

## H900f Gigabit 5G Router Datasheet



### >>| Product Introduction



The E-Lins H900 Series is a compact, ruggedized Gigabit Ethernet cellular 5G router, with option feature of Dual/Tri Band Wi-Fi (2.4Ghz + 5Ghz band1 + 5Ghz band4) and dual SIM. It is qualified for M2M (Machine to Machine), IoT (Internet of Things) and In-Vehicle applications. With an extensive list of safety and hardening certifications, the H900 is engineered to protect against extreme temperatures, humidity, shocks, vibrations, dust, reverse polarity, and transient voltage, which is widely used in more than twenty industrial fields, such as CCTV security surveillance, vehicle, Telemetry, vending machines, power control, AMR, traffic, oil field, weather forecast, environmental protection, street lamp control, post, bank and many other areas.

### >>| Key Features

- ◆ Multi-carrier 3G/4G LTE/5G support, option with Dual SIM card slot;
- ◆ E-SIM is supported;
- ◆ LAN Gigabit Ethernet \* 2 + LAN Fast Ethernet \* 2 + WAN Gigabit Ethernet \* 1;
- ◆ Cellular/WAN RJ45/WiFi client failover and Load Balance;
- ◆ USB3.0, USB2.0 supported;
- ◆ Supports LTE Advanced with SIM-based auto-carrier selection;
- ◆ External antenna connectors for high gain antennas replacement;
- ◆ MIMO supported;
- ◆ Cloud-managed (with NMS network management system), TR-069, Web management, SMS, SSH/Telnet/Command, SNMP;
- ◆ Option dual-band or tri-band, dual concurrent WiFi (802.11 a/b/g/n/ac, 2.4Ghz + 5Ghz band1 +

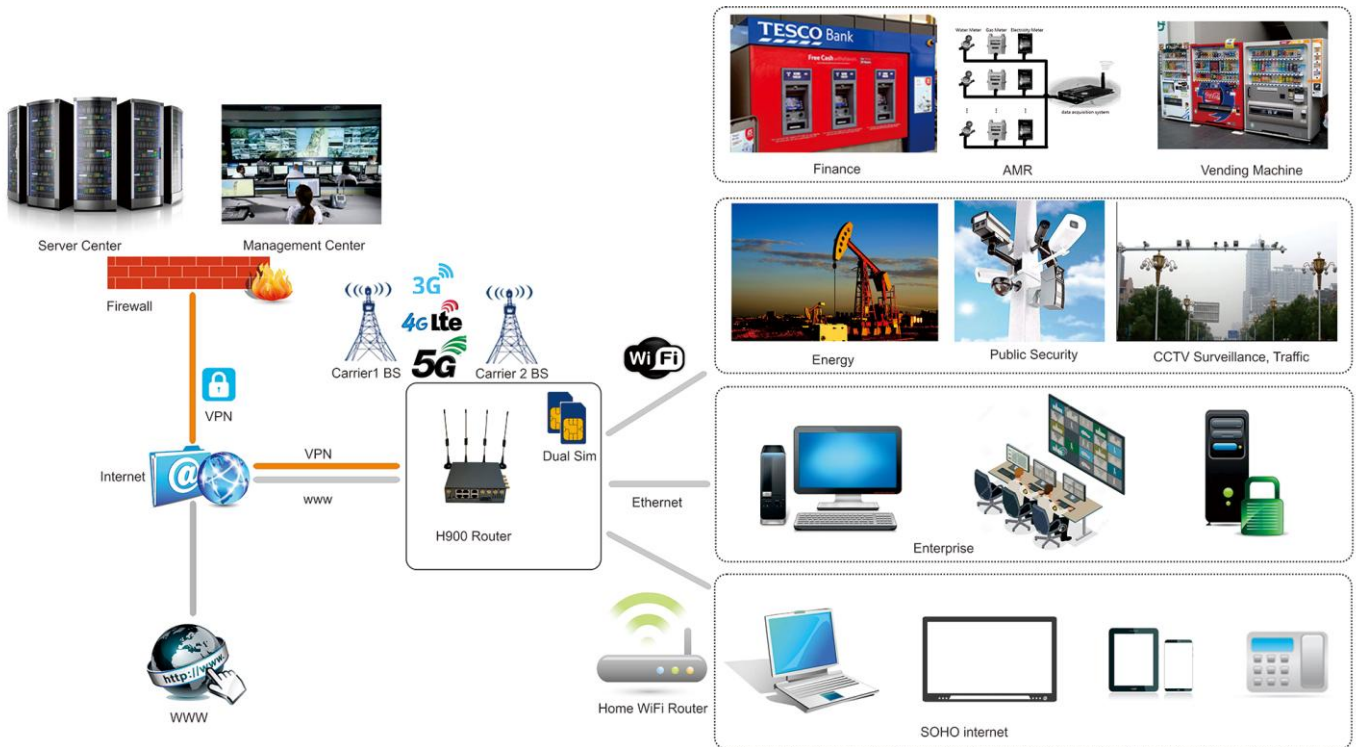
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- 5Ghz band4);
- ◆ Certified 3G/4G LTE/5G enterprise/industrial grade internal modems;
- ◆ Built-in transient and reverse polarity voltage protection, over-current and over-voltage protection;
- ◆ 5-40V DC voltage input range (5-60V DC option), Dual Power Inputs / Power Failover;
- ◆ POE passive is supported;
- ◆ GPS / GNSS / Beidou supported;
- ◆ Serial Ports \* 1 (RS232 or RS485);
- ◆ DI/DO port \* 4;
- ◆ Supports Ethernet (T1, DSL, Cable, MetroE), WiFi as WAN, and Metro WiFi;
- ◆ Ruggedized to ensure always-on connectivity;
- ◆ Create real-time alerts to monitor uptime;
- ◆ Offer secure, guest WiFi to passengers;
- ◆ Advanced security, VPN, and stateful firewall to protect sensitive data;
- ◆ Robust Metal Case is ruggedized for vibration, shock, provide IP30 protection;
- ◆ Desktop, Wall-mount and Din-rail mount of installation;

