EmbedAir1000 LTE

Ready to use industrial cellular router (4G LTE cat. 4) + WiFi (802 .11n)

- 4G LTE cat. 4 cellular router with auto-fallback

- 802.11n WiFi interface (MIMO 2T2R), 2.4/5 GHz

- Automatic Cellular <> WiFi switching

- WiFi fast roaming (< 30ms) for mobile applications

- Advanced security (VPN, Firewall, radius ...)

- Ready to use standalone, requiring no external software or drivers

- Easy to fit small sized PCB

- Easy to use web based configuration, SNMP V3 or WaveManager

Introduction

EmbedAir1000 LTE module is a cellular router (4G LTE cat.4) equipped with a dual-band 802.11n WiFi interface (2.4/5 GHz) and a GNSS interface (GPS, Galileo, GLONASS, Beidou). It is designed to quickly and easily add wireless connectivity to any existing Ethernet equipment, or simply to allow you to make your own industrial wireless router / gateway.

Ready to use standalone, requiring no external software or drivers, EmbedAir1000 LTE reduces your development costs and shortens the time to market for your final equipment. Its long-term availability will ensure you solid returns from investment and allow you to limit costly operations like design and certification operations, unlike most modules available on the market.

EmbedAir1000 LTE is an extremely compact, state-of-the-art solution that, in addition to its 4G LTE interface, supports WiFi access point, client, repeater and MESH point modes. These functions can be operated simultaneously. It offers routing, filtering and advanced security features such as 802.11i (EAP authentication with Radius server/WPA/WPA2/WPA3), tunnels with fully encrypted data, firewall, VLAN...

Its high speed 802.11n WiFi interface supports any type of Ethernet-based protocol (UDP, TCP, Profinet, Modbus/TCP, Safe Ethernet, Ethernet IP, etc.). EmbedAir1000 LTE meets the industrial requirements (shocks, vibrations, extended operating temperatures, long-lasting product design...) of applications such as : calculator, video surveillance, medical equipment, mining equipment, military communication equipment, explosion-proof equipment, autonomous vehicle/AGV, drone (UAV), autonomous underwater robot (AUV), autonomous mobile robot (AMR), rail guided vehicle (RGV) ...
Designed for M2M and IIoT applications, it allows a remote access to all your devices (maintenance, control for non-critical applications, remote I/O...). Its "Fast roaming" functionality (<30ms) combined with its automatic switching capability between WiFi and 4G/LTE allows it to ensure perfect continuity of operation and thus makes it ideal for any type of mobile application.

Administration of EmbedAir1000 LTE modules is done directly from a web browser, SNMP V3 or from WaveManager, ACKSYS centralized administration software.

ACKSYS
COMMUNICATIONS & SYSTEMS

Z.A. Val Joyeux - 10, rue des Entrepreneurs - 78450 Villepreux (FRANCE) - T : +33 (0) 1 30 56 46 46 - F : +33 (0) 1 30 56 12 95
www.acksys.fr - sales@acksys.fr

