

# WDR-3124A Series

## Industrial 802.11n/HSPA wireless routers



### Features and Benefits

- Universal GSM/GPRS/HSPA cellular communications
- 2.4-GHz/5-GHz dual-band 300 Mbps Wi-Fi communication
- Built-in 4-port Gigabit Ethernet switch
- Industrial design with dual power inputs and built-in DI/DO support
- Cellular link redundancy with dual SIM
- GuaranLink for reliable cellular connectivity
- Antenna and power isolation design to protect against interference

### Certifications



## Introduction

The WDR-3124A industrial wireless router combines 802.11n and cellular technologies to provide flexible wireless network connectivity. The WDR-3124A comes with a built-in antenna and power isolation suitable for any harsh industrial environment. With DIN-rail mounting, wide operating temperature range models, and IP30 housing, the WDR-3124A is a convenient yet reliable solution for any industrial wireless application.

### WLAN and Cellular Connectivity

- High-speed wireless connectivity with up to 300 Mbps data rate
- WLAN AP/Client-Router operation mode support
- Universal cellular band support for GSM/GPRS/HSPA connectivity

### Effective Isolation and Redundancy Design

- Dual power inputs for power redundancy
- Dual-SIM support for cellular connection redundancy
- Antenna isolation for protection against radio interference
- Power isolation for power source insulation protection

## Specifications

### Cellular Interface

|                             |                                                                                                                                          |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Cellular Standards          | GSM, GPRS, EDGE, UMTS, HSPA                                                                                                              |
| Band Options                | UMTS/HSPA 800 MHz / 850 MHz / 900 MHz / 1900 MHz / 2100 MHz<br>Universal quad-band GSM/GPRS/EDGE 850 MHz / 900 MHz / 1800 MHz / 1900 MHz |
| HSPA Data Rates             | 14.4 Mbps DL, 5.76 Mbps UL                                                                                                               |
| EDGE Data Rates             | 237 kbps DL, 237 kbps UL                                                                                                                 |
| GPRS Data Rates             | 85.6 kbps DL, 85.6 kbps UL                                                                                                               |
| No. of SIMs                 | 2                                                                                                                                        |
| SIM Control Voltage         | 3 V                                                                                                                                      |
| Cellular Antenna Connectors | 1 SMA female                                                                                                                             |

## WLAN Interface

|                                                   |                                                                                                                                                                                                                                                                  |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WLAN Standards                                    | 802.11a/b/g/n<br>802.11i Wireless Security                                                                                                                                                                                                                       |
| Spread Spectrum                                   | DSSS, OFDM                                                                                                                                                                                                                                                       |
| Modulation Type                                   | 802.11b: CCK @ 11/5.5 Mbps<br>802.11b: DQPSK @ 2 Mbps<br>802.11b: DBPSK @ 1 Mbps<br>802.11a/g: 64QAM @ 54/48 Mbps<br>802.11a/g: 16QAM @ 36/24 Mbps<br>802.11a/g: QPSK @ 18/12 Mbps<br>802.11a/g: BPSK @ 9/6 Mbps<br>802.11n: 64QAM @ 300 Mbps to BPSK @ 6.5 Mbps |
| Frequency Band for EU (20 MHz operating channels) | 2.142 to 2.472 GHz (13 channels)<br>5.180 to 5.240 GHz (4 channels)                                                                                                                                                                                              |
| Frequency Band for US (20 MHz operating channels) | 2.412 to 2.462 GHz (11 channels)<br>5.180 to 5.240 GHz (4 channels)<br>5.745 to 5.825 GHz (5 channels)                                                                                                                                                           |
| Wireless Security                                 | WEP encryption (64-bit and 128-bit)<br>WPA/WPA2-Enterprise (IEEE 802.1X/RADIUS, TKIP, AES)<br>WPA/WPA2-Personal<br>SSID broadcast enable/disable                                                                                                                 |
| Transmission Rate                                 | 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11n HT20: 6.5 to 150 Mbps (MCS0 to MCS7)<br>802.11n HT40: 150 to 300 Mbps (MCS8 to MCS15)                                                                                     |
| Transmitter Power for 802.11a                     | 20±1.5 dBm @ 6 to 24 Mbps<br>19±1.5 dBm @ 36 Mbps<br>16±1.5 dBm @ 48 Mbps<br>15±1.5 dBm @ 54 Mbps                                                                                                                                                                |
| Transmitter Power for 802.11b                     | 23±1.5 dBm @ 1 Mbps<br>20±1.5 dBm @ 5 Mbps<br>19±1.5 dBm @ 11 Mbps                                                                                                                                                                                               |
| Transmitter Power for 802.11g                     | 20±1.5 dBm @ 6 to 24 Mbps<br>19±1.5 dBm @ 36 Mbps<br>18±1.5 dBm @ 48 Mbps<br>17±1.5 dBm @ 54 Mbps                                                                                                                                                                |
| Transmitter Power for 802.11n (2.4 GHz)           | 20±1.5 dBm @ MCS0/8 20 MHz<br>20±1.5 dBm @ MCS0/8 40 MHz<br>16±1.5 dBm @ MCS7/15 20 MHz<br>16±1.5 dBm @ MCS7/15 40 MHz                                                                                                                                           |
| Transmitter Power for 802.11n (5 GHz)             | 19±1.5 dBm @ MCS0/8 20 MHz<br>18±1.5 dBm @ MCS0/8 40 MHz<br>14±1.5 dBm @ MCS7/15 20 MHz<br>14±1.5 dBm @ MCS7/15 40 MHz                                                                                                                                           |
| Receiver Sensitivity for 802.11a                  | -92 dBm @ 6 Mbps<br>-89 dBm @ 9 Mbps<br>-85 dBm @ 12 Mbps<br>-82 dBm @ 18 Mbps<br>-80 dBm @ 24 Mbps<br>-76 dBm @ 36 Mbps<br>-74 dBm @ 48 Mbps<br>-72 dBm @ 54 Mbps                                                                                               |
| Receiver Sensitivity for 802.11b                  | -90 dBm @ 1 Mbps<br>-88 dBm @ 2 Mbps<br>-86 dBm @ 5.5 Mbps<br>-84 dBm @ 11 Mbps                                                                                                                                                                                  |
| Receiver Sensitivity for 802.11g                  | -85 dBm @ 6 Mbps                                                                                                                                                                                                                                                 |

