



LigoPTP 5-N UNITY

Quick Installation Guide

Revision 1.5

January 6, 2015

Copyright

© 2015 LigoWave

This user's guide and the software described in it are copyrighted with all rights reserved. No part of this publication may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the written permission of LigoWave.

Notice

LigoWave reserves the right to change specifications without prior notice.

While the information in this manual has been compiled with great care, it may not be deemed an assurance of product characteristics. LigoWave shall be liable only to the degree specified in the terms of sale and delivery.

The reproduction and distribution of the documentation and software supplied with this product and the use of its contents is subject to written authorization from LigoWave.

Trademarks

LigoWave logo is trademark of LigoWave LLC.

All other registered and unregistered trademarks in this document are the sole property of their respective owners.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The device must not be installed where a TDWR can strike the antenna at a distance of less than 3.1 miles (5km).

FCC Caution

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

FCC Radiation Exposure Statement

To comply with FCC RF exposure requirements in section 1.1307, a minimum separation distance of 3.9 feet is required between the antenna and all occupational persons, and a minimum separation distance of 8.7 feet is required between the antenna and all public persons.

Antenna Installation

WARNING: It is installer's responsibility to ensure that when using the authorized antennas in the United States (or where FCC rules apply), only those antennas certified with the product are used. The use of any antenna other than those certified with the product is expressly forbidden in accordance to FCC rules CFR47 part 15.204. The installer should configure the output power level of antennas, according to country regulations and per antenna type. Professional installation is required of equipment with connectors to ensure compliance with health and safety issues.

Antenna Compliance

The LigoPTP 5-N UNITY radio module has been tested and certified with the following antennas:

- Dish (30dBi)
- Panel (23dBi)

Any antenna of same make and lower gain than those listed above may be used in compliance with certification.

CE Mark Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

R&TTE Compliance Statement

This equipment complies with all the requirements of the Directive 1999/5/EC of the European Parliament and the Council of 9 March 1999 on Radio Equipment and Telecommunication Terminal Equipment and the Mutual Recognition of their Conformity (R&TTE).

The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this manual and of the computer manufacturer must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries Not Intended for Use

None.

Contents

Copyright	2
Notice	2
Trademarks	2
FCC Warning.....	3
FCC Caution	3
FCC Radiation Exposure Statement	3
Antenna Installation	3
Antenna Compliance	3
CE Mark Warning	4
R&TTE Compliance Statement	4
Safety	4
EU Countries Not Intended for Use	4
CONTENTS.....	5
ABOUT THIS GUIDE	6
Purpose	6
Definitions, Acronyms and Abbreviations.....	6
LigoWave Technical Support.....	6
Contact Us.....	6
INSTALLATION.....	7
Package Contents	7
Hardware Introduction	7
Mounting the LigoPTP 5-N UNITY	8
Mounting on a Pole.....	8
Mounting on a Wall	9
ACCESS THE LIGOPTP 5-N UNITY	11
Connection via WEB browser	11
Resetting to Factory Defaults.....	12
OLED Display Control	13
DECLARATION OF CONFORMITY.....	14

About This Guide

Purpose

The purpose of this guide is to provide a quick and easy explanation of getting started with the LigoPTP 5-N UNITY. This is only a starter guide and full documentation may be found at our online wiki: <http://www.ligowave.com/wiki>.

Definitions, Acronyms and Abbreviations

The following typographic conventions and symbols are used throughout this document:



Additional information that may be helpful but which is not required.



Important information that should be observed.

LigoWave Technical Support

If you encounter problems when installing or using this product, please consult the LigoWave website at www.ligowave.com for:

- Direct contact to the LigoWave support centers.
- Frequently Asked Questions (FAQ).
- Download area for the latest software, user documentation and product updates.

Contact Us

EU office:

Sauletekio ave. 15 – 610
Vilnius LT-10244, Lithuania

US office:

LigoWave
138 Mountain Brook Drive
Canton, GA 30115
United States of America

Phone: +1 877 544 6928 (1 877 LigoWave)
+1 678 490 0108 (UTC -5)

Installation

This chapter provides installation instructions for the hardware and software components of the LigoPTP 5-N UNITY.