Working Mode	
Mode No.	Description
1	Only SIM1 or SIM2
2	Switch triggered by 'time'
3	Switch triggered by 'signal strength'
4	Switch triggered by 'dial fail'
5	Switch triggered by 'data limit'
6	Switch triggered by 'ICMP check'
7	Load Balance

## >>| Typical Topology



## Failover & Load Balance Tech. for M2M / IoT



## >>| Features

### Main Feature

**WAN**

Dual Cellular 3G/4G LTE/5G (FDD/TDD)(SA/NSA)

	WiFi as WAN Failover/Failback and Load Balance Advanced Modem Failure Check IP Passthrough WAN ports support Cell/Static IP/DHCP/PPPoE (on demand, keep alive, schedule, manual, standby)
<b>LAN</b>	DHCP Server, Client, Relay DNS and DNS Proxy DDNS UPnP DMZ Multicast/Multicast Proxy QoS (DSCP and Priority Queuing) MAC Address Filtering VLAN 802.1Q
<b>WiFi (Option)</b>	Single Band, Dual-Band or Tri-Band, Dual-Concurrent 802.11 a/b/g/n/ac Up to 128 connected devices (64 per channel – 2.4 GHz and 5 GHz) WPA2 Enterprise (WiFi) Hotspot/Captive Portal SSID-based Priority
<b>VPN AND ROUTING</b>	IPsec Tunnel, PPTP, L2TP, GRE Tunnel, OpenVPN (option), DMVPN (option); OSPF/BGP/RIP, Virtual Server/Port Forwarding, IPv6 (option), VRRP;
<b>MANAGEMENT</b>	E-Lins Enterprise Cloud Network Management System (NMS) Web UI, API, CLI/SSH/Telnet Data Usage Alerts (router and per client) Advanced Troubleshooting (support) Device Alerts SNMP SMS control TR-069
<b>SECURITY</b>	RADIUS and TACACS+ support 802.1x authentication for Ethernet Certificate support ALGs MAC Address Filtering Advanced Security Mode (local user management only) Per-Client Web Filtering IP Filtering Content Filtering (basic)

