FRITZ!Box Fon WLAN 7170

Product Specification

FRITZ!Box Fon WLAN 7170

Executive Summary

FRITZ!Box Fon WLAN 7170 combines a wireless DSL router with a VoIP/PSTN PBX. Three analog telephones and eight ISDN terminal devices can be connected to the Internet and fixed-line network via FRITZ!Box Fon WLAN 7170. FRITZ!Box Fon WLAN 7170 even supports the analog telephone line and ISDN on the PSTN line.

FRITZ!Box Fon WLAN 7170 is equipped with Wireless LAN 802.11 g/g++/b and four Ethernet interfaces for connecting computers or other network devices. In addition, the integrated USB host controller lets any USB devices, such as a printer or hard drive, be used anywhere within the network. The USB host controller with AVM Stick & Surf also greatly simplifies the WLAN provisioning of the computers. With the WLAN switch on the back panel of the housing, the WLAN function can be switched on and off temporarily at the touch of a button.

Color-coded cables and sockets, a clear quick guide and an interactive CD to help you start operation (including the WLAN installation) greatly simplify configuration. The system is operated with a clear, user-friendly web front end, or using telephone keypad codes. The UPnP-based FRITZ!Box StartCenter, installed optionally, includes valuable additional benefits like diagnostic support, security and update notification.

As soon as FRITZ!Box WLAN 7170 has been installed for the first time, it ensures that an encrypted WLAN connection is established using an individualized key. In combination with the FRITZ!WLAN USB Stick, the necessary WLAN security settings are transmitted to the client using AVM Stick & Surf.

The "SL" edition of the FT 7170 D allows Internet telephony without a fixed line. For this AVM provides a hardware configuration preset for conducting calls without the fixed-line network.

The FRITZ!Box Fon WLAN 7170 is set up for the simplified provisioning process on the basis of the CPE WAN Management protocol (DSL-Forum TR-069 / TR-104). With CPE WAN Management, the FRITZ!Box Fon WLAN 7170 provides for increased user-friendliness in the configuration of Internet telephony.

This user-friendly architecture simplifies VoIP marketing considerably for service providers. It also simplifies getting started in Internet telephony for broadband customers.
FRITZ!Box Fon WLAN 7170 has been singled out by the trade press for its performance and service.

Contents

1 System Components

1.1 Equipment

1.1-01	Wireless DSL modem router	
1.1-02	PBX for PSTN and Internet telephony	
1.1-03	Network processor for bridging and routing	
1.1-04	SIP user agent client / SIP user agent server (Internet telephony)	
1.1-05	File & Print network server	

1.2 Interfaces

1.2-01	ADSL / ADSL 2+	
1.2-02	PSTN subscriber line (ISDN and POTS)	
1.2-03	a/b lines (FXS) for analog telephone terminal devices, 3 ports	
1.2-04	S_0 NT for ISDN terminal devices	
1.2-05	Four-port Ethernet switch	
1.2-06	Wireless LAN IEEE 802.11 b/g/ g++	
1.2-07	WLAN pushbutton (for turning WLAN on/off manually)	
1.2-08	USB host controller (series A)	

1.3 Optional Variants

1.3-01	Service-specific value-added applications (upon request)	
1.3-02	“SL” Edition with presettings without fixed line, with different cables and setup CD-ROM included in delivery	

1.4 Package Contents

1.4-01	FRITZ!Box Fon WLAN 7170	
1.4-02	DSL/TEL connecting cable (Y cable for fixed line and DSL), approx. 4m long, gray, with black telephone branch	
1.4-03	Analog line-cable adapter (TAE plug/RJ45 socket)	
1.4-04	LAN cable (STP, approx. 1.5m long, red)	
1.4-05	CD with Installation Help, comprehensive manual, FRITZ!Box StartCenter	

1.4-06	Power supply plug	
1.4-07	Printed quick guide	
1.4-08	2 telephone adapters (black, RJ11 to TAE)	

1.5 System Requirements

1.5-01	Internet line: Dual Mode: ADSL or ADSL2+ line in accordance with 1TR112 (UR-2) or Ethernet connection 10/100 Base-T	
1.5-02	Telephony: - Internet telephony provider that supports Session Initiation Protocol (SIP) - analog telephone terminal devices or ISDN terminal device	
1.5-03	On the LAN port (Ethernet, 10/100 base T): computer, notebook, Apple Macintosh, game console or other network device	
1.5-04	System requirements for software: - computer with 300-MHz processor - Windows XP/2000 - a Web browser that supports Java Script (for instance, Internet Explorer from version 6.0 or Firefox)	
1.5-05	WLAN connection: WLAN client (in accordance with IEEE 802.11b, g or g++)	
1.5-06	USB host: - AVM FRITZ!WLAN USB Stick for AVM Stick & Surf - printer or mass storage device compatible with USB 1.1 or USB 2.0	

