

STUDER INTERNATIONAL

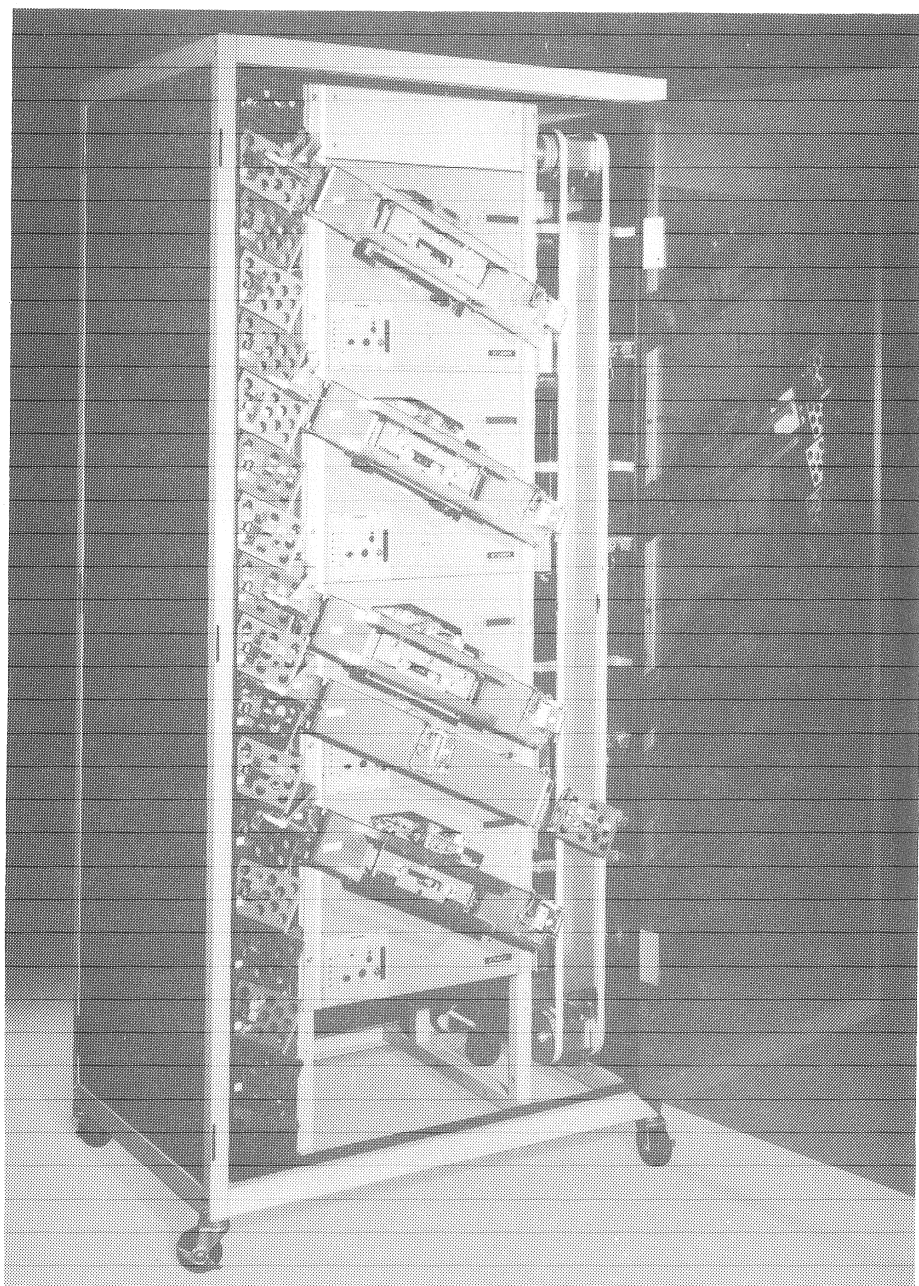
a division of STUDER REVOX AG

PI 9 / 81E
PRELIMINARY PRODUCT SPECIFICATIONS
S T U D E R C A M O S 3 0 0 5
COMMERCIALS BROADCASTING SYSTEM

Product Information

Prepared and edited by:
STUDER INTERNATIONAL
a division of STUDER REVOX AG
TECHNICAL DOCUMENTATION
Althardstrasse 10
CH-8105 Regensdorf-Zürich

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ED 1.6



STUDER COMMERCIALS BROADCASTING SYSTEM

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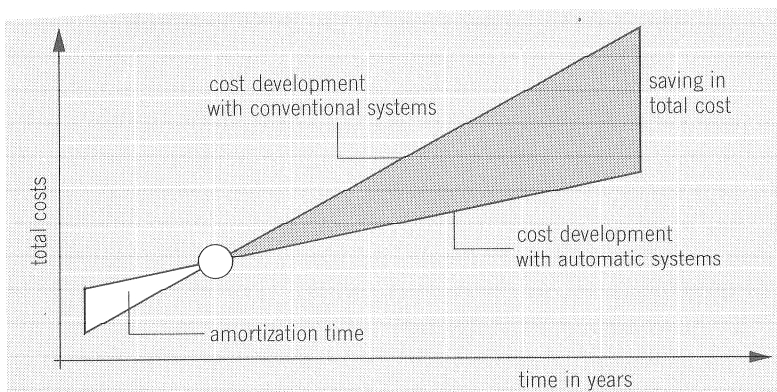
- 7.1 Technical specifications CAD 3010/11

1. SYSTEM DESCRIPTION

1.1 Introduction

Preparing the broadcasting material for a flawless program not only requires utmost care, but it is a time-consuming and consequently a costly task. This is especially true of frequently broadcast selections. In this respect, automation can significantly reduce costs. However, isolated streamlining efforts have the disadvantage that they frequently cannot be integrated into a total concept and thus must be abandoned as an expensive, temporary expedient.

STUDER, therefore, decided to direct its development efforts towards long-term solutions which would encompass all major functions, however, without sacrificing modular implementation.

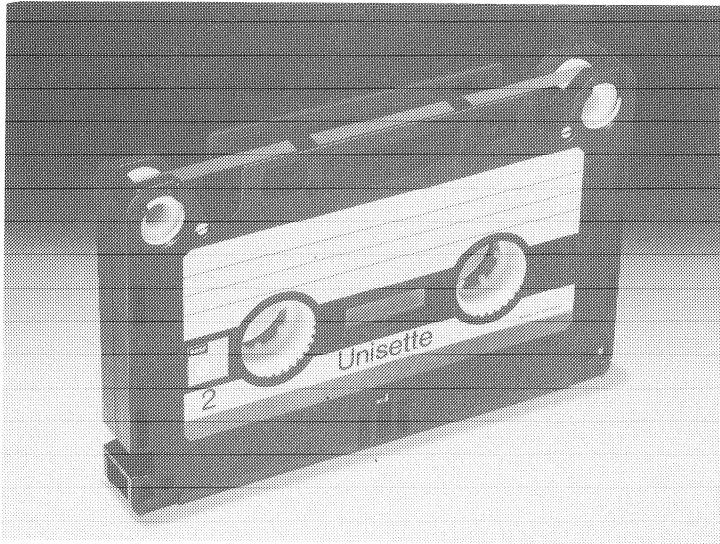


Short amortization period and long-term cost savings through automatic system

Because of its modular design, the STUDER CAMOS 3000 system can be tailored to suit the customer's application requirements. Internal control functions are performed by the built-in process computer. In larger configurations this processor can also provide a link to a co-ordinating host system (EDP).

