

# EP 3000 LCD COLOR

ANALOGUE DIGITAL  
TV - SAT - CATV ANALYSER



## EP 3000 LCD COLOR

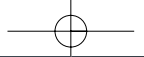


The design concept behind UNAOHM meters is based on outstanding quality functions, ease of use and modularity in construction. Modularity in particular, has always been instrumental in easing retrofitting UNAOHM meters with available optional modules. This ensures an ever expanding measuring possibility as the installer's measuring needs grow in time, while allowing for a fair price-to-quality ratio. The brand new EP 3000 is the latest offspring of such a concept. Representing the third generation of signal analysers with colour monitor, the EP 3000 places itself at the top of UNAOHM current product range, and is the most powerful measuring tool ever designed for the installation and maintenance of TV and data systems.

The sheer number of functions and options available with the unit to meet the current video industry transition from analogue broadcasting to digital data delivery, is impressive. It offers the widest frequency coverage -from 5 to 2230MHz-, total analogue TV-standard compatibility and TV-picture monitoring of free-to-air DVB digital signals. An active matrix high resolution TV-picture grade colour LCD-monitor gives the unit a leading edge in terms of Teletext resolution, heat-dissipation and compactness while offering excellent TV-picture reproduction. The sub-band coverage -5 to 65 MHz- is meant for return path measurements in CATV systems, which is of increasing interest to cable operators for interactive TV-services. Tuning can be made in a number of convenient ways i.e., by frequency, channel or recalling any of 99 pre-settable programs. Any world-wide analogue or digital channel format can be factory pre-set upon request. The input dynamic range for level measurement is from 20 to 130dB $\mu$ V, an accurate V/A ratio is provided for mono and stereo audio signals together with an in-channel C/N measurement for analogue and digital signals at a few pushes of a button. The analyser employs two markers to enable precision Digital Channel Power measurement so that for instance, "back-off" level for correct link operation can be set. The unit also provides a real time spectrum display, in green and upright fashion, with an outstanding linearity in level and frequency. A choice of five measurement bandwidths makes the spectral search for a carrier or a transponder extremely accurate, down to a single channel.

To assess overall digital link quality, the EP3000 boasts BER measurement for DVB-S/DVB-T/DVB-C/NICAM signals, constellation diagram analysis to troubleshoot the majority of distortion-induced problems (DVB-S and DVB-C only) and modulation error ratio (MER). As a further option, the unit can accept an MPEG2 card for free-to-air DVB TV-picture viewing or show an NIT display for network identification. A further extensive array of functions is available, such as 1500 data logging operations at customers' taps or anywhere else down the system, a built-in printer for protocol certification, PC/modem connections, power to LNB, 22kHz/DiSeqC<sup>(1)</sup> switching, a noise generator for distance-to-fault measurement/single channel module alignment applications, two SCART sockets and, as an industry's first, a global positioning system (GPS) for field mapping/automatic sat dish peaking. To complement the portability of the analyser two rechargeable Ni-MH battery packs are available and the EP3000 is housed in a durable nylon carry case. UNAOHM power, effectiveness and accuracy; welcome to the EP 3000.

