Operating Manual
Service Manual

DAT CONTROL DC-1

English Manual

RTW

RADIO-TECHNISCHE WERKSTÄTTEN

INSTRUMENTS FOR STUDIO APPLICATIONS

Serial Number:

Catalogue Number:

RTW

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Content

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Hinweis

WARNUNG!

Das Öffnen des Gerätes birgt eine potenziell gefährliche Situation, denn es kann eine gefährliche Spannung mit dem Risiko eines elektrischen Schlags anliegen!

WEEE-Reg.-Nr.: **DE 90666819**

Kategorie: 9

Geräteart: Diese Geräte erfüllen als
ÜBERWACHUNGS- UND KONTROLLINSTRUMENTE
in der Kategorie 9, Anhang 1B,
die Vorschriften des Elektro- und Elektronikgesetzes
vom 16. März 2005 und der RoHS-Directive 2002/95/EC.

Note

WARNING!

Opening the unit bears a potentially hazardous condition. A dangerous voltage that could pose a risk of electrical shock can be present!

WEEE-Reg.-No.: **DE 90666819**

Category: 9

Device type: These instruments comply with
and fall under category 9
MONITORING AND CONTROL EQUIPMENT
of Annex 1B of the RoHS-Directive 2002/95/EC.

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CONTENT

1. Preface

The present "Operating and Service Manual, DAT Control DC-1" contains information on connecting, operating and service literature for the DAT Control DC-1 manufactured by RTW. Before putting the unit into service, please take a few minutes to read the sections which follow, noting the information which applies to your application in particular.

1.1. Purpose of the operating manual

The Operating and Service Manual contains all the information needed regarding the functions which the DAT Control DC-1 provides. It covers the controls, the pre-established settings in the default menu and the operating sequences. Also to be found in this manual are circuit diagrams, drawings showing the mechanical aspects and spare parts list.

This manual is based on information drawn from the manuals for each type of component to be controlled. Consequently, it is assumed that the reader is familiar with the commands used for the various units. If there is any uncertainty, please refer to the manual which was provided with your DAT recorder.

1.2. Organization of the Operating and Service Manual

The contents of the individual chapters are summarized below. Additional details on the topics dealt with in the various chapters will be found in the table of contents at the front or in the index at the end of the manual.

Chapter 1. Preface

This chapter describes the organization of the Manual.

Chapter 2. General

This chapter explains what is included as standard equipment and gives information on optional accessories.

Chapter 3. Models

In this chapter you will find a detailed description of the models supported by the software.

Chapter 4. Connections and configuration examples

This chapter describes how to connect the DAT Control DC-1 to the DAT recorder, the connection required for the "start controller" and "external keys" functions, and how to use the remote control unit with an editing system.

Chapter 5. Operation

This chapter deals with the basic operating steps for the DAT Control DC-1.

Chapter 6. Warning displays

Explained in this chapter are the warning indicators implemented in the software and their meanings.

Chapter 7. Default setting

This chapter describes the parameters for the default menu and provides information on how to change these settings.

Chapter 8. Technical data

Summarized in this chapter are all the technical data for the DAT Control DC-1.

Chapter 9. Circuitry information

This chapter contains all the circuit drawings required for service work

Chapter 10. Part Lists

Chapter 11. Index

2. General

2.1. Standard equipment

Shipped together with the DAT CONTROL DAT DC-1 are: The DAT CONTROL DC-1 remote control module with a 64-pin, plug with solder lugs, along with an Operating and Service Manual in German and English.

2.2. Optional accessories

2.2.1. Plug adapter set

RTW offers a plug adapter set, available under Order No. 1179. This adapter branches from the 64-pin mating plug at the DAT CONTROL DC-1 to three 9-pin subminiature D-type plug connectors (connection RS-422, insert RS-422 and RS-232) and stripped conductors used to attach to the supply voltage and/or to external buttons keys or signalling devices.

2.2.2. RS-232 adapter

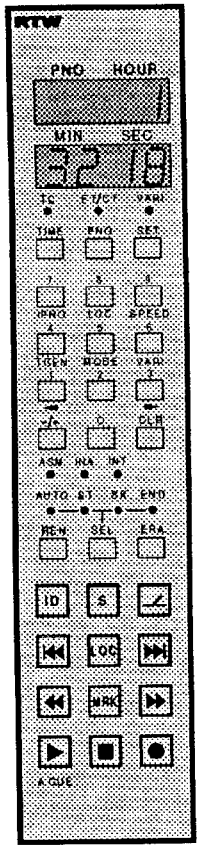
This plug adapter set contains a 9-prong RS-232 subminiature D-type insulation displacement plug connector for attachment at the recorder interface. If your recorder is fitted with a 25-pin RS-232 socket, the RS-232 connector adapter can be connected in between. The RTW order number is: 1178.

2.2.3. Line power pack

RTW can supply a 24 V DC / 540 mA wall transformer to supply power to the DAT CONTROL DC-1; order number 1198.

3. Models

3.1. DAT CONTROL RS-422



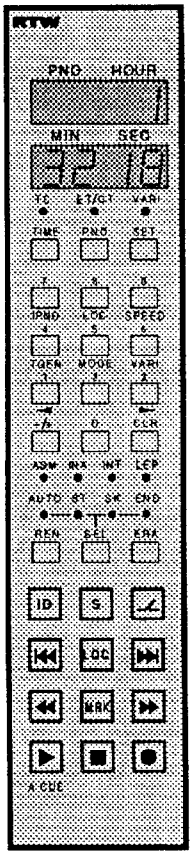
The DAT CONTROL DC-1 with the RS-422 serial interface is a remote control module designed especially to operate the SONY Series 7000 DAT recorders and the Otari DTR-90 with an RS-422 interface. All operating controls and electronics are housed in a standardized plug-in module measuring 40 x 190 mm.

Available at the remote control module are all functions required for recording and playback, including the time display. A numeric keypad facilitates entering time data or program numbers used to advance to specific points on the tape. Functions such as auto cue, single play or used time display offer enhanced operating convenience.

The DAT CONTROL DC-1-RS-422 is suitable for operation with the Sony series 7000 recorders and with the Otari DTR-90. The remote control module features an RS-422 input interface and an RS-422 output interface. This makes it possible to insert the DAT CONTROL between a DAT recorder and the Sony DAE- 3000 editor ("insert" operating mode). ID points on the tape can thus be located directly during editing work, without having to know the corresponding time code.

To be able to operate the simplest recorder in the Sony 7000 series (PCM-7010) the optional RS-232 interface card (Sony designation DABK-7013) must be installed.

3.2. DAT CONTROL RS-232



The DAT CONTROL DC-1 with the RS-232 serial interface is a remote control module designed especially to operate the SONY Series 7000 DAT recorders fitted with an RS-232 interface. All operating controls and electronics are housed in a standardized radio cassette measuring 40 x 190 mm.

Available at the remote control module are all the functions required for recording and playback, including the time display. A numeric keypad facilitates entering time data or program numbers used to advance to specific points on the tape. Functions such as auto cue, single play or used time display offer enhanced operating convenience. In addition to these functions, the DAT CONTROL DC-1 RS-232 provides a so called LEP display showing the last error point. This display is activated when specific errors occured.

To be able to operate the simplest recorder in the Sony 7000 series (PCM-7010) the optional RS-232 interface card (Sony designation DABK-7013) must be installed. The PCM-7010 is not fitted with an RS-422 (9-pin) interface and it is not possible to install one. The Sony PCM-7030 and PCM-7050 recorders can also be fitted with an RS-232 interface, if desired. This option has the Sony designation DABK-7033.

Note:
Please remember that due to the command structure at the RS-232 interface, there will be no feedback messages for the ID-SEARCH FW and ID-SEARCH REV functions.

Please note that the DAT CONTROL RS-232 cannot be connected to the RS-232 serial interface of the Otari DTR-90 DAT recorder for operation of this recorder.

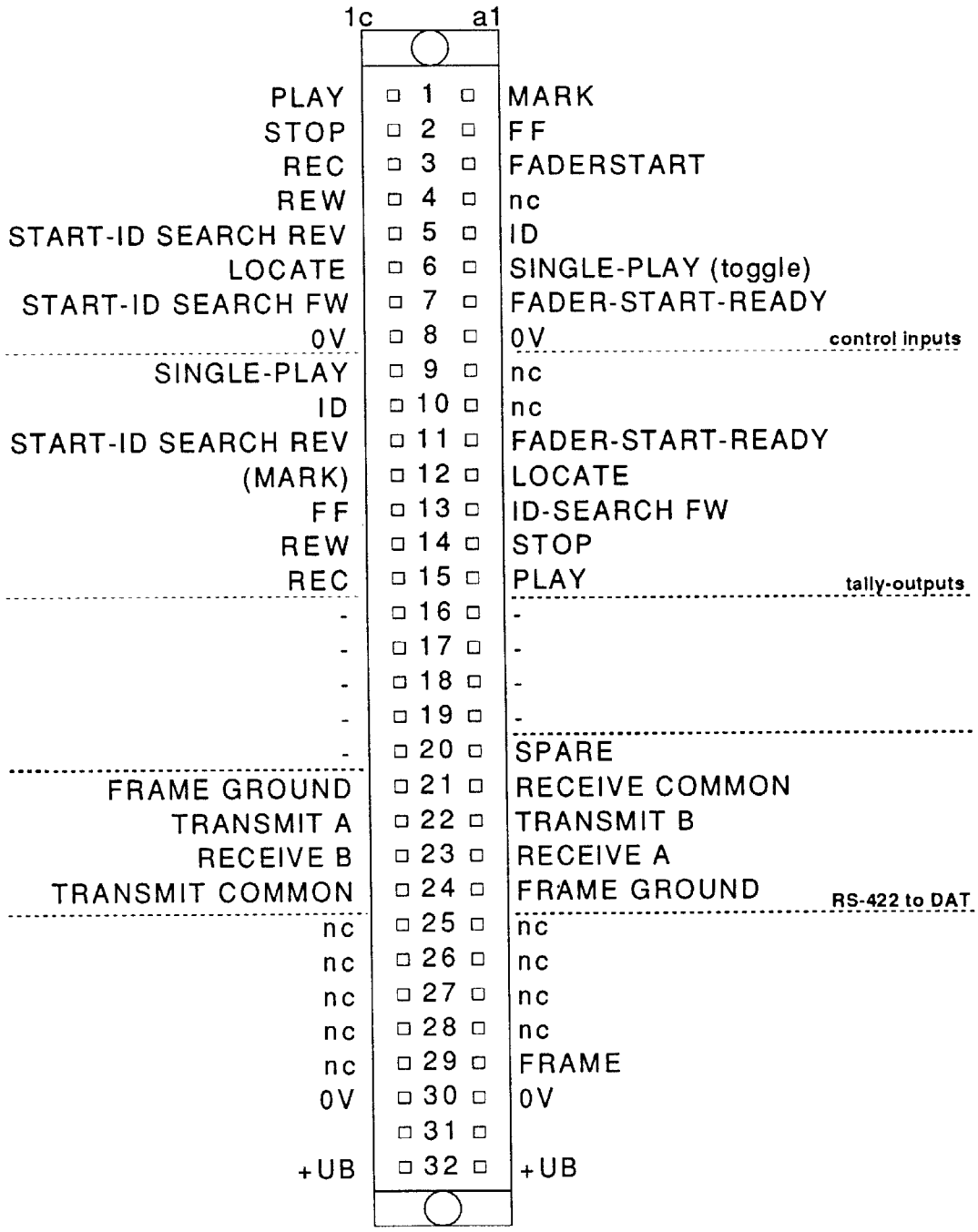
When the DAT CONTROL RS-232 is operated with equipment having a "positive" ground (e.g. Studer mixing consoles), a separate, isolated power supply is absolutely essential for the DAT CONTROL unit because of the asymmetrical architecture of the RS-232 interface in relation to 0V. The power for the DAT CONTROL RS-232 ***cannot*** be supplied by the console power supply unit in such setups.

4. Connection and Configuration

4.1. Pin Assignment of the 64-Pin Connector

4.1.1. Pin Assignment for RS-422-Operation

The following diagram shows the DAT CONTROL DC-1 pin assignment for RS-422 operation.



4.1.2. Pin Assignment of Sony 9p-Interface (RS-422)

The following table shows the interconnections between the 64-pin connector of DAT CONTROL DC-1 (RS-422-version) and a Sony 9p-interface.

DAT CONTROL DC-1 64-pin connector	Sony 9p-interface
24a (FRAME GROUND)	1 (FRAME GROUND)
23a (RECEIVE A)	2 (TRANSMIT A)
22a (TRANSMIT B)	3 (RECEIVE B)
21a (RECEIVE COMMON)	4 (TRANSMIT COMMON)
20a (nc)	5 (nc)
24c (TRANSMIT COMMON)	6 (RECEIVE COMMON)
23c (RECEIVE B)	7 (TRANSMIT B)
22c (TRANSMIT A)	8 (RECEIVE A)
21c (FRAME GROUND)	9 (FRAME GROUND)

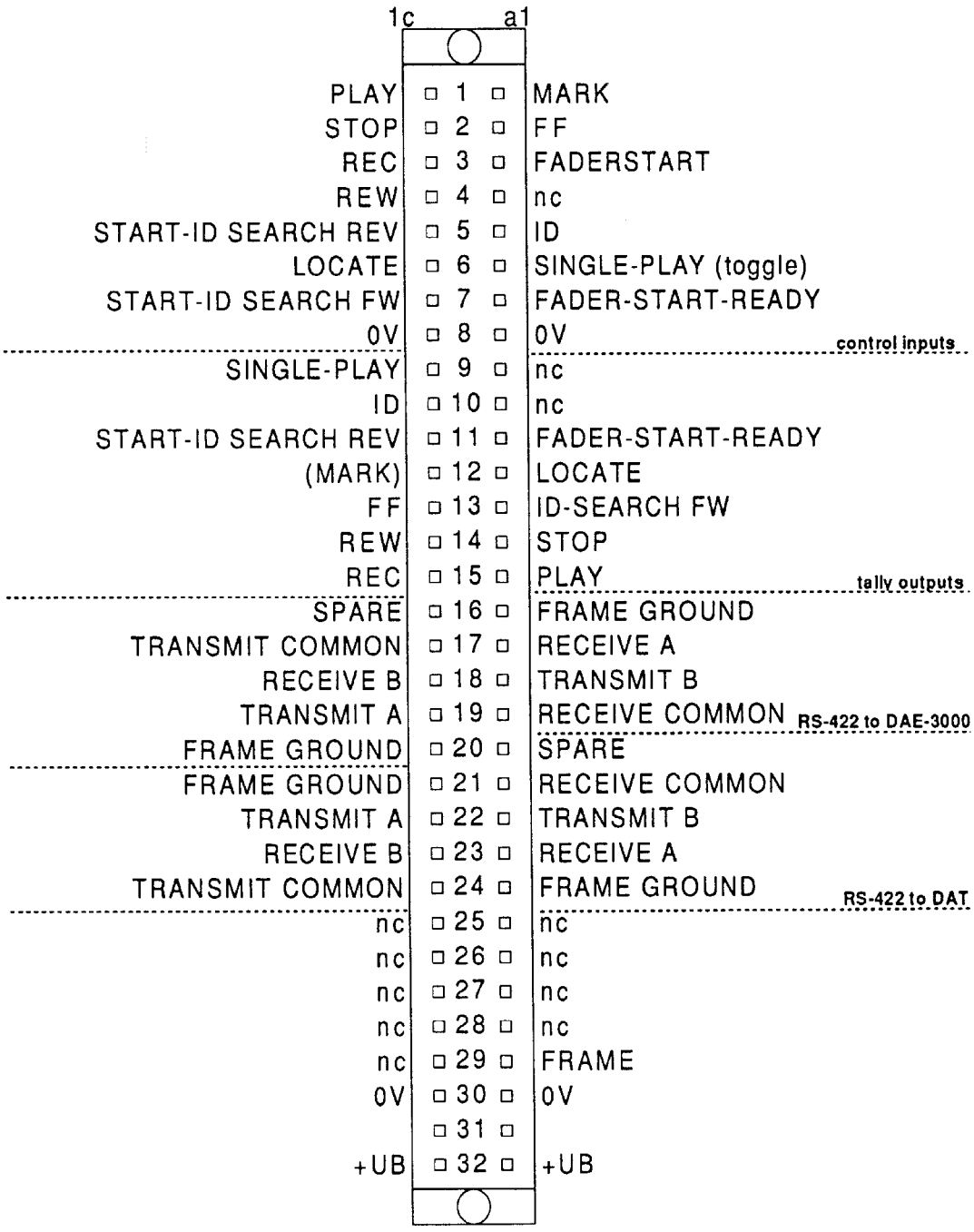
4.1.3. Adapter RS-422-9p at Sony PCM 7010-RS-442-15p interface

The following table shows the pin assignment of the DAT CONTROL DC-1 (RS-422) via adapter 1179 to a Sony PCM 7010 with a RS-422-15p interface (DABK 7014).

