



ROUTERAMP

5G ready
Up to 4x MIMO.



The RouterAmp is an industrial grade cellular amplifier for ships and vehicles that works with all mobile operators in the EMEA and Americas. It ensures that the cellular router is connected to mobile signal in remote regions for vehicles, and as far out as 30km from the coastline for ships. It has up to 16 ports that can connect to 4 radio cards in 4X MIMO configuration. It is compatible with the latest 5G routers.

For routers with 4 radios, the RouterAmp reduces the number of cables to the outdoor antennas by a factor of 4.

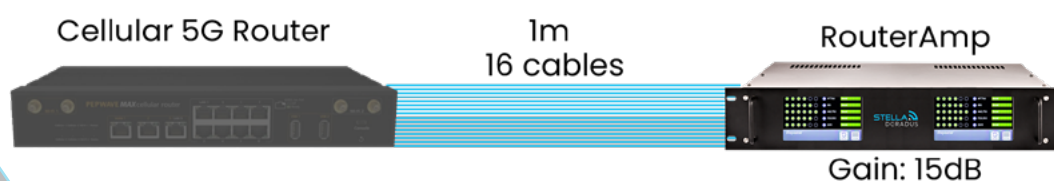
When connected to the Stella cloud, it can be remotely managed, monitored and adjusted, as well as receive real-time measurements of signal power and gain for each band.

In ByPass mode, the amplifier can be bypassed when in urban areas. This allows the router to receive more bands including 5G at 3.6Ghz.

- 15dB Gain- compensates for cables to outdoor antenna.
- High Uplink power to ensure stable mobile connection far from base stations.
- Boosts up to 4X 5G radio cards at the same time.
- 4X DL MIMO.
- Boosts all operators - Works with all routers.
- 5G/4G/3G/2G.
- Remote monitoring and management via stellacontrol platform.
- Large LCD Touch Display for enhanced user experience.
- ByPass mode - avail of 3.5GHz 5G when near base stations.

Ship
mast

20m
4 cables



4X DL MIMO Configuration

Pepwave

Huawei

Siemens

Teltonika

Cisco

TP-Link

Asus

Airbridge

| Models (SKU) | MIMO | Region | Rack | Mounting | Bands | Weight |
|--------------|------|--------|-------|-----------|-------------------------------|--------|
| RA-2X-EU-W/R | 2X | EU | 1U/2U | Wall/Rack | B28/B20/B8/B3/B1/B7 | 2.5kg |
| RA-4X-EU-R | 4X | EU | 2U | Rack | B28/B20/B8/B3/B1/B7 | 5kg |
| RA-2X-US-W | 2X | US | 1U | Wall | B28/B5/B4/B25/B7 | 2.5kg |
| RA-2X-WW-R | 2X | WW | 2U | Rack | B28/B20/B8/B3/B1/B7/B5/B4/B25 | 5kg |
| RA-4X-WW-R | 4X | WW | 4U | Rack | B28/B20/B8/B3/B1/B7/B5/B4/B25 | 10kg |

Regions:

EU: Europe, Middle East, Africa.

US: Caribbean, USA, Mexico, South America.

WW: EU+US.

SKU explained:

RA-2X-EU-W

RouterAmp-2X MIMO-Region-Wall Mounting



| Bands | B28 | B20 | B8 | B3 | B1 | B7 | B5 | B4 | B25 |
|----------------|---------|---------|---------|-----------|-----------|-----------|---------|-----------|-----------|
| Downlink (MHz) | 758-788 | 791-821 | 925-960 | 1805-1880 | 2110-2170 | 2620-2690 | 869-894 | 2110-2155 | 1930-1990 |
| Uplink (MHz) | 703-733 | 832-862 | 880-915 | 1710-1785 | 1920-1980 | 2500-2570 | 824-849 | 1700-1755 | 1850-1915 |
| Region | EU/US | EU | EU | EU | EU | EU | US | US | US |

