

VB220

HARDWARE & SOFTWARE PROBES

The VB220 Probe is the perfect choice in any network where digital video is carried across an IP-based infrastructure. Built specifically to high-end industry needs, this network service tool is ideal for both pure IP networks and hybrid networks with IP transport cores such as in digital cable and terrestrial networks. The VB220 probe hardware is custom-designed and built to telco-grade standards for maximum reliability and minimum maintenance. Each VB220 blade consumes less than 12W of power. This substantially reduces power consumption and air conditioning needs in installations. The VB220 can be paired with a full set of interface blades to cover signal formats such as DVB-T/T2, DVB-S/S2, DVB-C/C2, QAM-B, 8VSB and ASI. It is possible to monitor OTT/ABR streams at master play-out or at the CDN origin server in all common streaming formats using the OTT option. Streaming formats supported currently include Microsoft Smoothstream™, Apple HLS™, Adobe HDS™, MPEG-DASH and basic RTMP.



Technologies

Bridge Technologies options are designed to enhance the overall ability and performance of accurate monitoring in the broadcast environment

Click below to learn more about compatible technology options:

[Eii™](#) [ETR290™](#) [FSM](#) [Gold](#)
[TS](#) [MediaWindow™](#) [microETR™](#) [OTT](#) [R](#)
[DP](#)

Environmental

[Euroenvironment](#) [RoHS](#) [WEEE](#)

Chassis Options

[ACC](#) [DCC](#) [EC](#) [EC-DC](#)

Overview



A single VB220 blade is capable of monitoring up to 260 IP multicasts as found in FTTH IPTV systems. Three VB220 blades can be placed in one 19 1RU chassis, giving a total of 780 streams monitored in a small form factor.

The VB220 is ideally suited for network core and region use. It is an invaluable helpmate for any network engineer attempting multicast detection on multiple VLANs or in the process of IGMP tracking. Fault finding in complex IP networks just got a lot easier.

The monitoring of critical parameters such as loss distance measurements and detailed jitter values will give operators invaluable and precise feedback about network performance. With the patented MediaWindow™, historical data can be easily accessed for meaningful visualisation of media flow in IP networks. Whether establishing or modifying service settings on complex routers and switches, the VB220 facilitates the whole process.

The power of confidence monitoring is further enhanced by continuous monitoring and alarming for vital parameters like bandwidth overflow/underflow, RTP errors and signal loss. Based on a highly sophisticated threshold template system, alarm granularity can be set to reflect actual status, irrelevant alarms being effectively masked. The unique FSM™ framework also allows checking and continuous monitoring of middleware and network services vital to customer QoE.

The VB220 may be used with optional demodulator interfaces, resulting in a very compact monitoring solution particularly suited for systems that use IP distribution to regional nodes. The

VB220 monitors IP, ASI and optional demodulator inputs simultaneously, and the transport stream and service compare mechanism makes it easy to validate correct local insertion at regional head-ends.

The VB220 can be expanded with the ETR290 option for full video monitoring and analysis functionality according to TS 101 290 as used in head-end and studio environments. SNMP trapping and XML export enable the IP probes to be implemented in any NMS system with alarm generation; either directly from the probes themselves, or via the VBC server for advanced alarm correlation and filtering. Each VB220 contains the Eii (External Integration Interface) API for seamless and easy integration into any third party system.

Each IP probe runs an HTTP server with the client as a web browser, so there is no need to install custom software on computers needing access to the measurement data. The HTTP traffic is compressed between the probe and the client web browser to allow successful operation across limited bandwidth management networks.

VB220 Software



The VB220 software based probe has support for up to 260 IP multicasts and total bandwidth capacity of 2Gbps spread across video interfaces. The VB220-SW enables full confidence monitoring of 2 Gbit/s spread across video interfaces, with optional upgrade to up to 10 Gbit/s. It provides T2MI analysis, L2TP analysis and monitoring of up to 4 Secure Reliable Transport (SRT) streams.

The VB220-SW uses the patented MediaWindow™ to allow monitoring at-a-glance of packet loss and errors in inter-packet arrival time. This way the operator can conveniently ensure correct signal quality at IP-level. The advanced Ethernet protocol analysis tool automatically detects all protocols carried over Ethernet, and it then displays statistics giving the Software Probe a real-time sniffer capability. The VB220-SW allows the user to define a Return Data Path (RDP), using the regular

video/data network or the management network to return a stream. A faulty signal can then be further analyzed at the studio premises, when necessary. The recording functionality allows the user to record a stream, either triggered manually by the user or triggered by a user defined alarm.

