

User guide

MSK 30/L English



Contents

1	Intended Use	3
1.1	Use	3
1.2	Water protection	3
2	Product description	4
3	Changing measurement settings	6
3.1	Touch screen display area	6
3.2	Changing a setting value using the navigation wheel	6
3.3	Changing a setting value using the navigation wheel and the drop-down menu	7
3.4	Changing the frequency value using the numeric field	7
4	Volume menu	8
4.1	Changing volume	8
4.2	Changing brightness	8
4.3	Activating and deactivating battery saving mode	9
4.4	Changing switch-off time in the energy saving mode	10
5	Configuration menu	10
5.1	Changing the TV or CATV measurement range using Discovery	11
5.2	Changing SCR user frequency	12
6	Main menu	13
6.1	SAT, TV and CATV measurements	13
6.2	Spectrum analyser	13
6.3	Channel list	13
6.4	Service	14
6.4.1	Selecting a channel	14
6.4.2	Selecting the sound mode	14
6.5	Help	15
6.6	Memory	15
6.6.1	Automemory TV	15
6.6.2	Datalogger	15
7	Measuring SAT, TV and CATV signals	16
7.1	General	16
7.1.1	Selecting a signal type	16
7.1.2	Zooming in on constellation display	17
7.1.3	Activating and deactivating full-screen mode	17
7.2	Measuring SAT signals	18
7.2.1	Selecting a channel list	18
7.3	Measuring TV and CATV signals	19
7.3.1	Selecting a channel list	19
8	Battery	21
8.1	General	21
8.2	Charging battery	21
8.3	Carrying out a battery test	22
8.3.1	Starting a battery test	22
8.3.2	Retrieving battery test results	23
9	Technical Data	24
10	Maintenance instructions	26
11	Waste disposal instructions	26
12	Copyright and licence agreements	27

1 Intended Use

1.1 Use

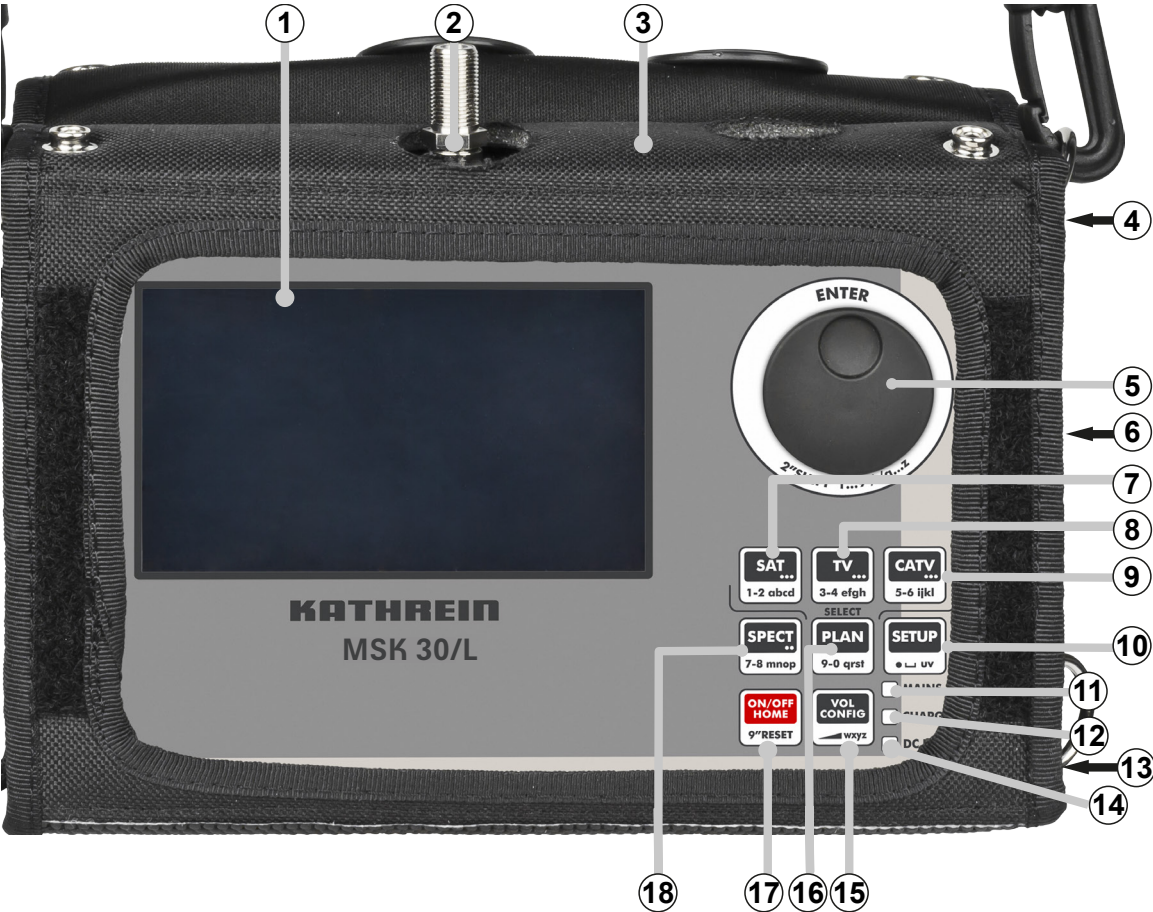
The test meter MSK 30/L is a measuring instrument to receive and measure SAT, TV and CATV signals. It is also possible to use the meter to display digital signals.

1.2 Water protection

The test meter is not waterproof. Contact with water can damage printed circuit boards. In case of contact with water:

- Dry the test meter before turning it on.
- Never use a hair dryer or a heat source to dry the meter.

