ALL IN ONE TOOL

Model DB4005

SDR-Based FM Radio Modulation Analyzer and Monitoring Receiver

DB4005 is DEVA Broadcast's third-generation digital FM Radio modulation analyzer and receiver, the result of long years of experience and a desire to always provide intelligent near-perfect solutions, while keeping pace with the very latest technological developments and trends.

With this product, upon demodulation of the FM signal, the RF signal is digitalized by the SDR FM tuner and all signal processing is achieved through sophisticated DSP algorithms. The high precision of the powerful digital filters used in this equipment enables the FM signal to be accurately and repeatedly analyzed with each device. An important asset to the DB4005 is the MPX input, which allows you to monitor external composite signals, regardless of whether they are from a composite STL receiver/stereo FM encoder, or from an off-air source. As this is a tool of great processing power, it provides detailed readings of all the multiplex FM signal components, while all measurements are refreshed simultaneously and synchronously.

Another useful feature of the DB4005 is the Loudness Meter, which allows for measurements to be shown as defined by ITU BS.1770-4 and EBU R128 recommendations, as the product supports both standards.

The DB4005 has an easy to read, high-resolution OLED graphical display and ultra-bright bargraph LED 60 segment indicators that allow reading the main signal parameters at a glance. The built-in oscilloscope represents the observed signal change over time and helps you visualize the most important signals participating in the process of demodulating and stereo decoding. Complementing the Oscilloscope mode, the Spectrum analyzer mode allows for spectral analysis of the input signal. Spectral components of the selected signal are determined on the basis of Fast Fourier Transform. MPX Power and all other level measurements are supported by measurement history data. Additionally, RDS information contained in the processed MPX signal is easily visualized and represented as RDS/RBDS Data and detailed RDS/RBDS Statistics.



FEATURES

- Bright, accurate bar graph LED metering of the Modulation and Pilot Levels
- Level Adjustable, Balanced Analog Audio Outputs on XLR Connectors
- Adjustable MIN/MAX alarms for RF, Pilot Left & Right Audio Levels
- Total and independent Positive and Negative deviation bar graph
- Built-in Oscilloscope for IF, MPX, Pilot, RDS, Left & Right display
- Spectrum analyzer allowing checking of the RF Carrier and MPX
- Professional AES/EBU, SPDIF and Optical Digital audio outputs
- Complete status reporting with SMS via optional GSM modem
- Adjustable MIN/MAX alarms for MPX, MPX Power & RDS
- SNTP for automatic synchronization of the built-in clock
- LAN port for full TCP/IP remote control and monitoring
- Left, Right, L+R, L-R bar graph LED audio level meters
- USB communication interface for local connectivity
- Firmware updates will ensure improved operation
- Headphone output with front panel level control
- FM Band 65 ÷ 108 MHz Basic Spectrum Analyzer
- Alarm dispatch via E-mail, SMS, SNMP and GPO
- Dual antenna ports with built-in RF attenuator
- Selectable De-emphasis - Off, 50µs and 75µs
- Accurate front-panel metering for local use
- Fully DSP-based core
- Built-in Stereo Decoder
- Easy to use WEB interface
- Built-in Loudness Analyzer
- Easy Installation and Setup
- Built-in WEB and FTP server
- Built-in 50 channel Data logger
- Very Intuitive Navigational Menu
- Quick Station access via 4 Presets
- Restore Factory Parameters option
- Apple and Android devices support
- Real Time Audio Program Streaming
- Levels measurement with data history
- Wide angle, easy to read OLED display
- Built-in input for external MPX analysis
- Protected access to the device settings
- Up to 100 dBµV direct RF Antenna Input
- RDS and RBDS decoder with BER meter
- Selectable wide range IF filter bandwidth
- Remote Listening via optional GSM modem

