

Remote Panel

RSAT1



Customer's Manual



Published by



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1. GENERAL

The remote control panel RSAT1 is used for copying button functions of the DD35 main operation panels for control of mixer functions from another workplace. Connected to DD35 main panel via RS-422 cable which can be ordered optionally. Besides single button functions also the built in Digi pots as well as the optional Fader can be trained with functions of the DD35 main panel – when the learn mode is applied.

1.1 APPLICATION EXAMPLES

Remote control on source selection, effects register recall, transitions, macros, Shot-Box, Keyer adjust, specifically in conjunction with the use of an additional sidepanel control PC.



1.2 CONTROL AND DISPLAY ELEMENTS

- 4x Digi pots
- 6x5 Button matrix with LEDs, programmable
- 2x Menu control buttons (Step up/down)
- 1x Display mode button (Name<—>Value)
- 16 Character menu function LEDs
- 4x4 Character LEDs (i.e. 1x per Digi pot)
- Serial connection status display

In learn mode only one function per button or digipot is programmable. Delegation functions are not available. Also, functions of the display panel RPV are not recordable (at this time).

The programmable memory of the RSAT1 is part of the DD35. Thus the programmed function set for the RSAT1 buttons can be switched from application to application. More complex button sequences can be achieved by programmed recall of macro buttons of the DD35 main panel.

The standard unit is equipped with 1x reconfigurable 9 Pin D-Sub interface for connection to a host processor. Without further options the factory configuration is a RS-422/485 port for direct connection to DD35's panel controller.

Without further option RC 2309, serial port and DC inlet connectors are mounted on the rear side of the panel (not bottom!).

Power supply via separate Power Supply unit necessary (e.g. Option RC 2313).



RSAT1 panel with power supply, cable, gender changer and mounting tools.

1.3 OPTIONS (INITIAL ORDER ONLY)

- RC 2303**
0 351 760 300 Fader Lever (T-Bar, factory configured). For remote control on fader functions (e.g. Timeline-, Transition- or DVE- sequence control) it is recommended to have a Fader module built-in at the factory. Fader functions learnable.
- RC 2309**
0 351 760 900 Bottom side connectors (DC & 9 pin). In case the RSAT1 panel shall be used in a rack environment we recommend this basic factory re-configuration. DC and serial 9 pin connectors are on the bottom. Also DIY configurable at a later date.
- RC 2311**
0 351 761 100 Port re-configuration for RS-232 interface. A factory reconfiguration as RS-232 port is recommended for use of an RSAT1 with a PC etc. (initial option is free of charge). The flexible concept would allow for usage in other applications (commands not yet supported by DD35 system).

1.4 FURTHER OPTIONS

- RC 2310**
0 351 761 000 RS-422 cable for standard configuration, 6m
Standard RS422 cable recommended for connection of RSAT1 to a RPD35 main control panel. Not part of basic RSAT1 unit.
- RC 2312**
0 351 761 200 RS-232 cable (for re-configured port), 6 m
- RC 2313**
0 351 761 300 Ext. Power Supply block (with Euro plug)
Wide AC range power supply block (90 – 264V, ca.15W).
Plug-In Adaptors for USA, UK, Australia are included.

2. TECHNICAL DATA

Mechanics	Width: 143 mm, Length: 270 mm, Depth: 72 mm Weight: 0.5 kg Desk cut out: 245 x 118 mm
Voltage supply	DC IN voltage: +9 ... +24 V DC Line current: 1.2 A max Power consumption: < 15 W Connector type: DIN 45318 Power supply via optional power supply unit RC2313. Wide AC range power supply block (100 V – 240 V, 15W) Plug-in adapter for US, UK and Australia are included.
Environmental requirements	Operating temperature: +0° C ... 40° C Storage/transport temp: -40° C ... 85° C Humidity: ≤95%, DIN IEC 68-2-14 non-condensing
Electromagnetic compability	EMA: EN 55103-1, EN 55 022, Class B, ESD: EN 61000-4-2 EMI: EN 61000-4-3 Burst: EN 61000-4-4 , IEC 1000-4-4 RF immunity: EN 61000-4-6
Safety	VDE 0805, EN 60 950
Interface	RS-422/485 port for direct connection to the DD35 panel controller. 9pin D-sub, female. Port re-configurable for RS-232. Communication is asynchron with 9600 baud, 1 start, 8 data, no parity, 1 stop bit.- A factory re-configuration is recommended for use of an RSAT1 with a PC.

3. INSTALLATION AND STARTUP

3.1 SAFETY INSTRUCTIONS



Caution!

These instructions are for use by qualified personnel only. To reduce the risk of electric shock, do not perform any installation other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

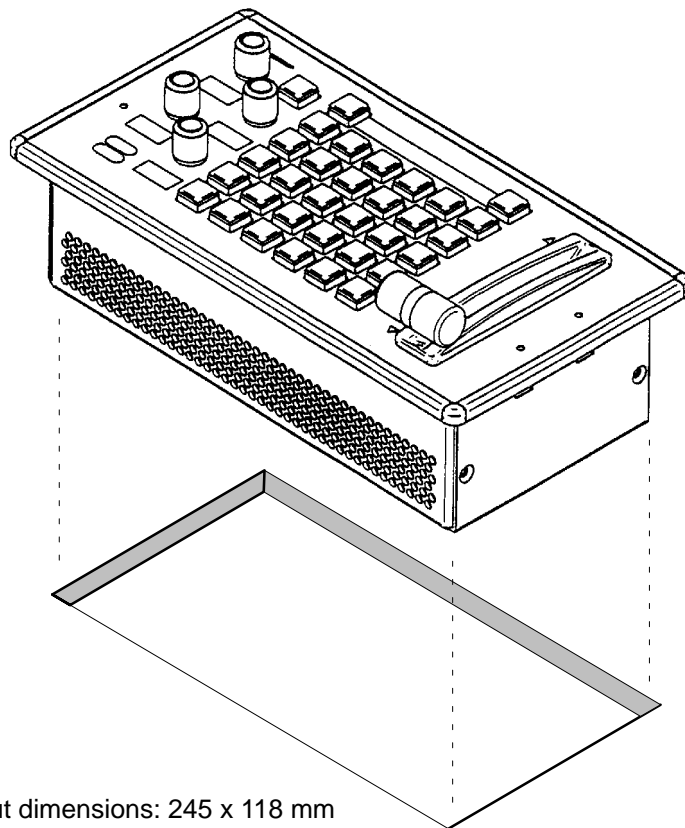


Attention!