|                                            |                                                                                                                                                                                                           |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | -84 dBm @ 9 Mbps<br>-83 dBm @ 12 Mbps<br>-82 dBm @ 18 Mbps<br>-80 dBm @ 24 Mbps<br>-76 dBm @ 36 Mbps<br>-70 dBm @ 48 Mbps<br>-70 dBm @ 54 Mbps                                                            |
| Receiver Sensitivity for 802.11n (2.4 GHz) | -70 dBm @ MCS7 20 MHz<br>-68 dBm @ MCS15 20 MHz<br>-65 dBm @ MCS7 40 MHz<br>-63 dBm @ MCS15 40 MHz                                                                                                        |
| Receiver Sensitivity for 802.11n (5 GHz)   | -70 dBm @ MCS7 20 MHz<br>-67 dBm @ MCS15 20 MHz<br>-68 dBm @ MCS7 40 MHz<br>-66 dBm @ MCS15 40 MHz                                                                                                        |
| WLAN Antenna Connector                     | 2 RP-SMA female                                                                                                                                                                                           |
| <b>GPS Interface</b>                       |                                                                                                                                                                                                           |
| GPS Antenna Connector                      | 1 SMA female                                                                                                                                                                                              |
| <b>Ethernet Interface</b>                  |                                                                                                                                                                                                           |
| 10/100/1000BaseT(X) Ports (RJ45 connector) | 4                                                                                                                                                                                                         |
| Standards                                  | IEEE 802.3 for 10BaseT<br>IEEE 802.3ab for 1000BaseT(X)<br>IEEE 802.3u for 100BaseT(X)                                                                                                                    |
| Total Port Count                           | 4                                                                                                                                                                                                         |
| <b>LED Interface</b>                       |                                                                                                                                                                                                           |
| LED Indicators                             | PWR1, PWR2, STATUS, FAULT, CELLULAR SIGNAL, WIFI SIGNAL, WLAN, SIM1, SIM2, 2G, 3G, GPS                                                                                                                    |
| <b>Input/Output Interface</b>              |                                                                                                                                                                                                           |
| Alarm Contact Channels                     | 1, Relay output with current carrying capacity of 1 A @ 24 VDC                                                                                                                                            |
| Buttons                                    | Reset button                                                                                                                                                                                              |
| Digital Input Channels                     | 2                                                                                                                                                                                                         |
| Digital Inputs                             | +13 to +30 V for state 1<br>3 to -30 V for state 0                                                                                                                                                        |
| <b>Ethernet Software Features</b>          |                                                                                                                                                                                                           |
| Management                                 | ARP, DDNS, DHCP Client, DNS, HTTP, SMTP, SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, Web Console, Wireless Search Utility, Serial Console, Telnet Console, Remote SMS Control, OnCell Central Manager, GuaranLink |
| Security                                   | HTTPS, IPsec, SSH                                                                                                                                                                                         |
| Time Management                            | SNTP                                                                                                                                                                                                      |
| Routing                                    | NAT, Port forwarding                                                                                                                                                                                      |
| Firewall                                   | Filter: MAC, IP protocol, port-based                                                                                                                                                                      |
| <b>IPsec VPN</b>                           |                                                                                                                                                                                                           |
| Authentication                             | MD5 and SHA (SHA-256)<br>PSK/X.509/RSA                                                                                                                                                                    |
| Concurrent VPN Tunnels                     | Max. 5 IPsec VPN tunnels                                                                                                                                                                                  |