2 Product description



Nr.	Name	Funktion
①	Touch screen	displays signals and enables operation
②	HF SAT/TV input	connects a SAT input plug 950-2.150 MHz connects a TV/CATV input plug 47-880 MHz
③	DC-RF IN	turns on and off remote feed voltage
④	USB port	connects to a PC
⑤	Navigation wheel	navigates between menu items and confirms a selection
⑥	Loudspeaker	reproduces sound
⑦	SAT	opens the measurement range of SAT signals
⑧	TV	opens the measurement range of DVB-T(2) and TV ¹⁾ signals
⑨	CATV	opens the measurement range of CATV signals
⑩	SETUP	opens the configuration menu
⑪	MAINS	LED is on when the meter is turned on or connected to an external power supply.
⑫	CHARGE	LED is on when the meter is being charged.
⑬	Power supply	connects external power supply (12 Volt DC)

Nr.	Name	Funktion
⑭	DC RF In	LED is on if there is a DC offset in a SAT signal.
⑮	VOL CONFIG	sets up volume and other settings
⑯	PLAN	activates SAT, TV and CATV channel lists
⑰	ON/OFF HOME	turns the meter on and off and navigates to the main menu
⑱	SPECT	activates the spectrum analyser mode

To operate the test meter, use buttons (⑧-⑪ and ⑯-⑱), the navigation wheel (⑥) and the touch screen (①).

For more information about the meter operation as well as software and hardware reset, see the MSK 30/L Quick Start Guide.

1) Display of analogue TV signals not possible

3 Changing measurement settings

3.1 Touch screen display area

①

PLAN

EUROPE

MODULAT

DVBT&H

BW

8

DC@RF

OFF

FREQ

698.00

CHAN

49

POWER: 65.5dBuV

30

40

50

60

70

80

90

100

MER: 33.4dB

8

12

16

20

24

28

32

36

40

bBER: 7x10-6

aBER: <10-8

ERR: 0

PICTURE

②

④

NTD: 12289

NETW: Mediaset4

MENU & ?

③

⑤

①

Setting parameters and values

②

Image display

③

Context sensitive menu

④

Transport stream information

⑤

Measurements

Tip

Use the main menu on the touch screen or the buttons to call up the following functions:

•

SAT

•

TV

•

CATV

•

SPECT

•

PLAN

3.2 Changing a setting value using the navigation wheel

CHAN

41

1.

Press the navigation wheel to activate the line with setting parameters.

⇒ A setting parameter is active (marked in green).

2.

Rotate the navigation wheel to select a desired setting parameter.

CHAN

41

3.

Press the navigation wheel to go to a setting value.

⇒ A setting value is active (marked in green).

4.

Rotate the navigation wheel to change the setting value.

⇒ The setting value changes.

CHAN

58

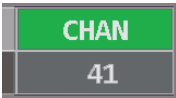
5.

Press the navigation wheel to confirm the selection.

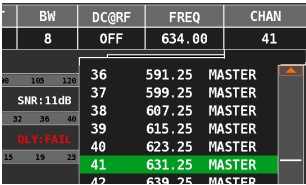
⇒ The new setting value is saved.

6 of 28

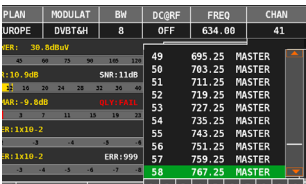
3.3 Changing a setting value using the navigation wheel and the drop-down menu



1. Press the navigation wheel to activate the line with setting parameters.
⇒ A setting parameter is active (marked in green).
2. Rotate the navigation wheel to select a desired setting parameter.



3. Press and hold the navigation wheel to call up the drop-down menu.
⇒ The drop-down menu opens.

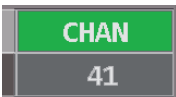


4. Rotate the navigation wheel to change the setting value.
⇒ The setting value changes.

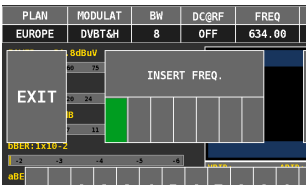


5. Press the navigation wheel to confirm the selection.
⇒ The new setting value is saved.

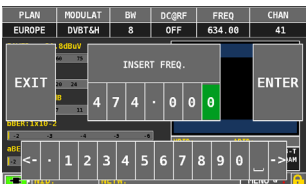
3.4 Changing the frequency value using the numeric field



1. Press the navigation wheel to activate the line with setting parameters.
⇒ A setting parameter is active (marked in green).
2. Rotate the navigation wheel to select the frequency parameter.
⇒ The frequency parameter is active (marked in green).



3. Press and hold the navigation wheel to call up the numeric field.
⇒ The menu shown on the left appears.



4. Enter a frequency value using the numeric field at the bottom of the touch screen. The cursor goes to the next input field automatically.

Tip If you want to change the value in an input field, rotate the navigation wheel to go to this input field and enter a new value.

Volume menu



5. Having entered the values, rotate the navigation wheel to go to **ENTER**.

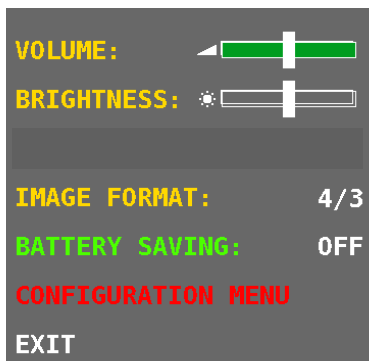


6. Press the navigation wheel to save the selection.

⇒ The new frequency value is saved.

Tip You can switch between setting parameters and values as well as change a setting value by using the touch screen directly.

4 Volume menu



In the volume menu, you can change the following settings:

- **VOLUME**
- **BRIGHTNESS**
- **IMAGE FORMAT**
- **BATTERY SAVING**
- **CONFIGURATION MENU**

Tip You can open **CONFIGURATION MENU** directly.
▶ Press **SETUP**.
⇒ The configuration menu opens and the **METER** menu item is active (marked in green).

4.1 Changing volume

1. Press **VOL CONFIG** to open the volume menu.
⇒ The volume menu opens and the volume value is active (marked in green).
2. Rotate the navigation wheel to change the volume value.
3. Press the navigation wheel to save the selection.
⇒ The volume value is saved.

4.2 Changing brightness

1. Press **VOL CONFIG** to open the volume menu.
⇒ The volume menu opens and the volume value is active (marked in green).
2. Press the navigation wheel and rotate it to select **BRIGHTNESS**.
⇒ The **BRIGHTNESS** menu item is active (marked in green).

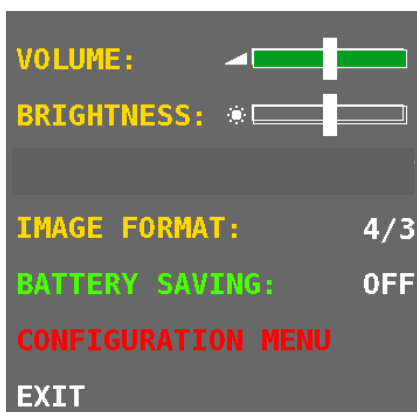
3. Press the navigation wheel to select the brightness value.
⇒ The brightness value is active (marked in green).
4. Rotate the navigation wheel to change the brightness value.
5. Press the navigation wheel to save the selection.
⇒ The brightness value is saved.

