

Anchors

Sewio Documentation

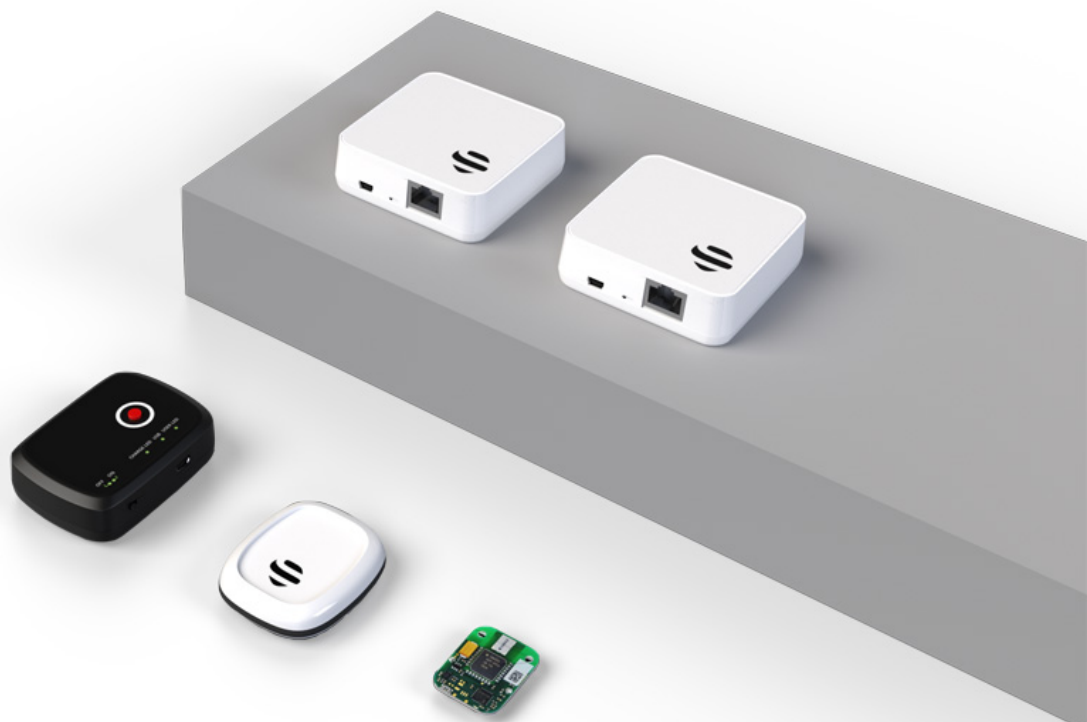
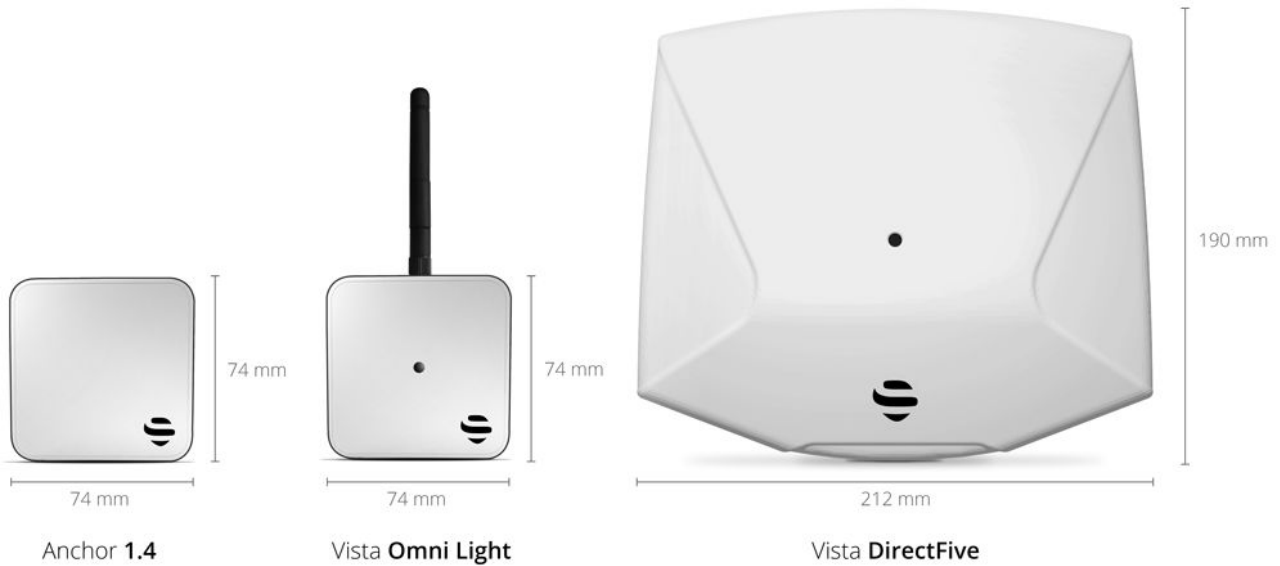
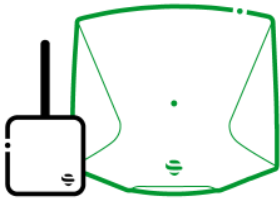


