



# Your PDF Guides

You can read the recommendations in the user guide, the technical guide or the installation guide for ZYXEL SAM1216-22. You'll find the answers to all your questions on the ZYXEL SAM1216-22 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

- [User manual ZYXEL SAM1216-22](#)
- [User guide ZYXEL SAM1216-22](#)
- [Operating instructions ZYXEL SAM1216-22](#)
- [Instructions for use ZYXEL SAM1216-22](#)
- [Instruction manual ZYXEL SAM1216-22](#)



### Flexible Provisioning of DSL and VoIP services

- Multi-service Access Node, AC or DC power input with two slide-in slots for various DSL and VoIP line modules
- 12-port ADSL/ADSL2/ADSL2+ line module with a splitter built-in for MTU application
- 8-port G.SHDSL or 16-port G.SHDSL bis line modules with M-pair bonding feature for business applications
- 24-port VoIP line module with SIP signaling protocol and MLT function support
- Line module cascading with 1st Ethernet uplinks
- 802.1p/QoS, priority queuing, 802.1q VLAN tagging and multibonding support
- 802.1x authentication, MAC/Portlet filtering and ACL filtering support
- Manageable with the Windows-based Element Management System (EMS)



1U IP DSLAM with AC/DC Power  
IES-1000

#### Benefits

##### Comprehensive Design for Various Market Demand

IES-1000 is a pizza box IP-based multi-service access node (MSAN). It has two slots for various combinations of DSL and VoIP line modules to provide ADSL2+, G.SHDSL and VoIP services to residential and business customers. It terminates the DSL traffic of DSL connections and PoTS voice signals to route them IP packets and route them through IP networks. With the highly compact design (1U height), AC and DC power input as well as simple installation, IES-1000 can be deployed at Telco and SMB environment to meet all kinds of market demands.

##### Robust ADSL2+ Solution for Multiple Tenant Unit (MTU) Services

With ADSL2+ line module, service providers can offer residential users high bandwidth internet access, on-demand entertainment services and IPTV services on a single network connection. The IES-1000 also offers business subscribers IP connectivity, VPN, VLAN, high-quality video conferencing and legacy service interconnection with bandwidth up to 24Mbps per port. Moreover, it supports ATM based 2-pair bonding to provide even higher bandwidth to distant customers. The ADSL2+ line module is a sophisticated device fully compliant with existing standards and with modern features like energy saving, excellent performance and transparent backward to ADSL/ADSL2 compatibility.

##### Lease Line G.SHDSL Service for Enterprise

With G.SHDSL technology, IES-1000 is applicable for lease line replacement. Using the TCP/M modulation technique, IES-1000 is compatible with other existing transmission technologies, allowing service providers to deploy at locations where broadband services already exist.

##### M-Pair Bonding G.SHDSL bis Solution

IES-1000 supports the new-generation G.SHDSL bis line module to provide transmission rate up to 4096bps symmetrically in a single pair. It also comes with two 1000Mbps Ethernet interfaces toward Ethernet aggregation network. The IES-1000 can accommodate two SAM1216-22 modules to support 32 DSL connections. In addition, the SAM1216-22 supports 1U/0.9U 2-in pair bonding in a physical layer manner. The m-pair bonding can be 2 or 4 pair, and the aggregated payload rate is around 16Mbps.

##### VoIP Line Module to Provide Media Gateway Feature

In addition to FAX and modem services, VoIP line module provides a parallel and distributed media gateway architecture to empower VoIP services by taking advantage of PoTS voice signals. With the architecture, the line module serves up to 24 PoTS ports. As part of the benefits, there is no throughput bottleneck or single-point failure issue in this architecture. The media gateway protocols G.711, G.723, G.726, G.729a/b and T.38 codecs while RFC 3561 SIP network signaling protocol is supported.



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**Manual abstract:**

SHDSL and VoIP services to residential and business customers. It terminates the ATM traffic of DSL connections and POTS voice signals to make them IP packets and route them through IP networks. With the highly compact design (1U height), AC and DC power input as well as simple installation, IES-1000 can be deployed at Telco and SMB environment to meet all kinds of market demands. Robust ADSL2+ Solution for Multiple Tenant Unit (MTU) Services With ADSL2+ line module, service providers can offer residential users high-bandwidth internet access, ondemand entertainment services and IPTV services on a single network connection. The IES-1000 also offers businesses subscribers IP connectivity, VPNs, VLANs, high-quality video conferencing and legacy service interconnection with bandwidth up to 24Mbps per port. Moreover, it supports ATM-based 2-port bonding to provide even higher bandwidth to distant customers. @@@@NetAtlas Access EMS provides powerful advanced remote management capabilities that help service providers minimize daily operational costs. Its loop-back design helps isolating network problems while the new firmware and IP Express configuration allow changes to be done remotely, eliminating the need for "truck rolls" in order to provision services to new customers or to reconfigure services for existing customers. Specifications System Specifications · Delivery of Ethernet in the first mile using legacy LAN technologies · End-to-end provisioning by offering DSL circuit configuration through NetAtlas Access EMS · Support expandable configuration with plug-and-play line cards · SNMP v1, v2 manageable · Web management · FTP/TFTP for firmware upload · Console port configuration (RS-232) · Telnet configuration and monitoring · Spanning tree algorithm (802.1D) for loop free connection · Configurable MTU value · PPPoE intermediate agent compliant with TR101 · G.

