



KWS ELECTRONIC

HIGH FREQUENCY TEST EQUIPMENT

RANGE OF PRODUCTS

INNOVATION PR

Demands on antenna measuring technology constantly increasing in the age of growing digitalisation. You need to be equipped with professional equipment today that can prepare you for the tasks and technologies of tomorrow.

For now 35 years, KWS-Electronic has been developing and creating solutions ready for the future.

Based on high-performance hardware, KWS-Electronic offers upgradeable measuring receivers for professionals that value long term value retention and investment security.

Place your trust in the wide-ranging expertise and long standing experience of KWS-Electronic. Invest in innovations that pay off.

KWS ELECTRONIC
HIGH FREQUENCY TEST EQUIPMENT

Your requirements are key.

Whether through direct satellite reception, BK networks or DVB-T, many TV stations are broadcasting digitally nowadays. However, the digital transmission of television programmes is merely the beginning of a new wave of information technology. The future increasingly belongs to BK networks and satellite uplinks that are capable of operating in return channel mode.

Only a future-oriented measurement system can follow the increasingly rapid change in technologies.

The KWS-Electronic product range opens up all possibilities for future growth and is uncompromisingly designed to meet your individual demands.

Whichever instrument series you choose, rest assured that you have made the right decision.

Today, tomorrow, and beyond.

Measure simply.

The innovative antenna measuring technology from KWS-Electronic is user-friendly.

Switch on and measure; that is the demand every instrument meets from the moment you turn it on. The key is a proven usability design that KWS-Electronic has consistently improved over the years.

Startup is quick and efficient. Troubleshooting is also incredibly easy in systems of all sizes. The comprehensible keypad and illuminated display elements are additional features of our new product range.

To get an idea how manageable KWS-Electronic instruments really are, you can download a short preview of our practical instruction manuals at our homepage www.kws-electronic.de.

PROTECTS INVESTMENT

Always up-to-date.

Cutting edge measuring technology must be upgradeable. KWS-Electronic has implemented this principle for many years. We are forward-looking when developing our instruments.

The numerous possibilities for technical adjustment and upgrading in the future mean that you have the entire range of KWS-Electronic products at your disposal.

Protect your investments. And secure them with innovative technology that will remain "state-of-the-art" for a long time: upgradeable, adjustable, ground-breaking.

This will catch on.

The implementation of new digital transmission methods has also defined new measurement standards. KWS-Electronic seminars provide an overview and outlook of current and forthcoming developments, tasks and challenges.

They are specially tailored to meet the requirements of the individual participants.

One example is the general training for wholesale distributors and trade organisations. In addition to teaching the theoretical framework in these seminars, we also focus on practical solutions to on-site problems.

Knowledge gives you a competitive edge – KWS-Electronic seminars provide know-how that pays off.

Get in touch.

Are you looking for detailed information about products, services and problem solutions?

KWS-Electronic offers you competent advice. Call or send us an email.

Sales

Hans-Peter Schenk, Lois Röhrli,
Kathrin Dirscherl

Seminars

Lois Röhrli, Hans-Peter Schenk

Service/Technical consultation

Lois Röhrli, Dieter Bergbauer
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Two series, a single goal.

Antenna measuring technology from KWS-Electronic will make professional jobs as easy as possible. The instrument series AMA and VAROS allow you to choose from different versions. The two series aim to provide the benchmark for innovation, precision and operation.

AMA. The pro series.

The instruments in the AMA series have been best sellers on the market for a number of years. Its reputation is justified by the advanced hardware platform, comprehensive functionality, and one-of-a-kind usability. You can see the mechanical and external merits of the AMA for yourself: state-of-the-art components, upgradeable technology, timeless design.

VAROS. The new standard class.

VAROS combines high measuring accuracy and comprehensive features with a low acquisition price. Designed to meet the requirements of professional trade and based on AMA series technology, VAROS opens up all measuring options required for installing and servicing measuring and distribution systems.

VAROS

KWS STANDARD-SERIE

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Here you can find additional information.



A package offer is available for this instrument.

Errors excepted, subject to changes.

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AMA KWS PROFI-SERIE



The AMA 310 is the newest addition in the professional series.

With this instrument KWS is taking a further step towards broadband measurement testing. Familiar from the AMA 300 and 301 instruments has stayed and novelties have been integrated.

Even with its numerous functions, the successful AMA300 remains comprehensible and easy to use. Cutting-edge components guarantee robust construction even when the instrument is very light.

Its economic efficiency, on the other hand, carries significant weight: the upgradeable technology of all KWS-Electronic antenna measuring instruments, compounded with the timeless hardware platform, means that your investment is safe for years to come.

Even with the AMA 301, upgrades are easy to integrate. The versatile instrument is an asset for everyday use. Non-sensitive and ready for use, it can be adjusted to meet the daily requirements of the operator with absolute precision.

