Measuring Instrument Programme 2007

KATHREIN

/01

Ī



KOTHREN

Contents

Antenna Signal Meter System MSK 200	3
Design, function	4
Six signal meter systems	5
Constellation diagrams	6-7
Technical data, product package	8-10
Signal Meter Sat/TV/FM MSK 33	11
Features	12
Technical data	13
Accessories	14-15
Measuring system MSK 33/MVG 10	16
Signal Meter Sat/TV/FM MSK 25	17
Features, product package	18
Technical data	19
Sat Meter MSK 15	20
Features, product package	21
Video Generator MVG 10	<mark>22</mark>
Technical data	23
Instrument Leasing	24





Antenna Signal Meter System



The MSK 200 is a latest generation signal meter in a compact design that leaves nothing to be desired for checking antenna and cable systems, or even professional head-ends.

The instrument is suitable for use in the lab and for monitoring head-ends with remote control, as well as for acceptance measurements on antenna and distribution systems.

Design

- Handy portable signal meter
- High-resolution, 10.4" TFT colour display for the display of analogue and digital TV signals as well as for the display of graphics
- Backlighting as a result the display is also easy to see in bright sunlight (typ. 600 cd/m²)
- Convenient operation using 12 hard keys and the infra-red touch screen for menu-based operation
- The touch screen controls can be adapted to the needs of left and right-handed users
- Alphanumeric keyboard display for the entry of numbers and text
- Adjustable carrying strap on the instrument

Functions

- MER measurement for all digital modulation types
- BER measurement
- Spectrum analyser with freely selectable start and stop frequencies as well as entry of centre frequency and span
- Simultaneous display of spectrum and picture
- Storage oscilloscope
- Constellation analyser for all DVB standards
- MPEG and analogue TV monitor
- Demodulation of analogue signals: AM (CATV, terr.), FM (satellite, radio)
- Demodulation of digital signals: DVB-C, DVB-T, DVB-S (DVB-S2 in development)
- Demodulation of the digital USA standards (J83B, DOCSIS, ATSC)
- Facility for measurement of video amplitude with line selection, S/N measurement and hum measurement
- S/N measurement: typ. 57 dB
- Channel selection for DVB-C, DVB-S, DVB-T and analogue with entry of frequency, entry of channel and user lists

- Remote control over Ethernet, RS 232 and PCMCIA module (analogue modem, GSM modem, Bluetooth, WLAN)
- Indication of SID, PMT-PID, PCR-PID, CA info, elementary stream PID, service type, NIT
- Measured data logging and automatic measurement
- Automatic measurements for CTB and CSO
- Return path measurements
- Result magnitude indication with indication of the numerical value
- Measurement units: dBμV, dBmV, dBm, μV, mV
- DiSEqC[™] monitor
- Multimeter for LNB supply
- Insert positions for future additions (e.g. for DVB-S2)
- Mains or battery operation possible
- 6.5 Ah lithium/ion rechargeable battery for several hours of measurements without mains supply - therefore also suitable for mobile use

Six signal meter systems in one

1.1



S	CON	TENT		OTICE						LIGCAD	Charles Sec
-	SID	PMI	PCR	Rame	Service Type	Status	CA	Stream Typ	1	s noutine	1
1	20201	100	101	EmErtra	Chiption table	Running	NO	NPG2 VMI		Chan Tak	Sel. Stea
2	28202	290	201	EinsPestival	Cligital talls	Russing	NO	NPG2 Video		nac as rea	A REAL COLOR
3	28203	300	301	EinsPlas	Olgital talls vision service	Running	ND	NPG2 Video		Raymon & Piler	21
4	28204	433	401	MOR FERNSEH	EN Orginal tala	Running	ND	MPG2 Video		Prog.Namber	Nig. copy to
5	28,216	500	601		Sol. Steam			X		Freuenney	
б	28.206	633	601	at		-				171.00 1011	
7	28,217	730	701	NDF MPEG2	Video > Ele	mentar	PE): 101 e		Channel .	Gestatoran
8	28208	800	801	NOI MPEGI	MPEG1 Audio > Elementary PID: 102					Standard	Get C lefe
9	20210	1000	1001	NO Private :	Private sections > Elementary PID: 170					6 ASK 0	
10	28211	1100	1101	MDI 13018-6	13918-6 Type B > Elementary PID: 171					-	Curcoa
11	28212	1200	1201	SPI 13919.6	SystelRate				VIEROPIC		
12	28213	1300	1301	Ewy					-		Ho Hardwa