<sup>(1)</sup> DiSeqC is a trade mark of Eutelsat



# EP 3000 LCD COLOR



CARRY BAG, STANDARD ACCESSORY



THE FIRST WITH A GPS SYSTEM



BATTERY CHARGE STATUS



CURRENT DRAW TO LNB

## TYPICAL DISPLAYS



QPSK QAM COFDM BER



MPEG 2 - NIT

### OPTIONAL CONFIGURATIONS

- DVB-S BER (QPSK)
- DVB-T BER (COFDM)
- DVB-C BER (QAM)
- MPEG 2 - NIT
- CONSTELLATION
- GPS



CONSTELLATION DIAGRAM



GPS DISPLAY



SPECTRAL ANALYSIS

**EP 3000 LCD COLOR****FULL SPECIFICATIONS****GENERAL**

<b>Input Level</b>	-VHF-UHF/SAT 20 to 130 dBµV -IF: 60 to 130 dBµV -Sub-band: 40 to 130dBµV
<b>Unit of measure</b>	dBµV, dBmV, dBm e V
<b>Attenuator</b>	Nine 10 dB steps, manual or autraging
<b>Attenuator Accuracy</b>	± 1.0 dB VHF-UHF/IF and Sub-band
<b>(measure + Spectrum)</b>	± 1.5 dB SAT
<b>Frequency Range</b>	-VHF-UHF/SAT: 45 to 2150 MHz (2)
<b>Coverage</b>	-IF: 38.9 MHz -Sub-band: 5 to 65 MHz
<b>Frequency Response</b>	± 1.0 dB between 45 and 2050 MHz
<b>(measure + Spectrum)</b>	± 1.5 dB between 2050 and 2150 MHz and between 5 and 65 MHz
<b>Data Indication</b>	-Numerical for level on a 0.1 dB resolution alphanumeric LCD readout -Analogue for level via a real-time dynamic bar-graph on the TV-picture monitor -Analogue for level via an aural tone with dynamic pitch proportional to signal level -Numerical for digital channel power (DCP) of DVB & non-DVB digital signals on a 0.1 dB resolution alphanumeric LCD readout -Numerical for C/N on a 0.1 dB resolution alphanumeric LCD readout -Numerical for V/A on a 0.1 dB resolution alphanumeric LCD readout -Numerical via an optional built-in printer
<b>Measurement</b>	-VHF-UHF/IF and Sub-band: 100 kHz; 1.0 MHz, switchable
<b>Bandwidth (-3dB)</b>	-SAT: 100kHz; 1MHz; 4MHz, switchable
<b>(measure + Spectrum)</b>	
<b>Input Impedance</b>	75 Ohm unbalanced. See (1) under special version section
<b>Maximum Input Voltage</b>	100 Vdc and/or 5Vpp RF
<b>Input Connector</b>	BNC, BNC/IEC and BNC/Y adapters provided
<b>Power to LNB</b>	-0; 13; 15; 18 and 24Vdc, switchable/500mA max via BNC input connector -Current draw monitoring Tono -Current limiting protection against overloads and indication of external circuit continuity
<b>DISEqC</b>	1.1; 2.0 and DISEqC monitoring
<b>Tuning</b>	-PLL frequency synthesis for frequency, channel and programme tuning via keypad and shaft encoder -Selection of factory-preset digital/analogue channel formats
<b>Storage Capacity</b>	200 programmes

**SPECTRUM**

<b>Presentation</b>	Level on X axis; frequency on Y axis. Real time and quasi real-time displays. Video filter 50 dB dynamic
<b>rangeFrequency range</b>	5 to 2150 MHz in five bands, real time C 5 to 65 MHz L 45 to 156 MHz M 156 to 454 MHz H 454 to 900 MHz SAT 900 to 2150 MHz
<b>Spectrum Expansion</b>	-45 to 900MHz, full VHF-UHF quasi real-time -Full band -8 step expansion around the marker frequency, from 1% of band (MIN SPAN) to 1 or 5 (according to band selected) channels (MAX SPAN)
<b>Video Filter</b>	On-off. Selectable
<b>Marker</b>	Two markers for frequency/level readings, and Δ measurement between markers on an alphanumeric LCD readout

**MONITOR**

<b>Monitor Type</b>	5.7" visible area high-resolution colour LCD monitor
<b>TV-Standards</b>	BG/L with PAL/SECAM colour coding. See (3) under special version section for additional TV-Standards
<b>Monitorized Function</b>	-Full TV-picture of analogue signals -Three-in-one display (analogue signal TV-Picture + Sync Pulse + level bar) -Full TV-picture of free-to-air DVB digital signal (MPEG-2 card required) -Full spectrum with markers -Spectrum expansion (SPAN) with markers -Teletext (PAL only). -External video signal (via SCART socket) -Menus and sub-menus -Built-in noise generator response -Data logging
<b>Video polarity</b>	Positive or negative, switchable. SAT band only

**SOUND**

<b>Sound Demodulation</b>	TV/AM/FM
<b>Sub-carrier Frequency</b>	-VHF/UHF: automatically selected according to TV-standard -SAT: FM from 5.5 to 9.77 MHz in PLL frequency synthesis 10 kHz steps. Selectable deemphasis
<b>Modulation Depth</b>	70 kHz; 300 kHz; 700 KHz, selectable.
<b>Stereo Decoder</b>	SAT band only -Analogue dual tone -NICAM digital audio of analogue signal. BER reading

**DATA LOGGER**

<b>Memory Capacity</b>	1500 measurements
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**AUXILIARY INPUTS/OUTPUTS**

<b>SCART Socket, complete</b>	Video/audio inputs (1V-75 Ohm); video/audio outputs 0.3 V-600 Ohm). RGB input
<b>SCART Socket, auxiliary</b>	RGB output of all data and displays on monitor
<b>SAT Base-band Output</b>	1 V-75 Ohm on a five-contact connector with or without de-emphasis
<b>RS232 Serial Port</b>	9-pin, female, "D" connector to PC, external printer, modem for data exchange

