

As explained on the previous page, a log file of the update can be obtained for service purposes. The file is saved at the location where the software is uploaded from. The file lists the result of the operation and can be opened with most text editors.

The file is saved in the same folder as the software is placed and read/write access for that folder must be set.

PRESET VAULT ON CENTRAL SERVER

In larger studio facilities with several studios, preset banks and automation presets can be stored on a central server in a setup similar to the one described on the previous pages.

We recommend creating two separate shared folders on the server. One for preset banks and one for automation presets.

In the examples below we use the following folder names:

“S6Kpresets” - for preset banks

“S6Kautomation” - for automation presets

Presets

Presets are handled as entire Banks and you load/save an entire bank between the server and your local DB4/DB8 MKII Mainframe. *

The exact path to the folder on the server must be entered in the File Folder field on the Library bank page.

Example: Path to folder with presets banks - PC



Example: Path to folder with automation presets - Mac



* Detailed description on bank handling is described in the manual section “Library Bank”.

Automation Presets

Automation presets are stored and recalled directly to and from a shared folder on the central server.

The exact path to the folder on the server must be entered in the Folder Path field on the Auto File page.

Example: Path to folder with presets banks - PC



Example: Path to folder with automation presets - Mac



To learn about shared folders please refer to the sections:
- **Shared folders PC - basics**
- **Shared folders Mac - basics**

Subnet Mask & TCP/IP addresses

The Subnet Mask is a number that defines a group of computers (or Icons/Mainframes) connected to the network. All units in the group must have the same Subnet Mask. The DB8 Subnet Mask is by default 255.255.255.0

The TCP/IP address is unique to each unit connected in the network. An IP address consists of 4 numbers separated by a "." Example: 192.168.1.1

The first three numbers (e.g. "192.168.1") must be the same for each unit, but no two units in the subnet can have the same the last number.

The TC Icon default address is : 192.168.1.125

The M6000 default address is : 192.168.1.xx

- where "xx" is identical to the last two digits in the Mainframes serial number. This way multiple DB8 Mainframes can be setup directly out of the box without changing the IP numbers.

If your computer's IP address (or any in the network) is one of the above you have two options. Either to alter the three last number in your computer's IP address or to alter the last number in the TC Icon and Mainframe IP addresses.

Setting Subnet Mask & TCP/IP

Setting the Subnet and TCP/IP on DB8 Mainframe is done via the TC Icon page: frame/system/main/net

Setting TCP/IP on TC Icon Remote CPU MKII is done on via the Setup/Net page.

Resetting a frames IP address

By pressing and holding the reset button on the frontpanel during boot-up, the frames IP address can at all times be reset to default: 192.168.1.xx*, - where "xx" is the last two digits in the frames serial number.

* If the frames serial number ends on "00", the IP address will be: 192.168.1.100, as "00" is not a valid IP number in all networks.



There is a small risk that two frames have the same last 2 digits in the serial number and thus will conflict after a reset. Solution: - reset one frame and change its IP address before connecting the second.

Setting Subnet Mask & TCP/IP on a PC

To find the TCP/IP address and the Subnet Mask settings on your computer running Windows:

Example - Windows XP

Go to Control Panel, Network Connections, Internet Protocol (TCP/IP)



Subnet Mask & TCP/IP address on a Mac

Example OSX

- Go to "System Preferences - Network"
- Under Configure select "manually"
- Set TCP/IP address



For further information please refer to you operating systems manual.

NETWORK BASICS

Shared folders PC - basics

When sharing a folder on Windows XP/VISTA/WIN7 you have to make sure that the user of the TC Icon Remote CPU MKII has rights to access read/write in the share folder.

The default user on your hardware ICON is already setup:

User name : **ICON**

Password : **Administrator**

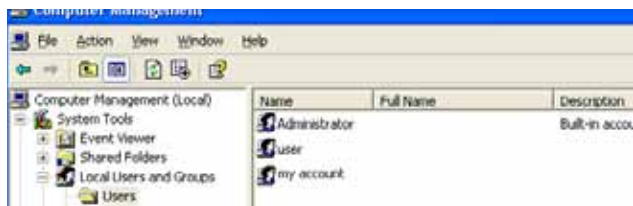
(Notice the capital letters, as these are case sensitive)

This user has to be added on the computer holding your shared folder for software updates and preset handling:

- Press start in the lower left corner of your desktop
- Right click "My Computer" and click "Manage"

Computer Management now appears and you click "Local Users and Groups"

Then "Users" and "Groups" appear and you double click on "Users"



You typically have 3 accounts on your system, Administrator, Guest, and the default account you created while installing windows. You now have to add a new account!

You right click the blank space underneath the 3 accounts and click "New User"



Type in user name : **ICON**

And Password : **Administrator**

Leave Full name and Description blank unless you need these information. All check boxes should be left as is.

Click "Create" and the "Close" and the user now has rights to access the computer.

Now go to the folder you want to share

- Right-click on the folder and select properties
- Select Sharing
- Mark "Share this folder"
- Type in the name "iconupdate" as share name
- Mark "Maximum allowed" in User Limit



- Then press "Permissions" and allow: Full Control, Change and Read.



- On the "General" page make sure that "Read only" is NOT marked. This allows the update software to write a Result file describing the update success/failure to be written.



- Press Apply and OK

- The path to the folder is now \\xxxx\iconupdate and it is available on the network. "xxxx" is the name of the computer.



To find the computers name:

Press, START and right-click on My Computer and select properties. Select the tab "Computer Name":



- in this case the name is "mypc"

Windows 7 note

For successfully sharing a folder on Win7 x86/x64 you have to setup sharing rights for the folder(any share) on the machine.

- Open Network and Sharing Center by clicking the Start button , clicking Control Panel, clicking Network and Internet, and then clicking Network and Sharing Center.

- Click the arrow button next to Password protected sharing, and then click one of the following options:

1 - In the Public Folder Sharing section select the following option:

“Turn on sharing so anyone with network access can read and write files in the Public folders.”



2 - In the Password protected sharing section select the following option:

“Turn off password protected sharing.”



If option 2 is NOT available it is most likely because you are on a domain controlled network, and we advise talking to your network administrator, before proceeding.

Advise for the network administrator:
The user should be able to sign out of the domain controlled network. Logging into a local account will not solve this issue.

A new account must be added to the domain with read/write access to the shared folder on the Mothership.

Shared folders Mac - basics

On Mac computers shared folders are setup in System Preferences - Shared.



Press “+” under Shared Folders



- Select the folder holding the software and press “Add”.
- The folder is now shared.

UPDATING TC ICON/REMOTE CPU MK II FROM A CENTRAL SERVER

There are two ways of updating the software

Updating directly from the Internet

- if the TC Icon Remote CPU MKII's LAN2 (Internet) connection is connected directly to the internet, the software can be updated directly. See explanation on page 14.

Updating from a Central Server

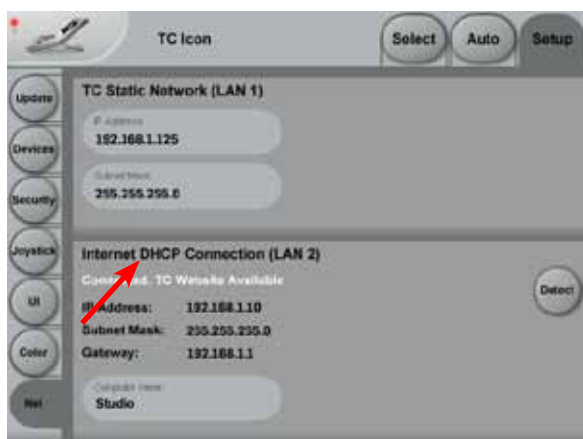
- The software is downloaded, placed in a shared folder on a central server and updated from there.

Updating directly from the Internet

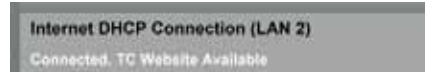
- First of all you should check whether your Icon software is up-to-date or not. Press Update Version Info on the Frame System Version page



- Make sure your DB8 is connected to the Internet via the TC Icon Remote CPU MKII's LAN2 Internet connection. Status on the connection can be seen on the Setup/net page. It should say "Connected to TC"



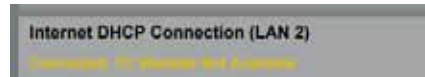
Three indications can be given:



"Connected. TC Website Available". This indicates that LAN2 is correctly connected to TC Electronics download server. Go to the Update page and press "Update From TC Website".



TC Electronic does NOT have access to any files or information on devices connected to LAN2.



"Connected. TC Website not Available". This indicates that LAN2 is correctly connected to the internet but you are either on a closed network with no internet access, or the download server at TC Electronic cannot be reached.



"LAN 2 Not Connected". You are not connected to the internet. Please check network setup and all cables, - then try again.