Electrostatic sensitive devices on the p. c. boards. Observe the following precaution for handling:

- Handling or mounting the RSAT1 unit call for special attention to personal safety. Personnel should be connected to ground potential via a wristlet (e.g. 3M Wristlet Serial 2200).
- Do not touch the p. c. boards during mounting.
- Repair the p. c. boards only at static-safe work stations.
- Use antistatistical protective bags when carrying the p.c. boards.

3.2 MOUNTING THE RSAT1 PANEL



Cut-out dimensions: 245 x 118 mm

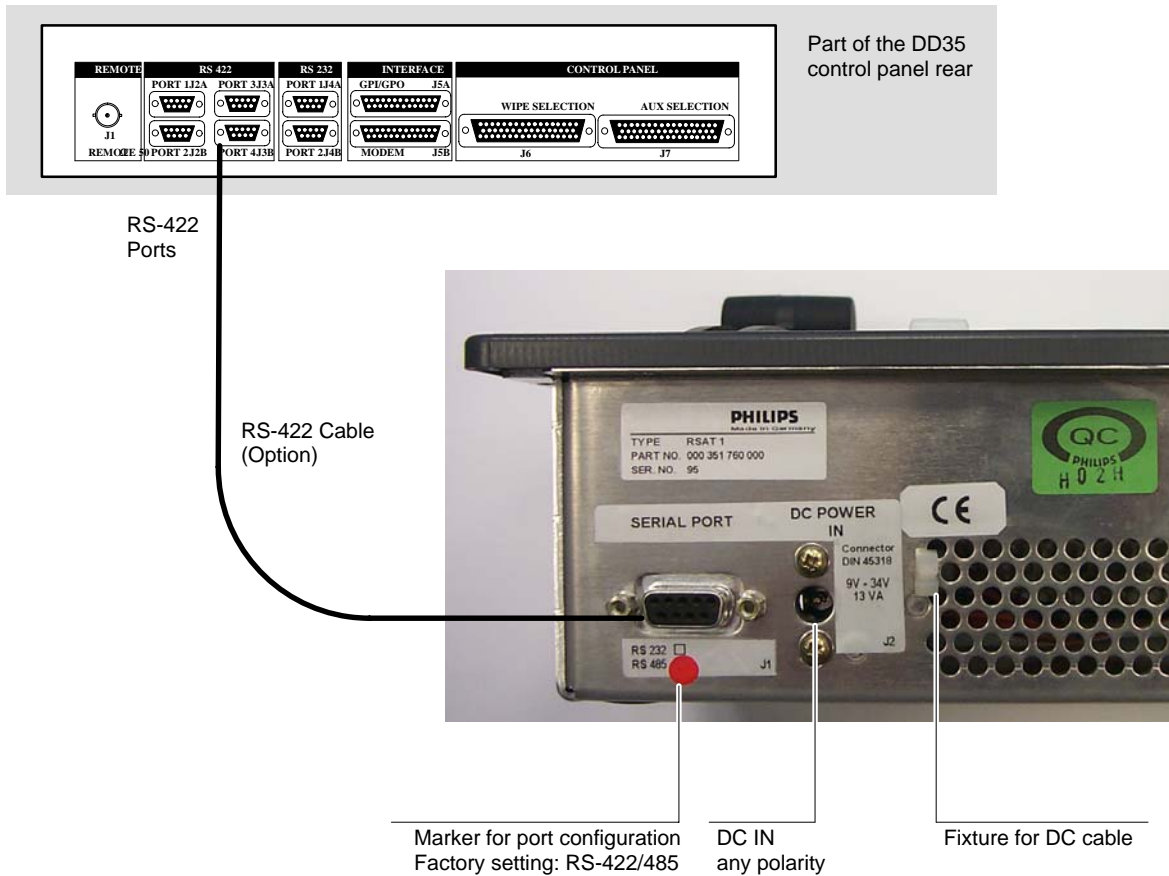
- Unpack the RSAT1 panel and remove the panel module from the mounting box. The locking mechanism can be removed by the two release tools delivered in the accessory pack. Therefore the module can be removed very simply.
- Disconnect the cables.
- Cut-out the openings in the desk.
- Put in the mounting box of the panel. For fastening, bores are provided in the frame. The housing can be fastened with countersunk wood screws with a diameter of 4 mm. The length of the screw depends on the plate thickness of the desk. A set with mounting parts is included in the delivery of the panel.
- Connect the flat cables and the DC cables into the corresponding plugs of the modules.
- Put in the panel module in in the mounting box. By pressing, the modules engages independently. After mounting the panels please close all locking holes with the plastic caps delivered in the accessory pack.

3.3 CONNECTING TO THE DD35 CONTROL PANEL

Attention:



The EMC regulations require the use of properly shielded cables in the installation of the device or the system. Suitable cables can be ordered from Philips Digital Video Systems.



On the bottom the panel have a PE terminal as protective earth.