Package Contents

The LigoPTP 5-N UNITY comes with the following:

Component Name	Quantity
LigoPTP 5-N UNITY	1
Articulating mounting bracket hardware	1
Screws for mounting bracket attaching to the device	4
Screws for pole mounting	2
48V 802.3af PoE	1



If any of these items are missing or damaged, please contact your reseller.

Hardware Introduction

The LigoPTP 5-N UNITY unit is housed in rugged, cast aluminum enclosure and features two N-type connectors for external antennas.

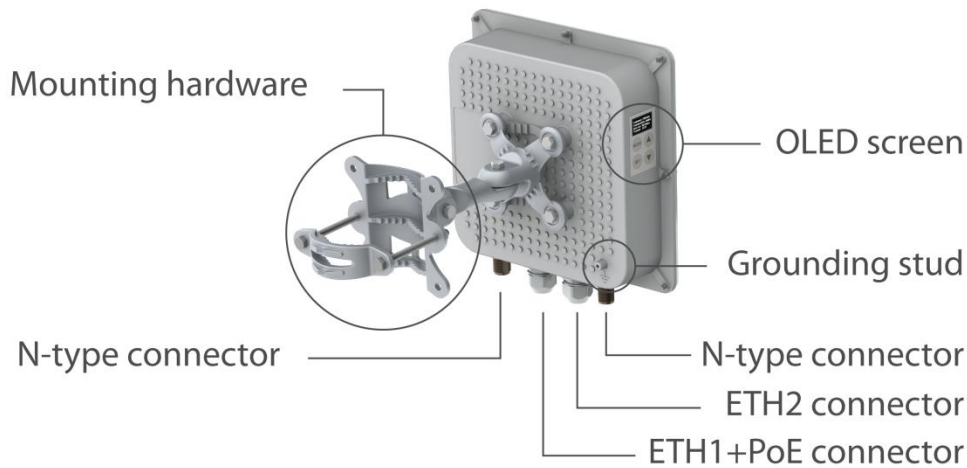


Figure 1 – LigoPTP 5-N UNITY Overview



The label of the LigoPTP 5-N UNITY contains following information:

- **Model name.** The official model name is **LigoPTP 5-N UNITY**.
- **Serial number.**
- **Radio MAC.**
- **Ethernet MAC.**
- **FCC ID.**
- **IC ID.**

Mounting the LigoPTP 5-N UNITY

Mounting bracket of LigoPTP 5-N UNITY unit is designed to make installation on a wall or a pipe easy. The unit is attached and its position is fixed with the single bolt.

Mounting on a Pole

The PTP units are supplied with mounting hardware for pole with diameters in the range 10mm to 70mm installations. Follow the steps for LigoPTP5-N UNITY installation on a pole:

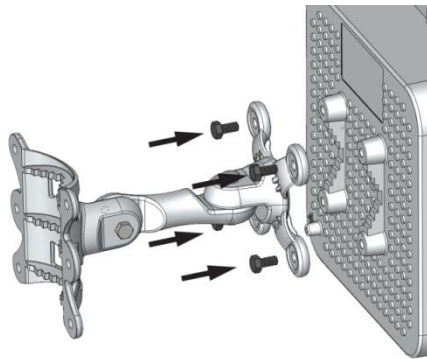
Step 1. Make sure that the unit is powered-off.

Step 2. Ground the unit. The unit must be properly grounded to protect against lightning. The grounding wire must be attached to the grounding stud on the unit.



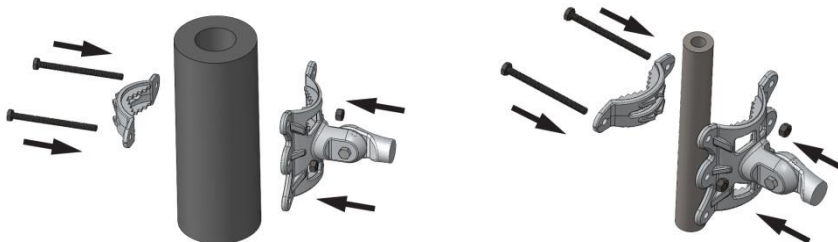
If the unit is attached to a metal pole which is earth-grounded, no further grounding is required.