998.1 ATM bonding · 802.1Q VLAN aware bridging · IGMP snooping supports multicast traffic · QoS support with 802.1p · DHCP relay agent option 82 per VLAN · Port isolation/per VLAN isolation · 256 static VLAN entries (full-range VLAN ID 1~4094) · 4 K MAC address entries · Packet prioritizing per 802.1p (QoS) · Static configuration default priority setting · 4 priority queues per PVC (up to 4 PVCs) · Multicast · IPv4 multicast forwarding (through L2 MAC) · Static multicast membership configuration · IGMP v1, v2 snooping & IGMP proxy mode support · Shared VLAN multicast · 256 multicast groups and each group can contain 18 members · IGMP filtering profile · IGMP count limiting · MVLAN · DSL port multicast bandwidth control · Management support · CLI-based management from console/Ethernet port · SNMPV1, v2 and telnet through Inband Ethernet interface and NetAtlas Access, PCbased EMS management support · Web-based management through Inband Ethernet interface.

- Secured Host: configure remote host IP addresses for management · UNIX syslog · F/W upgrade, configuration backup & restore via FTP and Web · Text-based configuration file support · Port configuration · Alarm/Status Surveillance · Performance monitoring · Security and Memory Backup · Self diagnostics · Remote reset · EMS Management support · MIB · SNMP MIB II (RFC1213) · SNMP v1 · SNMP v2 · RFC1493 Bridge MIB · RFC1643 Ethernet MIB · RFC1757 Four group of RMON · RFC2674 · RFC2662 ADSL line MIB · RFC4319 (formerly RFC3276) SHDSL Line MIB · DELT(Dual Ended Loop Test) · SELT (Single End Loop Test) · G.998.1 2-port ATM bonding · Power enhancement or ADSL power saving mode · Rate adaptation · Status LEDs- System Status, Ethernet 1 and 2 Link Status, Ethernet 1 and 2 Active Status, ADSL ports status, Alarm · ADSL Compliance - DMT T1.413, issue 2 - G.DMT (ITU G.992.1) - G.LITE (ITU G.992.2) - G.HS (ITU G.994.1) - Auto-negotiating rate adaptation · ADSL2 - G.992.3 Annex A - G.

992.3 Annex L (RE-ADSL) · Annex M · ADSL2+ · G.992.5 Annex A, Annex M · G.992.3 Annex L (RE-ADSL) · Annex M · ADSL2+ · G.992.5 Annex A, Annex M AAM1212-53 line module Hardware Specifications IES-1000M · 19" 1U rack mountable, 2 card slots chassis · Dimension : 440 mm (W) x 320 mm (D) x 46 mm (H) · 2 line cards to accommodate different types of DSL services as well as VoIP services · Fully hot-swappable design · Support 8 to 32 ports in MDU/central office environment · Temperature monitoring and alarm · Auto-shutdown for over temperature · Surge protection to prevent lightning damage · One Telco 50 connectors for 12-port ADSL/ADSL2/ADSL2+ and splitter card over ISDN · One mini RJ11 console port for local management · Two 10/100Base-TX for uplink · DELT(Dual Ended Loop Test) · SELT (Single End Loop Test) · Power enhancement or ADSL power saving mode · Rate adaptation · Status LEDs- System Status, Ethernet 1 and 2 Link Status, Ethernet 1 and 2 Active Status, ADSL ports status, Alarm · ADSL Compliance - DMT T1.413, issue 2 - G.DMT (ITU G.

992.1) - G.LITE (ITU G.992.2) - G.

HS (ITU G.994.1) - Auto-negotiating rate adaptation · ADSL2 G.992.3 Annex B - ADSL2+ G.

992.5 Annex B AAM1212-51 line module · One Telco 50 connectors for 12-port ADSL/ADSL2/ADSL2+ and splitter card over POTS · One mini RJ11 console port for local management · Two 10/100Base-TX for uplink SAM1008 line module · One console port-: Mini-RJ-11(4P4C) · One Ethernet port - RJ45 10/100 Mbps · 8-port G.SHDSL- RJ-11 connector · Status LEDs- System Status, Ethernet Link Status, Ethernet Active Status, G.SHDSL ports status, Alarm · Compliant with ITU-T G.991.2 · TC-PAM modulation · Transmission rate: 192k ~ 2.3Mbps, 64kbps increments over single copper pair · All front access · Hot-swappable VOP1224-61 line module · One Telco 50 connectors for 24-FXS ports over POTS · One mini RJ11 console port for local management · Two 10/100Base-TX for uplink · Ringer Max output power : 14 Watt · Support SIP singling protocol · Support G.711, G.726, G.729 a/b, G.