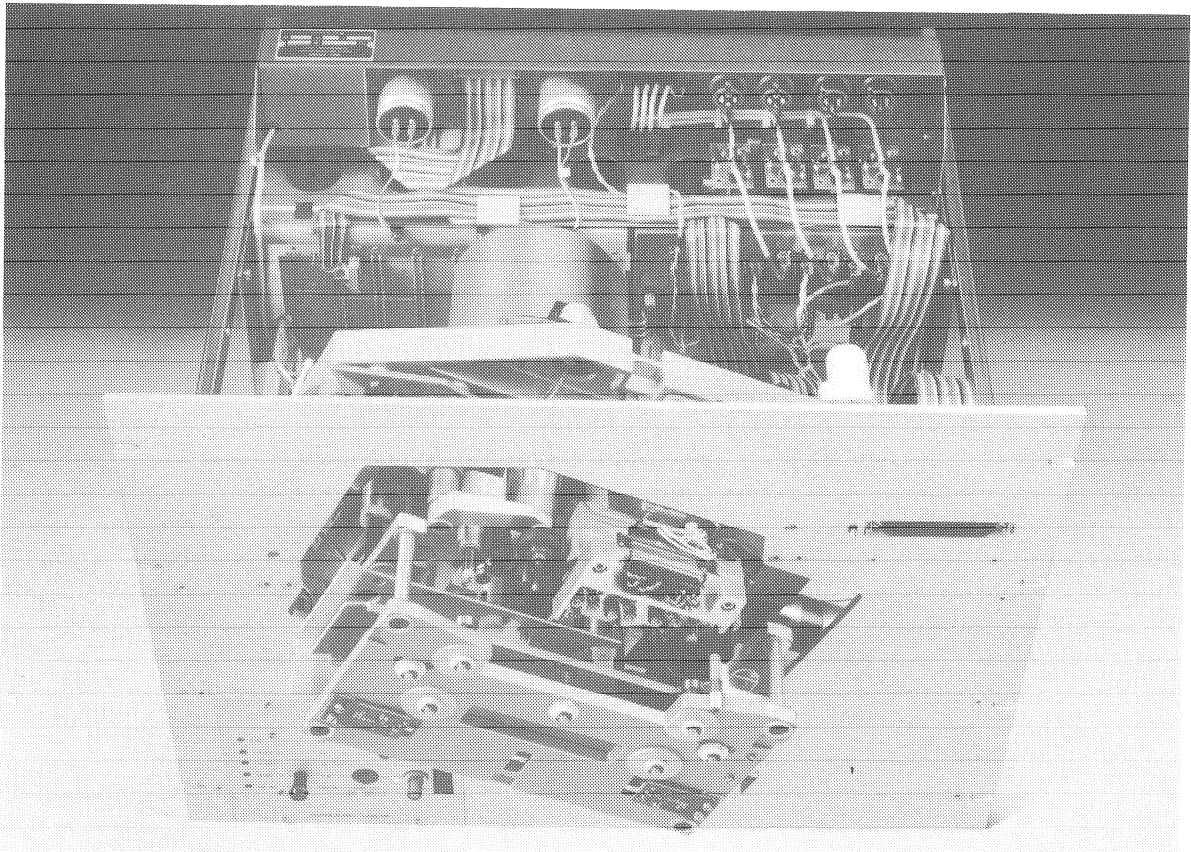
With the aid of interface processors and a large number of sensors the built-in process computer controls the complete sequence of operations, conveying of the cassettes, and the supervisory functions such as failure recovery strategy and testing. Each module can be triggered via serial interface type RS232C.

The system is based on the Unisette^{*} cassette. This storage medium is not only eminently suitable for automated applications but also for reproducing sound in professional quality.



* Registered trade mark of B A S F

The cassette deck accepts standard Unisette cassettes with a tape width of 6.3 mm (1/4") and a thickness of 18 or 36 μm . The tape is laid out for two audio tracks of 2 mm each and one cue track of 0.6 mm. The tape speed is 9.5 cm/s. An SMPTE time code is recorded on the cue track. Rough positioning by the tape deck control provides a resolution of ± 4 sec. by means of fast winding without head contact. Fine-positioning under control of the SMPTE code in play mode yields an accuracy of 100 ms. Serial as well as a parallel remote control of the tape deck functions is feasible.



1.2 GENERAL ASPECTS OF THE CAMOS COMMERCIALS BROADCASTING SYSTEM

1.2.1 PRINCIPLES OF OPERATION

The application can be subdivided into three major basic functions:

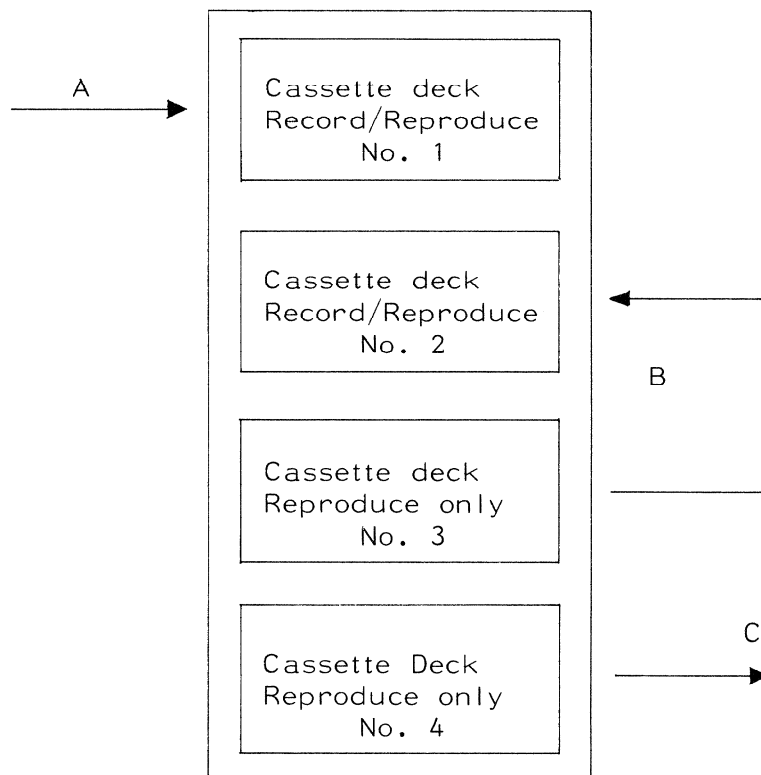
- A) Processing of new releases
- B) Copying to a broadcasting medium
- C) Control of the broadcasting run

The system should be capable of simultaneously handling all three functions. However, the priority with which they are serviced is as follows:

C / B / A

This means that task C is executed with the highest priority i.e. the broadcasting run may not be interrupted by the creation of a broadcasting tape, although the reverse is allowed.

Example: Assignment of the cassette decks:



1.2.2 SYSTEM CONFIGURATIONS

Various configurations are feasible with major differences regarding:

- Number of parallel programs
- Broadcasting medium: conventional 1/4" open-reel tape or cassette.

The configuration of the total system (task allocation of the individual machines) is automatically established by the initialization program at the time the system is powered up.

If the commercials inventory is to be expanded beyond 4000 titles, a STUDER library system CAMOS 3007 can be connected.

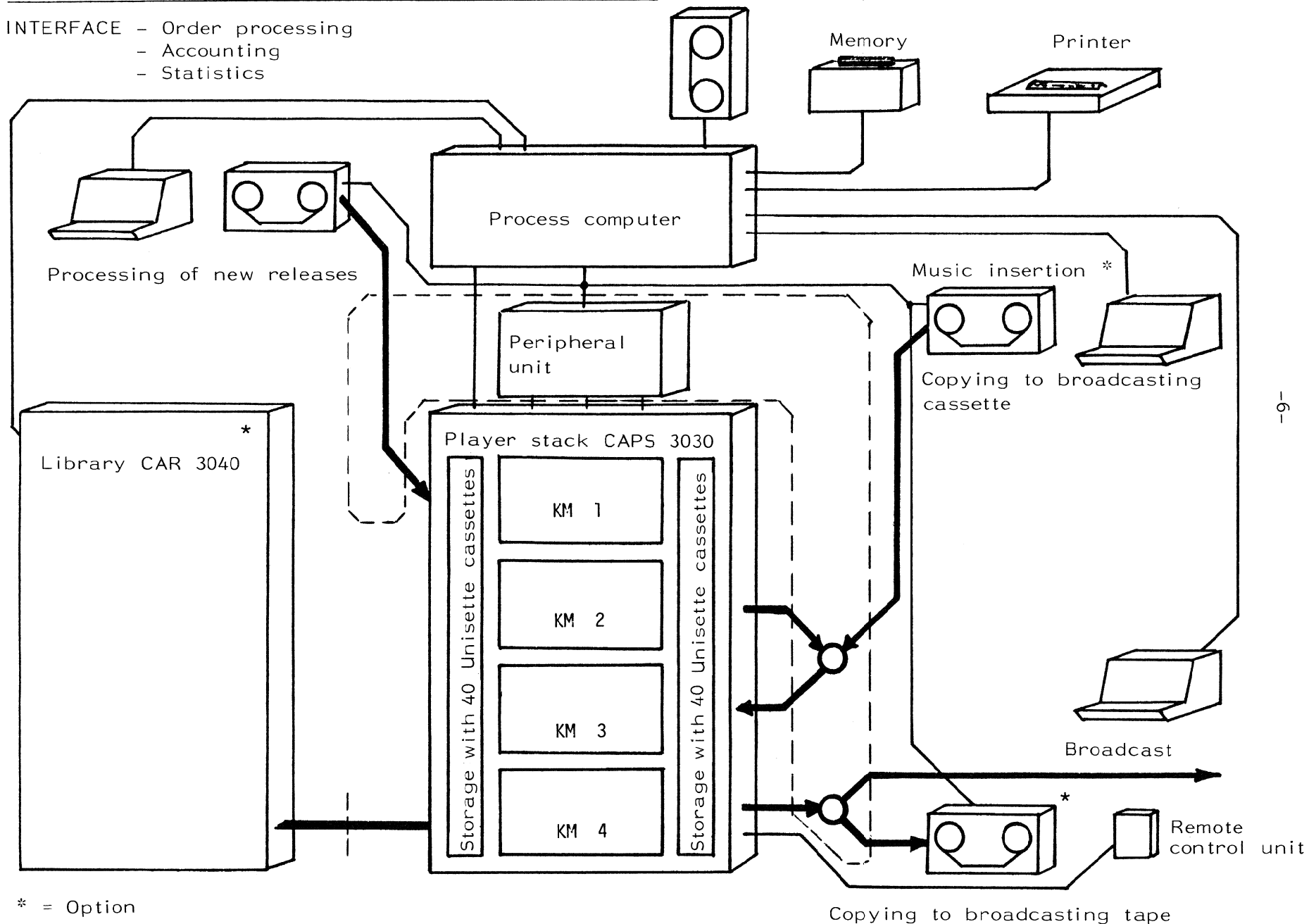


Partial view
Library module
CAR 3040

STUDER CAMOS 3000 COMMERCIALS BROADCASTING SYSTEM

INTERFACE - Order processing
- Accounting
- Statistics

Magnetic tape *



* = Option

1.2.3 EXTERNAL EQUIPMENT

External optional equipment can be installed in a separate peripheral unit such as a 19" rack. This unit features a universal design, i.e. it can accommodate any system configurations specified by the customer.