The high resolution and high contrast 5.5" b/w picture tube is a particular advantage.

Instruments in the Pro-Series

Professional measuring technology does not have to be stressful.

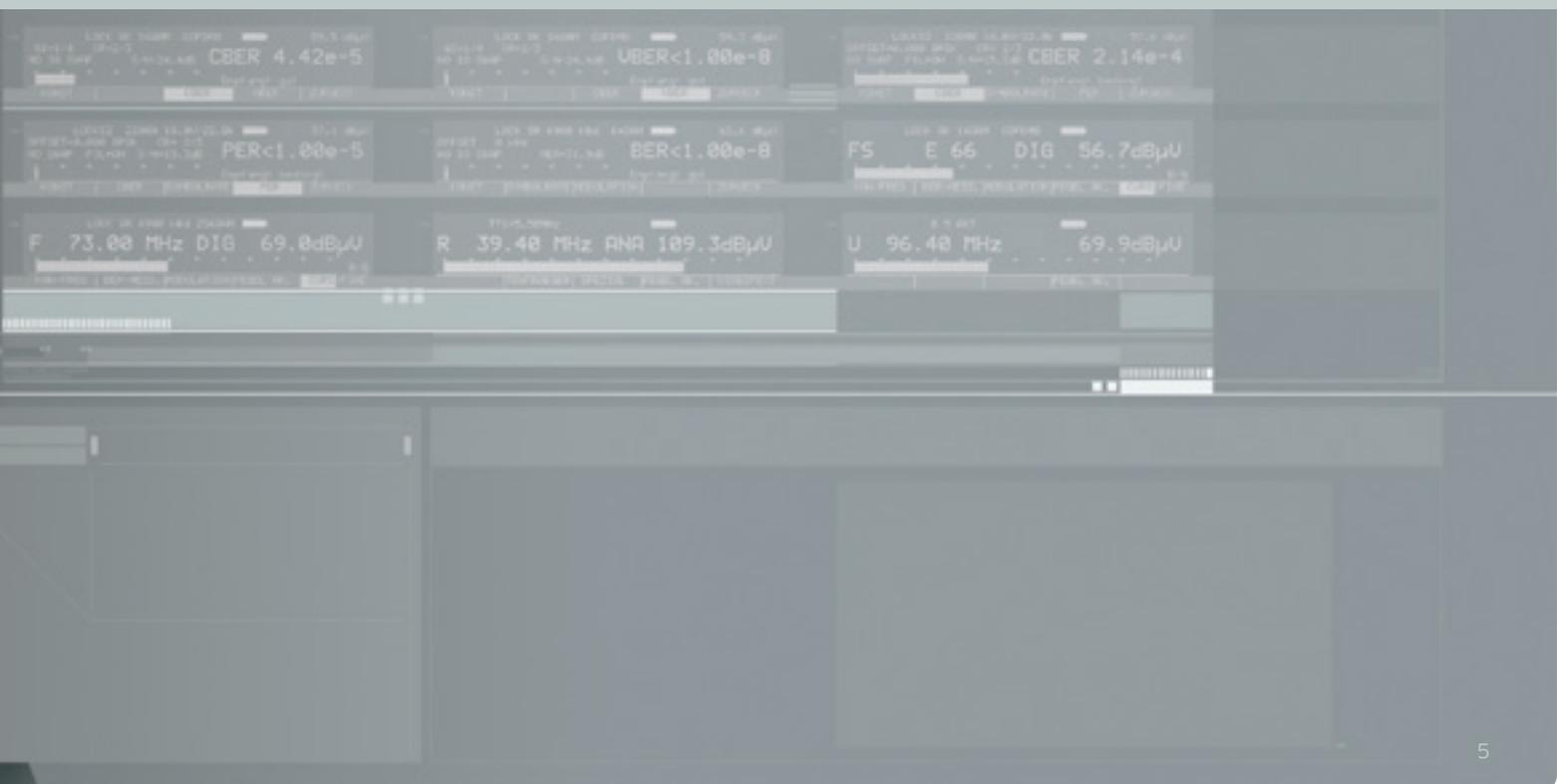




Figure: AMA 310 with bundle 2.



AMA 310

ANTENNA MEASURING RECEIVER

POSSIBLE OPTIONS:

- S/N meas. module with Scope/HUM
- DVB-S2 frontend
- MPEG 2/4 combi decoder with ASI in/out and DVI-out
- DOCSIS analyzer
- 5,5" colour TFT display (680 x 480 pixel)
- Frequency range from 5 MHz – 2,150 MHz
- Level measurement with picture/sound reproduction for analogue signals: FM, TV and SAT
- Level measurement, Bit Error Rate, MER and MPEG 2-picture display, 2x Common Interface (CI) for DVB-C, DVB-T and DVB-S
- Spectrum display for all ranges; Printer for measurement values
- Constellation diagram in realtime for all digital norms
- Return channel measurement
- EURO /US-DOCSIS measurement in downstream
- TV stereo and dual channel indication
- Interface: Ethernet (RJ 45), USB-A, USB-B, SCART
- Leather case with carrying strip



The bright color-TFT produces high-contrast pictures.