• Constellation analyser



- MPEG monitor
- DiSEqC[™] monitor
- Multimeter for LNB

Spectrum analyser MSK 200



Scan over the entire digital satellite band



Digital cable channel with picture display



Analogue cable channel

Constellation diagrams, MSK 200



64 QAM signal with low broadband noise

64 QAM signal with phase noise

64 QAM signal with high broadband noise

QPSK signals





Туре		MSK 200
Order no.		21710015
Spectrum analyser		
Frequency range	MHz	5-3100
Resolution bandwidth (-3 dB)	MHz	0.001-10
Resolution bandwidth (-6 dB)	kHz	9, 25, 50, 120, 200
Video bandwidths	MHz	0.0001-3
Phase noise at 10-kHz carrier spacing	dBc	<-90 (1 Hz), typ95 (1 Hz)
Phase noise at 100-kHz carrier spacing	dBc	<-100 (1 dB), typ110 (1 Hz)
Dynamic (RBW: 100 kHz)	dB	Тур. 70
Level measuring range	dBµV	20-130
Measurement accuracy	dB	< 1.5
Measurement detector	dB	Max peak, min peak, auto peak, sample, RMS
Return loss (5-dB pre-attenuation)	dB	> 16 (VSWR: 1.35)
Refresh rate	Pic./s	Max. 10
Reference level	dBµV	30-130
Display range	dB	100, 50, 20, 10
Screen resolution	Pixels	Max. 800 x 600/nominal 501 x 401
Analogue TV receiver		
Standards		B/G, I, D/K, L/L´, M/N
Colour standards		PAL, SECAM, NTSC
Audio standards		IRT-A2, NICAM, BTSC, EIA-J
Frequency increment	kHz	50
Video IF bandwidth		According to standard
Audio IF bandwidth		According to standard
Video output voltage/impedance	V_{pp}/Ω	1/75 ± 1 dB
Hum measurement	dB	> 50
S/N measurement (evaluated according to CCIR Rec. 567)	dB	> 55/typ. 57
Analogue satellite receiver		
Standard		FM according to CCIR Rec. 405
Colour standards		PAL, SECAM, NTSC
Audio standards	μs	De-emphasis: 50 µs/Panda-Wegener: 75
Frequency increment	kHz	200
Video IF bandwidth	MHz	27, 36
Audio IF bandwidth	kHz	130/380
Video output voltage/impedance	V_{pp}/Ω	1/75 ± 3 dB
Hum measurement	dB	> 50
S/N measurement (evaluated according to CCIR Rec. 567)	dB	> 55/typ. 60
Analogue input		
S/N measurement (evaluated according to CCIR Rec. 567)	dB	Typ. up to 80