<u>FUNCTION</u>	<u>SYSTEM INPUT MODULE</u>	<u>TAPE DECK MODULE</u>	<u>SYSTEM OUTPUT MODULE</u>
Audio switching panel	S	S	S
Level metering	0	-	-
Level adjustment	0	-	-
Title duration recording	0	-	-
Autom. A/B monitoring level control	0	0	-
Cue mark generator	-	-	*) 0
Mono/Stereo detector	0	-	-
Phase relation monitor	0	-	

*) For users who copy broadcasting programs to external open-reel machines.

S = Standard / 0 = Option

IN THE CENTRAL CONTROL ROOMS

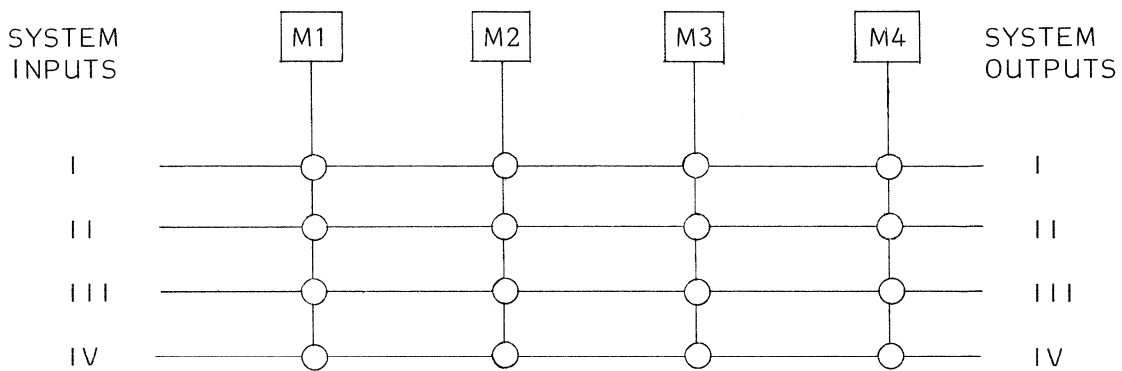
Remote control of broadcasting tape decks:

- Cue mark detector (including decoding)
- Tape deck control (only in conjunction with serially controlled STUDER tape decks)
- Indicator lamps
- Block limitation

Decremental playing time indicator

All audio inputs and outputs are electrically isolated, are balanced and floating.

SCHEMATIC REPRESENTATION OF SUPPLEMENTARY PERIPHERAL UNIT



1.3 OPERATING CONCEPT

Each work station can be equipped with a command keyboard and a video display. Thus, transparent interaction with the complete CAMOS system should be possible.

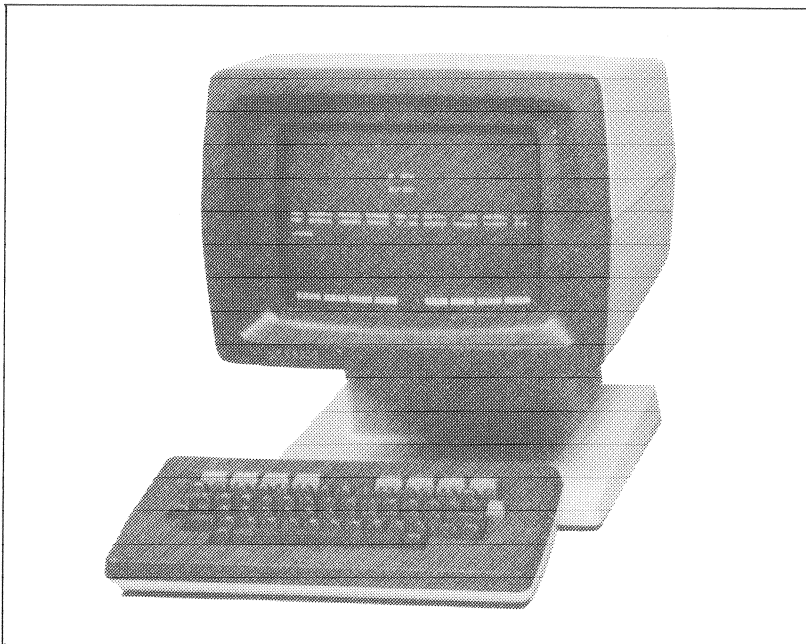
For operating so-called command keys (soft keys) are proposed. These keys change their function, depending on the operating mode. Since the functions are preprogrammed and hence cannot be entered incorrectly, one of the most important sources of errors is eliminated. Illegal command keys are disabled. In this manner the highest degree of total system redundancy is assured without sacrificing the capability of adding special functions at a later stage.

A HELP function is envisioned which the user can call at any time to obtain additional information and for displaying the input expected from the operator.

The process computer continuously monitors the status feedback of the player stack. Any incorrect manipulations or system faults are displayed on the screen through plain text messages.

The system feedback and the input expected from the operator are continuously displayed on the screen, making the man-machine interface highly transparent.

A language switch is planned with which the operator can select the appropriate communication language such as English, French or German.

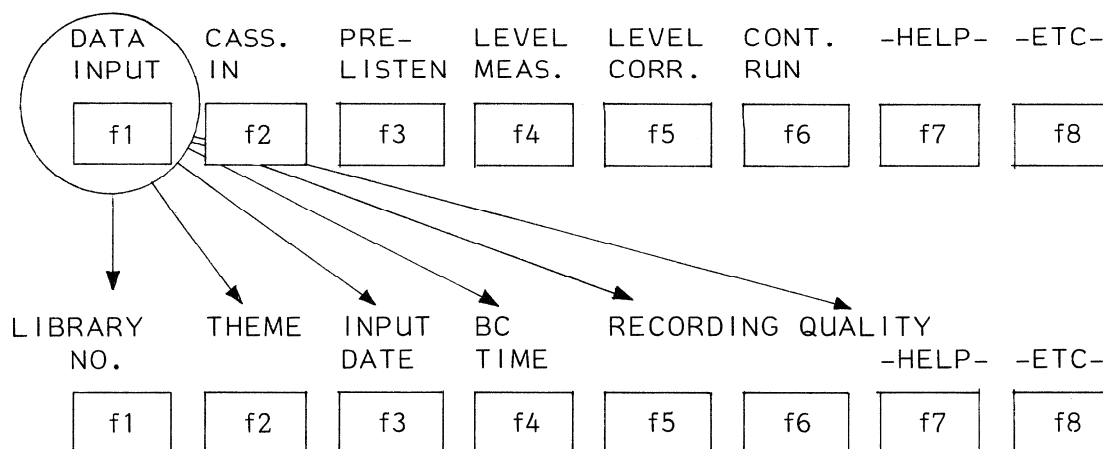


Video display
with typewriter
keyboard and 8
command keys

1.3.1 EXAMPLE ILLUSTRATING THE PRINCIPLE OF THE COMMAND KEYS

S T U D E R C O M M E R C I A L S
B R O A D C A S T I N G S Y S T E M

Status: Input Mode: New releases Time: 16:22



1.3.2 DESCRIPTION OF FUNCTIONS

The function (label) of the individual keys is indicated on the bottom lines of the display. The keys are simulated on the screen in such a manner that they can be clearly associated with the physical keys.

The above example illustrates the functions which are available after the respective key is depressed. In this way individual logical functions can be enabled depending on the task to be performed.