	<p>Website Filtering</p> <p>Zone-Based Object Firewall with host address (IP or FQDN), port, and mac address</p> <p>Other Details: NAT, SPI, port blocking, service filtering (FTP, SMTP, HTTP, RPL, SNMP, DNS, ICMP, NNTP, POP3, SSH), protocol filtering, WAN ping (allow/ignore)</p>
<b>OPTIMIZED IP COMMUNICATIONS</b>	<p>Automated WAN Failover/Failback support</p> <p>WAN Affinity and QoS allow prioritization of VoIP services</p> <p>Advanced VPN connectivity options to HQ</p> <p>SIP ALG and NAT to allow VoIP and UC communications to traverse firewall</p> <p>MAC Address Filtering</p> <p>802.1p/q for LAN QoS segmentation and treatment of VoIP on LAN</p> <p>Private Network support (wired and 4G WAN)</p>
<b>Firmware update</b>	<p>support firmware update locally, remotely (LAN, WiFi and OTA WAN) and RMS (Remote Management System) option;</p>
<b>DI/DO (Digital Input and Output)</b>	<p>4 ports, 0-3.3V. Support status monitor via SMS and Email;</p> <p>Option: customers can order E-Lins switch control board (5-40VDC supported)</p>
<b>Others</b>	<p>Cellular and WiFi MIMO supported;</p> <p>Syslog (local and remote);</p> <p>DDNS;</p> <p>DNS proxy;</p> <p>Optimized EMC design;</p> <p>Real-time clock (NTP, support update with defined hours);</p> <p>WAN/LAN/Memory statistics;</p> <p>Local/remote profiles backup and retrieve;</p> <p>Modbus is supported;</p>
<b>Feature Details</b>	
<b>Redundancy and Load Balancing</b>	<p>Failover/failback with 5G, 4G, 3G; WAN failure detection, VRRP;</p> <p>Auto-dial feature, keep alive link;</p> <p>LCP, ICMP check;</p> <p>Built-in watch dog;</p> <p>Cellular (3G/4G/5G), RJ45 WAN (xDSL, DHCP, Fixed IP), WiFi client three line redundancy;</p> <p>Option Feature: Ethernet with rule selection, advanced load balancing options (round robin, spillover, data usage, rate)</p>
<b>Intelligent Routing</b>	<p>UPnP, DMZ, virtual server/port forwarding, routing rules, NAT-less routing, wired or wireless WAN-to-LAN IP passthrough, route</p>

	<p>management, per-interface routing, content filtering, IP filtering, website filtering, per-client Web filtering, local DHCP server, DHCP client, DHCP relay, DNS, DNS proxy, Split DNS; ALGs: PPTP, SIP, TFTP, FTP, IRC; MAC address filtering, Dynamic DNS, LAN/WAN affinity, VLAN 802.1Q (coming Q4), STP, enterprise routing protocols: BGP/OSPF/RIP, multicast proxy support, IP setting overrides, IPv6 support option;</p>
<b>Management</b>	<p>web-based GUI (local management), optional RADIUS or TACACS+ username/password; remote WAN web-based management w/ access control (HTTP, HTTPS); SNMP v1, v2c, &amp; v3; CLI over SSH, SSH to serial, SSH to telnet; API; one-button firmware upgrade; modem configuration, update, and management; modem data usage w/ alerts, per-client data usage; custom AT scripting to modems; SMS; TR-069;</p> <p>Option: Enterprise Cloud Network Management System (NMS): cloud-enabled management and application platform (subscription-based);</p>
<b>VPN</b>	<p>IPsec – Tunnel, NAT-T, and transport modes; connect to E-Lins, Cradlepoint, Cisco/Linksys, CheckPoint, Watchguard, Juniper, SonicWall, Adtran and others; Hash (MD5, SHA128, SHA256, SHA384, SHA512), Cipher (AES, 3DES, DES) , IPsec over L2TP support; GRE tunneling;</p> <p>PPTP support;</p> <p>X.509 IPsec support;</p> <p>L2TP, L2TP over IPsec support;</p> <p>VPN pass-through;</p> <p>OpenVPN support (option);</p> <p>DMVPN (option);</p> <p>Certificate support (option);</p> <p>multiple networks supported in a single tunnel, site-to-site dynamic VPN with NHRP; VTI Tunnel support;</p>
<b>SMS, SMS Control and Alarm</b>	<p>Receive and Send the SMS;</p> <p>WAN Cell APN configuration via SMS;</p> <p>SMS/Voice Control and Alarm. SMS or Call to control router to be online, offline, reboot, signal and status monitor; SMS is default feature, Voice is option;</p> <p>SMS text sending and receiving;</p>