Figure: demodulated DVB-C station with channel specifications.

The background illumination of the keyboard allows for correct working in all conditions.

Figure: DVB-S transponder.



All interface in review: Ethernet RJ45, ASI in/out over BNC, USB-A, USB-B, SCART, DVI out.



This function case provides not only safety for the instrument but also enables easy usage of the AMA. Because of the easy to open flaps on the side you can reach every interface without problems.

 With the new AMA 310 the basis for options and upgrading was already planned during the hardware development. New times demand new procedures – with the new AMA 310 you are optimally equipped.

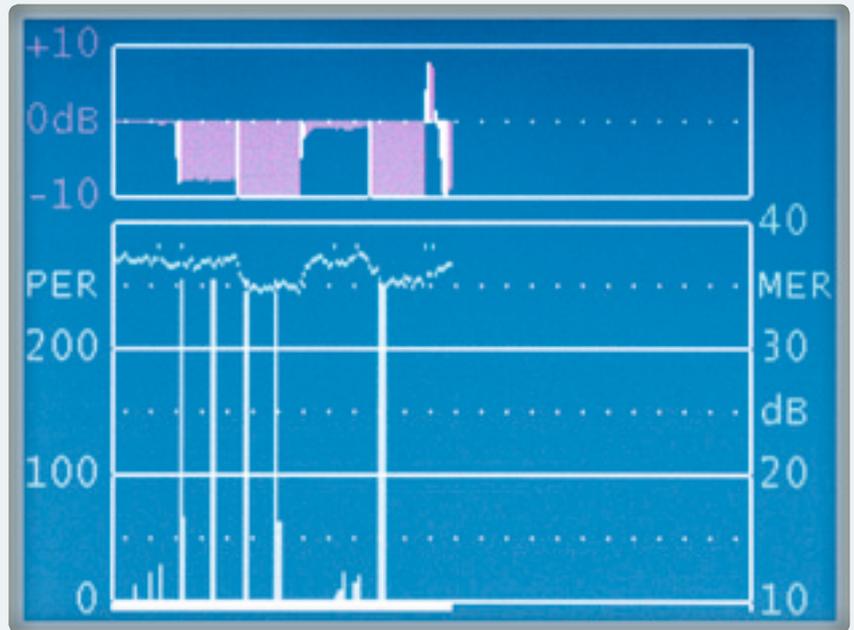
 Please find the contents of the AMA 310 bundles in our current price list or on our Homepage at www.kws-electronic.de.

Measurement data in a time diagram

More often temporary and intermittent interferences will disrupt the data flow. It is not possible to correct the faulty data package. The pattern of defects is then shown as brickwall faults or a complete failure of picture or sound.

Fault measurement: Permanent measurement, during which the MER, the signal level and the incorrect data package is recorded.

In the display picture you can see level dependent fluctuations in MER and short recurrent package faults.



AMA KWS PROFI-SERIE

AMA 310

THE NEW QUALITY OF THE PROFESSIONAL SERIES.

Faster calculation- and user proceedings, higher resolatory graphic diagramms as well as useful kopy and memory functions are the most obvious novelties for the AMA 310.

The new casing design, the higher amount of built-in electronic devices and the modified accu managment make the new measuring instrument more ergonomical.

As always concentration was placed on the fault safety (EMC). As with all KWS measuring receivers it is not possible that the various electronic devices disrupt each other or cause wrong measurement output.

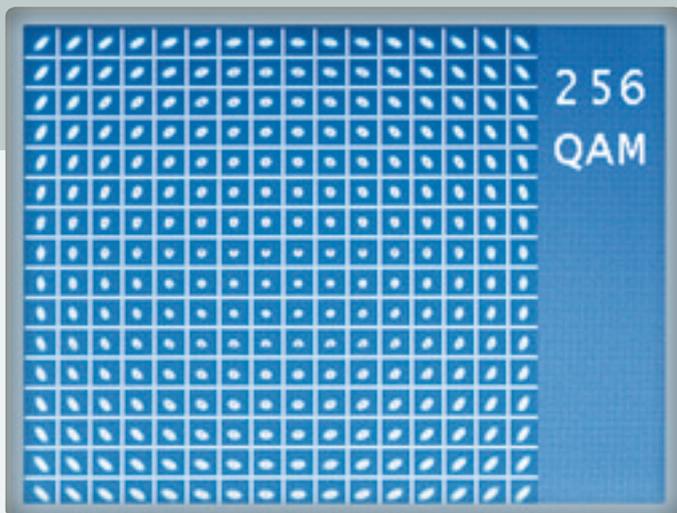
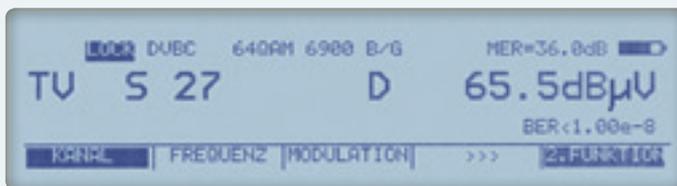