Sony 9p interface adapter 1179	Sony 15p interface PCM-7010
1 (FRAME GROUND)	1 (FRAME GROUND)
2 (TRANSMIT A)	2 (TRANSMIT A)
3 (RECEIVE B)	3 (RECEIVE B)
4 (TRANSMIT COMMON)	4 (TRANSMIT COMMON)
5 (nc)	5 (nc)
	6 (nc)
	7 (nc)
	8 (nc)
6 (RECEIVE COMMON)	9 (RECEIVE COMMON)
7 (TRANSMIT B)	10 (TRANSMIT B)
8 (RECEIVE A)	11 (RECEIVE A)
9 (FRAME GROUND)	12 (FRAME GROUND)
	13 (nc)
	14 (nc)
	15 (nc)

4.1.4. Pin Assignment RS-422-Insert

The following picture shows the DAT CONTROL DC-1 64-pin connector for Insert-mode operation.



4.1.5. Interconnection RS-422-Insert and DAE-3000

The following table shows the interconnections from DAT CONTROL DC-1 (64 pin connector) and a Sony editor DAE-3000 (9p interface).

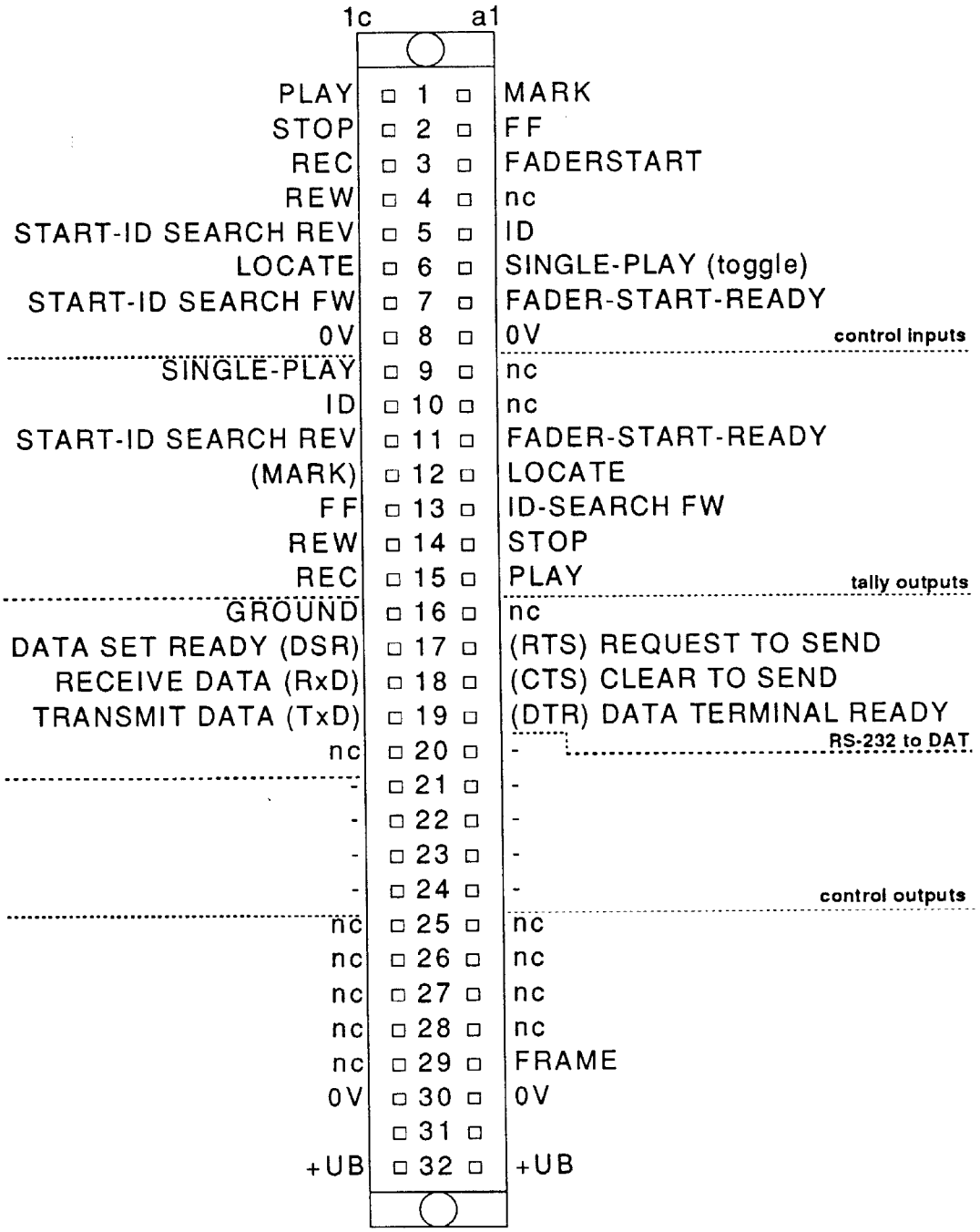
DAT CONTROL DC-1 64-pin connector	Sony 9p-interface DAE 3000
20c (FRAME GROUND)	1(FRAME GROUND)
19c (TRANSMIT A)	2 (RECEIVE A)
18c (RECEIVE B)	3 (TRANSMIT B)
17c (TRANSMIT COMMON)	4 (RECEIVE COMMON)
16c (nc)	5 (nc)
19a (RECEIVE COMMON)	6 (TRANSMIT COMMON)
18a (TRANSMIT B)	7 (RECEIVE B)
17a (RECEIVE A)	8 (TRANSMIT A)
16a (FRAME GROUND)	9 (FRAME GROUND)

4.1.6. Pin Assignment for RS-232-Operation

The following diagramm shows the pin assignment of a DAT CONTROL DC-1 RS-232 version.

Comment:

Make shure to connect to the correct 9-pin sub D if the counter-plug-adapter 1179 is used.

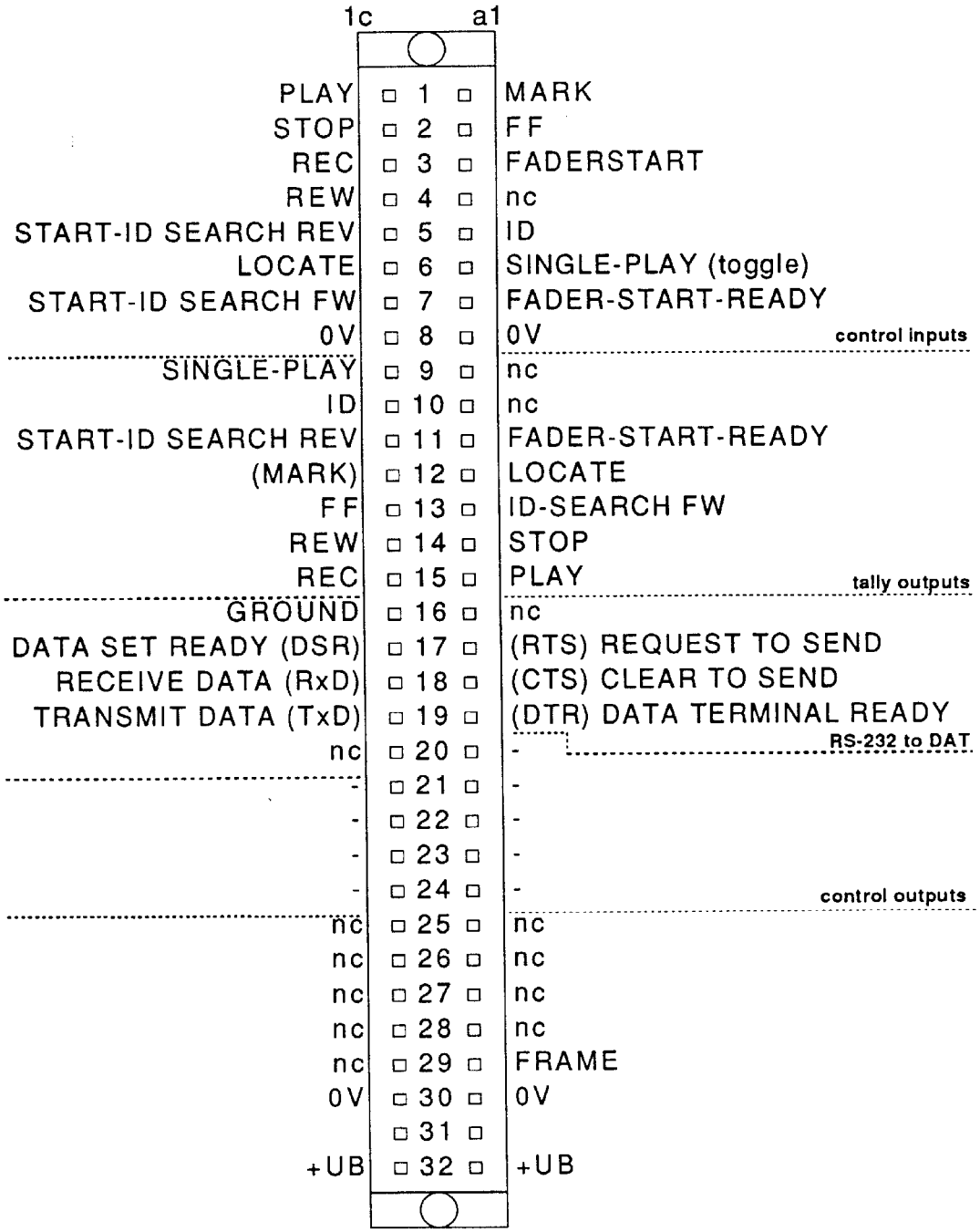


4.1.6. Pin Assignment for RS-232-Operation

The following diagramm shows the pin assignment of a DAT CONTROL DC-1 RS-232 version.

Comment:

Make shure to connect to the correct 9-pin sub D if the counter-plug-adapter 1179 is used.



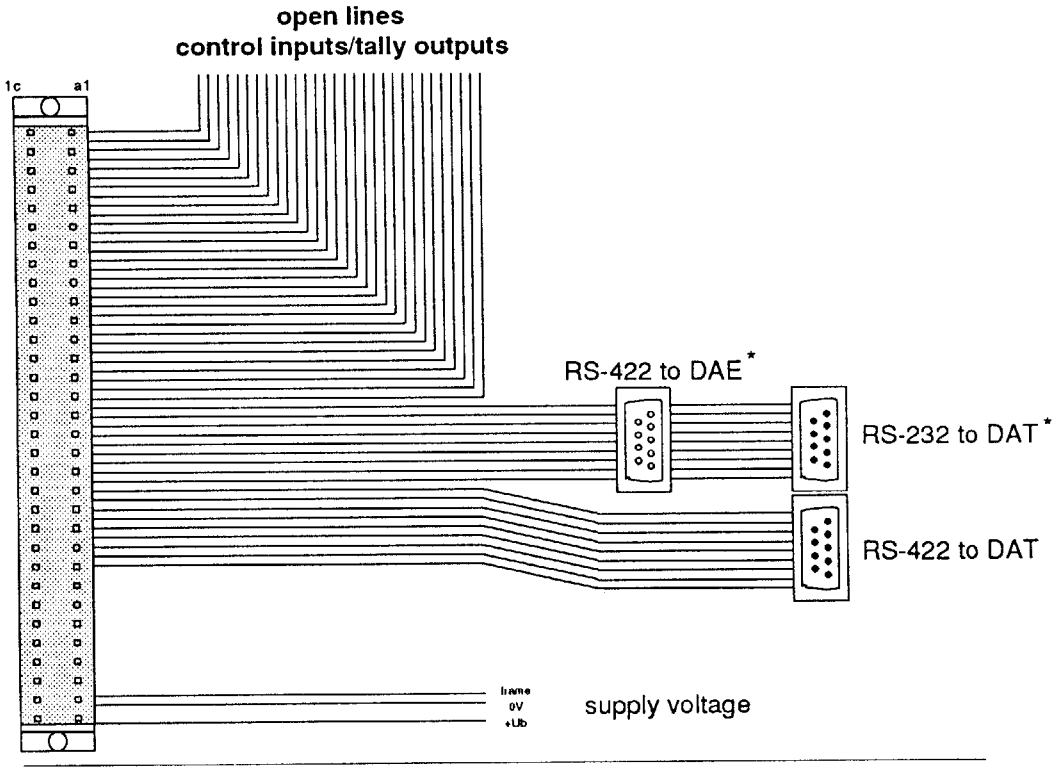
4.2. Counter-Plug-Adapter 1179

The following diagram shows the configuration of the counter-plug-adapter 1179.

Comment:

The use of connectors marked with * depends on the version (RS-422 or RS-232) of the remote control.

The RS-422 version of DAT CONTROL DC-1 features the INSERT mode operation. The Sony editor DAE-3000 must therefore be connected to "RS-422 to DAE". The RS-232 version of DAT CONTROL DC-1 only supports the RS-232 interface. In this case the "RS-232 to DAT" connector has to be used.



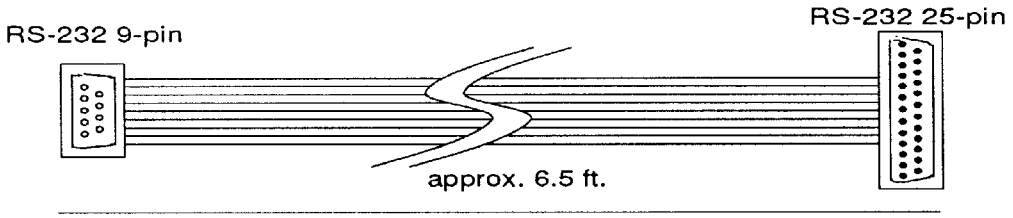
Comment:

Make sure that open lines like tally in- and output of the counter-plug-connector 1179 do not short and cause damage or faulty operation.

