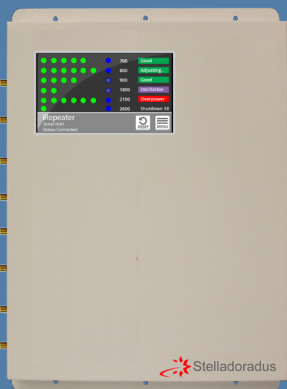


# CombinerAmp

The CombinerAmp (iC) is a commercial grade cellular amplifier for ships and fleet vehicles that works for all mobile operators. It will allow your router to stay connected to mobile signal 30km from the coastline. It has 8 ports that can connect up to 4 radio cards in a 2X2 MIMO configuration, allowing for faster MIMO download speeds.

If connected to the Pepwave HD4, with 4 radio cards, it will reduce the number of cables to your outdoor antennas by a factor of 4.

When connected to the Stelladoradus cloud platform, you can remotely manage, monitor, and adjust the amplifier, as well as receive real-time measurements of signal power, signal gain, plus other control metrics for each band.



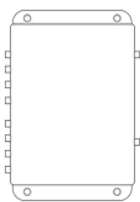
## Features:

- LCD Touch Display - Enhanced user experience<sup>1</sup>
- 8X ports for up to 4 radio cards, 2X1 MIMO
- Reduce number of cables to your outdoor antennas
- Remote monitoring - Alarms/GPS/API/History Graphs<sup>1</sup>
- Boosts all operators - Works with all SIMs operators
- 5G ready.
- Conforms to E.T.S.I specifications.

| Models                     | Bands                    | Cloud | Interface | PSU    | Weight | DIMS(cm)      |
|----------------------------|--------------------------|-------|-----------|--------|--------|---------------|
| iC5-US*                    | B4, B5, PCS, B1, B7      | Yes   | Touch LCD | 12V,5A | 2kg    | 43 X 30 X 3.8 |
| iC6-EU                     | B28, B20, B8, B3, B1, B7 | Yes   | Touch LCD | 12V,7A | 2kg    | 43 X 30 X 3.8 |
| <sup>2</sup> LTE-Combiner8 | B28, B20, B8, B3, B1, B7 | No    | LEDs      | 12V,7A | 1.8kg  | 35 X 30 X 3.5 |

\*Caribbean only

## Standard kit includes:



CombinerAmp



Power Supply

## Works with:

- Pepwave
- Cisco
- Asus
- Huawei
- Siemens
- Viprinet
- TP-Link
- Teltonika
- Airbridge
- Passari

<sup>1</sup>Internet connected CombinerAmps only. (iC6/iC5)

<sup>2</sup>This is our previous generation iC which does not have monitoring or a touch LCD panel.

Check models above for your frequencies

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

## Amplifier Specs

|                             |   |
|-----------------------------|---|
| Gain                        | Uplink Gp: 15dB      Downlink 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 <sup>1</sup>                                |
| Uplink Switch On            | Yes <sup>2</sup>                                      |
| AGC Range                   | 30dB  |
| Surge protection            | SMA connectors DC grounded, 12V DC port MOV protected |
| Ports (SMA)                 | 8X ports (4 Radio cards 2X1 MIMO)                     |

## Antennas (Optional)      Outdoor Omni

|                           |                  |
|---------------------------|------------------|
| Nominal Gain              | 5dBi             |
| 3dB beam Pattern          | 38° x 35°        |
| Bandwidth                 | 700MHz - 2700MHz |
| VSWR                      | <2               |
| Front to Back Ratio       | > 20dB           |
| Polarization              | Vertical         |
| Power Rating              | 100W             |
| Impedance                 | 50-OHM           |
| Termination               | N-Female         |
| Cross Pol. Discrimination | -20dB            |
| Dimensions                | 365x 33mm        |
| Weight                    | 0.4kg            |
| Wind velocity             | 216km/hr         |
| Working temperature       | -40°C to +65°C   |

<sup>1</sup>Automatically adjusts during installation. Thereafter, automatically adjusts for seasonal variation in pathloss between the base station and the outdoor antenna.

<sup>2</sup>The 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.

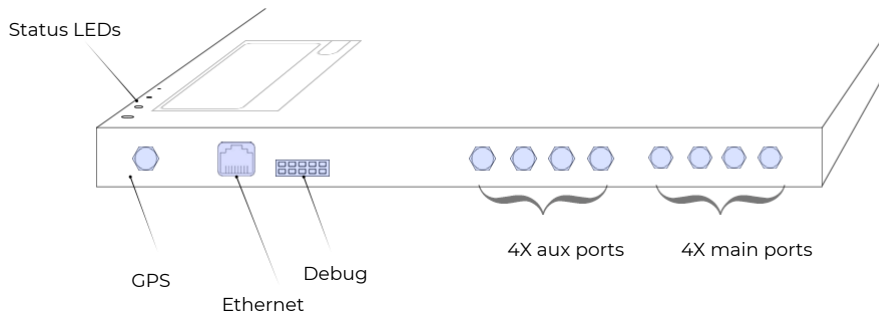
## Install diagram

The iC can amplify the mobile signal of up to 4X radio cards. For example, with the Pepwave HD4 below, the blue lines signify the main ports, the green line, the auxiliary ports. There are 2X outdoor antennas that supply signal for all 4 radio cards. This reduces a total run of 8 cables down to just 2, making installation much simpler.