Updating from a Central Server

Updating TC Icon software from a shared folder on a PC

- Connect the LAN2 connection to your computers network connection. For a direct connection use a X-Coupled ethernet cable. If connected via a hub, use standard (non-X-coupled) cables.
- Download and unzip the TC Icon cab file and place the file in a folder. This folder needs to be shared.

To learn about shared folders please refer to the sections:

- **Shared folders PC - basics**
- **Shared folders Mac - basics**

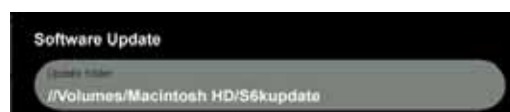
- found on the previous pages.

Then enter the correct Network Folder Path to the shared folder containing the software on the Setup/Net page.

Example PC:



Example Mac:



Introduction

This section of the manual is a general introduction to operate DB8/DB4 via the Software Editor or the TC Icon. The basic DB8/DB4 consists of a Mainframe with a DSP card and up to three I/O cards, plus a PC Editor but the DB8/DB4 can also be controlled via a TC Icon hardware remote.

Several mainframes, Mac/PC's with installed Software Editor and TC Icons can be hooked up at the same time via a standard Local Area Network (LAN).

Accessing a Mainframe

First time you connect the Mainframe to the PC with installed PC editor and network adapter:

- Power up your computer and your DB8/DB4.
- Start the Software editor and the following page appears:



- Press **Assign**
- All connected DB8/DB4 mainframes will be detected and assigned to one of the 8 locations (see fig. 1).
- Press the DB8/DB4 icon to access the DB8/DB4.

Scanning the system

The scenario described above covers the first time you boot up your system or when no connected units are assigned.

To scan the system for all connected units, go to the **Setup** page and press **Detect** (see fig 2). The connected mainframes will then appear in the left side of the display, and you can assign them to any of the 8 locations illustrated in the right side of the display by selecting the frames with the cursors followed by pressing one of the oval keys.

Engine Structure

The core element of DB8/DB4 is the Engine structure. This structure enables you to run up to two/four powerful algorithms/presets simultaneously.

Each Engine is capable of utilizing up to 8 Inputs and 8 Outputs, depending on the selected algorithm/preset. Up to 16 physical Input and 16 physical Output channels can be routed in the most flexible way.

Engine Resources

The powerful and flexible DSP distribution structure lets you run up to 4 Engine presets at the same time using any available algorithms.

Basic TC Icon operation

Navigation in the Software Editor or TC Icon display is easy as soon as a few basic elements are explained.

The Icon **Link** key in the upper left corner allows you to navigate between the two pages/modes illustrated below.

Generally :

- Press the top-tabs to do primary selections
- Press the side-tabs or elements to do secondary selections.

Fig 1



Via the "overall" **Select & Setup** pages you access overall settings and choices like:

- Selection of which mainframe to operate
- Enable devices to network
- Updates via disk
- TC Icon settings such as display appearance
- SMPTE Automation

Fig 2



The selection of mainframe is done in the Select page illustrated in "Fig 1". The page/pages illustrated in Fig. 2 are pages containing parameters on a specific mainframe. These are the Operating Pages and the page you will be working in once the system is up and running. Only when several mainframes are connected you will need to go to the "overall" Select and Setup pages to switch mainframe.

BASIC OPERATION

UI - Icon Views

On the Icon Setup page two sub-pages are available for controlling the TC Icon appearance.

Fader appearance

Three options are available. Changes will take effect next time you open the TC Icon.

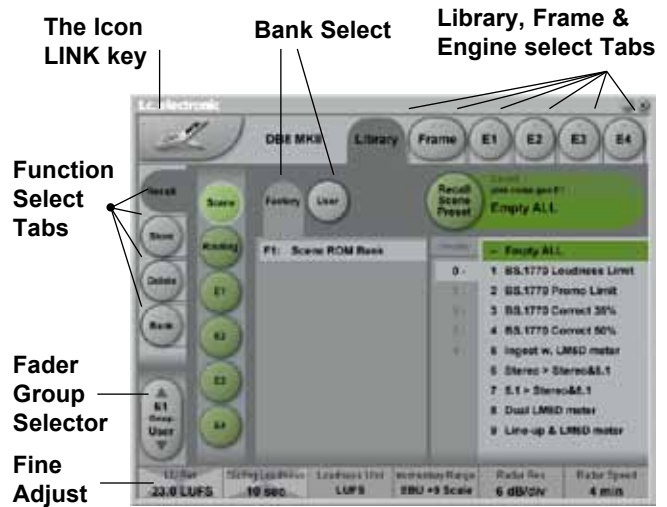
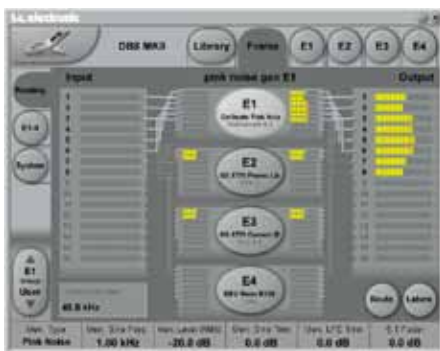
Faders at bottom



Fader at right side



No faders



Operating Levels

The Library-Recall page illustrated in Fig.3 leads to explanation of the “operating levels” in the DB8/DB4. We differentiate between 2 levels of presets: Scene and Engine levels.

- **SCENE**

This is the most extensive selection you can make. It includes all four Engine algorithms as well as physical and virtual Engine Routings. A Scene recall can be compared to a “total recall.”

- **ENGINE**

Handles the current algorithm in the selected Engine. A single preset can be loaded to each of the four Engines.

Parameter Values and Fader Groups

In the bottom of the display, Fader assignments and values will always reflect the last assigned Engine. Most parameters can be controlled via the 6 Faders. As some algorithms hold numerous parameters and we operate with 6 Faders the preset parameters are organized in Fader Groups. To scroll between the Fader Groups use the **Fader Group** selectors.

Parameter value - Fine Adjust

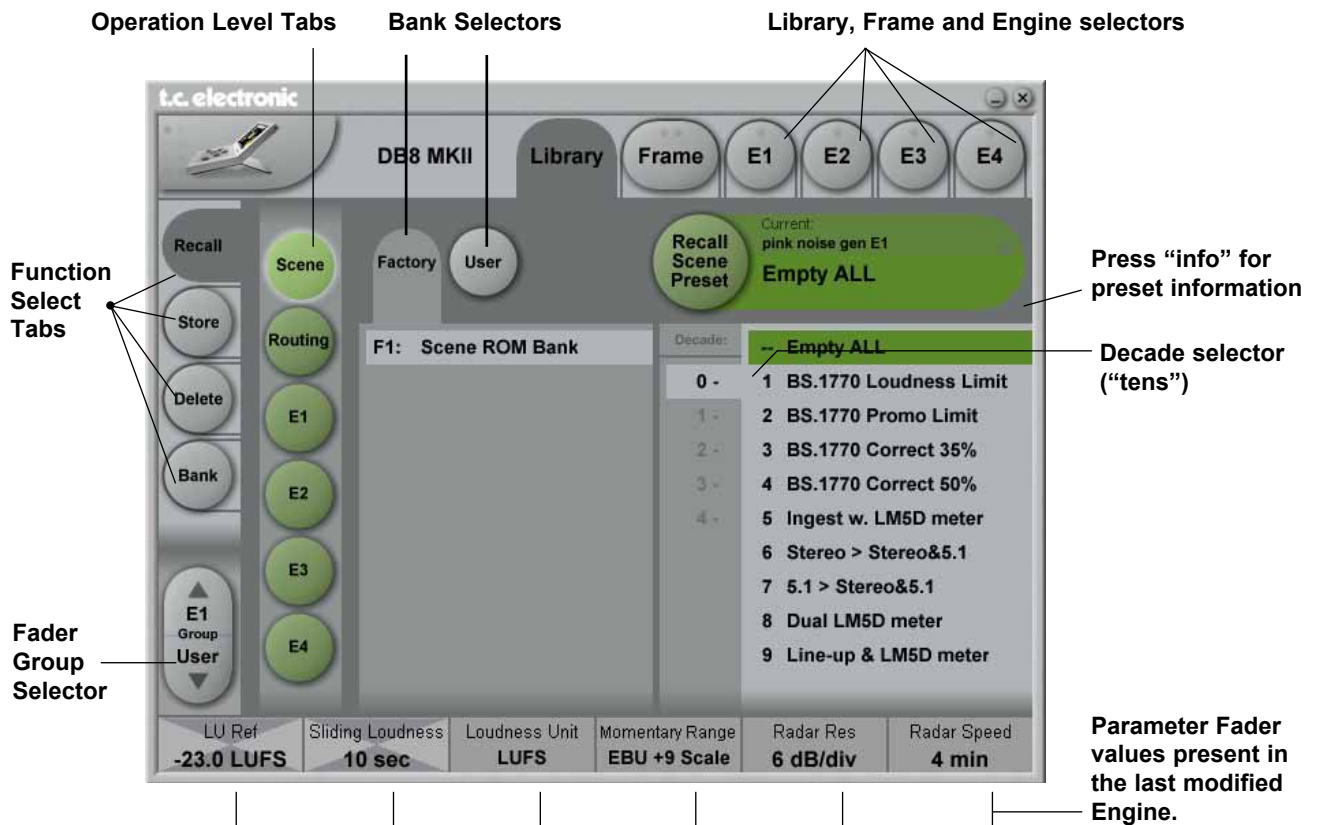
Any parameter value can be adjusted in two accuracies. A Normal and a Fine Adjust - mode. To switch between the two modes press the Value Fields above the faders. As shown in the illustration the Fine Adjust mode will be indicated with two triangles in the value field.