Tip To select other menu items and values, take steps 1 – 3, see *Changing brightness*.

Tip You can switch between the volume menu items by using the touch screen directly. The value of the menu item is active by default:

- ▶ Press a volume menu item.
⇒ The menu item value is active (marked in green).

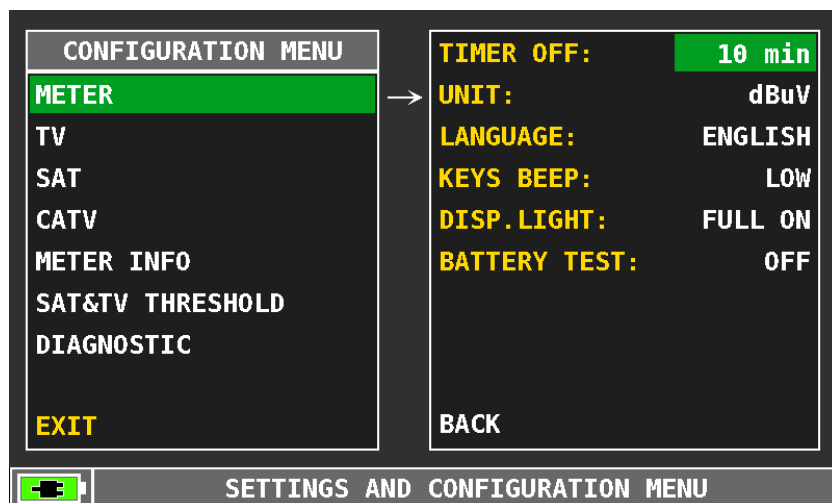
4.3 Activating and deactivating battery saving mode



In the battery saving mode, the display brightness is reduced after 30 seconds and the meter turns off automatically after 5 or 10 minutes of inactivity.

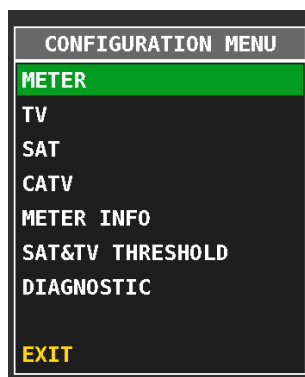
1. Take steps 1 – 3 to select **BATTERY SAVING**, see *Changing brightness*.
⇒ The battery saving value is active (marked in green).
2. Rotate the navigation wheel and select **ON** to activate the battery saving mode.
⇒ The battery saving mode is activated.
Rotate the navigation wheel and select **OFF** to deactivate the battery saving mode.
⇒ The battery saving mode is deactivated.

4.4 Changing switch-off time in the energy saving mode



1. Press **SETUP** or take steps 1 – 3 to open **CONFIGURATION MENU**, see *Changing brightness*.
⇒ The configuration menu opens and the **METER** menu item is active (marked in green).
2. Press the navigation wheel to open the **METER** menu.
⇒ The **METER** menu opens and the **TIMER OFF** menu item is active (marked in green).
3. Press the navigation wheel and rotate it to select **OFF**, **5 Min** or **10 Min**.
4. Press the navigation wheel to save the selection.
5. Rotate the navigation wheel and press **BACK** to leave the **METER** menu.
6. Rotate the navigation wheel and press **EXIT** to leave the configuration menu.
⇒ The switch-off time is saved.

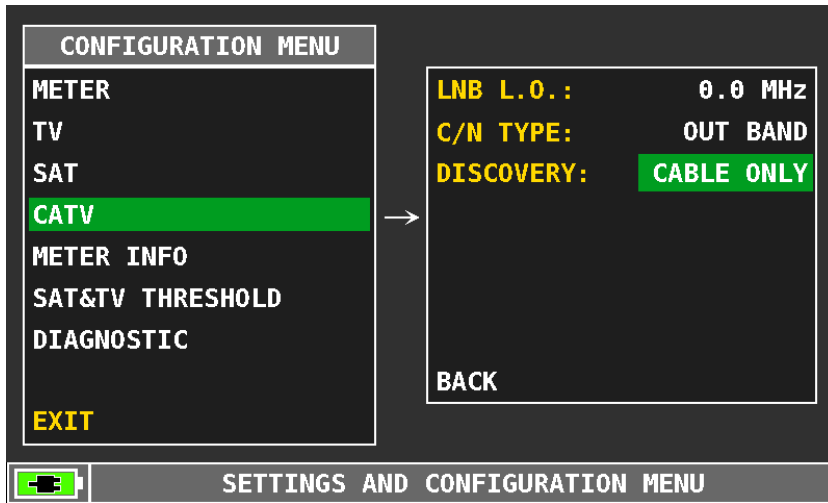
5 Configuration menu



In the configuration menu, you can change the following settings:

- **SAT**, **TV** and **CATV** configurations
- **SAT FINDER**
- **SAT SCR**
- **METER INFO**
- **DIAGNOSTIC**

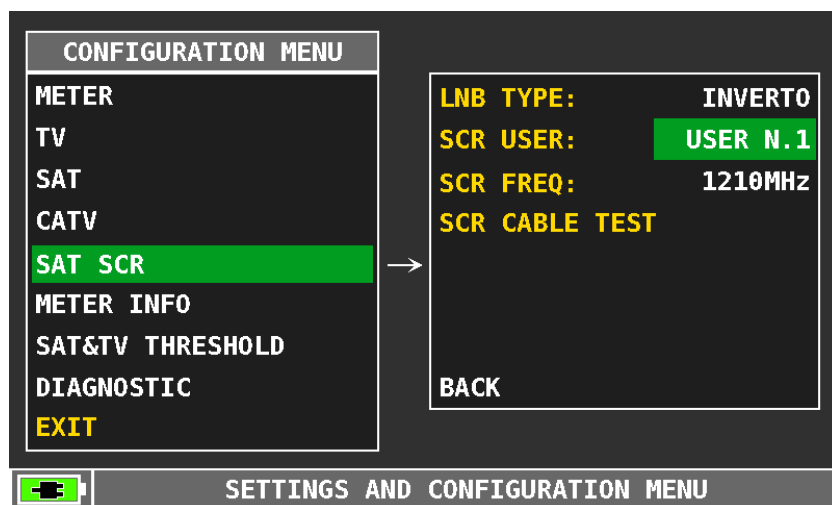
5.1 Changing the TV or CATV measurement range using Discovery



Tip You can change the TV or CATV measurement range only if there are no custom or automatic memory maps created using [MANUAL MEMORY](#) or [AUTOMEMORY](#).