2 Overview of Functions

2.1 ADSL2+ Modem

2.1-01	ADSL2+ compatibility: ITU G.992.1 Annex B (G.dmt), ITU G.994.1 (G.hs), ITU G.992.3 Annex B (ADSL2), ITU G.992.5 Annex B (ADSL2+)	
2.1-02	ATM compatibility: ATM-Forum UNI 3.1/4.0, UBR, OAM F4/F5 end-to-end/Seqment loopback cells, AAL5, 8-bit VPI address range, VCI 16-bit address range	
2.1-03	Network compatibility: T-Com 1TR 112, others - ATM AAL5, PPPoE/PPPoA, PPP, IP - alternatively: PPPoA, LLC, VC-Mux - alternatively, RFC 1483: bridged, routed IP LLC NLPID, routed IP LLC SNAP, routed IP raw	
2.1-04	RJ-45 socket, labeled DSL/TEL	
2.1-05	Intended for use at an ADSL splitter in accordance with the U-R2 standard 1TR112	
2.1-06	ADSL2+ monitoring: ADSL2+ line capacity, interleaved / fast-path, damping and SNR margin, ATM parameters including VPI and VCI, meter for different ATM cell types, for the transmission of used frequency ranges, etc.	
2.1-07	ADSL2+ diagnostics: test of ADSL2+ synchronization, ADSL2+ line capacity, ATM idle cell transmission, data buffer (interleaved/fast), accessibility of registered Internet Service Provider, name resolution (DNS), WWW access	
2.1-08	Layer 1 (ADSL DMT) can be updated for future demands	
2.1-09	Support for multiple ATM PVCs, for instance, for VoIP transmission	
2.1-10	VPI/VCI auto-detection	

2.2 DSL Router / DSL Bridge

2.2-01	IP packets from the LAN are routed through the PBX to the destination host	
2.2-02	PBX terminates an ADSL-PPPoE session	
2.2-03	DNS proxy/relay: local DNS (local IP address) with requests forwarded to the DNS conveyed by the Internet Service Provider via PPP	
2.2-04	DHCP server: automatic IP configuration of the computers/network devices connected via the LAN ports	
2.2-05	NTP client: NTP used for time synchronization (because of time stamp of logging)	
2.2-06	IP masquerading/NAT:	

	- allows Internet sharing so that multiple computers can use just one IP address - port forwarding (reverse NAT) provides for safe and direct accessibility from the Internet of services on the local server - VPN pass through (IPSec, PPTP, L2TP)	
2.2-07	Protocols: - ARP - IP, ICMP, UDP, TCP, HTTP, DHCP, DNS relay, FTP	
2.2-08	MAC Bridge LAN/ADSL2+: - Ethernet frames from the user interfaces are broadcast on ADSL/ADSL2+ (self-learning bridge, PPPoE filter) - application: Windows XP broadband connection, game console, etc. - multiple PPPoE sessions possible with one connection	
2.2-09	Universal Plug and Play (UPnP): - control of the shared use of the Internet connection by UPnP-capable devices, of port forwarding, for example - Internet Gateway Device (IGD) standardized device control protocol - overview of port forwarding settings configured via UPnP - multiple-step UPnP configuration (monitoring/control)	
2.2-10	Support for Multicast: - IGMP v1, v2, v3 - IGMP proxy - IGMP snooping - VLAN tagging	
2.2-11	Dynamic DNS: - automatic registration at DynDNS/Static IP (accessibility) - Dynamic DNS provider: dyndns.org, No-IP.com, DNS4BIZ.de, user-defined, etc.	

2.3 DSL Connection Manager

2.3-01	PPPoE client for the ADSL/ADSL2+ access network, (RFC 2516)	
2.3-02	PPP client for the ADSL/ADSL2+ Access Network (RFC 1618), PAP (RFC 1334), CHAP (RFC 1994)	
2.3-03	TCP/IP bandwidth management (DSL traffic shaping)	
2.3-04	Control of the PPP connection: - accessibility supported by holding the connection (always-on/auto-reconnect) - short-hold mode (idle timer that adheres to rate interval) for time-based rates	
2.3-05	Timer for online time/data volume with rounding up, limit assignments	
2.3-06	Logging of connection information	

2.3-07	PPP monitoring/trace function (Etherreal)	
2.3-08	FRITZ!DSL StartCenter: - throughput display - clearing/establishing the DSL connection - update notification - status display	
2.3-09	24-hour disconnect timeout can be delayed to a convenient time	
2.3-10	Support for multiple ATM PVCs, several PPPoE sessions and VLAN	

2.4 Firewall

2.4-01	Reliable Stateful Packet Inspection firewall	
2.4-02	IP masquerading: - Network Address Translation with dynamic port assignment - local IP addresses/source ports remain invisible from outside - VPN pass through (IPSec, PPTP, L2TP)	
2.4-03	Stateful Packet Inspection Firewall: - only answers to LAN-side Internet requests are forwarded to LAN - port forwarding (incoming connections): selected ports for incoming data packets remain only open for the actual course of the connection (establishment, transmission, clearing) - error message rate limiter - port forwarding initialized with local IP address - port ranges can be enabled for forwarding - all ports enabled for forwarding on "exposed host"	
2.4-04	Incoming and outgoing packet filters: - NetBIOS over IP (Windows network operating system) - prevention of Denial of Service attacks - filters against incorrect arrivals of Peer-to-Peer traffic	
2.4-05	Personal application firewall with FRITZ!DSL StartCenter: - simplifies the secure use of selected applications - user can allow incoming and outgoing data traffic for specific individual applications; port forwarding adapted automatically	

