# SETU VGB

## Multi-Port VoIP to GSM and ISDN BRI Gateways

Matrix SETU VGB range of gateways offer connectivity to IP, GSM/3G and ISDN BRI networks on a single platform. These gateways offer access to IP and GSM/3G networks for the users behind ISDN PBX. With the gateway connected to an IP based system, the digital BRI and wireless GSM/3G networks can be accessed seamlessly by the IP extensions, even remotely.

SETU VGB can also be used to setup IP connectivity between multi-locational and distant branch offices to take advantage of low cost VoIP calling. The high speed data accessibility over UMTS/HSPA/EDGE networks makes SETU VGB an ideal solution for remote locations lacking fixed line connectivity. Selective call routing over the fixed, IP or wireless networks brings significant cost savings and quick returns on investment.

Let Matrix SETU VGB be your high-performance bridge to the world of Diverse Telephony!


MATRIX
TELECOM SOLUTIONS

## PRODUCT OVERVIEW

SETU VGB is a compact, integrated and feature-rich gateway offering connectivity to IP, GSM/3G and ISDN BRI networks. The gateway seamlessly integrates with an existing PBX/IP-PBX system. This multi-port gateway offers flexibility to configure BRI ports in TE/NT modes. NAT and STUN facilitate smooth integration with existing LAN/WAN infrastructure.

Synchronization with ISDN network clock avoids problems of noisy and dropped calls experienced otherwise in multi-device setup. SETU VGB automatically selects the most cost-effective route as per programmed logics, modifies a dialed number to match dialing formats of the chosen network and logs complete call details in its buffer memory. These intuitive features offer convenience to the users and improve business productivity. Multi-locational enterprises can setup IP connectivity among all branch-offices using this gateway to save over long distance calls.

The Open-Standard SIP support makes SETU VGB an ideal choice for ITSPs, Wireless Service Providers and System Integrators to offer business trunking solutions and wireless connectivity to various organizations. The gateway can simultaneously register with multiple SIP service providers for cost savings and carrier redundancy. Up to 4 GSM/3G SIMs can be inserted, inquired for balance and automatically recharged from web-based GUI.

## AT-A-GLANCE

**DEVICE CAPACITY**
4/8 VoIP Channels
4 GSM/3G Ports*
2 ISDN BRI Ports

**DEDICATED IN-LINE CONNECTIVITY**
For IP-PBX and ISDN PBX

**FLEXIBLE CONNECTIVITY**
Peer-to-Peer and Proxy Calling
GSM/3G Quad-Band Support*
Programmable TE/NT

**DESIGN**
Compact Size
Wall & Table-Top Mountable

**SIMPLIFIED MANAGEMENT**
Fast and Easy Installation
Web-based Configuration

**EXTENDED REACH**
Multi-Site Connectivity over IP
Internet Accessibility over Wireless Networks*

**FAX over IP (FoIP)**
T.38 and Pass-Through
ISDN G3 Fax


**SETU VGB842**
Gateway with 8 VoIP Channels, 4 GSM/3G and 2 BRI Ports


**SETU VGB802**
Gateway with 8 VoIP Channels and 2 BRI Ports

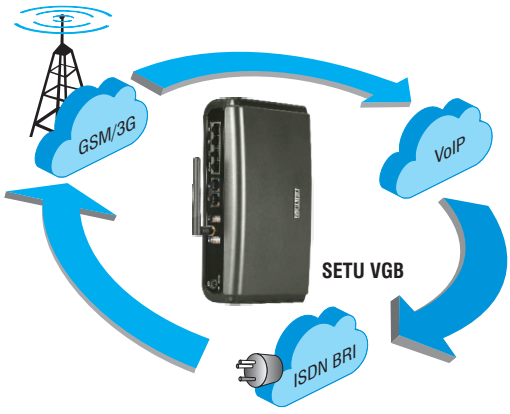
## Single-Box Solution

Matrix VoIP-GSM/3G-ISDN BRI gateways converge three different telephony networks on a single platform. These gateways provide seamless connectivity and transparent call routing between IP, ISDN BRI and GSM/3G networks.

**VoIP**
Based on Open-Standard SIP, SETU VGB is interoperable with all SIP infrastructures like Soft switches, IP-PBX, Registrars and SIP Proxies. The gateway provides multiple SIP accounts with flexibility to register with various SIP proxies and to make peer-to-peer calls among distant locations.