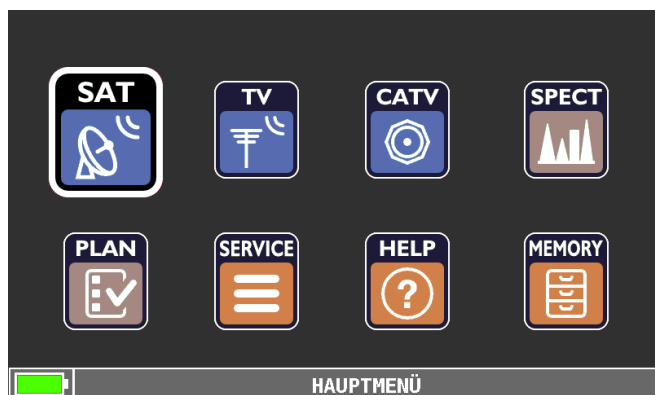
1. Press **SETUP** or take steps 1 – 3 to open **CONFIGURATION MENU**, see *Changing brightness*.
⇒ The configuration menu opens and the **METER** is active (marked in green).
2. Rotate the navigation wheel to select **TV** or **CATV**.
3. Press the navigation wheel to open the **TV** or **CATV** menu.
⇒ The **TV** or **CATV** menu opens and the **LNB L.O.** menu item is active (marked in green).
4. Rotate the navigation wheel to select **DISCOVERY**.
⇒ The **DISCOVERY** menu item is active (marked in green).
5. Press the navigation wheel to select the **DISCOVERY** value.
⇒ The **DISCOVERY** value is active (marked in green).
6. Rotate the navigation wheel to select between **TERR ONLY** (only DVBT) and **TERR&CABLE** (DVBT and DVBC) or **CABLE ONLY** (only DVBC) and **TERR&CABLE** (DVBT and DVBC).
7. Press the navigation wheel to save the selection.
8. Rotate the navigation wheel and press **BACK** to leave the **METER** menu.
9. Rotate the navigation and press **EXIT** to leave the configuration menu.
⇒ The **TV** or **CATV** measurement range is changed.

5.2 Changing SCR user frequency



1. Press **SETUP** or take steps 1 – 3 to open **CONFIGURATION MENU**, see *Changing brightness*.
⇒ The configuration menu opens and the **METER** menu item is active (marked in green).
2. Rotate the navigation wheel to select **SAT SCR**.
3. Press the navigation wheel to open the **SAT SCR** menu.
⇒ The **SAT SCR** menu opens and the **LNB TYP** menu item is active (marked in green).
4. Press the navigation wheel to select the **LNB TYP** value.
⇒ The **LNB TYP** value is active (marked in green).
5. Rotate the navigation wheel to select the **SCR/SCD2** function.
6. Press the navigation wheel to save the selection.
7. Rotate the navigation wheel to select **SCR USER**.
8. Press the navigation wheel to select the **SCR USER** value.
⇒ The **SCR USER** value is active (marked in green).
9. Rotate the navigation wheel to select an **SCR** user.
10. Press the navigation wheel to save the selection.
11. Rotate the navigation wheel to select **SCR CABLE TEST**.
⇒ The frequency of the selected user (Step 8) is measured.

6 Main menu



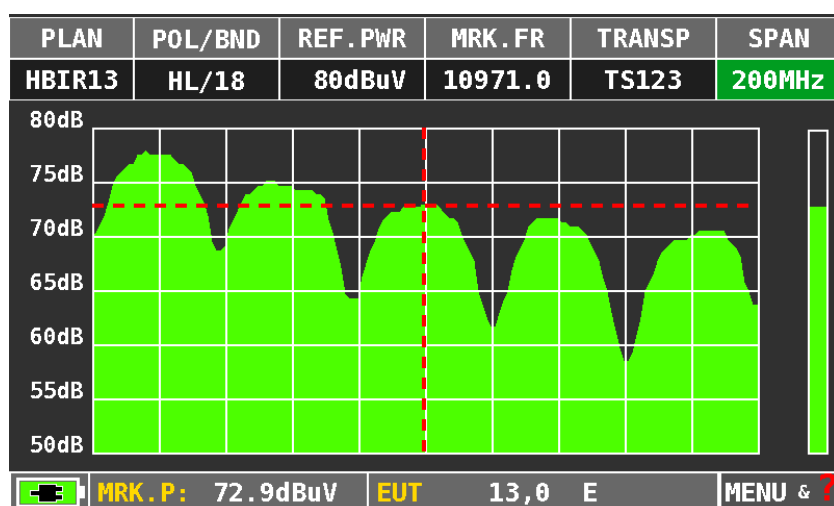
In the main menu, you can call up the following functions:

- **SAT**, **TV** and **CATV** measurements
- **SPECT** (spectrum analyser)
- **PLAN** (channel list)
- **SERVICE**
- **HELP**
- **MEMORY**

6.1 SAT, TV and CATV measurements

For more information about measurements, see *Measuring SAT signals* and *Measuring TV and CATV signals* as well as the MSK 30/L Quick Start Guide.

6.2 Spectrum analyser



1. Press **SPECT** to activate the spectrum analyser mode.
⇒ The spectrum analyser menu opens and the **SPAN** value is active (marked in green).
If a different value is active, press and rotate the navigation wheel to activate the **SPAN** value.
2. Rotate the navigation wheel to select a different **SPAN** value or press the active **SPAN** value (marked in green) using the touch screen and select a new value from the drop-down menu.

For more information about the spectrum analyser, see the MSK 30/L Quick Start Guide.

6.3 Channel list


For more information about the channel list, see 7.2.1 *Selecting a channel list* and 7.3.1 *Selecting a channel list* as well as the MSK 30/L Quick Start Guide.