2.5 Local Area Network (Ethernet)

2.5-01	Four-port Ethernet switch	
2.5-02	ATA Mode: LAN1 can be defined as a WAN line	
2.5-03	Connected computers/devices are networked with each other	

2.5-04	LAN Interfaces: - 10/100 Mb/s IEEE 802.3 / IEEE 802.3u (autosensing, Auto MDIX) - port status - back pressure in half-duplex mode - 802.3x flow control - 2048 MAC addresses	

2.6 Wireless LAN

2.6-01	Complies with the IEEE 802.11g/b radio standard	
2.6-02	Modulation: OFDM with BPSK, QPSK, 16QAM, 64QAM	
2.6-03	Modulation: DSSS with DBPSK, DQPSK, CCK, PBCC	
2.6-04	Frequency band: 2.412 ~ 2.472 GHz (ETSI)	
2.6-05	Transmission steps: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 and 54 Mb/s (auto rate)	
2.6-06	AVM-proprietary g++ mode, 125-Mbit/s gross transmission rate	
2.6-07	WLAN transceiver can be switched on/off (WLAN button, telephone keypad codes, time control)	
2.6-08	Connected computers/devices are networked with each other	
2.6-09	Option to prevent communication between WLAN clients	
2.6-10	SSID (identity) can be changed	
2.6-11	SSID broadcast can be switched off	
2.6-12	Transmission power can be configured on 5 levels	
2.6-13	WEP Wired Equivalent Privacy: - static keys (64-bit and 128-bit) - CRC32 checksum	
2.6-14	WECA WPA (WiFi Protected Access): - authentication using pre-shared key - encryption with RC4/ TKIP	
2.6-15	WPA2, IEEE 802.11i: - authentication using pre-shared key - encryption using AES/CCMP	
2.6-16	Access Control List (MAC Layer)	
2.6-17	Wireless Distribution System (WDS): - support for operation with WLAN repeaters or as a WLAN repeater - WDS in accordance with IEEE 802.11: non-encrypted or WEP, compatible with all WDS-capable access points - WDS proprietary: encryption with WPA2, compatible with other AVM WLAN devices	
2.6-18	Night Service: WLAN radio network turned off	
2.6-19	Ready for the 802.11e draft standard, Quality of Service (QoS); WWM-WLAN multimedia for optimum radio transmission of multimedia data streaming	

	with the FRITZ!Box: - WMM support for prioritizing packets within a WLAN - support for WMM power save on stations compatible with U-APSD	
2.6-20	WLAN Eco Mode: when WLAN is not in use, FRITZ!Box reduces radio activity and uses less power	

2.7 USB Host Controller

2.7-01	USB 1.1 host controller for USB devices	
2.7-02	Up to 3 devices can be connected via hub	
2.7-03	AVM Stick & Surf: WLAN security settings transmitted automatically to FRITZ!WLAN USB Stick	
2.7-04	Support for mass storage devices: - configurable access protection - upload and download by means of FTP protocol - Internet sharing	
2.7-05	Printer support: - TCP/ IP print server - driver support for Windows XP/2000/98/Me (“AVM: FRITZ!Box Printer Port”) - standard driver can be used for the printer server in Linux/Mac OS X	

2.8 PBX for Internet and PSTN Telephony

2.8-01	Internet Telephony (Voice over IP)	
2.8-02	Connection to ISDN, analog fixed-line network/POTS and ADSL/ADSL2+	
2.8-03	POTS controller in accordance with Deutsche Telekom 1TR110 (May 2000)	
2.8-04	a/b interface (Fon 1,2,3) compliant with 1TR110	
2.8-05	Internal S_0 interface (Fon S_0) compliant with ETSI DSS1	
2.8-06	PBX features available at the S_0 interface and all a/b ports	

2.8.1 Internet Telephony (Voice over IP)

2.8.1-01	Telephone calls via the Internet with connected analog telephones (local analog telephone interfaces, 3a/b) and ISDN telephones (S_0 NTBA)	
2.8.1-02	Management of up to 10 SIP accounts (SIP addresses)	
2.8.1-03	All PBX system functions can be used (see Overview 2.8.5)	
2.8.1-04	SIP address assignment to the extensions, or as MSNs	

