BRIDGE TECHNOLOGIES™

VB220



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BRIDGE TECHNOLOGIES™

VB220

VB220 IP Network Probe

The VB220 IP probe is the perfect choice in any network where digital video is carried across an IP-based infrastructure. Built specifically to meet high-end industry needs, this network service tool is ideal for both pure IP networks and hybrid networks with IP transport cores, such as those found in digital cable and terrestrial networks.

The VB220 IP probe offers a powerful monitoring solution, covering most common signal formats found in any media operation, including IPTV multicasts, OTT/ABR streams and SRT streams, as well as a whole range of RF/ASI formats.

The VB220 product line is available on two platform choices, granting unique flexibility when it comes to optimally tailoring the monitoring solution towards the customer's underlying system architecture. Regardless of the platform chosen, feature parity is ensured across the various deployment options, varying only in factors such as scalability, power consumption and longevity. The web-based user experience and feature availability stays the same across all the deployment alternatives.

The VB220 hardware platform is custom designed by BRIDGE Technologies to meet key design goals: these include a MTBF of at least 15 years and power usage of less than 30 Watts for a fully populated 1RU chassis. Achieving a consumption factor 10x less than that of other typical server architectures – and delivering consequential benefits to the load placed on the rest of the network infrastructure, including mains distribution, UPS backup and air conditioning – the hardware-based VB220 represents a cost-effective and environmentally friendly network solution.

Alternatively, the VB220 IP probe is available as a pure software image that can be run on cloud infrastructure such as AWS, or as a standalone solution on dedicated server infrastructure. This gives benefits in terms of CPU performance and flexibility in orchestration.

A single VB220 can monitor up to 260 IP multicasts as found in broadband fiber and cable-TV systems. Up to 200 concurrent TR 101 290 analysis engines for IP multicast streams can be activated through a software license for further deep-dive signal analysis. For OTT/ABR monitoring of HLS and M-DASH streams, the VB220 can be licensed with up to 25 OTT engines for 250 streams. A range of features are included as standard on the VB220 IP probe, including microbitrate for IP packet burst analysis, ethernet traffic type protocol overview, PCAP recording and traffic filter definition with summary statistics.

The VB220 hardware platform may be used with optional demodulator interfaces in the same 1RU chassis, resulting in a highly compact monitoring solution that is particularly suited for hybrid systems that use IP distribution to regional nodes, where the signal is converted to RF. Signal formats available include DVB-T/T2, DVB-S/S2/S2X, DVB-C/QAM-B, ATSC1.0/ATSC3.0, ISDB-Tb, and ASI. Up to 13 ASI or RF transport streams can be concurrently monitored in a single 1RU chassis.

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 even across management networks with limited bandwidth.

Choose your platform solution

The VB220 is deployed either on dedicated embedded hardware or as a pre-configured software-only solution on your own server. This gives the operator unique flexibility when it comes to tailoring the monitoring solution towards the underlying system architecture in the best possible manner. Feature parity is ensured across the various deployment options, varying only in factors such as scalability, power consumption and longevity. The web-based user experience and feature availability stays the same across all the deployment alternatives



VB220 Software

The VB220 probe is available as a pure software image that can be installed on suitable server hardware or in virtual machine environments by the end user. This opens the VB220 probe to be run on any compatible server infrastructure available. Some consideration is required in order to match software driver capabilities against the server hardware to run the VB220 on, especially the network card and the memory. 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.

VB220 SW – with Cloud Virtualisation

The VB220 probe software image makes deployment also in cloud environments possible. A flexible licensing arrangement allows for redundancy scenarios and machine-movable license options. Suitable tailor-made VB220 machine images have been made available for this reason. The ability of the VB220 to operate on a virtualized cloud environment also means that full VB220 functionality will be available through major cloud-based web service providers.





VB220 Embedded Hardware

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 and is designed for an MTBF of 15 years, thus substantially reducing 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, QAM-B, ATSC1.0, ATSC3.0, ISDB-T and ASI.

QoE & QoS content monitoring

In the connected media consumption landscape, there exists a vast amount of data that needs to be understood – and acted upon. These volumes of data need exceptional analytical tools if the data is to make sense, and the VB220-SW provides exactly this: in-depth analysis for detailed understanding of data for error, jitter, dropped packets, latency and low throughput analysis, producing hard, empirical QoE & QoS data – without the false positives.

QoE Content monitoring

Whilst vital to network operations, the above-listed QoS measures represent only half of the VB220-SW's functionality. What matters to audiences is their ultimate user experience, not the technicalities of network performance. As such, unlike many monitoring solutions in the market, the VB220 places a deliberate focus on establishing the end user's Quality of Experience (QoE). Positioning itself in the last mile, through Content Extraction it can detect and alarm MOS average, VMAF scoring, freeze-frame/color-freeze error, audio level and stereo phase issues and real-time loudness. It can also engage in closed caption extraction (CEA-608/CEA708), and deliver thumbnail content archiving and timeline visualization.

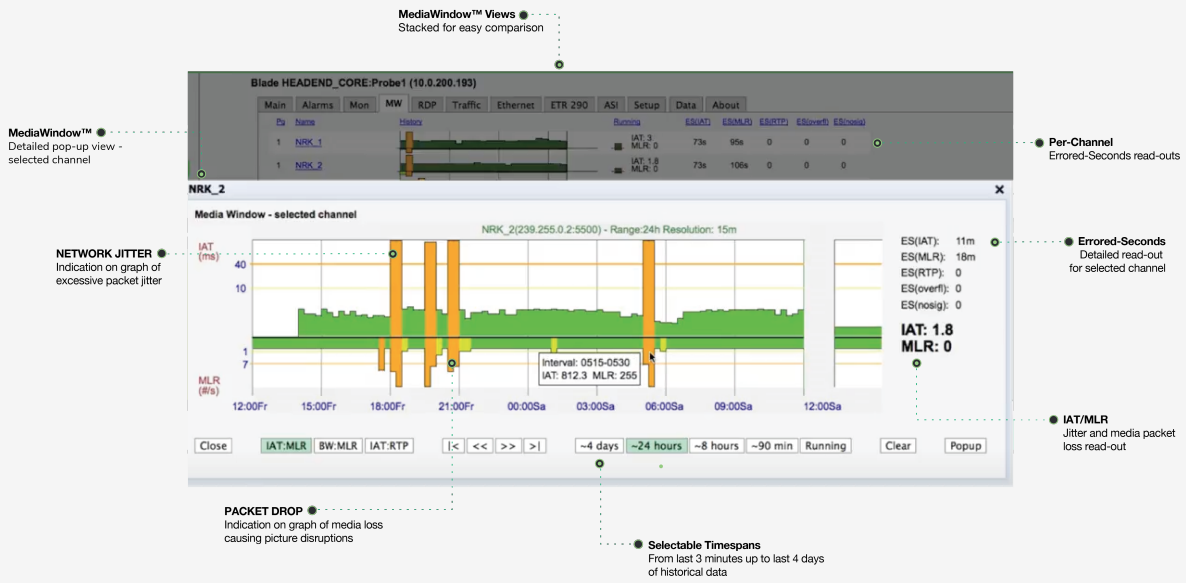
QoS monitoring at the IP and TS level

Regardless of whether the video in question is multicast, unicast (OTT/ABR), carried over IP or ASI, through a CDN or directly, and irrespective of compression and TS standard employed, the VB220-SW incorporates all of the tools necessary to monitor the specific attributes of each type of cast – with insight generated at the IP, TS and Content level. Quality of Service (QoS) monitoring represents the backbone of a comprehensive monitoring solution – understanding network performance along the full media chain; from point-of-origin, through the CDN and across the final mile: uptime, downtime, error rates, bandwidth, latency, profile switching alignment – QoS ensures that network movement is occurring within established parameters, and provides the data that engineers need to identify problem points and engage in strategic improvements.

Patented Visualisation

The VB220 contains unique visualisation technologies such as the MediaWindow™ and the microETR™. The MediaWindow allows the operator to gain key knowledge about the carriage quality of the media multicasts over time selectable time intervals. Color-coded graphs give an intuitive feel for how well the signal behaves in terms of QoS parameters such as packet loss and packet jitter. The microETR™ deals with transport streams and allows for the real-time alarm state of hundreds of media streams to be viewed in a single view. This allows for faults to be spotted and pinpointed in seconds. Together these techniques result in a graphical user interface that is packed with essential information, yet intuitive and easy to read.