6.4 Service

PLAN	MODULAT	BW	DC@RF	FREQ	CHAN
EUROPE	DVBT&H	8	OFF	698.00	49

NAME	TYPE	ENC
Servizio12	DATA	N
Rete4	TV	N
Canale5	TV	N
Italia1	TV	N
La 5	TV	N
TGCOM24	TV	N
Iris	TV	N

DATE:	5/12/2013
VIDEO RATE:	4.86 Mb/s

		
VPID:	1630 APID:	1631
SERV.ID.:	4004	
TELETEXT:	YES	
ENCRYPT.:	Clear	

 TSID: 940	CID: 301 (0x12D)	MENU & ? 
---	------------------	--

Using the **SERVICE** function you can change the following:

- select a channel from a channel list
- activate and deactivate the full-screen mode

6.4.1 Selecting a channel

1. Press **SERVICE**.
⇒ The **SERVICE** menu opens, see the picture under *Service*.
2. Press the navigation wheel to go to the channel list.
3. Rotate the navigation wheel to select a channel.
⇒ A channel is selected (marked in green).
4. Press the navigation wheel to save the selection.

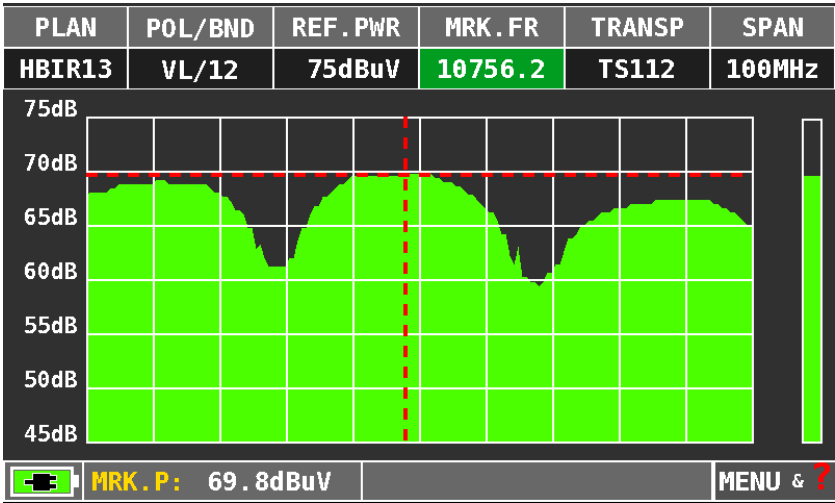
6.4.2 Selecting the sound mode

The MSK 30/L offers you a possibility to decode the Dolby AC3 Audio code.
An upgrade to receive AC3 sound can be ordered via the order form on our homepage.

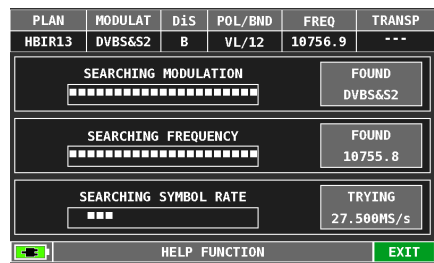
- In the full-screen mode, press **CHANGE AUDIO** on the screen to switch between MPEG-1 and DOLBY AC3 Audio (after the paid upgrade):



6.5 Help



Using the **HELP** function you can determine reception characteristics of an unknown digital TV, CATV or SAT signal.



- Press **HELP** in the main menu.
- ⇒ The reception characteristics of a digital signal are determined. After the search is completed, all three measuring fields display **FOUND**.

For more information about the **HELP** function, see the MSK 30/L Quick Start Guide.

6.6 Memory

6.6.1 Automemory TV

Using the **AUTOMEMORY TV** function you can save a channel list in the TV mode.
For more information about the **AUTOMEMORY TV** function, see the MSK 30/L Quick Start Guide.

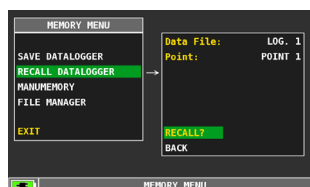
6.6.2 Datalogger

Using the **SAVE** or **RECALL DATALOGGER** functions you can save measuring results and retrieve saved measuring results.
For more information about saving measuring results, see **SAVE DATALOGGER** in the MSK 30/L Quick Start Guide.

To retrieve the saved measuring results:

1. Press **MEMORY** in the main menu.
⇒ The **MEMORY** menu opens.

2. Rotate the navigation wheel to select **RECALL DATALOGGER**.



3. Press **RECALL DATALOGGER**.

⇒ The **RECALL DATALOGGER** menu opens and **DATA FILE** menu item is active (marked in green).

4. Press the navigation wheel to activate the data file value (**LOG.1**, **LOG. 2** etc.).
5. Rotate the navigation wheel to select a data file (**LOG.1**, **LOG.2** etc.).
6. Press the navigation wheel to save the selection.
7. Rotate the navigation wheel to select **RECALL**.

LOG. 1		POINT 1		EXIT		
NAME	TYPE	PWR LVL	MER C/N	bBER A/V	aBER PER	
15	DVB-T	43.4	23.7	2.0E-06	<E-08	
18	DVB-T2	58.5	19.7	<E-06	<E-08	
21	DVB-T	48.2	24.4	<E-06	<E-08	
22	DVB-T	55.6	23.2	5.0E-03	<E-08	
26	DVB-T	68.6	21.5	9.0E-03	<E-08	
30	DVB-T	69.2	24.5	1.0E-03	<E-08	
32	DVB-T	69.1	16.6	5.0E-02	3.0E-02	
36	DVB-T	58.8	22.4	8.0E-05	<E-08	
37	DVB-T	60.4	24.4	4.0E-05	<E-08	
38	DVB-H	61.9	22.0	<E-06	<E-08	
42	DVB-T	57.3	19.7	1.0E-02	2.0E-02	

REF: 1 DATA LOGGER

8. Press **RECALL** to open the list with saved measuring results.

⇒ The list with measuring results opens.

9. Rotate the navigation wheel to switch between the saved measuring results.

7 Measuring SAT, TV and CATV signals

For more information about measurements, see the MSK 30/L Quick Start Guide.