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Anchor Type	Anchor 1.4	Vista Omni Light	Vista DirectFive
Product Status	END OF LIFE	AVAILABLE	AVAILABLE
Released	2017	2019	2019
Size	74 x 74 x 25	74 x 74 x 25	212 x 190 x 36
Weight	72 g	72 g	390 g
Operating Conditions	0 - 50 °C	0 - 60 °C	-20 - 60 °C
Warmup period	20 minutes*	zero	zero
UWB Antenna	omni	true omni	high-gain directional
Passive PoE 48V	✓	✓	✓

Active PoE IEEE 802.3af, Cisco Compatible	✘	✔	✔
Battery Power Supply	USB Power Bank	PoE Power Bank**	PoE Power Bank**
Ethernet Backhaul	✔	✔	✔
WiFi Backhaul	optional	optional	optional
Remote LED Identification	✔	✔	✔
Barometer	✘	✔	✔
Clock Type	XTAL	TCXO	TCXO

*Anchor is able to provide True Location after warmup period

**available through PoE Power bank or USB to PoE converter, see [accessories](#).

1 Anchor Vista OmniLight

Feature Set

- Decawave UWB Radio
- Manageable via web browser and RTLS Studio
- Ethernet (recommended) and Wi-Fi backhaul
- Firmware upgrade via Ethernet

NEW True 360° omni range

NEW IEEE 802.3af compliant (Active PoE)

NEW Atmospheric pressure sensor

NEW Zero Warm-up Time

NEW Robust Synchronization



Anchor is a reference device with a known position. Set of Anchors creates location infrastructure where Tags are being located with sub-meter accuracy. The primary goal of the device is to gather radio signals from mobile locators called Tags and forward them to RTLS Studio where the position is being estimated.

Moreover, Anchors can also receive data from sensors equipped within the Tag such as acceleration, orientation, button event or custom data payload. Data are further exposed to the user via open API.

Anchor is an IP network device equipped with an Ethernet/Wi-Fi interface for both data backhaul

and/or power supply. Anchors are configured and managed via RTL Studio software. They support variety of holders to simplify the installation in any premises. They are mounted above Tags which ensures maximum coverage and minimizes obstacles blocking its communication line.

Key Features of Anchor Vista Omni Light

Feature	Benefit	Description
PoE 802.3af	Remote Power Management	PoE Enables continuous power integrity health-check. In case of outage or system shutdown it enables to make power restart procedure remotely which might be crucial since anchors are not usually easily reachable.
	Reducing Cabling	Anchor consumes just 2W thus, empowering PoE In/PoE Out network extender device is feasible. It enables significantly reduce long cables coming inherent for Ethernet star topology. PoE In / PoE Out can be reduce multiple long cables to single cable with star cabling only within given location cell.

Other improvements of Anchor Vista line

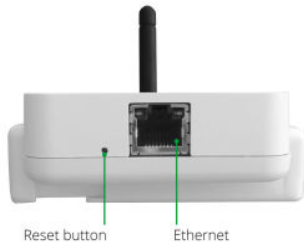
Feature	Benefit	Description
True 360° omnirange	No need for device orientation adjustments.	This design provides uniform omnidirectional pattern, thus there is equal range in 360°. Therefore no need for an additional and painful device orientation adjustments especially once the anchor is deployed and becomes physically unreachable.
Zero Warmup Time	Fast commissioning	Precise location requires sub-nano second synchronization. It takes around 20 minutes for synchronization stabilization for previous Anchor 1.4. Now, Anchor is ready immediately after the power-up.
Robust Sync	Stable Positioning robust against environmental conditions.	TDoA requires sub-nano second synchronization. Current Anchor version is sensitive to rapid airflow or sudden changes in temperature which causes troubles with anchor's synchronization. It might lead to incorrect positioning at the end. After a long research we have designed a new approach where Anchor Vista is able to be very resilient against various environmental condition.

Feature	Benefit	Description
Barometer Sensor on board	Positioning to measure Z-axis via barometer	Measuring Z-axis via UWB requires diagonal 3D anchors placement at different heights, which is quite impractical for most of applications outside the lab environment. Latest advances in MEMS sensors allows to incorporate very precise barometer sensor. Sewio on the top of it has developed Z-axis estimation based on relative barometric measurements between tag and anchors. It can be precise at dm-level of accuracy without any requirements on anchor infrastructure.