4.3. RS-232-Adapter

The adapter shown in the following diagramm is used to interface between a 9-pin and a 25-pin sub-D connector. The table below displays the interconnection. Abbreviations used are:

RxD - Receive Data
TxD - Transmit Data
RTS - Request to send
CTS - Clear to send
DSR - Data set ready
GND - Ground
DTR - Data Terminal ready
nc - not connected

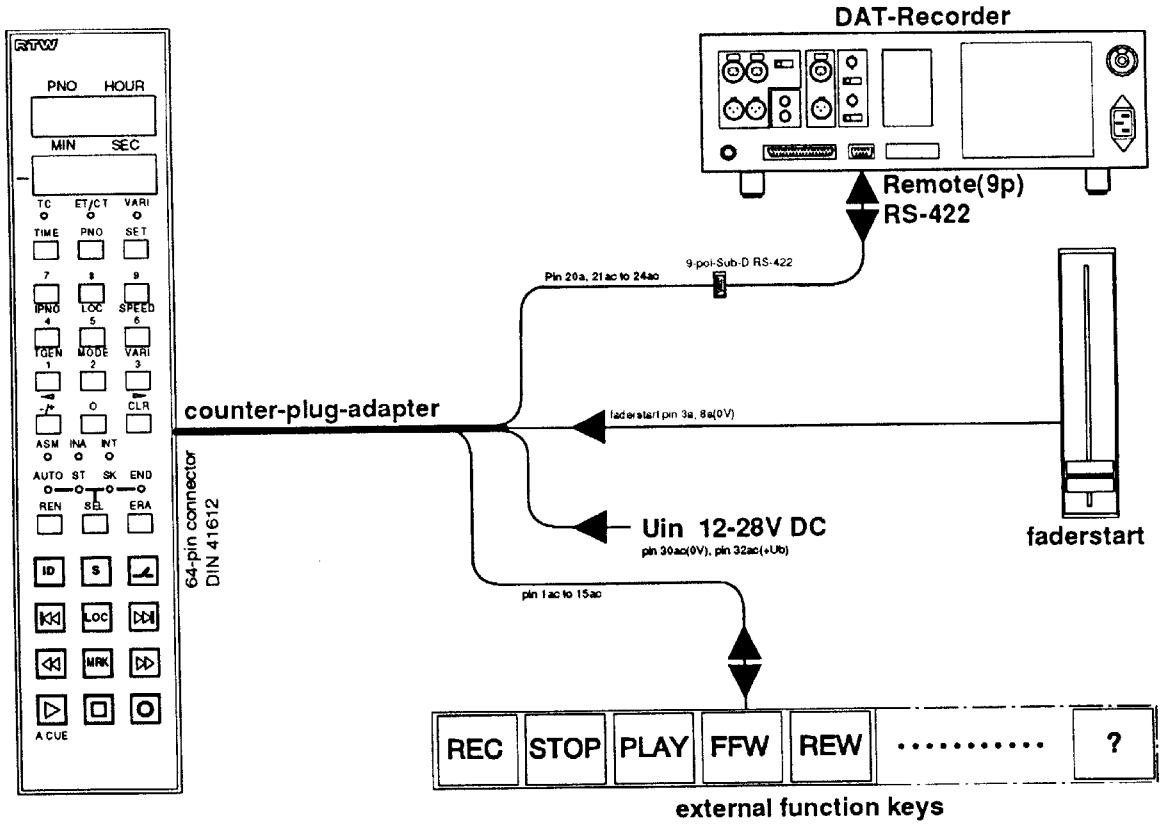


DAT-CONTROL DC-1 64-pin connector	RS-232-Adapter 9-pin.-Sub-D-female con.	RS-232-Adapter 25-pol.-Sub-D-male con.
20c (nc)	1 (-)	1 (-)
19c (TxD)	2 (TxD)	3 (RxD)
18c (RxD)	3 (RxD)	2 (TxD)
17c (DSR)	4 (DSR)	20 (DTR)
16c (GND)	5 (GND)	7 (GND)
19a (DTR)	6 (DTR)	6 (DSR)
18a (CTS)	7 (CTS)	4 (RTS)
17a (RTS)	8 (RTS)	5 (CTS)
16a (nc)	9 (-)	nc

4.4. Connecting Examples

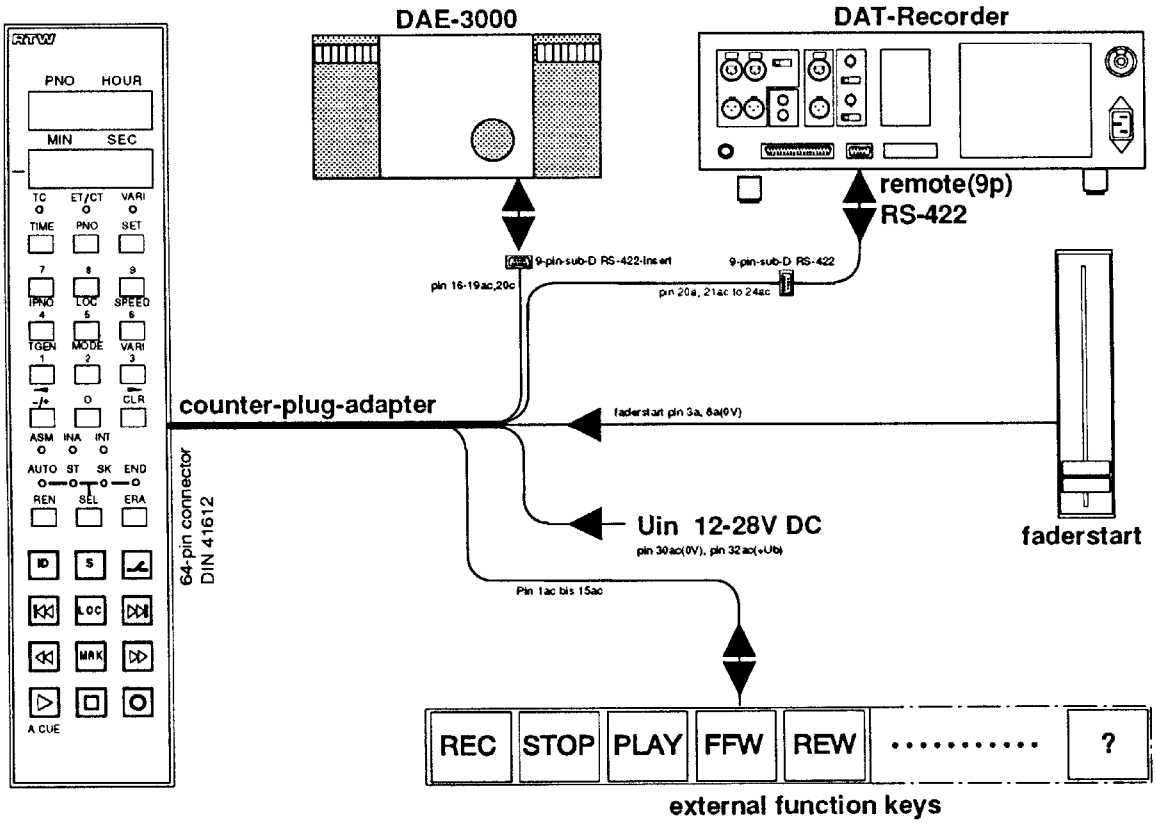
4.4.1. Operation with a DAT recorder

The following block diagram shows the connection of DAT CONTROL DC-1 RS-422-version with a DAT-Recorder.



4.4.2. Operation with DAE-3000 (Insert-Mode)

The following block diagram shows the connection of a DAT CONTROL DC-1 with RS-422 interface in INSERT mode in combination with a Sony DAE-3000 editor and a DAT recorder.

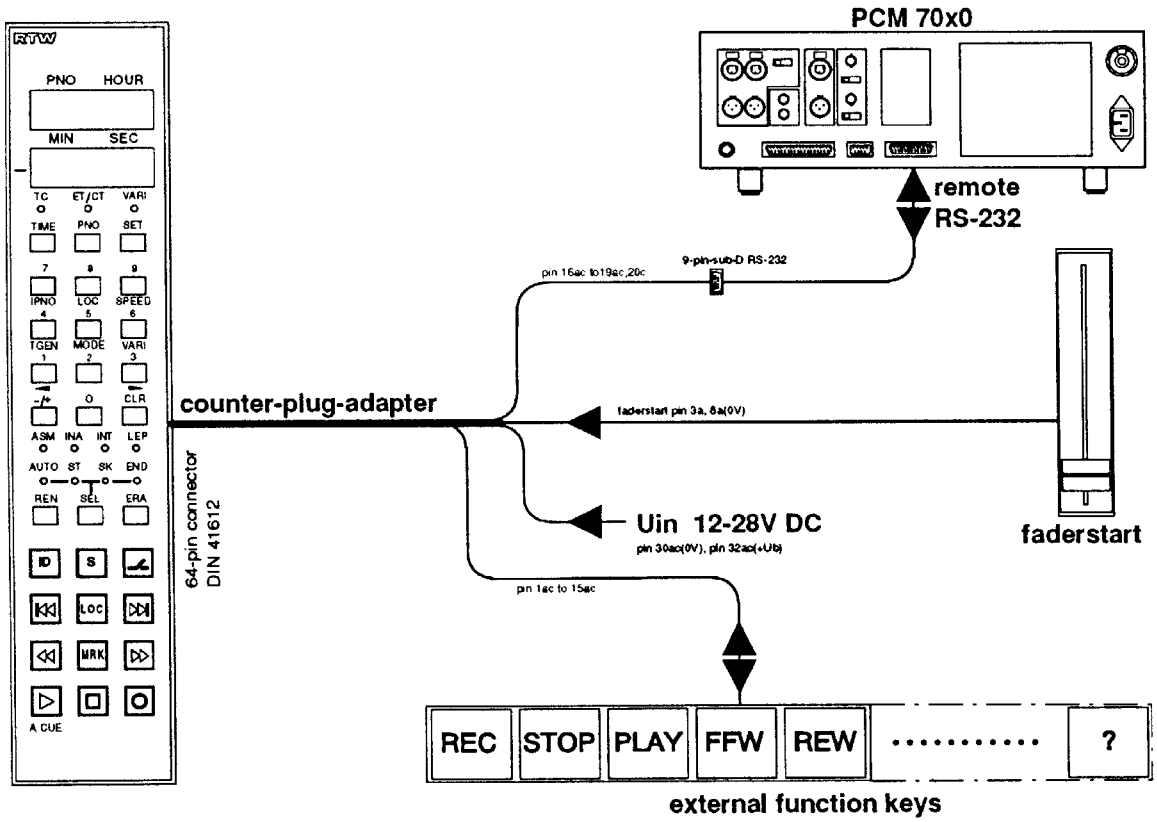


4.4.3. Operating a DAT Recorder via RS-232-Interface

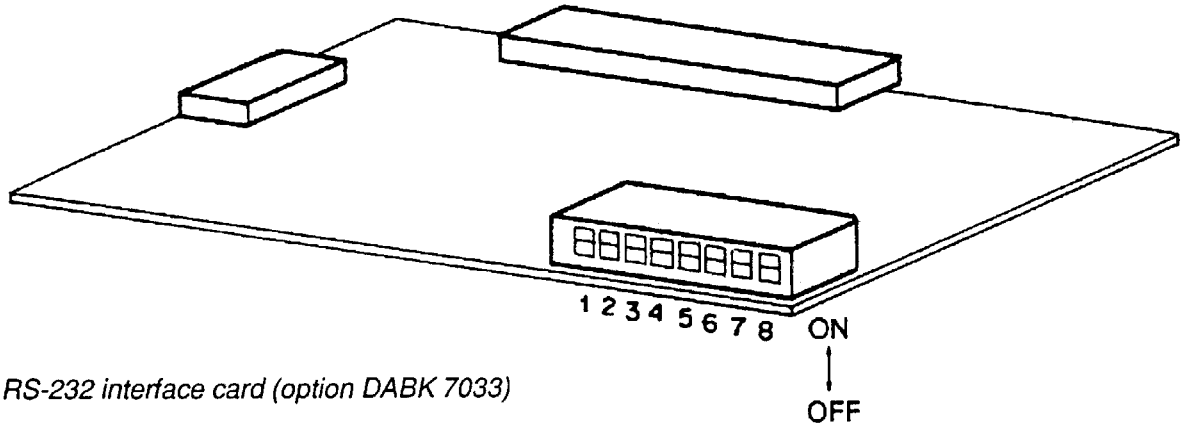
The following block diagram explains the connection of DAT CONTROL DC-1 with a Sony DAT 70x0 via RS-232 interface.

Comment:

Please make shure that the DIP-switches of the Sony interface board are in the right position. A detailed information can be found on the next page. If the settings do not match operation of DAT CONTROL DC-1 fails.



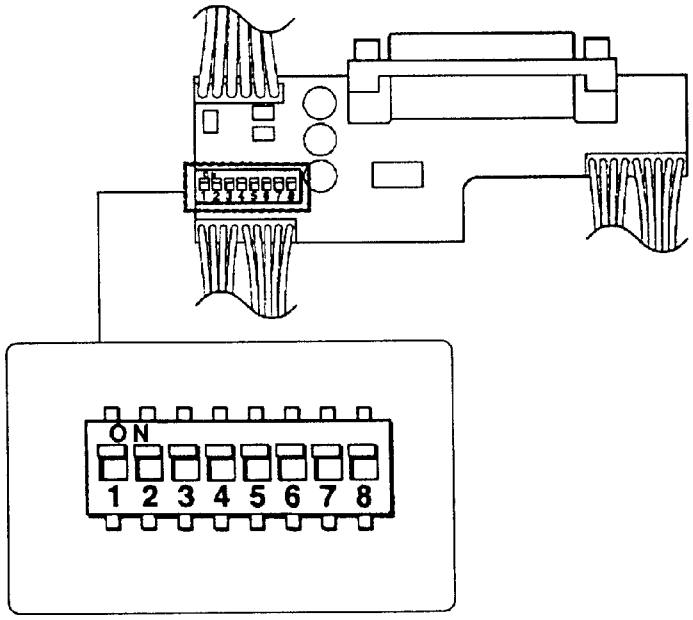
4.4.4. Location of the DIP switches of the Sony RS-232 interface board (7030/7050)



RS-232 interface card (option DABK 7033)

4.4.5. Location of the RS-232 interface card (DABK 7013) in the Sony 7010

The DABK 7013 RS-232 option is installed behind the rear connection panel. To check the DIP switch settings, turn the unit over so that the rear connection panel is facing you. Remove the 10 screws marked with an arrow and then carefully pull out the rear connection panel to reveal the DABK 7013 circuit board. Set the S 891 DIP switches as shown in the table below.



DABK 7013 RS-232 interface card

4.4.6. DIP-switch functions of the Sony RS-232-interface

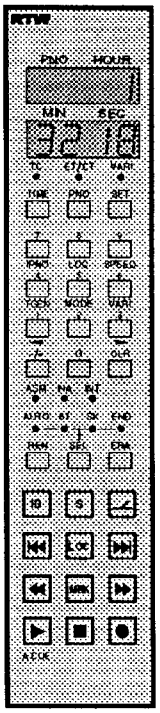
Switch	1 2 3 4	5	6	7	8
Function	Baud rate	Parity on/off	Parity odd/even	Character-length	n.u.

4.4.7. DIP-switch settings of Sony RS-232-interface

Switch	1	2	3	4	5	6	7	8
Position	OFF	OFF	OFF	ON	ON	ON	ON	OFF

5. Operation

5.1. Drive Controls



STOP Stop
Stops the tape. The key lights up when it is pressed. This key has priority over all other drive function keys. When the drive is not running the key lights up if a cassette is loaded.

Note:
Pressing the STOP key twice deactivates the STANDBY mode.

PLAY Play
Starts the drive in play mode. The key lights up when it is pressed. Holding down the PLAY key and pressing FF or REW plays the tape at 3 times normal speed. This function is only available with the DAT CONTROL DC-1.

Note:
See also auto-cue (A CUE) mode.

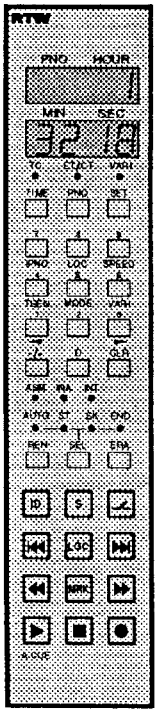
REC Record
Pressing this key together with PLAY starts recording. The REC and PLAY keys both light up during recording.

Note:
The recording mode must be specified before start of recording, otherwise the ASM, INA and INT LEDs will start blinking if you attempt to start recording.

If rEc inH (record inhibit) appears in the display this means that a record-protected cassette has been inserted in the DAT recorder. See also: SET MODE.

A display of SF Err (Sampling Frequency Error) when you press the REC key indicates a conflict between the sampling frequency defined in the SET Menu and that set in the recorder or read from the pre-formatted tape. See also: Chapter 7, Default Settings.

If neither these messages appears and the REC status LED row fails to light up when you press the REC key, this indicates that the record function has been disabled in the SET Menu.
See also: SET Menu.



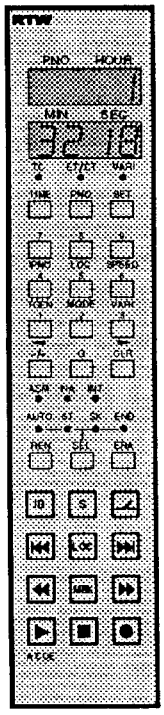
FF Fast Forward
Winds the tape forwards. The key lights up when it is pressed.

REW Rewind
Rewinds the tape. The key lights up when it is pressed.

Note:
Pressing FF or REW twice activates a slow wind mode (8x normal speed). The light in the corresponding key blinks to indicate slow wind mode.

The ID key lights up briefly during winding when the tape passes the points where ID codes have been set. See also: ID Codes.

5.2. Setting the REC Mode



SET

SET Input
Activates the Set (input) mode. SET appears in the display.

5
MODE

MODE Mode
Press this key repeatedly until the desired mode is activated.

Note:
A blinking display of iLLEGAL when this key is pressed indicates that there is a copy-protected tape in the drive.