Step 3. Connect the unit to the bracket together and tighten up with the screws:



It is recommended not to tighten the unit's mounting bracket details until the alignment process of the antenna is complete.

Step 4. Attach the mounting bracket and the pole clamp with the bolts and nuts. The clamp's orientation will differ according the pole's diameter as displayed below:



Step 5. Power-up the unit.



IMPORTANT: make sure that external antennas are connected before powering up the LigoPTP 5-N UNITY to avoid possible damage.



It is recommended to use shielded Ethernet cable to reduce exposure of the electromagnetic noise.

Step 6. Run the **Antenna Alignment** tool on Web management interface or on OLED display and move the antenna in the horizontal and vertical planes until the maximum RSSI visible on the Antenna Alignment graph is achieved.



Avoid standing directly in front of an operating antenna while aligning.



Figure 2 – Antenna Alignment Tool on Web and OLED.

Step 7. After the maximal RSSI is reached, tighten the unit’s bracket in the optimum position.

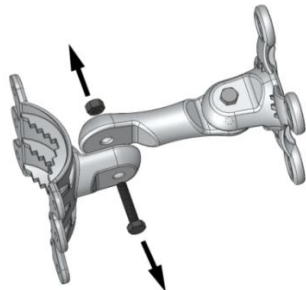
Mounting on a Wall



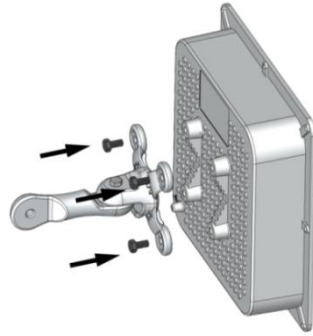
The mounting bolts for unit installation on the wall are not included in the package.

For mounting LigoPTP 5-N UNITY unit on the wall, first mount one half of the bracket to the wall and then connect the two halves of the bracket together and tighten the nut and bolt.

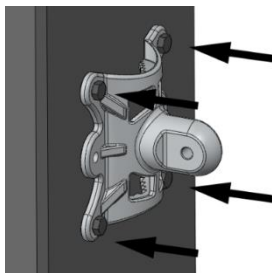
- Step 1.** Make sure that the unit is powered-off.
- Step 2.** Ground the LigoPTP 5-N UNITY unit. The unit must be properly grounded to protect against lightning. The grounding wire must be attached to the grounding stud on the unit.
- Step 3.** Dismantle mounting bracket into the two parts for easier attachment to the wall:



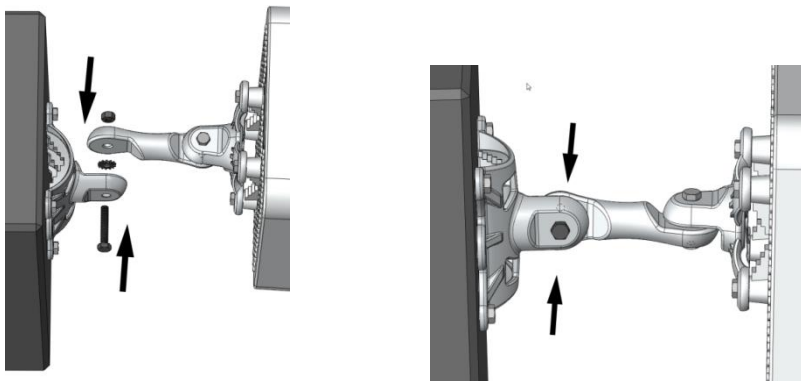
- Step 4.** Attach the following part of the mounting bracket to the unit with 4 screws as displayed below:



- Step 5.** Attach the second part of the mounting bracket to the wall using screws (not included) as displayed below:



- Step 6.** Connect the mounting bracket together as displayed below and tighten up:



It is recommended not to tighten the units to its mounting brackets until the alignment process of the antenna is complete.

- Step 7.** Power-up the LigoPTP 5-N UNITY unit.



IMPORTANT: make sure that external antennas are connected before powering up the LigoPTP 5-N UNITY to avoid possible damage.



It is recommended to use shielded Ethernet cable to reduce exposure of the electromagnetic noise.