Fader 6

Any parameter can always be assigned to Fader 6 by pressing the parameters value field. Detailed explanation will follow in the next sections.

User Fader Group - Custom Group

A User Fader group where you can assign parameters to all 6 faders can also be created and saved along with the preset. The User Fader group is selected by pressing the **Fader Group** selectors.



Library Recall

On the Library Recall page the following banks are available for recall operations:

Scene

Gives access to the following preset banks:

- Factory
- User
- Card (optional)

Engine 1-4

Gives access to the following preset banks:

- Factory
- User
- Card (optional)

Routing

Gives access to the following preset banks:

- Factory
- User
- Card (optional)

Recalling a Scene, Routing or Engine preset

- Press the **RECALL** tab to select the Recall page.
- Now select the level of: Scene, Routing or Engine 1-4.
- Select which bank you wish to recall from: Factory or User. If a DB8/DB4 formatted PCMCIA card is inserted in the Mainframe card-banks will be available and displayed below the User banks.
- Select presets pressing: Bank, Decade(tens) and preset number. (grayed out numbers indicates that the Decade is empty)
- Press the **Recall** key to recall/load the preset.

Info

For presets carrying the "info" tag we have added relevant information for the specific preset. Press **Info** and a pop-up display will appear.

Example:



LIBRARY - STORE



Library Store

For storing operations the following banks are available.

Scene, Engine 1-4 and Routing

Allows you to store in the following banks.

- User
- Card (optional)

Naming Presets

All user preset types can be renamed.

values. The preset is not stored when the keyboard's **Enter** key is pressed. Only the name is entered. To store you **MUST** press the red **Store** key.



Fader assignments in the bottom of the display will always reflect the last modified Engine. The Engine Fader Group selector in the lower left corner indicates the Engine in use.



Basic operation

- Press the **Name** field. A keyboard will pop up.
- Type in the new name.
- Press **Enter**.



The preset is not stored when the keyboard's **Enter** key is pressed. Only the name is entered. To store you **MUST** press the red **Store** key on the Store page.

The previously accessed display will always be present beneath the keyboard. Current Fader values will be displayed and faders can be used to adjust parameter

Library - Bank

From the Library Bank page you can copy Scene, Routing and Engine banks to and from PCMCIA card or to and from your hard disk when using a TC Icon Editor.



A 1MB PCMCIA card can hold:

1000 Engine presets in 10 banks of 100 presets
 500 Routing presets in 10 banks of 50 presets
 500 Scene presets in 10 banks of 50 presets

A 512kB PCMCIA card can hold:

500 Engine presets in 5 banks of 100 presets
 250 Routing presets in 5 banks of 50 presets
 250 Scene presets in 5 banks of 50 presets

Basic Operation

Bank copying is handled as a complete User bank transferal.

- Press **Scene**, **Routing** or **Engine** to select preset bank type.
- Select “from” and “to” depending on your choice.
- Press **Copy Bank**.

Scene/Routing/Engine Banks

To/From - Bank/File

Scene, Routing or Engine banks can be backed up and retrieved from a PCMCIA or a file location on a connected computer (when using the TC Icon software editor).

Copy Bank

Press to activate copy function between the selected Banks.

Rename

Press to rename selected bank via the Naming pop-up display.

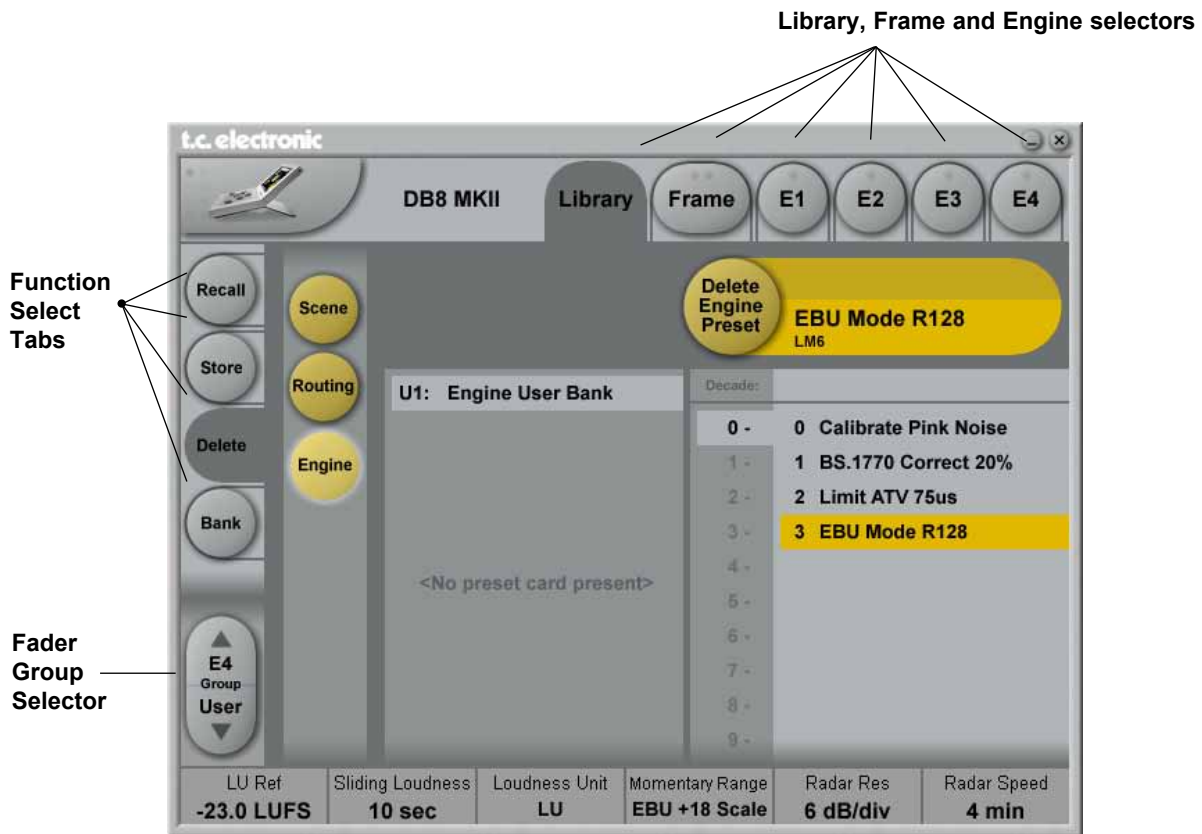
Delete

Press to clear the selected Bank. You will be asked to confirm your choice to avoid unintended deletion.

Using PCMCIA cards

To use a PCMCIA card with DB8-DB4 the card must be properly formatted. This is done from the Frame/System/Card page.

LIBRARY - DELETE



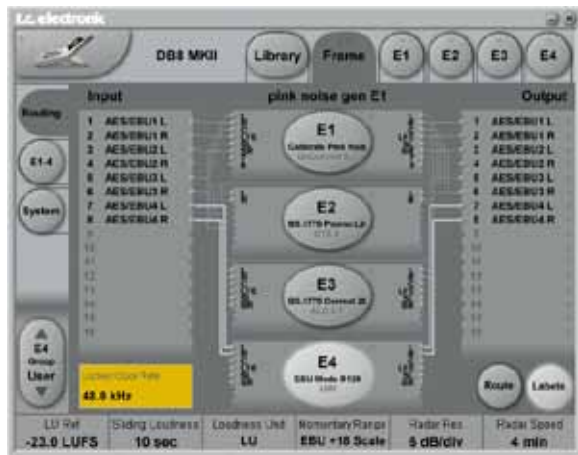
Library - Delete

For convenience it is possible to “clean up” the User banks by deleting individual presets.

Deleting a Preset

- Select **Delete** (side tab) and select level by pressing **Scene** or **Engine**.
- Select the preset to delete by pressing the actual Bank, Decade(to select tens) and the actual preset.
- Press the **Delete** key to delete the preset.

Routing



Introduction

The Routing page is the patch bay of the DB8/DB4 Mainframe. All routings of physical Inputs/Outputs as well as internal routing between Engines is setup here. The understanding of this page is therefore essential to operating the DB8/DB4.