**GSM/3G***
SETU VGB offers connectivity to GSM and 3G networks. It provides worldwide usage opportunity with all industry standard GSM/3G frequency support for uninterrupted and error-free communication.

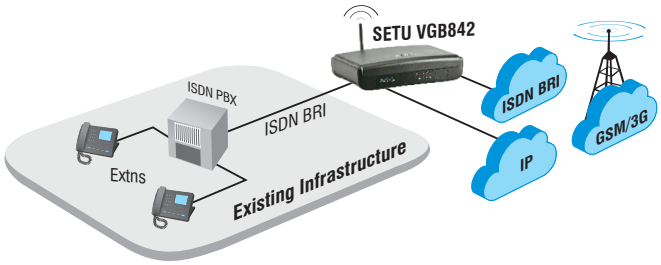
**ISDN BRI**
With two configurable TE/NT BRI ports, SETU VGB seamlessly integrates with the existing ISDN infrastructure. It intelligently routes calls from ISDN terminals to the cost-effective IP and the GSM/3G networks.



## APPLICATIONS

**GSM/3G -VoIP Gateway for Traditional ISDN PBX**

SETU VGB helps an organization to integrate new communication technologies to its existing ISDN infrastructure. With SETU VGB, any traditional ISDN PBX system can leverage the cost benefits and flexibilities offered by IP and GSM/3G networks.

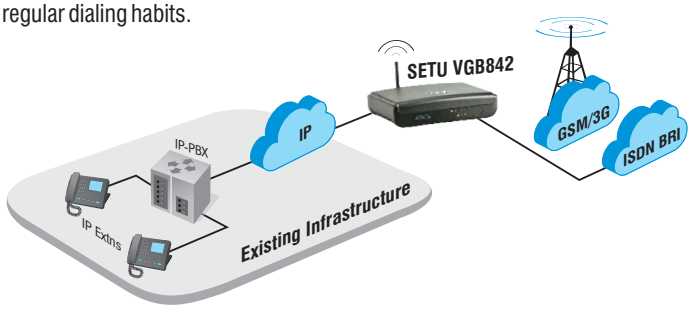



- Multiple Carrier Integration on a Single Platform
- Save on Recurring Fixed-to-Mobile Call Costs
- Seamless Integration with Existing Infrastructure
- Programmable TE and NT Mode for Flexible Integration
- Retain Dialing Habits and Patterns
- Compatible with All Industry Leading PBX

**GSM/3G-ISDN BRI Access for an IP-PBX**

SETU VGB connects an IP-PBX system to the wide-spread ISDN BRI and GSM/3G networks. It enables the IP-PBX users to place calls over legacy ISDN BRI or GSM networks without changing their existing infrastructure and regular dialing habits.

- Place Calls over GSM/3G or ISDN BRI from Existing IP Terminals
- Enhance Connectivity and Capacity of Existing IP-PBX
- Deployable in All SIP based VoIP Networks
- Cost-Effective Calling with Advanced Routing Logics
- Lower CAPEX and Early ROI




## KEY FEATURES

**Fax Support**

Users can send and receive Fax over IP and ISDN BRI trunks by connecting the fax machine to any port of the connected PBX. Both FoIP and Standard ISDN G3 analog fax are supported. Fax over Internet is provided using T.38 and Pass-Through.

**Peer-to-Peer Calls**

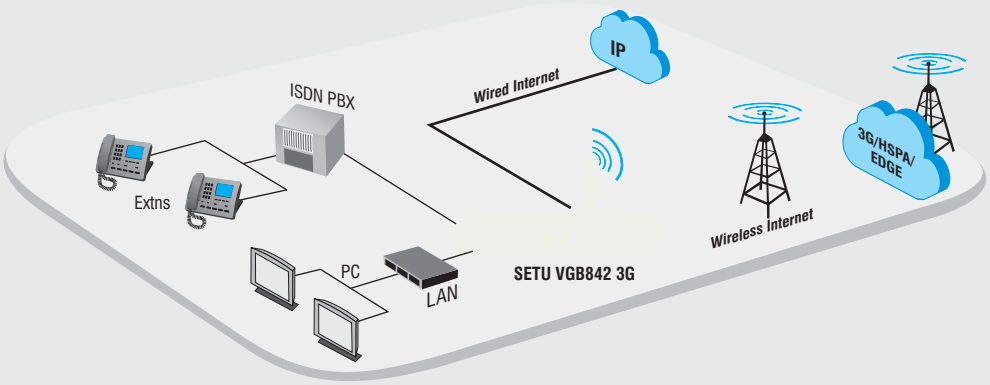
SETU VGB supports VoIP calls between two distant locations without any IP-PBX or Proxy Server. IP addresses of various locations can be programmed in Peer-to-Peer table of the gateway. SETU VGB can store up to 500 peer-to-peer entries. Short numerical codes can be defined to simplify dialing.

