4 Maintenance and Troubleshooting

4.1 Maintenance

4.1.1 Mechanical Maintenance

- Clean the front panel and keys using a soft, damp cloth soaked with a liquid detergent, if required.
- Cleaning the LC display: do not use any acid solutions or abrasive cleaners (otherwise the anti-reflecting coat is damaged)! We recommend that standard cleaners as are used for optical devices such as glasses, objectives and the like or water mixed with some rinsing liquid be used for cleaning.

4.1.2 Electrical Maintenance

The UPL requires no electrical maintenance.

4.2 Function Test

Upon switch-on of the UPL the following self-tests are performed:

- Self-test on the computer. On the detection of any error the AT warning tone codes (see Table 4-1) will be audible. The system start is aborted, the UPL cannot be operated. With an external keyboard connected, the subsequent memory test can be aborted by pressing the "ESC" key.

Table 4-1 AT warning tone codes

AT-warning tone	Meaning
1	DRAM refresh failure
2	Parity Circuit failure
3	Base 64kB RAM failure
4	System Timer failure
5	Processor Failure
6	Keyboard Controller-Gate A20 error
7	Virtual Mode Exception Error
8	Display Memory R/W Test Failure *)
9	ROM-BIOS CheckSum Failure

*) non-fatal error

- Self-test on all boards of the measurement hardware including all options installed (recognized by the UPL itself). The self-test is carried out while the switch-on picture is being displayed on the screen and also during normal measurement procedures - however to a limited extent. On the detection of an error a message is displayed, which specifies the type of error, the name of the defective board and, if possible, a hint for the user how to eliminate the defect.

4.3 Troubleshooting

Error messages displayed after the self-tests or during a measurement usually contain a hint as to the cause of trouble and its elimination (see Section 2.3.6 Error Messages). If the cause is a defective board, it should be replaced (see 4.4 Replacing the Boards). For more details on the theory of operation of the measurement hardware boards and instructions on further fault locating, please refer to the Service Manual (order designation 1030.7551.24).

4.3.1 BIOS-SETUP

It depends on the UPL model and the time of delivery, which controller boards and hard disk drives are supplied with the instrument. Thus, the operating menu for setting the SETUP parameters and the parameters, too, differ accordingly.
Operation of the setup menu is not explained since it may be obtained from the operator guidance lines.

Calling the SETUP menu

- Switch off the instrument, connect external keyboard.
- Switch on, press "DEL" key (or ENTF key with German keypad) and hold until the SETUP menu is displayed.
- Select menu item for setting the setup (e.g., "RUN CMOS SETUP", "STANDARD-SETUP", ...)
- Set according to the board and hard disk installed. The parameters to be entered are listed in the paragraphs below.

Note: *The setup menus assume an English keypad to be connected. With a German keypad, Y and Z have been exchanged compared to the English one (notice with acknowledging requests).*

Caution: *If the SETUP is not set correctly, this may lead to malfunction of the instrument! In this case, switch off the instrument, press "INS" key (or "Einfg" key with German keypad) and hold, switch on the instrument and release key with start of the memory test. The SETUP is thus reset to default values.*

SETUP for UPL 05 with 80486 DX4/75 Board

Table 4-2 Standard Setup (UPL05)

Date/Time	Current date /time
Floppy A	1,44 MB
Floppy B, Slave Disk	not installed
Hard Disk	use DETECT MASTER (s. u.)

The parameters for the hard disk need not be entered. The setup program determines the parameters when calling the "DETECT MASTER" function in the UTILITY menu.

Table 4-3 Advanced Setup (UPL 05)

Typematic Rate	30
System Keyboard	Absent
Primary Display	VGA/EGA
Above 1MB Memory Test	Enabled
Memory Test Tick Sound	Enabled
Hit "DEL" Message Display	Enabled
Extended BIOS RAM Area	0:300
Halt for "F1" if any Error	Disabled
System Boot Up Num Lock	On
Numeric Processor Test	Enabled
Floppy Drive Seek At Boot	Disabled
System Boot Up Sequence	C:, A:
Password Checking	Setup
Video Shadow C000, 32K	Enabled
Shadow C800, 32K	Enabled
Shadow D000, 32K	Disabled
Shadow D800, 32K	Disabled
Shadow E000, 32K	Disabled
Shadow E800, 32K	Disabled
Internal Cache	Enabled
Internal Cache Write Mode	Wrt-Thru
External Cache	Enabled
Video ROM Cache C000, 32k	Enabled
System ROM Cache F000, 64k	Enabled
Non Cachable Area #1 Size	Disabled
Non Cachable Area #1 Base	Disabled
Non Cachable Area #1 Type	DRAM
Non Cachable Area #2 Size	Disabled
Non Cachable Area #2 Size	Disabled
Non Cachable Area #2 Type	DRAM
IDE Block Mode	Disabled
Primary Master IDE LBA Mode	Disabled
Primary Slave IDE LBA Mode	Disabled
Secondary IDE Drives Preset	None
Secondary Master IDE LBA Mode	Disabled
Secondary Slave IDE LBA Mode	Disabled

Table 4-4 Chipset Setup (UPL 05)

System Auto Configuration	Enabled
Bus Frequency	7.159 MHz
System DRAM Speed	Fastest
DRAM Write Cycle Pulse Time	1T
DRAM Write Cycle Wait State	1 ws
Cache Burst Read Cycle Time	1T
Cache Write Cycle Time	2T
16 Bit 0 Wait State Override	Disabled
16 Bit I/O Read Cmd Delay	Disabled
16 Bit Read Cyc Reduction	Disabled
DRAM Burst Write Mode	Disabled
Slow Refresh	Disabled
Hidden Refresh	Enabled
Local Bus Latch Timing	T3
Local Bus Ready (LRDY *)	Sync.
16 Bit I/O Recovery Time	5 Clks
16 Bit Memory, I/O Wait State	1 ws
8 Bit I/O Recovery Time	16 Clks
8 Bit Memory, I/O Wait State	4 ws

Note on memory expansion, if fitted:
The SIMM modules used have 72 contacts (PS2-SIMMs). 1Mx36 or 4Mx36 modules with an access time of 70 ns may be used.

SETUP for UPL 02 with 80386/40-Board

Table 4-5 Standard Setup (UPL 02)

Floppy Drive A	1.44 MB
System Keyboard	Not Installed
Harddisk C	use AUTODETECT HARDDISK (s.u.)
Harddisk D	Not installed
Primary Display	VGA/EGA

The parameters for the hard disk need not be entered. The setup program determines the parameters when calling the AUTO DETECT HARDDISK function.