To access the Routing Page:

- Press **Frame** (upper tab)
- Press **Routing** (side tab)
- Press **Route** to enable routing facilities

This is the page where you:

- Have the overall view of all I/O's
- Route physical Inputs to Engine Inputs
- Route Engine Outputs to physical Outputs
- Access Input and Output meters

Routing Inputs

- Press the **Route** key to select route operation.
- Press Engine 1-4 to select the Engine you wish to route
- Select a physical Input or another Engine's Output using **Fader 1**
- Select Engine Input using **Fader 2**

Routing Outputs

- Press the **Route** key to select Route operation
- Press Engine 1-4 to select the Engine you wish to route
- Select an Engine Output using **Fader 5**
- Select Physical Output using **Fader 6**

The I/O possibilities are as follows

- It is possible to route an Input to several Engine Inputs (up to 32), however, it is not possible to connect more than one physical Input to the same Engine Input.
- It is possible to connect all Engine Outputs (up to 32) to one single physical Output.
- It is possible to connect an Engine Output to the Inputs of the three other Engines.



Engine Processing Delay

Processing delay between the routed Engines behaves as if they were external devices.

Labels

The Input/Output fields can show either meters or the Labels/names on the Input/Output channels. To switch between the two modes, press "Labels".

Renaming Physical Inputs and Outputs

Input and Output channels can be labeled individually. This is a global renaming process and is accessed by pressing **System** (side tab) followed by **I/O** and **Labels**.

Meters

Engine I/O Meters

Engine I/O meters are shown at the left and right of the large E 1-4 buttons in the middle of the display. The number of meters shown will always reflect the number of I/O channels in the loaded algorithm.

Frame - E1 to E4/E2 (DB8/DB4)



This page holds the User group parameters for all four Engines. Selecting User group parameters is done from the Engine pages. Values can be altered from both the Engine Edit pages and the page displayed above. Press the parameter you wish to assign to the Fader located below.

FRAME - SYSTEM - MAIN

State



Clock Master

Sets the master clock of the processor. A machine with SDI option always expects an SDI input signal. If SDI is not available, the machine reverts to 48 kHz internal rate operation, which should be regarded an error condition.

Clock Fallback

Determines how the processor reacts if it loses external reference. If "Halt" is selected, signal processing stops. If "Internal" is selected, the clock switches to the selected Internal Clockrate in case of lost external reference.

Internal Clock Rate

The internal Clock Rate can be set to 44.1 or 48 kHz. As it is considered "unconventional" to use the DB8 internal clock in broadcast setups, a yellow indication will appear on the frame select page when internal is selected.

Clock Status

Locked Clock Rate

The Clock Rate to which the Mainframe is currently locked.

Color indications

The yellow color indicates that:

- Auto Revert to Internal is selected and...
- the selected Clock Master has been present at one point but is now lost and...
- the frame has switched to the selected internal clock rate.

The red color indicates "no lock" - check cables and clock source.

Detected Sample Rate

This is a read-only parameter indicating the actual incoming Sample Rate. The tolerance of this detection is +/- 10Hz.

Example: An incoming Sample Rate of 44.056kHz will be detected as approx. 44.06kHz and the system indicates the Locked Clock Rate 44.100kHz.

The system will lock to and reject jitter at any Sample Rate between:

- 42.5 - 45.5kHz
- 46.5 - 48.5kHz

Power State

Display Power State

Off – No indication at power failure

Error – Failure of one power connection indicated by a red indicator on the Frame tab.

Warning – Failure of one power connection indicated by a yellow indicator on the Frame tab.

DB4 and DB8 GPI Specification

DB4 and DB8 offers a GPI input for remote switching between Scenes (all Engine Presets plus Routing). The input can be used for daily operation, or for backup and redundancy purposes. It allows change between 2, 4 or 8 presets using just one connection. GPI functionality includes two flexible modes (“3 presets” and “7 presets”) where normal editing of presets is allowed unless the GPI input is moved away from its idle state. These modes are typically be used for putting the machine into a defined state, for instance for backup or emergency announcements overruling normal operation. GPI switching is “intelligent” and performed without audio interruption as long as the same algorithms are used in Engine 1-4, and only parameters are changed.

Basic operation

GPI functions are accessed from the System/Main/GPI page in TC Icon.



The Enable Recall parameter can be set to Off (GPI recall disabled), 2, 3, 4, 7 and 8 presets.

Presets are selected as a state condition, i.e. presenting the GPI input a permanent voltage signifying a specific preset.

See table below for description of “Enable Recall” settings. NOTE: Moving “Enable Recall” away from the Off position immediately results in a Scene preset recall, and locks the machine from editing of parameters or recall of other presets.

The “Select Between Scenes” parameter sets the preset range from which presets are recalled based on GPI commands. For instance, if set to “10-19”, GPI commands recall a User Scene preset in the range 10-19. If “Enable Recall” is set to “4 presets”, the GPI input thus selects between User Scene preset 10, 11, 12 and 13.

Enable Recall	Notes
Off	Make sure this state is selected, if GPI recall is not being used.
2 Presets	User Scene 0 or 1 is permanently recalled. Note: Switching to this mode will instantly perform a Scene Recall, even if no connections are made to the GPI input.
3 Presets	As long as the GPI input is idle (+5V), GPI recall is inactive. In idle mode, the machine can be normally controlled from Icon, or using the serial data input. If active GPI windows 1, 2 or 3 are selected, the corresponding Scene is recalled, and the serial data control input is disabled. This GPI mode is suitable for Backup and Alarm messaging operation.
4 Presets	User Scene 0, 1, 2 or 3 is permanently recalled. Note: Switching to this mode will instantly perform a Scene Recall, even if no connections are made to the GPI input.
7 Presets	As long as the GPI input is idle (+5V), GPI recall is inactive. In idle mode, the machine can be normally controlled from Icon, or using the serial data input. If active GPI windows 1-7 are selected, the corresponding Scene is recalled, and the serial data control input is disabled. This GPI mode is suitable for Backup and Alarm messaging operation.
8 Presets	User Scene 0, 1, 2, 3, 4, 5, 6 or 7 is permanently recalled. Note: Switching to this mode will instantly perform a Scene Recall, even if no connections are made to the GPI input.

FRAME - SYSTEM -MAIN -GPI

Installation

Selection between up to 8 presets is achieved by feeding the processor a DC voltage to the 1/4" jack input labeled "Pedal". The input voltage is compared against voltage windows that correspond to certain presets.

Between the valid voltage windows, invalid windows have been inserted to protect against erratic operation. The processor constantly monitors the GPI input, and only if several consecutive measurements point to the same, valid voltage window, a recall is performed.

The voltage windows chosen enable easy "binary relay encoding" as shown in fig. 1. If long cable runs are required, HF decoupling using a ceramic capacitor across the Tip and Sleeve terminals inside the jack plug may be indicated.

Note: The ring terminal of the 1/4" jack is not used.

GPI Implementation

Three modes...