2.8.1-05	Codecs: G.711a/µ, G.726-40, G.726-32, G726-24, iLBC – expandable	
2.8.1-06	Voice transmission functions: - Voice Activity Detection / Silence Suppression - Comfort Noise Generation (CNG) - Packet Loss Concealment (PLC) - Dynamic Jitter Buffer - Echo Cancellation (G.165, G.168) - DTMF – Inband / Outband (RFC2833)	
2.8.1-07	VoIP Quality Reporting by the SIP User Agents to the SIP server by means of X-RTP Stat Header-Information in the SIP-Bye message: PS=‹audio packets sent›; OS=‹audio octets sent›; SP=‹comfort noise packets sent›,‹silence packets sent›; SO=‹silence octets sent›; PR=‹audio packets received›; OR=‹audio octets received›; CR=‹comfort noise packets received›; SR=‹comfort noise octets received›; PL=‹receive packets lost›; BL=‹receive maximum burst packets lost›; EN=‹encoder1 used›,‹encoder2 used›...; DE=‹decoder1 used›,‹decoder2 used›...; JI=‹jitter in ms› (see also http://www.avm.de/en/press/announcements/2005/2005_12_07.php3)	
2.8.1-08	SIP user agent client / SIP user agent server (Voice over IP) conform to the RFC 3261 standard: - RFC 3261 SIP: Session Initiation Protocol Protocol (SIP compliance in accordance with ETS 102 027-1 (2003-10) and IETF RFC 3261), see also Appendix C - RFC 2327 SDP: Session Description Protocol - RFC 2617 HTTP Authentication: basic and digest access authentication - RFC 2782: DNS RR for specifying the location of services (DNS SRV) - RFC 2976: SIP INFO Method - RFC 3262: Reliability of Provisional Responses in Session Initiation Protocol (SIP) - RFC 3263 Session Initiation Protocol (SIP): Locating SIP Servers - RFC 3264: Offer/Answer Model with Session Description Protocol (SDP) - RFC 3265: Session Initiation Protocol (SIP)-Specific Event Notification - RFC 3311: Session Initiation Protocol (SIP) UPDATE Method - RFC 3489: STUN - Simple Traversal of User Datagram Protocol (UDP) Through Network Address Translators (NATs) - RFC 3555: MIME Type Registration of RTP Payload Formats - RFC 3581: Extension to the Session Initiation Protocol (SIP) for Symmetric Response Routing. - RFC 3665: Session Initiation Protocol (SIP) Basic Call Flow Examples - DRAFT draft-mahy-sip-signaled-digits	

2.8.2 Features on the a/b Ports

2.8.2-01	a/b ports compliant with Deutsche Telekom 1TR110 (May 2000)	
2.8.2-02	Features on the network side can be used via analog, ISDN and VoIP (see Overview 2.8.5)	
2.8.2-03	Additional extension properties: - Do not disturb - Parallel call - Automatic Outside Dialing - Baby monitoring phone function - Message Waiting Indication - Alarm function - Pickup - Disable call waiting - Routing of calls to other extensions - Extension naming	
2.8.2-04	Assignment of fixed-line and Internet numbers to the individual extensions: each extension can be assigned up to 10 MSNs	

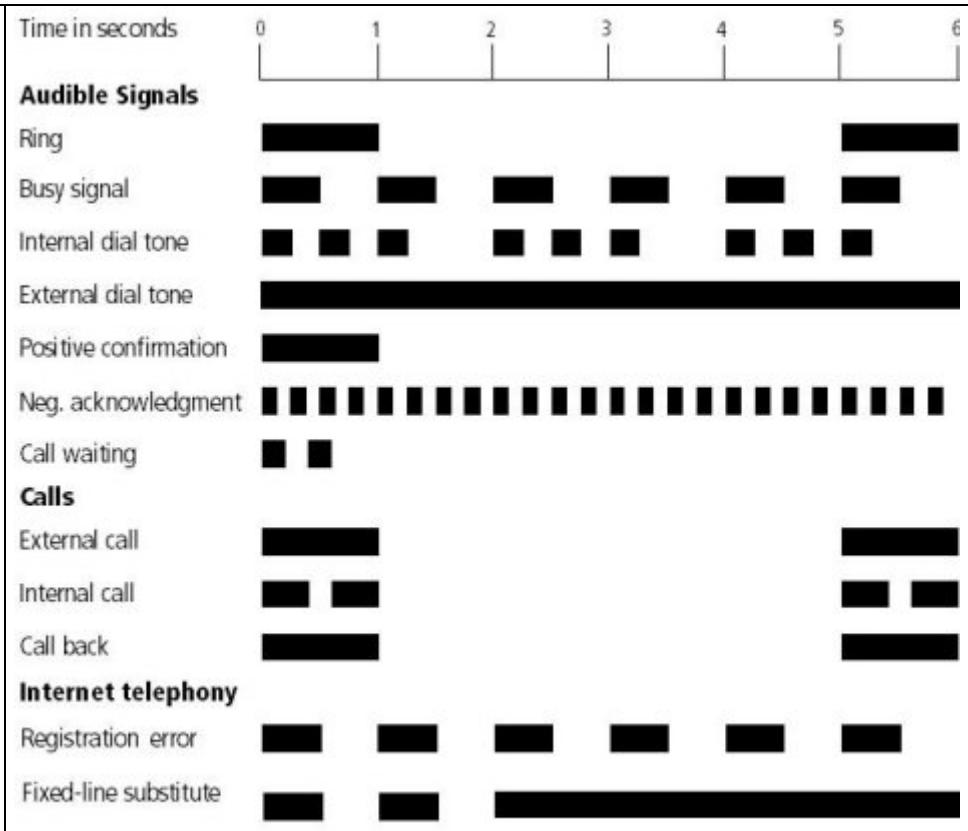
2.8.3 Features on the Internal S_0 Interface