Table 4-6 Advanced Setup (UPL 02)

Above 1MB Memory Test	Enabled
Memory Test Tick Sound	Disabled
Hard Disk Type 47 Area	0:300
System Boot Up Num Lock	Off
Floppy Drive Seek At Boot	Disabled
System Boot Up Sequence	C:, A:
External Cache	Enabled
Internal Cache	Disabled
Password Checking	Setup
IDE Block Mode	Disabled
IDE Standby Mode	Disabled
Chip Away Virus	Disabled

Table 4-7 Chipset Setup (UPL 02)

Cache Read Option	3--1--1--1
Cache Write Option	1 WS
DRAM Waitstates	1 WS
Keyboard Clock Select	9.5 MHz
AT Clock	CPUCLK/5
16 Bit I/O Recovery Time	5/3 BCLK
CoProcessor Ready	No Delay
Non Cachable Area \#1 Size	Disabled
Non Cachable Area \#1 Base	Disabled
Non Cachable Area \#1 Type	DRAM
Non Cachable Area \#2 Size	Disabled
Non Cachable Area \#2 Size	Disabled
Non Cachable Area \#2 Type	DRAM
Memory Remapping	Enabled
Alle Shadow Optionen	Enabled

- Store setup

Note on memory expansion, if fitted :
The SIMM modules used have 72 contacts (PS2-SIMMs). 1Mx36 or 4Mx36 modules with an access time of 70 ns may be used..

4.3.2 Others

Fault symptom:

- After switch-on, the UPL is not in the same state as it was before switch-off. The last entries have been omitted.
- The following error message is displayed:

  "CMOS CHECKSUM ERROR. "

Cause:

Battery of test hardware discharged, since the instrument has long since been switched on.

The UPL contains a CMOS memory which stores all settings of all active panels and the data of the recorded traces. The settings of the other panels and the previous states of the active panels is saved on the hard disk, in addition. These data are still available after a failure of the battery. A capacitor bank is used as backup for the CMOS RAM when the instrument is switched off.

Error recovery:

Have the instrument switched on for at least four hours. The battery is then recharged and the settings are retained after switch-off.

Fault symptom:

The UPL does not respond in a sensible way or not at all on key depressions or IEC bus commands.

Cause:

The combination of previous settings resulted in an inadvertent program run causing the software to "crash".

Error recovery:

Restart the UPL!
Depending on the desired instrument setup take the following steps:

Restart the UPL with the instrument setup most recently stored in the CMOS-RAM.
This setup may be correct despite the faulty response of the UPL. To avoid having to enter again the settings most recently made, have a try at starting the UPL with this setup.

- Turn power switch off and on. (No further action possible).

  In case the procedure stated above fails, restart the UPL with its default setup.

- Connect external keyboard (see 1.1.6 Connecting an External Keyboard).
- Turn power switch off and on.
- When the UPL switch-on logo is displayed, abort the UPL program by pressing ESC and enter the DOS operating system level, where you can restart the UPL with its default setting by entering the command

  UPL -d and confirm by pressing ENTER

The setup "DEFAULT.SET" in the "c:\upl\setup" directory supplied together with the UPL is loaded.

LOAD INSTRUMENT STATE in the FILE panel allows the loading of a setup which was stored by the user (see 2.9.1.1).

Further notes on software faults can be looked up in Section 2.3.6 Error Messages.

A UPL Default Setup

The default setup of the UPL is triggered by means of the settings below:

Manual setting in the FILE panel:	IEC/IEEE bus:
LOAD INSTRUMENT STATE Mode DEF SETUP	*RST

A precondition for the validity of basic settings is that the parameter link is switched off (see **2.15.8 Transfer of Parameters** (Parameter Link Function)).

A.1 Default Settings of Generator

INSTRUMENT — ANALOG

· Channel(s) 2 = 1

For setting GENERATOR →ANALOG (default setting) the following applies:

· Output UNBAL
· Max Volt 12.000 V
· Ref Freq 1000.0 Hz
· Ref Volt 1.0000 V

For setting GENERATOR →DIGITAL the following applies:

· Src Mode AUDIO DATA — Further selections: JITTER ONLY | PHASE | COMMON ONLY
· PhaseToRef 0.0000 %FRM — with Src Mode PHASE only
· Channel(s) 2 = 1 — not with Src Mode COMMON ONLY
· Unbal Out AUDIO OUT
· Cabel Sim OFF
· Sync To AUDIO IN
· Sample Frq 48 kHz
· Sync Out GEN CLK
  Type WORD CLK
· Ref Out REF GEN
· Data ALL ZERO
· Audio Bits 20 — with Src Mode AUDIO DATA| PHASE only
· Unbal Vpp 1.0000 V
· Bal Vpp 0.0000 V
· Max Volt 1.0000 FS — with Src Mode AUDIO DATA | PHASE only
· Ref Freq 1000.0 Hz

· PROTOCOL STATIC
· Ch Stat. L ZERO
· Ch Stat. R EQUAL L

· AUX GEN OFF — with SRC Mode AUDIO DATA | PHASE only

For setting AUX GEN →ANALOG OUTthe following appliest:

· Channel(s) 2 = 1
· Output UNBAL
· SWEEP CTRL OFF
· Anlg Freq 1000.0 Hz
· Anlg Ampl 0.1000 V

The auxiliary generator (AUX GEN) has its own sweep system designed similar to the sweep system of the function generator. The function for a 2-dimensional sweep (Z axis), ie simultaneous frequency and level sweep, is not implemented. The default setting of commands is largely identical to the SWEEP CTRL points described for FUNCTION SINE in the section "Functions common to all generators".

For setting AUX GEN → COMMON MODE the following applies:

- SWEEP CTRL OFF
- Comm Freq 1000.0 Hz
- Comm Ampl 0.1000 V

For setting AUX GEN → JITTER the following applies:

- SWEEP CTRL OFF
- Jitt Freq 1000.0 Hz
- Jitt Ampl 0.1000 UI

Functions common to all generators

FUNCTION SINE

· Frq Offset	OFF	
· Low Dist	ON	ANALOG generator. If low-dist. generator option not installed: OFF
· DC Offset	OFF	with ON: 0.0000 FS or: 0.0000 V
· Dither	OFF	with DIGITAL generator

For setting Dither ON the following applies:

	0.0001 FS	with DIGITAL generator
· PDF	GAUSS	with DIGITAL generator
· Equalizer	OFF	
· Equal.File	R&S_EXAM.VEQ	with equalizer ON
· SWEEP	CTRL OFF	
· FREQUENCY	1000.0 Hz	
· VOLTAGE	0.5000 V[FS]	

For setting SWEEP CTRL → AUTO SWEEP or MANU SWEEP the following applies:

· Next Step	ANLR SYNC	with AUTO SWEEP only
· X Axis	FREQ	
· Z Axis	OFF	

With X or Z axis → FREQ selected

FREQUENCY

· Spacing	LOG POINT
· Start	20000 Hz
· Stop	20.000 Hz
· Points	30
· VOLTAGE	0.5000 V [FS]

With X or Z axis → VOLT selected

· FREQUENCY	20000 Hz	
· Equalizer	OFF	
· Equal.File	R&S_EXAM.VEQ	with equalizer ON