Full Service Monitoring (FSM) checks that vital system components like CA-servers are active. Optional Ethernet TR 290 monitoring allows the operator to check parameters like transport stream sync and PSI/SI standards conformity. This option also performs further PSI/SI analysis, making it possible to view PSI/SI contents. PID and service bitrates are also continuously measured. Optional OTT monitoring allows the operator to set up active testing of Over-the-top type signals as found in adaptive bitrate streaming architectures. Formats supported include Apple™ HLS, Microsoft™ Smoothstream, RTMP, MPEG DASH, Adobe™ HDS and Nullsoft SHOUTcast™. The VB220-SW can be expanded through license options to monitor the T2MI protocol layer as found in DVB-T2 networks. The VB220-SW can also be licensed with an SCTE 35 option that allows monitoring and logging of splice time codes embedded in the transport streams. The Content option adds QoE monitoring, including freeze-frame, MOS and VMAF scoring, closed caption and audio level monitoring, thumbnail and metadata extraction, as well as Encoder Boundary Point monitoring. The Timeline view includes an analysis capability that allows users to play through recorded data in an NLE-style Timeline display to observe correlations and patterns of errors occurring over any time period.

The OTT software option is available on the VB220-SW and enables monitoring of up to 50 adaptive bitrate channels in steps of 10 depending on license activated. Supported streaming formats include Apple™ HLS, Microsoft™ Smoothstream, RTMP, MPEG DASH, Adobe™ HDS and Nullsoft SHOUTcast™.

The ETR 290 software option performs extended ETSI TR 101 290 analysis, enabling detailed transport stream monitoring, including verification of PSI/SI and bitrate monitoring for individual services and service components. A built-in web server in the probe allows remote signal monitoring using a standard web browser. This can be managed either through a separate Ethernet network, or by using the regular video/data network – both IPv4 and IPv6 are supported on the management interface. The probe can also be managed via the VBC Controller – a centralized server management solution. The VBC adds management features like alarm aggregation and report functionality as well as centralized access and user roles.

For suitable server specs please refer to user manual, or contact your local representative.

Tech Features

VB220 DIGITAL NETWORK PROBE

- 10/100/1000-T RJ45 Management port with Link and Activity LED indicators
- 10/100/1000-T RJ45 video port with Link and Activity LED indicators
- SFP gigE video port with Link and Activity LED indicators
- 75 ohm HD-BNC ASI input port with TS SYNC LED indicator
- 75 ohm HD-BNC ASI output port for monitoring purposes
- 50 ohm SMA female 1PPS input port for GPS synchronisation
- USB Type-A connector for initial setup
- Expansion blades available for common formats such as DVB-S/S2, DVB-C/C2, DVB-T/T2, QAM-B, 8VSB, ASI
- Parallel and continuous monitoring of up to 260 IP unicasts/multicasts according to ETSI TS 102 034:
 - Monitor current/min/max UDP payload bitrate
 - Monitor current/min/max TS payload not counting NULL TS packets
 - Count number of IP packets
 - Source/destination IP address
 - Type-of-Service field (TOS/DSCP)
 - Time-to-Live field (TTL)
 - VLAN ID, if appropriate
 - Max/min/average IP packet Inter-Arrival time (IAT) for jitter analysis
 - TS Continuity Counter errors
 - TS Sync errors
 - Media Loss Rate – number of TS packets lost
 - Delay Factor – time between IP frames
 - Source/destination MAC address
 - RTP dropped packets, duplicate packets, out-of-order packets
 - RTP max/min hole size, hole separation
 - Forward Error Correction analysis according to SMPTE 2022 / COP3
- MediaWindow™ visualisation technology for trending packet loss, bandwidth and jitter over up to 4 days
- Thumbnail decoding of uni/multicast IP transport streams with audio bars and metadata
- Full Service Monitoring of up to 10 network devices via built-in ICMP and HTTP query agents
- Framework called RDP for relaying any IP multicast monitored to a different IP