**Enhanced Voice Quality**

SETU VGB uses advanced DSP processor for VoIP calls to ensure superior voice quality. It supports up to eight simultaneous calls and delivers maximum call ratio at all industry standard voice codecs. Features like Comfort Noise Generation (CNG), Echo Cancellation and configurable audio gain (Adjustable Gain Control) aid in getting uninterrupted, toll-quality voice. Voice Activity Detection (VAD) and advanced bandwidth utilization techniques of the gateways provides effective bandwidth utilization to ensure maximum throughput.

**Wireless WAN (WWAN)***

SETU VGB offers high speed internet accessibility to the users behind LAN and also facilitates VoIP calling to the PBX users. It provides high speed data connectivity up to 7.2 Mbps with UMTS/ HSPA/EDGE technology. This makes the gateway a perfect solution for offices in remote locations, where fixed-line Internet connectivity may not be easily available.

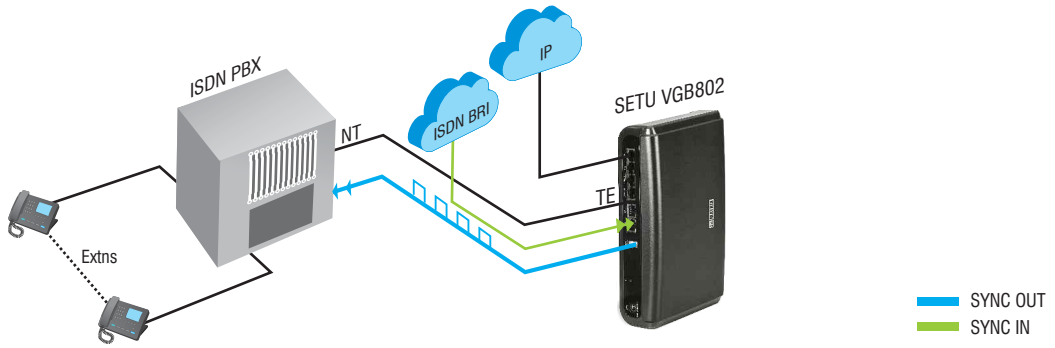



Furthermore, it provides fail-over connectivity by automatically routing all VoIP calls and data traffic over UMTS (3G) network in case of wired internet connectivity outage.

**Network Clock Synchronization**

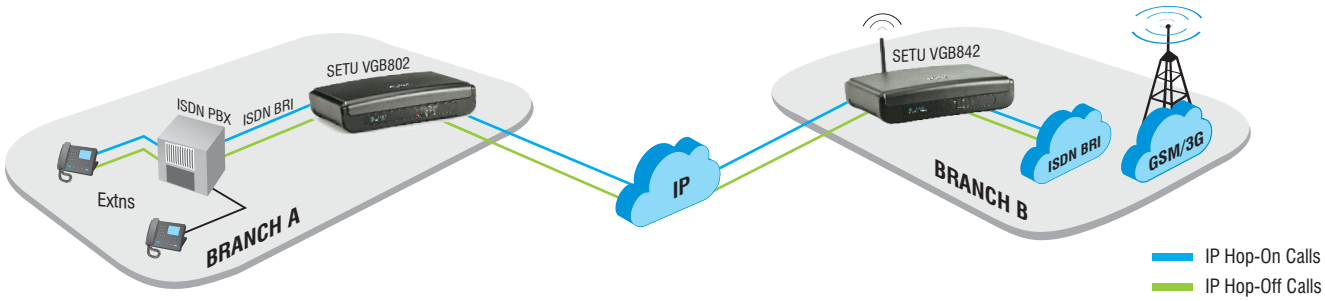
Whenever the PBX system is interfaced between ISDN BRI line and a communication device like VoIP gateway, chances of clock slip exists as PBX and gateway operate on different clock sources. As a consequence of the clock slip, many operational and integration problems like poor voice quality and noisy or dropped calls occur during field installations.