## >>| Specifications

### Main

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<b>Hardware</b>	CPU: 880Mhz dual core; RAM: 1Gb DDR3, option for up to 4Gb DDR3; Flash: 128Mb, option for up to 8Gbit;
<b>WAN</b>	Integrated Category 5G modem (with 4G LTE /3G failover); One 10/100/1000Mbps Gigabit Ethernet ports – cable/DSL/T1/satellite/Metro Ethernet; WiFi as WAN, Metro WiFi; MIMO “N” 2.4 GHz; 802.11 a/b/g/n/AC;
<b>LAN</b>	Dual-band, dual-concurrent WiFi; 802.11 a/b/g/n/AC; 2 LAN/WAN switchable 10/100/1000Mbps Gigabit Ethernet ports; 2 LAN/WAN switchable 10/100Mbps Fast Ethernet ports with POE;
<b>Ports</b>	Power (POE, 2 Pin Terminal Block for wire connection) 5 Ethernet LAN/WAN 2 cellular antenna connectors (SMA) 1 GPS antenna connector (SMA) 4-6 WiFi antenna connectors (SMA) Serial connector *1 – RS232 / RS485 (Terminal Socket) 4 Digital I/O ports (Terminal Socket) USB3.0 port + USB2.0 port Console Port (Terminal Socket + RJ45 type)
<b>Power</b>	Dual Power Inputs / Power Failover; DC input steady state voltage range: 5-40 VDC / 5-60VDC option, (requires inline fuse for vehicle installations); For 9–24 VDC installations, use a 3 A fuse; For > 24 VDC installations, use a 2.5 A fuse; Reverse polarity and transient voltage protection per ISO 7637-2 Ignition sensing (automatic ON and time-delay OFF); Power consumption: Idle: typical=100mA@12VDC; Maximum=500mA@12VDC; Tx/Rx: typical=300mA@12VDC; Maximum=800mA@12VDC; 12VDC 2A adapter recommended
<b>LEDs</b>	SYS, ERR, VPN, WiFi, USB, WAN, LAN*4, SIM1 Online, SIM2 Online, Signal1, Signal2, Signal3
<b>UIM/SIM Card Slot</b>	Support 1.8V/3V UIM/SIM cards, two sim card slots; E-SIM is supported;
<b>Others</b>	Reset button, console port
<b>Size</b>	PCBA: 128mm x 108mm x 29mm With case: 132mm x 112mm x 45mm
<b>Weight</b>	About 410g (not including the antenna)

	About 550g (including the antenna) About 750g (including all accessories, without package)
<b>Temperature</b>	All models: -35 °C to 75 °C ambient air operating; All models: -40 °C to 85 °C storage;
<b>Humidity (non-condensing)</b>	5% to 95% operating 5% to 95% storage
<b>Case</b>	Aluminum alloy; Black color; Customization is available
<b>Cellular</b>	
<b>Compatible Mobile Networks</b>	5G (SA and NSA) 4G LTE (FDD/TDD) 3G UMTS WCDMA (HSUPA/HSDPA/HSPA/HSPA+/DC-HSPA+)
<b>Cellular Frequency</b>	5G Sub-6G: n1/n2/n3/n5/n7/n8/n20/n28/n41/n66/n71/n77/n78/n79/n257/n261 And other more 5G bands...  4G FDD LTE: Band 1 – 2100Mhz Band 2 – 1900Mhz Band 3 – 1800Mhz Band 4 – AWS(1700/2100Mhz) Band 5 – 850Mhz Band 7 – 2600MHz Band 8 – 900Mhz Band 9 – 1700Mhz Band 12 – 700Mhz Band 13 – 700Mhz Band 14 – 700Mhz Band 17 – 700Mhz Band 18 – 850Mhz Band 19 – 800Mhz Band 20 – 800Mhz Band 21 – 1500Mhz Band 25 – 1900Mhz G Block Band 26 – 850Mhz Band 28 – 700Mhz Band 29 – 700Mhz (SDL) Band 30 – 2300Mhz Band 31 – 450Mhz Band 32 – 1500Mhz (SDL)