Modes:

ASM

ASM Assemble

INA

INA Insert Audio

If an Otari DTR-90 is connected, **iA12** will appear in the display. Since the DTR-90 is a two channel unit you can choose the recording channel you wish to use. In the **iA12** mode both input channels are activated for recording. You can select any other desired combination with keys 1 and 2, which function as toggle switches (e.g. **iA1-** = recording activated for channel 1 only; **iA-2** = recording activated for channel 2 only). If you deactivate both channels the software switches to the OFF status.

INT

INT Insert Subcode

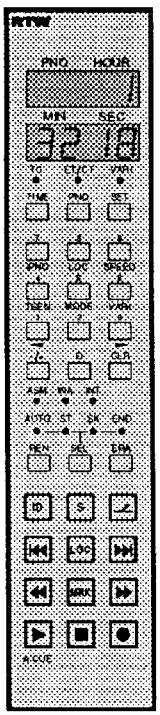
OFF Switch off recording mode
Pressing CLEAR in the SET mode always deactivates the recording mode.
The LED of the selected recording mode blinks.

SET

SET Input
Terminates and stores the entry.

Note:
The before blinking LED then lights up permanently to indicate the selected recording mode. You can now start the recording by pressing REC and PLAY.

5.3. The TIME, ET/CT and TID Display Modes and TID



TIME

TIME Time display
Activates the time display and selects the desired mode. Pressing the key repeatedly switches between Timecode and Elapsed Time / Tape Counter.

TC ●

TC Timecode Display
Lights up when Timecode display mode is selected.

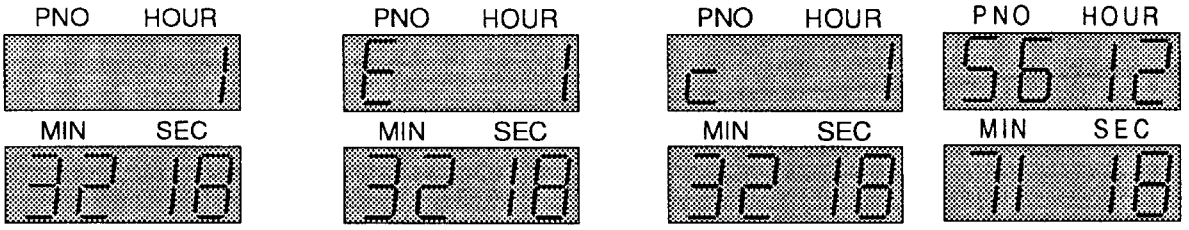
ET/CT ●

ET/CT Elapsed Time / Tape Counter
Lights up when Tape Counter mode is selected.

TID Tape-ID (archivnumber) (no signalisation)
Display of aTape-ID (archivnumber) which is on the tape.
See also Chapter 7: Default settings, TID.

Note:
The ELAPSED / COUNTER display preselection is made in the Default Menu. See also: Chapter 7, Default Settings.

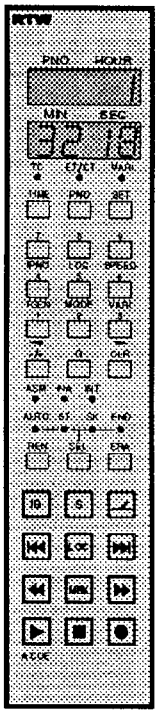
In units with an RS-422 port the tape counter value is read from the recorder. If you are using an RS-232 port the tape counter values from the recorder are not available; instead, they are calculated from the TCD values. The tape counter is reset when the tape is inserted. This means that the tape counter displays the elapsed play time of the tape.



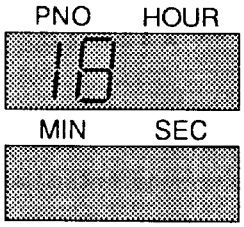
TC-Mode ELAPSED-Mode COUNTER-Mode Tape-ID-Mode

DAT CONTROL DC-1 display

5.4. PNO Display Mode



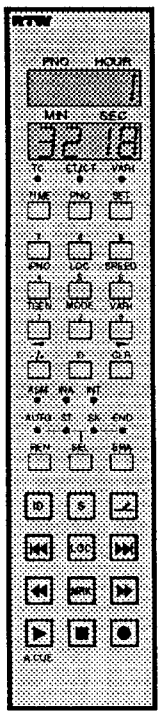
PNO Program Number
Activates the PNO (Program No.) display. Pressing this key switches from time display to program number display.



DAT CONTROL DC-1 display

5.5. ID Codes

5.5.1. Recording ID Codes



SET

SET
Activates the SET (input) mode. SET appears in the display.

5
MODE

MODE Recording Mode
Press to select recording mode. E.g. INT - Insert Subcode.

Note:
The procedure for recording ID codes in ASM (Assemble) mode is identical. Subcode ID data cannot be recorded in INA (Insert Audio) mode.

INT ●

INT Insert Subcode
The LED blinks.

SET

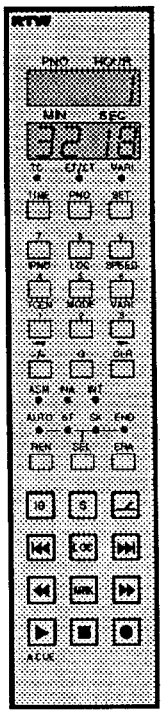
SET
Terminates and stores the entry.

INT ●

INT Insert Subcode
The LED remains on continuously.

5.5.2. Auto ID

When the AUTO mode is activated a start ID is written to the tape whenever you start recording (PLAY + REC) or press



ID

ID Write ID
If you wish, you can also assign a program number (PNO) at the same time (see SET Menu, id_PNO).

Note:
In the case of Sony DAT recorders with software version 4.0 or higher operating in ASM mode a PNO is always recorded automatically, irrespective of the setting in the SET Menu of the DAT CONTROL DC-1. Subsequent assignment of PNOs in INT (Insert Subcode) mode is not possible with this software version.

After selecting the recording mode you can select the AUTO mode by pressing:

SEL

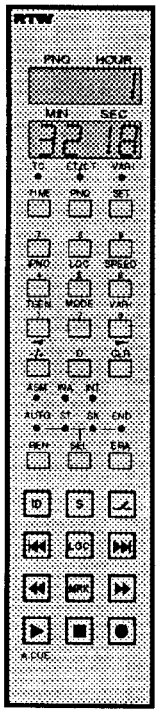
SEL Select ID type (Start, Skip, End)

AUTO ●

AUTO Auto ID Mode
The LED of the selected option lights up.

5.5.3. ST - Start ID

In the ST mode a Start ID is written to the tape whenever you press



ID

ID Write ID
Note that pressing PLAY + REC does ***not*** write an ID in this mode.

After defining the recording mode you can select the ST mode by pressing

SEL

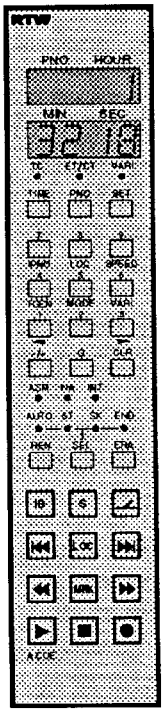
SEL Select ID type (Start, Skip, End)

ST
●

ST Start ID Mode
The LED of the selected option lights up.

5.5.4. SK - Skip ID

In the SK (Skip ID) mode a skip ID is written to the tape whenever you press



ID

ID Write ID
Note that pressing PLAY + REC does **not** write an ID in this mode.

After defining the recording mode you can select the SK mode by pressing

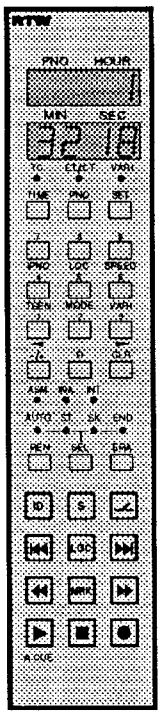
SEL

SEL Select ID type (Start, Skip, End)

SK ●

SK Skip ID Mode
The LED of the selected option lights up.

5.5.5. End - End ID



In the End (End ID) mode an end ID is written to the tape whenever you press

ID

ID Write ID
Note that pressing PLAY + REC does ***not*** write an ID in this mode.

After selecting the recording mode you can select the End mode by pressing

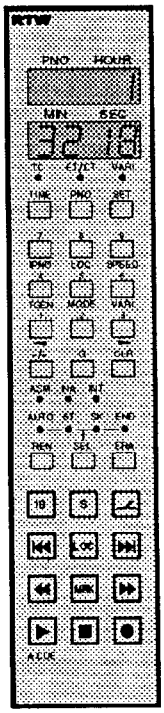
SEL

SEL Select ID type (Start, Skip, End)

END ●

END End ID Mode
The LED of the selected option lights up.

5.5.6. ERA - Erase ID



SEL

ERA

The ERA (erase) function enables you to erase IDs from your tapes. This function can only be used when the recorder is in INT (Insert Subcode) mode.

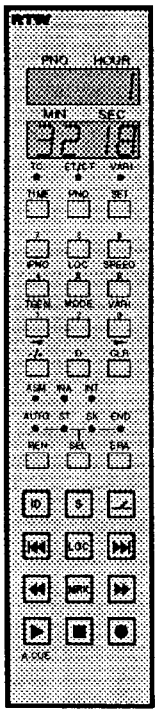
First define the type of ID to be erased by pressing

SEL Select ID type (Start, Skip, End)
The LED of the selected ID type lights up.

ERA Erase
Then press ERA to erase the last ID of the selected type (Start, Skip or End).

Note:
The winding speed when searching for Skip IDs is significantly slower than for Start or End IDs.

5.5.7. SET IPNO



SET

Pressing

SET

followed by

7

IPNO

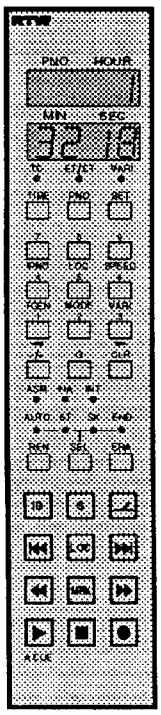
IPNO Initial Program Number
allows you to enter a defined program number, which is then written with the ID in AUTO ID mode. The IPNO is also used as the starting PNO for the RENumber function.

SET

SET
Terminates and stores the entry.

Note:
In Set-Menu the default setting 'ID-PNO' must be activated.

5.5.8. REC + ID-Search-FW and REC + ID-Search-REV



Pressing

REC

together with

ID-Search-FW

positions the tape at the end of the last recording. In Display-Mode 'PN' the input of the searched ID-Position can be numeric.

Pressing

REC

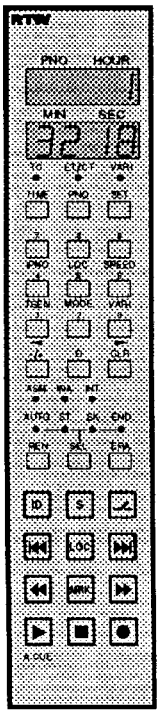
together with

ID-Search-REV

positions the tape at the beginning of the last recording.

Note:
The preroll time set in the SET menu is not used in either of these Locate modes.

5.5.8.1. SET LOC



SET

8

LOC

SET

Pressing

SET

followed by

LOC Locate Position
allows you to enter a numeric time value to define the position to be located with the Locate command.

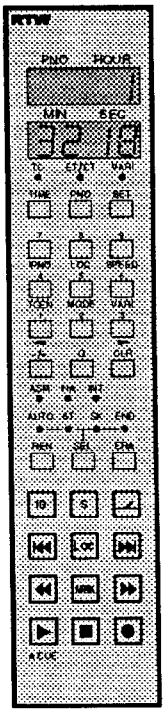
SET
Terminates and stores the entry.

Note:
When the tape is being positioned to the defined locate time the DAT CONTROL DC-1 uses the preroll value entered in the SET Menu (see the section on PrEroL in the SET Menu chapter). Using the MARK function (MRK) overwrites the value entered with SET LOC SET.

The LOC function gets its information from the DAT timecode signal. LOC cannot be used with recordings without timecodes (i.e. DAT cassettes from consumer recorders).

Entering a time followed by PLAY in timecode display mode will cause the recorder to execute the LOC command and then switch to play.

5.5.9. SET TGEN



Pressing

SET

SET

followed by

4
TGEN

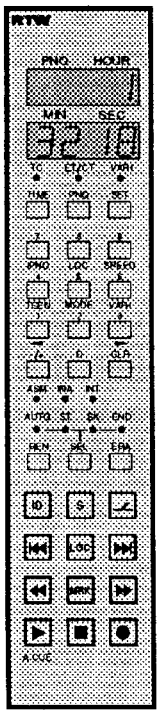
TGEN Timecode Generator
allows you to preset the timecode generator in the DAT recorder to a defined time.

Note:
The time you enter will only be stored if you press REC + PLAY (in that order) directly after making the entry. If you press PLAY + REC the value will not be accepted by the DAT recorder.

SET

SET
Terminates and stores the entry.

5.6. SET VARI



Pressing

SET

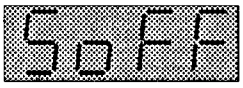
SET

followed by

6 VARI

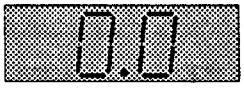
VARI Variable Speed
switches the DAT CONTROL DC-1 to Vari-Speed Mode. The following display appears:

PNO HOUR



- Variable speed on/off.

MIN SEC



- Factor in percent.

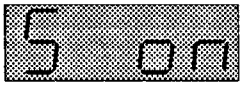
Pressing

6 VARI

VARI Variable Speed
again activates the Vari-Speed Mode.

The upper display switches to:

PNO HOUR



You can adjust the Vari-Speed factor with the keys

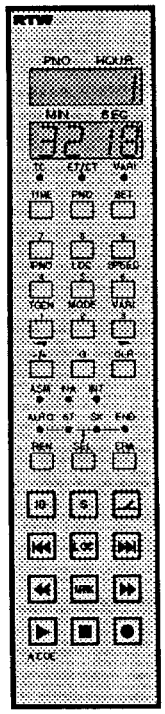
1

Decrement

and

3

Increment



Pressing the PLAY key switches the recorder to variable speed mode play. The display of the DAT CONTROL DC-1 remains unchanged. While the tape is being played you can adjust the speed with the keys

Decrement

and

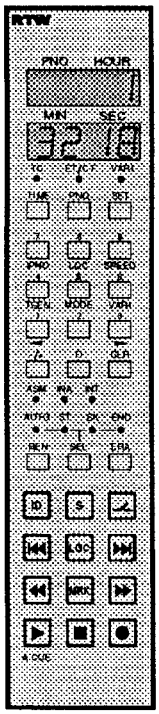
Increment

You can also toggle back and forth between the variable and normal speed by pressing

VARI Variable Speed

SET
Terminates the Vari-Speed mode, retaining the parameters that have been set.

5.6.1. SET SPEED



SET

Pressing

SET

followed by

9

SPEED

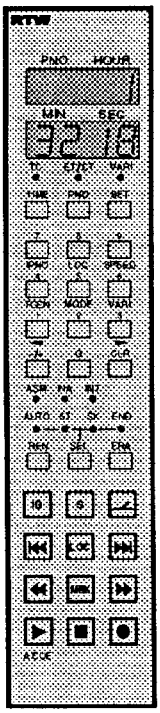
SPEED Vari-Speed Factor
allows you to enter the Vari-Speed factor as a numeric value without switching to the Vari-Speed Menu. This can be entered both as a preset or while the recorder is actually playing a tape. The Vari-Speed mode must be activated for this to be possible.

SET

SET

Terminates and stores the entry.

5.7. MRK



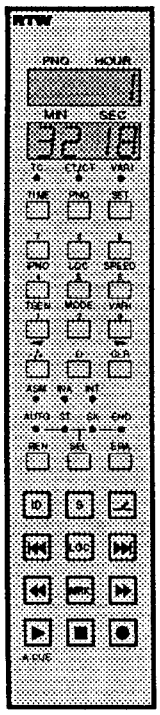
MRK

MRK Mark
writes the timecode value shown in the display to the LOC memory register.

Note:
The Preroll value set in the SET Menu is considered when the Locate command is used to find a tape position defined with MRK. The MRK function overwrites any time written into the memory with SET LOC.

5.8. Direct Entries for Tape Positioning

5.8.1. ID Search FW / ID Search REV



Pressing

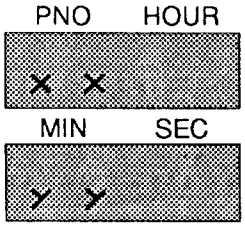
⏮ **REV** Reverse ID Search

or

⏭ **FW** Forward ID Search

makes the DAT recorder position the tape to the last or next ID code on the tape, respectively. Pressing the keys more than once accumulates the number of ID positions to be searched for.