VOLTAGE

· Spacing	LIN POINTS
· Start	0.0100 V[FS]
· Stop	0.5000 V[FS]
· Points	30

For setting SWEEP CTRL → AUTO LIST or MANU LIST the following applies:

```
· Next Step   ANLR SYNC        with AUTO LIST only
· X Axis      FREQ
· Z Axis      OFF
```

With X or Z axis → FREQ selected

```
· FREQ.FILE   R&S_EXAM.SPF     with X or Z axis → FREQ selected
```

With X or Z axis → VOLT selected

```
· FREQUENCY   1000.0 Hz
· VOLT.FILE   R&S_EXAM.SPV
```

FUNCTION STEREO SINE with INSTRUMENT DIGITAL only

```
. Frq Offset OFF
. DC Offset  OFF               with ON: 0.0000 FS
. Dither     OFF
```

For setting Dither ON the following applies

```
             0.0001 FS
. PDF        GAUSS

. Equalizer  OFF
. Equal.File R&S_EXAM.VEQ      with Equalizer ON
. Freq Mode  FREQ&PHASE
. Volt Mode  VOLT&RATIO
. SWEEP      CTRL OFF
. FREQUENCY  1000.0 Hz
. Phas Ch2:1 0.0000 °
. VOLT CH1   0.5000 FS
. Volt Ch2:1 4.0000 :1
```

For setting Freq Mode → FREQ CH1&2

```
. Freq Ch1   1000.0 Hz
. Freq Ch2   1000.0 Hz
```

For setting Volt Mode → VOLT CH1&2

```
. Volt Ch1   0.5000 FS
. Volt Ch2   0.5000 FS
```

For setting von SWEEP CTRL → AUTO SWEEP or MANU SWEEP the following applies:

```
. Next Step  ANLR SYNC         with AUTO SWEEP only
. X Axis     FREQ
. Z Axis     OFF
```

For setting Freq Mode → FREQ&PHASE
with X- or Z-Axis → FREQ selected

```
FREQUENCY
. Spacing    LOG POINT
. Start      20000  Hz
. Stop       20.000 Hz
. Points     30
. Phas Ch2:1 0.0000 °
```

For setting Freq Mode → FREQ CH1&2
with X- or Z-Axis → FREQ selected

```
FREQUENCY
. Spacing    LOG POINT
. Start      20000  Hz
. Stop       20.000 Hz
. Points     30
. Freq Ch2   1000.0 Hz
```

For setting Volt Mode → VOLT&RATIO
with X- or Z-Axis → VOLT selected

```
VOLTAGE CH1
. Volt Ch2:1 4.0000 :1
. Spacing    LIN POINTS
. Start      0.0100 FS
. Stop       0.5000 FS
. Points     30
```

For setting Volt Mode → VOLT CH1&2
with X- or Z-Axis → VOLT selected

```
VOLTAGE CH1
. Spacing    LIN POINTS
. Start      0.0100 FS
. Stop       0.5000 FS
. Points     30
. Volt Ch2   0.5000 FS
```

For setting von SWEEP CTRL → AUTO LIST or MANU LIST the following applies:

```
. Next Step  ANLR SYNC        with AUTO LIST only
. X Axis     FREQ
. Z Axis     OFF
```

For setting Freq Mode → FREQ&PHASE
with X- or Z-Axis → FREQ selected

```
. FREQ FILE  R&S_EXAM.SPF
. Phas Ch2:1 0.0000 °
. VOLT CH1   0.5000 FS
. Volt Ch2:1 4.0000 :1
```

For setting Freq Mode → FREQ CH1&2
with X- or Z-Axis → FREQ selected

```
. FREQ FILE  R&S_EXAM.SPF
. Freq Ch2   1000.0 Hz
. VOLT CH1   0.5000 FS
. Volt Ch2:1 4.0000 :1
```

For setting Volt Mode → VOLT&RATIO
with X- or Z-Axis → VOLT selected

```
. Freq Ch1   21000  Hz
. Freq Ch2   1000.0 Hz
. Volt Ch2:1 4.0000 :1
. VOLT FILE  R&S_EXAM.SPF
```

For setting Volt Mode → VOLT CH1&2
with X- or Z-Axis → VOLT selected

```
. Freq Ch1   21000  Hz
. Freq Ch2   1000.0 Hz
. VOLT FILE  R&S_EXAM.SPF
. Volt Ch2   0.5000 FS
```

FUNCTION MULTISINE

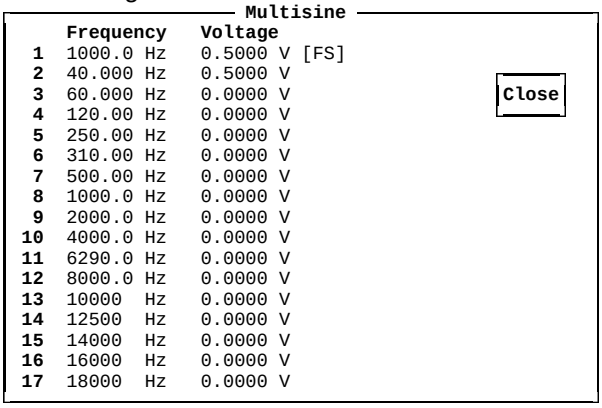
```
· DC Offset  OFF              with ON:  0.0000 FS or 0.0000 V
· Spacing    USER DEF
             10.000 Hz
· Mode       DEFINE VOLT
· Equalizer  OFF
· Crest Fact OPTIMIZED
· Equal.File R&S_EXAM.VEQ     with equalizer ON
· No of Sin  2
```

· Multisine CHOICE ...
· TOTAL GAIN 0.0000 dB
· TOTAL PEAK 1.0000 V[FS]
· TOTAL RMS 1.0000 V for INSTRUMENT ANLG only
. Ampl Var OFF

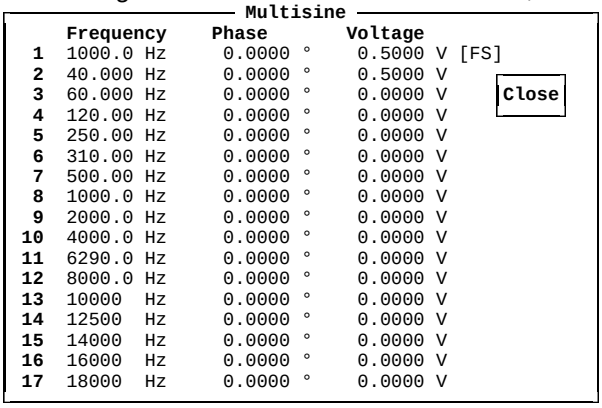
For setting Ampl Var → SINE
. Mod Freq 10.000 Hz
. Variation 0.0000 %

For setting Ampl Var → BURST
. ON TIME 0.0100 s
. INTERVAL 1.0000 s

For setting "No of Sin 17" and Crest Fact → OPTIMIZED *the following applies:*



For setting "No of Sin 17" and Crest Fact → , OPTIMIZED *the following applies::*