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TECHNICAL SPECIFICATIONS

RF Input	
Tuning Range	88-108 MHz; continuous tuning
Tuning Step	10, 20, 50, 100 kHz
Tuner Sensitivity	30 dBµV
Antenna Ports	Dual BNC Connectors
Input Range	1-5 Vrms; 50 Ω BNC
Antenna Sensitivity	100 µV or better; 75 Ω
Antenna Ports Isolation	>40 dB
Internal Attenuator	0, 10, 20 and 30 dB
Modulation Accuracy	±2.0% or better
FM Demod	
IF Filter Bandwidth	50-314 kHz; 15 Increments
Frequency Response	±0.1 dB, 10 Hz-86 kHz
MPX Power	±12 dBr; 20 s integration
Dynamic range	90 dB
Modulation Freq.	30 Hz to 100 kHz
Nominal Deviation	±75 kHz at 100% modulation
Deviation Indicator	0 to 133% modulation
Deviation Accuracy	±2.0% or better
AM Noise Measurement	Down to -70 dB vs 100% AM
MPX (Composite) Input	
Connector	Rear BNC; 10 kΩ
Frequency Range	10-70 kHz
Sensitivity	3.5 Vp-p at 100%
MPX Signal Output	
Frequency Response	Better than ±0.25 dB
THD+N	Not more than 0.01%
IMD (SMPTE)	Not more than 0.02%
SNR	80 dB or greater
Stereo Decoder	
Freq. Response L/R	±0.1 dB, 10 Hz-15 kHz
Stereo Monitoring	L/R, total; L+R and L–R
Separation	>60 dB; 30 Hz to 15 kHz
Crosstalk	>65 dB; L+R to/from L–R
Pilot Carrier	0-15% injection indication
SCA / Pilot	Monitor subcarrier and pilot
Outputs	
Audio (L, R)	≥0 dBm; 600 Ω balanced
AES3 (L, R)	5.0 Vp-p, 110 Ω XLR
SPDIF (L, R)	3.0 Vp-p, BNC
Optical (L, R)	TOSLINK transmitter
Alarms	Programmable; optoisolated
Headphone	6,3 mm; +12 dBm maximum
Audio Freq. Resp.	Better than ±0.25 dB
Audio SNR	85 dB or greater
Audio THD+N	Not more than 0.01%
Audio IMD (SMPTE)	Not more than 0.02%
De-emphasis	Flat and 50 µs

RDS Decoder	
Standards	European RDS; US RBDS
Error Correction / Count	Yes
AF / CT	Yes
TA / TP	Yes
PI / PTY / DI / MS	Yes
PS/ RT / RT+	Yes
TMC / ODA	Yes
Group Analyzer	Yes
BER Analyzer	Yes
Group Sequence Display	Yes
RDS RAW Data Display	Yes
Scope Analysis (RF, Composite, Audio)	
Signal Sources	RF(IF), MPX, Pilot, RDS, L/R
Record length	4096 points
Dynamic range	90 dB
Metering Accuracy	
RF Level	±1 dB, 0-100 dBµV
MPX Power	±0.2 dBr; -12 to +12 dBr
Total / Pos / Neg	±2 kHz; 10-100 kHz
Pilot / RDS	±0.5 kHz; 1-12 kHz
Audio	±1 dB; +10.0 to -55.0 dB
FFT Spectrum Analysis (RF, Composite, Audio)	
Signal Sources	RF (IF), MPX, Left, Right
FFT length	2048 points
Dynamic range	90 dB
Communication Interfaces	
USB	B-type connector
Ethernet	RJ45; 10/100 Base-T
Remote Monitoring	TCP/IP with SNMP support
Front Panel	Deviation / RF / L/R / Pilot / RDS / SCA
Power	
Voltage	230 V AC ±10%; single phase
Frequency	50 Hz ±4%
Power Factor	Better than 0.9
Power Consumption	20 VA
Connector	IEC320, fused, EMI-suppressed
Operating conditions	
Temperature	0°C to +45°C
Humidity	95% RH, non-condensing
Altitude	Up to 3000 m AMSL
Size and Weight / General	
19-inch Rack	Standard rack mounting
Cables	All RF and AC cords / connectors
Accessories	For all specified measurements
Equipment Size	485 x 44 x 180 mm
Shipping Weight	2.7 kg



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