1 of 2: Select between 2 presets

1 of 4: Select between 4 presets

1 of 8: Select between 8 presets

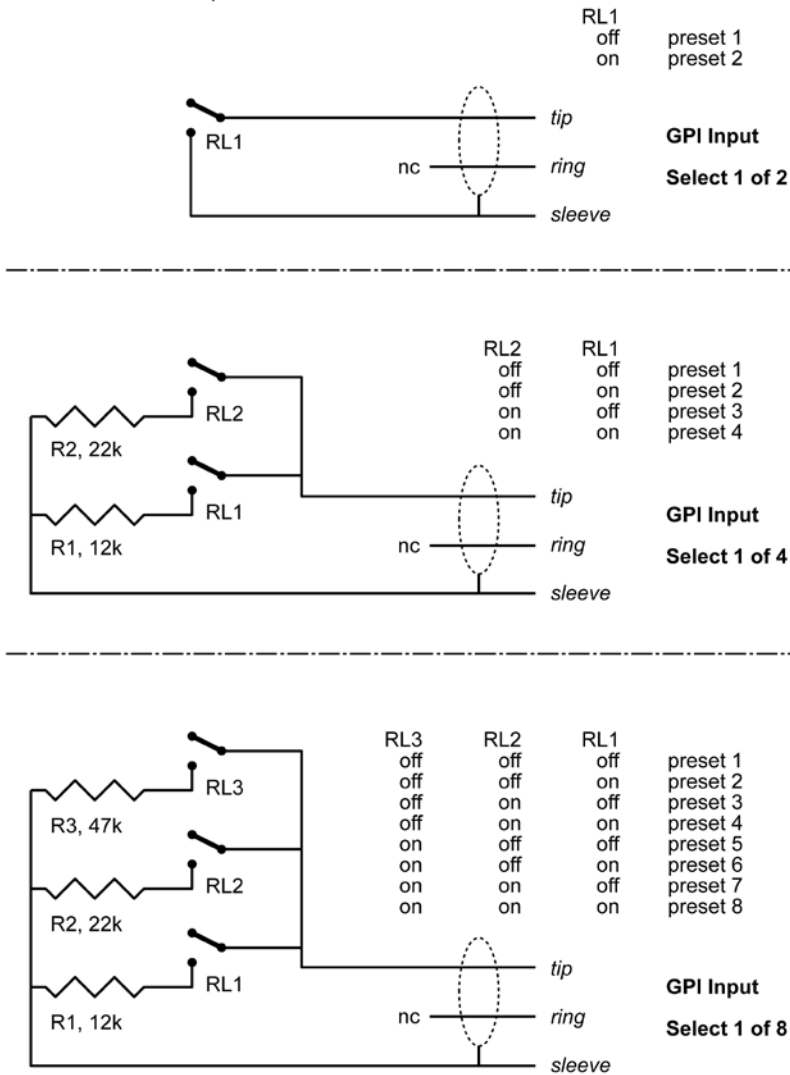


Fig 1, Relay coding of 2, 4 and 8 preset GPI configurations

GPI Technical specifications

Inside the processor, a 10kohm resistor connects the Tip terminal to a +5V power supply. When nothing is connected to the GPI input, the input voltage therefore is +5V. Resistors can be used to pull down the voltage as suggested in Fig 1. In Table 1, voltages outside the limits mentioned are to be considered invalid. No action is taken if invalid measurements are made. GPI recall action resumes when a stable, valid measurement again is detected.

Mode	Preset No	Target / Vs	Min typ / V	Target typ / V	Max typ / V
1 of 2	0	1.000 (idle)	2.67	5.00	5.00
	1	0.000	0.00	0.00	0.51
1 of 4	0	1.000 (idle)	4.16	5.00	5.00
	1	0.687	3.38	3.44	3.50
	2	0.545	2.67	2.73	2.79
	3	0.438	0.00	2.19	2.25
1 of 8	0	1.000 (idle)	4.50	5.00	5.00
	1	0.824	4.06	4.12	4.18
	2	0.687	3.38	3.44	3.50
	3	0.600	2.94	3.00	3.06
	4	0.545	2.67	2.73	2.79
	5	0.489	2.38	2.44	2.50
	6	0.437	2.13	2.19	2.25
		0.400	0.00	2.00	2.06

Tech Notes:

"Idle" refers to the state when no input is connected, or when the input is left floating.

Rather than absolute voltage measurements, the windows are defined as a fraction of the supply voltage, Vs. This voltage can be measured with a high impedance DMM on the Tip terminal when no pull down resistors are applied.

The table shows values as a fraction of Vs, and, as a guideline, typical voltages when Vs=5.000V. (If the Supply voltage is e.g. 5.015V, the table should be corrected by multiplying these values by 5.015/5).

FRAME - SYSTEM - MAIN - MIDI

MIDI Setup Page



Introduction

MIDI Channels

To recall presets for Scene, Routing and Engines 1 to 4 you must first setup individual MIDI channels for these categories.

In the example above MIDI channels 1 to 4 are set up for Engines 1 to 4 respectively and channel 5 to access Scene presets and channel 6 to access Routing presets.

Bank Mode

The Bank mode settings determine the destination bank of the received program change on the specified MIDI channels.

Normal mode:

This mode requires that the external sending MIDI device can send both Controller 0 and 32 in addition to MIDI program changes. This is an essential feature to recall presets from a device holding more than 128 preset locations. (see table in next column for details)

Factory and User mode:

These modes will force any incoming program change to access either Factory or User banks directly and are typically used if your sending MIDI device cannot send Controllers 0 and 32 as described above.

Normal mode

In Normal mode all banks can be accessed for program changes. Bank selection is done via Ctrl 0 (MSB) and Ctrl 32 (LSB):

- Controller 0 must be set to 0 in all cases.
- Controller 32 value must match the bank number you wish to address according to the table below.

Ctrl 32 value 0	- F1:	Loudness, Stereo
Ctrl 32 value 1	- F2:	Loudness, Multichannel
Ctrl 32 value 2	- F3:	Reserved
Ctrl 32 value 3	- F4:	Format Conversion
Ctrl 32 value 4	- F5:	Reserved
Ctrl 32 value 5	- F6:	Delay and EQ
Ctrl 32 value 6	- F7:	Reserved
Ctrl 32 value 7	- F8:	Monitor and Lineup
Ctrl 32 value 8	- F9:	Reserved
Ctrl 32 value 9	- F10:	Metering
Ctrl 32 value 10	- F11:	Reserved
Ctrl 32 value 11	- F12:	Reserved
Ctrl 32 value 12	- F13:	Reserved
Ctrl 32 value 13	- F14:	Reserved

Ctrl 32 value 32 - User bank

Ctrl 32 value 64 - Card Bank 1

Ctrl 32 value 65 - Card Bank 2

Ctrl 32 value 66 - Card Bank 3

Ctrl 32 value 73 - Card Bank 10

Example:

You wish to recall preset 5 from the Loudness, Stereo bank. According to the table above:

- Set Ctrl 0 to "0" and Ctrl 32 to "0" and send program change no 5.

SysEx Device ID

Range: 0 to 126

Select SysEx ID for the Mainframe.

MIDI Rate

Range: Normal or 19.2

This parameter sets the Baud Rate / MIDI transfer rate.

The default setting is "Normal". However, "19.2" may be better suited for external master control programs as found in broadcast stations.

MIDI Control Page



On the MIDI Control Page the following options are available:

Read Program Change

Select whether the Frame should read incoming program changes or not.

Send Program Change

Select whether the Frame should send program changes to MIDI out when presets are recalled via TC Icon or the TC Icon Software editor.

Read Control Change

Select whether the Frame should Read Control Changes messages.

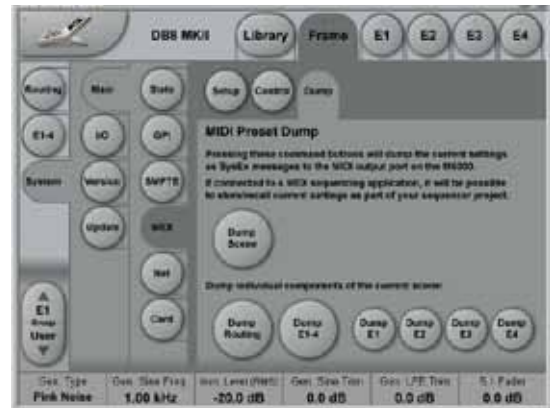
Send Control Change

Options here are Single (7 bit) or Double (14 bit) precision.

Read SysEx - Send SysEx

These two parameters determine whether the Frame should read and send SysEx.

MIDI DUMP Page



Various options for MIDI information dump is available.

Dump Scene - includes both routing and all presets loaded in the Engines.

Dump Routing - dumps current routing presets.

Dump E1-E4 - Dumps all currently loaded presets in all four Engines.

Dump E1, Dump E2, Dump E3, Dump E4 - Individual dump from each Engine with the currently loaded algorithms.

FRAME - SYSTEM - MAIN - NET/CARD

Net



Network Identifier

Press the field "Network Identifier" to enter a name for the Mainframe. This is the global TC network name for the frame. By giving the frame a specific name it will be easier to identify the frame when hooked up in a network with several frames.

Card



Format card with empty preset banks

This function will format a PCMCIA card with DB8/DB4 preset banks. A formatted 1Mb card will hold:

- 10 Engine user card banks of 100 presets
- 10 Routing user banks of 50 presets
- 10 Scene user banks of 50 presets

You may also choose to format and prepare a 1 Mb card for Automation Lists.

I/O - Setup - AES card installed



This page indicates the frame's current card configuration.

I/O - DSP - SDI card installed



I/O - DSP - AES card installed



This page indicates current status on the DSP card.
- Dither for AES pairs can be set to 24-20-18-8

I/O - Setup - SDI card installed

I/O Setup page
Setup page with SDI installed.
The Frame-System-I/O-Setup appears as illustrated below when a SDI card is installed.



Input Select

Select between SDI inputs A or B

Input/Output channels 1-4/5-8

Use the Input/Output parameters to select which SDI Groups become available on the Routing display of the processor.

Group 1-4 indicators

These "LEDs" indicate which SDI Input Groups have audio available.

Locked Clock Rate

This information field displays the currently locked Clock Rate, which is always 48 kHz when the processor is used with SDI.

Frequency

This information field displays the SDI Input data rate in a range between 140 Mbps and 1.5 Gbps.