3.4 RE-MOUNTING THE CONNECTORS TO THE BOTTON

In case the RSAT1 panel shall be used in a rack environment, the connectores can be moved easy the botton side:



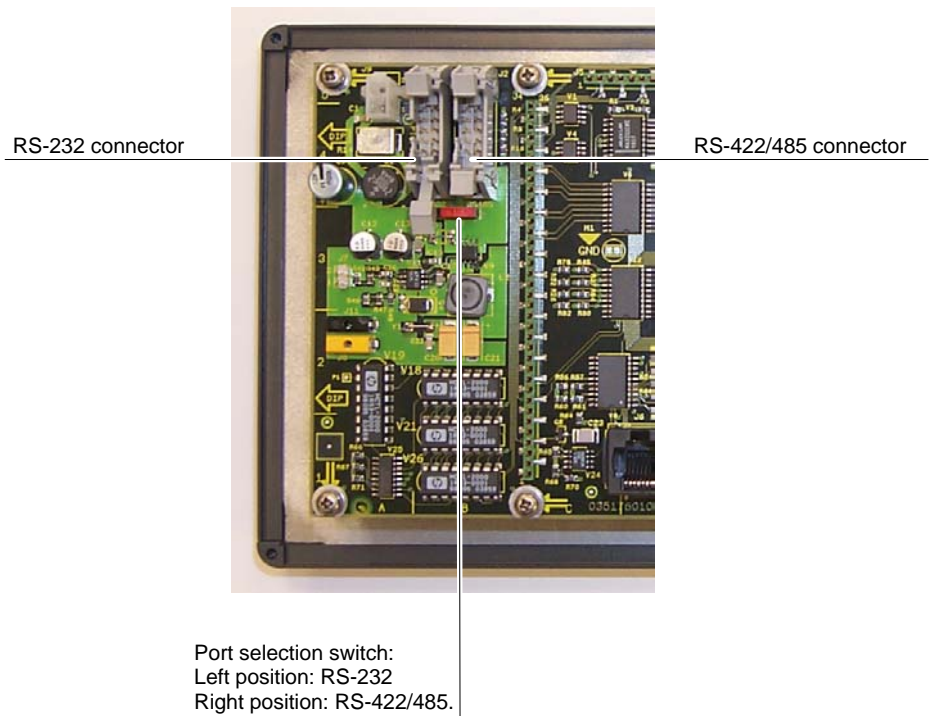
Remount the connector to the botton.

Protective earth terminal PE

3.5 PORT RE-CONFIGURATION RS-422 / RS-232

In case the RSAT1 panel shall be used in connection with a PC, the port can be configured as RS-232. For this a RS-232 cable is necessary.

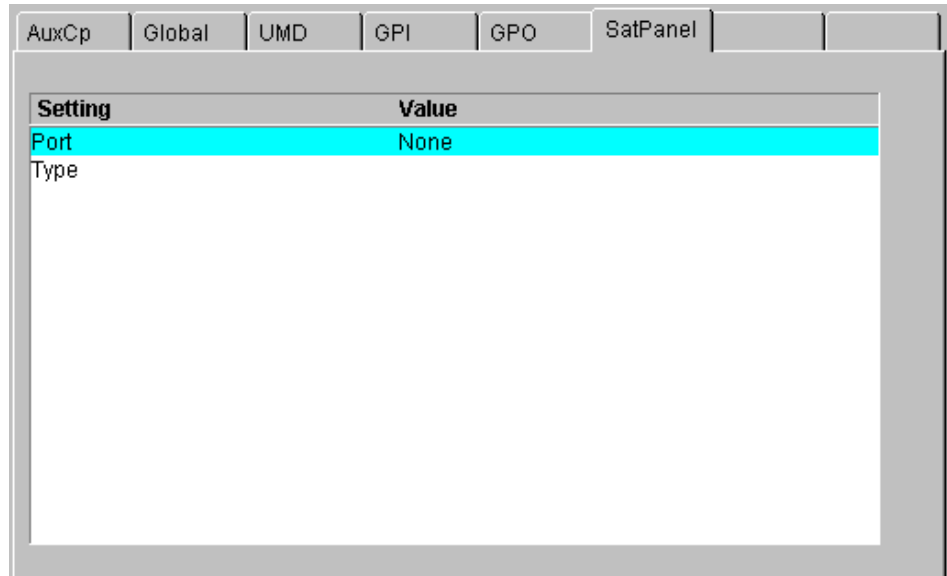
- Demount the panel module.
- Change the flat cable from RS-422/485 connector (right) to the RS-232 connector (left).
- Switch the port selection switch to the left position.



4. OPERATION

4.1 HOW TO START THE SATELLITE PANEL

To start the protocol for the satellite panel use the sidepanel menu. Step into the **install / panel / satpanel** menu and select the port number and the type (satpanel) of the protocol.



After that the signal light of the satellite panel has to be out. If it so, the Satellite Panel is alive. But if you do not have a macro file in your **appli_cp.ini** file the satellite panel will be without any function. To add now the filename into the **appli_cp.ini** use the file transfer program **FTP** to get the **current appli_cp.ini** and insert at the

```
[SAT_PANEL] under
filename = "...."
```

the filename of the macro including the whole path.

E.g. `filename = "/flash/satpanel/me3key1.sat"`.

After the modification of the **appli_cp.ini** copy the file via **FTP** back into the mixer. Now you should see the new function on the satellite panel.

After each new boot the file will be started automatically.

4.2 HOW TO LEARN A NEW FUNCTION

The learn mode is activated by pressing the two buttons left and right of the big (16 character) display simultaneously.



The message **Learning...** will appear in the display. The learn mode is deactivated the same way as it is activated (by pressing the two buttons).

The message “**Learning ...**” will disappear then.

4.2.1 Learning buttons

- Ensure that you are in learn mode.
- Press the desired button on the Satellite Panel and hold it down.
- Press the desired button on the DD35 control panel and then release it. Release the button on the control panel.
- The successful learning will be indicated by a beep (not yet implemented on the Satellite Panel).

4.2.2 Learning digipots

- Turn simultaneously two digipots, one on the Satellite Panel, the other one on the control panel.
- Keep in mind that the space between the digipots on the Satellite Panel is very narrow so you probably might have turned more than one digipot (“fat fingers” problem) and the result of the learning is not what you have expected (the last digipots “wins”).

4.2.3 Learning faders

- Move simultaneously two faders, the one and only on the Satellite Panel and one of the 5 faders of the control panel.