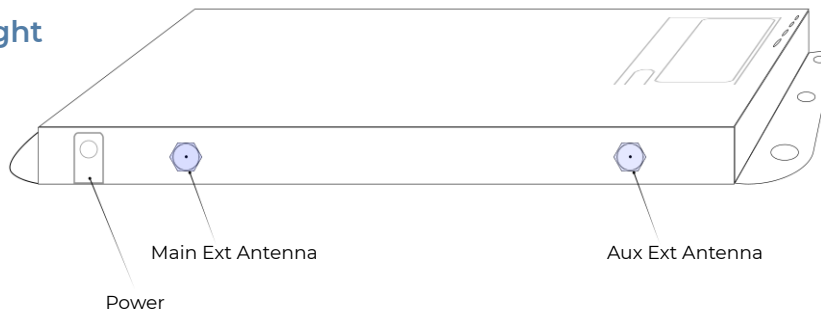
The 2X2 MIMO will double your download speeds in many cases.



## Profile left



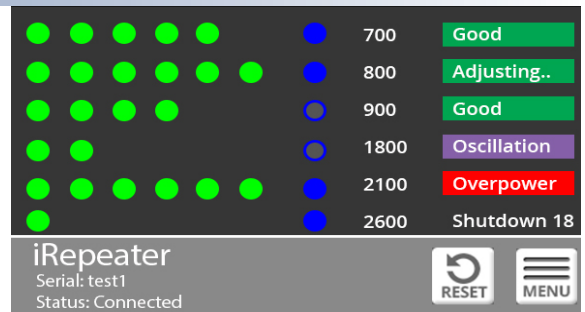
## Profile right



## Main screen:

The green dots represent the downlink signal power.

The blue dot means that the band is switched on. This will happen when the radio is initiating a data session. Once the data session is over, the band switches off and the blue dot also switches off.



|             |  |
|-------------|--|
| Good        | Band has no problems.  |
| Adjusting   | Band is optimizing itself. This usually happens only once at boot up and only if there is a lot of down link power.  |
| Overpower   | There is a very strong outdoor signal. There is no need to do anything in this case as the repeater will optimize itself to deal with this.  |
| Oscillation | Interference between the indoor and outdoor antennas. You should separate these antennas from each other to avoid oscillation. A separation of at least one solid block wall is recommended. |

## Decibel (dB) page:

The dB page shows the raw data coming from the amplifier. These dB values are very accurate.

Here we can see how the AGC (Automatic Gain Control) works on both uplink and downlink, and also how the amplifier manages oscillations.

| Frequency (MHz) | 700 | 800 | 900 | 1800 | 2100 | 2600 |
|-----------------|-----|-----|-----|------|------|------|
| Power up (dBm)  | -15 | -15 | -15 | -15  | -15  | -15  |
| Power dn (dBm)  | -30 | -30 | -30 | 12   | -30  | -30  |
| Phone up (dB)   | 5   | 5   | 5   | 5    | 5    | 5    |
| Temp up/dn (dB) | 0   | 0   | 0   | 0    | 0    | 0    |
| Clamp (dB)      | 0   | 0   | 0   | 0    | 0    | 0    |
| mgain (dB)      |     |     | 0   | 0    | 0    | 0    |
| Max Osc (dB)    | 0   | 0   | 0   | 0    | 0    | 0    |
| Total Loss dn   | 0   | 0   | 0   | 3    | 0    | 0    |

|             |   |
|-------------|---|
| Power Up    | Uplink power received by the repeater. (Power emitted by your phone)  |
| Power dn    | Downlink power received by the repeater. (from the base station)  |
| Phone up    | Uplink AGC - for phones passing nearby internal antennas, or just high power devices. Controls spikes in the uplink signal.   |
| Temp up/dn  | Uplink <i>and</i> downlink AGC. This controls the uplink and downlink gain at the same time, for when the base station downlink signal is too strong.                   |
| Clamp       | Extra attenuation added for when there is an oscillation or high sustained DL power. This ensures any oscillation is completely removed.                                |
| mgain:      | This is the manual gain. You can add your own attenuation to any band. Sometimes this is necessary for when there is too much power on any one band.                    |
| Max Osc:    | This value is a permanent reduction to the gain of the amplifier, due to an oscillation.*   |
| Total loss: | This is a sum of the temp up/dn + clamp + mgain + max osc. This value can be entered into the stellacontrol floorplan tool to help you to design your repeater systems. |

## Other LCD features

|                   |   |
|-------------------|---|
| Pin Access        | The default PIN code is 888888. This can be changed at a later stage on stellacontrol.com   |
| Band On/Off       | Turn any band on or off.  |
| Band attenuation  | Add up to 15dB of attenuation to any band.  |
| Internal location | Here you can type a note about the amplifier. This note is sent and displayed on the stellacontrol inventory page. An example note would be the internal location of the amplifier. |

\*Every 24 hours these oscillation reductions are cleared.