Туре		MSK 200
Order no.		21710015
Digital CATV receiver (J83 A. B. C)		
Modulation process		16 QAM, 32 QAM, 64 QAM, 128 QAM, 256 QAM
Symbol frequency	MHz	2.0-6.999
Frequency increment	kHz	50
	V /0	1/75 + 1 dB
	MHz	1567812
MEB measurement	dB	> 35/typ 40
Digital terrestrial TV reception (DVB-T_ATSC)		
Modulation process		OPSK 16 OAM 64 OAM 8 VSB
Symbol frequency		According to standard
Erequency		
	Ki 12	
		1//5 ± 1 dB
	MHZ	1, 5, 6, 7, 8, 12
MER measurement	dB	> 32
Digital satellite receiver (DVB-S)		
Modulation process		QPSK
Symbol frequency	MHz	2-45.0
Frequency increment	kHz	200
IF bandwidths	MHz	8, 18, 27, 36, 54
Video output voltage/impedance	V_{pp}/Ω	1/75 ± 1 dB
MER measurement	dB	> 14
Constellation analysis		
DVB-C		16 QAM, 32 QAM, 64 QAM, 128 QAM, 256 QAM
DVB-T		QPSK, 16 QAM, 64 QAM
DVB-S		QPSK
ATSC		8 VSB
Storage oscilloscope		
Resolution	Bit	12
Scanning rate	MHz	54
Memory depth	Picture	1
Remote feeding		
Switching voltage/max. current	V/mA	5-20/600
Control signals	kHz	22, tone burst, DiSEqC [™] 2.0, SCR single cable system and UFO <i>micro</i> control signals
Power supply		
Mains (power supply unit)	V/Hz/W	100-250/50-400/100
Lithium/ion rechargeable battery	V/Ah	11.1/6.45
DC external	V	10.8-14.0
General		
Monitor		10.4"; TFT; 800 x 600 pixels with backlighting
Touch screen		Infra-red
Temperature range		+5 to +45
Dimensions (W x H x D)		374 x 294 x 124
Weight		
woight		Appiox. o

ard (impedance)
tput/RGB output
tput
am input/output
ut
face/card reader
ector
ard
e
nnector
ce
V
im input/output 1



Product package

- Case for MSK 200 and accessories
- Power cable
- AC/DC power supply unit with DC cable and XLR plug
- RF test cable BNC (plug) BNC (plug)
- Adapters: 1.6/5.6m-BNC (socket)
 - BNC (socket) F (socket)
 - BNC (socket) F (plug)
 - BNC (socket) IEC (socket)
 - BNC (socket) IEC (plug) Fuse insert with fuse
- (for isolation of the built-in lithium/ion rechargeable battery)
- Carrying strap
- Safety instructions, concise operating manual

•

MSK 33

Signal Meter Sat/TV/FM





A handy, versatile high-end signal meter employing state-of-the-art technology. Soft keys provide menu prompts during operation.

Function upgrades are as easy as on a PC.

Even the basic version provides comprehensive features,

such as a high-resolution 5.5" TFT colour display for displaying the picture/ spectrum, a standard printer and much more.

208302
208312
208318 208319
21710004 21710007

(6

Features

MSK 33/G

- High-resolution, 5.5" TFT colour display for display of analogue TV signals
- Level measurement and parameter display for analogue and digital signals with min./max indication
- Printer for logging results of measurements and for spectrum analysis
- Multi-standard unit
- Nicam audio
- Teletext (videotext) as well as date and time indication
- Measurement and indication of remote feed current
- Power supply via built-in rechargeable battery or built-in power supply unit
- IF input
- 100 memory slots for signal meter settings
- Automatic measurement process
- Audio check via built-in loudspeaker
- Meter can also be operated via
- RS 232 modem port
- Software updates via RS 232 modem port
- Spectrum analyser
- S/N measurement
- Display of synchronous pulse
- Digital video, audio and DiSEqC[™] oscilloscope

MSK 33/QR, MSK 33/MR

All functions of Q and M version, plus return path card for return path measurement in the range from 4.0 to 80 MHz

MSK 33/TM

All functions of M version, plus DVB-T card, echo software and transport stream output with the following functions:

- Reception and demodulation of DVB-T signals in the range from 174 to 862 MHz
- Bit Error Rate (BER) measurement before and after the Viterbi decoder (1e-2 to 1e-8)
- Graphic display of the pre-echo and post-echo (reflections) on the terrestrial DVB signal on the level and over time
- Automatic adjustment of all necessary demodulation settings
- Parallel transport stream input and output in LVDS format (MPEG raw data stream)
- Indication of all the relevant DVB-T parameters

MSK 33/Q

All functions of G version, plus digital card for DVB-S and DVB-C signals

- BER/MER measurement and indication as well as constellation analysis
- Indication of the signal-to-noise ratio (SNR) for QPSK signals

MSK 33/TMR

All functions of TM version, plus return path card with the related functions

MSK 33/M

 Integrated MPEG card for the display of FTA DVB channels (QAM, QPSK)