The principle of success, to use 2 separate displays is also in the AMA 310. The new LC-display for measurement display is bright and can also be read in very light surroundings.

Upper figure: Time-monitoring (5 min.) with a digital cable transponder with display of Level, MER and PER.

Figure lower left: Measurements from DVB-C transponder S27. Modulation 64 QAM – SR 6.900 kBd – BER and MER measurements.

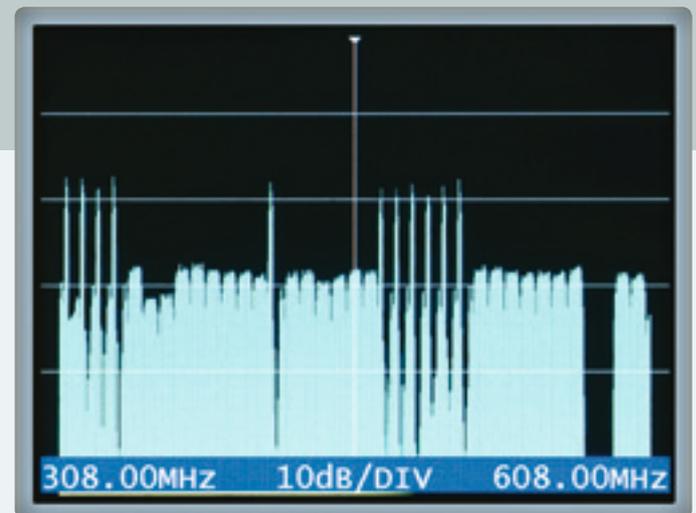
Figure lower right: UKW measurement of a channel 90,20 with level display, stereo sound and RDS evaluation.



HUM modulation/phase jitter

Problem there is no fault to be seen in the CATV plug, but the end device (for example Flat-TV) does not function. A dependable conduct research allows for changing the input sensitivitie from the measuring instrument. Therefore HUMM modulation and jitter phase can be easier demonstrated.

Figure: Constellation diagram 256 QAM with phase jitter.



CATV spectrum with analog and digital transponders

With help from the broadband spectrum analyzer the user can easily evaluate fault adaption.

Figure: In the narrow band modus fault adaption or reflections can be seen.



Figure: AMA 300 with bundle 2.



AMA 300

ANTENNA MEASURING RECEIVER

POSSIBLE OPTIONS:

- S/N meas. module with Scope/HUM
- DVB-T frontend
- DVB-S2 frontend
- MPEG2 decoder (picture display)
- CI slot for CA modules (2 x)
- MPEG2/4 combi decoder with 2 x CI, ASI in/out and DVI out
- Transport stream interface ASI in/out
- TV stereo and dual channel indication with NICAM decoder
- 5.5" colour TFT display
- Frequency range from 5 MHz – 2,150 MHz
- Level measurement with picture/sound reproduction for analogue signals: FM, TV and SAT
- Level measurement, Bit Error Rate, MER or S/N DVB-C and DVB-S
- Spectrum display for all ranges
- Constellation diagram in realtime for DVB-S und DVB-C
- Return channel measurement
- Printer for measurement values
- Video/audio input and output via SCART
- Operation using the mains, battery and 12 V external supply



Colour TFT (5.5") for optimal graphical representation.

Figure: Error-free constellation diagram of a 256 QAM-modulated cable signal.

The large display provides a variety of information. The keypad is dirt and splash-proof.

Figure: Level measurement of a 256 QAM BK signal at 73.0MHz.



Leather case for secure transportation, operation and storage of the instrument. Two retaining clips secure the instrument in the case.



Optional: 2 x Common Interface (CI) for accepting all current CA modules with smartcard (CA modules and smartcards are not included in the scope of delivery).

 If you want to upgrade a measuring receiver from KWS-Electronic, simply let us know the serial number of your measuring instrument – or use the “Upgrade fax” on our homepage www.kws-electronic.de. You will receive an quotation from us right away.

 Please find the contents of the AMA 300 bundles in our current price list or on our Homepage at www.kws-electronic.de.



Figure: AMA 301 with bundle 2 and optional printer.