1.4 TECHNICAL SPECIFICATIONS

Capacity of player stack:

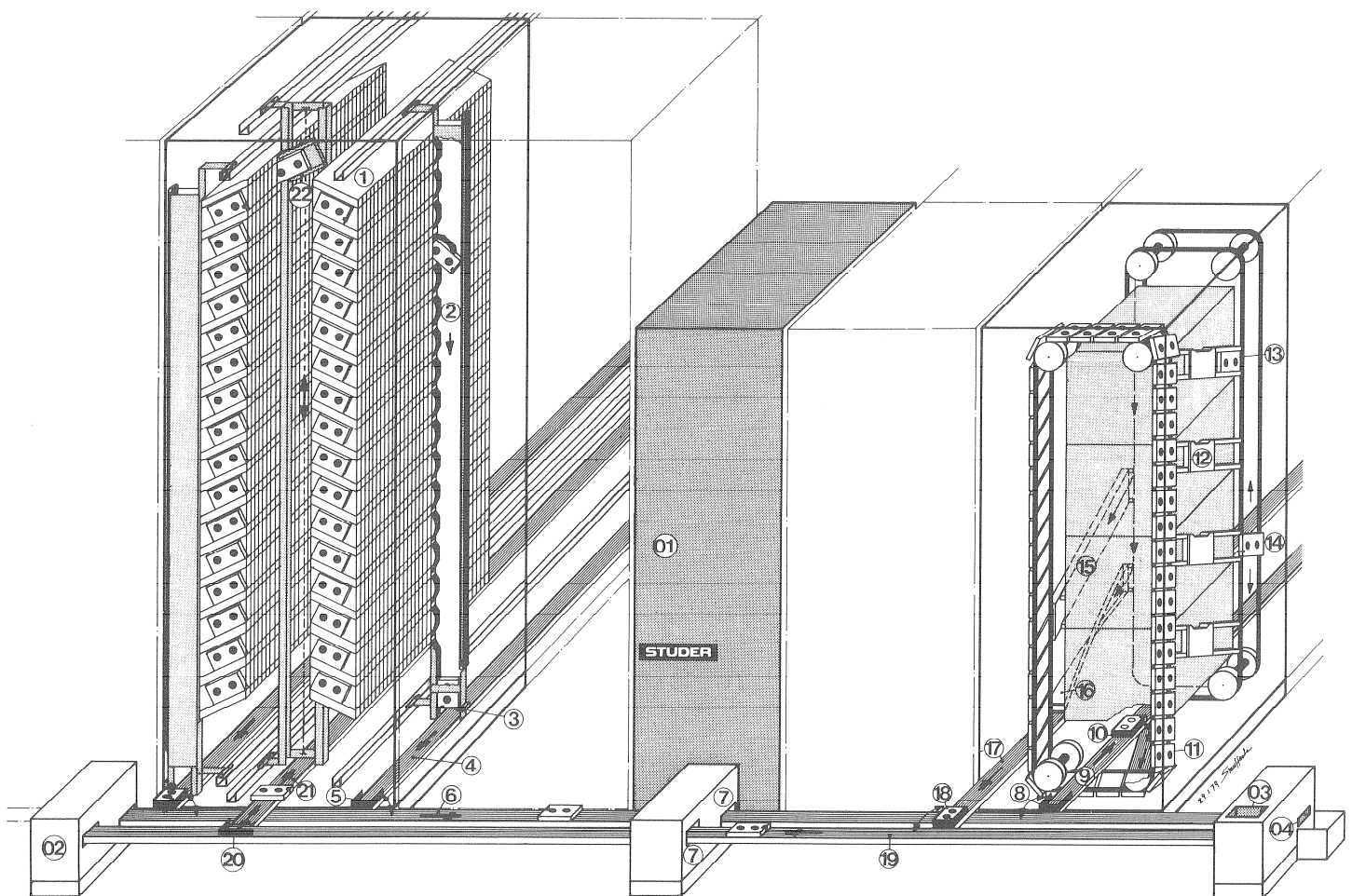
2 storage belts of 40 cassettes each = 80 cassettes

Playing time of each Unisette cassette = 30 min. (18 μ m tape)

Tape speed: 9.5 cm/sec.

—> Library capacity: 4000 active commercials with a duration of 35 seconds each.

The commercials broadcasting system can be expanded by adding a second player stack (CAPS 3030) or one or several library modules holding 1024 cassettes each. If the complete system is dedicated to commercials broadcasting, more than 50'000 commercials can be stored. Music programs and commercials can also be intermixed.



Expanded configuration: STUDER CAMOS 3005 with CAR 3040.
Storage capacity: 80 + (n x 1024) cassettes

2. FUNCTIONS OF THE PROCESS COMPUTER

2.1 SELECTION SCREEN

2.1.1 SCREEN FORMAT

S T U D E R C O M M E R C I A L S
B R O A D C A S T I N G S Y S T E M

- 1) Processing of new releases
 - 2) Copying to broadcasting medium
 - 3) Broadcasting run control
 - 4) Delete function
 - 5) System control
 - 6) Service and test functions
-

INPUT MODE OF OPERATION

STATUS: AWAITING COMMAND INPUT MODE: SELECTION TIME: 16:22

NEW REL	COPY	BC RUN CONTROL	DELETE	SYSTEM FUNCTION	SERVICE CONTROL	-HELP- TEST	-ETC-
f1	f2	f3	f4	f5	f6	f7	f8

STATUS: POSITIONING			MODE: NEW RELEASE			TIME: 08.30	
DATA INPUT	CASS. IN	PRE-LISTEN	LEVEL MEAS.	LEVEL CORR.	CONT. RUN	-HELP-	-ETC-
f1	f2	f3	f4	f5	f6	f7	f8
RECORD COMM.	NEXT COMM.	PRINT DATA	TRNSF. DATA	GEMA DATA	END	-HELP-	-ETC-
f1	f2	f3	f4	f5	f6	f7	f8

2.2.2 DESCRIPTION OF FUNCTIONS

f1 = DATA INPUT

——> f1 = INTERNAL/MANUAL

——> f1 = LIBRARY NUMBER

A library number can be entered. This number is not related to the system-internal number. The operator only needs to specify whether the commercial is longer or shorter than 35 seconds.

——> f1 = COMMERCIAL > 35 SEC

——> f2 = COMMERCIAL < 35 SEC (DEFAULT)

The process computer searches for a free location in the library based on the preceding specification and assigns a system-internal sequence number.

——> f2 = CUSTOMER SPECIFICATIONS

——> f1 = CUSTOMER / AGENCY (INPUT)

——> f2 = REFERENCE DESCRIPTION / THEME (INPUT)

——> f3 = CUSTOMER REFERENCE NO. (INPUT)

——> f3 = INPUT DATE OF COMMERCIAL (INPUT)

——> f4 = BROADCASTING TIME RANGE OF COMMERCIAL (INPUT)

——> f5 = RECORDING MODE

——> f1 = MONO

——> f2 = STEREO (DEFAULT)

——> f6 = QUALITY

——> f1 = GOOD

——> f2 = INADEQUATE ---> RETURN TO CUSTOMER
FOR NEW RECORDING. MESSAGE TO PRINTER!

——> f7 = BEGINNING OF COMMERCIAL (VOICE/MUSIC/SOUND)

——> f1 = VOICE

——> f2 = MUSIC

——> f3 = SOUND

——> f8 = END OF COMMERCIAL, SAME AS f7

After these specifications have been entered into the system, we are now ready to make the broadcasting copy. The customer tape can be mounted on the external open-reel machine.

f2 = CASSETTE IN TAPE DECK

When this key is depressed, the cassette with the blank tape section is loaded into the corresponding tape deck and the tape advances to the free sector.

f3 = PRE-LISTENING

After the tape containing the commercial to be copied has been mounted and positioned on the open-reel tape deck, the commercial can be pre-listened by depressing this key. When this key is released, the external tape deck rewinds to the beginning of the commercial (provided a tape deck with serial interface and ZERO LOC function is used).

f4 = LEVEL MEASUREMENT:

The peak level of the commercial is measured and the result displayed on the screen. This operation can be performed simultaneously with pre-listening.

f5 = LEVEL ADJUSTMENT

——> f1 = AUTOMATIC

After the commercial has been pre-listened, the level correction unit adjusts the peak output level to +6 dBm.

——> f2 = MANUAL

The level can also be adjusted manually in steps of 0.1 dB.

f6 = DURATION OF COMMERCIAL

——> f1 = AUTOMATIC

The duration of the modulation is measured with the modulation duration counter and the result communicated to the process computer. The measured value is indicated on the screen and subsequently saved.

——> f2 = MANUAL

The duration can also be measured with a stopwatch and manually entered via keyboard.

f8 = ETC

This key causes a change-over to alternate functions of the command keys.

f1 = RECORD COMMERCIAL

The commercial is recorded and marked as a valid entry in the commercials library. The process computer accepts the necessary information.

f2 = NEXT COMMERCIAL

After the preceding recording has been completed, this key resets the system for processing the next commercial.

f3 = PRINT DATA

A journal of the processed new releases can be printed.

f4 = DATA TRANSFER

The completed operations can be communicated to an external computer. This key initiates a data transfer to an EDP host which holds a program for analyzing the statistical data and for performing accounting functions. The data is transferred to an intermediate storage medium such as magnetic tape or diskettes.

f5 = GEMA DATA

——>	f1 = TITLE	(INPUT)
——>	f2 = COMPOSER	(INPUT)
——>	f3 = ARRANGER	(INPUT)
——>	f4 = LABEL/RECORD NO.	(INPUT)

f6 = END

Terminates the operating mode for new releases. The selection screen is returned. The command keys and the display can be used for a different mode.

f7 = HELP

Provides the user with additional operating information.

The system continuously displays status indications in the form of plain-text messages. Any malfunction is immediately reported.

f1 = DATA INPUT

——> f2 = EXTERNAL

The CAMOS process computer is capable of accepting a short record written by a host computer on a transfer medium (e. g. magnetic tape). The process computer assigns the library number, i.e. a system-internal sequence number.

This record contains the following fields:

- Library number
- Reference description / Theme
- Input date of commercial
- Date of broadcast
- Time of broadcast
- Block
- Program
- Recording mode: Mono/Stereo
- Quality
- Beginning/End of commercial

In the maximum system configuration the user simply mounts the open-reel tapes on the tape deck and checks the information displayed on the screen.