- Step 8.** Run the **Antenna Alignment** tool on Web management interface (*Figure 2 – Antenna Alignment Tool on Web and OLED.*) or on OLED screen and move the antenna in the horizontal and vertical planes until the maximum RSSI visible on the Antenna Alignment graph is achieved.



Avoid standing directly in front of an operating antenna while aligning.

- Step 9.** After the maximal RSSI is reached, tighten the unit's bracket in the optimum position.

Access the LigoPTP 5-N UNITY

The first connection to the LigoPTP 5-N UNITY can be made using a standard Ethernet cable connected directly to your PC. See next sections for the instructions on how to access the LigoPTP 5-N UNITY management interfaces.

Connection via WEB browser

The default IP address of the LigoPTP 5-N UNITY is 192.168.2.66 with a subnet mask of 255.255.255.0.

Step 1 Configure your PC with a static IP address on the 192.168.2.0 subnet (i.e. 192.168.2.10) with mask 255.255.255.0. Connect the LigoPTP 5-N UNITY Ethernet interface in to the same physical network as your PC. Open the Web browser and type the default IP address of the unit: <https://192.168.2.66/>



Step 2 Enter the administrator login details to access the Web management:



The default administrator login settings for all LigoPTP 5-N UNITY are:

Login: **admin**

Password: **admin01**

Step 3 After successful administrator log on you will see the main page of the LigoPTP 5-N UNITY Web management interface. The unit now is ready for configuration. For further instructions on Web management refer to the respective document at the LigoWave wiki at <http://www.ligowave.com/wiki>

Resetting to Factory Defaults

LigoPTP 5-N UNITY units have the capability of being reset to defaults by pinging the device with a certain packet size when the radio is booting. During the startup of the device, when the drivers of the ethernet interfaces are loaded, the discovery daemon is started. The daemon suspends startup process for 3 seconds and waits for ICMP "echo request" packet of length 369 bytes. If the packet received, the discoveryd resets the device to default configuration.



It is recommended to connect PC to the device via switch, as depending on PC OS settings, the ARP table might be flushed during wired link status change (connecting the device that will be reset).

Steps to reset to default settings:

Step 1. Power off the device.

Step 2. Obtain the device MAC address.

Step 3. Connect a PC to the same physical subnet as the device.

Step 4. Execute 'arp -s' command to assign the IP address (IP address should be from the same subnet as PC) to the device MAC address:

```
arp -s <IP address to assign> <device MAC address>
```



Note that syntax of MAC address differs depending on OS:

- Linux OS: AA:BB:CC:DD:EE:FF
- Windows OS: AA-BB-CC-DD-EE-FF

Step 5. Start pinging the device:

For Linux users: ping <IP address> -s 369

For Windows users: ping <IP address> -l 369 -t -w 200

Step 6. Power up device and wait about 30sec or more (depending on device hardware).

Step 7. Stop pinging the device, and let the device boot as usual. The device should start up with factory default settings.

OLED Display Control

LigoPTP 5-N UNITY has the capability to monitor the primary device's parameters and execute maintenance tasks through an OLED display and keypad.



OLED display menu:

- Unlock/Lock
- Antenna alignment
- Link test
- Statistics
- Reboot
- Reset to defaults

Steps to use OLED display and keypad:

- Step 1.** Press and hold "SET" for 3 seconds to unlock (to lock again press "SET" once). The keypad automatically locks and the OLED turns off after 5 min of inactivity.
- Step 2.** Press "UP" or "DOWN" button to navigate menu items.
- Step 3.** From the main menu, choose Antenna alignment and press "SET" to enter and show local and remote signal levels. Press "UP" or "DOWN" button to next/exit page, press "SET" to return to main menu.
- Step 4.** From the main menu, choose Link test and press "SET" to enter. Press "MODE" button to change packet size, press "SET" to start the link test. Press "UP" or "DOWN" button to next/exit page, press "SET" to return to main menu.
- Step 5.** From the main menu, choose Statistics and press "SET" to enter and show device's/link information. Press "UP" or "DOWN" button to next/exit page, press "SET" to return to main menu.
- Step 6.** From the main menu, choose Reboot and press "SET" to enter. Press "SET" button and hold for 5 seconds to reboot the device. Press "UP" or "DOWN" button to next/exit page, press "SET" to return to main menu.
- Step 7.** From the main menu, choose Reset to defaults and press "SET" to enter. Press "SET" button and hold for 5 seconds to reset the device's configuration to factory defaults. Press "UP" or "DOWN" button to next/exit page, press "SET" to return to main menu.