Туре	MSK 33/G	MSK 33/Q	MSK 33/M	MSK 33/QR	MSK 33/MR	MSK 33/TM	MSK 33/ TMR
Order no.	208302	208312	208313	208319	208318	21710004	21710007
Feature							
Graphics module	•	•	•	•	•	•	•
Printer	•	•	•	•	•	•	•
QPSK/QAM module	-	•	•	•	•	•	•
MPEG module	-	-	•	-	•	•	•
Return path module	-	-	-	•	•	-	•
DVB-T module with echo software	-	-	-	-	-	•	•

		3	KHtz Mis					
Туре		MSK 33/G	MSK 33/Q	MSK 33/M	MSK 33/QR	MSK 33/MR	MSK 33/TM	MSK 33/TMR
Order no.		208302	208312	208313	208319	208318	21710004	21710007
Functions								
Spectrum analysis using printer	r/on screen	•	•	•	•	•	•	•
Scope function		•	•	•	•	•	•	•
BER measurement of DVB-S/C	C signals		•	•		•	•	•
BER measurement of DVB-T s (COFDM)	ignals	-	-	-	-	-	•	•
MER indication (QAM)	101	-	•	•	•	•	•	•
Constellation diagram display	for	-	•	•	•	•	•	•
Constellation diagram display DVB-T signals	for	-	-	-	-	-	•	•
Picture display for DVB-C/S signal on FTA channels	gnals	-	-	•	-	•	•	•
Picture display for DVB-T signation on FTA channels	als	-	-	-	-	-	•	•
Transport stream output (LVDS	S interface)	-	-	-	-	-	•	•
Return path measurement		-	-	-	•	•	-	•
Input data rate, QPSK	MSymb/s	-		1	0.5	-32		,
Input data rate, QAM	MSymb/s	-			0.5	-7.2		
Frequency range (depending on version)	MHz	Sat: 920	-2150	TV: 47-867 FM: 88-108	IF (B IF	analogue): 38.9 (digital): 36.15	Return DVB-	path: 4-80 T: 174-862
Standard				B/D/G/I/K/	/L/M/Miap/N/NI	CAM audio		
Colour standard		PAI/SECAM/NTSC						
Monitor				5.5"	TFT: 320 x 240	oixels		
Frequency step	kH7		Sat: 125: TV/EM: 50					
Level measuring range	dBuV				30-130			
Measurement bandwidth	MHz			Sat: 8: TV	/: 1: TV audio ar	d FM: 0.2		
Measurement accuracy	dB			04110,11	+ 2			
Measurement detector	GD	ç	Sat/TV (digital)/F	M: mean value	indication: TV (analoque): neak	value indicatio	n
Beturn loss	dB		Sati I V (alghal)/I	, in moun value	Sat: > 8: TV: > 1	n		
Video output	Vpp/0			Sat: 1/75	+ 3 dB: TV: 1/7	75 + 1 dB		
FM threshold (sat)	dB			041.1710	< 9			
Audio IE bandwidth	kHz			TV/F	M: 200: Sat: 13	1/280		
Audio de-emphasis	1112			Sat: 50/	DNB/75/.117. T	//EM: 50		
Nicam bit error rate (TV)	μο				$< 1.5 \times 10^{-2}$			
Switching voltage/current	V/mA			0)/10-20/Max 50	0		
Control signals	U /110 C		22	kHz/tone burst	t/DiSEaC™2 0/I	JEO®micro/V-SI	FC	
Power supply mains	V AC/Hz/W			1(00-250/50-400/	62		
Power supply, rechargeable battery	V DC/Ah/W			Lead-	acid battery 12/	3.5/50		
Power supply, external	V DC	-	10.8-14	10.8-14	10.8-14	10.8-14	10.8-14	10.8-14
Connections								
RF input					BNC socket			
Video/audio input and output, RGB output					Scart socket			
Video output		-	BNC socket	BNC socket	BNC socket	BNC socket	BNC socket	BNC socket
DC power supply (12 V)		-	XLR socket, 3-pin	XLR socket, 3-pin	XLR socket, 3-pin	XLR socket, 3-pin	XLR socket, 3-pin	XLR socket, 3-pin
Headphone connector				3.	5 mm jack sock	et		
Modem connection Transport stream input &		_	_	RS 232;	; (Sub-D socket	, 25-pin) _	Sub D socket,	Sub D socket,
output							25-pin	25-pin
General	00				5.4. 45			
Cofety storeders	Ű			Ductori	+5 10 +45			
Dimensions (Mustles D)				Protectio	OT CLASS I, VUE L			
Dimensions (W X H X D)	mm no // m				215 X 130 X 31	tions)		
Packing unit/weight	рс./кд	Power cable	e, test cable BN	C (plug) - BNC	(plug). adapter	set: BNC (socke	et) - F (plua). BN	IC (socket) -
Product package		IEC (plug), I	BNC (socket) - F	(socket), BNC	(socket) - IEC (olug), operating	manual, safety	instructions