Display:

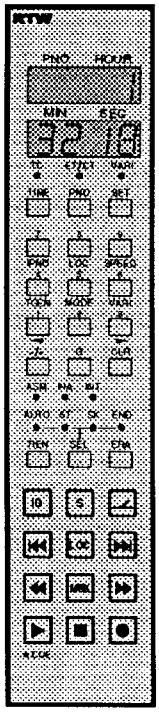


xx = Program number

yy = Number of IDs to be ignored

Note:
If you press PLAY directly after entering an ID REV or ID FW command the recorder will automatically switch to play mode as soon as the specified ID is reached.

5.8.2. LOC



In the TC and PNO display modes you can position the tape to a desired location by first entering a time value (or using increment/decrement in PNO mode) and then pressing

LOC Locate Position

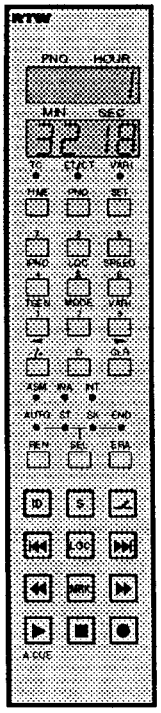
If you press PLAY directly after the LOC key the PLAY key will blink during the locate operation and the recorder will automatically switch to play mode as soon as the location has been found.

Note:
If the direct numeric entry of the time value is followed by the PLAY command, the DAT CONTROL DC-1 will first execute the LOC command; when the specified tape position is reached, it will then switch to play.

You can erase the entered value by pressing

CLR Clear
Pressing this key twice deactivates the direct entry mode.

5.9. Single Play

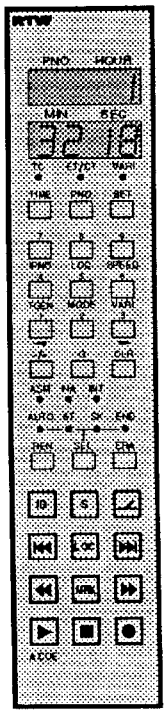


Pressing

S Single Play

activates the Single Play mode. The DAT recorder first plays the current take. When the next Start ID mark is reached he executes the command which was selected in the SET Menu under SPLY .
See the SPLY-section in the SET Menu chapter.

5.10. Fader Start / A CUE



Pressing

Fader Start

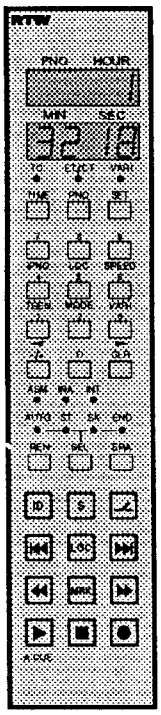
disables all the functions of the DAT CONTROL DC-1 except STOP and waits for the opening or closing of an external fader contact. For details see the FdrlGc (Fader Logic) and FdrPol (Fader Polarity) sections in the SET Menu chapter.

You can switch the DAT recorder to play in the Fader Start mode by holding down

A CUE

A CUE Auto Cue
When you release the key the tape is automatically rewound to the original position.

5.11. LEP



SET

CLR

LEP

Pressing

SET

followed by

LEP Last Error Point

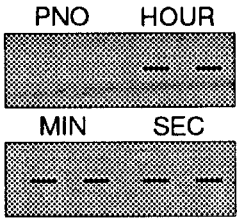
positions the tape at the point where the DAT recorder set the last error flag.

Note:
This function is only supported in the RS-232 version of the DAT CONTROL DC-1. The Preroll value set in the SET Menu is considered when the Locate command is executed.

6. Warning Displays

6.1. -- -- --

Display:



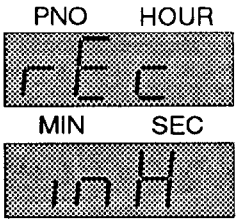
-- -- -- No display

Explanation:

There is no TC data on the DAT tape.

6.2. Record Inhibit

Display:



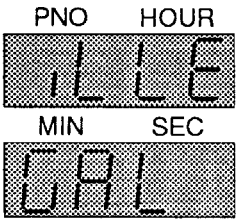
rEc InH - Record Inhibit

Explanation:

You have attempted to record on a record-protected cassette.

6.3. Illegal

Display:



iLLEGAL - Illegal

Explanation:

The selected function is not permitted in this situation.

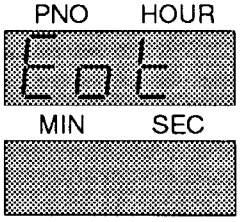
Examples:

- Attempt to set the recording mode with a record-protected cassette in the recorder.

- Attempt to record with Vari Speed switched on.

6.4. EOT

Display:



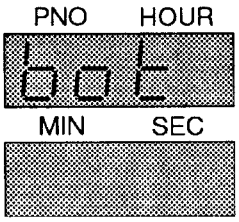
Eot - End of Tape

Explanation:

End of tape reached.

6.5. BOT

Display:



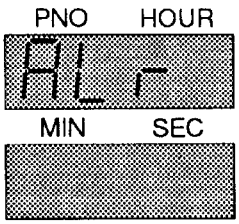
bot - Begin of Tape

Explanation:

Beginning of tape reached.

6.6. ALR

Display:



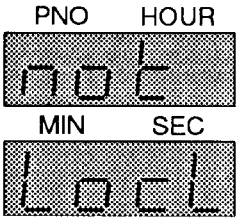
ALr - Alarm

Explanation:

General error message from the connected DAT recorder.
See the recorder manual for details.

6.7. Not LocL

Display:



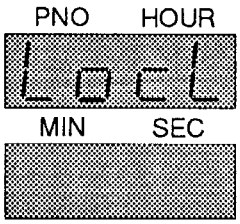
not LocL - Not Local

Explanation:

Error message specific to the RS-232 version of the DAT CONTROL DC-1. The connected DAT recorder is not in LOCAL mode. The 7030 and 7050 recorders can only be controlled via the RS-232 port when they are in LOCAL.

6.8. LocL

Display:



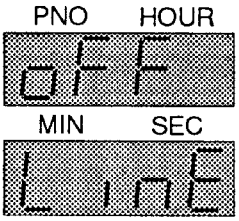
LocL - Local

Explanation:

Error message specific to the RS-422 version of the DAT CONTROL DC-1. The connected DAT recorder is not switched to REMOTE mode.

6.9. oFFLinE

Display:



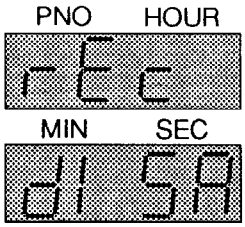
oFF LinE - Offline

Explanation:

Error message specific to the RS-232 version of the DAT CONTROL DC-1. Communications protocol error between the connected DAT recorder and the DAT CONTROL DC-1.

6.10. REC DISA

Display:



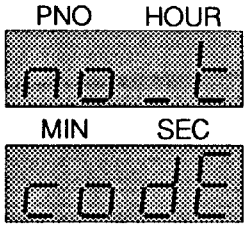
rEc dISA - Record disabled

Explanation:

You have attemptet to start recording or to define a record mode, even though the recording function is not acivated in default settings.

6.11. NO-TCODE

Display:



no-tcodE - no Timecode

Explanation:

Error message specific to the RS-422 version of the DAT CONTROL DC-1. You have attempted to execute the LOCATE, MARK, RECIN or RECOUT command on a tape without Timecode.

7. Default Settings

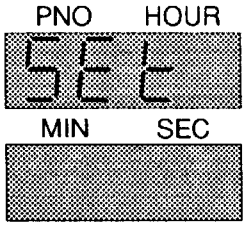
7.1. SET Menu

The default settings are stored in an EEPROM. You can change these settings in the SET Menu, which is activated by pressing

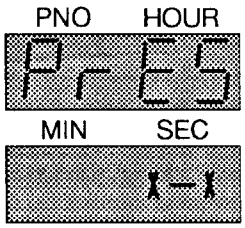
SET

SET for approx. 2 sec.

This results in a display of



followed by



where x.x is the version number of the software in your DAT CONTROL DC-1 unit. No entries can be made at this point.

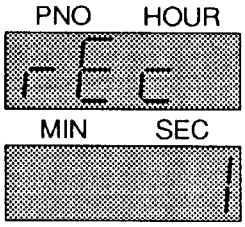
Pressing

SET

SET
again activates the REC option.

7.2. Menu parameter REC

Display



Default = 1

The REC parameter enables or disables all the remote control unit's record functions. This is particularly useful in broadcasting operation to prevent accidental erasure of cassettes that are not record-protected.

The default setting is "1". To change it, press

3

INCREMENT

Two settings are possible:

1 = Record operation enabled and

0 = Record operation disabled

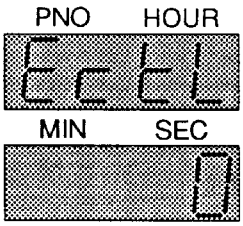
To terminate and confirm the entry, press

SET

SET

7.3. Menu parameter ECTL

Display



Default = 0

The ECTL (External Control) parameter activates or deactivates the parallel external control inputs for remote control via the 64-pin VG connector (this includes the fader start line).

The default setting is "0". To change it, press

3

INCREMENT

Two settings are possible:

1 = Parallel inputs activated and

0 = Parallel inputs deactivated

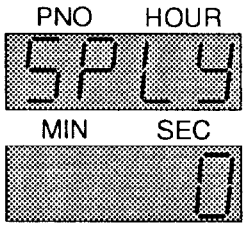
To terminate and confirm the entry, press

SET

SET

7.4. Menu parameter SPLY

Display



Default = 0

If the SPLY (Single Play) parameter is set to "1", the Single Play function is automatically activated when the unit is switched on.

The default setting is "0". To change this, press

3

INCREMENT

Two settings are possible:

1 = Single Play activated after power-up and

0 = Single Play not activated after power-up.

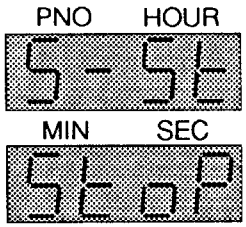
To terminate and confirm the entry, press

SET

SET

7.5. Menu parameter SPLY-MODE

Display



Default = 0

Durch Betätigen der Tasten

3 ► **INCREMENT**

1 ◄ **DECREMENT**

the desired function can be selected. The following function are available:

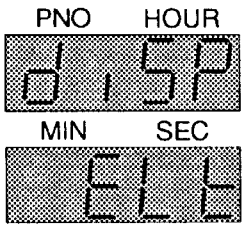
S-ST **STOP**	START-ID STOP When a Start ID is reached the recorder stops playing and switches to STOP mode.
S-ST **RTN**	START-ID RETURN When a Start ID is reached the recorder stops playing and rewinds the tape to the beginning of the previous Start ID.
S-ST **EJEC**	START-ID EJECT When a Start ID is reached the recorder stops playing and ejects the tape cassette.
S-SK **STOP**	SKIP-ID STOP When a Skip ID is reached the recorder stops playing and switches to STOP mode.
S-SK **RETN**	SKIP-ID RETURN When a Skip ID is reached the recorder stops playing and rewinds the tape to the beginning of the previous Start ID.

S-SK **EJEC**	SKIP-ID EJECT When a Skip ID is reached the recorder stops playing and ejects the tape cassette.
S-SK **NEXT**	SKIP-ID NEXT When a Skip ID is reached the recorder stops playing and winds the tape on to the beginning of the next Start ID.
S-ED **STOP**	END-ID STOP When an End ID is reached the recorder stops playing and switches to STOP mode.
S-ED **RETN**	END-ID RETURN When an End ID is reached the recorder stops playing and rewinds the type to the beginning of the previous Start ID.
S-ED **EJEC**	END-ID EJECT When an End ID is reached the recorder stops playing and ejects the tape cassette.

SET
terminates the entry and stores the selected setting.

7.6. Menu parameter DISP ELT / DISP CTR

Display



Default = DISP ELT

In addition to the TC display, the DAT CONTROL DC-1 can also display either ELAPSED TIME (DISP ELT), i.e. the time which has elapsed since the last Play or Rec command, or COUNTER TIME (DISP CTR), i.e. the tape counter time.

The default setting is DiSP ELT. To change this, press

3 ►

INCREMENT

Two settings are possible:

DISP ELT = ELAPSED TIME and

DISP CRT = COUNTER TIME (tape counter)

To terminate and confirm the entry, press

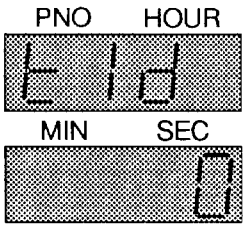
SET

SET

Note:
The DISP CTR function receives its information from the DAT timecode signal, not from tacho clock pulses. The DISP CTR display is not possible with recordings that do not have timecode (e.g. DAT cassette from a consumer recorder).

7.7. Menu parameter TID

Display



Default = 0

When the TAPE-ID parameter is set to 0, pressing the display key TIME displays the Tape-Id as well.

You can change the default setting with

3

INCREMENT

Two settings are possible

1 = Display possible and

0 = Display not possible

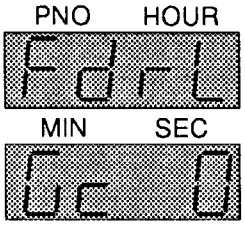
To terminate and store the entry, press

SET

SET

7.8. Menu parameter FDR LGC

Display



Default = 0

When the FDR LGC (Fader Logic) function is activated ("1"), the Fader Start Ready function is cancelled after the fader is opened. The DAT recorder is then ***not*** switched to STOP when the fader is closed again.

The default setting is "0". To change this, press

3

INCREMENT

Two settings are possible:

1 = Fader Start, no STOP on closing and

0 = Fader Start, STOP on closing

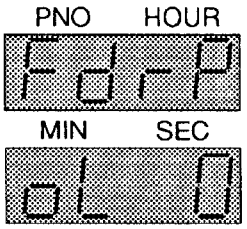
To terminate and confirm the entry, press

SET

SET

7.9. Menu parameter FDR POL

Display



Default = 0

When the FDR POL (Fader Polarity) parameter is set to "1", PLAY is activated when the fader contact is opened; when it is set to "0", PLAY is activated when the contact is closed.

The default setting is "0". To change this, press

3

INCREMENT

Two settings are possible:

1 = PLAY on Open and

0 = PLAY on Close

To terminate and confirm the entry, press

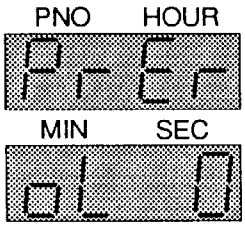
SET

SET

Note:
Please note that the Fader Start mode can only be used when the ECTL (External Control enable) parameter is set to "1".

7.10. Menu parameter PREROL

Display



Default = 0

When the LOC (Locate) function is used, the DAT tape is positioned ahead of the actual position entered by the offset entered in the PREROL parameter (0-9 sec).

The default setting is "0". To change this, press

3 **INCREMENT**

or

1 **DECREMENT**

You can vary the Preroll Time from

0 = 0 sec to

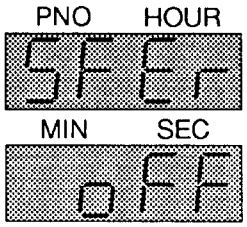
9 = 9 sec, in 1 second steps.

To terminate and confirm the entry, press

SET **SET**

7.11. Menu parameter SFER

Display



Default = off

If a frequency (48, 44 or 32) is set in the SFER (Sampling Frequency Error) parameter, the system checks that the sampling frequency set in the DAT CONTROL DC-1 matches the frequency on the DAT tape (if present) before recording begins. If the frequencies do not match the recording is aborted with the error message "SFER".

The default setting is "off". To change this, press

3 ►

INCREMENT

or

1 ◄

DECREMENT

There are four possible settings:

48 = 48 kHz
44 = 44.1 kHz
32 = 32 kHz and
off

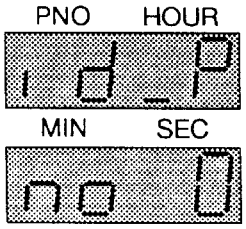
To terminate and confirm the entry, press

SET

SET

7.12. Menu parameter ID_PNO

Display



Default = 0

When the ID_PNO (ID with Program No.) is set to "1", a program number is automatically written together with every ID when recordings are made in ASM (Assemble) mode.