1.1 Partnumber

PN	name
SWA07-00-00	Anchor Vista OmniLight
SWA07-01-00	Anchor Vista OmniLight WiFi

1.2 Technical Parameters - Vista OmniLight



Size	74 x 74 x 25
Weight	72 g
Power Supply	PoE 802.3af or DC 48V (Passive PoE)
Power Requirements	2.5W
Operating Conditions	0 - 60 °C 20 - 85% humidity without condensation
Warm-up Time	Immediate
Environment	Industrial Warehouse Manufacturing Retail Sports Tracking
Placement	Indoor
UWB Antenna	Omnidirectional CH2, CH5
WiFi 2.4 GHz (optional)	Omnidirectional Antenna
UWB Radiated Power CH2 4 GHz CH5 6.5 GHz	-41.3 dBm/Hz
Approvals	RED/CE, CH5 and CH2. FCC, CH5 only

1.3 Power Supply Options, Vista OmniLight

- **Power Over Ethernet**



Please connect Anchor to network switch supporting PoE IEEE 802.3af standard and connect anchor with Ethernet cable.

Once the Anchor is connected to a stable power supply, a blue LED blink several times that indicates the anchor was turned ON. Then LED is turned OFF.

- **DC 48 V, Passive PoE**

Anchor can be also powered from single or multiple port PoE injector with DC 48V output. Power supply is injected and delivered into unused Ethernet pairs (Pairs 4,5 positive terminal, 7,8 negative terminal).

- **Single-port Injector**

<p>Injector with integrated power source for AC.</p>	<p>Injector which requires external DC 48V power source.</p>
 <p>(Ubiquiti POE-48)</p>	

- **Multi-port Injector for 19" rack**

“Data LAN” ports are connected to the network Switch, “Power+Data” ports are connected to the Anchors.





Always use galvanic isolated 48V power adaptor with short circuit protection for passive PoE injection. Never connect “Power+Data” injector ports to the computer or other network devices.

Recommended PoE Injector power adaptor PN: [GS36E48-P1J](#) or [GST36E48-P1J](#) Meanwell. Available through whole-sellers Mouser, Digikey or Farnell world-wide.

- **Power Bank**

⚠ USB connector is not available in Anchor Vista. Thus either PoE power bank should be used or USB to PoE convertor and standard USB power bank. Please see the [accessories](#).

1.4 Device Mounting, Vista OmniLight

Please follow the assembly guide:



Anchor Vista OmniLight is typically deployed at the height 3 - 6 meters above the floor.

Permanent deployment : Recommended mounting with Wall Mount Bracket + Holder. Antenna should be in straight position in order to get maximum possible performance.



Mobile deployment: can utilize the whitworth 1/4" as it is compatible with the most off-the-shelf tripods and CCTV holders.

1.4.1 Holders PN

name	PN
Wall Mount Bracket	SWC02-00-00
Vista OmniLight Holder	SWC01-00-00

1.5 Package Contains and Accessories, Vista OmniLight

1.5.1 Package Contains

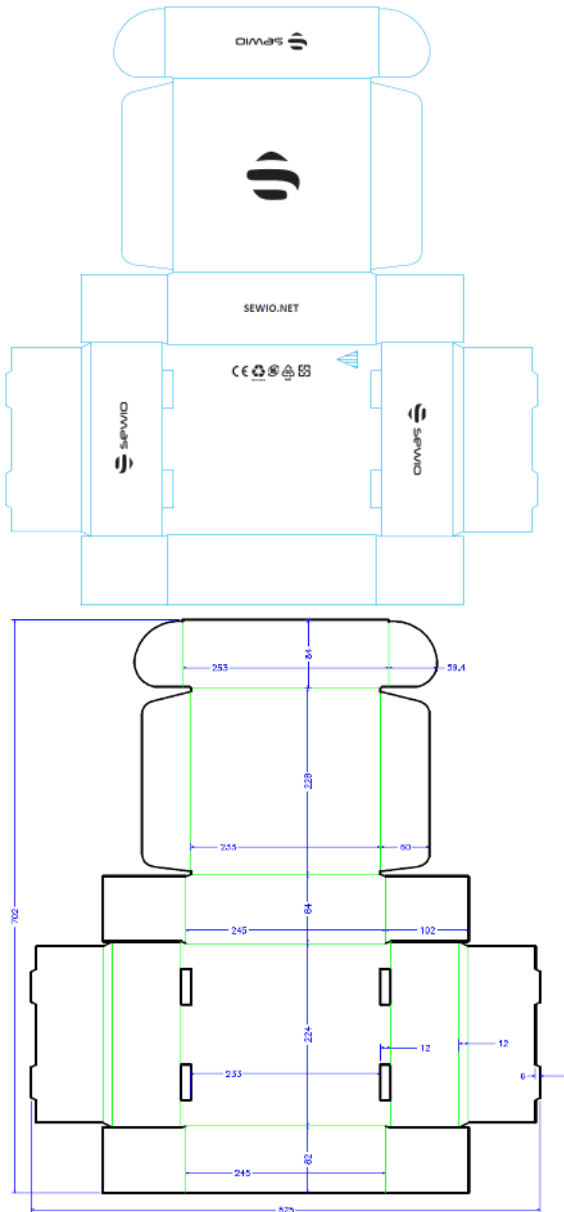
- Anchor Vista OmniLight
- Anchor Holder
- Wall Mount Bracket

1.5.2 Accessories

They are not part of the package.