FUNCTION SINE BURST | SINE² Burst
· DC Offset OFF with ON: 0.0000 FS or 0.0000 V
. Equalizer OFF
. Equal.File R&S_EXAM.VEQ with Equalizer ON
· SWEEP CTRL OFF
· FREQUENCY 1000.0 Hz
· VOLTAGE 0.5000 V [FS]

For setting SWEEP CTRL → AUTO SWEEP or MANU SWEEP the following applies:
· Next Step ANLR SYNC with AUTO SWEEP only
· X Axis VOLT
· Z Axis OFF

With X or Z axis → VOLT selected

```
FREQUENCY    1000.0 Hz
VOLTAGE
· Spacing    LIN POINTS
· Start      0.0100 V[FS]
· Stop       0.5000 V[FS]
· Points     30
· Low Level  0.0000 V [FS]     for SINE BURST only
· ON TIME    0.0100 s
· INTERVAL   1.0000 s
· BurstOnDel 0.0000 s
```

With X or Z axis → FREQ selected

```
FREQUENCY
· Spacing    LIN POINT
· Start      20000. Hz
· Stop       20.000 Hz
· Points     30                points 2 for SINE² burst
· VOLTAGE    0.0100 V [FS]
· Low Level  0.0000 V [FS]     for SINE BURST only
· ON TIME    0.0100 s
· INTERVAL   1.0000 s
· BurstOnDel 0.0000 s
```

With X or Z axis → ON TIME selected

```
· FREQUENCY  20000 Hz
· VOLTAGE    0.0100 V [FS]
· Low Level  0.0000V [FS]      for SINE BURST only
ON TIME
· Spacing    LIN POINTS
· Start      0.0010 s
· Stop       0.2000 s
· Points     30
· INTERVAL   1.0000 s
· BurstOnDel 0.0000 s
```

With X or Z axis → INTERVAL selected

```
· FREQUENCY  20000 Hz
· VOLTAGE    0.0100 V [FS]
· Low Level  0.0000V [FS]      for SINE BURST only
· ON TIME    0.0010 s
INTERVAL
· Spacing    LIN POINTS
· Start      1.0000 s
· Stop       0.0200 s
· Points     30                points 2 for SINE² burst
· BurstOnDel 0.0000 s
```

For setting SWEEP CTRL → AUTO LIST or MANU LIST the following applies:

```
· Next Step  ANLR SYNC         with AUTO LIST only
· X Axis     FREQ
· Z Axis     OFF
```

With X or Z axis → VOLT selected

```
· FREQUENCY  1000.0 Hz
· VOLT FILE  R&S_EXAM.SPV
· Low Level  0.0000 V [FS]     for SINE BURST only
· ON TIME    0.0100 s
· INTERVAL   1.0000 s
```

· BurstOnDel 0.0000 s

With X or Z axis → FREQ selected
· FREQ FILE R&S_EXAM.SPF
· VOLTAGE 0.5000 V
· Low Level 0.0000 V [FS] for SINE BURST only
· ON TIME 0.0100 s
· INTERVAL 1.0000 s
· BurstOnDel 0.0000 s

With X or Z axis → ON TIME selected
· FREQUENCY 1000.0 Hz
· VOLTAGE 0.5000 V [FS]
· Low Level 0.0000 V [FS] for SINE BURST only
· ONTIM FILE R&S_EXAM.SPO
· INTERVAL 1.0000 s
· BurstOnDel 0.0000 s

With X or Z axis → INTERVAL selected
· FREQUENCY 1000.0 Hz
· VOLTAGE 0.5000 V [FS]
· Low Level 0.0000 V [FS] for SINE BURST only
· ON TIME 0.0100 s
· INTV FILE R&S_EXAM.SPI
· BurstOnDel 0.0000 s

FUNCTION MOD DIST
· Frq Offset OFF
· DC Offset OFF with ON: 0.0000 FS or 0.0000 V
· SWEEP CTRL OFF
· UPPER FREQ 4000.0 Hz
· LOWER FREQ 40.000 Hz
· Volt LF:UF 4.0000 :1
· TOTAL VOLT 1.0000 V

For setting SWEEP CTRL → AUTO SWEEP or MANU SWEEP the following applies:
· Next Step ANLR SYNC with AUTO SWEEP only
· X Axis FREQ
· Z Axis OFF

With X or Z axis → FREQ selected
UPPER FREQUENCY
· Spacing LOG POINTS
· Start 20000. Hz
· Stop 4000.0 Hz
· Points 30
· LOWER FREQ 40.000 Hz
· VOLT LF:UF 4.0000 :1
· TOTAL VOLT 1.0000 V [FS]

With X or Z axis → VOLT selected
· UPPER FREQ 20000 Hz
· LOWER FREQ 40.000 Hz
· VOLT LF:UF 4.0000 :1
TOTAL VOLTAGE
· Spacing LIN POINTS
· Start 0.0100 V[FS]
· Stop 0.5000 V[FS]
· Points 30

For setting SWEEP CTRL → AUTO LIST or MANU LIST the following applies:

- Next Step ANLR SYNC — with AUTO LIST only
- X Axis FREQ
- Z Axis OFF

With X or Z axis → FREQ selected

- UPP F.FILE R&S_EXAM.SPF — if X or Z axis → FREQ selected
- LOWER FREQ 40.000 Hz
- VOLT LF:UF 4.0000 :1
- TOTAL VOLT 1.0000 V [FS]

With X or Z axis → VOLT selected

- UPPER FREQ 4000.0 Hz
- LOWER FREQ 40.000 Hz
- VOLT LF:UF 4.0000 :1
- TOT V.FILE R&S_EXAM.SPV

FUNCTION DFD

- Frq Offset OFF
- DC Offset OFF — with ON: 0.0000 FS or 0.0000 V
- MODE IEC 268

For setting the IEC 268 mode the following applies:

- Equalizer OFF
- Equal.File R&S_EXAM.VEQ — with Equalizer ON
- SWEEP CTRL OFF
- MEAN FREQ 12500. Hz
- DIFF FREQ 80.000 Hz
- TOTAL VOLT 1.0000 V

For setting the IEC 118 mode the following applies:

- Equalizer OFF
- Equal.File R&S_EXAM.VEQ — with Equalizer ON
- SWEEP CTRL OFF
- UPPER FREQ 12500. Hz
- DIFF FREQ 80.000 Hz
- TOTAL VOLT 1.0000 V

For setting SWEEP CTRL → AUTO SWEEP or MANU SWEEP the following applies:

- Next Step ANLR SYNC — with AUTO SWEEP only
- X Axis FREQ
- Z Axis OFF

With X or Z axis → VOLT selected

```
· MEAN FREQ  12500 Hz
· DIFF FREQ  80.000 Hz
TOTAL VOLTAGE
· Spacing    LIN POINTS
· Start      0.0100 V[FS]
· Stop       0.5000 V[FS]
· Points     30
```