7.1 General

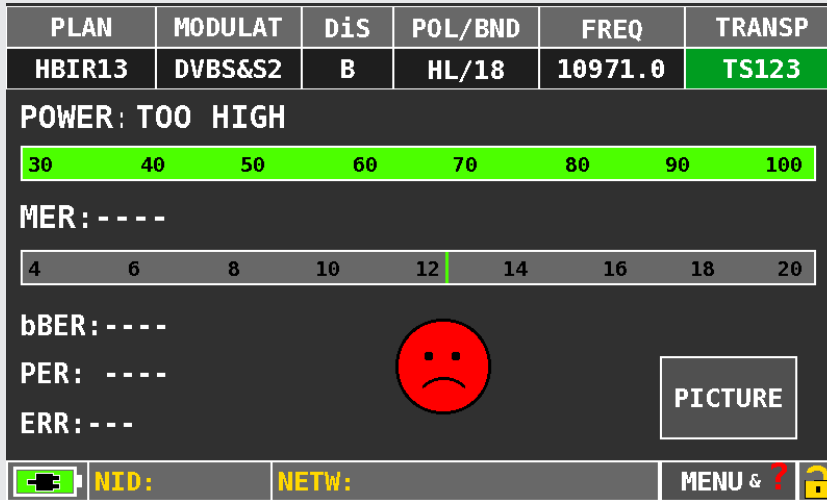
7.1.1 Selecting a signal type



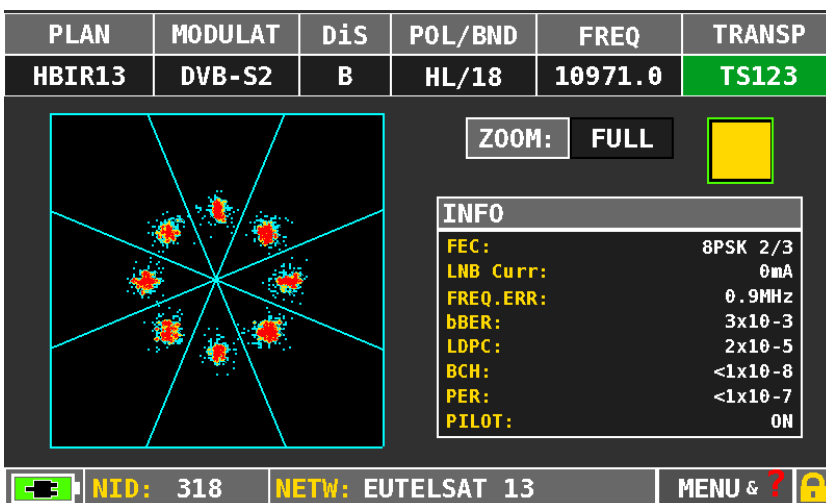
1. Press **ON/OFF HOME** to open the main menu.
⇒ The main menu opens and the **SAT** menu item is active (the icon is larger).
2. Rotate the navigation wheel or use the touch screen to select **SAT**, **TV** or **CATV**.

Tip Use the main menu on the touch screen or buttons to select **SAT**, **TV** or **CATV** signals.

Tip If the input signal is too high or too low, there is a notification **POWER: TOO HIGH** or **POWER: TOO LOW**:



7.1.2 Zooming in on constellation display

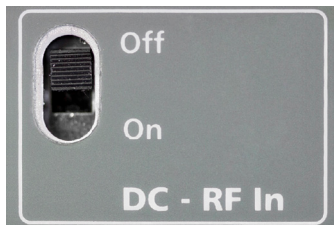


1. Select a signal type, see *Selecting a signal type*.
2. Press **SAT/TV/CATV** to go to the constellation.
3. Rotate the navigation wheel or use the touch screen to select **ZOOM**.
4. Select a quadrant of the constellation.
⇒ The selected quadrant is zoomed in.

7.1.3 Activating and deactivating full-screen mode

For more information about the full-screen mode, see the MSK 30/L Quick Start Guide.

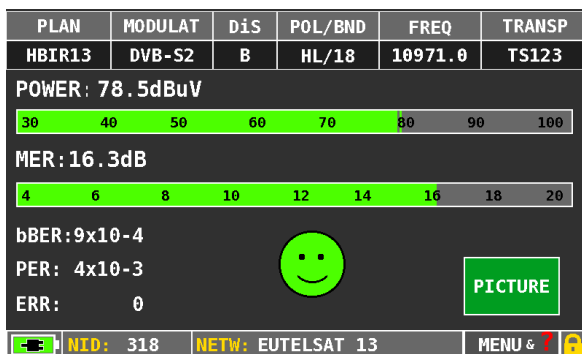
7.2 Measuring SAT signals



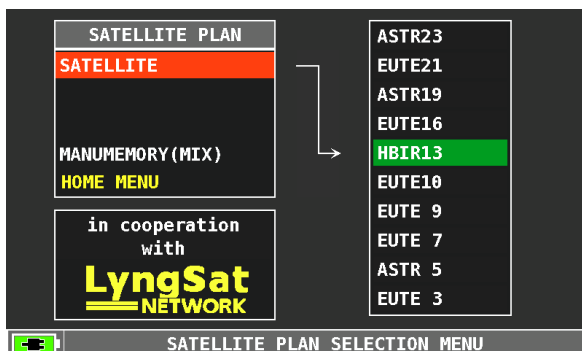
Notice

If there is a DC offset in the coax cable when measuring a SAT signal (DC RF LED is on), move the **DC-RF In** switch to **OFF** to prevent permanent damage on the test meter.

7.2.1 Selecting a channel list



1. Select **SAT** using the main menu on the touch screen or the **SAT** button.
⇒ The SAT measurement range opens.



2. Press **PLAN**.
⇒ The SAT overview opens.

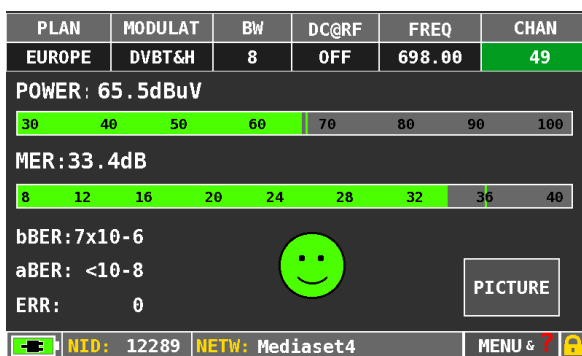
3. Press the navigation wheel to go to the satellite list.
4. Rotate the navigation wheel to select a satellite.
⇒ The satellite is selected (marked in green).
5. Press the navigation wheel or the **SAT** button to save the selection and leave the SAT overview.
⇒ The chosen satellite is displayed in the measurement range under **PLAN**.