Sewio Name	Sewio PN	Product Name	Description
PoE PowerBank	N/A	SMART POWERBANK 802.3AF POE 48VDC/300MA	Power bank for demos with Anchor Vista
USB to PoE Converter	N/A	TP-DCDC-2USB-48	DC-DC Converter to PoE from arbitrary power bank
Tripod	N/A	Tripod 3.45m	-
Tripod Whitworth adaptor	N/A	Verified PN Other adaptors (non verified)	Tripod adaptor to Anchor Vista
SMALLRIG	N/A	SMALLRIG	Flexible multipurpose holder.
RAM portfolio	N/A	variety of mouting products	Many types of industrial mounting

1.5.3 Packaging





1.6 Safety and Regulatory Information, Vista OmniLight

1.6.1 Safety Information

- Never open the enclosure of the Vista OmniLight.
- Do not use the Vista OmniLight if it has been damaged

1.6.2 Regulatory Information

FCC Notice (For US Customers): FCC ID: 2ATZ8-SWA07-00

For FCC compliance, the following conditions must be met:

- All units must be exclusively used indoors.
- No devices may be installed at any outdoor locations.

This device is designed to be operated with the supplied antenna. The use of any other antenna with this device is strictly prohibited and may result in the voiding of the FCC authorization for this equipment's operation. It is strictly forbidden to use of any other antenna than the one Sewio Networks s.r.o has supplied.

This device is compliant with FCC Rules, part 15. Its usage is subject to the two following conditions:

(1) this device may not be the cause of any harmful interference, and (2) this device shall accept any interference received, including interference that may interfere with its desired operation.

This device is also in compliance with part 15.517 of the FCC Rules. This equipment may only be used indoors. Usage outdoors violates 47 U.S.C. 301 and the operator could be subject to serious legal penalties.

This equipment is only to be installed and used at a 20 cm minimum distance between the radiator and a person.

Any changes or modifications that have not been expressly agreed to by the Sewio Networks s.r.o could invalidate the user's authority to use the equipment

1.6.3 DISCLAIMER

The information contained within this document is subject to change without prior notice. Sewio Networks s.r.o accepts no responsibility for any inaccuracies or omissions and specifically rejects any losses, liabilities, or risks, personal or otherwise, sustained as a consequence, directly or otherwise, of the use or application of anything contained within this document. In order to obtain the latest documentation, contact Sewio Networks s.r.o.

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user indemnifies Sewio from all claims arising from the handling or use of the goods.

2 Anchor Vista DirectFive

Feature Set

- Decawave UWB Radio
- Manageable via web browser and RTLS Studio
- Ethernet and Wi-Fi backhaul (optional)
- Firmware upgrade via Ethernet



NEW Cutting Edge

Antenna Design

NEW IEEE 802.3af

compliant (Active PoE)

NEW Atmospheric

pressure sensor

NEW Industrial

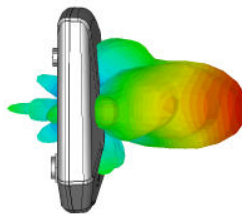
Enclosure

NEW Zero Warm-up

Time

NEW Robust

Synchronization




Anchor is a reference device with a known position. Set of Anchors creates location infrastructure where Tags are being located with sub-meter accuracy. The primary goal of the device is to gather radio signals from mobile locators called Tags and forward them to RTLS Studio where the position is being estimated.

Moreover, Anchors can also receive data from sensors equipped within the Tag such as acceleration, orientation, button event or custom data payload. Data are further exposed to the user via open API.

Anchor is an IP network device equipped with an Ethernet/Wi-Fi interface for both data backhaul and/or power supply. Anchors are configured and managed via RTLS Studio software. They support variety of holders to simplify the installation in any premises. They are mounted above Tags which ensures maximum coverage and minimizes obstacles blocking its communication line.