UPPER FREQ with IEC 118 mode selected

With X or Z axis → FREQ selected

```
MEAN FREQUENCY
· Spacing    LIN POINTS
· Start      20000 Hz
· Stop       200.0 Hz
· Points     30
· DIFF FREQ  80.000 Hz
· TOTAL VOLT 0.0100 V [FS]
```

UPPER FREQuency with IEC 118 mode selected

For setting SWEEP CTRL → AUTO LIST or MANU LIST the following applies:

```
· Next Step  ANLR SYNC
· X Axis     FREQ
· Z Axis     OFF
```

with AUTO LIST only

With X or Z axis → VOLT selected

```
· MEAN FREQ  12500  Hz
· DIFF FREQ  80.000 Hz
· TOT V.FILE R&S_EXAM.SPV
```

UPPER FREQuency with IEC 118 mode selected

With X or Z axis → FREQ selected

```
· MEANF.FILE R&S_EXAM.SPF
· DIFF FREQ  80.000 Hz
· TOTAL VOLT 1.0000 V [FS]
```

UPP F.FILE with IEC 118 mode selected

FUNCTION RANDOM

```
· DC Offset  OFF
· Domain     TIME
· PDF        GAUSS
· VOLT PEAK  1.0000 V [FS]
· VOLT RMS   0.2550 V
```

with ON: 0.0000 FS or 0.0000 V

in analog generator only

For setting Domain FREQ the following applies:

```
· Spacing    USER DEF
             10.000 Hz
· Shape      WHITE
· Lower Freq 10.000 Hz
· Upper Freq 20000. Hz
· Equalizer  OFF
· Equal.File R&S_EXAM.VEQ
· VOLT PEAK  1.0000 V [FS]
· VOLT RMS   1.0000 V
. Ampl Var   OFF
```

with equalizer ON

in analog generator only

For setting Ampl Var → SINE

```
. Mod Freq  10.000 Hz
. Variation 0.0000 %
```

For setting Ampl Var → BURST

```
. ON TIME   0.0100 s
. INTERVAL  1.0000 s
```

FUNCTION ARBITRARY

```
· DC Offset   OFF                 with ON:  0.0000 FS or 0.0000  V
· Shape File  R&S_EXAM.TTF
· VOLT PEAK   1.0000 V [FS]
· VOLT RMS    1.0000 V            in analog generator only
. Ampl Var    OFF
```

For setting Ampl Var → SINE

```
. Mod Freq   10.000 Hz
. Variation  0.0000 %
```

For setting Ampl Var → BURST

```
. ON TIME    0.0100 s
. INTERVAL   1.0000 s
```

FUNCTION POLARITY

```
· DC Offset  OFF              with ON:  0.0000 FS or 0.0000  V
· VOLTAGE    0.5000 V [FS]
```

FUNCTION FSK

```
· DC Offset  OFF              with ON: 0.0000 FS or  0.0000 V
· VOLTAGE    0.5000 V[FS]
```

FUNCTION RANDOM+ANLR

```
. DC Offset  OFF              with ON: 0.0000 FS bzw. 0.0000 V
. Spacing    USER DEF
             10.000 Hz
. Lower Freq 350.00 Hz
. Upper Freq 550.00 Hz
. Crest Fact OPTIMIZED
```

For setting Crest Fact → Value:

```
             1.0000

. RND PEAK   1.0000 V|FS
. RND RMS    0.3869 V|FS
. Loop Chan  1
. Loop Gain  0.0000 *
```

FUNCTION MODULATION

```
. DC Offset  OFF              with ON: 0.0000 V | FS
. Mode       FM
. Mod Freq   1000.0 Hz
. Deviation  0.5000 %
. Carr Freq  40.000 Hz
. Carr Volt  0.5000 V|FS
```

For setting Mode → AM

```
. Mod Freq   1000.0 Hz
. Mod Depth  0.5000 %
. Carr Freq  40.000 Hz
. Carr Volt  0.5000 V|FS
```

FUNCTION DC

```
. SWEEP CTRL OFF
. VOLTAGE    1.000 V|FS
```

For setting von SWEEP CTRL → AUTO SWEEP or MANU SWEEP the following applies:

```
. Next Step  ANLR SYNC
. X Axis     VOLT             only Volt
VOLTAGE
. Spacing    LIN POINTS
. Start      0.0100 V|FS
. Stop       0.5000 V|FS
. Points     30
```

For setting von SWEEP CTRL → AUTO LIST or MANU LIST the following applies:

```
. Next Step  ANLR SYNC
. X Axis     VOLT             only Volt
. VOLT FILE  R&S_EXAM.SPF
```

FUNCTION **CODED AUDIO** for INSTRUMENT DIGITAL only

```
. Format     AC-3
. Chan Mode  2/0 192kb/s
. SWEEP CTRL OFF
```

SWEEP Setting like Function SINE

```
. Vari Mode  FREQUENCY
. FREQUENCY  1000.0 Hz
. TOTAL VOLT 0.1000 FS
```

A.2 Default Settings of Analyzer

INSTRUMENT — ANLG 22kHz

For setting ANALYZER ANLG 22 kHz and ANLG 110 kHz the following applies.

- Min Freq 10 Hz — 20 Hz for ANLG 110kHz only
- Ref Imped 600.00 Ω
- Channel(s) 1
- Ch1 Coupl AC
- Ch1 Input BAL
- Ch1 Imped 600 Ω
- Ch1 Common FLOAT
- Ch1 Range AUTO

} The same settings apply with channel 2 selected

For setting ANALYZER DIGITAL the following applies:

- Meas Mode AUDIO DATA
- Min Freq 10 Hz — for Meas Mode AUDIO DATA only
- Channel(s) 1 — for Meas Mode AUDIO DATA only
- Input BAL (XLR)
- Sync To AUDIO IN — for Meas Mode AUDIO DATA only
- Sample Frq 48 kHz — for Meas Mode AUDIO DATA only
- Audio Bits 20 — for Meas Mode AUDIO DATA only
- Jitter Ref VARI (PLL) — for Meas Mode JITTER/PHAS only

START COND — AUTO

- Delay 0.0000 s

For setting START COND TIME TICK the following applies:

- Time 1.0000 s
- Points 30

For setting START COND FREQ CH1 | FREQ CH2 the following applies:

- Delay 0.0000 s
- Min Volt 0.0100 V [FS]
- Start 1000.0 Hz
- Stop 10000. Hz
- Variation 10.000 %
- Settling OFF

For setting START COND VOLT CH1 | VOLT CH2 the following applies:

- Delay 0.0000 s
- Start 0.0100 V [FS]
- Stop 1.0000 V [FS]
- Variation 10.000 %
- Settling OFF

For setting START COND LEV TRG CH1 | LEV TRG CH2 the following applies:

- Delay 0.0000 s
- Start 0.0100 V [FS]
- Stop 1.0000 V [FS]
- Variation 10.000 %
- Settling OFF