AMA 301

ANTENNA MEASURING RECEIVER

POSSIBLE OPTIONS:

- S/N meas. module with Scope/HUM
- DVB-T frontend
- DVB-S2 frontend
- MPEG 2 decoder (picture display)
- CI-Schacht für CA-Module (2x)
- MPEG 2/4 combi decoder with 2x CI, ASI in/out and DVI out
- Printer for measurement values
- Transport stream interface ASI in/out
- TV stereo and dual channel indication with NICAM decoder
- 5.5" b/w picture tube
- Frequency range from 5 MHz – 2,150 MHz
- Level measurement with picture/sound reproduction for analogue signals: FM, TV and SAT
- Level measurement, Bit Error Rate, MER or S/N DVB-C and DVB-S
- Spectrum display for all ranges
- Constellation diagram in realtime for DVB-S und DVB-C
- Return channel measurement
- Video/audio input and output via SCART
- Operation using the mains, battery and 12V external supply



High resolution b/w picture tube (5.5") for optimal picture control.

Figure: Broadband return channel level spectrum (5-65 MHz). Signal source is a peak generator.

The large display provides a variety of information. The keypad is dirt and splash-proof.

Figure: Level measurement of a return channel frequency.



Leather case for secure transportation, operation and storage of the instrument. Two retaining clips secure the instrument in the case.



Optional: 24-character thermal printer allows measurement logs and spectrum displays to be printed out quickly.

 If you need to use your measuring instrument while it is being repaired or upgraded, we have an instrument loan service available for you to use. For a fixed price, KWS-Electronic will provide a replacement of the equivalent instrument or above, until your own measuring receiver is returned to you.

 Please find the contents of the AMA 300 bundles in our current price list or on our Home-page at www.kws-electronic.de.

VAROS

KWS STANDARD-SERIE



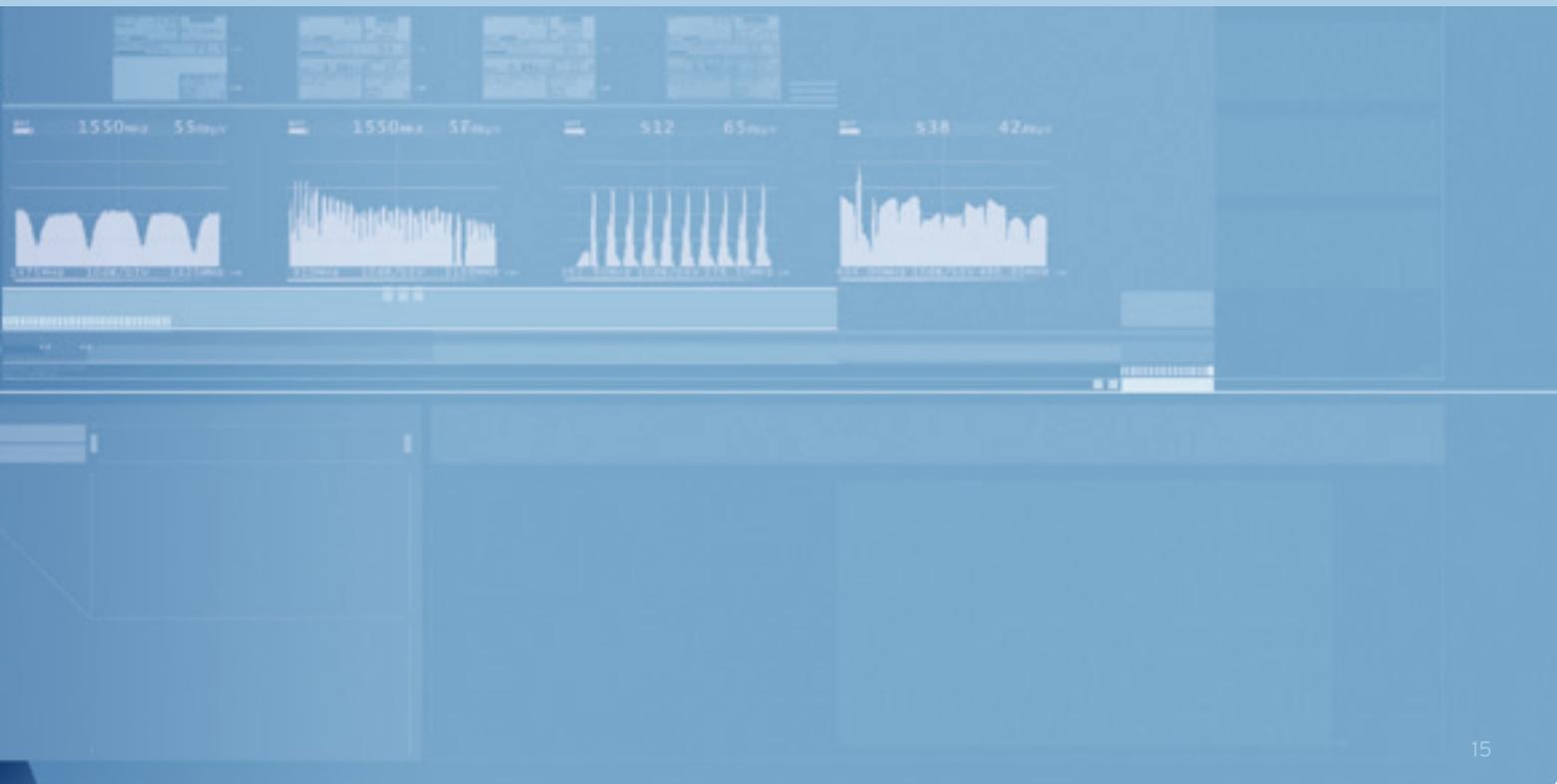
Are you looking for high measuring accuracy and all the equipment you need at the lowest price possible? Do you require practical measuring and simple operation? The VAROS 307 is the sophisticated solution for today and the future.