723.1 · Support T.38 Fax/Modem signal coding & Fax Relay (G.711 a/m) · Echo cancellation based on ITU-T G.168, G.165 · Silence detection/suppression and Comfort Noise Generation (CNG) · Voice Activity Detection (VAD) · Caller ID detection (for VoIP packets from uplink) · 10 K Business Hour Call Attempts (BHCA) · Configurable jitter buffer · Support the generation of dial tone, second dial tone, ringing tone (ring-back tone), busy tone, off-hook warning tone · Support call waiting, call hold, call transfer, return and call back on busy · MLT (Metallic loop testing for subscriber lines) and GR-909 loop diagnostic SAM1216-22 · Dimension: 170 (W) x 320 (D) x 35 (H) mm · Weight : 0.



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9 Kg VOP1224-61 · Dimension: 170 (W) x 320 (D) x 35 (H) mm · Weight : 0.8 Kg Environmental specification · Power Supply (AC/DC) - AC Power: 100 ~ 240V AC, 50 ~ 60Hz - DC Power: -36 ~ -72 V DC · Power Consumption - AAM1212-51: 25W - AAM1212-53: 25W - SAM1008: 8.59W - SAM1216-22: 25W - VOP1224-61 : 30W · Operating Temperature: 0°C ~ 50°C · Storage Temperature: -40°C ~ 70°C · Operating Humidity: 10% ~ 90% (noncondensing) · Storage Humidity: 10% ~ 95% (noncondensing) SAM1216-22 line module · One Telco 50 connectors for 16-port G.SHDSL.

bis · One mini RJ11 console port for local management · Two 10/100Base-TX for uplink · In-band Ethernet management · Status LEDs- System Status, Ethernet Link Status, Ethernet Active Status, G.SHDSL.bis ports status, Alarm · Line coding: TC-PAM · Transmit power: up to 16.8 dBm · Density: 16 ports per chip · SHDSL payload format: ATM · Rate Adaptation Mode: fixed, line probing · Up to 4096kbps in single pair, m-pairs (2/4 pairs mode) bonding support up to 16.384Mbps · Annex A and annex B PSD mask · SHDSL line profile · SHDSL alarm profile · Power backoff · Standard Compliant - ETSI SDSL (ETSI TS 101 524 V 1.

2.1) - ITU G.shdsl (ITU-T G.991.2 (2001)) - ITU G.

shdls.bis (ITU-T G.991.2 (2004)) Certification Physical Specifications IES-1000M · Dimension: 440 (W) x 320 (D) x 46 (H) mm · Weight : 3.7 Kg · Safety - UL 60950-1 - CSA 60950-1 - EN60950-1 - IEC 60950-1 · EMC - FCC Part 15B Class A - EN55022 Class A - EN55024 Class A - ETSI 300386 · Reliability - ETSI 300019 · Telecom - ITU-T K20 AAM1212-51 · Dimension: 170 (W) x 320 (D) x 35 (H) mm · Weight : 0.9 Kg AAM1212-53 · Dimension: 170 (W) x 320 (D) x 35 (H) mm · Weight : 0.9 Kg SAM1008 · Dimension: 170 (W) x 320 (D) x 35 (H) mm · Weight : 0.9 Kg 1U IP DSLAM with AC/DC Power ADSL2+ Line Card G.SHDSL Line Card G.SHDSL.

bis Line Card VoIP Line Card IES-1000 AAM1212-51/53 SAM1008 SAM1216-22 VOP1224-61 IES Series IP DSLAM Family Matrix Model System Overview IP DSLAM for Outside Plant (ADSL2+ only) 270 x 350 x 44.45 Built in 19" 1U Standalone Standalone 12 (ADSL2+) 19" 1U Standalone Standalone 8 (ADSL2+) IP DSLAM for Outside Plant (G.SHDSL.bis only) 270 x 350 x 44.45 Mini MSAN (ADSL2+, G.SHDSL.bis & VoIP) 440 x 320 x 44.5 Built in 19" 1U 2 2 24/32 19" 1U Standalone Standalone 48 IP DSLAM for Outside Plant (ADSL2+ only) 270 x 350 x 44.45 MSAN for Outside Plant (Both ADSL2+ & VoIP) 440 x 251 x 66 Built in 19" 1.5U Standalone Standalone 48 MSAN for Outside Plant (ADSL2+, VoIP, G.

SHDSL.bis, VDSL2, Active Fiber-base Ethernet) 440 x 250 x 152 Separated, IES-5005ST 19" 4U 5 4 192/288 MSAN no v3) 256 · · · · · 256 · · · · · 512 · · · · · NetAtlas Access · · · · · NetAtlas Access · · · · · NetAtlas Access · · · · · NetAtlas Access · · · · · NetAtlas Access · · · · · NetAtlas Access · · · · · NetAtlas Access · · · · ·

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