Key Features of Anchor Vista line

Feature	Benefit	Description
UWB Antenna 	Better Range and Uniform Coverage, no blind spots	<p>Directional antenna was specifically designed for world-wide available UWB channel 5 and scalable TDoA approach. Its design leverage on wireless synchronization where key is to have enough gain to reach neighbor anchors within square, while still have the maximum gain for location area where Tags are moved and signal from them can be easily attenuated.</p> <p>This high performance directional antenna also provide homogeneous/uniform radiation pattern, while this is almost impossible with omni UWB antennas. Therefore, it minimizes possibility of "blind" spots in radiation pattern as well as the within location area as well.</p>
PoE 802.3af	Remote Power Management	PoE Enables continuous power integrity health-check. In case of outage or system shutdown it enables to make power restart procedure remotely which might be crucial since anchors are not usually easily reachable.

Feature	Benefit	Description
	Reducing Cabling	Anchor consumes just 2W thus, empowering PoE In/PoE Out network extender device is feasible. It enables significantly reduce long cables coming inherent for Ethernet star topology. PoE In / PoE Out can be reduce multiple long cables to single cable with star cabling only within given location cell.
Industrial Enclosure	Industry ready solution	Sewio provides Anchor Vista DirectFive with industrial housing which was specifically designed for harsh environments and outdoors. It also perfectly suits industrial environments where lot of dust or dirty impurities are present. Thanks to unique design, it provides barometric measurement for Z-axis even through robust housing.

Other improvements of Anchor Vista line

Feature	Benefit	Description
Zero Warmup Time	Fast commissioning	Precise location requires sub-nano second synchronization. It takes around 20 minutes for synchronization stabilization for previous Anchor 1.4. Now, Anchor is ready immediately after the power-up.

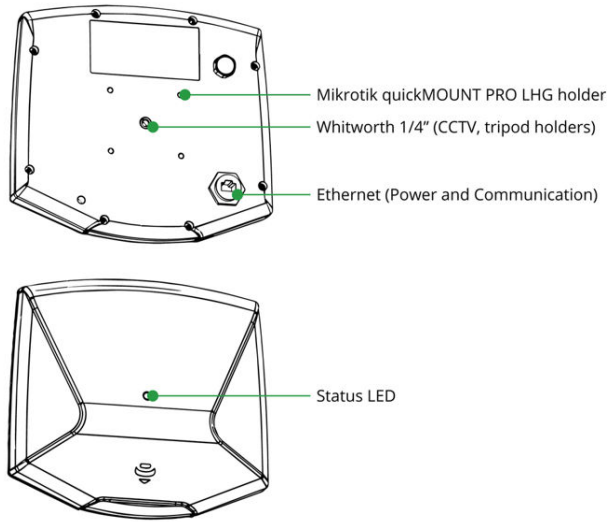
Feature	Benefit	Description
Robust Sync	Stable Positioning robust against environmental conditions	TDoA requires sub-nano second synchronization. Current Anchor version is sensitive to rapid airflow or sudden changes in temperature which causes troubles with anchor's synchronization. It might lead to incorrect positioning at the end. After a long research we have designed a new approach where Anchor Vista is able to be very resilient against various environmental condition.
Barometer Sensor on board	Positioning via barometer	Measuring Z-axis via UWB requires diagonal 3D anchors placement at different heights, which is quite impractical for most of applications outside the lab environment. Latest advances in MEMS sensors allows to incorporate very precise barometer sensor. Sewio on the top of it has developed Z-axis estimation based on relative barometric measurements between tag and anchors. It can be precise at dm-level of accuracy without any requirements on anchor infrastructure.

2.1 Part Number

PN	Name
SWA08-00-00	Anchor Vista DirectFive

PN	Name
SWA08-01-00	Anchor Vista DirectFive WiFi

2.2 Technical Parameters



Size	212 x 190 x 36
Weight	390 g
Power Supply	PoE 802.3af or DC 48V (Passive PoE)
Power Requirements	2.5W
Operating Conditions	-20 - 60 °C 20 - 85% humidity
Warm-up Time	Immediate
Environment	Industrial Warehouse Manufacturing Retail Sports Tracking Livestock
Placement	Indoor
UWB Antenna	Directional CH5
WiFi 2.4 GHz (optional)	Omnidirectional Antenna
UWB Radiated Power CH5 6.5 GHz	-41.3 dBm/Hz
Approvals	RED/CE

2.3 Power Supply Options

- **Power Over Ethernet**



Please connect Anchor to network switch supporting PoE IEEE 802.3af standard and connect anchor with Ethernet cable.

Once the Anchor is connected to a stable power supply, a blue LED blink several times that indicates the anchor was turned ON. Then LED is turned OFF.

- **DC 48 V, Passive PoE**

Anchor can be also powered from single or multiple port PoE injector with DC 48V output. Power supply is injected and delivered into unused Ethernet pairs (Pairs 4,5 positive terminal, 7,8 negative terminal).


