



MSK 200/S2
21710024

MSK 200/S2
21710025

MSK 200/M4
21710026

MSK 200/M4
21710027

MSK 200/ME
21710034

MSK 200/ME
21710035



The MSK 200 is a compact signal meter for the inspection of antenna and cable systems or even professional headend systems, which leaves nothing to be desired. The units can be used either in a lab or for the monitoring of remote-controlled headend systems as well as for final measurements on antenna and distribution systems.

The instruments enable video display of analogue and digital TV signals, both MPEG 2 and MPEG 4 (as of MSK 200/M4).

Different variants are available. Subsequent retrofitting is possible at any time.

Design

- Manageable portable signal meter
- High-resolution 10.4" TFT colour display to graph analogue and digital TV signals and display graphics
- Digital video and audio playback in MPEG 2 and MPEG 4
- Backlight - thus the display is excellently readable even in bright sunlight (typ. 600 cd/m²)
- User-friendly with 12 hard keys and an infra-red touch screen for menu-guided operation
- The touch-screen control panels can be adapted to the needs of left and right handers
- Alphanumeric touch-screen keyboard to enter numbers and text
- Shoulder strap that can be adapted in length

Functions
(valid for all
variants)

- MER measurement for all digital modulation types
- BER measurement
- Spectrum analyser with individually selectable start and stop frequencies, centre-frequency entry and span
- Simultaneous representation of spectrum and picture
- Memory oscilloscope
- Constellation analyser for all DVB standards
- MPEG 2 and analogue TV screen
- Demodulation of analogue signals:
AM (CATV, terr.), FM (satellite, radio)
- Demodulation of digital signals:
DVB-C, DVB-T, DVB-S(2)
- Demodulation of the digital USA standards
(J83B, DOCSIS, ATSC)
- Possibility to measure the video amplitude with line selection, S/N weighting and hum measurement
- S/N weighting: typ. 57 dB
- Representation of SID, PMT-PID, PCR-PID, CA info, elementary current PID, service type (NIT in development)
- Channel selection in DVB-C, DVB-S, DVB-T and analogue through frequency entry, channel entry and user lists
- Remote-controllable
(together with MZS 200; not in delivery scope)
- Integrated user interface for data processing and office tasks
- Data logging
- Return path measurements
- The results of the memory oscilloscope and the numerical value are shown in large format
- Measures: dB μ V, dBm
- **MSK 200/S2** - 21710024 (75 Ω) or 21710025 (50 Ω):
Function range as described above
- **MSK 200/M4** - 21710026 (75 Ω) or 21710027 (50 Ω):
Corresponds to MSK 200/S2; it additionally features an HDMI interface and an MPEG 4 decoder to display HD pictures
- **MSK 200/ME** - 21710034 (75 Ω) or 21710035 (50 Ω):
Corresponds to MSK 200/M4; additionally featured option „external reference“ to improve oscillator accuracy; includes BNC socket to connect external reference oscillators

Variants

Measuring instruments



Rear view of the MSK 200/S2
(75 Ω variant)

Type		MSK 200/S2	MSK 200/M4	MSK 200/ME
Order no.		21710024 (75 Ω) 21710025 (50 Ω)	21710026 (75 Ω) 21710027 (50 Ω)	21710034 (75 Ω) 21710035 (50 Ω)
Spectrum analyser				
Frequency range	MHz	5-3,100		
Resolution bandwidth (-3 dB)	kHz MHz	1, 3, 10, 30, 100, 300 1, 3		
Resolution bandwidth (-6 dB)	kHz	9, 25, 50, 120, 200		
Video bandwidths	MHz	0.00001-3		
Phase noise at 10 kHz carrier level spacing	dBc	< -90 (1 Hz), Typ. -95 (1 Hz)		
Phase noise at 100 kHz carrier level spacing	dBc	< -100 (1 dB), Typ. -110 (1 Hz)		
Dynamic (RBW: 100 kHz)	dB	Typ. 70		
Level measurement range	dBμV	30-130/-128 (50 Ω)		
Total input power max.	W	0.5		
Accuracy of measurements	dB	< 1.5		
Measurement detector	dB	Max Peak, Min Peak, Auto Peak, Sample, RMS		
Return loss (pre-attenuation 5 dB)	dB	> 16 (VSWR: 1,35)		
Repetition speed	Pict./s	Max. 10		
Reference level	dBμV	30-130		
Display range	dB	100, 70, 50, 30, 20, 10		
Screen resolution	Pixels	Max. 800 x 600/nominal 501 x 401		
FM radio receiver				
Frequency range	MHz	87.5-108		
Channel bandwidth	kHz	300		
De-emphasis	μs	50/75		
Analogue TV receiver				
Frequency range	MHz	5-900		
Standards		B/G, I, D/K, L/L', M/N		
Colour standards		PAL, SECAM, NTSC		
Audio standards		IRT-A2, NICAM, BTSC, EIA-J		
Nicam bit error rate		0.1E-8 ... 1.5E-2		
Channel bandwidth	MHz	6/7/8		
Frequency increment	kHz	50		
Video IF bandwidth		Standard-dependent		
Audio IF bandwidth		Standard-dependent		
Audio de-emphasis	μs	50/75		
Video output voltage/impedance	V _{ss} /Ω	1/75 ± 1 dB		
Hum measurement	dB	> 50		
S/N weighting (to CCIR Rec. 567)	dB	> 55/Typ. 57		
Analogue satellite receiver				
Frequency range	MHz	900-3,100		
Standard		FM to CCIR Rec. 405		
Colour standards		PAL, SECAM, NTSC		
Audio standards	μs	Deemphase: 50/Panda-Wegener: 75		
Frequency increment	kHz	200		
Video IF bandwidth	MHz	27/36		
Audio IF bandwidth	kHz	130/380		
Video output voltage/impedance	V _{ss} /Ω	1/75 ± 3 dB		
Hum measurement	dB	> 50		
S/N weighting (to CCIR Rec. 567)	dB	> 55/Typ. 60		