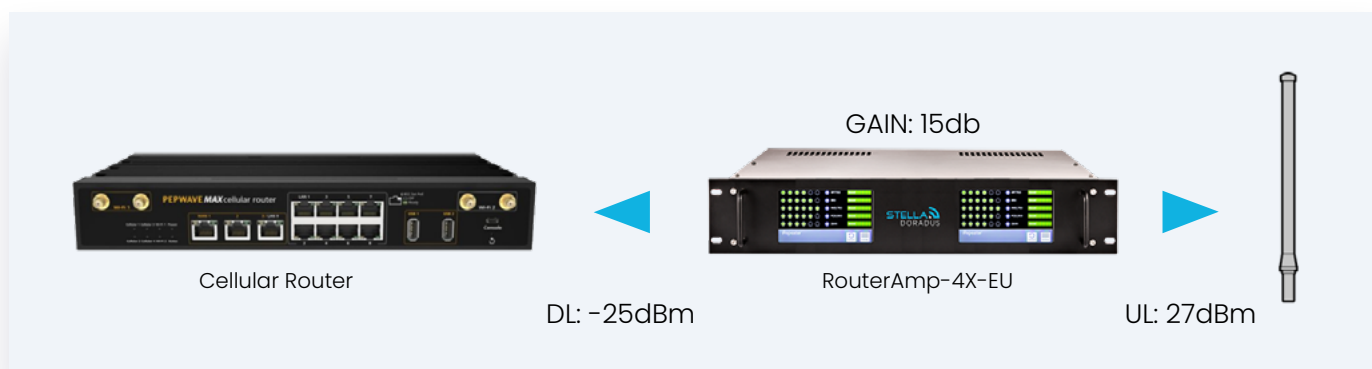
Amplifier Specification

| | |
|-----------------------------|---|
| Gain | Up-link Gp: 15dB Down-link Gp> 15dB |
| Pass band ripple | <4dB |
| I/O impedance | 50 ohm/SMA female connector |
| Max up/down signal strength | 27dBm / -25dBm |
| Ambient Temperature | -30°C to +70°C |
| Power supply input | 110 - 240V AC |
| Oscillation Control | Automatic |
| AGC Level Control | Automatic ¹ |
| Uplink Switch On | Yes ² |
| AGC Range | 30dB |
| Surge protection | SMA connectors DC grounded, 12V DC port MOV protected |
| Ports (SMA) | 8X ports or 16X ports (2X or 4X MIMO) |
| ByPass mode | Yes |
| Power supplies | 12V,7A |

¹Automatically adjusts during installation. Thereafter, automatically adjusts for seasonal variation in path loss between the base station and the outdoor antenna.

²The uplink amplifiers switch off when the repeater is not in use. This reduces the uplink noise to almost zero. When the repeater is in use (phone call or data session), the uplink amplifiers switch on for the duration of the call/ data session only.

Note: Specifications subject to change without notice.



Power control:

The RouterAmp amplifies both the uplink signals from the cellular router, and the downlink signals from the base stations. The RouterAmp amplifies the gain of these signals by 15dB.

On the UL, the signals from the router are amplified up to a maximum power of 27dBm. This is a high sustained power required to maintain a robust uplink connection on the cell edge.

On the downlink, the signals from the operator's masts are amplified by 15dB, to a maximum power of -25dBm (minus 25dBm). This low power (in comparison to the high maximum UL power) is because the radio cards in the router are very sensitive, and cannot sustain exposure to high RF (radio frequency) power.

MIMO

2X1 MIMO means 2 data channels on the downlink and 1 channel on the uplink. Example: RA-2X-EU.

4X2 MIMO means 4 channels on the downlink and 2 channels on the uplink. Example: RA-4X-EU.

These extra MIMO channels essentially mean a doubling or quadrupling of the bandwidth respectively.

ByPass mode:

The RouterAmp amplifies frequencies up to 2.6GHz. Increasingly 5G is appearing on these low band frequencies. However, for the 3.4-3.8GHz bands, the RouterAmp can be bypassed when in port or close to base stations. In this case the outdoor antennas will be connected directly to the router allowing all frequencies to reach it, including 3.5GHz.

These higher 5G frequencies have a short range so they can only be accessed in port anyway. Far from base stations only the lower frequencies will be available.

Remote Monitoring – Stellacontrol

The RouterAmp can be monitored and managed remotely on the Stella online platform – Stellacontrol. Remote monitoring allows remote setup, optimization and control of the system at all times.

Main screen:

Green: Down-link signal power.

Blue: The band is switched on. This happens when a data session is initiated. Once the data session is over, the band switches off and the blue dot also switches off.



| | |
|-----------|---|
| Good | Indicates no problems. |
| Adjusting | Band is optimizing itself. |
| Feedback | Oscillation detected. Action: Isolate the outdoor antenna from the indoor antennas. |

Decibel (dB) page:

The dB page shows actual raw data (dB) from the amplifier.

| Frequency (MHz) | 700 | 800 | 900 | 1800 | 2100 | 2600 |
|--------------------|-----|-----|-----|------|------|------|
| UL Power(dBm) | -15 | -15 | -15 | -15 | -15 | -15 |
| DL Power(dBm) | -30 | -30 | -30 | 12 | -30 | -30 |
| UL Fast AGC(dB) | 0 | 1 | 3 | 5 | 4 | 5 |
| AGC (dB) | 0 | 0 | 0 | 0 | 0 | 0 |
| DL Total Loss (dB) | 0 | 0 | 0 | 0 | 0 | 0 |