Traditional ISDN network provide extremely accurate clock signals. SETU VGB boasts SYNC IN and SYNC OUT ports that acquires stable network clock and uses it to provide clock synchronization with the interfaced PBX, eliminating any synchronization issue, noisy or dropped calls.




**Hop-on and Hop-off Calling**

SETU VGB provides a cost-effective way to capitalize on VoIP for communicating among various branch-offices. It routes the call over cost-effective IP network till last mile of termination and then transparently 'hop-off' to ISDN BRI or GSM/3G network. Similarly, any incoming call from GSM/3G or BRI network can be 'hop - on' to IP.



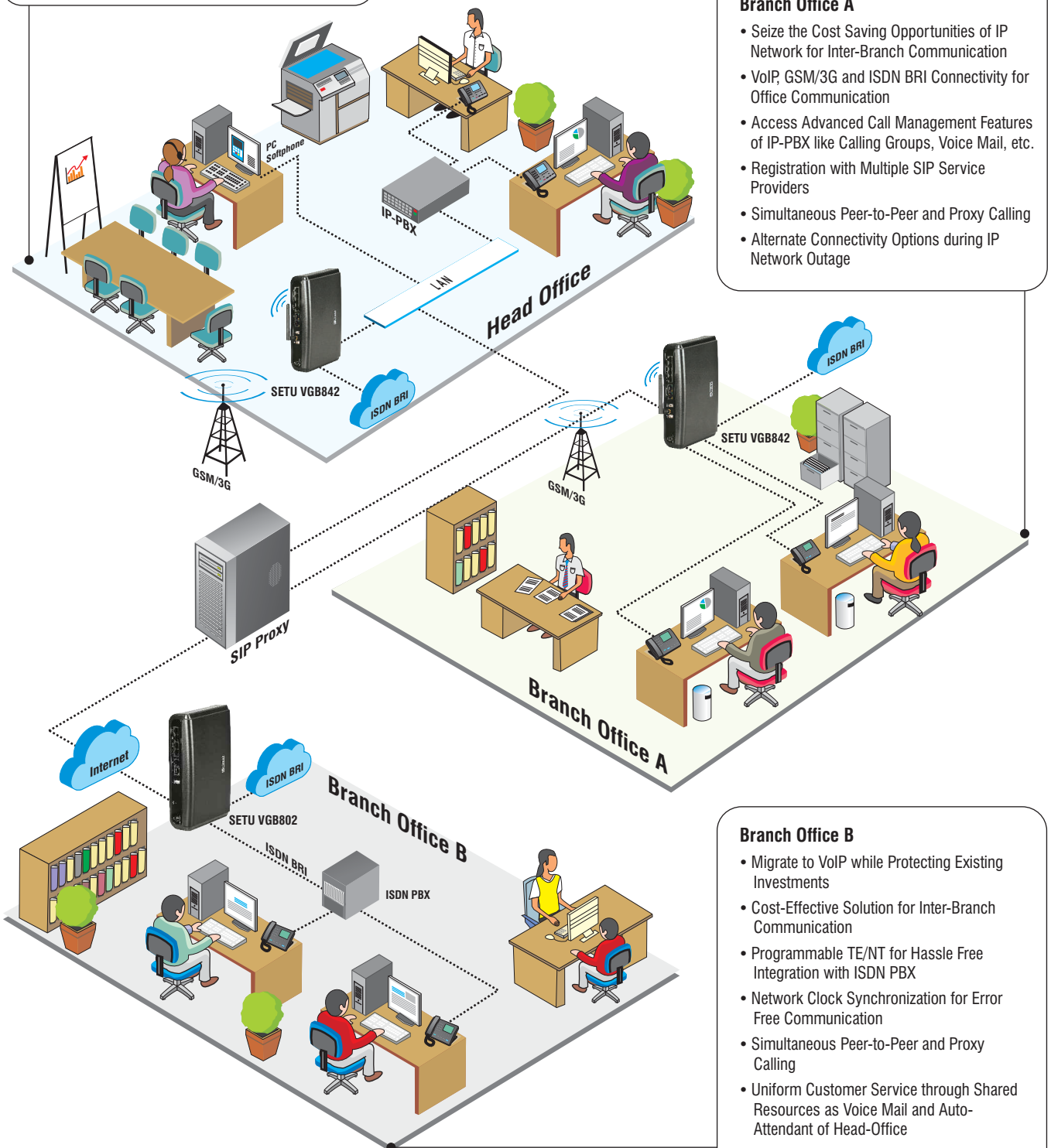

| FEATURES | DESCRIPTION |
|---|---|
| Allowed and Denied Numbers | Permit or restrict dialing of certain outgoing numbers for toll-control purpose<br>Separate Allowed and Denied lists for ISDN BRI, GSM/3G and IP Port |
| Automatic Number Translation | Modifies the dialed numbers to match dialing formats of the network through which the call is routed |
| Call Detail Records (CDR) | Stores call details of 2000 calls that can be viewed, stored and printed in text and excel format |
| Caller ID Based Routing | Route pre-defined external calls to desired extensions directly |
| Dynamic DNS | Static IP is not required for SETU VGB |
| Emergency Number Dialing | Allows dialing of pre-defined emergency numbers like police, fire station etc. in emergency situations, even in absence of GSM/3G SIM cards |
| Enhanced Administration | Web based GUI for system configuration<br>Built-in Syslog client for remote diagnosis and trouble-shooting<br>Status monitoring of IP/GSM/3G*/ BRI trunks |
| Localization | Multiple language support- English, French, German, Italian, Portuguese and Spanish<br>Country specific call progress tones and detection<br>Daylight saving time, date-time format |
| Mobile Network Selection* | Automatic and/or manual selection of available GSM/3G networks |