destination for further analysis

- Functionality for record 200MB of the whole or parts of any transport stream monitored (RDP framework)
- Automatic record trigger based on up to 3 configured alarm criteria with pre fill in order to catch fault
- Framework for automatic detection of present multicast/unicast streams
- Protocol hierarchy view with bandwidth and packet count statistics for video interface
- IGMPv2/v3 protocol logging and analysis framework
- Flexible template based alarming system to allow custom configuration of what parameters result in an alarm being generated on a per-TS level
- History graphs from last 4 days of NoSignal, CC-errors, RTP-drops, RTP-duplicates, RTP-Out-of-order, Total interface bitrate, Monitored bitrate, Ethernet CRC frame errors
- One ETR290 engine automatically activated per RF/ASI input port on interface modules
- IEEE 802.1Q VLAN tagging support
- Microsoft mediaRoom X-bit RTP header extension support
- Alarm on changes to TOS/DSCP and TTL for detection of changes in network prioritization
- Time loss distance measurements according to RFC3357
- Alarm forwarding to 3rd party systems via SNMP TRAP via up to 3 unique destinations
- NTP client time synchronization support according to RFC2030
- DHCP client support on management and video ports according to RFC2131
- Easy web-based software and license upgrade
- Tightly integrated with VideoBRIDGE Controller (VBC)
- XML-based configuration save and retrieval via web
- Powerful and openly available XML-based External Integratoin Interface (Eii) for 3rd party integration
- Gold TS Protection™
- Condensed mosaic thumbnail view of all services monitored

ETSI TR 101 290 OPTION FUNCTIONALITY

- Full real-time ETSI TR 101 290 alarming and analysis (Pri 1, 2, 3), one transport stream per input monitored in parallel
- Configurable round-robin functionality for each ETSI TR 101 290 analysis engine
- Conforms to both DVB and ATSC specifications
- Table and descriptor parsing of PSI/SI and PSIP presented as table summary and full table breakdown (including hex dump)

- EPG analysis (EIT p/f and schedule)
- Bitrate monitoring and alarming (TS, service and PID level)
- Monitoring of vital CA parameters
- Compare view for comparison of transport streams and services across different interfaces
- Sophisticated threshold template system for detailed alarm handling control at transport stream, service and component level
- Monitoring of demodulator parameters (demodulator option)
- Scheduled alarm masking
- Full real-time ETSI TR 101 290 alarming and analysis (Pri 1, 2, 3) on the ASI input
- Full real-time ETSI TR 101 290 alarming and analysis (Pri 1, 2, 3) on one IP multicast
- Expand with 7 additional ETR290 engines for concurrent ETSI TR 101 290 analysis of a total of 8 IP multicasts

CONNECTOR SPECIFICATIONS

- Input voltage: 100-240 VAC +/- 10% 50/60Hz
- Power consumption: 12W per blade
- 10/100/1000-T management RJ-45
- 10/100/1000-T Video RJ-45
- SFP Video
- Initial setup: USB Type-A
- HD-BNC 75ohm female ASI input
- HD-BNC 75ohm female ASI output loop through
- SMA female 50ohm 1PPS GPS input

MECHANICAL SPECIFICATIONS

- Standard 19 1RU rack-mount
- W x H x D: 483 x 43 x 400 mm
- Weight: 4,2 kg fully populated

PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

- Operating temperature: 0 to 45
- Storage temperature: -20 to 70
- Operating humidity: 5% to 95% non-condensing

Software Options

ETR290 (ETSI TR 101 290)-OPTION

The ETSI TR 101 290 functionality is included as standard on the VB120. ETR290 also available as an option on the VB220. Full analysis is performed on Ethernet, ASI, COFDM, QAM, DVB-S/S2 QPSK and signals according to the industry standard ETSI TR 101 290. Multiple analysis engines are available as an option for Ethernet, allowing real-time ETSI TR 101 290 analysis for Ethernet transport streams in parallel. The Bridge Technologies implementation provides operators with unparalleled input signal visibility. The probes can detect and trigger alarms for many of the common errors that would normally go unnoticed by conventional monitoring systems.

BULK-ETR290 (ETSI TR 101 290)-OPTION

The ETSI TR 101 290 functionality is included as standard on the VB120. ETR290 also available as an option on the VB220 and VB330. Full analysis is performed on Ethernet, ASI, COFDM, QAM, DVB-S/S2 QPSK and signals according to the industry standard ETSI TR 101 290. Multiple analysis engines are available as an option for Ethernet, allowing real-time ETSI TR 101 290 analysis for Ethernet transport streams in parallel.