ns.

<section-header><section-header><section-header><section-header><section-header>







Measurement software



The software automates measurements and enables measurement reports to be generated using a PC or laptop in conjunction with the MSK 33.

- Measurement and logging of analogue and digital signals in the range from 47-862 MHz
- Measurement of BER and MER
- Frequency offset can be entered if different from TV channel grid
- Display of the values measured in tabular and graphic form
- An unlimited number of measurement configurations can be compiled and saved with a description, and also printed out
- System requirements:
 - PC or laptop with Pentium processor or higher
 - Windows 95, 98, NT 4, ME, 2000 or XP
 - At least 3 MB of free hard disk space
 - At least 16 MB RAM
- Interface cable Sub-D is included in the product package

Note:

•

The MZS 33 (208590) software can no longer be used in conjunction with the MSK 33/xx with software version 8.0 or higher.

The MZS 33/B software is required for these meters.

D Messpr Datum: Uhrzeit: Messort: Beschreit	violadel erstellt mit Kathrein MSK33 Serien-Nr; 368 06.00.2001 09.04.00 Bito ST mag: Kabelmandhan
Kanad C (2000) C (2000) C (2000) <th>$\begin{array}{ c c c c c c c c c c c c c c c c c c c$</th>	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$
50.0 1 00	

Measuring system MSK 33/MVG 10

Adjustment of the forward and return paths with the MSK 33 and MVG 10 measuring system



Adjustment of the return path switching matrix

- Using the MSK 33 on the head-end, measure the carrier injected into the return path transmitter at the input on the CMTS
- Using the output level control on the optical return path receiver, calibrate this carrier such that it corresponds to the selected nominal input level for the CMTS (e.g. 60 dBµV)

Adjustment of the modulation index on the return path transmitter

- The mobile MVG 10 is switched to the "Sweep Generator" operating mode
- A carrier is generated in a free channel and the output level is set to the value at which the return path amplifier in the related network is operated (e.g. 65 dBµV)
- The mobile MSK 33 is connected to the test socket on the return path transmitter and, using the modulations index control, set to the driver level according to the planning documents (e.g. 70 dBµV)



Selective receiver for the measurement of analogue and digital satellite, cable and terrestrial signals. With high-quality 4" TFT colour display. Indication of Bit Error Rate (BER) and Modulation Error Rate (MER) facilitates quality evaluation of DVB signals. With the MSK 25 it is also possible to measure QAM 256 signals. The calibrated spectrum analysis is displayed at a refresh rate of around two seconds. A separate two-line 16-character LC display for the indication of the measured values simplifies optimal alignment of reception systems. The signal meter in the shielded metal housing is available in three versions.

It is supplied in a hard-wearing black leather case with carrying strap.