FRAME - SYSTEM - I/O

Format

This information field displays the SDI Input format. A partial list of SDI formats handled and recognized by DB4/8:

Format	Latency
SD 29.97	85/1.77
SD 25	87/1.81
1280x720/60p	38/0.79
1280x720/59.94p	38/0.79
1280x720/50p	39/0.81
1280x720/30p	38/0.79
1280x720/29.97p	38/0.79
1280x720/25p	39/0.81
1280x720/24p	39/0.81
1920x1080/30p	40/0.83
1920x1080/29.97p	40/0.83
1920x1080/25p	42/0.88
1920x1080/24p	42/0.88
1920x1080/60i	40/0.83
1920x1080/59.94i	40/0.83
1920x1080/50i	42/0.88
1920x1080/25i	42/0.88

I/O - A/B/C



Input, Output and Dither settings for e.g. an SDI 8 card placed in slot B/C as well as Locked Clock Rate, Frequency and Format indication

I/O - Labels



All physical Inputs and Outputs can be named/renamed. Enter the Titles page by pressing the tabs System and Titles. Press any of the 16 Inputs/Outputs and the Naming display will pop up. Enter adequate name for the Input/Output and press **Enter**. The names will be displayed on the Frame-Routing page.



The I/O Labels are global and are not affected by preset changes.

Version

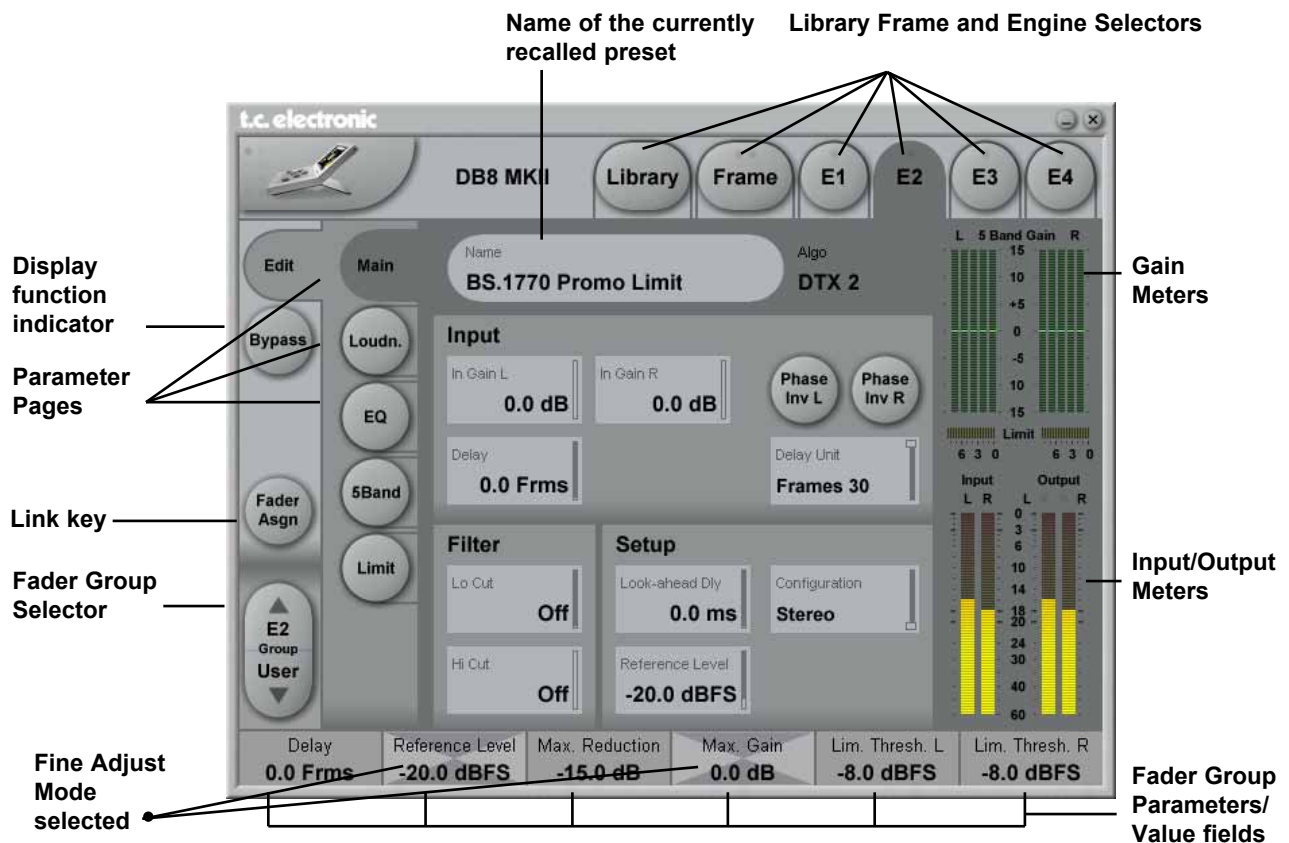


The Version page indicates the Frame serial number and current software versions.

Update Version Info

Pressing the UPDATE VERSION INFO will download a file to your hard drive containing information about the latest sw. versions. - The TC Icon Editor will check whether you are running the latest version and write status next (e.g. new Version available) to each software type as indicated above.

For information on how to update the software please refer to page 16.



The Engine 1-4 Edit Pages

This is where you edit algorithm parameters. Parameters in several algorithms are distributed on different pages. As illustrated above, the Multiband-2 has 5 pages: Main, Loudness, EQ, 5 band and Limiter. Depending of the quantity of parameters represented in the groups one or more groups will be displayed.

Basic operation

- Press E1 to E4 to select Engine. Parameters for the recalled algorithms are instantly available for editing.
- Select a parameter group. In the example above - a Multiband-2 algorithm - the groups are Main, Setup, Expander, Compressor, Limiter and Output.
- Parameters are assigned to Fader Groups. Select Fader Groups using the **Fader Group** selector.
- Press any parameter and it is assigned to Fader 6.

Fader User Group - Assign key

By pressing the **Fader Group Selector Up** key enter the User group. In this group you can assign any parameter to any fader. The User Fader group is stored with a preset.

- Press the **Link** key.
- Select the fader you wish to link a parameter to, by pressing the field just above the fader.
- Press the parameter you wish to link to the selected fader.

Bypass

The **Bypass** key will respond in different ways depending on the recalled algorithm. See specific algorithm description.

Naming a Preset

- Press the Name field. A keyboard will pop up. (See the "Naming display" section).
- Type in the new name.
- Press **Enter**.

Parameter value - Fine Adjust

Any parameter value can be adjusted in two accuracies. A Normal and a Fine Adjust - mode. To switch between the two modes press the Value Fields above the faders. As shown in the illustration the Fine Adjust mode will be indicated with two triangles in the value field. (fader 2+4 in the illustration).

ICON SETUP

Software Editor Setup menu

Info

On this page, the current Software Editor version number is listed.

Devices

On this page you control and assign the devices in the setup.

- Press **Detect** to scan the network for connected devices. All devices will appear in the list.
- Now assign the devices one at a time by selecting the device using the **Cursor up/down** followed by pressing one of the eight oval keys in the right side of the display.



Security

In the security page you can activate/deactivate the “sticky clip” function.

When this function is set to “on” the Overload LEDs on the Routing page will stay lit once activated, until the **Reset Clip** key is pressed.

Color

Select the Color scheme of your choice. Depending on the surrounding light conditions, different schemes may be more appropriate than others.

Icon User Interface

(only available on the hardware version of the TC Icon)

Go to the Select & Setup pages pressing the TC Icon key in the upper left corner.

Press SETUP (upper tab) and UI (side tab) to enter the setup page for the TC Icon display.

TC Icon Display Parameters

In this display, you set up various parameters regarding the appearance of the display as well as the Fader Touch Sensitivity.

Display Brightness

Adjust the brightness of the display using either the **Arrow** cursors or simply drag the “**Adjust** handle”.

Show Mouse Cursor

Press to show mouse/pointer position.

Calibrate Display Touch

For optimal performance the touchscreen will at times need to be calibrated. Press and follow instructions to calibrate the touchscreen.

Fader Sensitivity

To avoid accidental movement of the faders, they are sensitive to humidity and will only respond when touched by your skin.

Enable Fader Touch

Enables touch sensitivity of the Faders.

AC/DC Sensitivity

Sets the Faders, sensitivity to AC and DC. Adjust these handles to achieve optimal performance in your environment.

SMPT E



Reader Enabled

On/Off switch for the DB8/DB4 SMPT E Reader.

Frame Rate

Range: 24 FPS, 25 FPS, 29.97 FPS, 30 Drop FPS, 30 FPS.

Running Status

The small field in the top left corner of the numeric display will state "Running" when SMPT E clock is running.

Auto Edit Page



In the Auto Edit page, all automation Events are listed and handled.

Keep

Press to save the Event List locally on the Icon. It is possible to save one Event List on the Icon. Additional cue-lists can be stored and recalled on a PCMCIA card.

The **Keep** key will turn red as soon as any editing of the list has taken place, indicating that you must press to save the list.