**POWER SUPPLY**

<b>Vac</b>	90 to 260 V 50-60 Hz
<b>Vdc</b>	-Internal: -Vdc: 12 V-3.8 Ah Ni Metal-Hydrate rechargeable battery-pack, as a standard accessory, which can be paired to an optional battery-pack of the same kind to double the 1 hour continuous operational run ensured by the standard battery-pack

<b>Battery-charger</b>	14 V - 0.8 A, built-in
<b>Indication</b>	Battery charge status monitoring

<b>Pilot Light</b>	"Low battery" status, battery-charger "on"
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**MECHANICAL**

<b>Size</b>	305 x 105 x 325 mm (W x H x D)
<b>Weight</b>	6.5 kg including all optional cards and battery-packs
<b>Finish</b>	Sturdy nylon carry bag with accessory pocket and transport strap

**AMBIENT**

<b>Operating temperature</b>	5°C to 40°C
<b>Operating height</b>	2000 m

**Printer STP 500 (option)**

<b>Type</b>	Impact
<b>Matrix/Column</b>	5 X 7/24
<b>Paper</b>	Roll with regular paper

**QAM Card (option)**

<b>Frequency Range</b>	46 to 862 MHz
<b>Symbol Rate</b>	2.5 to 7MS/s
<b>Modulation Constellation</b>	64; 128; 256 QAM
<b>RU</b>	Uncorrected errors past the Reed Solomon stage
<b>BER</b>	Pre-FEC BER (before Reed Solomon)
<b>CFO</b>	AFC; 0.5 MHz
<b>SNR</b>	17 to 34, relative indication

**QPSK Card (option)**

<b>Frequency Range</b>	950 to 2150 MHz
<b>Symbol rate</b>	4 to 30 MS/s
<b>Code rate</b>	1/2, 2/3, 3/4, 5/6, 7/8, AUTO
<b>RU</b>	Uncorrected errors past the Reed Solomon stage
<b>CH BER</b>	Channel BER (pre-Viterbi)
<b>PV BER</b>	Post Viterbi BER
<b>CFO</b>	AFC; 3 MHz
<b>SNR</b>	5 to 10, relative indication

**COFDM Card (option)**

<b>Frequency Range</b>	470 to 862 MHz
<b>Modulation</b>	16 QAM; 64 QAM; QPSK
<b>Code rate</b>	1/2, 2/3, 3/4, 5/6, 7/8
<b>Guard Interval</b>	1/4, 1/8, 1/16, 1/32
<b>Bandwidth</b>	6 MHz, 7-8 MHz
<b>Hierarchy</b>	Non hierarchical
<b>RU</b>	Uncorrected errors past the Reed Solomon stage
<b>CH BER</b>	Channel BER (pre-Viterbi)
<b>PV BER</b>	Post Viterbi BER

**CONSTELLATION Card (option)**

<b>Modulation Constellation</b>	QPSK, 64QAM, 128 QAM, 256 QAM
<b>QUA Constellation</b>	
<b>Display</b>	Regular, integration, contour

**MPEG 2 Card (option)**

<b>Standard</b>	DVB compatible
<b>Audio-Video Decoder</b>	MPEG2 Main Level @ Main Profile
<b>Video Channel</b>	Free-to-air (non-encrypted)
<b>Video format</b>	4:3

**GPS Card (option)**

<b>Reception Mode</b>	16 channel
<b>Frequency</b>	1575.42 MHz, band L1, C/A Code
<b>Sensitivity</b>	< -130 dBm
<b>Accuracy</b>	150 m
<b>Speed (km/h)</b>	500
<b>Acceleration</b>	Max 2 G
<b>Aerial</b>	Amplified type

**SPECIAL VERSION**

- (1) 50 Ohm input impedance
- (2) SAT band extension to 2230 MHz
- (3) Other TV-standards upon request

**STANDARD ACCESSORIES**

- Carry nylon bag with accessory pocket and strap
- Power cord C 84
- BNC to IEC adapter P 80
- BNC to F adapter P 83
- Input plug for external Vdc power supply
- 5.00 AT fuse for battery
- 3.8 Ah Ni-MH rechargeable battery pack
- Instruction manual

**OPTIONS**

- QPSK card
- QAM card
- COFDM card
- QAM/QPSK Constellation card
- MPEG 2 card (as an alternative, NIT -network information table- card)
- GPS card
- Noise generator NC 96A
- Printer STP 500
- Spare 12V/3.8 Ah Ni-MH rechargeable battery-pack