2.8.3-01	ETS 300 012-1 (Basic User Network Interfaces UNI, in excerpts)	
2.8.3-02	Up to eight ISDN terminal devices can be connected (incl. ISDN PBX)	
2.8.3-03	Support for the service indicators voice, telephony, audio 3.1 and fax G2/G3 via VoIP; connections with other service indicators established via fixed-line network	
2.8.3-04	Telephone connections also possible using an analog fixed line	
2.8.3-05	ISDN equipment with fixed TEI (Terminal Endpoint Identifier) supported	
2.8.3-06	Up to 1 watt power supply for terminals	
2.8.3-07	Internal calls to other ISDN telephones: internal calls for targeted dialing to individual ISDN telephones	
2.8.3-08	Features on the network side can be used via ISDN and VoIP (see Overview 2.8.5)	
2.8.3-09	Additional PBX Features: - Automatic Outside Dialing - Call Rejection on Busy (Busy on Busy) - Disable call waiting - Do Not Disturb - Display messages - Message Waiting Indication (MWI)	

2.8.4 PBX Features

2.8.4-01	Internet numbers, MSNs or the numbers of the analog lines can be configured as the MSN on ISDN terminal equipment	
2.8.4-02	Dialing rules: - specify outgoing number and type of connection for number ranges - define number ranges that are only to be dialed using the PSTN line emergency numbers are preset - configure whether calls are dialed using the fixed-line network or the Internet phone numbers - carrier prefixes	
2.8.4-03	Manual selection of outgoing call number and connection type through the prefix	
2.8.4-04	Internal call diversion: - to analog extensions and to ISDN equipment - even during Night Service (e.g., to answering machine)	
2.8.4-05	External call diversion (via VoIP or PSTN): - call diversion set up in the PBX - calls can be diverted internally to the other extension or to an external line - call diversion for calls to an ISDN MSN - calls are diverted to an external line via the fixed-line network or the Internet	
2.8.4-06	Call through: Incoming calls are transferred to a specified destination number via the Internet	
2.8.4-07	Call Routing / PSTN Fallback: - if registration at the Internet telephony provider fails, the call will automatically be dialed using PSTN (configurable) - PSTN fallback for SIP Cause 403 (forbidden)	
2.8.4-08	Internal three-party conference: two parties can use the extensions to talk with an external party at the same time	
2.8.4-09	Call rejection when busy (Busy on Busy): this feature applies to the entire PBX: when it is enabled and one B channel is busy, a caller will always receive a busy signal	
2.8.4-10	Call Waiting suppression: no external incoming calls are signaled by call waiting when a call is in progress; this feature can be enabled/disabled for each extension separately from the computer using the web interface.	
2.8.4-11	Picking up calls (Pickup): a call at one extension can be picked up from another extension	
2.8.4-12	Quick-dial numbers: up to 40 quick-dial numbers and SIP addresses can be assigned for use at	

	all extensions; the quick-dial numbers are configured using the web configurator	
2.8.4-13	Call Journal: keeps track of incoming and outgoing telephone calls	
2.8.4-14	DTMF (Dual Tone Multi-Frequency): signal tones are generated by the telephones and sent to the remote site	
2.8.4-15	Blocking numbers: number ranges can be blocked for outgoing calls	
2.8.4-16	Click-to-dial: with the built-in dialer numbers from the Call List can be dialed with the click of a mouse	
2.8.4-17	Night Service: switch off the ringer by enabling Do Not Disturb	
2.8.4-18	Telephone Book: - storage of names and corresponding telephone numbers - assignment of a quick-dial number for each entry - name display of stored numbers during incoming and outgoing calls	
2.8.4-19	Treatment of callers: - rules tailored to individual callers - number-dependent rejection, diversion or patch-through despite Do Not Disturb	
2.8.4-20	Acoustic signaling: The diagram below shows the duration and the interval of the individual audio tones and call rhythms of a phone connected to an AVM FRITZ!Box:	


Time in seconds
0
1
2
3
4
5
6
Audible Signals
Ring
Busy signal
Internal dial tone
External dial tone
Positive confirmation
Neg. acknowledgment
Call waiting
Calls
External call
Internal call
Call back
Internet telephony
Registration error
Fixed-line substitute