4.3 WHAT CAN BE LEARNED

Interactively all faders and digipots can be learned. As for the buttons, the delegation buttons (the key1, key2 .. buttons in the keyers groups, the second/third buttons in the xbars, the Me1Wipe1,.. DVE2 buttons in the wipe group, the 2nd/rot/user buttons (also wipe group), the arrow buttons in mask and matte group and all that kind of buttons can **NOT** be learned).

All other buttons can be.

Displays and underfloor lamps can only be learned by using a setup file.

Note:

Due to the fact that all the functions of the RSAT1 panel can be learned no button inlays are supplied. They can be easily be made in a do-i-you-self fashion. Printing on foil e.g. with a laser printer. Foil thickness max. 200 μm.

4.4 LOADING AND SAVING SETUPS

Currently there is no menu on the SidePanel, so you have to enter some commands from the VxWorks shell.

This implies that you have a terminal connected to the control panel.

Setups are stored in */flash/satpanel* (default setups) and in */appdisk/satpanel* (user interactively defined setups).

4.4.1 Loading Setup

SatPanelLoadLearned <complete_filename>

Example: **SatPanelLoadLearned "/flash/satpanel/mstrmemo.sat"**

or **SatPanelLoadLearned "/appdisk/satpanel/mysatpan.sat"**

You have to be careful because you save only the new macro in the flash or ramdisk, but you do not change the item in the APPLI-CP.INI file.

If you like to have the macro as the default macro you have to change the file **APPLI-CP.INI**.

4.4.2 Saving Setup

SatPanelSaveLearned <filename>, <headername>, <displaytext>

Example: **SatPanelSaveLearned "mysatpan", "my header", "hello world"**

<filename> is the base of the filename.
The (internal) resulting filename will be

/appdisk/satpanel/filename.sat

So any extensions to the filename (e.g. ".txt") and any preceding path are ignored.

<headername> is a text which appears in the file (as a comment, will later be used by the SidePanel GUI for the setup choice list).

<displaytext> is the text which has to be written into the big 16-character display.

The last 2 parameters can be omitted, in that case the header name is an empty string and the 16-character display is cleared.

4.4.3 Format of the setup files

The setup files are special text files, which can be "understood" by the VxWorks shell interpreter. This means you can alternatively load setups by running them as shell script (by typing **< /flash/appdisk/mstrmemo.sat**, for example).

But this is not recommended due to the long time it usually takes for interpreting the scripts (so you better use the SatPanelLoadLearned command).

Available commands (public C-functions):

Command	Parameters	Description
SatPanelLearnButton	satButtonID, cpButtonID, cd, co, kw, level	learns a button
SatPanelLernDigi	satDigiID, cpDigiID, cd, co, kw, level	learns a digipot
SatPanelLearnDisplay	satDispID, cpDispID, cd, co, kw, level	learns a display
SatPanelWriteDisplay	satDisplayID, text	writes a 4-character text directly into the display no matter wheter it is delegated or not
SatPanelSetLamp	SatButtonID, state	sets the state of a lamp, no matter wheter the lamp is delegated or not. <state> can be 0 or 1.
SatPanelSetAllLamps	state	sets all lamps to one state
SatPanelWriteAllDisplays	text	writes a text into all diplays
SatPanelUnLernAll	<none>	clears the leaning table. After that, the satpanel is "stupid".
SatPanelRefreshState	<none>	Reloads the lamp states and display contents from the control panel. The learned items are NOT modified !

4.5 IMPORTANT NOTES

RSAT MAKROS and Control Panel M/E Delegation

When using the supplied exemplary makros, consider the following: the makros have been programmed for the switcher type DD35-4. When using the makros for the new switcher types DD35-2 and DD35-3 or in connection with the M/E delegation, pay attention to the assignment of the M/E designation of the makro to the physical M/E of the control panel.

The supplied RSAT makros only function as usual when being used in a DD35-4 system and when the M/E control fields of the control panel are delegated 1:1 in relation to the mainframe.

Assignment table:

RSAT makros controlling parts of an M/E, have M/E designations relating to the physical M/Es of the control panel.

There is the following assignment:

DD35-4	DD35-3	DD35-2	RSAT Makros
Physical Control Panel M/E			RSAT makros are fixed-assigned to a physical M/E
M/E1			me1_key1.sat, me1_key2.sat, me1_key3.sat, me1_trns.sat, me1_memo.sat
M/E2	M/E2		me2_key1.sat, me2_key2.sat, me2_key3.sat, me2_trns.sat, me2_memo.sat
M/E3	M/E3	M/E3	me3_key1.sat, me3_key2.sat, me3_key3.sat, me3_trns.sat, me3_memo.sat
PP	PP	PP	pp_dsk1.sat, pp_dsk2.sat, pp_dsk3.sat, pp_dsk4.sat, pp_dsk5.sat, pp_dsk6.sat, pp_trns.sat, pp_memo.sat, mstrmemo.sat

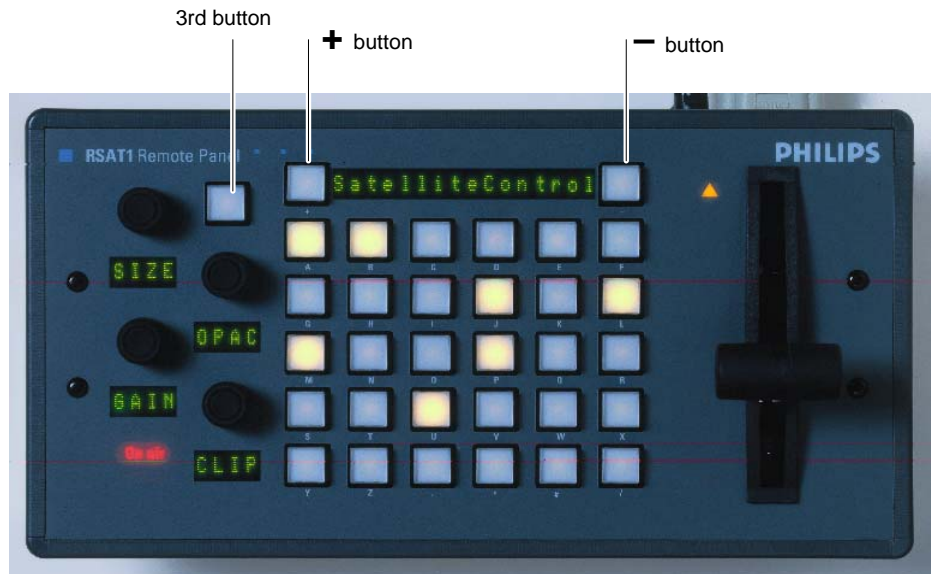
The physical M/E of the control panel, however, can control any mainframe M/E. In this case, an RSAT makro acts on that mainframe M/E which is just delegated in the physical M/E of the control panel.