Its powerful, constantly optimized hardware platform prepares you for the increasing measurement standards like DVB-S2.

Documentation made easy: in our standard series measurement data can also be transferred with the »VAROS.data« directly to the PC/Laptop.

Instruments in the Standard-Series

No compromises.





VAROS KWS STANDARD-SERIE

VAROS 307

ANTENNA MEASURING RECEIVER

POSSIBLE OPTIONS:

- DVB-S2 frontend
- Measurement memory »VAROS.data«
- 4" colour-TFT · Frequency range from 5 MHz – 2,150 MHz
- Level measurement with picture/sound reproduction for analogue signals: FM, TV and SAT
- Level measurement, Bit Error Rate, MER or S/N DVB-C, DVB-T and DVB-S
- Picture display for MPEG2 signals, indication of MPEG 4 signals
- Spectrum display for all ranges
- Ci slot for CA modules and smartcards
- Return channel measurement
- Video/audio input and output via SCART
- Battery and 12V external supply
- Integrated charging supply unit



Clearly structured and user-friendly:

On the right is the membrane keyboard with adjustable potentiometers and the measuring input – the cover for the CI slot is on the left.

The speaker and easy-to-read 4-inch colour TFT display are integrated into the cover.

Figure: Listing of the TV-channel from a DVB-S transponder.



The scope of delivery includes a robust canvas case for transportation, operation and storage of the instrument, along with additional space for cables, plugs and the operating manual.

Figure: Television picture display for picture control.



Easy and fast logging of measurements and functions on the PC with the measurement memory »VAROS.data«.

Figure: The measurement memory is active. The fourth from seven chosen transponders is being measured.

Measurement of a DVB-S2 transponder

Through the introduction of the DVB-S2 norm, the correction mechanism has also changed. These transponders can not be analyzed with a conventional DVB-S measuring receiver. Optionally the VAROS 307 can analyze the DVB-S2 signals.

Picture shows measurement results from the transponder – ZDF Vision – on the satellite ASTRA (19,2° East).



VAROS KWS STANDARD-SERIE

VAROS 307

THE COMPACT INFORMATION IN THE STANDARD SERIES

The comparability of measurement data is essential. That is why quality and measurement accuracy has the same importance with VAROS 307 as it does with the AMA series.

A clear display of the measurement display or an uninterrupted picture analysis is possible with the 4" TFT-screen at all times. There are no disturbing TV-programs in the background during the measurement display.

With the VAROS 307 the users wishes for size, functionality and costs were considered.



Echo measurement (impulse answer) with DVB-T

An echo measurement is needed for optimal adjustment of a DVB-T receiver. Faults that show up in analog-TV as ghost pictures, can also cause disturbance in the DVB-T reception. For example Brickwall effect.

Figure: The subsequent second impulse (cursor position) will be received at 24 dB lower than the first impulse.



Spectrum display in CATV-Network

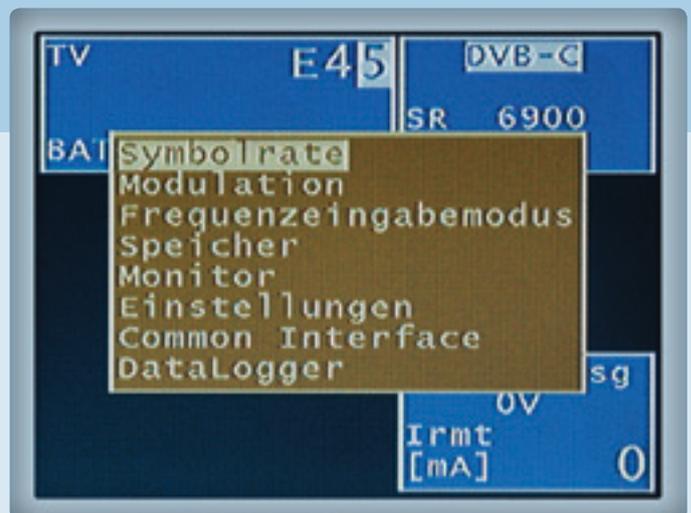
With help from the spectrum diagram, the level of the adjacent transponder will be shown in review.