NOTE

Certain broadcasting companies such as BRW/ORF/HR use an EDP package called "ISAR" which processes all the administrative processing of the commercials. The CAMOS system is capable of interfacing to the "ISAR" package.

2.3 COPYING TO BROADCASTING MEDIUM

2.3.1 SCREEN FORMAT

S T U D E R C O M M E R C I A L S
B R O A D C A S T I N G S Y S T E M

BROADCASTING CASSETTE NO: <____>

DATE: <__/__/__> BLOCK TIME: <__:__> PROGRAM: <__>

LIB NO	SEQ NO	LOC	REF	DESCR/THEME	CUST	DUR	MODE	B/E
<____>	<____>	01	_____	_____	_____	30.00	STEREO	V/M
<____>	<____>	02	_____	_____	_____	25.50	MONO	V/S
<____>	<____>	03	_____	_____	_____	42.35	STEREO	M/V
<____>	<____>	04	_____	_____	_____	16.20	STEREO	M/V
<____>	<____>	05	_____	_____	_____	27.80	STEREO	S/M

TOTAL BLOCK: 5 min. 30 sec.

STATUS: EDITING

MODE: COPYING

TIME: 10:30

COPY MEDIUM	INPUT DATA	PRE- LISTEN	REC START	REC STOP	MUSIC INSERT	-HELP-	-ETC-
f1	f2	f3	f4	f5	f6	f7	f8
EDIT	DISPLAY	AUTOM CUT	PRINT DATA	TRANSF DATA	-END-	-HELP-	-ETC-
f1	f2	f3	f4	f5	f6	f7	f8

2.3.2 DESCRIPTION OF FUNCTIONS

f1 = COPYING TO BROADCASTING MEDIUM

——> f1 = INTERNAL (Cassette)

Copying to a broadcasting cassette is performed internally within the CAMOS player stack.

——> f1 = DATE (INPUT)

——> f2 = BLOCK TIME (INPUT)

——> f3 = PROGRAM (INPUT)

The process computer assigns a broadcasting cassette to the commercials block (broadcasting cassette number).

——> f4 = CASSETTE IN TAPE DECK

——> f2 = EXTERNAL

The commercial is copied to an external open-reel tape deck. The process computer indicates the required audio matrix on the screen and switches on the cue mark generator (option).

f2 = INPUT DATA

——> f1 = INTERNAL/MANUAL

Changeover possible at the block and single commercials level.

——> f1 = LIBRARY NUMBER (INPUT)

The process computer displays the foregoing information relating to a commercial for the purpose of feedback.

——> f2 = SEQUENCE NUMBER (INPUT)

Information analogous to f1. The cumulative play duration of a block is continuously indicated on the screen.

The process computer specifies whether the commercials can be strung together based on the transition criteria voice/music/sound or whether a short piece of music must be inserted.

——> f3 = EXTERNAL

In this function a predefined data record is accepted via magnetic tape from an EDP host system. The process computer subsequently checks whether the commercials to be copied are currently stored in the system. Should this not be the case, a corresponding message will be displayed on the screen and the operator is requested to input these from an external source. The process computer logs this operation to the printer.

f3 = PRE-LISTENING

f4 = STOP

f5 = RECORDING START

f6 = MUSIC INSERTION

——> f1 = INTERNAL (standard insertion from cassette)

——> f2 = Insertion from external source

——> f3 = GEMA accounting

——> f1 = TITLE (INPUT)

——> f2 = COMPOSER (INPUT)

——> f3 = ARRANGER (INPUT)

——> F4 = LABEL/RECORD NO. (INPUT)

f7 = HELP

f8 = ETC

NOTE:

Copying to a broadcasting medium within the player stack can be performed fully automatically if no insertions from an external source are required, i.e. the system runs in unattended mode.

f1 = EDIT BLOCK

This function can be used for editing at the block level, i.e. the sequence of the commercials can be changed; a commercial can be inserted, erased or be replaced by a different one.

- > f1 = INSERT (Commercial)
- > f2 = ERASE (Commercial)
- > f3 = SWAP (By commercial _____)

f2 = DISPLAY

- > f1 = BROADCASTING CASSETTE (NO)
Display: - Blocks / - Date / - Program
- > f2 = DATE (INPUT)
- f3 = BLOCK (INPUT)
- > f4 = PROGRAM (INPUT)

f3 = AUTOMATIC COPY START

This key initiates the automatic assembly of broadcasting tapes. This function can be performed at any time.

f4 = PRINT DATA

A log of the assembled broadcasting tape is printed.

f5 = DATA TRANSFER

The log can be saved on magnetic tape.

f6 = END

f7 = HELP

f8 = ETC

2.4 BROADCASTING RUN CONTROL

This function is only applicable if the user decides on creating broadcasting cassettes.

2.4.1 SCREEN FORMAT

S T U D E R C O M M E R C I A L S
B R O A D C A S T I N G S Y S T E M

BROADCASTING CASSETTE NO: < ____ >

DATE: <05/21/81> BLOCK TIME: < __: __ > TO < __: __ > PROGRAM: < __ >

<u>LIB NO</u>	<u>LOC</u>	<u>DESCR/THEME</u>	<u>CUSTOMER</u>	<u>DURATION</u>	<u>TIMEOUT</u>
2448	01	FILM C-24	CIBA	21.1 SEC	<input type="text"/> 5 SEC
1012	02	OMO 2	HENKEL	32.5 SEC	<input type="text"/> 4 SEC
0812	03	SCHAPPY	COOP	27.2 SEC	<input type="text"/> 4 SEC
1215	04	CAMOS	STUDER	25.3 SEC	<input type="text"/> 3 SEC
1615	05	HAMBURGER	MC DONALDS	19.8 SEC	<input type="text"/> 2 SEC
0051	06	SUMMER 2	BALLY	28.7 SEC	<input type="text"/> 2 SEC
0122	07	S. DREAMS	ARCADE	35.8 SEC	<input type="text"/> 1 SEC

BLOCK END TIME: 16.59.80 REMAINING RUN TIME: 1 MIN 15 SEC

STATUS: PLAYBACK KM4 MODE: BROADCASTING TIME: 16.57

BC CASS --> CD4	PLAY BLOCK	NEXT BLOCK	PLAY N BLOCKS	PRE- LISTEN	PRINT DATA	TRANSFER-END- DATA	
<input type="text"/> f1	<input type="text"/> f2	<input type="text"/> f3	<input type="text"/> f4	<input type="text"/> f5	<input type="text"/> f6	<input type="text"/> f7	<input type="text"/> f8

2.4.2 DESCRIPTION OF FUNCTIONS:

f1 = BROADCASTING CASSETTE IN CD 4

The corresponding broadcasting cassette (number) is conveyed to the broadcasting cassette deck and the content (reference descriptions) of the cassette is displayed on the screen together with the acknowledgment "BROADCASTING CASSETTE READY".

The following functions are only used for checking purposes. The actual broadcasting run is controlled from the broadcasting operator's station.

f2 = PLAY BLOCK

Reproduction of first block. An acoustical signal (possibly terminal) is activated prior to the end of the block. The warning lead time can be specified. A time out (count down) is started on the screen (bar indication as visual aid for the user). The cassette automatically stops at the end of the block.

f3 = NEXT BLOCK

Addition of next block

f4 = PLAY N BLOCKS

For individual arrangement of commercials blocks.

f5 = PRE-LISTENING

When this key is released, the broadcasting tape is rewound to the beginning of the series of commercials and repositioned for play.

f6 = PRINT DATA

Printout of broadcast listing

f7 = TRANSFER DATA

After a commercial has been broadcast, the information required for statistics can be transferred to an EDP host by activating this function.

f8 = END

NOTE: A block can also consist of a single commercial.

2.5 DELETE FUNCTION AND ENABLING OF FUNCTION

2.5.1 SCREEN FORMAT

S T U D E R C O M M E R C I A L S
B R O A D C A S T I N G S Y S T E M

<u>DATE</u>	<u>TIME</u>	<u>LIB NO</u>	<u>DESCR/THEME</u>	<u>PRODUCT</u>	<u>CUSTOMER</u>
02/26/78	16:15	2448	C-24 FILM	CIBA	JELMOLI
07/16/79	18.30	1012	BEBE	SAFTY	MIGROS
05/02/77	17:30	0814	A176	TUNER	STUDER
10/12/80	14.30	3022	DUFTY	ABC	MUELLER AG
09/15/80	12:20	4377	IR - 12	SPEAKER	ACOUSTICS

STORAGE LOCS: CAPACITY = 4080 / ASSIGNED = 1437 / AVAILABLE = 2643

STATUS: SEARCH MODE: DELETE ENABLE TIME: 09:25

LIB NO	SEQ NO	SEARCH	BACKUP COPY	DELETE ENABLE	PRINT SLIP	-HELP-	-END-
f1	f2	f3	f4	f5	f6	f7	f8

2.5.2 DESCRIPTION OF FUNCTIONS

Recordings can be deleted either by referencing their library number or internal sequence number. The segments to be erased can possibly be input by a EDP host computer.

f1 = LIBRARY NUMBER (INPUT)

f2 = SEQUENCE NUMBER (INPUT)

f3 = SEARCH

——> f1 = CUSTOMER (INPUT)

——> f2 = AGENCY (INPUT)

——> f3 = CUSTOMER'S REF. NO. (INPUT)

——> f4 = LAST BROADCASTING DATE (INPUT)

f4 = EXTERNAL BACKUP COPY REQUIRED

——> f1 = YES

The commercial can be copied to an external open-reel tape deck. The segment is subsequently deleted.