MediaWindow™



Multicast Monitoring

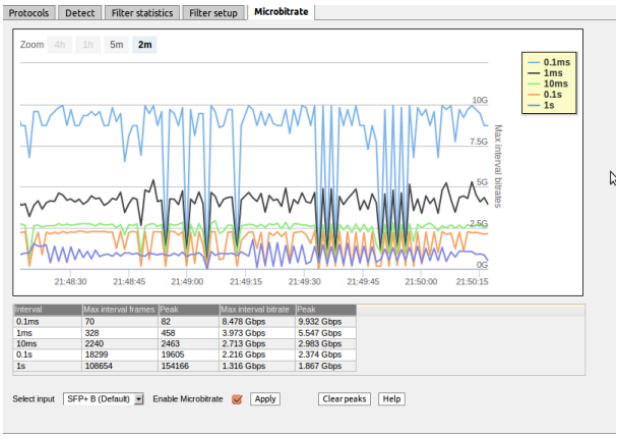
An extensive range of multicast parameters can be displayed at-a-glance, pertaining to IP, TS, Ethernet, RTP and FEC. Associated thumbnails are also displayed, which can be expanded to produce a more frequently updated single image – or



alternatively, display error information in cases where thumbnails cannot be obtained. For each multicast stream, peak and aggregate values for an extensive range of signal, bitrate and packet data are all displayed, up to a duration of four days, customizable according to the user's priorities. The detection and joining of multicasts into the probe is also facilitated in an intuitive and simple-to-achieve manner. Both IPv4 and IPv6 are supported.

Traffic - Microbitrate Bursting

A common problem in any large enterprise or public network infrastructure is the occurrence of packet bursts. These typically happens due to congestion points and resulting packet queues accumulating inside the Ethernet switches and IP routers making up the network. When the network is used to transport video these aberrations can have a particular adverse effect. The VB220 comes with standard built-in support for microbitrate burst monitoring. The feature allows for the whole 1G, 10G or 100G Ethernet network trunk to be viewed as one and analyzed for the presence of packet bursts. This unique functionality allows the network engineer to detect the amount of micro bursting and also trend this over time to spot patterns otherwise very difficult to pinpoint.



SRT contribution and cloud monitoring

Bridge Technologies is a proud member of the SRT alliance, and recognizes the value that this

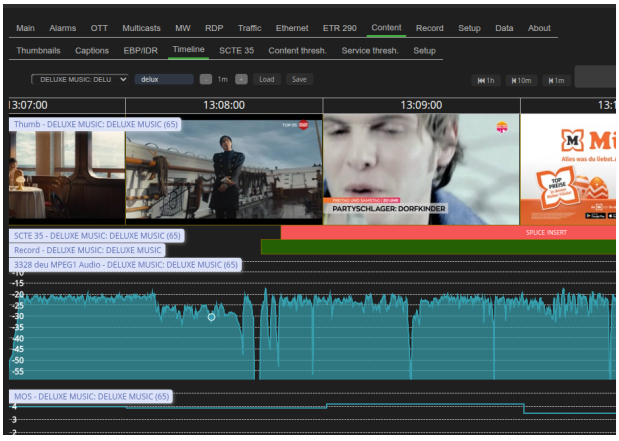


Alliance for IP Media Solutions

robust quality, low latency, open-source video streaming protocol presents to the industry. The VB220 can receive up to 4 SRT streams and forward them to the main monitoring framework for further analysis. There is support for up to 200 SRT-Receive on VB220-SW, and 4 SRT-RX on VB220-EMBEDDED. This includes MediaWindow visualisation, TR 101 290 analysis, content capture and thumbnail mosaic. Key parameters such as round-time and lost-packets are displayed. The VB220 can also send out any two media streams currently being monitored by the probe as an SRT-formatted stream. This capability is typically used for ad-hoc transport of content across an IP network for remote live viewing or recording. SRT support is a standard feature on the VB220.

Content Timeline

The Content Timeline is part of the Content option in the VB220 probe and enables operators to go back and explore, understand, verify and document in complete detail what happened at any given time, or look for patterns over longer periods of time to identify and eliminate problems. The Timeline shows content thumbnails, alarm markers and all the metrics familiar from the MediaWindow™ displays, making visual navigation through the data simple and quick. Users can drag and drop data tracks to group them in any order for convenience. Engineers can search through the chain of events that led up to service failures, and generate reports for remedial action or fulfilment of regulatory SLA obligations







TS Playout - Ability to playout transport stream (TS) files across IP networks

The functionality transforms the VB220-SW probe from a passive monitoring tool into a far more comprehensive, expansive broadcast asset – allowing broadcasters to fulfil a full range of regulatory and compliance activities, as well as vastly improving their technical, operational and strategic decision making. The TS playout feature builds upon the existing recording capabilities of the probe, allowing for round-robin and alarm-triggered recording of up to 200 streams, with an inbuilt clip editor for export. The new TS playout feature expands upon this, taking a recorded stream and playing it out to any TS receiver, supporting bitrates up to 100 Mbps per stream with up to 12 simultaneous playouts and a total throughput of 1 Gbps (or 2 Gbps with ST 2022-7 redundancy activated). The probes support both Single Program Transport Streams (SPTS) and Multiple Program Transport Streams (MPTS), as well as both Constant Bit Rate (CBR) and Variable Bit Rate (VBR) files. Streams can be played once or set to loop with adaptive handling to avoid continuity counter errors and can be sent to either multicast or unicast destinations. For multicast delivery, the probe can also monitor its own output using its full built-in analysis toolset. Files can be uploaded via the web interface, and recordings made by the probe can be used directly as playout sources.

Customisable Alarming and visualization

The VB220 does not simply display in-the-moment network data to network engineers, but allows for

the full customization of alarms, thresholds and parameters across nearly every measurement metric available. This allows engineers to prioritise issues and manage their network in the way that best suits their needs. Alarm customization is easy and intuitive, and the readouts simple to understand, and capacity for alarms of different types is maintained independently – with each group maintaining no bearing on the capacity of another; this includes 100 Full Service Monitoring and Microbitrate (FSM), 2500 OTT alarms, 10000 ETR290 alarms, and 2500 System alarms. A further 20000 alarm entries can be stored in non-volatile memory by employing the FLASH32-OPT. This is particularly useful in remote applications where logging all alarms is important but at the same time the management network connectivity is not always reliable.

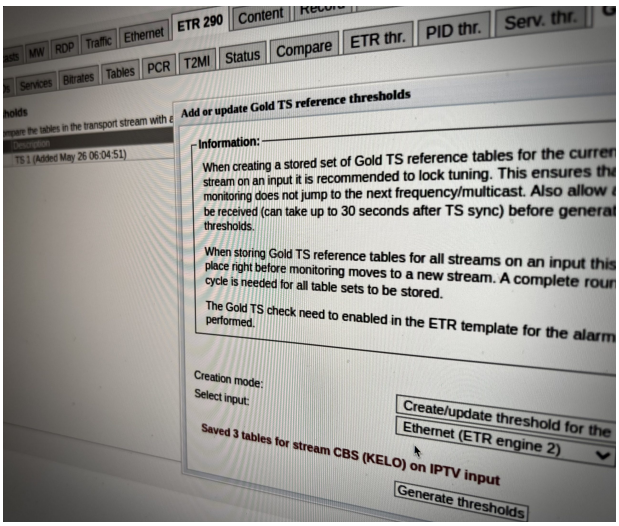


Testing according to ETR290

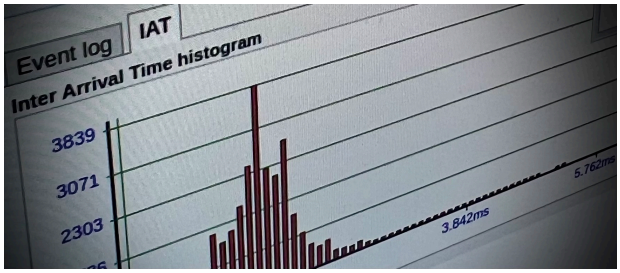
TR 101 290 testing ensures that the interoperability parameters of TS streams – including intervals, section gaps and tables – are all met. The VB220 has a capacity of 200 concurrent ETR290 engines. It groups errors into Priority 1, 2 and 3 errors, but further allows for the user to fully customize alarming and adapt the thresholds of various ETR290 components.

Gold TS Protection™

Gold TS protection represents an upgrade on the established TR 101 290 standard, including testing for critical conditions that are not covered under ETR290 testing, whilst also making fault tracking much faster, more accurate and secure. It includes identification of failures – all of which are vital real-world quality assurance elements that have direct effect on end-user subscribers. For operators of digital media services Gold TS saves significant time in setup and diagnosis. Easier setup is facilitated through the use of a much faster calibration process than that associated



with ETR290, by capturing an ideal transport stream and setting this as a reference value. Easier diagnosis is achieved by reducing the huge volumes of data that technical staff are required to wade through, instead replacing this with quick flagging and clear presentation of the error condition with deviation from protection values highlighted, and side-by-side presentation of correct values. The result is a reduction in time-to-resolve errors of a factor between 10 and 15: meaning Op-Ex is reduced by allowing maintenance staff to effectively monitor larger numbers of streams, whilst quality and reliability of service delivered to subscribers is significantly enhanced.