MSK 25 MSK 25/M MSK 25/TM 21710012 21710017 21710014 (6

Features

MSK 25

- Level measurement for analogue and digital TV signals (DVB-S, DVB-C, DVB-T)
- Picture display for analogue TV signals
- BER measurement and indication of DVB-C signals (QAM 64, 128, 256)
- BER measurement and indication of DVB-S signals (QPSK)
- MER indication in range up to approx. 32 dB
- 4" TFT/LCD colour display
- Two-line 16-character LCD
- Spectrum analysis
- Level indication in dBµV or optionally dBmV
- Acoustic signal tone for antenna alignment
- C/N measurement
- Automatic measuring range selection
- Direct frequency and channel input
- Measurement and indication of remote feed current
- Audio carrier measurement (TV)
- NICAM audio carrier and BER measurement
- Audio check via built-in loudspeaker
- DiSEqC[™]1.0 control signal
- Interface for software updates
- Mains or battery operation possible

MSK 25/M

• As for MSK 25, plus MPEG card for picture display for digital TV signals (DVB-C, DVB-S)

MSK 25/TM

As for MSK 25/M, plus DVB-T card for reception of digital terrestrial signals (DVB-T)

- BER/MER measurement and indication (DVB-T)
- Picture display for FTA DVB-T signals
- Demodulation: 2k, 8k mode
- Channel bandwidth: 6.7 and 8 MHz

Product package



- Hard-wearing leather case
- Power supply unit
- Test cable BNC (plug) BNC (plug)
- Adapters: BNC (socket) F (socket)
 - BNC (socket) F (plug)
 - BNC (socket) IEC (socket)
 - BNC (socket) IEC (plug)
- Operating manual, safety instructions

Type		MSK 25	MSK 25/M	MSK 25/TM		
Order no.		21710012	21710017	21710014		
Feature						
Basic version		•	•	•		
MPEG module		-	•	•		
DVB-T module		-	-	•		
RF section						
Frequency range	MHz	TV: 48	858, Sat: 920 2150, FM 88	108		
Frequency resolution	kHz		TV/FM: 50; SAT: 100			
TV standards			B/G, I, D/K, L			
DVB standards		DVB-S (QPSK), DVB-C (QAM 64, -128, -256)	DVB-S (QPSK), DVB-C (QAM 64, -128, -256)	DVB-S (QPSK), DVB-C (QAM 64, -128, -256), DVB-T (COFDM 2k, 8k)		
DVB-T channel bandwidth	MHz	-	-	6, 7, 8		
TV system						
Colour standards		P/	AL/NTSC in colour; SECAM in b/	/w		
Audio			FM, NICAM and AM audio			
Level measuring section						
Measuring range	dBµV		30 120			
Measurement accuracy	dB		± 2			
Measurement bandwidth	MHz		TV/FM: 0.25; DVB-S/C/T: 6			
Analogue detector		Γ	: peak value, SAT/FM: mean val	ue		
Digital detector			Mean value			
Digital measurement						
BER/MER/carrier offset DVB-S/DVB-C)		•	•	•		
BER/MER/carrier offset (DVB-T)		-	-	•		
Display						
TV monitor 1)		TFT colou	ur display 4", 238 x 480 pixels, 2	50 cd/qm		
LC display		Alphanun	nerical 2 x 16-digit, bar graph, ill	uminated		
Sat adjustment aid (acoustic)			Level-dependent tone			
Supply voltages						
Power supply	V/Ah		Internal lead-acid battery 12/3.4			
Mains supply	V AC	230 (e	xternal power supply unit and ch	narger)		
Remote feeding	V/mA	0, (5)	10 20, max. 500, (5 10 max	. 100)		
LNB control	kHz		22, DiSEqC™1.0			
Connections						
RF input/impedance	-/Ω		BNC socket/75			
TV/audio output		Sca	rt (FBAS output, audio mono out	tput)		
DC voltage supply	mm		Hollow plug 5.5/2.1			
Data port for software download			RS 232 (Sub D 9-pin)			
General						
Safety standard			Protection class II			
Housing		Metal ho	ousing in leather case with carryi	ng strap		
Dimensions	mm	Approx. 95 (*	120) x 260 x 160; () incl. case for	raccessories		
Weight	kg		Approx. 4.5 (incl. leather case)			
Product package		Power supply unit, test cable, adapters: BNC (socket) - F (socket), BNC (socket) - F (plug), BNC (socket) - IEC (socket), BNC (socket) - IEC (plug), operating manual, safety instructions				

MSK 15 Sat-Meter



Receiver for the optimal alignment of satellite reception systems in a compact, handy design. Indication of the signal strength and BER for optimal alignment of the antenna. Facility to store 32 transponders from max. 16 satellites.