The default setting is "0". To change this, press

3 **INCREMENT**

or

1 **DECREMENT**

Two settings are possible:

1 = Automatic PNO assignment on and

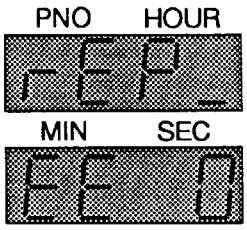
0 = PNO assignment off

To terminate and confirm the entry, press

SET SET

7.13. Menu parameter REP_EE

Display



Default = 0

The REP_EE parameter defines in which oparation mode the recorder should be automatically switched to "EE" (input).

The default setting is "0". To change this, press

3

INCREMENT

Three settings are possible:

0 = no function. Operation mode defined via REPRO- (DAT CONTROL) or INPUT-/MONITOR- (Sony 70xx) key will not be effected by any tape transport control command and

1 = Change machine mode to EE (Input) for tape transport commands STOP and REC. Once the recorder is set to EE, input will be used for all FFW, REW and LOC commands also. and

2 = Change machine mode to EE (Input) for STOP mode only.

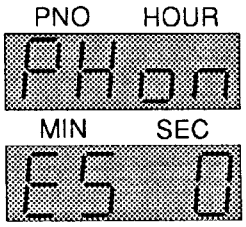
To terminate and confirm the entry, press

SET

SET

7.14. Menu parameter PHONES

Display



Default = 0

The PHONES parameter defines whether the headphone output of the Otari DTR90 is enabled or disabled in the Fader Start Ready mode.

The default setting is "0". To change this, press

3

INCREMENT

Two settings are possible:

1 = Phones output enabled and

2 = Phones output disabled

To terminate and confirm the entry, press

SET

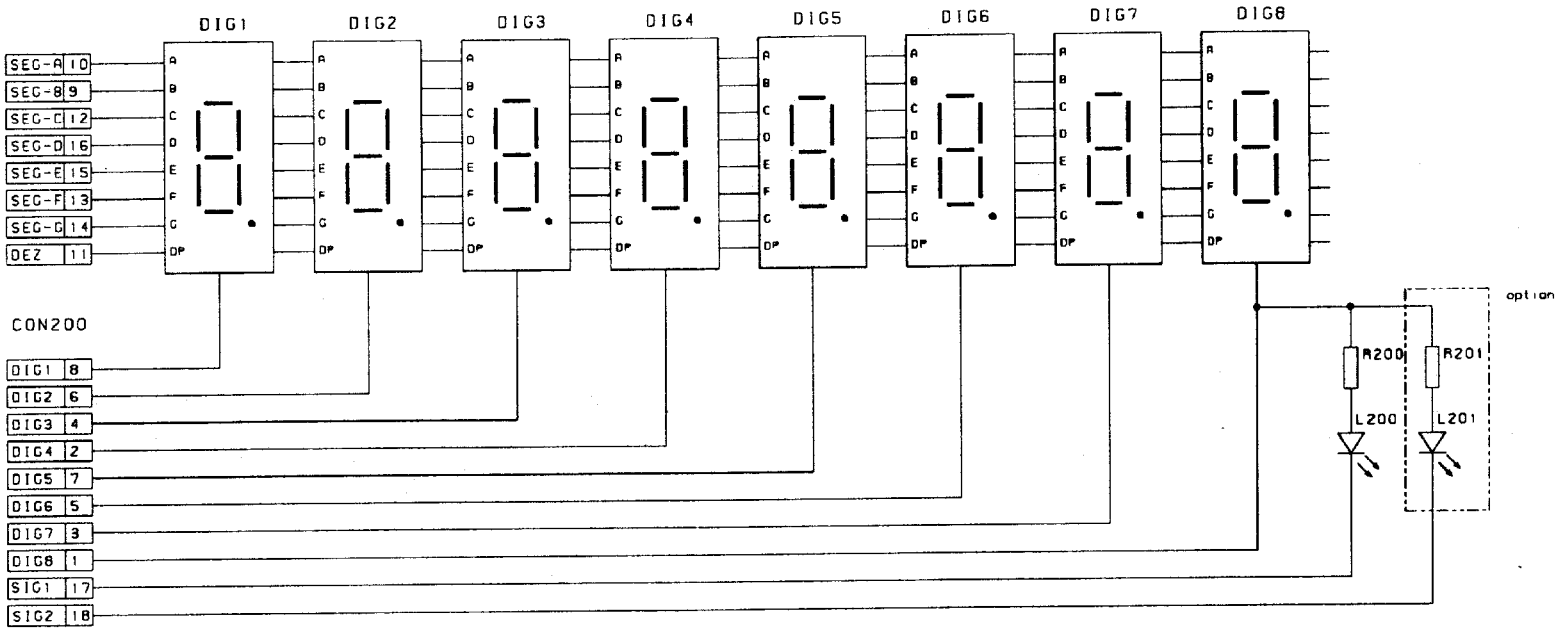
SET

Note:
This function is only supported by the software of the Otari DTR 90.

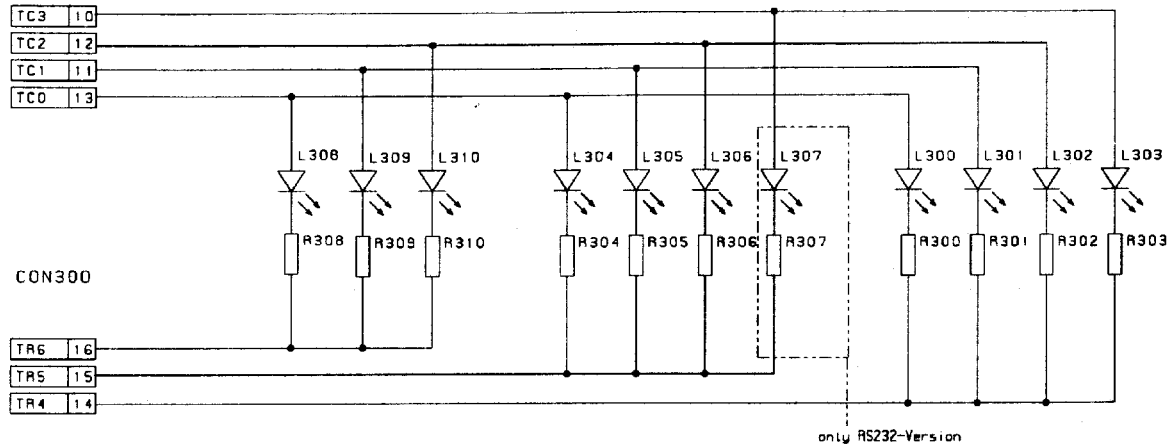
8. Specifications

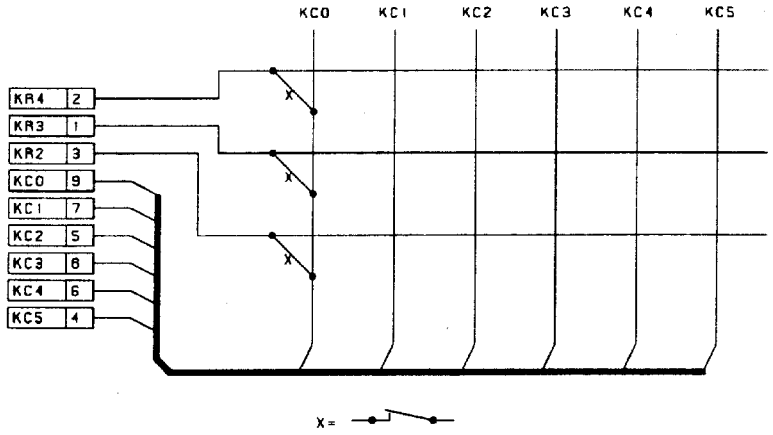
Remote control interface:	SONY 9-pin (RS-422), RS-232 (option)
Parallel control inputs:	TTL compatible, 5 Volts, active low Functions: Stop, Play, Rec, Rew, FF, Mark, ID-Search FW, ID-Search Rev, Locate, ID-Write, Single Play, Fader Start Ready, Fader Start
Parallel control outputs:	Open collector outputs E_{cemax} = 70 V, I_{max} = 5 mA Functions: Stop, Play, Rec, Rew, FF, Mark, ID-Search FW, ID-Search Rev, Locate, ID, Single Play, Fader Start Ready
Default settings:	Stored in non-volatile memory
Power supply:	12 V - 28 V DC
Power consumption:	12 V - 300 mA 28 V - 160 mA
Ambient temperature:	0° - 40° Celsius
Connector:	DIN 41612 64-pin plug connector

9. Circuitry information

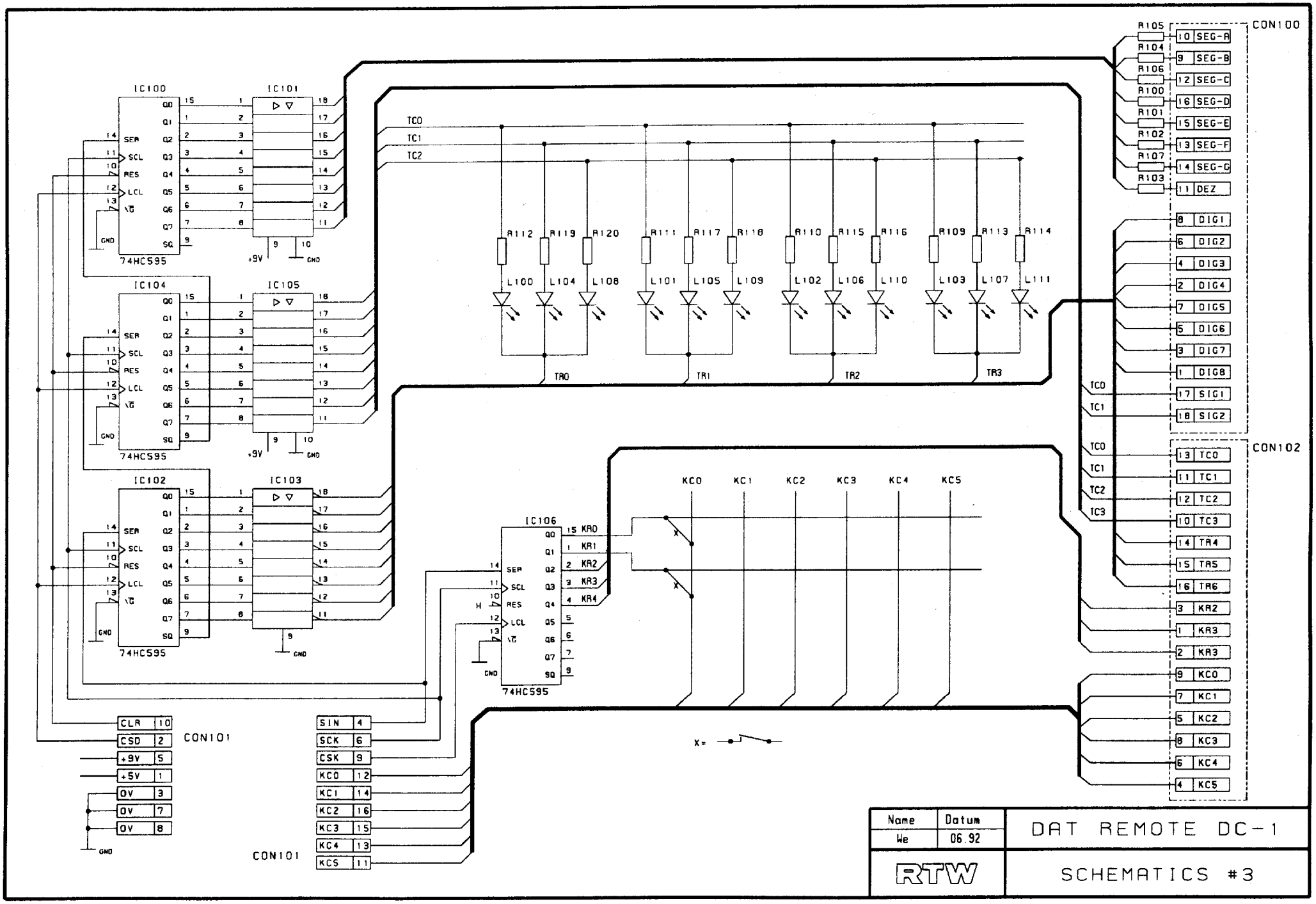


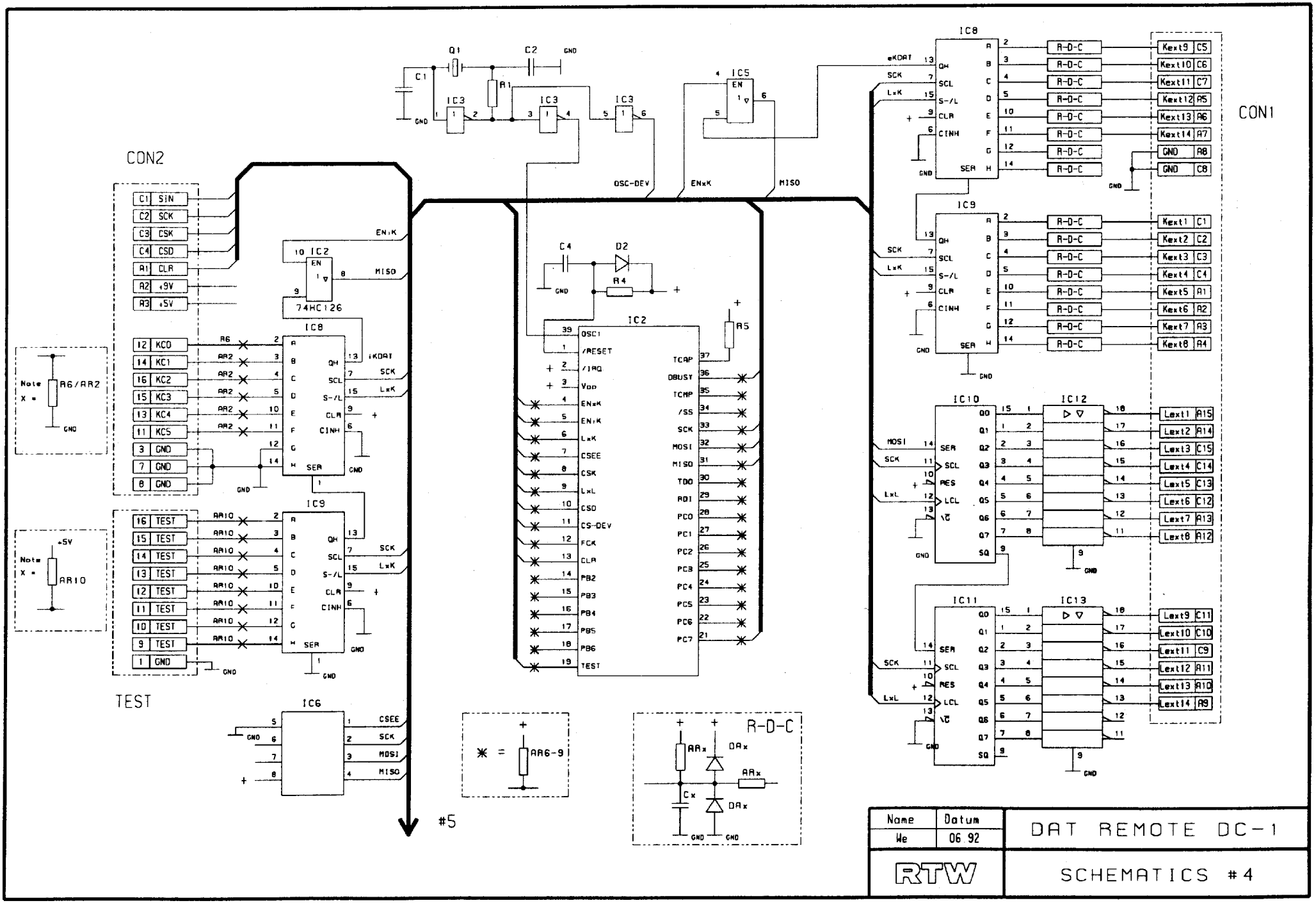
Name	Datum	DAT REMOTE DC-1
We	06 92	
RTW		SCHEMATICS #1