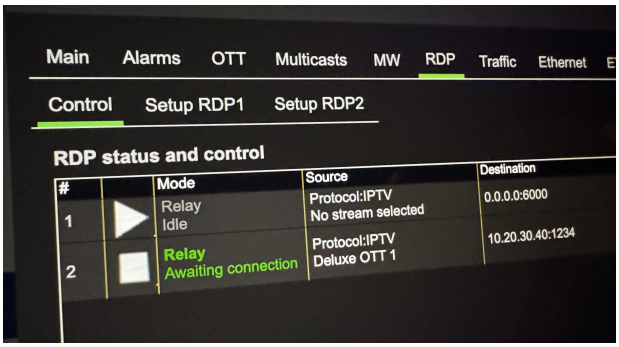


IAT - Histogram

The Inter Arrival Time (IAT) histogram gives you a view of how well the timing of the media multicast received is over time. It shows an accumulated count of the number of IAT measurements that fall within each presented bin interval. Vertical green lines indicate the maximum and minimum IAT values observed. The user can customize the scales.

Return Data Path

With the advent of fully duplex technologies as IP transportation, new features for allowing remote access to regional ingress signals are vital. Return Data Path allows the operator to record video locally on the probe or re-route live video monitored by the probe to a central location for



decryption and further analysis. Recording is initiated either directly by the operator or automatically based on pre-defined alarm trigger criteria. RDP reduces the need for truck rolls and otherwise necessary on-site visits, by making available centrally signals that are normally only available locally. RDP™ also facilitates a simpler descrambling process for scrambled signals, by transporting the stream to the NOC, head-end or anywhere else for visual monitoring. Currently supported protocols for remote relay include UDP and RTP uni/multicast and Secure Reliable Transport (SRT).

OTT/ABR monitoring

The VB220 incorporate powerful OTT/ABR analysis engines for gaining insight into any adaptive bitrate video distribution, particularly in VoD and Live. Supported formats include HDS, HLS, SmoothStream and MPEG-DASH. Each OTT Engine operates autonomously and only requires knowledge of the URL from which the media is being fetched. The OTT Engine then parses the manifest file provided by the origin or edge-server, extract the different profiles served, validates syntax, checks chunk counters and then does the same for the individual profiles. Support for AES-based decryption is included as well as an innovative method for customizing the expected format of the manifest files received.



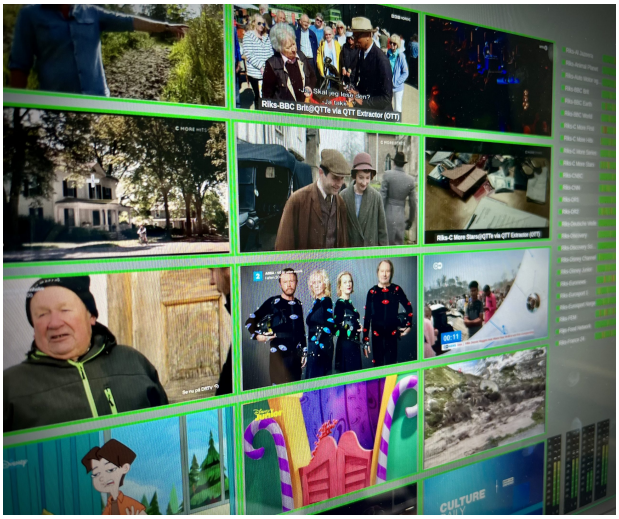
Thumbnails

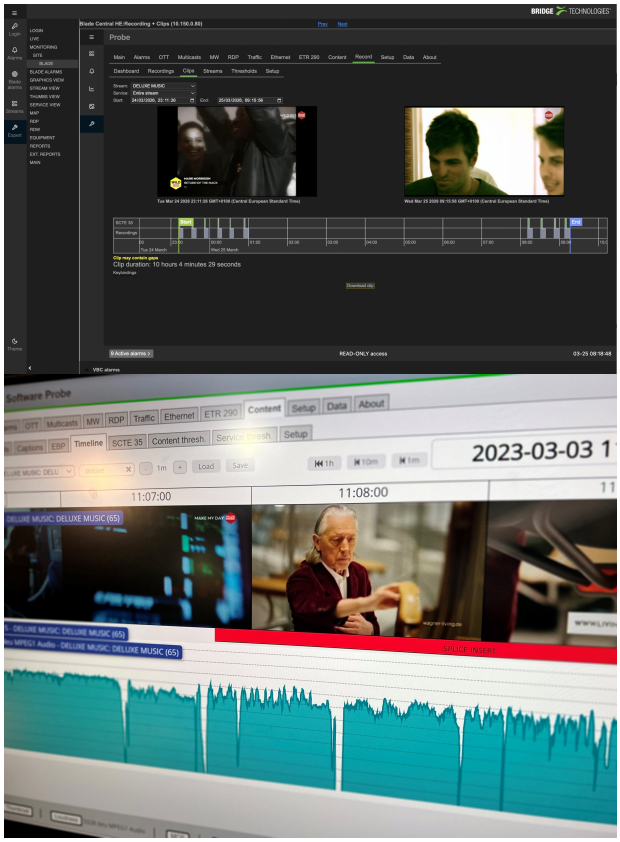
As with the multicast and RF/ASI monitoring functionality, thumbnails for every OTT channel are displayed if successfully descrambled or available in the clear. These thumbnails can then be clicked through to for each profile, along with associated data (actual bitrate, expected bitrate, etc) of each profile. Thumbnail update rate is dependent on compression standard and resolution and can be

adjusted by the user.

Origin server CDN monitoring

The maximum number of OTT/ABR streams for the VB220 platform is 250. There is no practical limit on the number of bandwidth profiles supported within one OTT/ABR stream.





SCTE-104 and SCTE-35 Marker Monitoring

The capability of monitoring ad inserts is of particular importance to safeguard the revenue flow of any media operation relying on commercials as an income. Advertising breaks are typically signalled using either the SCTE-104 (uncompressed) or SCTE-35 (compressed) standards. These standards describe messages – or events – that flow together with the main signal telling downstream equipment when to switch in and out advertising content. The VB220 contain full support for monitoring SCTE-104 carried inside ST.2038 or SCTE-35 directly in all the IP and ASI/RF transport streams monitored as all the activated ABR/OTT unicast streams. Events are logged internally in the probe and also visualised in the content timeline view. Relevant alarms are generated in case of erroneous syntax or mismatching timing.

Security — Tacacs+

The VB220 uses best practices from the IT industry to ensure continued operational stability and the highest level of protection against attack. The VB220 ensures continued operational stability using HTTPS to secure and encrypt the communications channels, thus practically eliminating the possibility of man-in-the-middle attacks. This provides broadcast facilities with the ability to architect and use IP broadcast capabilities with confidence and ease.



Audio Meters

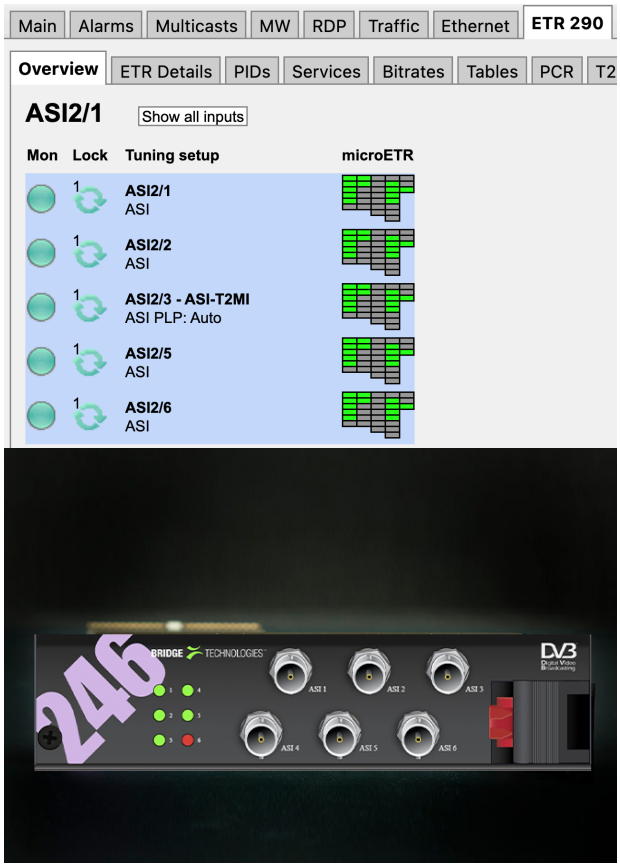
Audio formats supported on VB220-SW: MPEG1 Audio, AC-3 Audio, E-AC-3 Audio, AAC Audio, AAC LATM Audio, SMPTE PCM Audio Loudness: LUFS/ LKFS According to ITU 1770, ATSC A/85 and EBU R128

RF and ASI input modules

The VB220 (hardware/embedded) can be bundled with up to 2 additional plug-in modules in one 1RU chassis, enabling monitoring of non-IP based signal formats such as ASI and RF. The list of supported standards includes ASI for intra head-end coaxial wiring, DVB-T/T2 terrestrial networks, DVB-C/QAM-B cable-tv networks, DVB-S/S2/S2X satellite DTH infrastructure, ATSC1.0/3.0 terrestrial distribution in the US and ISDB-T as found in terrestrial networks in Brazil and Japan. The monitoring unit is deployed on a standalone basis and accessed through its own built-in web server, or via the VBC Controller in a larger system. The openly available External Integration Interface allows for third-party management system integration such as DataMiner by Skyline Communications.