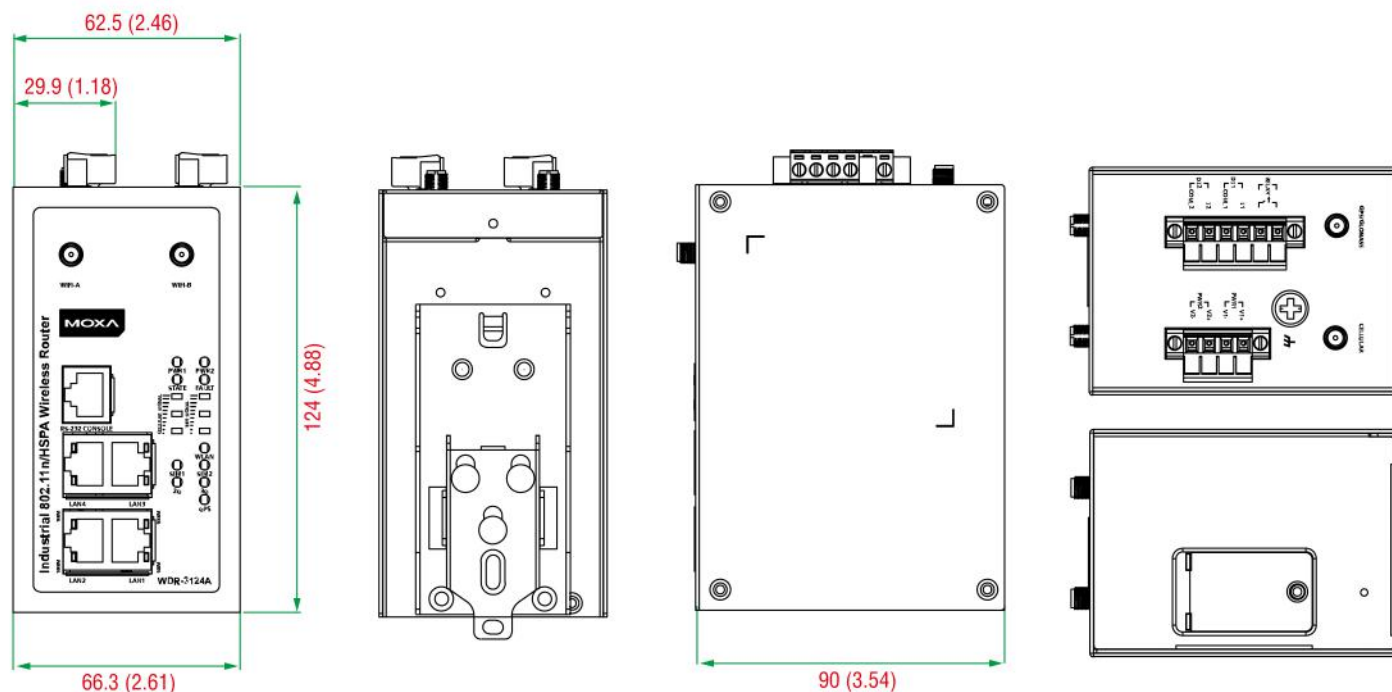
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|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protocols                              | IPsec                                                                                                                                                                                                                                       |
| Encryption                             | DES, 3DES, AES, MD5, SHA-1, DH2, DH5                                                                                                                                                                                                        |
| <b>Physical Characteristics</b>        |                                                                                                                                                                                                                                             |
| Housing                                | Aluminum                                                                                                                                                                                                                                    |
| IP Rating                              | IP30                                                                                                                                                                                                                                        |
| Dimensions                             | 66.3 x 124 x 90 mm (2.61 x 4.88 x 3.54 in)                                                                                                                                                                                                  |
| Weight                                 | 1,280 g (2.82 lb)                                                                                                                                                                                                                           |
| <b>Environmental Limits</b>            |                                                                                                                                                                                                                                             |
| Operating Temperature                  | Standard Models: 0 to 55°C (32 to 131°F)<br>Wide Temp. Models: -30 to 70°C (-22 to 158°F)                                                                                                                                                   |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                  |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                   |
| <b>Power Parameters</b>                |                                                                                                                                                                                                                                             |
| Power Connector                        | Terminal block                                                                                                                                                                                                                              |
| Input Voltage                          | Redundant dual inputs, 12 to 48 VDC                                                                                                                                                                                                         |
| Input Current                          | 0.7 A @ 12 VDC, 0.2 A @ 48 VDC                                                                                                                                                                                                              |
| Reverse Polarity Protection            | Supported                                                                                                                                                                                                                                   |
| <b>Standards and Certifications</b>    |                                                                                                                                                                                                                                             |
| Safety                                 | EN 60950-1, UL 60950-1                                                                                                                                                                                                                      |
| EMC                                    | EN 61000-6-2/-6-4                                                                                                                                                                                                                           |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                              |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m<br>IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV<br>IEC 61000-4-5 Surge: Power: 2 kV; Signal: 1 kV<br>IEC 61000-4-6 CS: 10 V<br>IEC 61000-4-8 PFMF |
| Radio Frequency                        | EN 301 489-1, EN 301 489-7, EN 301 511, EN 301 908, EN 300 328, EN 301 893, FCC ID SLE-WAPN005                                                                                                                                              |
| <b>MTBF</b>                            |                                                                                                                                                                                                                                             |
| Time                                   | 382,851 hrs                                                                                                                                                                                                                                 |
| Standards                              | Telcordia SR332                                                                                                                                                                                                                             |
| <b>Warranty</b>                        |                                                                                                                                                                                                                                             |
| Warranty Period                        | 5 years                                                                                                                                                                                                                                     |
| Details                                | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>                                                                                                                                                                        |
| <b>Package Contents</b>                |                                                                                                                                                                                                                                             |
| Device                                 | 1 x WDR-3124A Series wireless router <sup>1</sup>                                                                                                                                                                                           |
| Installation Kit                       | 1 x DIN-rail kit                                                                                                                                                                                                                            |