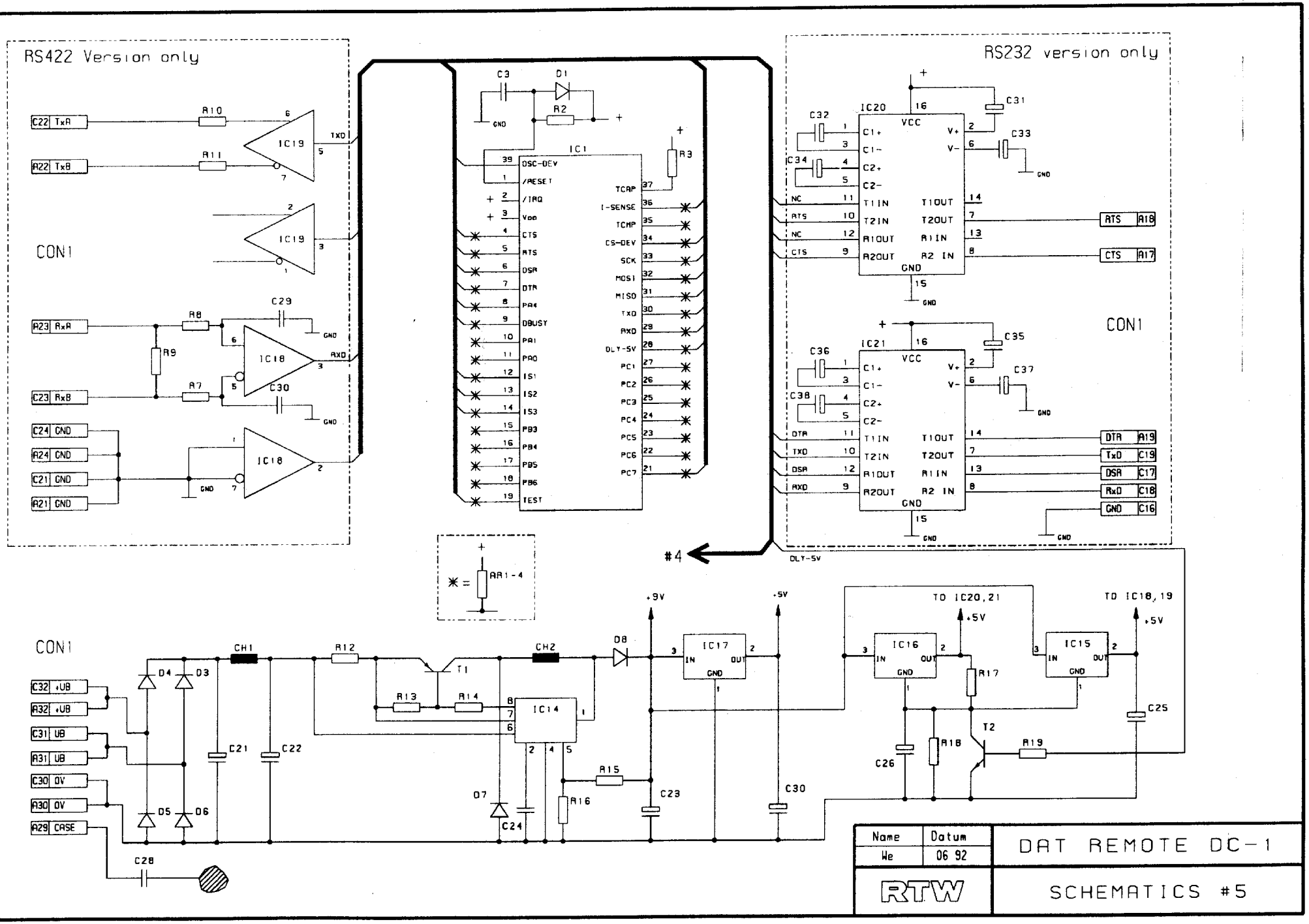


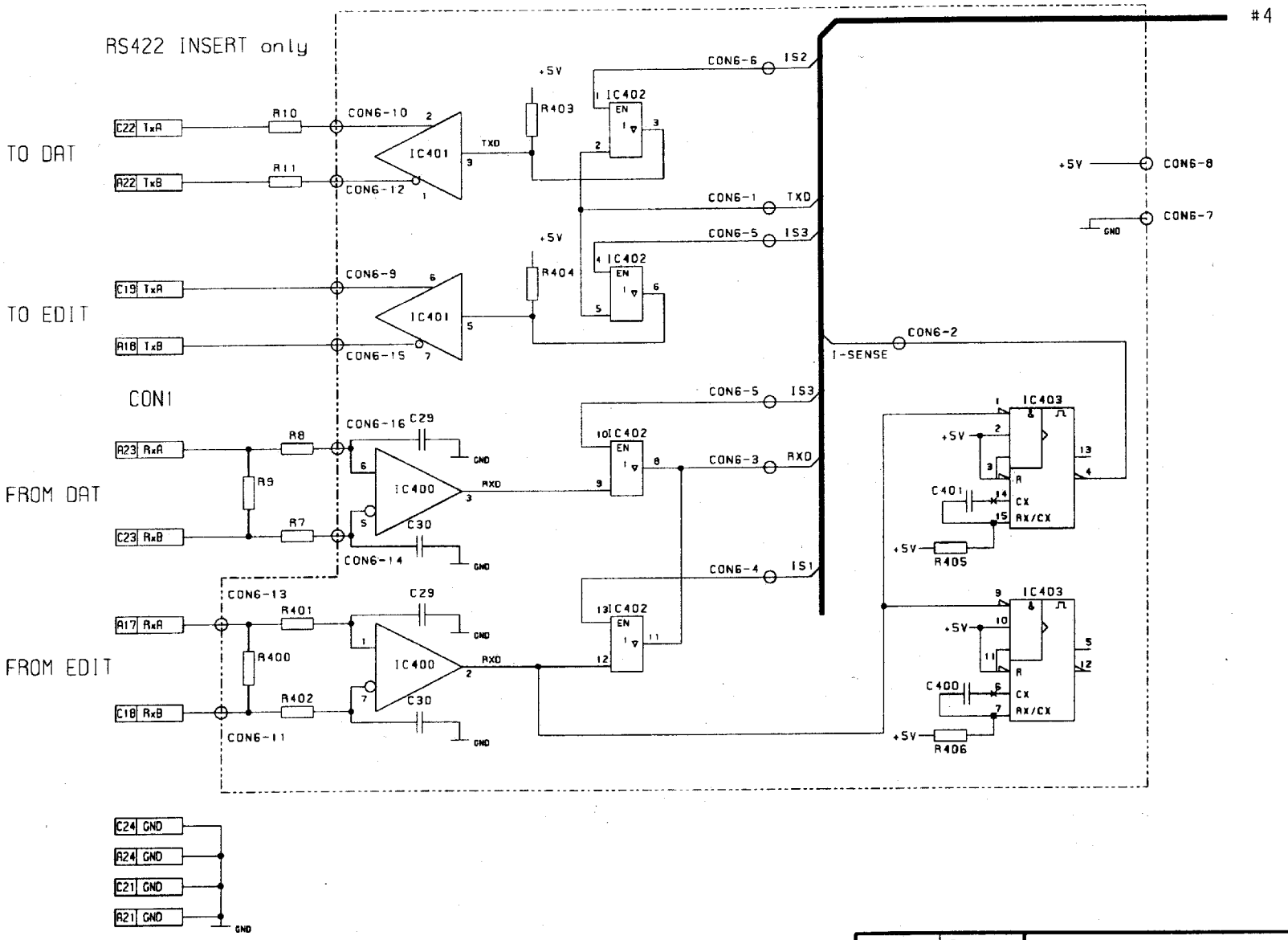


Name	Datum	DAT REMOTE DC-1
We	06.92	
RTW		SCHEMATICS #2

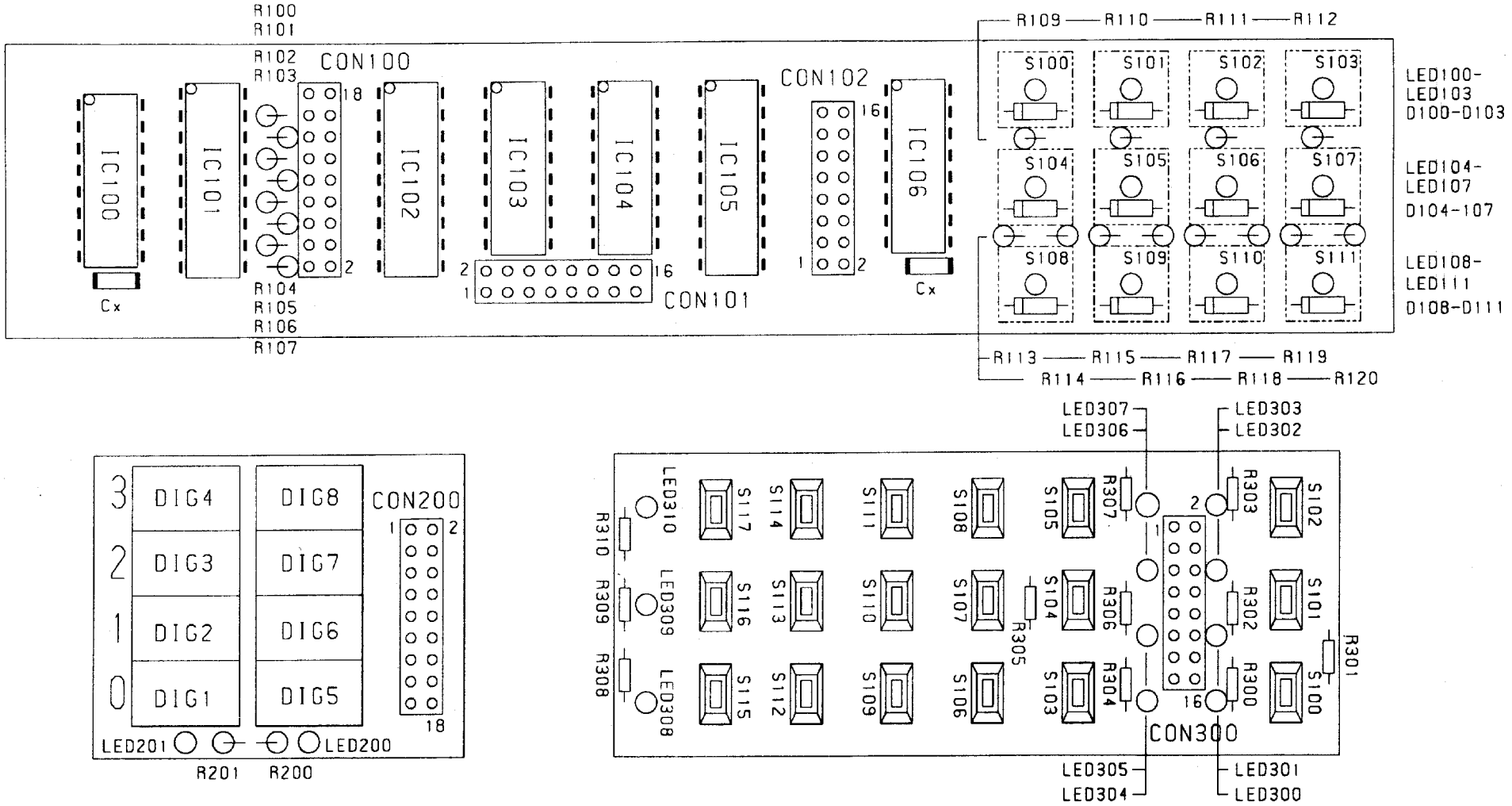

IC100
IC101
IC104
IC105
IC102
IC103
IC106
74HC595
SER
SCL
RES
LCL
GND
+9V
TC0
TC1
TC2
TR0
TR1
TR2
TR3
L100
L104
L108
L101
L105
L109
L102
L106
L110
L103
L107
L111
R112
R119
R120
R111
R117
R118
R110
R115
R116
R109
R113
R114
KC0
KC1
KC2
KC3
KC4
KC5
KR0
KR1
KR2
KR3
KR4
X=
CON100
R105
R104
R106
R100
R101
R102
R107
R103
SEG-A
SEG-B
SEG-C
SEG-D
SEG-E
SEG-F
SEG-G
DEZ
DIG1
DIG2
DIG3
DIG4
DIG5
DIG6
DIG7
DIG8
SIG1
SIG2
CON102
TC3
TR4
TR5
TR6
KR2
KR3
KR3
KC0
KC1
KC2
KC3
KC4
KC5
CON101
CLR
CSD
+9V
+5V
0V
0V
0V
SIN
SCK
CSK
KC0
KC1
KC2
KC3
KC4
KC5
Name
We
Datum
06.92
DAT REMOTE DC-1
RTW
SCHEMATICS #3


CON2
CON1
TEST
OSC-DEV
ENxK
MISO
#5
R-D-C
Name
We
Datum
06 92
DAT REMOTE DC-1
RTW
SCHEMATICS #4

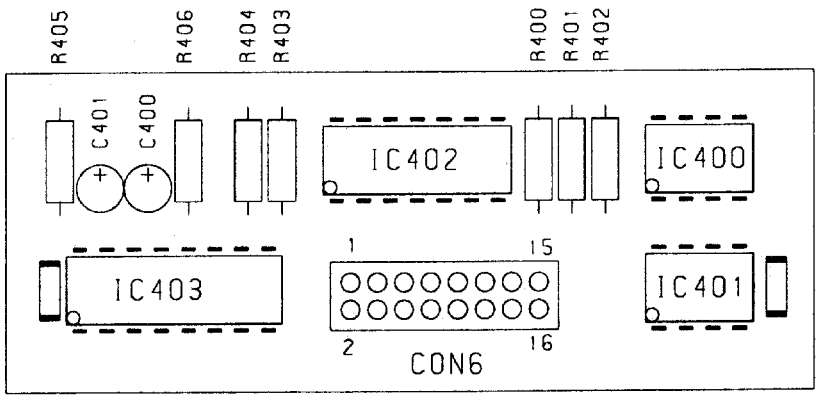

RS422 Version only
CON1
C22 TxA
A22 TxB
A23 RxA
A23 RxB
C24 GND
A24 GND
C21 GND
A21 GND
R10
R11
R8
R9
R7
C29
C30
IC19
IC18
TXD
RXD
C3
D1
R2
R3
IC1
DSC-DEV
/RESET
/IRQ
Vdd
CTS
RTS
DSR
DTR
DBUSY
TCAP
I-SENSE
TCMP
CS-DEV
SCK
MOSI
MISO
TXD
RXD
DLY-5V
TEST
RS232 version only
IC20
IC21
VCC
GND
C1+
C1-
C2+
C2-
T1IN
T2IN
R1OUT
R2OUT
T1OUT
T2OUT
R1IN
R2 IN
C31
C32
C33
C34
C35
C36
C37
C38
NC
RTS
CTS
DTR
TxD
DSR
RxD
A18
A17
A19
C19
C17
C18
C16
CON1
#4
DLY-5V
AR1-4
CON1
A32 +UB
C31 UB
A31 UB
C30 0V
A30 0V
A29 CASE
C28
D3
D4
D5
D6
C21
C22
CH1
CH2
R12
T1
R13
R14
IC14
D8
D7
C24
R15
R16
C23
C30
+9V
+5V
IC17
IC16
IC15
TO IC20,21
TO IC18,19
R17
R18
R19
T2
C25
C26
Name
Datum
We
06 92
DAT REMOTE DC-1
RTW
SCHEMATICS #5