| NAT and STUN Support | Discover and connect the devices located behind lan and wan infrastructure |
| PIN Authentication | Authenticates the caller identity before placing any inter-network calls to prevent unauthorized usage |
| Return Call to Original Caller (RCOC) | Directly routes an incoming call to the extension who attempted the call, in case the called party is busy or the call is unanswered |
| SIM Balance Inquiry and Recharge* | Automatic recharge and balance inquiry of SIM cards inserted in SETU VGB from Web-based GUI |

## MULTI-SITE CONNECTIVITY

With continuous expansion of business horizons across geographies, organizations tend to have more and more local footprints across locations. SETU VGB facilitates easy and low cost communication between various geographically distant branch offices over cost-effective IP network.

### Head Office

- Easy Integration with Existing LAN/WAN Infrastructure
- GSM/3G and ISDN BRI Trunking for IP based System
- Substantial Reduction in GSM/3G and Fixed-Line Call Costs




### Branch Office A

- Seize the Cost Saving Opportunities of IP Network for Inter-Branch Communication
- VoIP, GSM/3G and ISDN BRI Connectivity for Office Communication
- Access Advanced Call Management Features of IP-PBX like Calling Groups, Voice Mail, etc.
- Registration with Multiple SIP Service Providers
- Simultaneous Peer-to-Peer and Proxy Calling
- Alternate Connectivity Options during IP Network Outage

### Branch Office B

- Migrate to VoIP while Protecting Existing Investments
- Cost-Effective Solution for Inter-Branch Communication
- Programmable TE/NT for Hassle Free Integration with ISDN PBX
- Network Clock Synchronization for Error Free Communication
- Simultaneous Peer-to-Peer and Proxy Calling
- Uniform Customer Service through Shared Resources as Voice Mail and Auto-Attendant of Head-Office
- Alternate Connectivity Options during IP Network Outage

## SYSTEM RESOURCES

| SYSTEM RESOURCES | SETU VGB842 | SETU VGB802 |
|---|---|---|
| VoIP Channels | 8 | 8 |
| GSM Ports | 4 | — |
| ISDN BRI Ports | 2 | 2 |