- **Single-port Injector**

<p>Injector with integrated power source for AC.</p>	<p>Injector which requires external DC 48V power source.</p>
 <p>(Ubiquiti POE-48)</p>	

- **Multi-port Injector for 19" rack**


“Data LAN” ports are connected to the network Switch, “Power+Data” ports are connected to the Anchors.



Always use galvanic isolated  48V power adaptor with short circuit protection for passive PoE injection. Never connect “Power+Data” injector ports to the computer or other network devices.

Recommended PoE Injector power adaptor PN: [GS36E48-P1J](#) or [GST36E48-P1J](#) Meanwell. Available through whole-sellers Mouser, Digikey or Farnell world-wide.

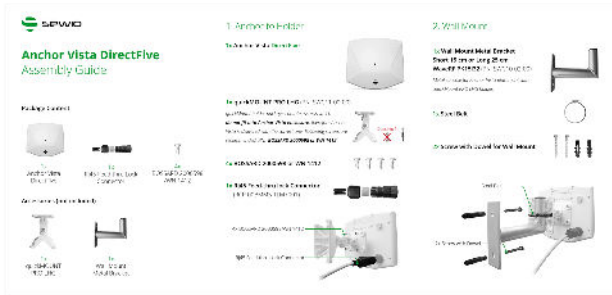
- **Power Bank**

 USB connector is not available in Anchor Vista. Thus either PoE power bank should be used or USB to PoE convertor and standard USB power bank. Please see the [accessories](#).

2.4 Device Mounting

Please follow the assembly guide:

[Assembly Guide-v2.pdf](#)



quickMOUNT PRO LHG holder provides tilt capability up to 30° while metal console maintain minimum separation from the wall. Adjustable holder Mikrotik quickMOUNT PRO LHG + metal console is recommended for permanent anchor placement.

Anchors are typically deployed at the height 4 - 6 meters above the floor. Please read more information about typical anchor deployment within Starting guide and Advanced guide.

Permanent deployment: Mikrotik quickMOUNT PRO LHG + metal console



Mobile deployment: can utilize the whitworth 1/4" as it is compatible with the most off-the-shelf tripods and CCTV holders.



2.5 Package Contains and Accessories

2.5.1 Package Contains

- Anchor Vista DirectFive
- RJ45 Feed-thru lock connector ([RCP-00BMMS-TLM7001](#))
- Screws for quickMOUNT PRO LHG

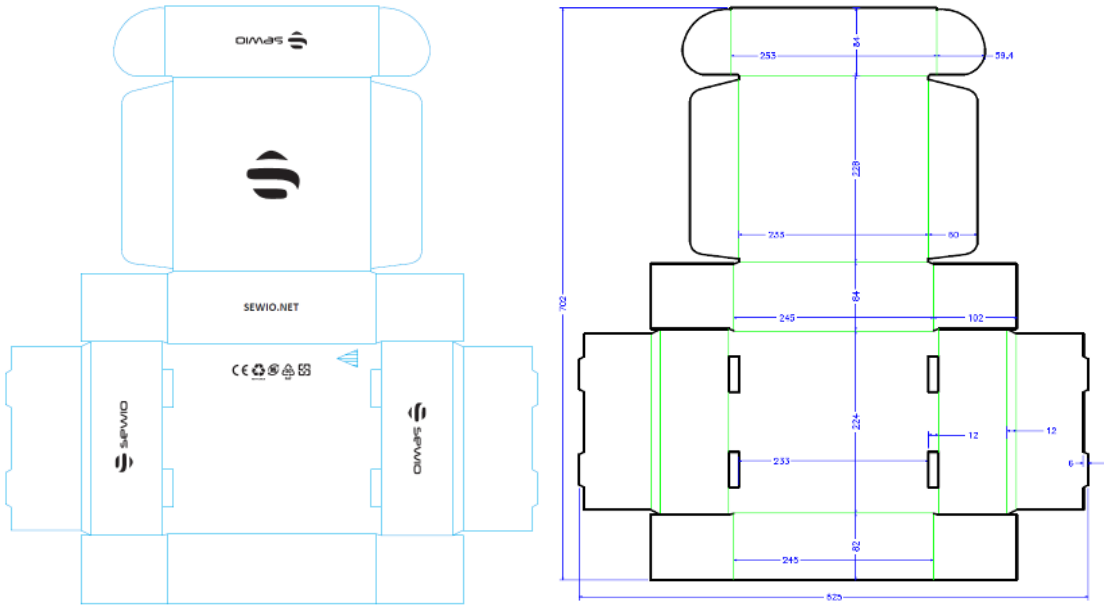
2.5.2 Accessories

They are not part of the package.