VB246 ASI Input Module

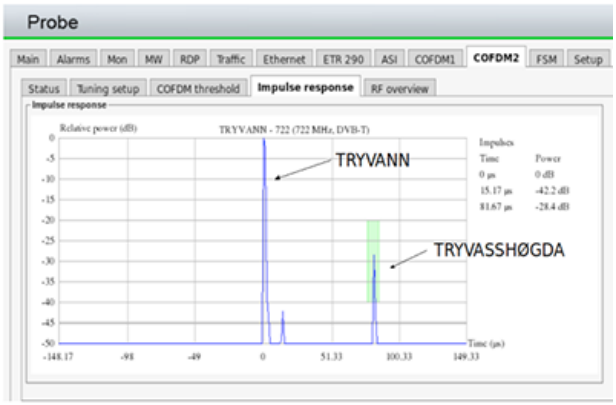
The VB246 module is designed to provide customers who require high ASI monitoring density with 6 ASI inputs operating in parallel.

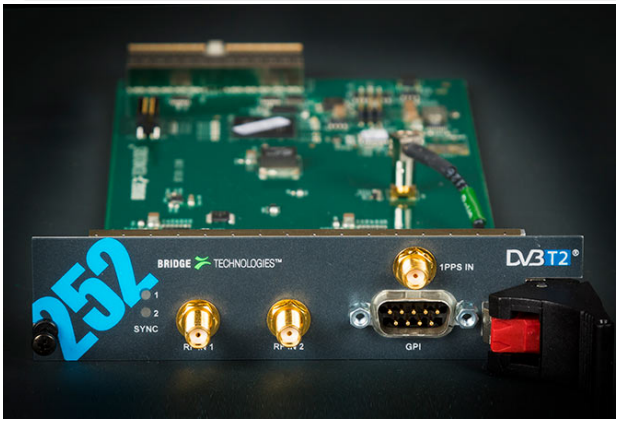


Monitored concurrently and with continuous ETSI TR 101 290 analysis, the VB246 is ideal for existing infrastructures in the head-end and regional edge-multiplexer/modulator/transmitter sites. Each 1RU chassis supports up to two VB246 modules for a total ASI density of 13 (the last one being local to the controller VB120/220 module). The physical interface is 6 x 75 ohm BNC Female. Each input has a matching red/green signal lock status LED on the card front.

VB252 DVB-T/T2 terrestrial input module

The VB252 DVB-T/T2 COFDM input module (w/ 1PPS synchronizations) is ideally suited for continuously monitoring the performance of terrestrial distribution networks. Typical usage includes transmitter tower monitoring where the monitoring probe is co-hosted with the RF Exciter. Alternative usage is as a standalone off-air monitoring probe capable of receiving the signal from multiple transmitters operating in SFN in fringe coverage areas. The VB252 plug-in module supports one DVB-T/T2 COFDM RF input by default. The second input can be activated by the customer via a software licensing option. A chassis can be equipped with a VB220 probe





controller that has one or two VB252 RF input cards under its control, for a maximum of 4 independent RF input ports. Full ETSI TR 101 290 analysis is performed on all active RF inputs. The Advanced RF Option adds impulse response graphing and analysis to the VB252, making it possible to check reflection conditions at the probe location. Configurable threshold limits determine when an alarm should be raised due to reflection changes in time or power. Impulse response analysis results are presented as a user-friendly graphical GUI, facilitating reflection measurement interpretation.



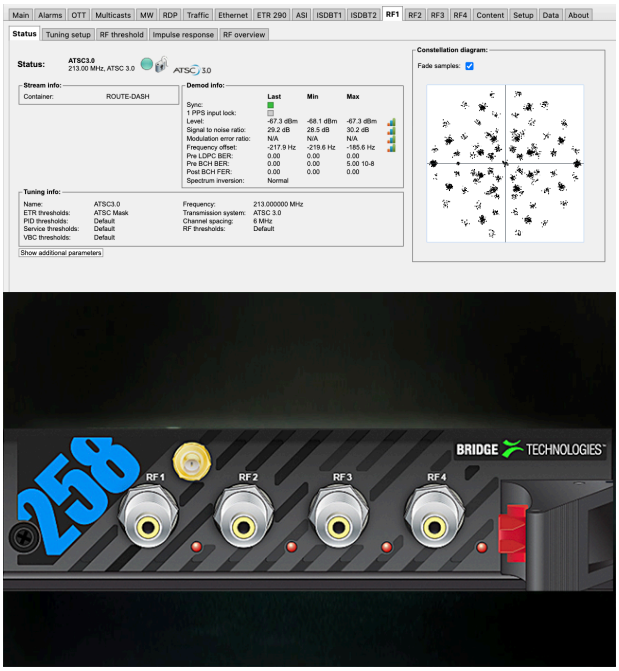
VB256 ISDB-T terrestrial input module

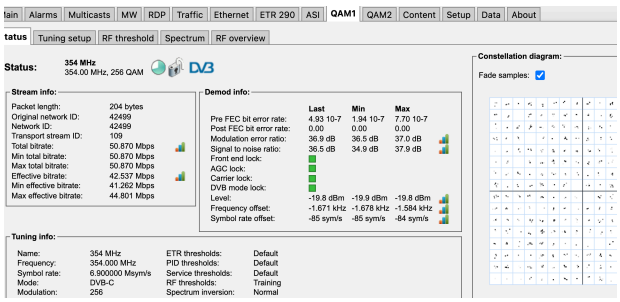
The VB256 ISDB-T input module expands Bridge Technologies' digital terrestrial monitoring capabilities to encompass the Latin American and Japanese terrestrial markets. Supporting both ISDB-T/SBTVD-T standards, it enables customers operating in these regions to fully monitor their ISDB-T transmissions. A chassis can be equipped with a VB220 probe controller that has one or two VB256 RF input cards under its control, for a maximum of 4 independent RF input ports. Full ETSI TR 101 290 analysis is performed on all active RF inputs.

VB258 terrestrial/cable RF

The VB258 offers 4 independent RF inputs that allow for monitoring and analysis of RF streams as found in terrestrial and cable architectures, with

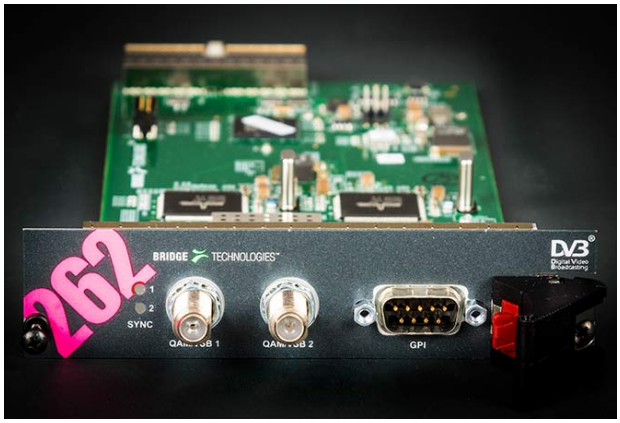
the system facilitating one RF input by default, and the other three by license activation. Formats supported are DVB-T/T2, ATSC1.0/ATSC3.0, DVB-C, QAM-B and ISDB-T. Up to two VB258 modules can be placed into a single chassis for 8 independent RF inputs. Each RF input is further capable of round-robin operation to allow for monitoring of a full frequency raster, as typically found in DVB-C/QAM-B cable networks. The VB258 complements the VB220, offering key monitoring features such as TR 101 290 analysis, IP multicast monitoring, HLS/M-DASH monitoring, TS recording, RF analysis and SRT relay operations. This latter feature – SRT relay operation – is of particular interest since it allows for the conversion of any received RF stream into an IP/UDP stream, which is then made available via the SRT standard. SRT (Short Reliable Transport) allows for reliable UDP streaming across Internet-type media, and through this it is possible to gain central access to streams that would otherwise be hard to access.