## TECHNICAL SPECIFICATIONS

| PARAMETERS | SETU VGB842 | SETU VGB802 |
|---|---|---|
| **VoIP** | | |
| SIP Accounts | 9 | 4 |
| VoIP Protocol | SIP v2, SDP, RTP (RFC 2833) | |
| Network Protocol | IPv4, TCP, UDP, DHCP, SNTP, STUN, HTTP | |
| NAT | STUN and NAT Keep Alive | |
| Voice Codecs | G.711 A/$\mu$-Law, G.723, G.729AB, GSM-FR, i-LBC 20ms$^{\#}$, i-LBC 30 ms$^{\#}$ | |
| Line Echo Cancellation | G.168 with 128ms Tail Length | |
| Call Progress Tones | Dial Tone, Ring Back Tone, Busy Tone, Error Tone, Routing Tone | |
| Voice Processing Techniques | Dynamic Jitter Buffer (Adaptive)<br>Comfort Noise Generation (CNG)<br>Voice Activity Detection (VAD) | |
| Fax Support | FoIP (T.38 and Pass-Through)<br>Standard ISDN G3 Fax | |
| Quality of Service (QoS) | Layer 3 DiffServ and ToS | |
| Data Network | WAN Port RJ45, Auto MDIX 10/100 BaseT<br>LAN Port RJ45, Auto MDIX 10/100 BaseT | |
| **BRI** | | |
| Channels | 2B+D | |
| Personality | NT or TE (User Programmable) | |
| Signaling | ITU I.430, ETSI TBR 003 [9,4] | |
| Interface | S/T Interface, Point-to-Point and Point-to-Multipoint | |
| ISDN Switch Variant | ETSI - EURO ISDN NET3 BRI (BRI NET3) | |
| Connection | RJ45 (100 Ohm Termination Resistor – Manually Configurable via Jumpers present on the BRI modules) | |
| **GSM/3G*** | | |
| GSM Band | Quad-Band : GSM850, EGSM900, DCS1800, PCS1900<br>Tri-Band : WCDMA 850/1900/2100 MHz<br>: WCDMA 900/1900/2100 MHz | |
| Compliant | ETSI GSM Phase 2/2+ | |
| SIM Card | One SIM per GSM/3G Port | |
| SIM Interface | 1.8V, 3V | |
| Transmission Power | Class 4 (2W) at GSM850 and EGSM900 MHz band<br>Class 1 (1W) at DCS1800 and PCS1900 MHz band<br>Class 3 (0.25 W) at WCDMA 850/1900/2100 | |
| RF Sensitivity | Better than -106dBm at GSM850/EGSM900/DCS1800/PCS1900<br>Better than -108dBm at WCDMA 850/1900/2100 | |
| Antenna (Panel Mount) | 3.0dBi, 50 Ohm, SMA (Male) Connector, Omni Directional with Cable of 3 Meters Length<br>2.5dBi, 50 Ohm, SMA (Male) Connector, Fixed Omni Directional Swivel Antenna | |
| **POWER SUPPLY** | | |
| Input | 12VDC, 2A | |
| Power Consumption (Typical) | 10W | 8W |
| Connector | DC Power Jack | |

