

## 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.

## 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.

[Learn more: ETR290 and BULK ETR290](#)

### **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.

[Learn more: OTT and BULK OTT](#)

### **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.

[Learn more: T2MI](#)

## **EXTRACTOR-OPTION**

The extractor option is for Content extraction that includes; freeze/black/colour frame alarming, audio loss alarming for one service only typically where RF interface cards is used for round-robin checking of multiple frequencies. The Objective QoE Extraction option on the probe offers picture analysis functionality in the form of freeze-frame detection and color-freeze detection. Configured as part of the ETSI TR 101 290 engine and appears as content check underneath other checks. It also allows picture freeze-frame alarms to be detected by probe on all IP and ASI/RF interfaces monitored. Typical performance will vary depending on probe load but 5 minutes for detection delay for 3 multiplex carrying 4 HD H.264 services each is typical.

## **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.

[Learn more: SCTE35](#)

### **FLASH32-OPTION**

The Flash32 feature is used as an added 32GB SD card, to be able to save RDP and PCAP recordings. RDP recordings are automatically moved to the SD card when completed, and PCAP recordings can be manually moved using the interface GUI as shown below. When in the storage tab, file system statistics are shown to the right and files can be downloaded by clicking its name.

[Learn more: FLASH32](#)

## Ordering Codes

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

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

### PRODUCT ORDERING CODES RF INTERFACE

**VB242** – 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

### PRODUCT ORDERING CODES SOFTWARE

**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 1 channel or 10 channels round robin (up to 5 engines or 50 channels round robin in total) Factory ordered. Disables TS Recording if HW1 – HW3

**OTT-ENG-UPGR** – 1 engine w/active testing of 1 channel or 10 channels round robin (up to 5 engines or 50 channels round robin in total). Disables TS Recording if HW1 – HW3

**EXTRACT-OPT** – Content Extraction and Alarming Option – factory ordered – requires v5 sw

**EXTRACT-UPGR** – Content Extraction and Alarming Option – requires v5 sw, 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

**FLASH32-OPT** – Flash Storage 32GB Option. Factory ordered only – requires v5.1 sw

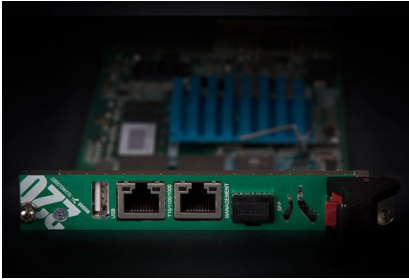
## Documentation

[Hardware User Manual – Download](#)

[Software User Manual – Download](#)

[Quick Start Guide – Download](#)

## Related Products



**VB220 ATV**

IP MONITOR PROBE FOR  
APPEAR TV INSTALLATIONS



**VBC**

VBC CONTROLLER SERVER



**VB288**

OBJECTIVE QoE CONTENT  
EXTRACTOR



**VB242**

ASI SWITCHED DUAL INPUT



**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



**VB266**

DVB-C/C2 CABLE RF  
INTERFACE CARD



VB272

DVB-S/S2 SATELLITE INPUT  
MODULE



VB273

DVB-S/S2 INTELLIGENT  
REDUNDANCY SWITCH