VB262 digital cable

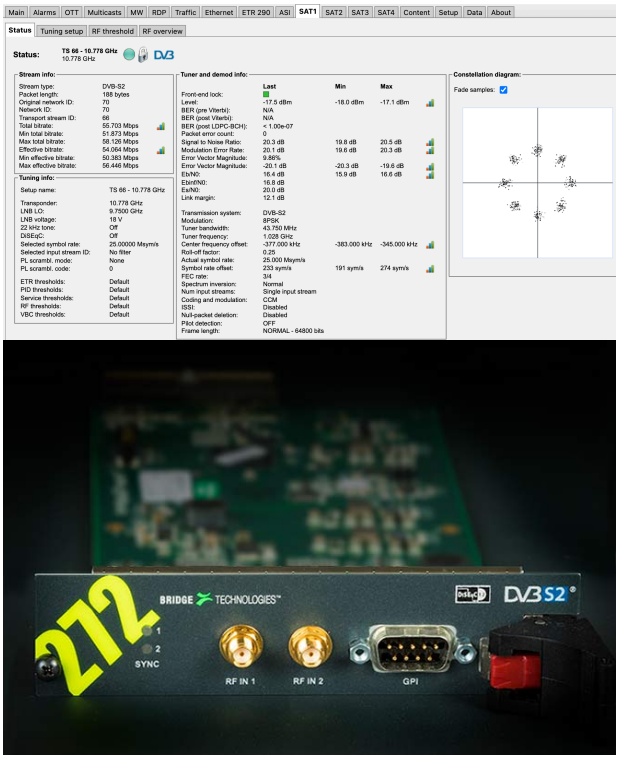
The VB262 Dual QAM/8VSB input option offers monitoring of cable TV signals as found in ITU-T J.83 Annex A/B/C QAM networks and 8VSB signals found in ATSC1.0 terrestrial networks. The VB262 plug-in module supports one RF input by default. The second input can be activated by the customer via a software licensing option. A chassis can be equipped with a VB220 probe controller that has one or two VB262 RF input cards under its control, for a maximum of 4 independent RF input ports. Full ETSI TR 101 290

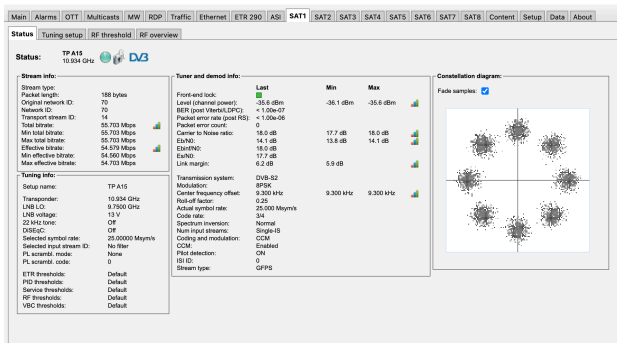


analysis is performed on all active RF inputs.

VB272 Satellite input module

The VB272 input card offers monitoring and analysis of QPSK/8/16/32APSK signals found in DVB-S/S2 satellite Contribution and DTH networks. Each VB272 module has one RF input activated by default. The second input is activated through a license key option. Each chassis can be equipped with a VB120 or VB220 probe controller and up to two VB272 input cards under its control, for a total of up to 4 independent RF inputs. Full ETSI TR 101 290 analysis is performed on all active DVB-S/S2 inputs. Each RF input has a built-in antenna 13V/18V drive and 22kHz tone control. DisceqC 1.0 switching is supported.





VB278 – High density satellite RF monitoring

VB278 offers 4 independent inputs that allow for monitoring and analysis of the types of RF signals found in Satellite uplink and downlink architectures, with the system facilitating one RF input by default, and the other three by license activation. Modulation formats supported are DVB-



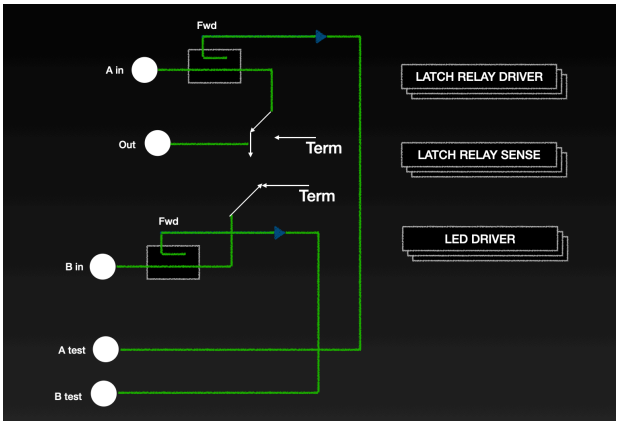
S, DVB-S2, DVB-S2X and DSS. Up to two VB278 modules can be placed into a single 1RU chassis for 8 independent RF inputs. Each RF input is further capable of round-robin operation to allow for monitoring of a full satellite transponder lineup. The VB278 complements the VB220, offering key monitoring features such as TR 101 290 analysis, IP multicast monitoring, HLS/M-DASH monitoring, TS recording, RF analysis and SRT relay operations for remote live video inspection across IP. Each RF input is capable of 13/18V/22kHz and DiseqC 1.0 control and can drive an LNB directly should the need arise. A fully populated 1RU chassis with one VB220 controller module and two VB278 RF input modules run at an environmentally friendly 30 watts.

Redundancy switching modules

The option for redundancy switching on the VB220 enables 2:1 A/B-style redundancy switching to take place based on alarms from the full TR 101 290 specification and not only basic parameters such as signal loss or carrier sense. Two supporting modules – the VB243 and VB273 – are available, offering relay switching on ASI-type signals and L-band or IF satellite style signals respectively. Applications include main/backup redundancy switching at terrestrial TV towers or at satellite uplink facilities. The switching blades listed contain bi-stable relays, making them capable of maintaining the switching state even without any power applied to the system.

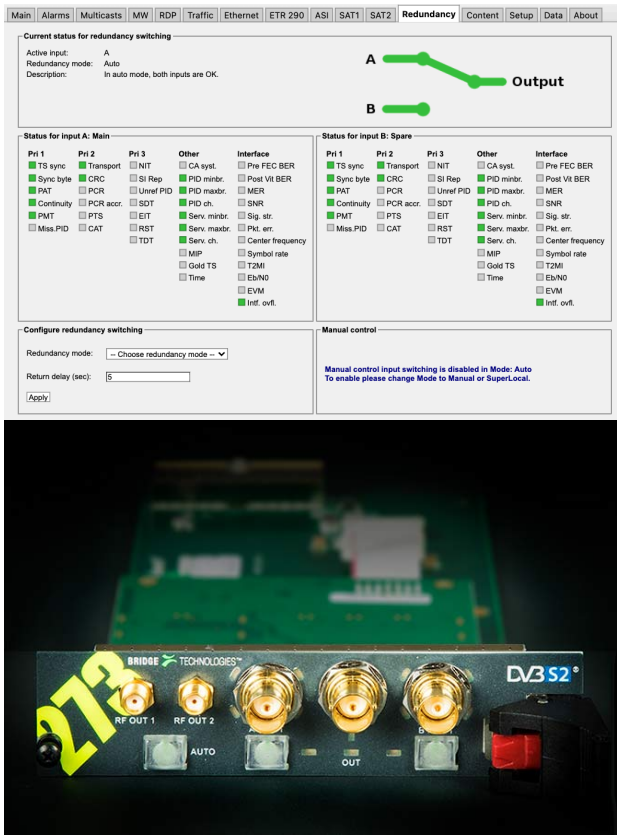
VB243 ASI Intelligent redundancy switch

The VB243 provides full dual-path redundancy for ASI signals with autonomous operation and deep signal analysis on both signal paths for the ultimate switching decision making. Front panel controls with illuminated buttons offer local override control and a clear visual indication of the



active switching path. The redundancy switch offers three distinct modes of operation making it suitable for any real-life operational challenges: automatic, manual and SuperLocal.





VB273 Intelligent Redundancy Switch

The VB273 Intelligent Redundancy Switch also provides full dual-path redundancy autonomous operation and deep signal analysis on both signal paths, but operates in the context of Satellite operations. The solution is ideal for providing fast and robust redundancy switching for permanently installed satellite up-links or in outside broadcast systems. As with the VB243, front panel controls with illuminated buttons offer local override control and a clear visual indication of the active switching path, and also operates on an automatic, manual and SuperLocal basis, as required - making it suitable for any real-life operational challenges. The VB273 comes in two factory-ordered variants, depending on whether the input signal is 70MHz IF or L-band.