Tip You can select a satellite by using the touch screen directly.

1. Take steps 1 – 2, see *Selecting a channel list*.
2. Press a satellite.
⇒ The satellite is selected (marked in green).
3. Press the navigation wheel or the **SAT** button to save the selection and leave the SAT overview.
⇒ The chosen satellite is displayed in the measurement range under **PLAN**.

7.3 Measuring TV and CATV signals

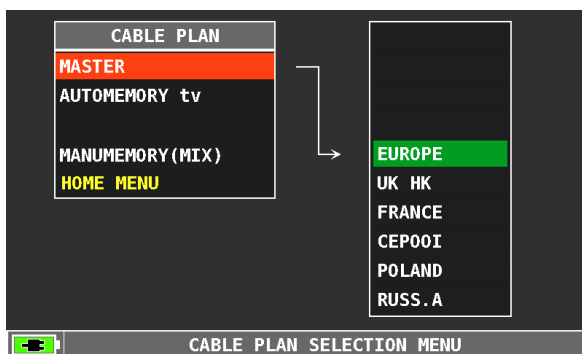
7.3.1 Selecting a channel list



1. Select **TV** or **CATV** using the main menu on the touch screen or **TV** or **CATV** buttons.

⇒ The TV or CATV measurement range opens.

- 1) Display of analogue TV signals is not possible. Only the measurement of analogue signals is available.



2. Press **PLAN**.

⇒ The SAT overview opens.

3. Press the navigation wheel to go to the channel list.
4. Rotate the navigation wheel to select a channel list.
⇒ The channel list is selected (marked in green).
5. Press the navigation wheel or the **TV** or **CATV** button to save the selection and leave the TV or CATV overview.
⇒ The chosen satellite is displayed in the measurement range under **PLAN**.

Tip You can select a channel list by using the touch screen directly.

1. Take steps 1 – 2, see *Selecting a channel list*.
2. Press a channel list.
⇒ The channel list is selected (marked in green).
3. Press the navigation wheel or the **SAT** button to save the selection and leave the TV or CATV overview.
⇒ The chosen satellite is displayed in the measurement range under **PLAN**.

8 Battery

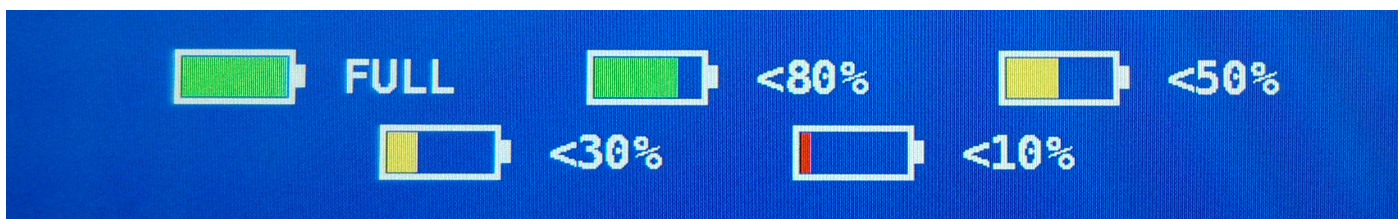
8.1 General

The provided battery is a lithium polymer battery of the highest quality. The capacity of the battery depends on the following conditions:

- LNB power consumption: single, dual or quad LNB.
- Outdoor temperature: at temperatures below 10 °C the capacity of the battery is reduced by 20 %.
- Age of the battery: the capacity of the battery is annually reduced by 10 %.

Tip If the test meter has been exposed to particularly low or high temperatures, let the meter rest for a while at ambient temperature before use.

The battery status has a tolerance of ± 20 % and depends on the battery charge condition and ageing process as well as on the outdoor temperature. The following icons in the bottom left corner of the touch screen provide information about the battery charge condition:



The charged battery lasts up to 3 hours. Using the **BATTERY SAVING** function you can increase the battery life, see *Activating and deactivating battery saving mode*.

8.2 Charging battery

You can charge the battery a number of times. Pay attention to the following instructions to charge the battery properly and to increase the battery life span:

- Charge the battery at ambient temperature (at approx. 20 °C).
- Charge the battery in areas with good air circulation.
- Never cover the test meter when the battery is being charged and do not charge it in a hard-top case.
- Always turn the test meter off to charge the battery.
- Charge the battery for at least 7 hours over night after every use, even if it is not fully discharged.
- Never leave the battery discharged over a longer period of time to prevent a premature battery failure.

Following elements provide information about the battery charging process:

Test meter	Power supply unit connected	LED		Meaning
		MAINS	CHARGE	
off	yes	on	on	The meter is being charged.
off	yes	on	off	The charging process is completed.
off	yes	on	flashes	Abnormal battery temperature. The charging process has been interrupted and will reset automatically.

8.3 Carrying out a battery test

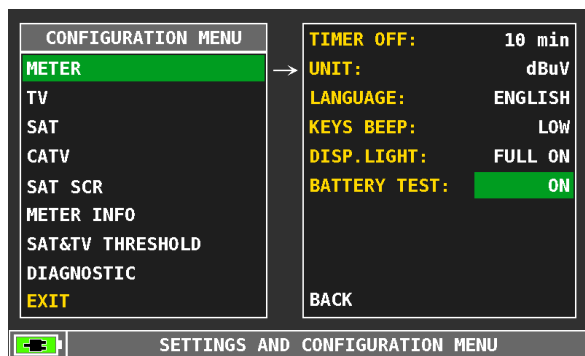
After some time it is necessary to replace the battery. However, you can restore the capacity of the old battery by carrying out 3 to 5 battery tests.

Tip

- The battery test lasts approx. 20 hours. You cannot use the test meter during this time.
- After the battery test is completed, the test meter turns off automatically.
- All functions of the test meter with the exception of the **RESET** function are turned off to guarantee a correct execution of the battery test.
- The **RESET** function is active to be able to turn off the meter, if necessary.
- If the battery test is interrupted by the use of the **RESET** function, the battery charge condition is not displayed correctly. Carry out the battery test again!
- The battery is fully charged at the end of the test.