Examples:

DD35-4			
Physical Control Panel M/E	Delegated Mainframe M/E	RSAT makros act in mainframe M/E	RSAT makros only run on a physical M/E
M/E1	M/E2	M/E2	me1_key1.sat, me1_key2.sat, me1_key3.sat, me1_trns.sat, me1_memo.sat
M/E2	M/E3	M/E3	me2_key1.sat, me2_key2.sat, me2_key3.sat, me2_trns.sat, me2_memo.sat
M/E3	M/E1	M/E1	me3_key1.sat, me3_key2.sat, me3_key3.sat, me3_trns.sat, me3_memo.sat
PP	PP	PP	pp_dsk1.sat, pp_dsk2.sat, pp_dsk3.sat, pp_dsk4.sat, pp_dsk5.sat, pp_dsk6.sat, pp_trns.sat, pp_memo.sat, mstrmemo.sat

DD35-2			
Physical Control Panel M/E	Delegated Mainframe M/E	RSAT makros act in mainframe M/E	RSAT makros only run on a physical M/E
-	-	-	me1_key1.sat, me1_key2.sat, me1_key3.sat, me1_trns.sat, me1_memo.sat
-	-	-	me2_key1.sat, me2_key2.sat, me2_key3.sat, me2_trns.sat, me2_memo.sat
M/E3	PP	PP	me3_key1.sat, me3_key2.sat, me3_key3.sat, me3_trns.sat, me3_memo.sat
PP	M/E1	M/E1	pp_dsk1.sat, pp_dsk2.sat, pp_dsk3.sat, pp_dsk4.sat, pp_dsk5.sat, pp_dsk6.sat, pp_trns.sat, pp_memo.sat, mstrmemo.sat

5. SETUP / TEST



Starting the Setup / Test mode:

- Simultaneously press the button (3rd button without designation, see figure above), the + button and – button.
- release the button (without designation) at last.
- The display shows:

SETUP / TESTS

The + button now enables to cyclically select one of the following operational modes:

Fader Adjust

Key Click

Low Light

Show SW Version

Test: Display

Test: Key

Test: 232 / 485

Test: Lamps

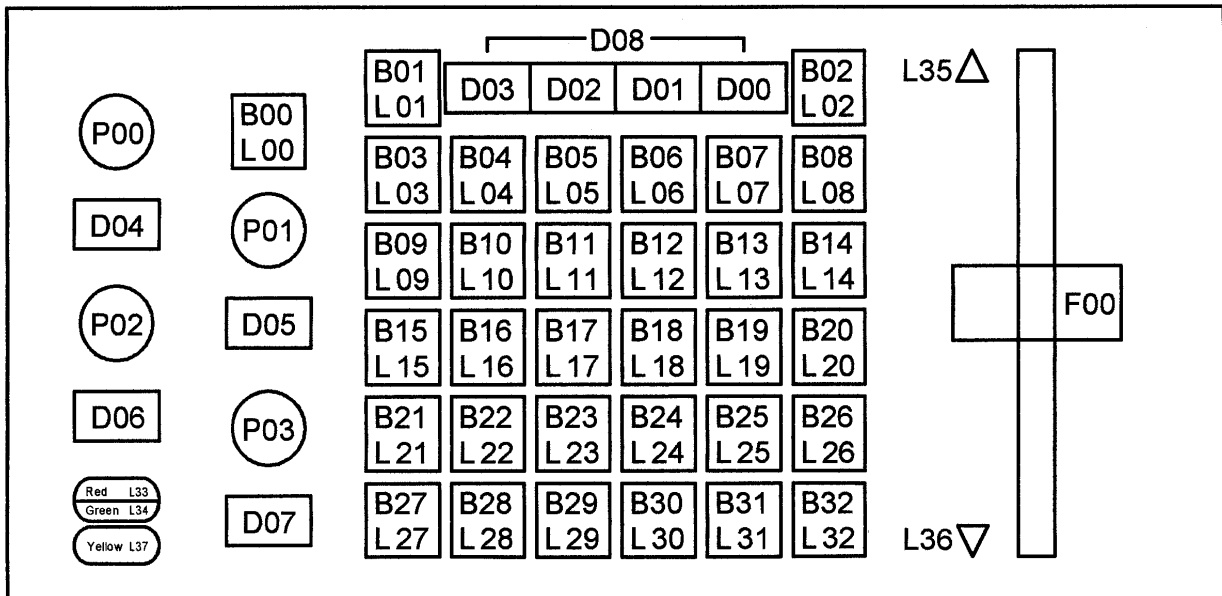
Exit Menu

The – button starts the selected operational mode. The individual tests are self-explaining. The display requests the user to perform further operational steps.

With menu item **Exit Menu**, the normal operation mode is recalled.