Technical specifications

VB220

KEY FEATURES – VB220 SOFTWARE and VB220 EMBEDDED PROBES

- Continuous monitoring of up to 260 IP media multicasts with extraction and monitoring of relevant parameters for the Ethernet, IP, UDP and Transport Stream layers (ETSI TS 102 034)
- MPEG2 (SD/HD), H.264/AVC/MPEG-4 AVC (SD/HD/UHD), MPEG-4p10, H.265/HEVC (8 bit, 10 bit, SD/HD/UHD), JPEG-XS, JPEG-2000 all up to 60fps **(SOFTWARE probe)**
- Support for active testing of up to 250 OTT/ABR streams. No limit on profiles
- TR 101 290 priority 1, 2 and 3 analysis on up to 250 streams concurrently
- Support for Secure Reliable Transport (SRT) with 200 concurrent Receive and 2 concurrent Transmit sessions **(SOFTWARE probe)**
- QoE Content analysis and MOS scoring on up to 260 streams concurrently with black frame detection and alarming **(SOFTWARE probe)**
- LUFS/LKFS loudness monitoring and alarming on up to 260 streams **(SOFTWARE probe)**
- Recording option allowing concurrent recording of up to 200 multicast streams for an aggregated bandwidth up to 10Gpbs **(SOFTWARE probe)**
- Innovative multicast collision detect and alarming functionality
- Monitor IEEE 802.3Q VLAN trunks and terminate up to 200 individual VLANs inside probe
- Patented MediaWindow™ visualisation technology for trending packet loss, jitter and bandwidth over time with 4 days of history on all IP multicasts
- Support for IPv4 and IPv6 multicast monitoring and management (IGMPv2/v3 and MLD)
- Passive automatic detection of multicast/unicast streams present on interface
- Active multicast scan and discovery functionality
- Support for Session Announcement Protocol (SAP) for easier multicast stream management
- Protocol hierarchy view with bandwidth and packet count statistics for each active interface
- Web-based management interface for remote access from leading browser platforms
- Security features such as HTTPS using TLS 1.1 and 1.2 with a self-signed certificate
- Limit access to web interface via configurable roles and passwords
- Innovative Remote Data Path (RDP) functionality for relaying any two IP multicasts monitored to central destinations for further analysis. Supports plain TS-into-UDP, TS-into-RTP and SRT (Secure Reliable Transport)
- IGMPv2/v3 protocol logging and analysis framework for multicast fault finding
- Flexible template based alarming system to allow custom configuration of what parameters result in an alarm being generated on a per-TS level
- PCAP capture of up to 2GB of data for further analysis using 3rd party applications such as Wireshark
- Innovative Microbursting jitter analysis for monitoring difficult to detect bandwidth spikes on

network interfaces
- MediaKind mediaRoom™ X-bit RTP header extension support
- Alarm on changes to TOS/DSCP and TTL IP header files for detection of changes in network prioritization
- Monitor all received SRT streams using powerful tools such as ETR290 analysis, MediaWindow™ packet drop and jitter analysis, QoE content monitoring and alarming, thumbnail mosaic
- Support for JPEG-XS thumbnail decode and QoE content alarming and analysis **(SOFTWARE probe)**
- Full Service Monitoring of any network device via built-in ICMP and HTTP query agents
- Searchable alarm lists with up to 10,000 alarms stored locally on probe
- Alarm forwarding to 3rd party systems via SNMP TRAP via up to 3 unique destinations or via XML-based polling
- NTP client time synchronization support according to RFC5905 with time zone database download functionality
- DHCP client support on management and video ports according to RFC2131
- Easy web-based software and license upgrade
- XML-based configuration save and retrieval via web
- Powerful and openly available XML-based External Integration Interface (Eii) for 3rd party system integration allowing access to all measurement data inside probe
- Condensed mosaic thumbnail overview of all services monitored with red/green alarm indication
- CMAF HLS and DASH compliance. SmoothStream™, HDS and RTMP support
- Innovative graphical timeline presentation of all OTT/ABR alarms and warnings going back up to 4 days in time
- Transport alarms, HTTP alarms, XML Manifest alarms, QoE content analysis alarms
- Detailed thumbnail view with media structure information and loudness indicators
- Framework for key server access and decryption
- Profile alignment verification with VMAF scoring **(SOFTWARE probe)**
- Innovative Advanced Manifest functionality for 2-step bespoke manifest queries
- OTT/ABR audio Loudness extraction for presentation in Timeline view **(SOFTWARE probe)**
- (EBP) Encoder Boundary points monitoring and Analysis for verification of Segmenter ingest
- Downloads every chunk for analysis
- Unique PTS versus PCR timing analysis for all PIDs within a transport stream for detection of lip sync skew issues
- SCTE35 ad-insert cue tone monitoring, logging and alarming on up to 260 multicasts and 250 OTT/ABR streams

- Innovative TR 101 290 Gold TS™ Protection with alarming for comparison against pre-recorded stream
- Fully VMware and OpenStack compliant
- Deliverable as ISO installer, OVF image or standalone installer
- Support for L2TP de-encapsulation and TR 101 290 analysis relevant for Remote PHY cable applications as seen in DOCSIS 3.0/3.1 architectures
- Redundancy / 2022-7
- Timeline view with logging going back up to 2 years, depending on storage capacity **(SOFTWARE probe)**
- Timeline zoom levels from 1 second up to 1 hour with date/time selector
- Timeline graphs showing thumbnails, audio loudness, MOS scoring, QoE analysis, SCTE35 events, Recorded files, Caption data, VMAF scoring
- Set up triggered recording based on alarms with pre-trigger buffer fill, configure time scheduled recordings or manually initiate recordings
- Main audio formats supported include MPEG1, AC-3, E-AC-3, AAC, AAC LATM, SMPTE PCM
- Loudness monitoring LUFS / LKFS with alarming according to ITU 1770, ATSC A/85 and EBU R128
- TS RECORD option allows for continuous or alarm-triggered recording of up to 200 transport streams, with an inbuilt clip viewer for file export **(SOFTWARE probe)**
- TS PLAYOUT option supports bitrates up to 100 Mbps per transport stream with up to 12 simultaneous playouts and a total throughput of 1 Gbps (2 Gbps with ST 2022-7 redundancy activated). The probes support both Single Program Transport Streams (SPTS) and Multiple Program Transport Streams (MPTS), as well as both Constant Bit Rate (CBR) and Variable Bit Rate (VBR) files **(SOFTWARE probe)**

ETSI TR 101 290 OPTION

FUNCTIONALITY

- Enable continuous TR 101 290 monitoring and analysis on IP multicasts in convenient granular steps of 1, 25 and 200
- Full real-time ETSI TR 101 290 alarming and analysis (Pri 1, 2, 3), one transport stream per input monitored in parallel
- Expand multicast stream coverage further by activating round-robin functionality for each ETSI TR 101 290 analysis engine
- TR 101 290 alarming and analysis (Pri 1, 2, 3) on the local ASI input on the

controller module activated
- Gold TS Protection included
- 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)
- PCR histogram visualisation
- Unique PCR-versus-PTS analysis functionality for audio/video synchronization verification
- 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
- Scheduled alarm masking

PHYSICAL AND ENVIRONMENTAL

VB220 Embedded/Hardware

- Standard 19 1RU rack-mount
- W x H x D: 483 x 43 x 400 mm
- Weight: 4.2 kg fully populated
- Operating temperature: 0 to 45
- Storage temperature: -20 to 70
- Operating humidity: 5% to 95% non-condensing
- Input voltage: 100-240 VAC +/- 10% 50/60Hz
- Max power requirement fully populated: 80W / 110 – 220VAC / 50-60 Hz
- 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

VB246 SPECIFICATIONS

VB246 ASI INPUT INTERFACE MODULE

- 6-input ASI module
- One mode: Constant monitoring of all 6 ASI inputs
- Higher stream count and higher performance
- Compatible with 1RU chassis running latest software
- 6 x 75 ohm female BNC inputs
- 6 red/green LED indicators
- Support for continuous analysis of all 6 x ASI inputs
- Supports DVB-ASI according to EN 50083-9, Annex B
- Supports Burst mode, Spread mode and legacy M2S
- Supports 188-byte packet format and 204-byte packet format

VB252, VB256 TERRESTRIAL AND VB258 TERRESTRIAL/CABLE MODULE SPECIFICATIONS

VB252: DVB-T/T2 TERRESTRIAL RF INPUT MODULE

- Choice between 50 ohm female SMA (VB252-SMA) or 75 ohm female F-type connectors (VB252)
- 50 ohm female SMA 1-pulse-per-second GPS input for SFN Drift measurements
- 9-pin D-Type male connector for relay alarm indication
- One red/green LED TS sync indicator per RF input
- Supports DVB-T EN 300-744 and DVB-T2 EN-302-755
- Frequency range 43 – 1002 MHz
- Symbol rate range 0.7 – 7.2 Msym/s
- All versions of DVB-T2 supported: 1.1.1, 1.2.1 and 1.3.1
- DVB-T2 Base and DVB-T2 Lite profiles supported (1.3.1)
- Channel bandwidth: 1.7 (T2-Lite only), 5, 6, 7 and 8 MHz
- Round-robin capability across multiple PLPs within one frequency
- Capable of monitoring the following RF parameters:

- Channel power RF level
- Modulation Error Rate MER(PLP)
- Signal to Noise Ratio SNR
- Center Frequency Offset
- Spectrum sense
- 1PPS Input Lock
- Pre Viterbi BER (DVB-T)
- Pre Reed Solomon BER (DVB-T)
- Pre LDPC BER (DVB-T2)
- Pre BCH BER (DVB-T2)
- Post BCH FER (DVB-T2)
- Packet Error Rate
- LDPC Iterations count
- DVB-T SFN Drift monitoring for measuring absolute transmission time of mega frame
- DVB-T2 SFN Drift monitoring by measuring timing of T2MI frame versus received RF super frame
- Channel impulse Response diagram
- Constellation diagram
- Extract and display over 30 signalled DVB-T2 L1 Pre information parameters
- Extract and display over 20 signalled DVB-T2 L1 PLP information parameters
- Extract and display 9 signalled DVB-T2 L1 Post information parameters