1. An activated SIM card (not included) must be provided by a third party Cellular Service Provider.

|               |                                                   |
|---------------|---------------------------------------------------|
| Antenna       | 2 x 2.4/5 GHz antenna, 1 x UMTS/HSPA              |
| Documentation | 1 x quick installation guide<br>1 x warranty card |

## Dimensions

Unit: mm (inch)



Front View

Rear View

Left Side View

Top and Bottom Views

## Ordering Information

| Model Name     | Cellular Standard | Wi-Fi Standard | Wi-Fi Band | Operating Temp. |
|----------------|-------------------|----------------|------------|-----------------|
| WDR-3124A-US   | UMTS/HSPA         | 802.11n        | US         | 0 to 55°C       |
| WDR-3124A-US-T | UMTS/HSPA         | 802.11n        | US         | -30 to 70°C     |
| WDR-3124A-EU   | UMTS/HSPA         | 802.11n        | Europe     | 0 to 55°C       |
| WDR-3124A-EU-T | UMTS/HSPA         | 802.11n        | Europe     | -30 to 70°C     |

## Accessories (sold separately)

### Antennas

|                        |                                                                            |
|------------------------|----------------------------------------------------------------------------|
| ANT-WCDMA-ANF-00       | GSM/GPRS/EDGE/UMTS/HSPA, omni-directional outdoor antenna, 0 dBi           |
| ANT-WCDMA-ASM-1.5      | GSM/GPRS/EDGE/UMTS/HSPA, omni-directional rubber duck antenna, 1.5 dBi     |
| ANT-WCDMA-AHSM-04-2.5m | GSM/GPRS/EDGE/UMTS/HSPA, omni-directional magnetic base antenna, 4 dBi     |
| ANT-LTE-ASM-02         | GPRS/EDGE/UMTS/HSPA/LTE, omni-directional rubber duck antenna, 2 dBi       |
| ANT-LTE-ANF-04         | GSM/GPRS/EDGE/UMTS/HSPA/LTE, omni-directional outdoor antenna, 4 dBi, IP66 |
| ANT-LTEUS-ASM-01       | GSM/GPRS/EDGE/UMTS/HSPA/LTE, omni-directional rubber duck antenna, 1 dBi   |

### Wireless Antenna Cables

|                   |                                                         |
|-------------------|---------------------------------------------------------|
| A-CRF-RMNM-L1-300 | N-type (male) to RP SMA (male), LMR-195 Lite cable, 3 m |
|-------------------|---------------------------------------------------------|

|                     |                                                            |
|---------------------|------------------------------------------------------------|
| A-CRF-SMSF-R3-100   | Cellular magnetic-base SMA connector with 1-meter RF cable |
| A-CRF-RMNM-L1-900   | N-type (male) to RP SMA (male), LMR-195 Lite cable, 9 m    |
| CRF-N0117SA-3M      | N-type (male) to RP SMA (male), CFD200 cable, 3 m          |
| A-CRF-RMNM-L1-600   | N-type (male) to RP SMA (male), LMR-195 Lite cable, 6 m    |
| CRF-SMA(M)/N(M)-300 | N-type (male) to SMA (male), CFD200 cable, 3 m             |

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