6. ANNEX

6.1 CODES OF THE OPERATING ELEMENTS



Name	Range	Telegram
LED	Lxx (L00 ... L36)	Lxx0 = off Lxx1 = on Lxx2 = all lamps off Lxx3 = all lamps on
Button	Bxx (B00 ... B32)	Rxx = released Pxx = pressed
Display	Dxx (D00 ... D08)	txx <max. 26 char> tAD <text> send to all displays
DigiPot	Pxx (P00 ... P03)	Dxx±vvv (vvv= ± 999)
Fader	Fxx (F00)	Axxvvv (vvvv = 0000 ... 4095)

6.2 SERIAL PROTOCOL FOR THE DD35 SATELLITE PANEL

6.2.1 PREFACE

This protocol describes a point-to-point serial protocol.

The intention is to provide a robust flexible means to hook up specialized hardware with a standard PC. Inside the specialized hardware is an industry single chip microprocessor.

6.2.2 ELECTRICAL SPECIFICATIONS

This protocol uses a full-duplex RS-232 conformant serial line without hardware handshake.

6.2.3 COMMUNICATION PARAMETERS

Communication is asynchronous with 9600 Baud, 1 Start, 8 Data, No parity, 1 Stop bit.

6.2.4 PROTOCOL DESCRIPTION

The datagram derived from the KERMIT packet format consists of

Start	length	type	Data	chksum	end/cr	If
0x01	toascii(length)	<type>	...	char(chk)	0x0d	0x0a

Each protocol field – except the data field – is one ASCII byte. The Data field may be longer.

Length is the count of all following bytes up to and including chksum.

Type is the message type described later. Type is a printable ASCII character.

Data depends on type and is described later together with the type. Data is printable ASCII character(s).

For calculation of **chksum** the following C program is given. A value of '~' in this field indicates that the checksum was not calculated.

The **lf** character is optional.

```
unsigned char chksum, chk;
int i;

chksum = toascii(length) + type;
for ( i = 0; i < (length - 2 ); i++)
{
    chksum += data[i];
}

chk = chksum & 0x3F;
```

The function **char()** simply adds a space (0x20) to the number.

The function **toascii()** converts the number into the ascii character. The datagram length is therefore restricted to 9 bytes. The new text (t) command makes it necessary to change the **toascii()** function. Allowed characters for the **Length** field are now '0' .. '9' plus ':' .. '~' where a **Length** of ':' means 10 bytes and so on until '~' which means 78 bytes.

```
unsigned char toascii(size_t count)
{
    unsigned char retval = '0';

    if ( count <= (size_t) ('~' - '0') )
    {
        retval += (unsigned char) count;
    }
    else
    {
        // error
    }

    return retval;
}
```

6.3 MESSAGE TYPES

Type	Data	Length	Comment
?		2	Are You There ?
Y		2	Acknowledge.
N		2	Not Acknowledge. Last datagram was corrupted.
E	<error string>	2+length(string)	Error packet. String length max. = 767 Sent by sidepanel keyboard.
P	NN	4	button P ressed. NN = 00 .. 99 the number of the button. Sent by sidepanel keyboard
R	NN	4	button R eleased. NN = 00 .. 99 Sent by sidepanel keyboard.
D	NNVVV	7	Digipot increment. NN = 00 .. 99. VVV = -999 .. +999 Sent by sidepanel keyboard.
L	NNV	5	Lamp on/off. NN = 00 .. 99. V = 0 (off), V = 1 (on), V = 2 (all lamps off), V = 3 (all lamps on) (NN=don't care) sent by sidepanel PC. initially all lamps will be off.
A	NNVVVV	8	Absolute Value (e.g. generated from an A/D converter) NN = 00.. 99 the number of value VVVV = Absolute value 0000 ... 4095 sent by Satellite Panel
S		2	Status request for all absolute values sent by sidepanel PC
!		2	Reset sidepanel keyboard sent by sidepanel PC
H		2	Hold. sidepanel keyboard stops sending of messages. sent by sidepanel PC
G		2	Go. sidepanel keyboard starts sending messages.
B	VVV	5	Button Backlight Intensity. VVV = 000 ... 100 000 = minimum backlight intensity 100 = maximum backlight intensity (100 %) sent by sidepanel PC
T	V	3	TFT Display Backlight V = 0 (TFT Backlight OFF) V = 1 (TFT Backlight ON) sent by sidepanel PC initially the TFT-Backlight is ON.
I	VVV	5	TFT Display Intensity. VVV = 000 ... 100 000 = minimum intensity 100 = maximum (100 %) sent by sidepanel PC

Type	Data	Length	Comment
t	NN<text>	4 + length(text)	<p>text to be displayed in character displays (not the TFT display!) NN = (00..99) display number NN == AD has a special meaning: it addresses all displays in the device. (e.g. tADHello..) <text> = any printable ASCII text. To keep the text readable control characters (if needed) must be prefixed with the backslash (\).</p> <p>e.g. “\” => print ‘ “\r” => CR (set cursor to top of disp) “\n” => LF (clear disp) “\t” => TAB (move cursor to fixed TABs 4, 8, 12, 16) “\vv => ASCII char as a Hex value (\00...\7F)</p>
M	NVVVV	7	<p>(M)usic, activates beeper in the satellite panel.</p> <p>N : 0 = normal beep, length of beep is VVVV * 1mSec 1 = KeyClick on, length of click is VVVV * 1mSec 2 = KeyClick off, VVVV has no meaning</p>
I	VVVVVVVVVV	12	<p>(lower case L) switch all LEDs at one time</p> <p>V = 0...F switch four LED's (hexdecimal coded 1,2,4,8)</p> <pre> VVVVVVVVVV IIIIIIII+ Lamp: 39-36 (max LED=37) IIIIIIII+- Lamp: 35-32 IIIIIIII+-- Lamp: 31-28 IIIIII+--- Lamp: 27-24 IIII+---- Lamp: 23-20 IIII+----- Lamp: 19-16 III+----- Lamp: 15-12 II+----- Lamp: 11-08 I+----- Lamp: 07-04 +----- Lamp: 03-00 (L00=1, L01=2, L02=4 . L03=8) </pre>