2.8.5 Supported Services and Features: Analog/ISDN/SIP

		analog	ISDN	SIP	
2.8.5-01	MSN/SIP account (Multiple Subscriber Number)		•	•	
2.8.5-02	Call List	•	•	•	
2.8.5-03	Keypad	•	•	•	
2.8.5-04	CLIP (Calling Line Identification Presentation; display of caller ID from party A to party B)	•	•	•	
2.8.5-05	CLIR (Calling Line Identification Restriction; suppression of caller ID display from party A to party B)	•	•	•	
2.8.5-07	COLP (Connected Line Identification Presentation; display of caller ID from party B to party A)		•		
2.8.5-08	COLR (Connected Line Identification Restriction; suppression of caller ID display from party B to party A)		•		
2.8.5-09	HOLD (Hold/Consult/Transfer)	•	•	•	
2.8.5-10	ECT (Explicit Call Transfer)	•	•	•	
2.8.5-11	CW (Call Waiting)	•	•	•	
2.8.5-12	3PTY (Three-party conference)	•	•	•	
2.8.5-14	TP (Terminal Portability; Suspend)		•		
2.8.5-15	MFV (DTMF signaling)	•	•	•	
2.8.5-16	CCBS (Completion of Calls to Busy Subscriber)	•	•		
2.8.5-17	CCNR (Completion of Calls on No Reply)	•	•		
2.8.5-18	MCID (Malicious Call Identification)		•		
2.8.5-19	Call Diversion (CFU, CFB, CFNR)	•	•	•	
2.8.5-20	Transmission of charge information (AOC, AOC-E, AOC-D, AOC-S)		•		
2.8.5-21	User-to-User Signaling (UUS)		•		
2.8.5-22	LLC compatibility information / Subaddress (data service)		•		
2.8.5-23	External call diversion (via ISDN)	•	•	•	
2.8.5-24	Internal call forwarding	•	•	•	
2.8.5-25	Pick Up	•	•	•	
2.8.5-26	MWI (Message Waiting Indication)		•	•	
2.8.5-27	Specified MSN assignment before dialing		•	•	
2.8.5-28	Restore factory settings and delete all memory, test mode	•	•	•	

2.9 Quality of Service (QoS)

2.9-01	Bandwidth manager for voice, TV and data via DSL/QoS (Quality of Service)	
2.9-02	VoIP prioritization / traffic shaping (bandwidth optimization)	
2.9-03	Download/upload can be limited during connection	
2.9-04	Automatic Codec selection adapted to bandwidth	
2.9-05	Type of Service Support (ToS)/DiffServ	
2.9-06	Support for multiple ATM PVCs, VLAN tagging	

2.10 CPE WAN Management Protocol

2.10-01	CPE WAN Management Protocol, DSLForum TR-069, May 2004, Auto-configuration and dynamic service provisioning	
2.10-02	CPE methods supported in accordance with TR-069: GetRPCMethods, GetParameterNames, GetParameterValues, SetParameterValues, GetParameterAttributes, SetParameterAttributes, AddObject, DeleteObject, Download, FactoryReset, ScheduleInform	
2.10-03	CPE methods supported in accordance with TR-069 Inform, TransferComplete	
2.10-04	Internet Gateway Device Version 1.1 Data Model (TR-098): Profiles supported in accordance with TR-098: Baseline, EthernetLAN, ADSLWAN, IPPing, WiFiLAN	
2.10-05	DSLHome Provisioning Parameters for VoIP CPE, DSL-Forum TR-104, September 2005; extension of TR-069 regarding VoIP CPE; profiles supported in accordance with TR-098: Endpoint, SIP Endpoint	
2.10-06	Successful interoperability with leading ACS manufacturers (Plugfest UNH)	

3 Launching Operation and the User Interface

3.1 Assisted Launch

3.1-01	Help for starting operation: - clear Quick Guide - color-coded sockets and cables - pre-configured individual WLAN key printed on stickers on the base of the device and on the cover of the CD - enclosure refers to interactive installation instructions on the CD - self-launching installation instructions on the CD (Intro): interactive configuration of DSL connections, connection to PSTN and connection of terminal devices - automatic start of the FRITZ!Box Configuration Wizard after completion of the Intro	
3.1-02	Configuration Wizard integrated in FRITZ!Box: - configuration of Internet connection including connection check - manual configuration of VoIP connections including configuration check	
3.1-03	Automatic VoIP configuration: - automatic completion of VoIP number with country code and area code before dialing - switches between VoIP and fixed-line network if selected type of connection is not available (Fallback) - dynamic dialing rules: call redirection to fixed-line network if subscriber cannot be reached via VoIP - automatic dial-in routing	
3.1-04	Check of LAN/Internet/WLAN setup: - network adapter configuration check and automatic assistance offered in case of settings not suitable for FRITZ!Box - tests whether FRITZ!Box can be reached and proposes possible resolutions if it cannot - Internet Explorer settings are checked and set to “Do not dial a connection” if necessary - checks the Internet Explorer proxy settings - WLAN scan by means of any WLAN adapter (Windows XP Service Pack 2) and configuration of the WLAN key in the CD introduction routine	
3.1-05	Status analysis: - automatic notification if firmware update is available - graphic display of throughput rates and course of data transmission - diagnosis of the FRITZ!Box status, the computer installation and the Internet connection	

3.1-06	Automatic and clear configuration of port forwarding with UPnP	
3.1-07	Automatic configuration and dynamic service provisioning on the basis of the CPE WAN Management protocol (DSL-Forum TR-069 / TR-104), see also 2.10	