Declaration of Conformity

Česky [Czech]

Deliberant tímto prohlašuje, že tento Ligowave LigoPTP 5-N UNITY, je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.

Dansk [Danish]

Undertegnede Deliberant erklærer herved, at følgende udstyr Ligowave LigoPTP 5-N UNITY, overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

Nederlands [Dutch]

Hierbij verklaart Deliberant dat het toestel Ligowave LigoPTP 5-N UNITY, in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.

Bij deze verklaart Deliberant dat deze Ligowave LigoPTP 5-N UNITY, voldoet aan de essentiële eisen en aan de overige relevante bepalingen van Richtlijn 1999/5/EC.

English

Hereby, Deliberant, declares that this Ligowave LigoPTP 5-N UNITY, is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Eesti [Estonian]

Käesolevaga kinnitab Deliberant seadme Ligowave LigoPTP 5-N UNITY, vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Suomi [Finnish]

Deliberant vakuuttaa täten että Ligowave LigoPTP 5-N UNITY, tyypinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Français [French]

Par la présente Deliberant déclare que l'appareil Ligowave LigoPTP 5-N UNITY, est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Par la présente, Deliberant déclare que ce Ligowave LigoPTP 5-N UNITY, est conforme aux exigences essentielles et aux autres dispositions de la directive 1999/5/CE qui lui sont applicables.

Deutsch [German]

Hiermit erklärt Deliberant, dass sich diese Ligowave LigoPTP 5-N UNITY, in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet. (BMW)

Hiermit erklärt Deliberant die Übereinstimmung des Gerätes Ligowave LigoPTP 5-N UNITY, mit den grundlegenden Anforderungen und den anderen relevanten Festlegungen der Richtlinie 1999/5/EG. (Wien)

Ελληνική [Greek]

ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Deliberant ΔΗΛΩΝΕΙ ΟΤΙ Ligowave LigoPTP 5-N UNITY, ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.

Magyar [Hungarian]

Alulírott, Deliberant nyilatkozom, hogy a Ligowave LigoPTP 5-N UNITY, megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.

Íslenska [Icelandic]

Hér með lýsir Deliberant yfir því að Ligowave LigoPTP 5-N UNITY, er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.

Italiano [Italian]

Con la presente Deliberant dichiara che questo Ligowave LigoPTP 5-N UNITY, è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Latviski [Latvian]

Ar šo Deliberant deklarē, ka Ligowave LigoPTP 5-N UNITY, atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.

Lietuvių [Lithuanian]

Šiuo Deliberant deklaruoja, kad šis Ligowave LigoPTP 5-N UNITY, atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

Malti [Maltese]

Hawnhekk, Deliberant, jiddikjara li dan Ligowave LigoPTP 5-N UNITY, jikkonforma mal-htigijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fd-Dirrettiva 1999/5/EC.

Norsk [Norwegian]

Deliberant erklærer herved at utstyret Ligowave LigoPTP 5-N UNITY, er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.

Slovensky [Slovak]

Deliberant týmto vyhlasuje, že Ligowave LigoPTP 5-N UNITY, spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.

Svenska [Swedish]

Härmed intygar Deliberant att denna Ligowave LigoPTP 5-N UNITY, står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

Español [Spanish]

Por medio de la presente Deliberant declara que el Ligowave LigoPTP 5-N UNITY, cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Polski [Polish]

Niniejszym, firma Deliberant oświadcza, że produkt serii Ligowave LigoPTP 5-N UNITY, spełnia zasadnicze wymagania i inne istotne postanowienia Dyrektywy 1999/5/EC.

Português [Portuguese]

Deliberant declara que este Ligowave LigoPTP 5-N UNITY, está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE



To get full CE declaration of conformity documents, refer at <http://www.ligowave.com/conformity>.