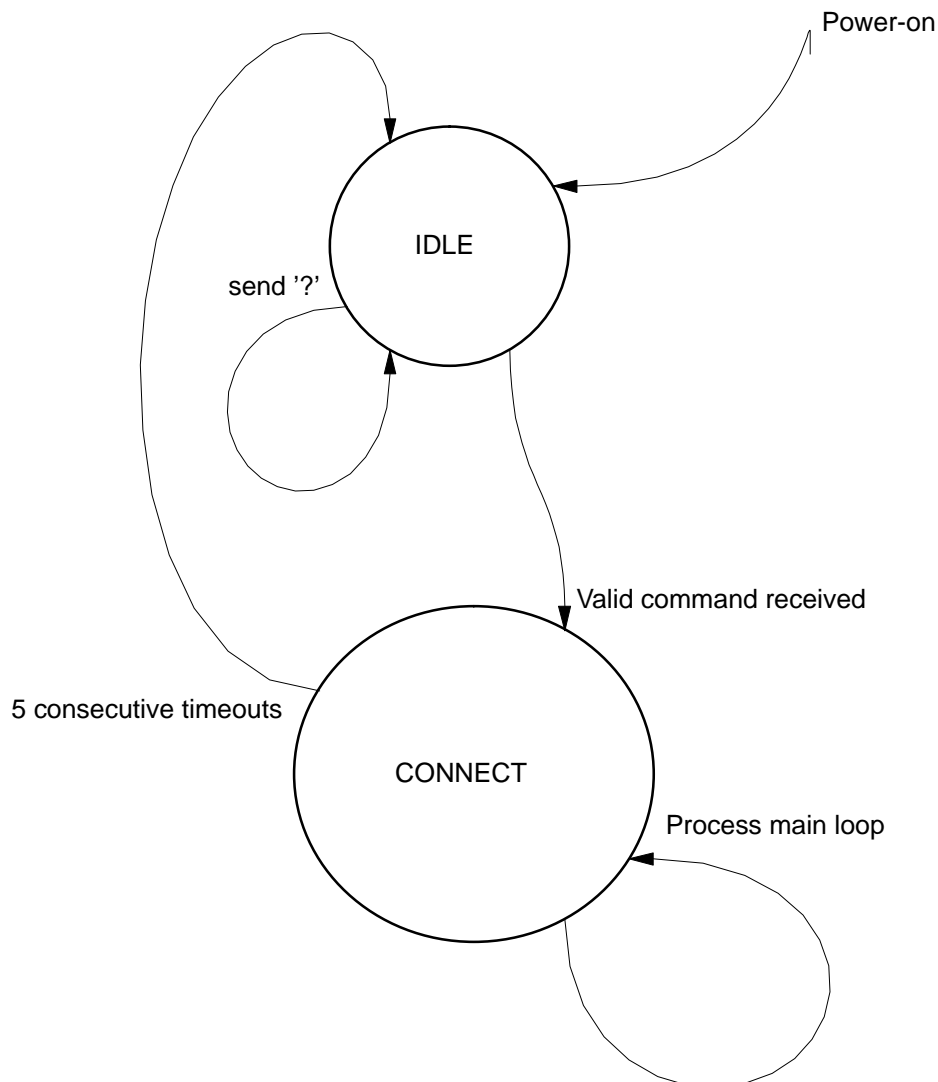
6.4 COMMUNICATION GUIDELINES

Each side can initiate the communication by sending '?' datagrams every two or so seconds. When receiving '?' the receiver acknowledges with a Y datagram.

Each datagram – except Y,N,E – has to be acked within 30 milliseconds. Otherwise it is re-transmitted after 0.5 seconds. After 5 consecutive re-transmissions it is assumed that the partner has been powered off. This should be indicated somehow and the communication state goes to sending '?'. The communication breakdown indication can be one of the following:

- undersurface LED with an appropriate symbol like on the DD35 control panel
- running light over all buttons (like CP-3xx series panels when not polled)
- lighting all buttons.