Sewio Name	Sewio PN	Product Name	Description
quickMOUNT PRO LHG	SWC11-00-00	quickMOUNT PRO LHG quickMount holder package contains screws which do not fit into Anchor Vista enclosure, therefore Anchor Vista is delivered with the correct one. following screws are recommended: PN: BOSSARD 2000598 or WN 1412 for plastic; 5x12; Head: button; Phillips; steel; zinc.	Recommended holder for Anchor Vista
Wall Mount Metal Bracket - Short 15cm	SWC10-02-00	WaveRF PK15I32	15cm Metal console for Anchor Vista placement with quickMount PRO LHG holder.
Wall Mount Metal Bracket - Long 25cm	SWC10-01-00	WaveRF PK25I28	25cm Metal console for Anchor Vista placement with quickMount PRO LHG holder.
PoE PowerBank	N/A	SMART POWERBANK 802.3AF POE 48VDC/300MA	Power bank for demos with Anchor Vista
USB to PoE Converter	N/A	TP-DCDC-2USB-48	DC-DC Converter to PoE from arbitrary power bank
Tripod Whitworth adaptor	N/A	Verified PN Other adaptors (non verified)	Tripod adaptor to Anchor Vista

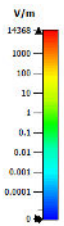
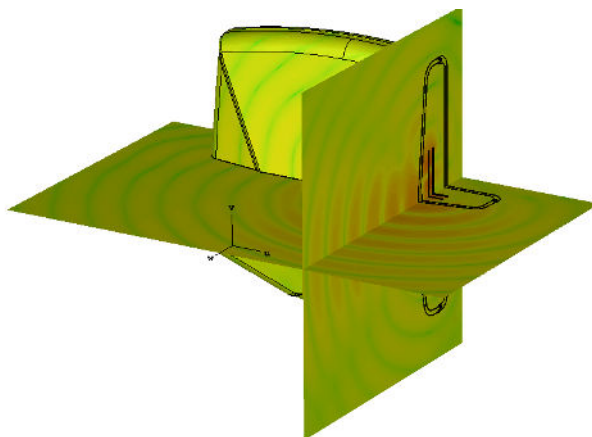
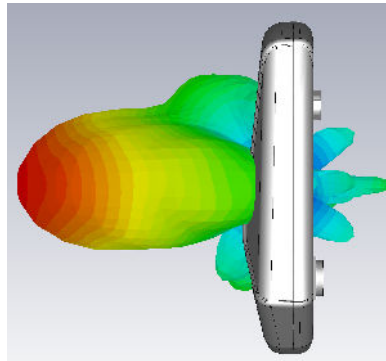
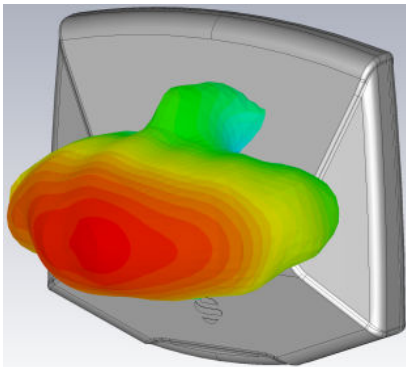
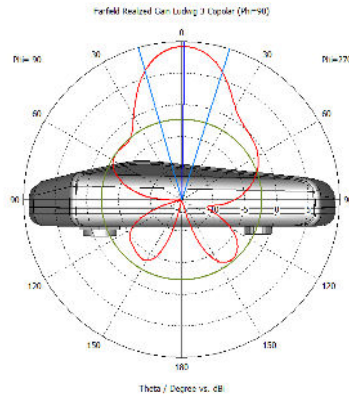
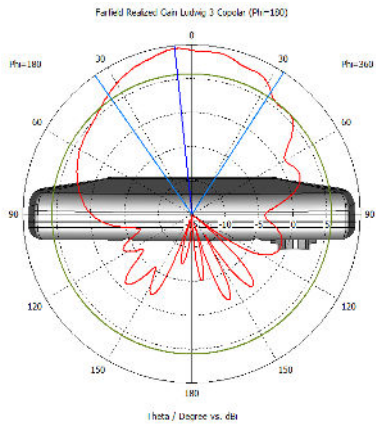
Sewio Name	Sewio PN	Product Name	Description
Tripod	N/A	Tripod 3.45m	-
RAM portfolio	N/A	variety of mouting products	Many types of industrial mounting

2.5.3 Packaging





2.6 Anchor Radiation Pattern

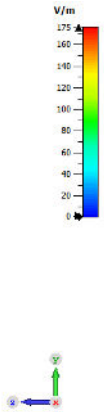
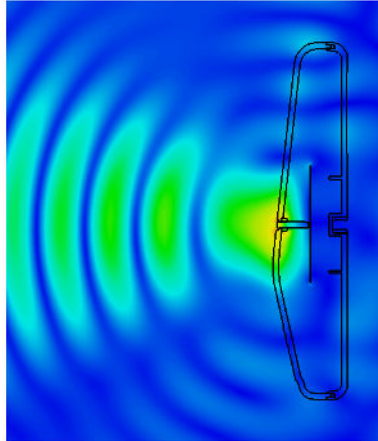


e-field (F=6.5) [1]