For setting START COND TIME CHART the following applies:

- Time 1.000 s
- Points 30

For setting START COND FRQ FST CH1 | FRQ FST CH2 the following applies:

```
· Delay      0.0000 s
· Min Volt   0.0100 V [FS]
· Start      1000.0 Hz
· Stop       10000  Hz
· Variation  10.000 %
· Settling   OFF
```

For setting START COND FREQ CH1|2 | FRQ FST CH1|2 and Settling EXPONENTIAL ½ FLAT the following applies:

```
· Samples    3
· Tolerance  1.0000 %
· Resolution 0.0010 Hz
```

For setting START COND VOLT CH1|2 | LEV TRG CH1|2and Settling EXPONENTIAL ½ FLAT the following applies:

```
· Samples    3
· Tolerance  1.0000 %
· Resolution 0.0010 V [FS]
```

Functions common to all analyzers

Input measurement for analog analyzers

INPUT DISP	**PEAK | RMS**	
· Unit Ch1	V	
· Unit Ch2	V	with two-channel measurement
· Reference	VALUE:	
	1.0000 V [FS]	

Input measurement for digital analyzer in Meas Mode AUDIO DATA

INPUT DISP	**PEAK | RMS**	
· Unit Ch1	dBFS	FS for RMS
· Unit Ch2	dBFS	FS for RMS, with two-channel measurement
· Reference	VALUE:	
	1.0000 FS	

Input measurement for digital analyzer in Meas Mode COMMON/INP

INPUT DISP	**PEAK | DIG INP AMP**
· Unit Ch1	V
· Reference	VALUE:
	1.0000 V[FS]

Input measurement for digital analyzer in Meas Mode JITTER/PHAS

INPUT/PHAS	**PEAK**	
· Unit Ch1	UI	%FRM for PHAS TO REF
· Reference	VALUE:	for PEAK only
	1.0000 UI	for PEAK only

INPUT/PHAS	**PHAS TO REF**
· Unit	%FRM

Frequency measurement for analog analyzers and digital analyzer in Meas Mode AUDIO DATA

FREQ/PHASE	**FREQ**	
· Unit Ch1	Hz	
· Unit Ch2	Hz	with two-channel measurement
· Ref Freq	VALUE: 1000.0 Hz	
· Freq Settl	OFF	

Frequency/phase measurement with two-channel measurement for analog analyzers and digital analyzer in Meas Mode AUDIO DATA

FREQ/PHASE	**FREQ&PHASE**	
· Unit Ch1	Hz	
· Unit Ch2	°	
· Ref Freq	VALUE: 1000.0 Hz	
· Format Pha	-180...+180°	Formatt Pha 0 to 360° for analog analyzer
· Ref Phase	VALUE: 10.000 °	
· Freq Settl	OFF	
· Phas Settl	OFF	

Frequency/group-delay measurement with two-channel measurements for analog analyzers and digital analyzer in Meas Mode AUDIO DATA

FREQ/PHASE	**FREQ&GRPDEL**
· Unit Ch1	Hz
· Unit Ch2	s
· Ref Freq	VALUE: 1000.0 Hz
· Ref Phase	VALUE: 10.000 s
· Freq Settl	OFF

Sample frequency measurement for digital analyzer in Meas Mode AUDIO DATA

FREQ/PHASE	**SAMPLE FREQ**	
· Unit Ch1	Hz	
· Unit Ch2	Hz	with two-channel measurement
· Ref Freq	VALUE: 1000.0 Hz	
· Freq Settl	OFF	
· Freq Settl	OFF	

Frequency and sample frequency measurement for digital analyzer in Meas Mode JITTER/PHAS | COMMON/INP

FREQ/PHASE	**FREQ | SAMPLE FREQ**
· Unit	Hz
· Ref Freq	VALUE: 1000.0 Hz

common to all FREQ/PHASE settings:

For setting Freq Settl EXPONENTIAL ⁄ FLAT the following applies:

· Samples	3
· Tolerance	0.1000 %
· Resolution	0.1000 Hz
· Timeout	5.0000 s

For setting Freq Settl AVERAGE the following applies:

· Samples 3

For setting Phas Settl EXPONENTIAL / FLAT the following applies:

· Samples 3
· Resolution 0.1000 °
· Timeout 5.0000 s

For setting Phas Settl AVERAGE the following applies:

· Samples 3

Functions of all analyzers:

FUNCTION	**RMS & S/N**	
· DC Suppres	ON	for digital- analysator only
· S/N Sequ	OFF	for analogen analyzers only
· Meas Time	AUTO FAST	
· Unit Ch1	V [FS]	
· Unit Ch2	V [FS]	(with channel 2 activated)
· Reference	VALUE: 1.0000 V [FS]	
· Notch(Gain)	OFF	for analogen analyzers only
· Filter	OFF	
· Filter	OFF	
· Filter	OFF	
· Fnct Settl	OFF	
· POST FFT	OFF	
· SPEAKER	OFF	

For setting POST FFT = ON the following applies:

· FFT Size 4096
· Window RIFE VINC 2

FUNCTION	**RMS SELECT**	
· DC Suppres	ON	for digital- analysator only
· Meas Time	AUTO	
· Unit Ch1	V [FS]	
· Unit Ch2	V [FS]	if channel 2 is on
· Reference	VALUE: 1.0000 V [FS]	
· Sweep Mode	NORMAL	
· Bandwidth	BP 1%	with bandwidth BP FIX or BS FIX: 100.00 Hz
· SWEEP CTRL	OFF	
· FREQ MODE	GEN TRACK	
· Factor	1.0000 *	with FREQ MODE GEN TRACK only

For setting SWEEP CTRL AUTO SWEEP, MANU SWEEP the following applies:

· Spacing LOG POINTS
· Start 100.00 Hz
· Stop 20000. Hz
· Points 30

For setting SWEEP CTRL AUTO LIST, MANU LIST the following applies:
· Filename R&S_EXAM.SPF

For setting SWEEP CTRL GEN MLTSINE the following applies:
There are no further parameters

· Notch(Gain)OFF — for analogen analyzers only
· Fiter OFF — for analogen analyzers only
· Fnct Settl OFF
· SPEAKER OFF

FUNCTION PEAK & S/N — for analyzers ANLG 22kHz and DIGITAL only
· S/N Sequ OFF
· Meas Mode PK+
· Intv Time FIX 200ms
· Unit Ch1 V [FS]
· Unit Ch2 V [FS] — (if channel 2 is on)
· Reference VALUE:
1.0000 V [FS]
· Filter OFF
· Filter OFF
· Filter OFF
· Fnct Settl OFF
· SPEAKER OFF

FUNCTION QPK & S/N — for analyzers ANLG 22 kHz and DIGITAL
· S/N Sequ OFF
· Intv Time FIX 3
· Unit Ch1 V [FS]
· Unit Ch2 V [FS] — with channel 2 activated
· Reference VALUE:
1.0000 V [FS]
· Notch (Gain) OFF — for analog analyzers only
· Filter OFF
· Filter OFF
· Filter OFF
· Fnct Settl OFF
· SPEAKER OFF