3.2 Configuration

3.2.1 Via HTTP Server (HTML, JavaScript)

3.2.1-01	Internet - online meter (limits online time and/or volume) - account information (short-hold mode, automatic disconnection) - DSL expert settings: VP (VCI, encapsulations) - port forwarding - Dynamic DNS	
3.2.1-02	Telephony - account information for registration with the Internet telephony provider - configuration of the fixed-line and Internet numbers - setting the services (CLIP, call waiting, ...) - extension configuration - dialing rules - telephone book - call diversion configuration (internal, external) - call list (can be saved as an MS Excel list and used for dialing) - block against anonymous VoIP calls - Do Not Disturb - wake-up call - logging telephone connections - numbers routed to the fixed-line network (emergency calls, special numbers, international numbers) - settings can be configured on the computer; some directly on the telephone keypad	
3.2.1-03	WLAN - enable WLAN - channel selection - name of the radio network (SSID) - transmitter power - security (encryption mode) - WLAN mode (802.11 b, g, g++) - repeater mode (WDS)	
3.2.1-04	USB devices - printer port	

	- data access - enable AVM Stick & Surf	
3.2.1-05	System - network devices (restriction of access rights) - network settings (UPnP, FRITZ!Box IP addresses) - FRITZ!Box password - firmware update (one-click option) - reset (restore factory settings) - save settings - “Expert Mode” (“normal” and “advanced” settings)	
3.2.1-06	Help	
3.2.1-07	Configurable “INFO” LED	
3.2.1-08	Configuration Wizard: - guided basic configuration including security	

3.2.2 Via UPnP (IGD)

3.2.2-01	Manual connection control	
3.2.2-02	Port forwarding	

3.2.3 Via Keypad

3.2.3-01	The complete list of the telephone keypad codes is recorded in the FRITZ!Box Fon WLAN manual	

3.2.4 Via CPE WAN Management Protocol

3.2.4-01	Automatic configuration and dynamic service provisioning on the basis of the CPE WAN Management protocol (DSL-Forum TR-069 / TR-104), see also 2.10	

3.3 FRITZ!DSL StartCenter

3.3-01	Internet display: - monitoring of the Internet connection - manual and automatic startup	

3.3-02	Explicit access rights to the Internet for specified software on the computer	
3.3-03	Update with automatic version check	
3.3-04	Direct access to: - FRITZ!Box Diagnostics - the FRITZ!Box user interface - the FRITZ!Box Call List	

3.4 Monitoring

3.4.1 LED Display

3.4.1-01	Power / DSL, ‹Internet call›, ‹PSTN/analog line call›, WLAN, INFO (configurable)	

3.4.2 Via Web Browser (HTTP)

3.4.2-01	Event Log: Internet connections (time, duration, volume), error conditions, WLAN registrations	
3.4.2-02	Call List	
3.4.2-03	Self-diagnosis (ADSL/ADSL2+, ATM, PPPoE, local account information, WebWatch)	
3.4.2-04	PPPoE traces (ethereal)	
3.4.2-05	Monitoring of quality display for each WLAN client	
3.4.2-06	VoIP Quality Reporting: FRITZ!Box displays detailed information about the voice transmission during Internet telephone calls (see also 2.8.1-07)	

3.4.3 Via “Push Service” E-mail

3.4.3-01	FRITZ!Box sends status e-mails periodically	
3.4.3-02	Notification about connections, Online Meter and Events	
3.4.3-03	All relevant information upon request: daily, weekly or monthly	
3.4.3-03	Notification of detailed information about the voice transmission during Internet telephone calls (see also 2.8.1-07)	

3.4.4 Via LAN Client Software (FRITZ!DSL)

3.4.4-01	Upstream/downstream throughput	

3.5 Event Messaging

3.5-01	Displays events optically using the "INFO" LED on the device	
3.5-02	MWI events are displayed on the telephony LEDs (flashing Internet telephony LED or fixed-line telephony LED)	
3.5-03	Display messages	

4 Declaration of CE Conformity

4.1 Directives

4.1-01	1999/5/EEC R&TTE Directive: Telecommunications Terminal Equipment and Satellite Earth Station Equipment	
4.1-02	89/336/EEC EMC Directive: Electromagnetic compatibility	
4.1-03	73/23/EEC Low Voltage Directive: Electric Equipment for Use	

4.2 Norms for Evaluation of Conformity

4.2-01	CTR 3/1998.06.17	
4.2-02	EN 55024/9.98 + A1/10.01 + A2/01.03	
4.2-03	EN 301489-1 V1.5.1 (2004)	
4.2-04	EN 301489-17 V1.2.1 (2002)	
4.2-05	EN 60950-1:2001/A11	
4.2-06	ETSI TS 101 388, ITU-T G.992.1, ITU-T G.992.5, ITU-T G.994.1, ETSI ETR328	
4.2-07	EN 300328 V1.6.1 (11.2004)	

Appendix

Appendix A: TÜV Test Report Firewall Client Software

Prüfergebnis

Sicherheitstechnischen Analyse der Firewall-Funktion der AVM FRITZ!DSL-Software

bei der

AVM Audiovisuelles Marketing und Computersysteme GmbH
Alt-Moabit 95
D-10559 Berlin

Die Firewall-Funktion der FRITZ!DSL-Software, wurde mit Methoden der Network Penetration Analysis in Bezug auf Schwachstellen untersucht, die zu einer Umgehung der eingestellten Sicherungsmechanismen führen könnten oder eine Gefährdung des geschützten Arbeitsplatzes darstellen. Die Funktion „FRITZ!webProtect" wurde nicht untersucht.