Figure: Here you can see the lowering of the level from the digital (broad) transponder to the analog channels. The difference between 64 and 256 QAM transponder is also visible.



CATV-NIT

While programming the headend (DVB transponder) it is important to prepare a correct NIT. With the NIT-blanking in the VAROS 307 the user can control the correct programming.



Menu-overview for VAROS 307

All settings and user instructions for the instrument can be viewed either in German, English, Italian or French.

AMA.doc

DOKUMENTATIONSSOFTWARE

SOFTWARE

AMA.doc/J

DOCUMENTATION SOFTWARE

The PC software AMA.doc/J for transferring data between instrument and PC. The recording of systems is constantly increasing in importance.

Often enough customers or purchasers require a significant documentation. Mainly in the CATV area fast localization of cause of fault can result with problems or disturbances that appear later.

This is why we developed the AMA.doc/J PC software based on the Java programming language: for communicating with the AMA Pro-Series measuring receivers.



You can download the current demo version of AMA.doc/J at www.kws-electronic.de in the Support/Downloads area.



The task oriented surface can bundle single commands as they are needed in the daily assignments. The import from data and the simplified display make it easy to evaluate measurement results. The input bar at the bottom of the working area allows for efficient configuration of adjustment memory allocation.

Which automatically delivers validation of the parameter input. This compensates with an instrument list for all measuring receivers which are connected with the AMA.doc/J.

It has the following advantages over the previous version:

- Assistance for systems software Windows 98®, 2000®, XP® and Vista®
- Comfortable design of a channel plan and transfer into the adjustment memory from the AMA measuring receiver. Automatic validation of the inputted parameter.
- Extended Excel® export interface for easier processing of measurement data in the chart calculation program.
- Display of the spectrum for fast review for example a slope in the network.
- Connection of the network planning software AND with automatic processing of an assignment directly out of the AND program. Transfer of a measurement point out of the AND as a channel chart in the analyzer memory of the AMA. After the measurement the data is automatically transferred back to the AND.
- Now the AMA.blue can be used to make a Bluetooth connection to PC and Notebook the same as the serial cable and USB-adapters.

VAROS.data

MESSDATENSPEICHER FÜR VAROS 307

SOFTWARE

VAROS.data

MEASUREMENT MEMORY

- Included in the delivery of the »VAROS.data« is a PCMCIA adapter and a Compact-FlashCard.
- Every measurement can be recorded with a alphanumeral symbol (for example Hauptstrasse 20/3).
- The measurement data is memorized direktly on the card in XML size.

Like the AMA-Series the VAROS 307 can document and record systems. The user has free choice and can combine in which frequencie he wants to enter the mesurement data from analog and digital.

With the Measurement data memory »VAROS.data« it is very easy to record all measurments and to transfer this to the PC or Laptop.



Also included with the VAROS.data is a CD with the current instrument software. The customer can install this in his VAROS 307 and receives hereby the latest software update for his instrument.



The PCMCIA modul is inserted with the CompactFlash card in the CI slot of the VAROS 307. The VAROS 307 recognizes this modul and is ready for measuring.



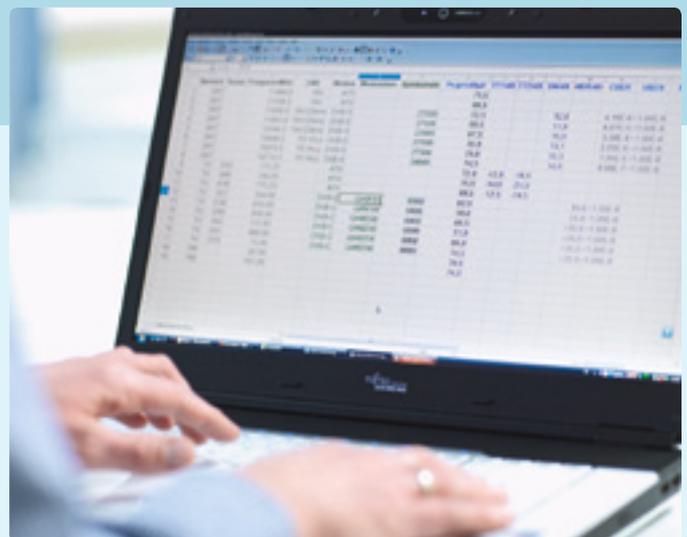
The name of the measurement place is given in – choose the channels and transponder where it should be measured – and start.