Software updates enable the user to programme the signal meter for customer-specific satellite transponders.

The signal meter is easy to operate and consequently the ideal tool for antenna installers during the installation of satellite reception systems.



Features

MSK 15

- Measuring range: 950-2150 MHz
- Level and BER measurement
- Input level range: 41-81 dBµV
- 32 transponders or 16 satellites can be set
- BER bar graph display in linear or logarithmic format
- Indication of carrier-to-noise (C/N) ratio
- Level indication either in dBµV or linear in 256 increments
- Easy adjustment and modification of the satellite parameters via software update
- Input data rate: 1-45 MSymbol/s
- Power supply via built-in rechargeable battery (NiMH 2.4 A/7.2 V)
- Battery capacity sufficient for more than three hours of continuous operation

- Battery charging using internal 240 V charger or external 12 V DC supply
- LNB supply voltage: 13/18 V, max. 500 mA
- Control signal: 22 kHz
- RF input: 75 Ω , F-type, with loop-through output
- Serial port: modular plug, 8-pin,
- for software update
 Including leather case, RF cable with F plugs, Power cable, 12-V connection cable and serial cable for connection to a computer
- Dimensions, L x H x W (mm): 168 x 58 x 123
- Weight (kg): 0.8

Product package







The MVG 10 is a signal generator that can sweep and modulate video signals. In connection with the MSK 33 Sat/TV/FM signal meter, it forms a broadband-analysis measuring system. The functionality of the cable network both on the forward path (47-862 MHz) and return path (4-80 MHz) can be checked prior to operating the cable system.

The MVG 10 can, however, also be used in cable networks already in operation. The video generator can sweep in various ranges omitting frequency ranges that are already occupied, thus avoiding interference.

With the functions "signal generator", "noise generator" and "sweep generator", the MVG 10 also provides valuable support in the service sector during maintenance work by radio and TV technicians, e.g. during the repair of televisions. The versatile unit's extensive range of functions can also be deployed in the laboratory environment.



Technical data MVG 10

Туре		MVG 10
Order no.		208320
Frequency range	MHz	4-1000
Frequency setting	kHz	50
Frequency resolution	kHz	62.5
Display		LCD alphanumerical, 2 x 16-digit, bar graph illuminated
Signal generator		Direct frequency entry; ± buttons; can be modulated
Sweep generator		10 ranges with start/stop and frequency step input
Channel-hopping generator		10 ranges with start/stop and channel step input
Noise generator	MHz	4-1000 (ripple: ± 2 dB)
Output level	dBµV	36-100; noise generator: 29-93 (7 MHz)
Level accuracy	dB	± 2
Level resolution	dB	0.1; noise generator: 1
Interference level	dBµV	< 40 (up to 90 dBµV output level)
Standards		B/G; D/K; I; M; Mj; H
Colour standards		PAL; NTSC
TV modulation		Internal: test picture/coloured bar; external: composite colour, RGB (black/white) - two side band 4.5/5.5/6.0/6.5 MHz FM audio carrier modulation
FM modulation	kHz	Internal: LF = 1, deviation approx. 75; external: LF = 0.05-15
Power supply	V/Ah	Internal: lead-battery 12/2.8; external: power supply unit and charger 230/12
Connections		
Voltage supply	mm	Hollow plug 5.5/2.1
Signal output	-/Ω	BNC socket/75
Signal input (comp. colour in, RGB in, audio in)		Scart socket
Data interface (software updates)		RS 232, (Sub D 9-pin)
General		
Ambient temperature	°C	Max. 0 to +40
Dimensions (W x H x D)	mm	90 (115) x 162 x 235 (incl. leather case)
Weight	kg	Approx. 3 (incl. leather case)
Product package		Leather case with carrying strap, charger

Received from:



Internet: http://www.kathrein.de