Unter anderem wurde der Schutz vor folgenden Angriffen aus dem Internet verifiziert:

- Schutz vor Internet-Würmern (z.B. W32.Blaster, ...), da die Ports 135, 139 und 445 zuverlässig geschlossen werden.
- Schutz vor Windows Messaging Pop-Ups, da Port 139 wirksam geschlossen wird.
- Schutz vor Fernsteuerung des Arbeitsplatzes, da alle Dienste wirksam geblockt werden können.
- Der Stateful Inspection Paketfilter sorgt dafür, dass keine nicht gewünschten Dienste des Arbeitsplatzes erreichbar sind.
- Schutz vor Denial of Service Angriffen, da die Anzahl der Antwortpakete limitiert wird und Pakete auf Standard-Konformität/-Konsistenz geprüft werden. (z.B. Ping-of-Death, Pingflooding, SYN-Flooding)

Die Firewall-Funktion der FRITZ!DSL-Software erwies sich robust gegenüber diesen und den im Bericht Nr. 63000712-01-04 der TÜV Secure iT GmbH beschriebenen Angriffen und gewährleistet im Regelbetrieb einen zuverlässigen Schutz gegenüber Angriffen, die eine eingehende Verbindung zum geschützten Arbeitsplatz hin erfordern.

Appendix B: TÜV Test Report FRITZ!Box Firewall

Prüfergebnis

Sicherheitstechnischen Analyse der Firewall-Funktion der AVM FRITZ!Box

bei der

AVM Audiovisuelles Marketing und Computersysteme GmbH
Alt-Moabit 95
D-10559 Berlin

Die Firewall-Funktion der FRITZ!Box, wurde mit Methoden der Network Penetration Analysis in Bezug auf Schwachstellen untersucht, die zu einer Umgehung der eingestellten Sicherungsmechanismen führen könnten oder eine Gefährdung des geschützten Arbeitsplatzes darstellen. Die Funktion „FRITZ!webProtect“ wurde nicht untersucht.

Unter anderem wurde der Schutz vor folgenden Angriffen aus dem Internet verifiziert:

- Schutz vor Internet-Würmern (z.B. W32.Blaster, ...), da die Ports 135, 139 und 445 zuverlässig geschlossen werden.
- Schutz vor Windows Messaging Pop-Ups, da Port 139 wirksam geschlossen wird.
- Schutz vor Fernsteuerung des Arbeitsplatzes, da alle Dienste wirksam geblockt werden können.
- Der Stateful Inspection Paketfilter sorgt dafür, dass keine nicht gewünschten Dienste des Arbeitsplatzes erreichbar sind.
- Schutz vor Denial of Service Angriffen, da die Anzahl der Antwortpakete limitiert wird und Pakete auf Standard-Konformität/-Konsistenz geprüft werden. (z.B. Ping-of-Death, Pingflooding, SYN-Flooding)

Die Firewall-Funktion der FRITZ!Box erwies sich robust gegenüber diesen und den im Bericht Nr. 63000712-01-04 der TÜV Secure iT GmbH beschriebenen Angriffen und gewährleistet im Regelbetrieb einen zuverlässigen Schutz gegenüber Angriffen, die eine eingehende Verbindung zum geschützten Arbeitsplatz hin erfordern.

Appendix C: SIP Conformity

T-Com
Deutsche Telekom AG
T-Com Zentrale, Bereich TE4
Akkreditiertes Testlabor Nürnberg

CONFIRMATION OF TEST RESULTS

System under Test (SUT)

Name:	**FRITZ ! Box Fon**
Version:	**AVM SIP 3.01.03**
Supplier:	**Fa. AVM Audiovisuelles Marketing und Computersysteme GmbH**
Dates of Testing:	August / 31 / 2005 – September / 02 / 2005
Performed test services :	SIP Conformance Test according to ETS 102 027-1 V2.1.1 (2003-10) based on RFC 3261
Test Facilities Required:	Accredited Test Laboratory Nuremberg
Test Laboratory	
Testing laboratory:	Deutsche Telekom AG T-Com Zentrale, TE45 Akkreditiertes Testlabor Hansastraße 39 90441 Nürnberg
Accredited by:	DATech, represented in the: Deutscher Akkreditierungs Rat DAR
Registration Number:	DAT-P-187/95-02
Statement:	The IUT has not been shown by conformance assessment to be non-conforming to the referenced protocol specification. *TCP is not supported as transport layer !*
Test Laboratory Manager:	Werner Mayer
Representative:	Jürgen Kupfer
Date:	September / 02 / 2005

Home address: Deutsche Telekom AG, T-Com Zentrale,
Department TE45, Hansastraße 39, 90441 Nuremberg
Postal : PO box 90 01 10, 90492 Nuremberg
Telecontacts: phone: +49 (0)911 6910 7416 +49 (0) 911 6910 7433 +49 (0) 911 6910 9270
e-mail: Werner.Mayer@t-com.net Juergen.Kupfer@t-com.net Gerald.Nun@t-com.net