This key corresponds/is the same, as the **Keep** key located on the File page. (see following page)

Write

When enabled, any program change is written to the SMPT E Event List. This can be Engine, Routing or Scene recalls.

Read

When enabled, the Event list will be executed according to incoming SMPT E clock. Read and Write functions can be activated simultaneously.



General Read and Write status is given in the **Icon Tab** in the left corner.

Follow

When Follow is selected the list will scroll and the current event/song position will always be in the top line. When Follow is de-selected the list will NOT scroll but the cursor position will move according to song-position.

Modify

Press this key to access Event parameters for the currently selected Event. (see further description below)

Delete

Press to delete the selected Event.

Event Parameters

For each Event the following parameters are available.

- Time - indicates the SMPT E time at which the Event takes place.
- Device - indicating on which Device Mainframe the Event is taking place. Device numbers 1-8, corresponds to the Device position at the Select page.
- Event - states the occurring Event at the given time.

Insert New Event

Press to insert an Event (see further description below)

Cursor

The triangular cursor always indicates the current clock position in relation to the Event List.

Modify/Insert Page



Event Settings

Operation

- To access Event settings, press **Modify** in the Edit page.
- Set up all parameters for the Event you are about to Modify or Insert.
- Press OK to confirm.

Time

The time where the Event being Modified or Inserted is taking place.

Step/Adjust

Range: Frame, 1 Second, 10 Seconds, 1 min., 10 min. or 1 hour.

Use the Step parameter to select Adjust range and the Adjust parameter to increase/decrease the time.

Device

This parameter selects which Mainframe connected to the LAN you are working on. Device numbers 1-8, corresponds to the Device position at the Select page.

Preset Type

Selects whether the preset Event you are working on is a Scene, Routing, Engine or a System preset.

Bank

Select the bank related to the preset you are about to setup/recall via SMPTE.

Preset

Select the preset from the selected bank.

File



Current List

Keep

Press to save the Event List locally on the Icon. It is possible to save one Event List on the Icon. Additional cue-lists can be stored and recalled on a PCMCIA card..

The **Keep** key will turn red as soon as any editing of the list has taken place, indicating that you must press to save the list.

This key corresponds/is the same, as the **Keep** key located on the Edit page. (see previous page)

Revert

This "Undo" function allows you to revert the to the last saved SMPTE Event list. This is the List that is stored locally on the TC Icon.

Clear

Press **Clear** to delete the entire SMPTE Event list present in the TC Icon.

File Storage

Event lists can easily be organized and saved to a PCMCIA card in the Mainframe. Mainframe selection is done in the Auto Edit page.

PC

Press to get a list of all SMPTE Event lists stored on the connected computers hard drive.

Card

Press to get a list of all SMPTE Event lists stored on a PCMCIA card.

New

Press **New** to create and name a new Event list.

Save

Press to save the current Event list.

Load

Press to load Event list.

Delete

Press to delete selected Event preset from the Event Preset list.

Options



Automation Timecode Options

Master Sync Device

Select which of the Mainframes connected on the LAN you wish to act as Master Clock.

Start Of Daytime

Range: 23:00:00:00 or 00:00:00:00

If the SMPTE time code present on your tape media or film does not start exactly at the beginning of the tape, the 23:00:00:00 setting would be a good choice to keep chronological order in the Event List.

Support of SNMP

Multiple DB8 and/or DB4 units can be monitored using industry standard SNMP trapping. SNMP includes monitoring of sync status, overload, silent outputs and more. - Look on www.tcelectronic.com under "Products -DB8/DB4" for details.

CONTROLLING MORE THAN 8 FRAMES

It is possible to control up to 32 System DB4/DB8 Mainframes using four instances of the TC Icon Editor on a PC*.

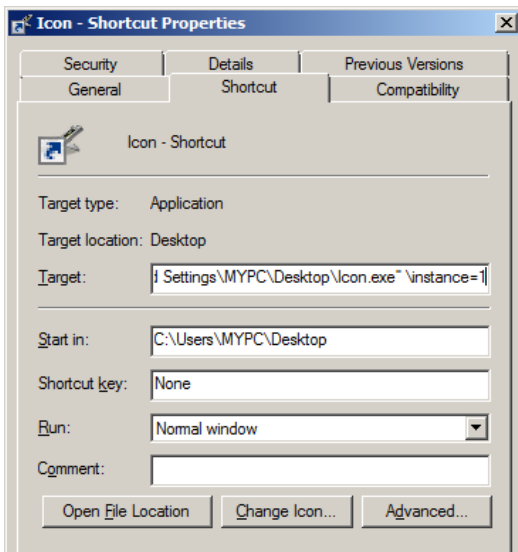
To do so, follow these steps:

- Place the TC Icon.exe file on your desktop if it is not already there.
- Create three shortcuts to the Icon.exe file and rename each instance.
E.g. Icon 1, Icon 2 etc.
- Then right-click on each shortcut and enter the following lines in "Target":

"C:\Documents and Settings\MYPC\Desktop\Icon.exe" \instance=1

"C:\Documents and Settings\MYPC\Desktop\Icon.exe" \instance=2

etc.



* Not available on Mac

End Users License Agreement (EULA) for TC ICON OS (Operating System) contained in the TC Electronic A/S embedded system: TC ICON/Remote CPU.
The TC ICON operating system is based on Microsoft NT.

Refund

If you do not agree to the terms of this EULA, TC Electronic A/S and Microsoft are unwilling to license the TC ICON OS to you. In such event, you may not use the TC ICON/Remote CPU, and you should promptly contact TC Electronic A/S for instructions on return of the unused products for a refund.

Client Access Licenses

If you use the TC ICON/Remote CPU to access or utilize the services or functionality of Microsoft Windows NT Server (all editions) or use the TC ICON/Remote CPU to permit workstation or computing devices to access or utilize the services or functionality of Microsoft Windows NT Server, you may be required to obtain a Client Access License for the TC ICON/Remote CPU and/or each such workstation or computing device. Please refer to the end user license agreement for Microsoft Windows NT Server for additional information.

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TC Electronic A/S's suppliers entire liability and your exclusive remedy shall be, at TC Electronic A/S's option, either (a) return of the price paid, or (b) repair or replacement of the TC ICON/Remote CPU that does not meet the above Limited Warranty and which is returned to TC Electronic A/S with a copy of your receipt. This Limited Warranty is void if failure of the TC ICON/Remote CPU has resulted from accident, abuse, or misapplication. Any replacement TC ICON/Remote CPU will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer.

Limitations on Reverse Engineering, Decompilation and Disassembly

You may not reverse engineer, decompile, or disassemble the TC ICON OS, except and only to the extent that such activity is expressly permitted by applicable law notwithstanding this limitation.

Separation of Components

The TC ICON OS is licensed as a single product. Its component parts may not be separated for use on more than one TC ICON/Remote CPU.

Single TC ICON/Remote CPU

The TC ICON OS is licensed with the TC ICON/Remote CPU as a single integrated product. The TC ICON OS may only be used with the TC ICON/Remote CPU as set forth in these licensing terms.

Rental

You may not rent, lease or lend the TC ICON OS.

TC ICON OS transfer

You may permanently transfer all of your rights set forth in these licensing terms only as part of a permanent sale or transfer of the TC ICON/Remote CPU, provided you retain no copies, you transfer all of the TC ICON OS (including all component parts, the media and printed materials, any upgrades, these licensing terms, and, if applicable, the Certificate(s) of Authenticity), and the recipient agrees to these licensing terms. If the TC ICON OS is an upgrade, any transfer must also include all prior versions of the TC ICON OS.

Back-up Copy

If TC Electronic A/S has not included a back-up copy of the TC ICON OS with the TC ICON/Remote CPU, you may make a single back-up copy of the TC ICON OS. You may use the back-up copy solely for archival purposes. Except as expressly provided in these licensing terms, you may not otherwise make copies of the TC ICON OS.

NOT FAULT TOLERANT

THE TC ICON OS MAY CONTAIN TECHNOLOGY THAT IS NOT FAULT TOLERANT AND IS NOT DESIGNED, MANUFACTURED, OR INTENDED FOR USE OR RESALE AS ON-LINE CONTROL EQUIPMENT IN HAZARDOUS ENVIRONMENTS REQUIRING FAIL-SAFE PERFORMANCE, SUCH AS IN THE OPERATION OF NUCLEAR FACILITIES, AIRCRAFT MACHINES, OR WEAPONS SYSTEMS, IN WHICH THE FAILURE OF LICENSED SOFTWARE COULD LEAD DIRECTLY TO DEATH, PERSONAL INJURY, OR SEVERE PHYSICAL OR ENVIRONMENTAL DAMAGE.

Termination

Without prejudice to any other rights, TC Electronic A/S may terminate this license if you fail to comply with the licensing terms. In such event, you must destroy all copies of the TC ICON OS and all of its component parts.

