Ciholas DWETH101

User Manual

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Introduction

The Ciholas DWETH101 is an Ethernet device that relies on ultra-wideband (UWB) pulses and time-stamp information to capture real-time location and sensor data. The DWETH101 can receive UWB pulses from objects of interest and transmit time-sync data in real time. The DWETH101 is positioned around an area in which tracking and data collection are desired. The DWETH101s are small and easily movable allowing for quick setup and tear-down before and after use. This makes the Ciholas DWETH101s an ideal solution for fast and accurate real-time tracking.

Regulatory Information

FCC Notice (For US Customers):

FCC ID: 2ALIR-DWETH101

Model: DWETH101

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: 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 or more 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/television technician to help.

Changes and modifications not expressly approved by Ciholas, Inc. can void your authority to operate this equipment under Federal Communications Commissions rules.
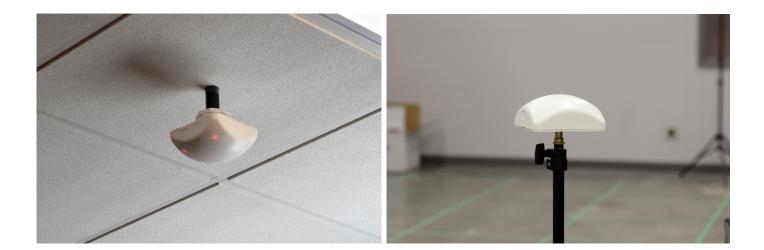
Usage Instructions

Overview

The DWETH101 receives real-time UWB beacons from tags attached to an object of interest. These beacons are used to calculate the real-time location. The DWETH101 is capable of receiving real-time data from UWB tags or interfacing with other DWETH101s placed around the tracking area in order to calculate real-time position and collect sensor data. The DWETH101 is a standard Ethernet device and is powered via daisy-chainable passive-power injection.

Placement

The DWETH101 devices should be distributed throughout the desired tracking area. To achieve a higher precision of position tracking within an area a higher density of DWETH101s can be used.

Example Mounting:

Product Specifications

Main System Components

Micro-controller: 32-bit ARM Cortex-M7 RISC processor with FPU

RF Transceiver: Decawave DW1000 Ultra Wideband (UWB) IEEE802.15.4-2011

Sensors: Inertial, Temp/Humidity, Barometric Pressure

I/O: 3-port 10/100Mbps Ethernet Switch

Indicators: 4 Tri-Color LEDs (Red, Green, Blue)

Power: 5-60V DC, supports Chainable Powered Ethernet (CPE)

Operating Voltage: 3.3V

Temperature Range: -40 - 85C

Mechanical

Width: 5.0"

Depth: 5.0"

Height: 2.2"

Weight: 0.54 lbs

RF Characteristics

UWB IEEE802.15.4-2011

Channel: 5

Bandwidth (Values in GHz):

f_M	The highest emission peak	6.7388
f_L	10 dB below the highest peak	6.1414
f_H	10 dB above the highest peak	6.8347
Bandwidth	Calculated: (f_H - f_L) 0.6933	

Data Rate: 6.81Mbps

Antenna: 0 dBi Omnidirectional