FUNCTION DC
· Meas Time FIX 200ms
· Unit Ch1 V [FS]
· Unit Ch2 V [FS] — if channel 2 is on
· Reference VALUE:
1.0000 V|FS
· Fnct Settl OFF
· SPEAKER OFF

FUNCTION THD
· Meas Mode All di
· Dyn Mode PRECISION — for analogen analyzers only
· Unit dB
· Fundamentl AUTO
· Fnct Settl OFF
· SPEAKER OFF

FUNCTION THD+N/SINAD

· Meas Mode	THD+N	
· Dyn Mode	PRECISION	for analog analyzers only
· Meas Time	SLOW	
· Rejektion	NARROW	for digital analyzer only
· Unit	dB	
· Fundamentl	AUTO	
· FILTER	OFF	
· FrqLim Low	100.00 Hz	128 Hz for ANLG 110kHz
· FrqLim Upp	20000. Hz	
· Fnct Settl	OFF	
· POST FFT	OFF	
. Equalizer	OFF	
. Equal.File	R&S_EXAM.VEQ	with Equalizer ON
SPEAKER	OFF	

For setting POST FFT ON the following applies:

· FFT Size	8192
· Window	RIFE VINC 3

FUNCTION MOD DIST

· Dyn Mode	PRECISION	for analog analyzers only
· Unit	dB	
· Fnct Settl	OFF	
· SPEAKER —	OFF	

FUNCTION DFD

· Meas Mode	d2 (IEC 268)	
· Dyn Mode	PRECISION	for analogen analyzers only
· Unit	dB	
· Fnct Settl	OFF	
SPEAKER —	OFF	

FUNCTION WOW & FL in analyzers ANLG 22 kHz and DIGITAL

· Standard	DIN/IEC
· Weighting	ON
· Unit	%
· Fnct Settl	OFF
· POSTFFT	OFF
· SPEAKER —	OFF

For setting POST FFT the following applies:

· FFT Size	8192
· Window	RIFE VINC 1

FUNCTION POLARITY

There are no further parameters

FUNCTION FFT

· DC Suppres	ON	with digital analysator only
· Unit Ch1	dBV [dbFS]	
· Reference	VALUE: 1.0000 V [FS]	
· Notch(Gain)	OFF	for analogen analyzers only
· FFT Size	4096	
. Filter	OFF	
. Filter	OFF	
. Filter	OFF	
· Window	RIFE VINC 2	RIFE VINC 3 for digital analyzers
· Avg Mode	EXPONENTIAL	
· Avg Count	1	
· Zooming	OFF	
. Equalizer	OFF	
. Equal.File	R&S_EXAM.VEQ	with Equalizer ON
· SPEAKER	— OFF	

For setting ZOOMING ON the following applies:

· Zooming	ON (2 to 128)	Zooming ON (2 to 8) for ANLG 110 kHz
· Center	10000 Hz	
· Span	21.94 kHz	SPAN 140.40 for ANLG 110 kHz In the digital analyzer, the value depends on the selected sample rate
· Zoom Fact	2	

FUNCTION FILTER SIM.

· Unit	%
· Filter	OFF
· Filter	OFF
· Filter	OFF
· SPEAKER –	OFF

FUNCTION WAVEFORM

· DC Suppres	ON	with digital analysator only
· Meas Mode	STANDARD	
· Unit	V [FS]	
· REF VOLT	1.0000 V	
· Filter	OFF	
· Trig Level	0.0000 V	
· Trig Slope	RISING	
· Interpol	1	
· Trace Len	0.0100 s	
· Trig Src	CHAN 1	for analog analyzer ANLG 22kHz only
· SPEAKER –	OFF	

FUNCTION PROTOCOL for digital analyzer only

there are no further parameters

FUNCTION COHERENCE

· Unit	%	
. Chan Delay	0.0000 s	for analyzers ANLG 22kHz and DIGITAL only with two channels
· FFT Size	4096	
· Window	RIFE VINC 2	
· Avg Count	2	
· Start	0.0000 Hz	
· Stop	21938 Hz	
· Resolution	11.719 Hz	

FUNCTION RUB & BUZZ with analog analyzer only

· Meas Time	GEN TRACK	
· Unit Ch1	V	
· Reference	VALUE:	
·	1.0000 V	
· FREQ MODE	GEN TRACK	
· Factor	2.0000 *	
· Sweep Mode	NORMAL	
· Filter	OFF	
· FrqLim Low	100.0 Hz	
· FrqLim Upp	21938 Hz	120 kHz with analyzer ANLG 110 kHz only

FUNCTION 3rd OCTAVE for analyzers ANLG 22kHz and DIGITAL

```
. Line Count 30
. Meas Time  VALUE
.            0.5013 s
. Max Hold   OFF
. Unit Ch1   V [FS]
. Unit Ch2   V [FS]
. Reference  VALUE:
             1.0000 V [FS]
. Filter     OFF
. FrqLim Low 100.00 Hz
. FrqLim Upp 21938  Hz
```

FUNCTION 12th OCTAVE for analyzers ANLG 22kHz and DIGITAL

```
. Meas Time  VALUE
.            1.3925 s
. Max Hold   OFF
. Unit Ch1   V [FS]
. Unit Ch2   V [FS]
. Reference  VALUE:
             1.0000 V [FS]
. Filter     OFF
. FrqLim Low 100.00 Hz
. FrqLim Upp 20586  Hz
```

Common to all measurement functions:

For setting SPEAKER unequal to OFF the following applies:

```
· Pre Gain   0.0000 dB        with SPEAKER FUNCT CH1|2|1&2 only
· Spk Volume 30.000 %
· Phone Out  = SPEAKER
```

For setting Fnct Settl EXPONENTIAL / FLAT the following applies:

```
· Samples    3
· Tolerance  0.1000 %
· Resolution 0.0010 V
· Timeout    5.0000 s
```

For setting Fnct Settl AVERAGE the following applies:

```
· Samples    3
```

A.3 Default Settings of Filter Panel

Basic parameters of filters:

Lowpass filter:
- Order 8
- Passband 20000. Hz
- Attenuat. 60.000 dB
- Short Name 1:LP20.0kHz

Highpass filter:
- Order 8
- Passband 400.00 Hz
- Attenuat. 60.000 dB
- Short Name 2:HP400.0Hz

Bandpass filter:
- Passb Low 900.00 Hz
- Passb Upp 1100.0 Hz
- Attenuat. 60.000 dB
- Short Name 3:BP900.0Hz

Bandstop filter:
- Passb Low 900.00 Hz
- Passb Upp 1100.0 Hz
- Attenuat. 60.000 dB
- Short Name 4:BS900.0Hz

Notch filter:
- Center Frq 16000. Hz
- Width 500.00 Hz
- Attenuat. 60.000 dB
- Short Name 5:NO16.0kHz