VB256 ISDB-T TERRESTRIAL RF INPUT MODULE

- Supports ISDB-Tb ARIB STD-B31
- Signal level, SNR, MER, BER per layer A/B/C
- Two independent RF inputs capable of parallel operation
- 75 ohm female F-type connectors
- 9-pin D-Type male connector for relay alarm indication
- One red/green LED TS sync indicator per RF input
- Channel bandwidth: 6,7,8 MHZ
- RF input signal frequency range: 42MHz – 1002MHz

Channel Impulse Response diagram with alarming capabilities
Constellation diagram

- Channel power RF level
- Modulation Error Rate MER(PLP)
- Signal to Noise Ratio SNR

- PreRS BER-A, BER-B, BER-C
- Packet error rate counters PER-A, PER-B, PER-C
- Mode 1 (Number of carriers = 1405)
- Mode 2 (Number of carriers = 2809)
- Mode 3 (Number of carriers = 5617)
- Code Rates: 1/2, 2/3, 3/4, 5/6, 7/8
- Modulations: DQPSK, QPSK, 16QAM, 64QAM
- Guard Intervals: 1/32, 1/16, 1/8, 1/4

RF SPECIFICATIONS

- Return loss: > 9 dB
- RF power level: -80 dBm to -20 dBm
- RF power level accuracy: +/- 1.5 dB
- RF power level resolution: 1 dB
- Maximum SNR: > 38dB +/- 1.5dB
- Maximum MER: > 38dB +/- 1.5dB
- Carrier offset: < 15 ppm of tuning frequency

VB258 – Terrestrial/cable RF input module supporting ATSC1.0/ATSC3.0, DVB-T/T2, DVB-C, QAM-B, ISDB-T/SBTVD-T

Common specifications

- 4 RF inputs 75 ohm female F-type connector
- 50 ohm female SMA 1-pulse-per-second GPS input
- One red/green LED TS sync indicator per RF input

DVB-T and DVB-T2 mode

- Supports DVB-T EN 300 744 and DVB-T2 EN 302 755
- Frequency range 42 to 1002 MHz
- Symbol range 0.7 to 7.2Msym/s
- All versions of DVB-T2 supported: 1.1.1, 1.2.1, 1.3.1 and 1.4.1
- Channel bandwidth: 5, 6, 7 and 8MHz
- Round-robin capability across multiple PLPs within one frequency
- Channel power RF level
- Modulation Error Rate – MER(L1)
- Signal to Noise Ratio – SNR
- Center Frequency Offset
- Spectrum sense

- DVB-T: Pre Viterbi BER, Pre Reed-Solomon BER
- DVB-T2: Pre LDPC BER, Pre BCH BER, Post BCH BER, Post BCH FER
- LDPC iterations count
- DVB-T SFN Drift and network delay monitoring for measuring signal delay through signal chain relative to 1PPS based on MIP
- DVB-T2 SFN Drift and network delay monitoring for measuring signal delay through signal chain based on T2MI
- DVB-T: Read-out of TPS information
- DVB-T2: Read-out of signalled L1 and PLP parameters
- Channel Impulse Response diagram with echo alarming capabilities
- I/Q constellation diagram
- RF channel power level: -80 dBm to –20dBm with +/- 1.5dB accuracy and 0.5dB resolution
- Maximum SNR: > 38dB +/- 1.5dB accuracy
- Maximum MER: > 38dB +/- 1.5dB accuracy
- Center Frequency Carrier Offset: Accurate to within 1 Hz provided initial offset calibration, reasonably stable temperature conditions and local 1PPS signal applied to VB258 module directly
- SFN Drift accuracy: Dependent on modulation parameters and exciter but typically within +/- 2us for DVB-T and +/- 8 us for DVB-T2 with zero-offset calibration active.

QAM mode for cable systems (US, Europe, Japan)

- Frequency range 42 to 1002 MHz
- Fully compliant with ITU-T J.83 Annex A/B/C
- QAM modes: 16, 32, 64, 128, 256
- I/Q Constellation diagram
- Wide symbol rate range of 0.87 up to 7.2 Msym/s
- User-selectable IF filter of 6, 7 and 8 MHz
- Capable of monitoring the following RF parameters
- Channel power RF level
- Modulation Error Rate – MER
- Signal to Noise Ratio – SNR
- Symbol rate
- Spectrum sense
- Pre FEC BER, Post FEC FER
- Symbol rate: 0.87 to 7.2Msym/s
- RF power level: -60dBm up to –10dBm, +/- 1.5dB accuracy, 0.5dB resolution
- SNR, MER: <40dB (+/- 1.5dB accuracy). Ensure RF level > -40dBm for best result

- Pre-FEC BER: down to 1×10^-7 or DVB-C and down to 1×10^-9 for QAM-B
- Post-FEC PER: down to 1×10^-6

ISDB-T terrestrial mode (Brazil, Japan)

- Supports ISDB-Tb ARIB STD-B31
- Supports system modes 1, 2 and 3 (carriers 1405, 2809 and 5617)
- Code rates: 1/, 2/3, ¾, 5/6, 7/8
- Modulation: DQPSK, QPSK, 16QAM, 64QAM
- Guard intervals: 1/32, 1/16, 1/8, 1/4
- Signal level, SNR, MER, pre-RS BER, PER for each layer
- Channel bandwidth 6, 7 and 8MHz
- RF channel power input level: -80 to –20dBm +/- 1.5dB accuracy, 0.5dB resolution
- Maximum SNR, MER: >38dB +/- 1.5dB
- Center Frequency Carrier Offset: Accurate to within 1 Hz provided initial offset calibration, reasonably stable temperature conditions and local 1PPS signal applied to VB258 module directly
- Channel Impulse response diagram with echo alarming capabilities
- I/Q constellation diagram
- ATSC1.0 and ATSC3.0 for US terrestrial systems
- ATSC1.0 (ATSC A/53-Part2 2011)
- 6MHz channel bandwidth
- 8VSB modulation
- 2/3 code rate

ATSC3.0 ATSC A/321(2016), A/322(2017), A/330(2019)

- 6, 7 and 8MHz channel bandwidths
- 8, 16 and 32K FFT sizes
- All mandatory modulation and coding combinations
- All guard interval patterns
- Single and multiple PLPs (one at a time)
- ALP layer synchronization
- RF channel power input level: -80 to –20dBm +/- 1.5dB accuracy, 0.5dB resolution
- Maximum SNR, MER: >38dB +/- 1.5dB
- Channel Impulse response diagram with echo alarming capabilities
- I/Q constellation diagram

VB262 CABLE QAM MODULE SPECIFICATIONS

VB262 CABLE QAM ITU.T J-83 ANNEX A/B/C RF INPUT

- Frequency range: 51-1003 MHz
- Dual input digital cable receiver
- Fully independent inputs
- Fully compliant with ITU-T J.83 Annex A/B/C
- QAM modes: 16,32,64,128,256
- Constellation Diagram
- Wide symbol rate range of 0.87 to 7.0 Mbaud
- User selectable IF filter (6/7/8 MHz)
- Excellent neighbour channel isolation
- Dual 75 ohm F-connector inputs
- Pre-FEC BER, Post-FEC BER, SNR, MER, Level
- CFO, SRO

VB262 SPECIFICATIONS

- Symbol rate: 0.87-7.0 Msym/s
- RF power level: -60 dBm to-10 dBm (+/-1.5 dB)
- SNR (*): < 42 dB (+/-2 dB)
- MER: < 42 dB (+/-2 dB)
- BER pre-FEC (*) > 1.0E-8
- BER post-FEC (*) > 1.0E-9
- Input sensitivity: -60 dBm
- (*) 6.9MS,BER2x10e-4,QAM256
- Minimum signal strength for highest MER readings: -45 dBm

VB262 VSB FEATURES INCLUDE

- Dual input digital terrestrial receiver
- Fully independent inputs
- VSB modes: 8VSB

VB272 SATELLITE MODULE SPECIFICATIONS

VB272 DVB-S/S2 SATELLITE RF INPUT MODULE

- Hardware ready with two independent tuners and demodulators
- One input activated by default – second input available through VB272-RF-OPT
- Available with 50 ohm SMA female connectors (VB272-SMA) or 75 ohm F female connectors (VB272)
- 9-pin male D-SUB alarm relay
- Capable of demodulating DVB-S, DVB-S2 8PSK, 16APSK, 32APSK
- Supports DVB-S2 GOLD CODES, ROOT CODES and BOTH
- Input frequency range from 950 to 2150 MHz
- Automatic symbol rate detection requires only frequency to be configured by user
- Symbol rate range between 1 to 45Msym/s
- Input stream selection (for DVB-S2)
- PL scrambling mode setting (for DVB-S2)
- PL scrambling code setting (for DVB-S2)
- DVB-S 1/2, 2/3, 3/4, 5/6, 7/8 FEC
- DVB-S2 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 FEC
- Configure LNB local oscillator frequency and set input satellite frequency directly
- 13V/18V/22kHz antenna signalling present
- DiseqC 1.1 compatible for control of Committed L-band Switches
- Modulation Error Rate (MER) in dB
- Signal to Noise Rate (SNR) in dB
- Error Vector Magnitude (EVM) in% and in dB
- Constellation diagram maintained in GUI
- BER pre Viterbi (for DVB-S)
- BER post Viterbi (for DVB-S)
- BER post LDPC-BCH (for DVB-S2)
- RS Packet Error Count
- Front-end lock indication in GUI and through front panel red/green LED
- Channel power with an absolute accuracy of +/- 3 dB and a resolution of 1 dB
- Trend graphs over time for Channel Power and MER up to 2 years – requires VideoBRIDGE Controller server
- Carrier level
- Carrier frequency offset
- Symbol rate offset
- Energy per information bit to noise power spectral density ratio (Ebinf/N0) in dB
- Energy per transmitted bit to noise power spectral density ratio (Eb/N0) in dB