Note on Java Support

The TC ICON OS may contain support for programs written in Java. Java technology is not fault tolerant and is not designed, manufactured, or intended for use or resale as online control equipment in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, direct life support machines, or weapons systems, in which the failure of Java technology could lead directly to death, personal injury, or severe physical or environmental damage. Sun Microsystems, Inc. has contractually obligated Microsoft Corporation to make this disclaimer.

EXPORT RESTRICTIONS

Export of the TC ICON OS from the United States is regulated by the Export Administration Regulations (EAR, 15 CFR 730-744) of the U.S. Commerce Department, Bureau of Export Administration (BXA). You agree to comply with the EAR in the export or re-export of the TC ICON OS: (i) to any country to which the U.S. has embargoed or restricted the export of goods or services, which as of May 1999 include, but not necessarily limited to Cuba, Iran, Iraq, Libya, North Korea, Sudan, Syria, and the Federal Republic of Yugoslavia (including Serbia, but not Montenegro), or to any national of any such country, wherever located, who intends to transmit or transport the TC ICON OS back to such country; (ii) to any person or entity who you know or have reason to know will utilize the TC ICON OS or portion thereof in the design, development or production of nuclear, chemical or biological weapons; or (iii) to any person or entity who has been prohibited from participating in U.S. export transactions by any federal agency of the U.S. government. You warrant and represent that neither the BXA nor any other U.S. federal agency has suspended, revoked or denied your export privileges. For additional information see <http://www.microsoft.com/exporting>.

TECHNICAL SPECIFICATIONS - FRAME

Platform

Number of audio channels:	Max 16 inputs, 16 outputs
Number of processing engines:	4 in DB8, 2 in DB4
Processing Delay:	0.15 ms + 0.21 ms per engine @ 48 kHz, 0.07 ms
Additional delay:	0-4 sec per audio channel
Output Dither:	HPF/TPDF 8-24 bit and Off
Frequency Response DIO:	DC to 23.9 kHz \pm 0.01 dB @ 48 kHz
Internal sample rate:	48.0 kHz, 44.1 kHz
Internal clock precision:	\pm 30 ppm
Jitter rejection at external sample rates:	42.5 to 45.5 kHz, 46.5 to 48.5 kHz
Rejection filter (4th order):	< -3 dB @ 50 Hz, < -65 dB @ 500 Hz, < -100 dB @ 1.4 kHz
Rejection filter peak (jitter gain):	< 1 dB @ 2 Hz

PCMCIA Interface

Connector:	PC Card, 68 pin type 1 cards
Standards:	PCMCIA 2.0, JEIDA 4.0
Card Format:	Supports up to 2 MB SRAM

Control Interface

MIDI:	In/Out/Thru: 5 Pin DIN
"GPI control input"	Change between 2, 4 or 8 presets
Remote:	Custom MIDI In & Out
SMPTE:	Input for timed program changes
Ethernet, SNMP and remote control:	10/100 Mbits/s, Base-T

EMC

Complies with:	EN 55103-1 and EN 55103-2, FCC part 15 class B, CISPR 22 class B
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Safety

Certified to:	IEC 60065, EN 60065, UL 6500 and CSA E65
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Environment

Operating Temperature:	32° F to 122° F (0° C to 50° C)
Storage Temperature:	-22° F to 167° F (-30° C to 70° C)
Humidity:	Max. 90 % non-condensing

General

Front indicators:	PSU 1 OK, PSU 2 OK, Remote Communication
Finish:	Natural color anodized aluminum face plate. Painted and plated steel chassis
Dimensions:	19 x 3.5 x 12 inches (483 x 89 x 305 mm), 2 RU
Weight:	19 lbs. (8,6 kg)
Mains voltage:	100 to 240 VAC, 50-60 Hz auto-select
Power supply function:	Dual Power Supply Redundancy
Fan:	Dual Fan Redundancy
Power consumption:	25 to 50 W typ., 60 W max, depending on I/O configuration
Backup Battery Life:	>10 years
Warranty, Parts and labor:	1 year

IO configurations

AES balanced	
Number of audio channels:	8 channel In, 8 channel Out
Connectors:	SUB-D, 25 pole, 110 Ohm, AES/EBU in/out
Formats:	AES/EBU (24 bit)
Word clock input:	BNC, 75 Ohm or Hi-Z, 0.6 to 10 Vpp
Intrinsic interface jitter :	< 1 ns peak, BW : 700 Hz to 100 kHz
Digital output phase:	Less than 3% of sample period
Input variation before sample slip:	+27 % / -73 % of sample period
Interface function:	Synchronous, bit transparent

AES3-id unbalanced

Number of audio channels:	8 channel In, 8 channel Out
Connectors:	BNC, 75 Ohm, 0.1 to 10 Vpp, AES3-id in/out
Bypass Relay:	Inputs to outputs while powered off and during boot-up
Formats:	AES/EBU (24 bit)
Word clock input:	BNC, 75 Ohm or Hi-Z, 0.6 to 10 Vpp
Intrinsic interface jitter:	< 1 ns peak, BW : 700 Hz to 100 kHz
Digital output phase:	< 3 % of sample period
Input variation before sample slip:	+27 % / -73 % of sample period
Interface function:	Synchronous, bit transparent

SDI

Number of audio channels:	8 channel In, 8 channel Out
Connectors:	2 BNC In, 2 BNC Out. 75 Ohm
Bypass Relay:	Input B to output while powered off and during boot-up
Function:	Audio de-embed/embed, video thru
Formats supported:	SD and HD. 143 - 1485 MHz
Input selection:	Input 1 or 2, SDI group 1-4
Outputs:	2 is a replicate of 1. Outputs are individually buffered.
Audio embed + de-embed delay:	1.77 ms @ SD, 0.83 ms @ HD
Video delay:	22.3 us @ SD, 15.4us @ HD
Interface function:	Synchronous, bit transparent video and audio

Technical Specifications are subject to change without notice !

TECHNICAL SPECIFICATIONS - TC ICON & REMOTE CPU

These specifications cover the optional TC Icon remote control

TC Icon MK II

Display Type: 6,5" TFT active matrix color LCD display, 640 x 480 pixels resolution. High luminance (300 cd/m2, typ.)
 Touch screen: Resistive, 20 gram activation force
 Faders: Six (6), 90mm motorized with touch sensitivity
 Connection: 36-pin MDR connection for Remote CPU 6000 mk II

EMC

Complies with: EN 55103-1 and EN 55103-2, FCC part 15 class B, CISPR 22 class B

Safety

Certified to: IEC 60065, EN 60065, UL 6500 and CSA E65

Environment

Operating Temperature: 32° F to 122° F (0° C to 50° C)
 Storage Temperature: -22° F to 167° F (-30° C to 70° C)
 Humidity: Max. 90 % non-condensing

General

Finish: Natural color anodized aluminum. Stand plate in brushed stainless steel

Dimensions: D x W x Hfront x Hback: 11 x 7.8 x 1.3 x 3.9 inches
 (279 x 198 x 33 x 100 mm)

Weight: 5.56 lb (2,51 kg)

Warranty, Parts and labor: 1 year

Remote CPU 6000 MK II

CPU: Embedded AMD Geode LX-800, 500MHz
 System disc: 512MB CompactFlash Card
 System Memory: 256MB SO DIMM 200-pin DDR SDRAM
 Operating system: Windows Embedded Standard

Connections: Two separated 10/100 Mbps TC Network (fixed IP) and firewalled internet network (dynamic IP). Standard IEEE 802.3u protocol compatible on RJ-45 connectors.
 Ethernet interface:

USB interface: Two Universal Serial Bus ports, USB 2.0 compliant (for connection of TCE products, e.g. Reverb4000, DB2)
 COM interface: Two RS-232 serial communication ports. SUB-D 9 pin (for connection of TCE products, e.g. P2, DB2)

Keyboard/Mouse: Mini-DIN connector supports standard PC/AT keyboard and a PS/2 mouse.
 External display: VGA output, SUB-D 15 pin
 Remote: 36-pin connection for TC Icon mk II

EMC

Complies with: EN 55103-1 and EN 55103-2, FCC part 15 class B, CISPR 22 class B

Safety

Certified to: IEC 60065, EN 60065, UL 6500 and CSA E65

Environment

Operating Temperature: 32° F to 122° F (0° C to 50° C)
 Storage Temperature: -22° F to 167° F (-30° C to 70° C)
 Humidity: Max. 90 % non-condensing

General

Finish: Natural color anodized aluminum face plate. Painted and plated steel chassis

Dimensions: 19 x 1.75 x 8.2 inches
 (483 x 44 x 195 mm)

Weight: 4,8 lb. (2,2 kg)
 Mains Voltage: 100 to 240 VAC, 50 to 60 Hz (auto-select)

Power Consumption: 50 watts
 Backup Battery Life: >10 years

Warranty, Parts and labor: 1 year

Technical Specifications are subject to change without notice !