Technical characteristics overview

Ethernet interface	1-port Gigabit Ethernet 10/100/1000 Base TX auto-sensing, auto MDI/MDIX cross-over, RJ45 or TTL Ethernet interface (HE10 connector)
Cellular interfaces + navigation	1 LTE radio category 4, 3GPP E-UTRA release 11, MIMO DL with Rx diversity Dual SIM LTE, UMTS/HSPA+, GSM/GPRS/EDGE (worldwide) Multi-constellation GNSS (GPS, Galileo, GLONASS, Beidou). Requires an active antenna.
Cellular radio data rate	150 Mbps ↓ & 50 Mbps ↑ (maximum radio data rate)
Cellular operating frequencies	FDD LTE: B1/B2/B3/B4/B5/B7/B8/B12/B13/B19/B20/B25/B26/B28 TDD LTE: B38/B39/B40/B41 WCDMA: B1/B2/B4/B5/B6/B8/B19 GSM: B2/B3/B5/B8
WiFi interface	802.11n (MIMO 2T2R), 300 Mbps, 2.4 / 5 GHz, ANI (Adaptive Noise Immunity)
WiFi radio data rate	802.11a: 6, 9, 12, 18, 24, 36, 48 & 54 Mbps 802.11b/g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 & 54 Mbps 802.11n: MCS0-7, 2 streams (6.5 to 300 Mbps)
WiFi operating frequencies	ISM : 2.4-2.483 GHz (up to 14 channels) UNII : 5.15-5.25 GHz (up to 4 channels UNII-2 : 5.25-5.35 GHz (up to 4 channels) UNII-2 ext : 5.470-5.725 GHz (up to 11 channels) UNII-3 : 5.725-5.825 GHz (up to 4 channels) Supports DFS and TPC
Output power	WiFi : 2.4 GHz : up to 23.5 dBm (aggregate) / 5 GHz : up to 21 dBm (aggregate) LTE / 4G : up to 33 dBm (GSM)
Sensitivity max.	WiFi : • 2.4 GHz : -94 dBm • 5 GHz : -96 dBm LTE WCDMA B5/B8 receiver : -110.5 dBm
Radio connectors	WiFi : 2 Hirose UFL connectors / LTE : 2 Hirose UFL connectors / GNSS : 1 Hirose UFL connector
Security	Firewall, DoS, https, MAC filtering, WPA/WPA2/WPA3 Personal & Enterprise (IEEE 802.1X/RADIUS), WEP, tunnels L2 (GRE), VPN (OpenVPN), SNMP V3, isolated clients (in AP mode)
WiFi modes	Access point, client, MESH (IEEE 802.11s), infrastructure, AD-HOC, fast roaming (less than 30 ms), WMM QoS
Ethernet networking	Frames filtering, bridging, repeater, STP/RSTP, VLAN, DHCP (server & client), DNS relay
Ethernet routing	Multicast (PIM), IP redundancy (VRRP), static routes, NAT router, router
Administration	http, https, SNMP agent (V1, V2C, V3), WaveManager administration software
LEDs Signaling	Radios : activity - status	Ethernet : 10/100/1000 link - activity	GPS : status	Power : on-off
Power supply	+5VDC on an HE10 connector or micro USB (1.2A mini / 2.5A recommended)
Consumption	5.7 Watts typical, 13.6 Watts maximum
Dimensions & weight	RJ > L : 92.6 x l : 50.8 x h : 27.2 mm, 57 g TTL > L : 92.6 x l : 50.8 x h : 26.5 mm, 52 g
Standards and certifications	WiFi : CE (RED) and FCC (FCC ID : Z9W-RMB) certified LTE : CE (RED) and FCC (FCC ID : XMR201903EG25G) certified
Environment	Operating temperature : -40 to +70°C, storage -40 to +85°C Humidity : 5% to 95% (non-condensing)
Warranty	1 year

Ordering references

EmbedAir1000/R7	4G LTE cat. 4 cellular module (worldwide) + WiFi (11n 2T2R) + multi-constellation GNSS interface, RJ45 Ethernet interface (delivered without antenna nor pigtail cable)
EmbedAir1000/T7	4G LTE cat. 4 cellular module (worldwide) + WiFi (11n 2T2R) + multi-constellation GNSS interface, TTL Ethernet interface (delivered without antenna nor pigtail cable)
EmbedAir/CB	Evaluation board with antennas and power supply included. EmbedAir100 or EmbedAir1000 module must be ordered with.

Additional accessories

WL-KIT-ANT-1C	Flat & swivel WiFi omnidirectional antenna, 2.4 GHz 3dBi / 5 GHz 4dBi, RPSMA with pigtail cable (14 cm, ø 1.37 mm, UFL to RPSMA)
WL-KIT-ANT-1D	Flat & swivel cellular omnidirectional antenna, 22dBi, 700-960 / 1700-2170 / 2300-2700 MHz, SMA with pigtail cable (14 cm, ø 1.37 mm, UFL to SMA)

ACKSYS
COMMUNICATIONS & SYSTEMS

Z.A. Val Joyeux - 10, rue des Entrepreneurs - 78450 Villepreux (FRANCE) - T : +33 (0) 1 30 56 46 46 - F : +33 (0) 1 30 56 12 95
www.acksys.fr - sales@acksys.fr