	<p>Band 34 – 2100Mhz Band 66 – 1700Mhz Band 72 – 450Mhz And other more FDD bands...</p> <p>4G TDD LTE (TD-LTE): Band 48 – 3600Mhz (CBRS) Band 46 – 5200Mhz Band 43 – 3700Mhz Band 42 – 3500Mhz (CBRS) Band 41 – 2500/2600Mhz Band 40 – 2300Mhz Band 39 – 1900Mhz Band 38 – 2600Mhz And other more TDD bands...</p> <p>UMTS/HSPA/HSUPA/HSPA/HSPA+/DC-HSPA+ (WCDMA/FDD): 2100MHz(B1)/1900MHz (B2)/1800MHz (B3)/ 1700MHz /AWS (B4)/850MHz (B5)/900MHz (B8)/800MHz (B6)/1800MHz (B9)/850MHz (B19)</p> <p>Notes: There are many different band and frequencies. Please confirm the detailed band and frequency with your carriers before order.</p>
<b>Bandwidth</b>	<p>Downlink data: 5G/NR sub-6: 2Gbps-10Gbps, LTE 2.4Gbps Uplink data: 5G/NR sub-6:2.5Gbps, LTE 450Mbps</p> <p>Notes: the bandwidth is peak value. Real value depends on carrier network support.</p>
<b>Network and Band Lock Feature (Option)</b>	Default is unlocked, can use this feature to lock
<b>WiFi (WLAN)</b>	
<b>Wi-Fi (Option)</b>	<p>802.11a/b/g/n/ac/ax WiFi; Can be used as AP and client;</p> <p>Frequency Range: 2.4Ghz: 2.412 ~ 2.472Ghz 5Ghz Band 1: 5150~5250MHz 5Ghz Band 4: 5475~5850MHz</p> <p>Speed:</p>

	802.11n in 300Mbps; 802.11ac/ax options in 600Mbps, 867Mbps, 1300Mbps, 1730Mbps, 2033Mbps, or even higher (Depends on WiFi module option);  Notes: default is 802.11a/b/g/n 2.4Ghz WiFi. Option: Dual-Band Dual-Concurrent or Tri-Band Tri-Concurrent 802.11 a/b/g/n/ac/ax, Wave2, MU-MIMO; Up to 128-250 connected devices (64 per channel – 2.4 GHz and 5 GHz); High gain WiFi module option;
<b>Others</b>	
<b>Warranty</b>	2 Year default. Option extends up to 5 years maximum; Other warranty services can be customized;
<b>Package Contents</b>	H900 Series Wireless 5G Router Ethernet Cable Power Adapter Cellular Antenna, WiFi Antenna Others depends on option features (GPS antenna, Serial Cable, etc.)
<b>OEM / ODM Services</b>	Yes

## >>| Order Part Number

H900 Series Router Order Models											
Part Number	4G LTE	3G	2G	USB	WiFi	Serial	GPS Beidou	DI DO	5-60VDC	Market	Marks
H900f	Y	Y	Y	Y	O	O	O	O	O	Global	Supports 5G/4G/3G/2G
H900t-F1	Y	Y	Y	Y	O	O	O	O	O	Asia, Europe, South America, Africa	CAT3/4/6/9/11/12 /16/18
H900t-F4	Y	Y	Y	Y	O	O	O	O	O	North America	CAT3/4/6/9/11/12 /16/18
H900t-F5	Y	Y	Y	Y	O	O	O	O	O	Japan	CAT3/4/6/9/11/12 /16/18
H900t-TF1	Y	Y	Y	Y	O	O	O	O	O	customized	CAT4

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										for some operators	
H900t-TF2	Y	Y	Y	Y	O	O	O	O	O	customized for some operators	CAT4
H900t450-F1	Y			Y	O	O		O	O	customized for some operators	CAT3 or CAT4, 450Mhz
H900p		Y	Y	Y	O	O	O	O	O	Global	
H900ev450		Y		Y	O	O		O	O	customized for some operators	450Mhz
Y = supported O = option											