——> f2 = NO

f5 = DELETE ENABLE (ACTIVATION)

The commercial to be deleted appears in reverse video, so that it stands out. The commercial is deleted by activating this function.

f6 = PRINT SLIP

f7 = HELP

f8 END

2.6 CAPTURE AND DISPLAY OF INTERNAL SYSTEM PROCESSES

2.6.1 SCREEN FORMAT

S T U D E R C O M M E R C I A L S
B R O A D C A S T I N G S Y S T E M

CASSETTE NUMBER	PLAY FREQUENCY
37	5012
38	5007
48	5015
52	5003

PLEASE MOUNT NEW CASSETTE IN LOADING UNIT

STATUS: TEST MODE: CASSETTE TEST TIME: 18:30

START CASS TEST	COPY			TRANSF STATIST DATA	PRINT INDEX	-HELP-	-END-
-----------------------	------	--	--	---------------------------	----------------	--------	-------

f1	f2	f3	f4	f5	f6	f7	f8
----	----	----	----	----	----	----	----

2.6.2 DESCRIPTION OF FUNCTIONS

f1 = CASSETTE TEST

A check is made to see whether a sector on the cassette has exceeded the number of recordings and playbacks specified via parameter input. If this parameter value is exceeded, the process computer issues a message on the screen and requests the user to replace the cassette, i.e. to mount a new cassette in the player stack. The valid commercials are subsequently copied to this new cassette and the cassette is filed in place of the old one which is ejected from the player stack.

f2 = COPYING

The valid commercials are copied. The data record remains unchanged.

——> f1 = MOUNT BLANK CASSETTE IN LOADING UNIT

——> f2 = BLANK CASSETTE IN CASSETTE DECK (INPUT)

——> f3 = RECORDING CODE

The audio code record selector on the CAD 3011 must be changed over.

——> f4 = CASSETTE TO BE REPLACED IN PLAYBACK DECK

——> f5 = COPYING OF VALID SELECTIONS

——> f6 = OLD CASSETTE IN EJECT CHANNEL

f5 = TRANSFER STATISTICAL DATA

Statistical data regarding commercials such as date, broadcasting time, etc. are transferred to an EDP host in a suitable format with the aid of an intermediate storage medium to be specified or via communications interface. The dynamic statistics memory in the process computer is subsequently cleared. This function is acknowledged by displaying the message "DATA TRANSFER TERMINATED".

f6 = PRINT INDEX

The process computer directs the printer to output an index containing essential information regarding the stored commercials.

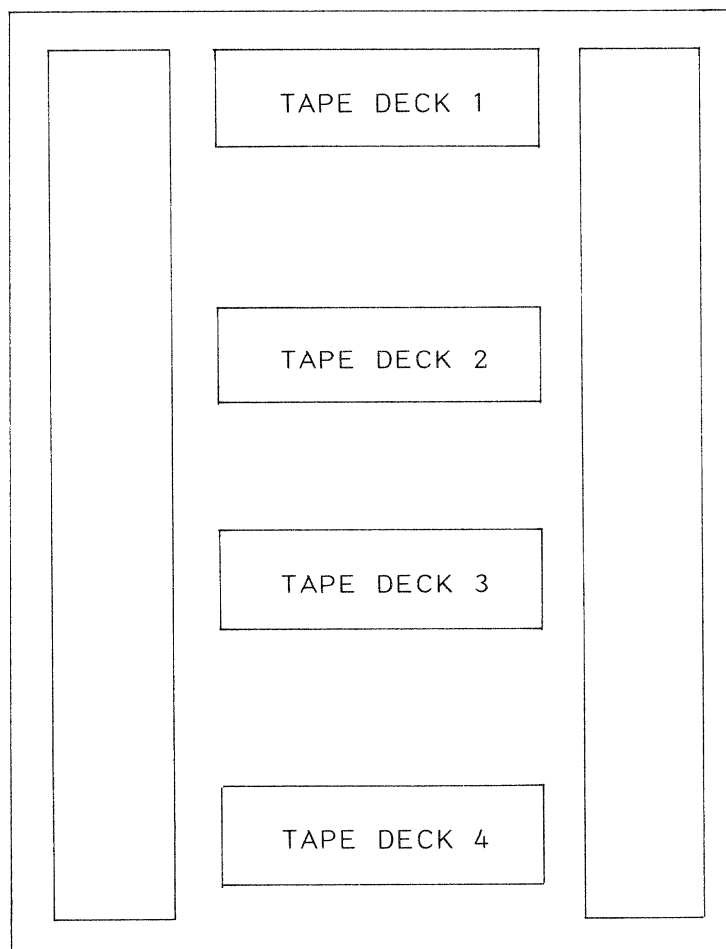
f7 = HELP

f8 = END

2.7 SERVICE AND TEST FUNCTIONS

2.7.1 SCREEN FORMAT

S T U D E R C O M M E R C I A L S
B R O A D C A S T I N G S Y S T E M



FAULT: TOTAL FAILURE OF CASSETTE DECK 2

HELP: CHECK SUPPLY POWER OR REPLACE CM 2

STATUS: TEST

MODE: SERVICE

TIME: 13:35

RESET
SYSTEM

TEST
C.DECK

STORAGE TEST
BELT

RECORD
CODE

-HELP-

-END-

f1

f2

f3

f4

f5

f6

f7

f8

2.7.2 DESCRIPTION OF FUNCTIONS

For ease of servicing the capability must be provided to activate each individual function unit and to have the status feedbacks checked by the process computer. If a fault is detected the source can be identified with a plain-text message.

f1 = RESET SYSTEM

A defined system status is established.

f2 = TEST CASSETTE DECK

——> f1 = CD 1

——> f2 = CD 2

——> f3 = CD 3

——> f4 = CD 4

f3 = TEST STORAGE BELT

——> f1 = BELT STORAGE

——> f2 = ROTARY BELT

f4 = AUTOMATIC TEST RUN

f6 = RECORD CODE:

f7 = HELP

f8 = END

3. FAILURE RECOVERY STRATEGY

If a system malfunction occurs, its location and nature must first be analyzed.

Basically there are three types of faults:

- a) Faults which do not require immediate attention. A fault message is displayed on the screen so that the appropriate steps can be taken later.
- b) Faults which require immediate attention. The audible operator attention signal is activated on the terminal and the defective components are identified on the screen, together with the appropriate remedial action or possible reconfiguration steps to be taken.
- c) Catastrophic faults:
Tape breakage during a broadcast or power failure.
Acoustical and visual operator alarm.

The computer continuously performs self-check functions concurrently with normal operations. If a fault is detected, it can be quickly isolated. The control processor keeps track of all operations performed. In case of a power failure the last step would be recorded on disk. Any partially completed step must be repeated after the system is restarted (power on and re-initialization).

A desk calculator can be used as an emergency device in case of a failure in the process computer. With this calculator it is possible to maintain emergency operations on a manual basis. For this purpose it is recommended that the allocation of library and (internal) sequence number as well as the location of the cassettes in the player stack be copied on a list so that the necessary operations can be performed.

4. LAYOUT OF DATA RECORD

4.1 PROCESS COMPUTER DATA

	DESIGNATION	LENGTH/DEFINITION	DEFAULT VALUE
1)	Library number	000000 - 999999	-
2)	Sequence number	0000 - 8050	-
3)	Cassette number	00 - 80 (n)	-
4)	Number of commercial	00 - 50	-
5)	TC - Drop-in	XX(min) XX(sec) X (1/10sec)	-
6)	TC - Drop-out	xx(min) XX(sec) X (1/10sec)	-
7)	Cassette position	00	0
8)	Sectors occupied	1,2,3...9	1
9)	Released for deletion	YES/NO	NO
10)	RECORDED	YES/NO	NO
11)	Mono/Stereo	Mono or stereo	STEREO
12)	Begin/End	Word/Music/Sound	-
13)	Quality	Good/Unusable	-

4.2 GENERAL COMMERCIALS DATA

	DESIGNATION	LENGTH/DEFINITION
1)	Customer's reference number	
2)	Reference description/theme	
3)	Customer	
4)	Agency	
5)	Duration	
6)	Broadcasting time/validity	
7)	Date received	
8)	Date last broadcast	
9)	Total number of broadcasts	
10)	Product	
11)	Product group code	

4.3 DATA FOR NEW RELEASES

	DESIGNATION	LENGTH/DEFINITION
1)	Backup copy	YES/NO
2)	Music content	YES/NO
	GEMA DATA:	
3)	Title	
4)	Composer	
5)	Arranger	
6)	Label/Record number	
7)	Own/Foreign production	O/F

4.4 COPYING DATA

	DESIGNATION	LENGTH/DEFINITION
1)	Broadcasting tape number	
2)	Block number	
3)	Location within block	
4)	Blocking e.g. on account of unpaid commercials	
5)	Program	
6)	Day	
7)	Week	
8)	Month	
9)	Year	
10)	Total block time	

4.5 STATISTICAL DATA

For customers which use the commercials broadcasting system as a self-sufficient unit, the following statistical data can be captured directly from the player stack if the broadcasting run is computer controlled:

	DESIGNATION	LENGTH/DEFINITION
1)	Date broadcast	
2)	Block broadcast	
3)	Program	
4)	Time broadcast	

EXAMPLE:

PROGRAM (1) DATE (06/12/81)

18:03:20 - 18:04:10

Specifications of commercial

5. OPTIONS

There are hardware and software options available for the system. The hardware is installed in a separate peripheral unit and is available as optional modules. The software options, consisting of packages, can be added to the standard software.