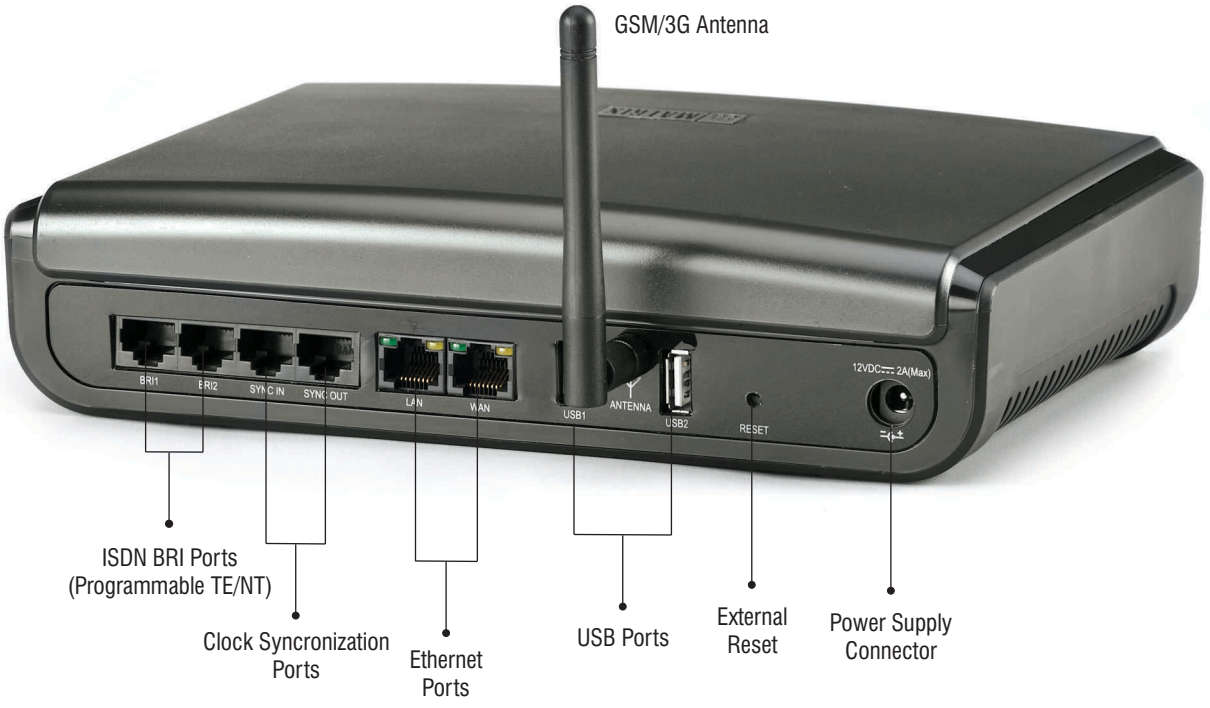
| MECHANICAL | | |
|---|---|---|
| **PARAMETERS** | **SETU VGB842** | **SETU VGB802** |
| Dimensions (WxHxD) | 23.0 x 5.5 X 16.3 cm (9.1" x 2.2" x 6.4") | |
| Unit Weight | 0.8 Kg | 0.6 Kg |
| Material and Finish | UL94 V-0 Grade ABS, Fine Matte Finish | |
| Installation Mounting | Desktop and Wall Mount | |

| ENVIRONMENTAL | |
|---|---|
| Operating Temperature | -10˚C to +50˚C (14˚F to +122˚F) |
| Storage Temperature | -40˚C to +85˚C (-40˚F to +185˚F) |
| Operating Humidity | 5-95% RH (Non-Condensing) |
| Storage Humidity | 0-95% RH (Non-Condensing) at 40˚C (104°F) |

## MATRIX GATEWAY RANGE OF PRODUCTS

| | |
|---|---|
| ETERNITY | The Universal Telephony Gateway with VoIP, GSM/3G, T1/E1/PRI, ISDN BRI and FXO/FXS Connectivity |
| SETU VGFX | Multi-Port SIP based VoIP to GSM-FXO-FXS Gateway |
| SETU VGB | Multi-Port SIP based VoIP to GSM and ISDN BRI Gateway |
| SETU VTEP | Single Span SIP based VoIP to ISDN PRI Gateway |
| SETU VFXTH | Multi-Port SIP based VoIP to FXO-FXS Gateway |
| SETU VFX | Multi-Port SIP based VoIP to FXS Gateway |
| SIMADO GFX | Multi-Port GSM to FXS Gateway |
| SIMADO GBR | Multi-Port GSM to BRI Gateway |

*Available only in SETU VGB842
#Available only in SETU VGB802



## ABOUT MATRIX

RoHS COMPLIANT

An ISO 9001 Company, Matrix is a leader in Telecom and Security solutions for modern businesses and enterprises. An innovative, technology driven and customer focused organization; the company is committed to keep pace with the revolutions in the telecom and security industries. With around 30% of its human resources dedicated to the development of new products, Matrix has launched cutting-edge telecom products like IP-PBX, Universal Gateways, VoIP Gateways and Terminals, GSM Gateways, Access Control and Time-Attendance Systems and Fire Alarm Systems. These solutions are feature-rich, reliable and conform to the international standards.Having global foot-prints in Asia, Europe, North America, South America and Africa through an extensive network of more than 500 channel partners, Matrix ensures that the products serve the needs of its customers faster and longer. Matrix has gained trust and admiration of more than 150,000 customers representing the entire spectrum of industries. Matrix has won many awards for its innovative products.

*For further information, please contact:*

MATRIX
TELECOM SOLUTIONS

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