OTT ENGINE-OPTION

The use of OTT technologies like variable bit rate HLS, SmoothStream and HDS for distribution of media to all kinds of receiving platforms is rapidly expanding, portable devices used in multiscreen applications being particularly important for OTT deployment to be a preferred method for media signal delivery. Content distribution using OTT is complex, and it is necessary for a service provider to perform continuous surveillance of signal availability and integrity of both LIVE multi-profile streams and VOD content. The OTT Option provides the same paradigms as more traditional media transports enabling easy understanding of complex media transportation where operators have both traditional and new distribution systems. The OTT options, available for all Bridge Technologies probes, enables monitoring and analysis of HLS, SmoothStream, HDS and MPEG-DASH streams. The OTT engine will check that stream and profile manifest files, the «lists of contents», are syntactically correct and updated, that all stream profiles are available and that stream chunks are delivered on time.

T2MI-OPTION

The T2MI-OPT applies only to the management board (VB120 & VB220).

The T2MI option is used to enable analysis of inner streams in DVB-T2 distribution systems utilising T2MI functionality. Stream verification is based on the renowned Bridge Technologies ETSI TS 101 290 analysis engine, and the T2MI enabled probe allows a thorough check of outer and inner

streams. The T2MI option makes it possible to design and implement an end-to-end monitoring system for DVB-T2 distribution. The T2MI option extends ETSI TS 101 290 analysis functionality of a Bridge Technologies probe to include inner streams in DVB-T2 distribution systems where T2MI functionality is used. The T2MI stream-in-stream concept opens for simplified local insertion and is increasingly being used in DVB-T2 distribution. Monitoring of signal integrity is essential, and the T2MI probe option makes it possible to check inner stream parameters, like T2 timestamps and L1 information. Measurements are performed real-time in accordance with DVB document A14-1.

DATA-LOG-OPTION

Offers storage of up to 20000 alarms to disk. Recording of multiple TS and PCAP captures of file size 1500MB to disk. Offers data logging of selected TS measurement parameters to disk.

SCTE35-OPTION

SCTE35 is a specification which allows equipment to splice in local content at specific times. SCTE35 is the signalling mechanism the equipment uses to know when to switch from the master transmission to insert local content and when to switch back. SCTE35 is used for two different reasons: In USA it is used to insert local advertising. It's quite common that local Cable TV companies redistribute satellite channels in their network. They can purchase the right to replace some of the country-wide advertising with local ads. In Europe it is used to insert local TV programs, e.g. local news transmissions. SCTE35 analysis requires a special license for the probes and is connected to the ETR290 engine. All streams where ETR290 monitoring are performed simultaneously can be SCTE35 monitored in parallel, i.e. this is a reason for buying VB330 if many SCTE35 streams are to be monitored in parallel. GUI: From the ETR 290 main tab a list of streams containing SCTE35 signalling are displayed under the SCTE 35 tab.

CONTENT-OPT

Offers content analysis in the form of QoE monitoring, thumbnail content archiving and timeline visualisation, MOS average alarming, VMAF scoring, freeze-frame/color-freeze detection and alarming, audio level and stereo phase monitoring, real-time loudness monitoring, closed captions extraction (CEA-608/CEA708). Allows for QoE and QoS for up to 1000 streams across OTT and multicast streams pending sufficiently scaled hardware.

Ordering Codes

PRODUCT ORDERING CODES EMBEDDED PROBE

VB220- IP-Probe blade w/Gbit electrical/optical inputs + ASI input and built in AET

VB2G2-OPT – Second 1Gbit DATA interface Option. License factory ordered – requires sw v5.1 or later

VB2G2-UPGR – Second 1Gbit DATA interface Option. License upgrade – requires sw v5.1 or later

ETR290-OPT – ETSI TR 101 290 for Ethernet and enable ASI input

ETR290-UPGR – ETSI TR 101 290 for Ethernet and enable ASI input. Upgrade license

T2MI-OPT – DVB-T2MI Encapsulation Synchronisation monitoring option, factory ordered

T2MI-UPGR – DVB-T2MI Encapsulation Synchronisation monitoring option

OTT-ENG-OPT – 1 engine w/active testing of up to 10 channels, factory ordered

OTT-ENG-UPGR – 1 engine w/active testing of up to 10 channels, upgrade

BULK-OTT-OPT – 25 engines w/ active testing of up to 250 channels, factory ordered

BULK-OTT-UPGR – 25 engines w/ active testing of up to 250 channels, upgrade

SCTE35-OPT – SCTE35 Signaling Analysis and Logging. Licence for VB2 series factory ordered – requires v5 sw and ETR Engine

SCTE35-UPGR – SCTE35 Signaling Analysis and Logging. Upgrade licence for VB2 series – requires v5 sw and ETR Engine