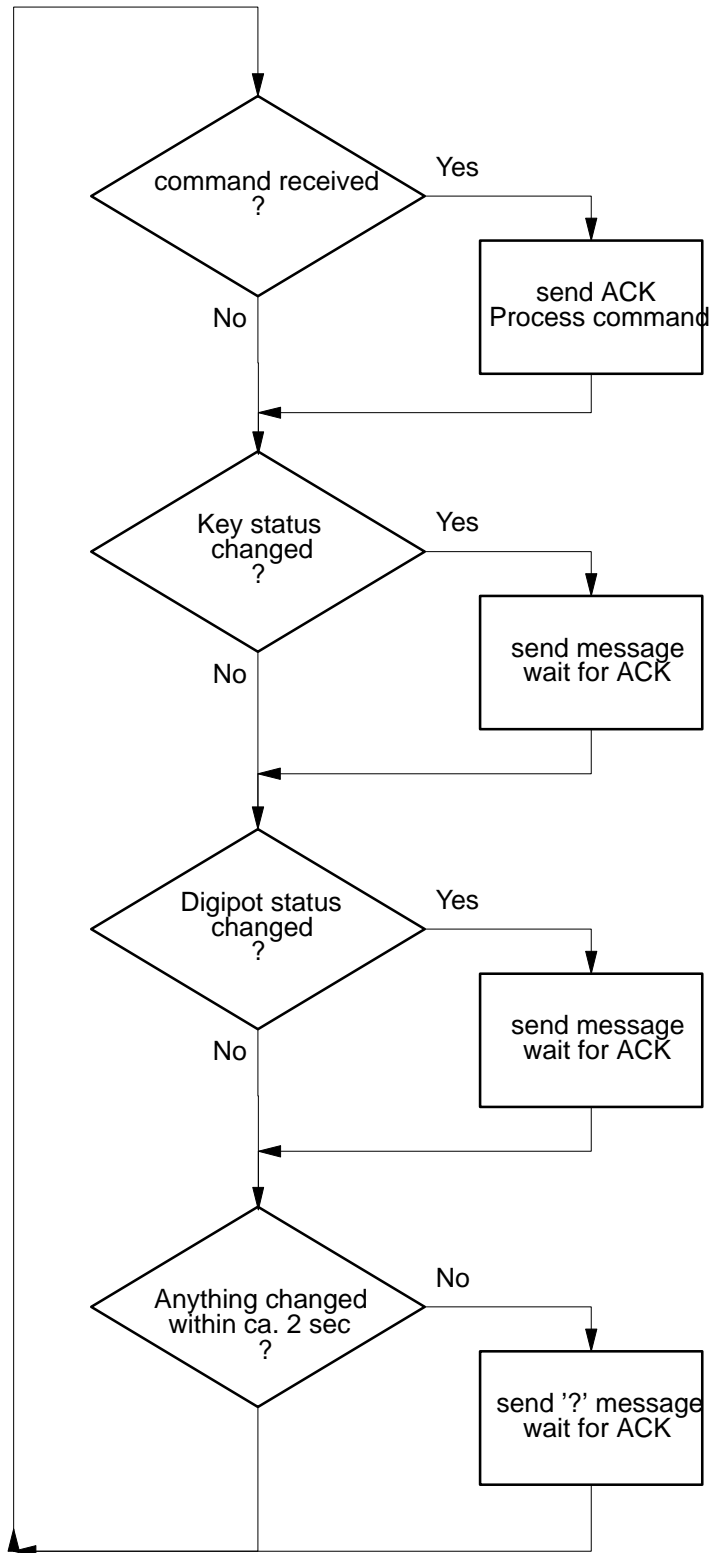
Status Diagram



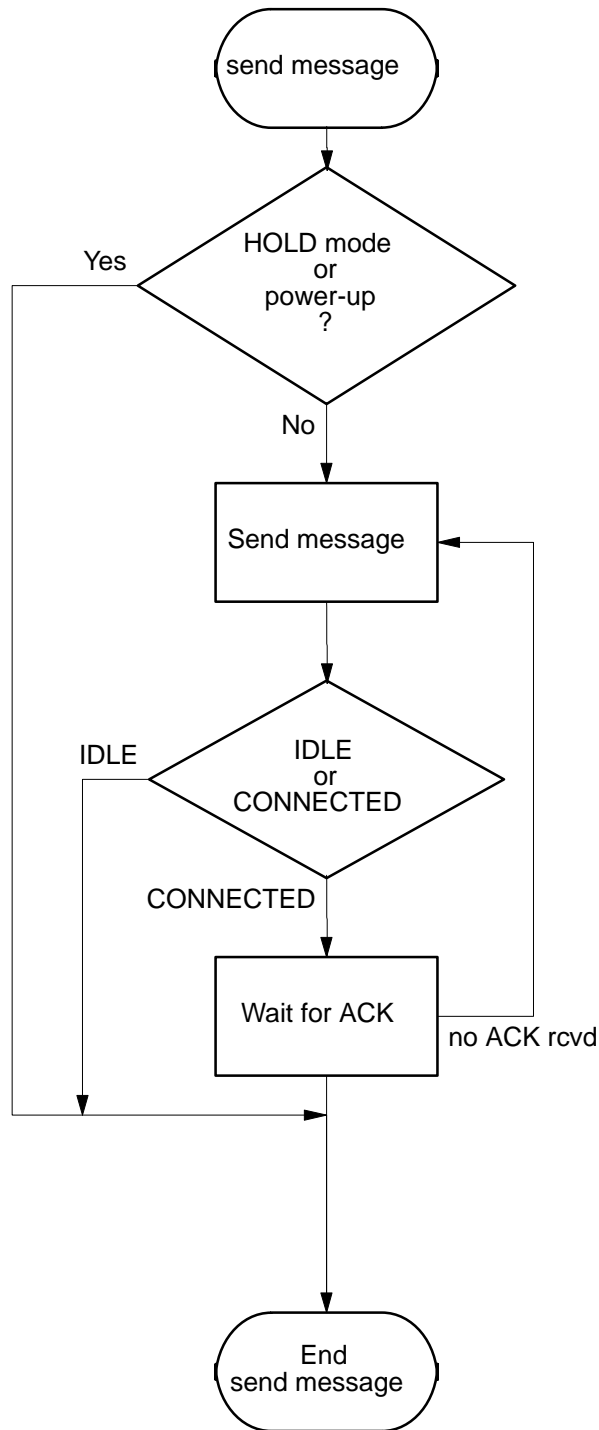
6.5 SIDEPANEL KEYBOARD SOFTWARE GUIDELINES

- In CONNECT state the sidepanel keyboard processes the incoming command, scans its hardware, sends the command for the changed button or digipot – if not quieted by the HOLD command.
- The sidepanel keyboard does NOT do an autorepeat for pressed buttons
- The sidepanel keyboard does not scan the buttons and digipots in a fixed timer-interval. In consequence a button push/release which is faster as the cycle of the mainloop flowchart will be lost.

Sidepanel Keyboard Mainloop Flowchart



Send Message Procedure



7. DEFAULT MACROS

7.1 1_PPDSK1.SAT



7.2 1_PPDSK2.SAT



7.3 1_PPDSK3.SAT



7.4 1_PPDSK4.SAT



7.5 1_PPDSK5.SAT



7.6 1_PPDSK6.SAT



7.7 1_ME1KY1.SAT



7.8 1_ME1KY2.SAT



7.9 1_ME1KY3.SAT



7.10 1_ME2KY1.SAT



7.11 1_ME2KY2.SAT



7.12 1_ME2KY3.SAT



7.13 1_ME3KY1.SAT



7.14 1_ME3KY2.SAT



7.15 1_ME3KY3.SAT



7.16 1_ME1MEM.SAT



7.17 1_ME2MEM.SAT



7.18 1_ME3MEM.SAT



7.19 1_ME1TM.SAT



7.20 1_ME2TM.SAT



7.21 1_ME3TM.SAT



7.22 1_TAPE.SAT



7.23 1_PPTRANS.SAT



7.24 1MSTMEM.SAT