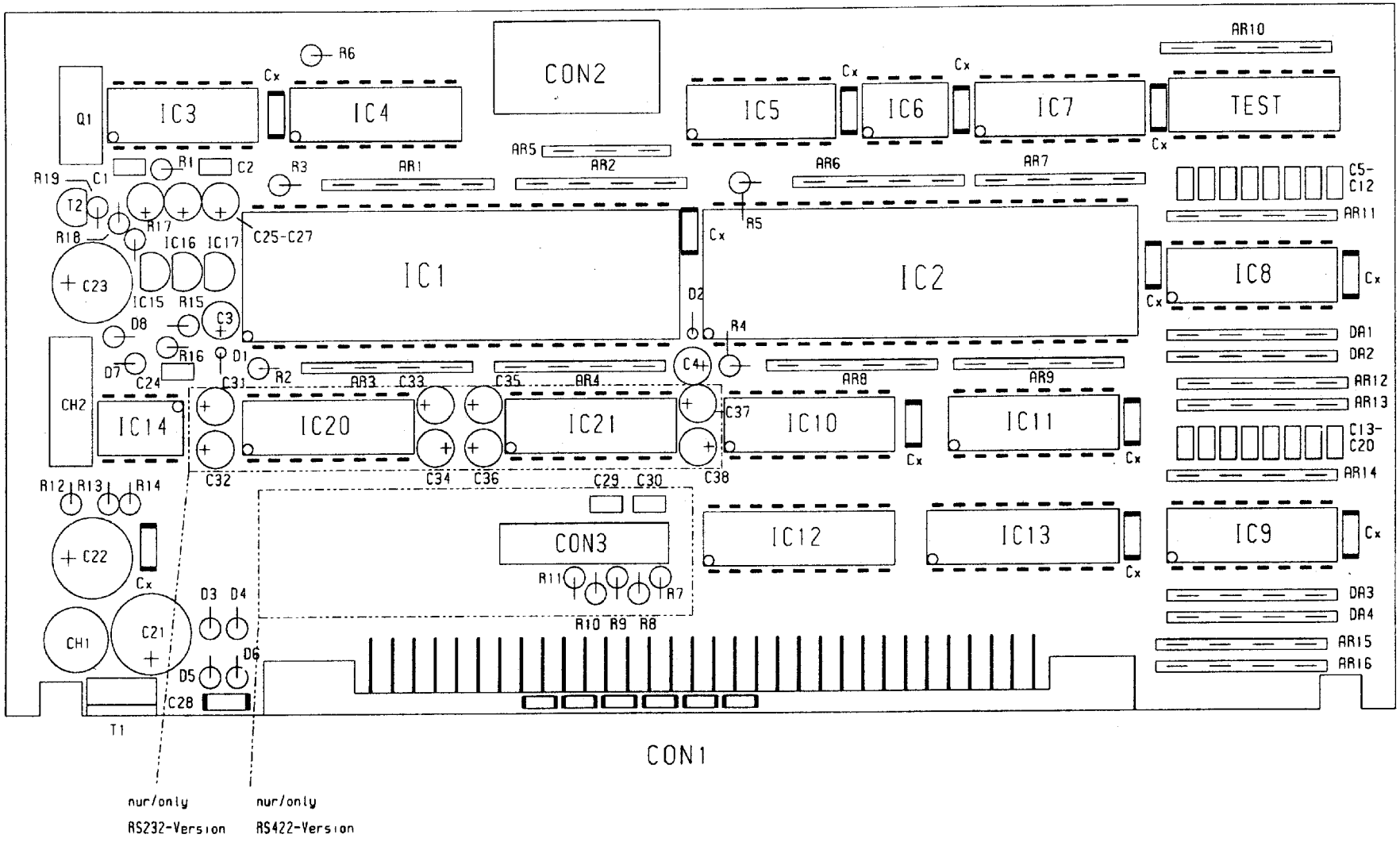
Name	Datum	DAT REMOTE DC-1
We	06 92	
RTW		SCHEMATICS #6



Name	Datum	DAT REMOTE DC-1
We	06.92	
RTW		COMPONENTS LAYOUT



Name	Datum	DAT REMOTE DC-1
We	06.92	
RTW		COMPONENTS LAYOUT



Name	Datum	DAT REMOTE DC-1
We	06.92	
RTW		COMPONENTS LAYOUT

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GMBH

10. Part Lists

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GMBH

REF.NO	DESCRIPTION	VALUE		TYPE	MANUFACTURER	PART-NO
DIG1-8	7-Segm.-Display	red 1-digit		HDSP-7303	Hewlett-Packard	18542
						.
R100-107	Resistor,Carbon	120E	5%	0204	Resista	170932
R109-120	Resistor,Metal	27E	1%	0204	Resista	170929
R200	Resistor,Carbon	120E	5%	0204	Resista	170932
R300-310	Resistor,Carbon	1K	5%	SK1	Resista	17093
						.
LED100	LED,green			HLMP1790	Hewlett Packard	18530
LED101-103	LED,yellow			HLMP 1440	Hewlett Packard	19403
LED104-107	LED,yellow			HLMP 1440	Hewlett Packard	19403
LED108	LED,red			HLMP 1700	Hewlett Packard	19402
LED109-111	LED,yellow			HLMP 1440	Hewlett Packard	19403
LED200	LED,red			HLMP 1700	Hewlett Packard	19402
LED300-310	LED			LRZ181-CO	Siemens	18517
						.
IC100	IC-HC			74HC595	Motorola	18039
IC101	IC-DRIVER			UDN2981A	Sprague	18121
IC102	IC-DRIVER			L603C	SGS	18122
IC103	IC-HC			74HC595	Motorola	18039
IC104	IC-HC			74HC595	Motorola	18039
IC105	IC-DRIVER			UDN2981A	Sprague	18121
IC106	IC-HC			74HC595	Motorola	18039
						.
D100-111	Diode,Silicon			1N4148	ITT	17492
						.
S100-111	Push Button				Lumitas	14055

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GMBH

REF.NO	DESCRIPTION	VALUE			TYPE	MANUFACTURER	PART-NO
CON1	Main Connector	64p			09031646921	Harting	17698
CON2	P.C.Connector	16pin			BL4/16/Z	RTW	143142
IC1	Controller		IO232		68HC705C8P	RTW	18128.232D
IC2	Controller		Master		68HC705C8P	RTW	18128.88M
IC3	IC-AC				74AC04	National	18126
IC4	IC-HC				74HC166N	National	18120
IC5	IC-CMOS				MC74HC126N	Motorola	18026
IC6	EE-PROM				NM 93C56 N	National	18131
IC7	IC-HC				74HC166N	National	18120
IC8,9	IC-HC				74HC166N	National	18120
IC10,11	IC-HC				74HC595	Motorola	18039
IC12,13	IC-DRIVER				L603C	SGS	18122
IC14	IC-DC-DC-Converter				MC34063	Motorola	18109
IC15,16	Voltage,Regulator				LM317LZ	National	18112
IC17	Voltage,Regulator				LM78L05	National	18015
IC20,21	RS232 Driver/Recever				MAX232	Texas Intruments	18132
							.
T1	Transistor				BDW 94	SGS	19004
T2	Transistor				BC239C	Intermetall	17450
							.
Q1	X-TAL				3.6864 MHz	RTW	17542
							.
D1,2	Diode,Silicon				1N4148	ITT	17492
D3-D6	Diode,Silicon				1N4005	ITT	17482
D7,8	Diode,Schottky				1N5819	Motorola	19401
							.
CH1	Choke	470u			262LYF-0100K	RTW	14705
CH2	Choke	100uH				RTW	14706
							.
DA1	Diode,Array				DAN801	RTW	18528
DA2	Diode,Array				DAP801	RTW	18529
DA3	Diode,Array				DAN801	RTW	18528
DA4	Diode,Array				DAP801	RTW	18529
							.
AR1-AR4	Resistor,Array	47K			4609X-101-473	Bourns	170921
AR5	Resistor,Array	47K			4606X-101-473	Bourns	170881
AR6-AR11	Resistor,Array	47K			4609X-101-473	Bourns	170921
AR12,13	Resistor,Array	470R			4608x-102-471	Bourns	170924
AR14	Resistor,Array	47K			4609Y-101-473	Bourns	170921
AR15,16	Resistor,Array	470R			4608x-102-471	Bourns	170924
							.
R0	Resistor,Carbon	6,8M		10%	0207	Resista	17080
R1	Resistor,Carbon	1K		5%	0207	Resista	17013
R2-R6	Resistor,Carbon	47K		5%	0207	Resista	17026
R12	Resistor,Carbon	0,39E		5%	0207	Resista	170991
R13	Resistor,Carbon	330E		5%	0207	Resista	17009
R14	Resistor,Carbon	150E		5%	0207	Resista	17006
R15	Resistor,Metalfilm	5,9K	50ppm	1%	0207 MK2	Resista	17079
R16	Resistor,Metalfilm	1,1K	50ppm	1%	0207 MK2	Resista	17051
R17	Resistor,Metalfilm	330E	50ppm	1%	0207 MK2	Resista	17077
R18	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK 2	Resista	170957
R19	Resistor,Carbon	4,7K		5%	0207	Resista	17019

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GMBH

REF.NO	DESCRIPTION	VALUE			TYPE	MANUFACTURER	PART-NO
Cx	Capacitor,Ceramic	0,1u	63V		Z5U	Sprague	17422
C1,2	Capacitor,Ceramic	47p			C320C470K2G5CA		17373
C3,4	Capacitor,Tantal	0,47u	35V	5%	ETPO,68/35	Ero	17326
C5-C20	Capacitor,Ceramic	100p	63V		ROV745.11	Roederstein	17355
C21,22	Capacitor,Elect	220uF	40V			Thomson	17314
C23	Capacitor,Elect	470u	25V		AL01-NV	SGS	17325
C24	Capacitor,Ceramic	470p	100V	1%	AMC704	Resista	17371
C25	Capacitor,Elect	100u	10V		SRA-VB	Chemi-Con	17327
C26,27	Capacitor,Elect	3,3u	50V		SRA-VB	Chemi-Con	17317
C28	Capacitor,Ceramic	0,1u	63V		Z5U	Sprague	17422
C31-C38	Capacitor,Elect	3,3u	50V		SRA-VB	Chemi-Con	17317

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GMBH

REF.NO	DESCRIPTION	VALUE		TYPE	MANUFACTURER	PART-NO
DIG1-8	7-Segm.-Display	red 1-digit		HDSP-7303	Hewlett-Packard	18542
R100-107	Resistor,Carbon	120E	5%	0204	Resista	170932
R109-120	Resistor,Metal	27E	1%	0204	Resista	170929
R200	Resistor,Carbon	120E	5%	0204	Resista	170932
R300-310	Resistor,Carbon	1K	5%	SK1	Resista	17093
LED100	LED,green			HLMP1790	Hewlett Packard	18530
LED101-103	LED,yellow			HLMP 1440	Hewlett Packard	19403
LED104-107	LED,yellow			HLMP 1440	Hewlett Packard	19403
LED108	LED,red			HLMP 1700	Hewlett Packard	19402
LED109-111	LED,yellow			HLMP 1440	Hewlett Packard	19403
LED200	LED,red			HLMP 1700	Hewlett Packard	19402
LED300-306	LED			LRZ181-CO	Siemens	18517
LED308-310	LED			LRZ181-CO	Siemens	18517
IC100	IC-HC			74HC595	Motorola	18039
IC101	IC-DRIVER			UDN2981A	Sprague	18121
IC102	IC-DRIVER			L603C	SGS	18122
IC103	IC-HC			74HC595	Motorola	18039
IC104	IC-HC			74HC595	Motorola	18039
IC105	IC-DRIVER			UDN2981A	Sprague	18121
IC106	IC-HC			74HC595	Motorola	18039
D100-111	Diode,Silicon			1N4148	ITT	17492
S100-111	Push Button				Lumitas	14055

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GMBH

REF.NO	DESCRIPTION	VALUE			TYPE	MANUFACTURER	PART-NO
CON1	Main Connector	64p			09031646921	Harting	17698
CON2	P.C.Connector	16pin			BL4/16/Z	RTW	143142
CON3	P.C.Connector	16pin			BL22/16/Z	RTW	143141
IC1	Controller		IO422		68HC705C8P	RTW	18128.422D
IC2	Controller		Master		68HC705C8P	RTW	18128.88M
IC3	IC-AC				74AC04	National	18126
IC4	IC-HC				74HC166N	National	18120
IC5	IC-CMOS				MC74HC126N	Motorola	18026
IC6	EE-PROM				NM 93C56 N	National	18131
IC7	IC-HC				74HC166N	National	18120
IC8,9	IC-HC				74HC166N	National	18120
IC10,11	IC-HC				74HC595	Motorola	18039
IC12,13	IC-DRIVER				L603C	SGS	18122
IC14	IC-DC-DC-Converter				MC34063	Motorola	18109
IC15,16	Voltage,Regulator				LM317LZ	National	18112
IC17	Voltage,Regulator				LM78L05	National	18015
							.
T1	Transistor				BDW 94	SGS	19004
T2	Transistor				BC239C	Intermetall	17450
							.
Q1	X-TAL				3.6864 MHz	RTW	17542
							.
D1,2	Diode,Silicon				1N4148	ITT	17492
D3-D6	Diode,Silicon				1N4005	ITT	17482
D7,8	Diode,Schottky				1N5819	Motorola	19401
							.
CH1	Choke	470u			262LYF-0100K	RTW	14705
CH2	Choke	100uH				RTW	14706
							.
DA1	Diode,Array				DAN801	RTW	18528
DA2	Diode,Array				DAP801	RTW	18529
DA3	Diode,Array				DAN801	RTW	18528
DA4	Diode,Array				DAP801	RTW	18529
							.
AR1-AR4	Resistor,Array	47K			4609X-101-473	Bourns	170921
AR5	Resistor,Array	47K			4606X-101-473	Bourns	170881
AR6-AR11	Resistor,Array	47K			4609X-101-473	Bourns	170921
AR12,13	Resistor,Array	470R			4608x-102-471	Bourns	170924
AR14	Resistor,Array	47K			4609X-101-473	Bourns	170921
AR15,16	Resistor,Array	470R			4608x-102-471	Bourns	170924
							.
R0	Resistor,Carbon	6,8M		10%	0207	Resista	17080
R1	Resistor,Carbon	1K		5%	0207	Resista	17013
R2-R6	Resistor,Carbon	47K		5%	0207	Resista	17026
R7,R8	Resistor,Carbon	120E		5%	0204	Resista	170932
R9	Resistor,Carbon	100E		5%	0207	Resista	17005
R10,11	Resistor,Carbon	10E		5%	0207	Resista	17001
R12	Resistor,Carbon	0,39E		5%	0207	Resista	170991
R13	Resistor,Carbon	330E		5%	0207	Resista	17009
R14	Resistor,Carbon	150E		5%	0207	Resista	17006
R15	Resistor,Metalfilm	5,9K	50ppm	1%	0207 MK2	Resista	17079
R16	Resistor,Metalfilm	1,1K	50ppm	1%	0207 MK2	Resista	17051

RTW
RADIO-TECHNISCHE
WERKSTÄTTEN GMBH

REF.NO	DESCRIPTION	VALUE			TYPE	MANUFACTURER	PART-NO
R17	Resistor,Metalfilm	330E	50ppm	1%	0207 MK2	Resista	17077
R18	Resistor,Metalfilm	1,0K	50ppm	1%	0207 MK 2	Resista	170957
R19	Resistor,Carbon	4,7K		5%	0207	Resista	17019
Cx	Capacitor,Ceramic	0,1u	63V		Z5U	Sprague	17422
C1,2	Capacitor,Ceramic	47p			C320C470K2G5CA		17373
C3,4	Capacitor,Tantal	0,47u	35V	5%	ETPO,68/35	Ero	17326
C5-C20	Capacitor,Ceramic	100p	63V		ROV745.11	Roederstein	17355
C21,22	Capacitor,Elect	220uF	40V			Thomson	17314
C23	Capacitor,Elect	470u	25V		AL01-NV	SGS	17325
C24	Capacitor,Ceramic	470p	100V	1%	AMC704	Resista	17371
C25	Capacitor,Elect	100u	10V		SRA-VB	Chemi-Con	17327
C26,27	Capacitor,Elect	3,3u	50V		SRA-VB	Chemi-Con	17317
C28	Capacitor,Ceramic	0,1u	63V		Z5U	Sprague	17422
C29,30	Capacitor,Ceramic	47p			C320C470K2G5CA		17373
INSERT-PCB							
IC400	IC-Receiver				SN75157	Texas Intruments	18133
IC401	IC-Receiver				SN75158P	Texas Intruments	18134
IC402	IC-CMOS				MC74HC126N	Motorola	18026
IC403	IC-HC				74HC123	Motorola	18038
R400	Resistor,Carbon	100E		5%	0207	Resista	17005
R401,402	Resistor,Carbon	120E		5%	0204	Resista	170932
R403,404	Resistor,Carbon	47K		5%	0207	Resista	17026
R405,406	Resistor,Carbon	220K		5%	0207	Resista	17033
C400	Capacitor,Tantal	0,47u	35V	5%	ETPO,68/35	Ero	17326
C401	Capacitor,Tantal	1,5u	35V		ETP1,5/35	Ero	17319
CON6	P.C.Connector	16pin			SL22/111/16Z	RTW	143144

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