PRODUCT ORDERING CODES SOFTWARE PROBE

VB220-SW – Software based virtual probe. Requires software v5.3

VB2G2-OPT – Second 1Gbit DATA interface Option. License factory ordered – requires sw v5.1 or later

VB2G2-UPGR – Second 1Gbit DATA interface Option. License upgrade – requires sw v5.1 or later

ETR290-OPT – ETSI TR 101 290 for Ethernet and enable ASI input

ETR290-UPGR – ETSI TR 101 290 for Ethernet and enable ASI input. Upgrade license

BULK-ETR290-OPT – 25 engines with testing of ETSI TR 101 290, includes GoldTS, factory ordered

BULK-ETR290-UPGR – 25 engines with testing of ETSI TR 101 290, includes GoldTS, upgrade

ETR290-200-OPT – 200 engines enabling concurrent TR 101 290 priority 1, 2 and 3 analysis on up to 200 streams

ETR290-200-UPGR – 200 engines enabling concurrent TR 101 290 priority 1, 2 and 3 analysis on up to 200 streams, upgrade

T2MI-OPT – DVB-T2MI Encapsulation Synchronisation monitoring option, factory ordered

T2MI-UPGR – DVB-T2MI Encapsulation Synchronisation monitoring option

OTT-ENG-OPT – 1 engine w/active testing of up to 10 channels, factory ordered

OTT-ENG-UPGR – 1 engine w/active testing of up to 10 channels, upgrade

BULK-OTT-OPT – 25 engines w/ active testing of up to 250 channels, factory ordered

BULK-OTT-UPGR – 25 engines w/ active testing of up to 250 channels, upgrade

SCTE35-OPT – SCTE35 Signaling Analysis and Logging. Licence for VB2 series factory ordered – requires v5 sw and ETR Engine

SCTE35-UPGR – SCTE35 Signaling Analysis and Logging. Upgrade licence for VB2 series – requires v5 sw and ETR Engine

DATA-LOG-OPT – Offers storage of up to 20000 alarms to disk. Recording of multiple TS and PCAP captures of file size 1500MB to disk. Offers data logging of selected TS measurement parameters to disk

DATA-LOG-UPGR – Offers storage of up to 20000 alarms to disk. Recording of multiple TS and PCAP captures of file size 1500MB to disk. Offers data logging of selected TS measurement parameters to disk

CONTENT-OPT – Offers content analysis in the form of QoE monitoring, thumbnail content archiving and timeline visualisation, MOS average alarming, VMAF scoring, freeze-frame/color-freeze detection and alarming, audio level and stereo phase monitoring, real-time loudness monitoring, closed captions extraction (CEA-608/CEA708).

CONTENT-UPGR

Offers content analysis in the form of QoE monitoring, thumbnail content archiving and timeline visualisation, MOS average alarming, VMAF scoring, freeze-frame/color-freeze detection and alarming, audio level and stereo phase monitoring, real-time loudness monitoring, closed captions extraction (CEA-608/CEA708).

PRODUCT ORDERING CODES RF INTERFACE

VB246 – ASI high-density input blade

VB252 – DVB-T/T2 Demodulator interface blade single RF input

VB252-SMA – DVB-T/T2 Demodulator interface blade single RF input – 50 ohm SMA connector model

VB262 – DVB-C QAM/8VSB/Analogue Demodulator Interface blade single RF input – ITU.T J83 Annex A/B/C

VB266 – DVB-C/C2 QAM Demodulator Interface blade single RF input

VB272 – DVB-S/S2 Demodulator Interface Blade single RF input

VB272-SMA – DVB-S/S2 Demodulator Interface Blade single RF input – 50 ohm SMA connector model

Documentation

[Hardware User Manual – Download](#)

[Software User Manual – Download](#)

[Quick Start Guide – Download](#)

Related Products



VB220 ATV

IP MONITOR PROBE FOR
APPEAR INSTALLATIONS



VBC

VBC CONTROLLER SERVER



VB243

ASI INTELLIGENT
REDUNDANCY SWITCH



VB252

DVB-T/T2 TERRESTRIAL RF
INPUT MODULE



VB256

ISDB-T TERRESTRIAL RF
INPUT MODULE



VB262

DVB-C QAM/VSB DIGITAL
CABLE



VB272

DVB-S/S2 SATELLITE INPUT
MODULE



VB273

DVB-S/S2 INTELLIGENT
REDUNDANCY SWITCH