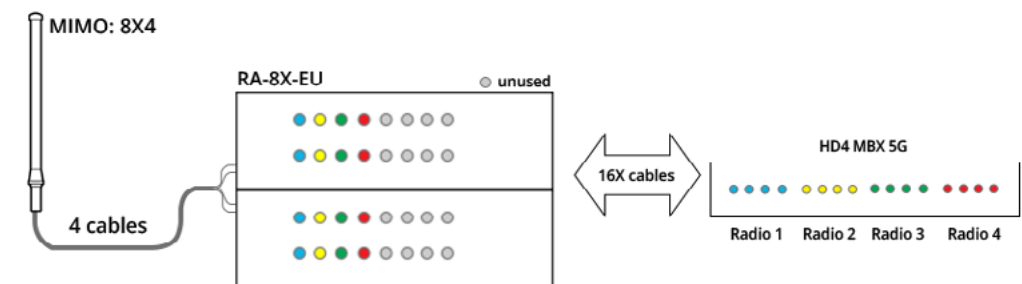
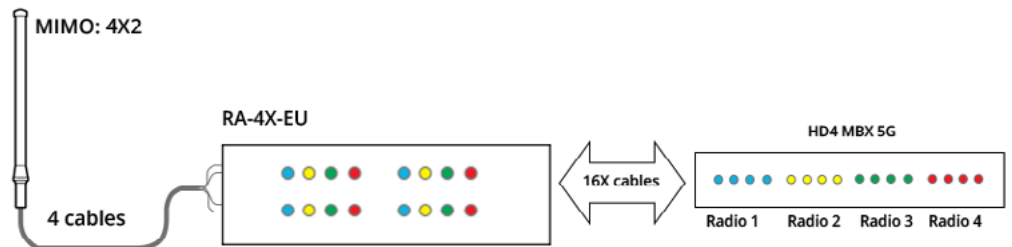
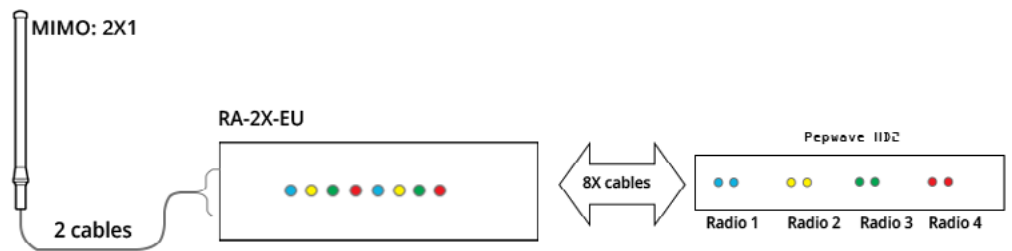
| | |
|-------------|--|
| UL Power | Uplink power received by the amplifier. (Power emitted by the router) |
| DL Power | Downlink power from the operator's mast, received by the amplifier. |
| UL Fast AGC | Uplink AGC |
| AGC | Downlink AGC. This controls the downlink gain when the downlink signal from the operator's mast is too strong. |

Other LCD features

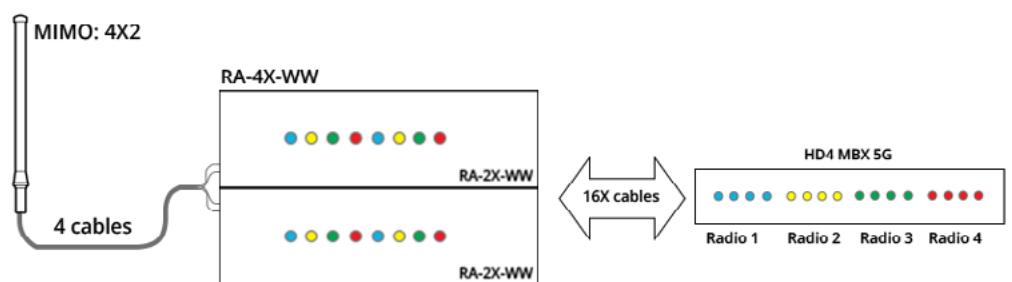
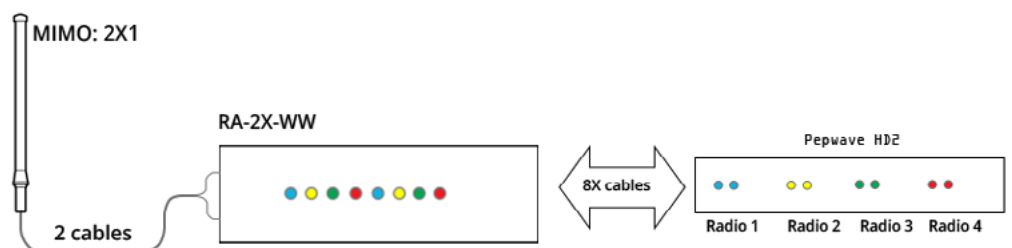
| | |
|-------------------|---|
| PIN Access | A secret PIN can lock out access to the LCD display. The PIN is set on the clients account on the platform. |
| Band On/Off | Turn any band on or off. |
| Internal location | Enter note about the amplifier. This note is sent and displayed on the stellacontrol inventory page. E.g. Internal location of the amplifier. |