8.3.1 Starting a battery test

1. Connect the test meter to the power supply unit.
2. Turn on the meter.
3. Press **SETUP** or take steps 1 – 3 to open **CONFIGURATION MENU**, see *Changing brightness*.
⇒ The configuration menu opens and the **METER** menu item is active (marked in green).
4. Press the navigation wheel to open the **METER** menu.
⇒ The **METER** menu opens and the **TIMER OFF** menu item is active (marked in green).
5. Rotate the navigation wheel to select **BATTERY TEST**.



6. Press the navigation wheel and select **ON**.
⇒ The **BATTERY TEST** is active (marked in green).

7. Press the navigation wheel to save the selection.
⇒ A series of pages opens.
8. Read instructions on every page.
9. Press **NEXT** to go to the next page.
Press **BACK** to go to the previous page.

Tip You can cancel the battery test at any time:
► Press **EXIT** to cancel the battery test.

10. Select **START** on the last page.
11. Press the rotation wheel to start the battery test.
Press **EXIT** to cancel the battery test.

8.3.2 Retrieving battery test results

1. Press **SETUP** or take steps 1 – 3 to open **CONFIGURATION MENU**, see *Changing brightness*.
⇒ The configuration menu opens and the **METER** menu item is active (marked in green).
2. Press the navigation wheel to open the **METER** menu.
⇒ The **METER** menu opens and the **TIMER OFF** menu item is active (marked in green).
3. Rotate the navigation wheel to select **BATTERY TEST**.
4. Press the navigation wheel to retrieve the results of the battery test.
⇒ The result of the battery test is shown as a combination of letters and numbers, e.g. **130ACLY**.
The number (e.g. **130**) indicates the battery life in minutes.
The letters **ACL** represent a checksum and have no meaning for the evaluation of the battery test results.
The last letter is either **Y** or **N**. **Y** stands for "Yes" and means that the battery is in working order. **N** stands for "No" and means that the battery is faulty or that the battery test has been interrupted.

9 Technical Data

Feature	Unit	Value
Type		MSK 30/L
Order no.		2170000003
RF section		
Frequency range DVB-C/-T/-T2	MHz	47 - 880
Frequency range DVB-S/-S2	MHz	950 - 2150
Frequency resolution	kHz	Cable/TV/FM: 50, Sat: 100
Transmission standards		B/G, I, D/K, M, N
Digital satellite receiver DVB-S/-S2		
Modulation type		QPSK, 8PSK
Code rate (FEC) DVB-S		1/2, 2/3, 3/4, 5/6, 7/8
Code rate (FEC) DVB-S2		1/2, 2/3, 3/4, 5/6, 8/9, 9/10, 2/5, 3/5
Input symbol rate	MS/s	2 - 45 (DVB-S), 2 - 45 (DVB-S2)
BER		1E-6 ... 2E-2 (pre Viterbi)
MER	dB	25
Digital terrestrial TV receiver DVB-T/-T2		
DVB-T modulation		QPSK, 16/64 QAM
DVB-T2 modulation		QPSK, 16/64/256 QAM
FFT mode DVB-T		2k, 8k
FFT mode DVB-T2		1k, 2k, 4k, 8k, 16k, 32k
Guard intervall DVB-T		1/4, 1/8, 1/16, 1/32
Guard intervall DVB-T2		1/4, 1/8, 1/16, 1/32, 1/128, 19/128, 19/256
Code rate (FEC) DVB-T		1/2, 2/3, 3/4, 5/6, 7/8
Code rate (FEC) DVB-T2		1/2, 2/3, 3/4, 5/6, 7/8, 3/5, 4/5
Channel bandwidth	MHz	6, 7, 8
BER		1E-6 ... 1E-2 (pre Viterbi)
MER	dB	36
Digital CATV receiver DVB-C (J83 A)		
DVB-C modulation		16/32/64/128/256 QAM
Input symbol rate	MS/s	2 - 6.999
BER		1E-9 ... 1E-2 (pre RS)
MER	dB	40
TV system standards		
Audio		FM, NICAM and AM audio
Digital video decoding		MPEG-2; MPEG-4/AVC
DVB transport stream		

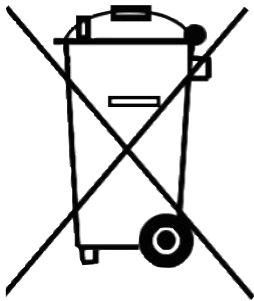
Feature	Unit	Value
Data rate		Services can be measured in Mbit/s
Level measurement section		
Level measurement range	dBμV	30 ... 95
Measurement accuracy	dB	Typ. ±1,5
Detector analogue		TV: peak value; Sat/FM: mean value
Detector digital		Mean value
Display		
Monitor		4.3" Touch TFT colour display (480 x 272 pixels)
Sat finder (acoustical)		Level-dependent whistling sound
Power supply		
Li-Ion battery		2.4 Ah, 18 Wh, 7.4 V
Mains (plug-in power supply unit)	V	100 - 240 (50/60 Hz)
DC external	V	12
Remote feeding		
Remote feed voltage supply	V	5/13/18
Remote feed current	mA	Max. 500
Control signals		22 kHz, DiSEqCTM1.2, SCR-/SCD2 single-cable system
Connections		
RF input (impedance)	Ohm	75 (F-type coaxial socket)
USB port		1 x port, USB 1.1
DC voltage supply 12 V		DC plug adapter 2.5/5.5 mm
General		
Safety standards		Protection class II (AC/DC power supply unit), VDE EN 61010
Dimensions (W × H × D)	mm	185 x 125 x 44
Weight	kg	approx. 0.7
VPE 1		1
EAN 1		4021121530500
Customs tariff number		90303200

10 Maintenance instructions

To clean the meter, use a soft cloth dampened with a solution of water or alcohol.

Never use aggressive chemical products, diluting agents and abrasives or rough cloths.

11 Waste disposal instructions



Electronic equipment is not domestic waste – in accordance with directive 2002/96/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL dated 27th January 2003 on used electrical and electronic appliances, it must be disposed of properly.

At the end of its service life, take this unit for disposal to an appropriate official collection point.

12 Copyright and licence agreements



Manufactured under licence from Dolby Laboratories. Dolby and the double D symbol are registered trademarks of Dolby Laboratories.