H = Hardware / S = Software

- | | | |
|----|--|-----|
| 1) | Automatic source/tape monitoring unit | (H) |
| 2) | Cue mark generator | (H) |
| 3) | Cue mark detector (broadcasting control station) | (H) |
| 4) | Mono/Stereo detector | (H) |
| 5) | Level correction unit | (H) |
| 6) | Phase relation monitor | (H) |
| 7) | Selection metering unit | (H) |

FOR SELF-SUFFICIENT APPLICATIONS

- | | | |
|----|-----------------------|-----|
| 8) | Mini order processing | (S) |
| 9) | Mini statistics | (S) |

6. QUESTIONNAIRE: STUDER COMMERCIALS BROADCASTING SYSTEM

DATE : / /

CUSTOMER: : _____ ACCOUNT EXECUTIVE: _____

ADDRESS : _____

TELEPHONE : _____

6.1 SYSTEM CONFIGURATION:

6.1.1 DOES THE CUSTOMER PLAN A COMPUTER-ASSISTED ORDER PROCESSING AND ACCOUNTING FUNCTION?

YES / NO

If yes, is an existing software to be used?

E.g. "ISAR" YES / NO OR _____

6.1.2 NUMBER OF ACTIVE COMMERCIALS:

Less than 4000 More than 4000

Self-sufficient
commercials broad-
casting system

Expansion with
CAMOS library
modules

Number of
commercials:

6.1.3 DOES MUSIC HAVE TO BE INSERTED?

External source	YES/NO	YES/NO
-----------------	--------	--------

Internal source standard insertion)	YES/NO	YES/NO
--	--------	--------

"GEMA" statement:	YES/NO	YES/NO
-------------------	--------	--------

If yes, by:

—> STUDER YES/NO YES/NO

—> EDP YES/NO YES/NO

6.1.4 MUSIC PROGRAMS AND COMMERCIALS INTERMIXED?

External source YES/NO YES/NO

Internal source _____ YES/NO

"GEMA" statement: YES/NO YES/NO

If YES, by:

——> STUDER YES/NO YES/NO

——> EDP YES/NO YES/NO

6.1.5 NUMBER OF PARALLEL PROGRAMS WITH COMMERCIALS?

1 2 3 4 5 6 7 8 9 more = _____ programs

6.1.6 FROM HOW MANY CONTROL ROOMS DOES A PLAYER STACK HAVE TO BE CONTROLLED?

1 2 3 4 5 6 7 8 9 more = _____ rooms

6.1.7 WHERE ARE THE INDIVIDUAL WORK STATIONS PHYSICALLY LOCATED?

	BUILDING 1				BUILDING 2
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	
Processing of new releases	_____	_____	_____	_____	_____
Copying	_____	_____	_____	_____	_____
Broadcasting control	_____	_____	_____	_____	_____
EDP	_____	_____	_____	_____	_____

IF THE WORK STATIONS ARE NOT IN THE SAME LOCATION, HOW LARGE IS THE APPROXIMATE DISTANCE TO THE PLAYER STACK?

_____	_____ meters
_____	_____ meters
_____	_____ meters
_____	_____ meters

6.1.8 HOW DO YOU PLAN TO ASSIGN THE WORK STATION FOR COMMERCIALS BROADCASTING SYSTEMS?

STATION NO.	FUNCTIONS		
	NEW RELEASES	COPYING	BROADCASTING
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
5	_____	_____	_____
6	_____	_____	_____

POSSIBLE WORK ORGANIZATION WITH ONE PLAYER STACK

	a)	M1	M2	M3	M4	b)	M1	M2	M3	M4
New releases		■					■			
Copying			■	■	■		■	■	■	
Broadcasting					■				■	■
	c)	M1	M2	M3	M4	d)	M1	M2	M3	M4
New releases		■					■			
Copying		■	■	■				■	■	■
Broadcasting			■	■	■					

External tape decks

6.1.9 ARE ADDITIONAL DISPLAY STATIONS REQUIRED FOR EDITORS?

If yes, how many? _____ And where? _____

6.1.10 CAN THE SYSTEM BE COMMISSIONED IN STAGES?

YES/NO

If no, how much time
is available?

_____ days

6.2 GENERAL QUESTIONS

6.2.1 ARE THERE PERIODS DURING WHICH NO COMMERCIALS
ARE BEING BROADCAST? YES/NO

If yes, when?

Mornings / Afternoons / Evenings / Nights

Total per day? _____ hours.

6.2.2 DURATION OF COMMERCIALS

Average length of a commercial? _____ sec.

Longest commercial? _____ sec.

Shortest commercial? _____ sec.

Percentage of commercials shorter than 20 sec.? _____

Percentage of commercials longer than 25 sec.? _____

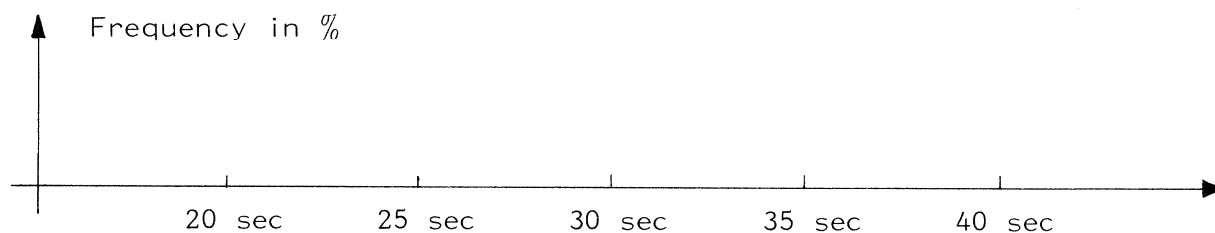
Percentage of commercials longer than 30 sec.? _____

Percentage of commercials longer than 35 sec.? _____

Percentage of commercials longer than 40 sec.? _____

Average broadcasting frequency of commercials? _____ times

GRAPH



6.2.3 HOW MANY COMMERCIALS ARE BROADCAST ON AN AVERAGE DAY?

	Program 1	Program 2	Program 3	Program 4
Commercials Time	_____	_____	_____	_____
Total	_____ hrs	_____ hrs	_____ hrs	_____ hrs

6.3 CUSTOMER AUDIO SPECIFICATIONS

6.3.1 Mains voltage _____ V

6.3.2 Mains frequency _____ Hz

6.3.3 Audio connector layout _____ US _____ EURO STD

6.3.4 Noise reduction system YES/NO

If yes, _____ DOLBY _____ TELCOM

6.3.4 USE OF COMPANDER/EXPANDER

Per machine YES/NO

Per input/output YES/NO

6.3.5 COMMENTS:

6.4 QUESTIONS CONCERNING SEQUENCE OF OPERATIONS

6.4.1 When a new commercial is received,
is its quality verified through pre-listening? YES/NO

6.4.2 Is a commercial checked for
legal acceptability? YES/NO

6.4.3 If commercials are broadcast in blocks,
are there any rules regarding the
stringing of commercials based on
beginning and end criteria such as
Voice / Music / Sound? YES/NO

B/E	ALLOWED	ONLY WITH FILLER MUSIC
M / V	0	0
V / M	0	0
M / M	0	0
V / V	0	0
S / V	0	0
V / S	0	0
S / S	0	0
S / M	0	0
M / S	0	0

6.4.4 Are new commercials checked for correct
phase relation and stereo balance? YES/NO

If yes, does this check have
to be performed automatically? YES/NO

6.4.5 Is automatic level control required? YES/NO

6.4.6 Is the duration of the commercial
being measured? YES/NO

If yes, how?

Does this task have to be performed
automatically? YES/NO

6.4.7 What happens with customer's tape
after the commercial has been
filed in your library?

Back to customer YES/NO

Saved YES/NO

If yes, are they to be copied? YES/NO

6.4.8 How many new releases do you receive
on an average day? _____

6.4.9 COPYING TO BROADCASTING MEDIUM

Cassette? YES/NO

External open-reel broadcasting tape YES/NO

If yes, existing machine _____ or STUDER tape deck _____

6.4.10 CREATION OF BROADCASTING TAPE?

If by blocks, how many commercials per/block? _____

How many blocks per tape? _____

How many blocks per day
and program? _____

How many programs? _____

How many days in advance? _____

6.4.11 Does filler music have to be inserted
between commercials when a block is
assembled in order to compensate
time differences? YES/NO

Does this have to be performed automatically? YES/NO

6.4.12 DOES A GEMA STATEMENT HAVE TO BE PRODUCED? YES/NO

By STUDER CAMOS 3005? YES/NO

By EDP / Accounting? YES/NO

6.4.13 CUE MARKS FOR EXTERNAL OPEN-REEL TAPE DECKS? YES/NO

Can this be performed electronically
with corresponding display? YES/NO

How much residual playing time is required? _____ sec.