Octave filter (1/3 OCT FLT):
- Center Frq 12500. Hz
- Attenuat. 60.000 dB
- Short Name 7:TO12.5kHz

Oktave filter (OCTAVE FLT):
- Center Frq 12500. Hz
- Attenuat. 60.000 dB
- Short Name 8:OC12.5kHz

File-defined filter (FILE DEF):
- Filename R&S_EXAM.COE
- Delay 0.1000 s
- Short Name 9:R&S_EXAM

Standard filter types:

```
FILTER 01  LOW PASS
FILTER 02  HIGH PASS
FILTER 03  BAND PASS
FILTER 04  BAND STOP
FILTER 05  NOTCH FLT
FILTER 06  1/3 OCT FLT
FILTER 07  OCTAVE FLT
FILTER 08  FILE DEF.
FILTER 09  FILE DEF.
```

A.4 Default Settings of Display Panel

OPERATION BARGRAPH
· Scans COUNT 1
· User Label OFF

BARGRAPH A FUNC CH1

· Unit	V [FS, Hz, dB, %]	Basic unit of selected analyzer or bargraph function (see section **2.4 Units**)
· Limit Ref	VALUE:	
	1.0000 V [FS, Hz, dB, %]	Basic unit of selected analyzer or bargraph function (see section **2.4 Units**)
· Scale	AUTO ONCE	
· Spacing	LIN	

BARGRAPH B OFF

If the same function was selected for BARGRAPH B and BARGRAPH A:
· Scale B NOT EQUAL A

With Scale B → NOT EQUAL A selected :

· Unit	V [FS, Hz, dB, %]	Basic unit of selected analyzer or bargraph function (see section **2.4 Units**)
· Limit Ref	VALUE:	
	1.0000 V [FS, Hz, dB, %]	Basic unit of selected analyzer or bargraph function (see section **2.4 Units**)
· Scale	AUTO ONCE	
· Spacing	LIN	

BARGRAPH X VOLT

· Unit	V [FS]	VOLT, FREQ, ON TIME and INTERVAL are displayed depending on the setting under X axis in the case of a generator sweep. For a sweep of the center frequency of the rms selective bandpass filter in the analyzer with measurement function RMS SELECT, FREQ is displayed.
· Reference	10000 V [FS]	
· Scale	AUTO	
· Spacing	LIN	

BARGRAPH X FREQ
· Unit Hz
· Reference 1000.0 Hz
· Scale AUTO
· Spacing LIN

BARGRAPH X ON TIME | INTERVAL
· Unit S
· Scale AUTO
· Spacing LIN
LIMIT CHECK ——————
· Mode OFF

For setting "Mode LIM LOWER, LIM UPPER, LIM LOW&UP" the following applies:

· Check	TRACE A	
· Lim Upper	VALUE:	not with LIM LOWER
	0.5000 V	
· Lim Upper	VALUE:	not with LIM UPPER
	0.0500 V	

A.5 Default Settings of Options Panel

```
· Remote via  IEC BUS
· UPL IECadr  20
· Beeper      ON
PARAM.LINK  ————————————
· Param Link  CHOICE...
```

with remote control option (UPL-B4) installed
not with remote control via COM2

Function tracking Gen → Anl selected

```
DIGITAL AUDIO I/O ——
. Sampl Mode BASE RATE
```

The HIGH RATE-Mode (96 kHz-Instrument) has also the default setting described here

```
SCREEN HARD COPY  ———
```

*For setting **Destin** → **PRINTR/SPC** the following applies:*

```
· Destin      PRINTR/SPC
· Printname   Default-Printer
· Frame Col   FILE DEF
· Comment     ON
· Left Mrgn   10   Chars
· Prn Resol   HIGH
· X Scaling   1.5000
· Y Scaling   1.5000
· Orientatn   PORTRAIT
```

Default Printer stands for the printer selected last by the user. If printer 0 is selected in the setup, loading the default setup does not overwrite the printer type selected by the user.

*For setting **Destin** → **PLOTTR/HPGL** | **PRINTR/HPGL** the following applies:*

```
· Destin      PLOTTR/HPGL | PRINTR/HPGL
· Color       OFF
· Copy        SCREEN
· Plot on     COM2
· IEC Adr     4
```

with Plot on = IEC BUS

*For setting Destin → **FILE/PCX** the following applies:*

```
· Destin      FILE/PCX
· Color       OFF
· Frame Col   FILE DEF
· Plot on     COM2
```

*For setting Destin → **FILE/HPGL** the following applies:*

```
· Destin      FILE/HPGL
· Color       OFF
· Copy        SCREEN
· Filename    SCREEN
```

*For setting Destin → **PRINTR/PS | FILE/PS | FILE EPS** the following applies:*

```
· Destin      PRINTR/PS | FILE/PS | FILE EPS
· Color       OFF
· Comment     ON
· Paper Size  A4
· Orientatn   LANDSCAPE
· Plot on     COM2
· Plots/Page  1

PRINT  ——————————————
· Type        OFF

 COM2 PARAMETER ————————
 · Baud Rate   9600
 · Parity      EVEN
 · Data Bits   7
 · Stop Bits   1
 · Handshake   RTS/CTS
```

This standard setting is only set when the BACKSPACE key is pressed during UPL switch-on, UPL-d is entered or after a (new) installation of an UPL software.
COM2 parameters remain unchanged when a default settup is loaded. This prevents interface parameters, which have to correspond to those of the connected device, being overwritten by mistake.

```
PANEL KEYS  ————————
· Reptn Rate  10.000 Hz
· Rep Delay   0.5000 s

DISPLAY  ——————————
· Extrn Disp  BOTH AUTO
· Meas Disp   ON
· Read Rate   6/s
· Read Resol  CHOICE ...        Automatic for all 6 displays
TRACES COLOR/LINE ————
· Scan Conf   MANUAL
· Scannr. (A) 0
· Color   (A) GREEN
· Line    (A) —————————
· Scannr. (B) 0
· Color   (B) GREEN
· Line    (B) —————————

HELP LANGUAGE ———————
· Language    GERMAN

CALIBRATion   ANL ————
· Zero Auto   ON

CALIBRATion   GEN ————
· PhaseToRef  OFF
· DIAGNOSTIC  password ?
· Device      INSTALL KEY
· Option No.  0
· InstallKey  0
```

A.6 Default Settings of File Panel

```
LOAD INSTRUMENT STATE ———
. Applicat    USER DEF
· Mode        ACTUAL
· Info Displ  ON
· Filename    LASTSAVE

STORE INSTRUMENT STATE ———
· Mode        ACTUAL
· Attrib      READ/WRITE
· Info Text   no infotext
· Filename    LASTSAVE

STORE TRACE/LIST ————————
· Store       OFF

UTILS  ——————————————
· Delete      TO_DELETE
· Work Dir    C:\UPL\USER
· COPY        SOURCE
· To          DEST
```