The instrument shows the state of measurement, for example »Datalogger 12 from 20«. This display means that the 12th from 20 chosen channels is being measured.



Now the transfer of the measurement data can be made to the PC.

The user has the choice: All depending on the PC interface either the PCMCIA modul or the FlashCard alone can be inserted into the PC. Also an adapter can be used.



The user opens the desired XML data with EXCEL® or OpenOffice® directly with the FlashCard.

Without an additional software you can process or archive data. Easy and swift recording: with the measurement data memory »VAROS.data«.



The Noise Generator RG 226 enables you to assess the frequency progressions of entire distribution systems as well as those of individual components such as amplifiers and multi-switches.

TEST EQUIPMENT

RG 226

NOISE GENERATOR

SPECIFICATIONS:

Frequency range	1 - 2,150 MHz (constant noise)
Output level	min. 85 dB μ V (bandwidth 1MHz)
Frequency response	\pm 1dB to 1GHz - \pm 1.5 dB bis 2.15GHz
HF splitter	0-30 dB in 2 dB increments 0-6 dB variable
Battery charge	via external power supply unit 170-240 VAC
Power supply	integrated battery pack
Weight	approx. 1.3 kg with battery
Dimensions	H: 55mm, W: 105mm, L: 165mm
Scope of delivery	measuring cable, AC/DC power supply unit, manual, transportation case

Many forms of interference can be simulated with this instrument thanks to complete coverage from 1 to 2,150 MHz, extremely accurate frequency progression over all bands and the adjustable output level. By feeding in a noise signal to the instrument, the exact power reserves of transmission links can be determined.

Examples of measuring applications:

- Cable loss and frequency response
- Transmission loss and decoupling of distributors, amplifiers and multi-switches
- Setting of band and channel pass filters, attenuation regulators, block circuits, etc.
- Testing of complete TV reception and distribution systems.



The Pulse Reflection Meter IRM 232 locates irregularities, exposed lines and short circuits in antenna, data and energy lines.

IRM 232

PULSE REFLECTION METER

SPECIFICATIONS:

Measuring range	0-25, 0-50, 0-100, 100-200,...1900-2000 m
Resolution	0.25 m · 0.5 m · 1 m · 5 m
Accuracy	1% of the measuring range
Velocity factor	nvp 0.300-0.999 (10 values can be stored)
Impedance	75 Ohm
Power supply	integrated battery pack
Weight	0.5 kg with battery
Dimensions	H: 30 mm, W: 84 mm, L: 157 mm
Scope of delivery	protective case, manual, power supply unit, transport case

Principle of measurement:

The IRM 232 functions according to the time-domain reflectometry method. The pulses fed into the cable are reflected from existing cable errors, and shown on the display. By analysing the shape and the duration of the reflection, the type of the error and the error distance can be determined.

Antenna range:

Since the introduction of digital television, the accurate assessment of distributor links has become more and more important. Irregularities caused by cable pinches or bad coaxial connections, for example, are a major problem as they affect analogue and digital signals and generate standing waves as returning energies.

Standing waves are also reflected into the network by exposed lines (75ohm) or short circuits.



AMA KWS PROFI-SERIE

LEATHER CASE

AMA 310

Function is everything:

Safekeeping for a high quality measuring receiver with high functionality, this case meets both criteria. New material makes for a lot less weight, allowing to easily operate the instrument in the case.

The case for the AMA 310 is the ideal way to transport and operate the measuring receiver.

Assignment:

- Light and nevertheless sturdy material
- Protection from dust and moisture
- Ergonomical operating in the case
- Space for measurement cable, adapter and documents
- Heat dissipation while using the instrument

The high quality of the leather allows for the best possible safety against blows and prevents the instrument from becoming soiled. The easy use and the heat dissipation is ensured by the two big sideflaps.



LEATHER CASE

AMA 300/AMA 301

Flaps and pockets on all sides:

for the connections on the side of the AMA instrument (network, SCART, 12 V, RS 232...) and on the top (CI, printer).

Additional storage room in the fold-away side pocket (at the front in the picture), and a removable pocket in the case lid (top left in the picture).

Leather case for secure transport, operation and storage of the instrument.

Design:

- it protects the instrument during transportation or operation
- it is robust and made of leather that is water and dirt-resistant
- it improves day-to-day work thanks to its sophisticated functionality.

For example, the sturdy shoulder strap prevents the instrument from slipping when working on roof-tops and the two retaining clips prevent the instrument from falling out during operation.

The instrument face is kept clean by an additional removable protective film that is connected with nylon loop fasteners. The film material is made of soft PVC and thus ensures that the instrument remains easy to use.



RANGE OF PRODUCTS B

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