Is yellow tape inserted manually? YES/NO

6.4.14 BROADCAST:

Broadcasting from player stack?	YES/NO
If yes, distance to control room?	_____
Through remote control?	YES/NO
Number of remote control units?	_____ ea.
Is an acoustical warning signal required before end of block?	YES/NO
Is an analaog display required?	YES/NO
Distance to transmitter (HF cross-talk)	_____ m
From broadcasting tape?	YES/NO
Distance to control room?	_____ m
Distance to transmitter?	_____ m

6.4.15 Is computer-assisted broadcasting run control desired, i.e. control display with bars on screen? YES/NO

6.4.16 CRITERIA FOR ENABLING DELETE FUNCTION?

6.4.17 DO YOU KEEP A BACKUP COPY OF EACH COMMERCIAL? YES/NO

If yes, where _____

6.4.18 COMMENTS:

6.5 DATA RECORD

Which information is of importance to you at the various operator displays or which information would you like to have displayed?

	NEW RELEASES	COPYING	BROAD- CASTING	ORDER PROC.	STATIS- TICS	EDP
Library NO.	_____	_____	_____	_____	_____	_____
Ref. Descr./Theme	_____	_____	_____	_____	_____	_____
Customer	_____	_____	_____	_____	_____	_____
Customer's ref. No.	_____	_____	_____	_____	_____	_____
Agency	_____	_____	_____	_____	_____	_____
Product	_____	_____	_____	_____	_____	_____
Product code key	_____	_____	_____	_____	_____	_____
Commercials duration	_____	_____	_____	_____	_____	_____
Commercials begin/end	_____	_____	_____	_____	_____	_____
Mono/Stereo	_____	_____	_____	_____	_____	_____
Quality	_____	_____	_____	_____	_____	_____
Broadcasting time	_____	_____	_____	_____	_____	_____
Reception date of commercial	_____	_____	_____	_____	_____	_____
Last broadcasting date	_____	_____	_____	_____	_____	_____
Number of broadcasts	_____	_____	_____	_____	_____	_____
Broadcasts/ _____	_____	_____	_____	_____	_____	_____
Broadcasting: date	_____	_____	_____	_____	_____	_____
time	_____	_____	_____	_____	_____	_____
block	_____	_____	_____	_____	_____	_____
BLPLNR	_____	_____	_____	_____	_____	_____
program	_____	_____	_____	_____	_____	_____
Filler music	_____	_____	_____	_____	_____	_____
GEMA data	_____	_____	_____	_____	_____	_____

6.6 OPTIONS

H = Hardware / S = Software

6.6.1	Automatic A/B level correction	(H)	YES/NO
6.6.2	Cue mark generator	(H)	YES/NO
6.6.3	Cue mark detector (Broadcasting operator's station)	(H)	YES/NO
6.6.4	Mono/Stereo detector	(H)	YES/NO
6.6.5	Level correction	(H)	YES/NO
6.6.6	Phase relation check	(H)	YES/NO
6.6.7	Commercials timing unit	(H)	YES/NO
6.6.8	Mini order processing (free-standing use)	(S)	YES/NO
6.6.9	Mini statistics	(S)	YES/NO

6.7 INSTALLATION PLANNING

- 6.7.1 Will the system be installed in an airconditioned room YES/NO
- If no, can an ambient temperature of $24^{\circ}\text{C} \pm 3^{\circ}\text{C}$ still be warranted during working hours? YES/NO
- Is the room sufficiently large that the heat produced by the equipment can simply be dissipated? YES/NO
- 6.7.2 Does the average relative humidity fall between 40 and 60%? YES/NO
- 6.7.3 Are preventive steps planned against
- Buildup of static charges YES/NO
 - Buildup of dust YES/NO
- 6.7.4 Does the player stack (system) have to be moved within the building? YES/NO
- 6.7.5 Is the AC supply power protected against failures and fluctuations? YES/NO
- 6.7.6 Is an emergency power plant available? YES/NO
- 6.7.8 Can the automatic changeover from the AC mains to the emergency power plant be accomplished within _____ ms? YES/NO
- 6.7.9 Are safety precautions planned according to general EDP guidelines? YES/NO

6.8 REPLACEMENT PARTS

- 6.8.1 Spare cassette decks? YES/NO
If yes, how many units? (CAD 3011) _____
- 6.8.2 Spare parts, according to recommended list? YES/NO
- 6.8.3 Do you plan to use a desk calculator
in case the control processor or the
EDP system breaks down? YES/NO
(Minimum fallback system)

6.9 BUSINESS DETAILS:

- 6.9.1 Do you require additional information? YES/NO
- 6.9.2 Do you wish to receive a quotation? YES/NO
- 6.9.3 Is the equipment to be installed by us? YES/NO
- 6.9.3 Is the equipment to be commissioned by us? YES/NO
- 6.9.5 Will the machine be serviced by your own
technical staff? YES/NO
- 6.9.6 Does a technical training course have to be
provided? YES/NO
- 6.9.7 The ideal date would be _____

7. APPENDIX

Preliminary technical specifications: STUDER CAD 3010/3011

Models:	CAD 3010 Reproduce-only cassette deck CAD 3011 Record/Reproduce cassette deck
Tape transport:	1 Capstan motor 2 DC spooling motors 1 DC positioning motor
Tape speed	9.5 cm/sec (3.75 ips)
Tape speed variation:	$\pm 0.2\%$
Drift:	$\leq 0.1\%$
Cassette type:	BASF Unisette [®]
Tape width:	6.3 mm (1/4")
Tape capacity:	Playing time 15 minutes for 85.5 m (281 ft) tape Playing time 30 minutes for 171 m (561 ft) tape
Wow and flutter IEC 368 (DIN 45507)	Peak weighted $\leq 0.08\%$
Acceleration time:	Max. 0.2 sec. for reaching the two-fold wow-and-flutter specifications
Stop time:	Max. 2 sec. from fast winding Max. 40 ms from play mode
Tape position indication:	SMPTE code (EBU 80-bit code, Tech 3097E, June 1980)
Positioning accuracy:	Typical ± 40 ms
Positioning resolution:	80 or 120 ms respectively
Access time:	Playing time 15 min.: ≤ 15 sec. Playing time 30 min.: ≤ 25 sec.
Rewind time:	Playing time 15 min.: 20 sec. Playing time 30 min.: 40 sec.
Tape rewind speed:	average 4.75 m/s

[®] reg. trademark of BASF

Track widths	Audio track 2 x 2 mm Code 1 x 0.6 mm, center track
Inputs:	Balanced, floating Impedance min. 5 kohm, 30 Hz to 20 kHz
Input level:	Min. - 20 dBm for 185 nWb/m Max. + 22 dBm
Outputs:	Balanced, floating Impedance max. 50 Ohm, 30 Hz to 20 kHz Terminating impedance min. 200 ohm
Output level:	max. 22 dBm ($R_L = 600 \text{ ohm}$)
Code output:	According to IEC 60 B, 1974
Equalization:	90/3180 μs NAB/CCIR
Tape type:	BASF LP 31 CrO ₂ . T 149 AM 15 min.
Reference level:	320 nWb/m (315 Hz)
Frequency response: (Record-Reproduce)	60 Hz to 12 kHz $\pm 1\text{dB}$ 30 Hz to 18 kHz $\pm 2 \text{ dB}$
Signal-to-noise ratio: RMS value Record-Reproduce Tape flux 320 nWb/m	<ul style="list-style-type: none"> - Unweighted S/N ratio, linear 55 dB - Weighted S/N ratio, CCIR 468 53 dB (49 dB quasi peak) - S/N ratio, A-weighted according to IEC 179 (DIN 45633) 62 dB

Harmonic distortion (k_3): Record-reproduce 1 kHz, 320 nWb/m	$\leq 1.5 \%$
Crosstalk attenuation: Stereo	Min. 40 dB, 80 Hz to 8 kHz 45 dB at 1 kHz
Code cross-talk cancellation:	Min. 75 dB
Maximum output level 10 kHz: (MOL 10)	- 2 dB (relative to 0 dB, 320 nWb/m, 315 Hz)
Erase ratio:	min. 75 dB at 1 kHz
Erase frequency:	150 kHz
Bias frequency:	150 kHz
Power requirements: (selectable)	100 to 140 V, 200 to 240 V $\pm 10\%$ 50 or 60 Hz
Connected load:	Max. 150 VA (Cassette deck with amplifier and remote control)
Ambient temperatures:	+10°C to +40°C (50°F to 104°F)
Relative humidity:	20% to 95%, dry bulb
Safety standard:	Meets IEC recommendations Publication 65, safety category 1
Cassette deck remote control:	Serial triggering Parallel triggering
External terminals:	Audio XLR Audio/Code multipin connector Interface RS 232C
Design:	For 19" rack mounting
Dimensions	Width 483 mm Height 399 mm Depth (without head block sled) 420 mm Max. depth 505 mm
Weight	21.5 kg (47 lbs) net