- Energy per symbol to noise power spectral density ratio (Es/N0) in dB
- Pilot detection (for DVB-S2)
- Frame length (for DVB-S2)
- Null packet deletion (for DVB-S2)
- Input Stream Synchronization Indicator (ISSI) (for DVB-S2)
- Number of input streams (for DVB-S2)
- Capable of Short and Normal frames
- Stream types:
- Generic Packetized Stream
- Generic Continuous Stream
- Transport Stream
- Coding and modulation
- Constant Coding and Modulation
- Adaptive/Variable Coding and Modulation (ACM/VCM)
- Roll-off factors: 0.35 / 0.25 / 0.20
- Capable of Multi Input Stream (MIS) with tuning selection of individual Input Stream Identifiers (ISI)

RF SPECIFICATIONS

- Frequency range: 950 to 2150 MHz
- RF power level: -65 to -25 dBm
- RF power level accuracy: +/- 2 dB
- RF power level resolution: 0.1 dB
- SNR: >30 dB
- BER and PER readings

VB278 SATELLITE 4 RF INPUT MODULE SPECIFICATIONS

DVB-S/S2/S2X functionality

- Capable of demodulating DVB-S (ENTSI EN 300 421), DVB-S2/S2X (ETSI EN 302 307-1/-2)
- Modulation standards supported: QPSK, 8PSK, 8/16/32APSK
- DirecTV DSS and AMC modes supported
- Roll-off factor 0.05 to 0.35
- VCM, ISSY and NPD supported
- Supports DVB-S2 GOLD CODES

- Input frequency range from 950 to 2150 MHz
- Automatic symbol rate detection requires only frequency to be configured by user
- Symbol rate range between 1 to 45Msym/s (<40MSymbol/s in 32APSK)
- DiSEqC 1.0 L-band switch signaling supported
- 13V/18V/22kHz antenna signaling present
- Modulation Error Rate (MER) in dB
- Signal to Noise Rate (SNR) in dB
- Error Vector Magnitude (EVM) in% and in dB
- Constellation diagram maintained in GUI
- BER pre Viterbi (for DVB-S)
- BER post Viterbi (for DVB-S)
- BER post LDPC-BCH (for DVB-S2)
- RS Packet Error Count
- Channel power with an absolute accuracy of +/- 3 dB
- Trend RF graphs over time back 24 hours standard and extendable through license key
- Carrier frequency offset
- Symbol rate offset
- Energy per information bit to noise power spectral density ratio (Ebinf/N0) in dB
- Energy per transmitted bit to noise power spectral density ratio (Eb/N0) in dB
- Energy per symbol to noise power spectral density ratio
- (Es/N0) in dB
- Pilot detection (for DVB-S2/S2X)
- Frame length (for DVB-S2/S2X)
- Number of input streams (for DVB-S2/S2X)
- Capable of Short and Normal frames
- Adaptive/Variable Coding and Modulation (ACM/VCM)
- Capable of Multi Input Stream (MIS) with tuning selection of individual Input Stream Identifiers (ISI)

VB243 AND VB273 REDUNDANCY MODULE SPECIFICATIONS

VB243 ASI INTELLIGENT REDUNDANCY SWITCH

- 2:1 switching operation with latching relays
- Simultaneous monitoring of two ASI switching inputs plus ad-hoc ASI input
- 2 DVB-ASI inputs EN 50083-9, Annex B – BNC connector

- 1 DVB-ASI output EN 50083-9, Annex B – BNC connector
- Supports burst mode, spread mode, M2S
- Supports 188 or 204-byte packet length
- 75 ohm BNC (female) connectors
- Spare ASI input: 75 ohm HD-BNC (female)
- Switching modes: automatic, manual, superLocal
- TS 101 290 priority 1, 2 and 3 switching criteria
- PID analysis, Service analysis, bandwidth overview, table analysis
- Automatic or manual TS recording of up to 200MB
- Thumbnail extraction
- Configurable alarm severity level
- PSIP support (ATSCA/78)
- Exportable logs
- Management port: 10/100/1000-T RJ45
- Alternative SFP port
- Web-based element management
- 9-pin DSUB alarm relay
- USB type-A port for maintenance

VB273 SATELLITE UPLINK REDUNDANCY SOLUTION IF and L-BAND

- 2:1 redundancy switching functionality based on built-in monitoring of incoming satellite signals
- Monitoring feature set of VB120 included making this a switch and a probe combined into one
- Supports 70/140MHz IF (VB273) and 950-2150MHz L-band (VB273-LBAND)
- IF signal inputs: 75 ohm female BNC
- IF signal output: 75 ohm female BNC
- L-BAND signal inputs: 50 ohm female SMA
- L-BAND signal output: 50 ohm female SMA
- Three-stage button logic supporting 3 distinct modes: Manual, Auto, Super Local
- Robust bistable RF relays ensures state is preserved even in the event of a power loss
- Passive loop through so that signal is passed even if no power on unit
- Capable of receiving DVB-S/S2 QPSK, DVB-S2 8PSK, DVB-S2 16APSK, DVB-S2 32APSK
- Continuously monitor and switch on all TR 101 290 priority 1, 2 and 3 parameters (except Buffer Fill)
- Continuously monitor and switch on all TR 101 290 priority 1, 2 and 3 parameters (except Buffer Fill)

- Independent alarm template and redundancy switching template to allow a parameter to be alarmed on while at the same time not resulting in a redundancy switch
- Filtering capabilities on switching criteria to prevent short glitches to trigger a redundancy switch
- Continuously monitor and switch on RF parameters:
    - Channel power RF level
    - Modulation Error Rate (MER) in dB
    - Signal to Noise Rate (SNR) in dB
    - Error Vector Magnitude (EVM) in% and in dB
    - BER pre Viterbi (for DVB-S)
    - BER post Viterbi (for DVB-S)
    - BER post LDPC-BCH (for DVB-S2)
    - RS Packet Error Count
    - Carrier frequency offset
    - Symbol rate offset
- PID analysis, Service analysis, bandwidth overview, PSI/SI/PSIP table analysis
- Automatic or manual TS recording of up to 200MB for recording fault that triggered redundancy switch
- Thumbnail extraction with audio bars and meta data
- Configurable alarm severity level
- PSIP support (ATSCA/78)
- Exportable logs
- Management port: 10/100/1000-T
- Video ports for RDP relay: 10/100/1000-T and SFP
- Condensed mosaic thumbnail view of all services monitored

OPTIONS

ETR290-OPTION and BULK-ETR290-OPTION

ETR290 and Bulk-ETR290 are available as options 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.

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 (VB220 SOFTWARE only)

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.

FLASH32-OPT (VB220 EMBEDDED only)

A 32GB mini-SD card is installed and activated on the controller module. It allows TS and PCAP recordings to be stored onto non-volatile disk. The last 20,000 alarms are stored and preserved between probe reboots. Data generated by measurement logger for RF and ASI inputs are stored onto disk as CSV-type files. If SD card is not installed then the user still gets non-volatile storage of up to 20,000 alarms useful for remembering alarm state in case of site power failures.

SCTE35-OPTION

SCTE35/104 ad-insertion marker concurrent monitoring and logging on all IP multicasts and OTT streams in probe.

CONTENT-OPT (VB220 SOFTWARE only)

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 260 services – pending sufficiently scaled hardware.

ORDERING CODES

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 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 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

VB256 – Supports both ISDB-T/SBTVD-T standards

VB258 – Terrestrial/cable RF input module. Supports ATSC1.0/ATSC3.0, DVB-T/T2, DVB-C, QAM-B, ISDB-T/SBTVD-T

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

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

MANUALS & QSG

Hardware Probe User Manual – Download

Software Probe User Manual – Download

Quick Start Guide – Download

CASE STUDY

TVB Hong Kong (VB220, VB243 Redundancy) – Download

Please visit the customer login area next to the main menu for further details and access to software versions

Click below to learn more about compatible technology options:

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ETR290™
FSM
Gold TS
MediaWindow™
OTT
PCAP
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Timeline™

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