Configurations

Region EU

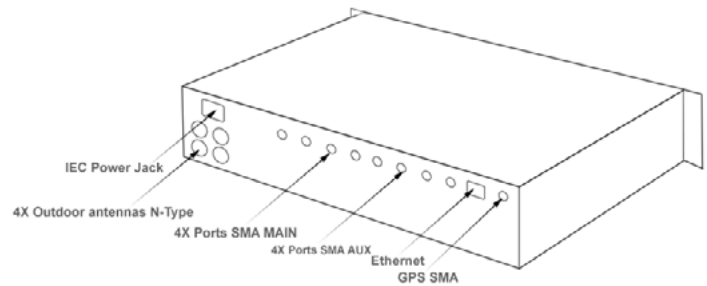
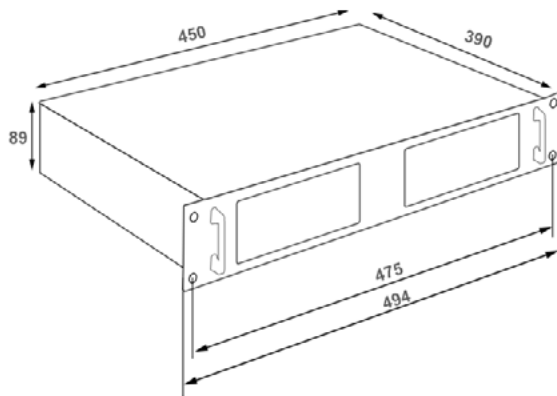


Region WorldWide



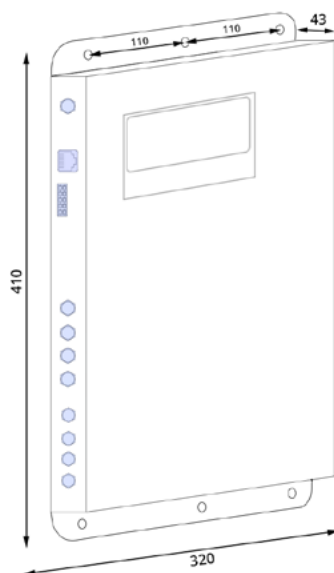
Rackmount 2U case

Each 2U rackmount case can contain up to 2X amplifiers.



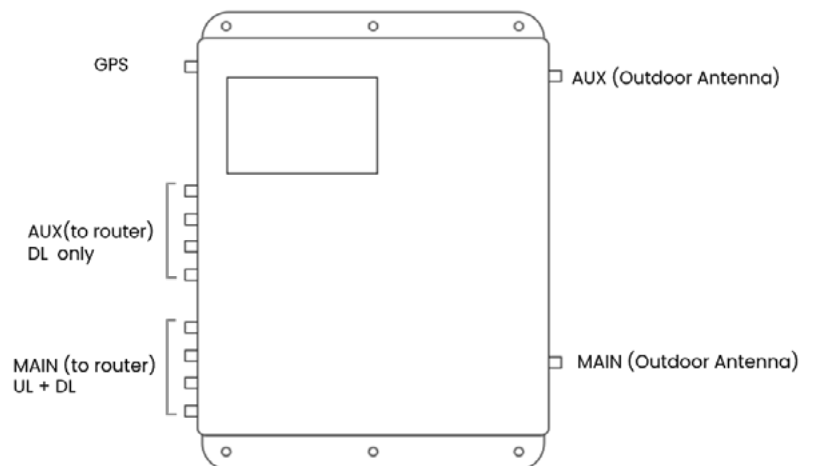
Wallmount 1U case

Each wallmount contains 1X amplifier.



Wallmount Wiring diagram

Make sure the main and auxillary ports are connectd to the respective ports on the router.



NOTE: The AUX ports are downlink only, whereas the main ports are both uplink and downlink. Therefore this unit provides MIMO 2X1.



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