Technical data

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Analogue input				
CVBS/video input voltage	V_{ss}/Ω	1/75		
S/N weighting (to CCIR Rec. 567)	dB	Typ. up to 80		
Digital CATV receiver (J83 A, B, C)				
Frequency range	MHz	45-900		
Modulation type		16 QAM, 32 QAM, 64 QAM, 128 QAM, 256 QAM		
Symbol rates	MSymb/s	2.0-6.999		
Frequency increment	kHz	50		
Video output voltage/impedance	V_{ss}/Ω	1/75 ± 1 dB		
IF bandwidths	MHz	1, 5, 6, 7, 8, 12		
MER measurement	dB	Typ. 40		
BER		1E-2 ... 1E-8		
Channel bandwidths	MHz	6/7/8		
Digital terrestrial TV receiver (DVB-T, ATSC)				
Frequency range	MHz	45-900		
Modulation type		QPSK, 4QAM, 16 QAM, 64 QAM, 8 VSB		
Symbol rate		Standard-dependent		
Frequency increment	kHz	50		
Video output voltage/impedance	V_{ss}/Ω	1/75 ± 1 dB		
IF bandwidths	MHz	1, 5, 6, 7, 8, 12		
MER measurement	dB	Typ. 38		
BER (before Reed Solomon)		1E-2 ... 1E-8		
FFT sizes		2k/8k		
Digital satellite receiver DVB-S(2)				
Frequency range	MHz	900-3,100		
Modulation type		QPSK, 8PSK		
Symbol rates	(DVB-S) (DVB-S2) MSymb/s	2-45 2-30		
Frequency increment	kHz	200		
IF bandwidths	MHz	8, 18, 27, 36, 54		
Video output voltage/impedance	V_{ss}/Ω	1/75 ± 1 dB		
MER measurement	dB	Typ. 20		
BER		1E-2 ... 1E-8		
SNR	dB	> 14		
CNR	dB	Max. 20		
Code rate (FEC) DVB-S	QPSK	1/2, 2/3, 3/4, 5/6, 7/8		
Code rate (FEC) DVB-S2	QPSK 8PSK	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10		
Constellation analysis				
DVB-C		16 QAM, 32 QAM, 64 QAM, 128 QAM, 256 QAM		
DVB-T		QPSK, 4 QAM, 16 QAM, 64 QAM		
DVB-T single carrier selection	2k system 8k system	0-1704 0-6816		
DVB-S(2)		QPSK, 8PSK		
ATSC		8 VSB		

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Memory oscilloscope				
Resolution	Bit	12		
Sampling rate	MHz	27/54		
Memory depth	Picture	1		
Frequency accuracy				
TCXO	ppm	± 4		
OCXO	ppm	-	-	± 0.1
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 UFOmicro control signals		
Power supply				
Mains (power supply unit)	V/Hz/W	100-265/50-400/85		
Li-Ion accumulator	V/Ah	11.1/6.45		
Operation duration with accumulator (depending on operation mode)	h	1-3		
DC external	V	10.8-16.0		
Connections				
RF input standard (impedance)	Ω	1.6/5.6 (75 Ω) adapter pre-mounted on BNC N-type socket (50 Ω)		
CVBS input/CVBS output/RGB output		Scart socket		
Video input/output		2 x BNC socket		
Transport current input/output		2 x Sub D socket (25-pin)		
ASI input/output		2 x BNC socket		
MPEG 4 (HDTV) output		-	HDMI	HDMI
Common interface/card reader		1/1		
PCMCIA slot		1		
Module interface		Sub D socket (25-pin)		
Network port		1 x Ethernet		
USB port		2		
External keyboard		PS-2		
External mouse		USB		
Printer port		IR/USB		
Headphone connection	mm	Stereo phone jack, 3.5		
Modem interface (serial)		RS 232/Mini DIN, 9-pin (socket)		
External reference		-	-	BNC socket
DC supply 11-16 V		XLR socket		
General				
Monitor		10.4", TFT, 800 x 600 pixels with backlight		
Touch screen		Infra-red		
Temperature range	°C	+5 to +45		
Dimensions (W x H x D)	mm	374 x 294 x 124		
Weight	kg	Approx. 8		