Component	Abs
Frequency	6.5 GHz
Phase	0°
Cross section	A
Cutplane at X	63200 mm
Maximum (Plane)	7713.17 V/m
Minimum	24562.2 V/m



e-field (f=6.5) [1]
Component Abs
Frequency 6.5 GHz
Phase 0°
Cross section A
Cutplane at X 0.000 mm
Maximum (Plane) 175.343 V/m
Maximum 24563.2 V/m



2.7 Safety and Regulatory Information, Vista DirectFive

2.7.1 Safety Information

- Never open the enclosure of the product.
- Do not use the product if it has been damaged.

2.7.2 Regulatory Information

Any changes or modifications that have not been expressly agreed to by the Sewio Networks s.r.o could invalidate the user's authority to use the equipment.

2.7.3 DISCLAIMER


The information contained within this document is subject to change without prior notice. Sewio Networks s.r.o accepts no responsibility for any inaccuracies or omissions and specifically rejects any losses, liabilities, or risks, personal or otherwise, sustained as a consequence, directly or otherwise, of the use or application of anything contained within this document. In order to obtain the latest documentation, contact Sewio Networks s.r.o.

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user indemnifies Sewio from all claims arising from the handling or use of the goods.

3 Anchor 1.4

Feature Set

- Decawave UWB Radio
- Manageable via web browser and RTLS Studio
- Ethernet (recommended) and Wi-Fi backhaul
- Firmware upgrade via Ethernet

-  UWB Location
-  Ethernet Backhaul
-  WiFi Backhaul



Anchor is a reference device with a known position. Set of Anchors creates location infrastructure where Tags are being located with sub-meter accuracy. The primary goal of the device is to gather radio signals from mobile locators called Tags and forward them to RTLS Studio where the position is being estimated.

Moreover, Anchors can also receive data from sensors equipped within the Tag such as acceleration, orientation, button event or custom data payload. Data are further exposed to the user via open API.

Anchor is an IP network device equipped with an Ethernet/Wi-Fi interface for both data backhaul and/or power supply. Anchors are configured and managed via RTLS

Studio software. They support variety of holders to simplify the installation in any premises. They are mounted above Tags which ensures maximum coverage and minimizes obstacles blocking its communication line.

3.1 Product Number

PN	name
SWA01-00-00	Anchor 1.4
SWA02-00-00	Anchor 1.4 WiFi

3.2 Technical Parameters, Anchor 1.4



Size	70 x 74 x 25 mm
Weight	72 g
Power Supply	Passive PoE or USB
Power Requirements	1.5W USB DC 5V, ≈ 300mA Passive PoE 48V, ≈ 30mA
Operating Conditions	0 - 50 °C
Warm-up Time	20 minutes
Environment	Office Warehouse Retail Light Industry
Placement	Indoor Only
UWB Antenna	Omnidirectional
WiFi 2.4 GHz (optional)	Omnidirectional Antenna

UWB Radiated Power CH5 6240 – 6739.2 MHz	-41.3 dBm/Hz
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3.3 Power Supply Options, Anchor 1.4

- **Power Supply from USB – DC 5V, 500mA, battery power bank or USB Adaptor with maximum cable length 1.8m.**

Do not use longer USB cables, since cable voltage drop can cause instability of the device.

- **DC 48 V, Passive PoE**

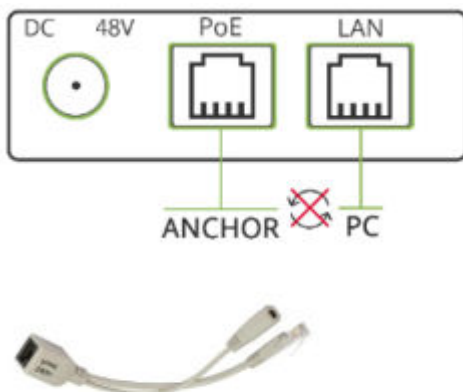
Alternatively, Anchor can be powered from DC 48V supply via PoE Injector. Power is injected and delivered into unused Ethernet pairs (Pairs 4,5 positive terminal, 7,8 negative terminal).

Always use galvanic isolated  48V power adaptor with short circuit protection for passive PoE injection. Never connect "Power+Data" injector ports to the computer or other network devices.

Recommended power adaptor PN: [GS36E48-P1J](#) or [GST36E48-P1J](#) Meanwell. Available through whole-sellers Mouser, Digikey or Farnell world-wide.

- **Single-port Injector**

Contains DC Jack, PoE Port and Lan port.



- **Multi-port Injector for 19" rack**

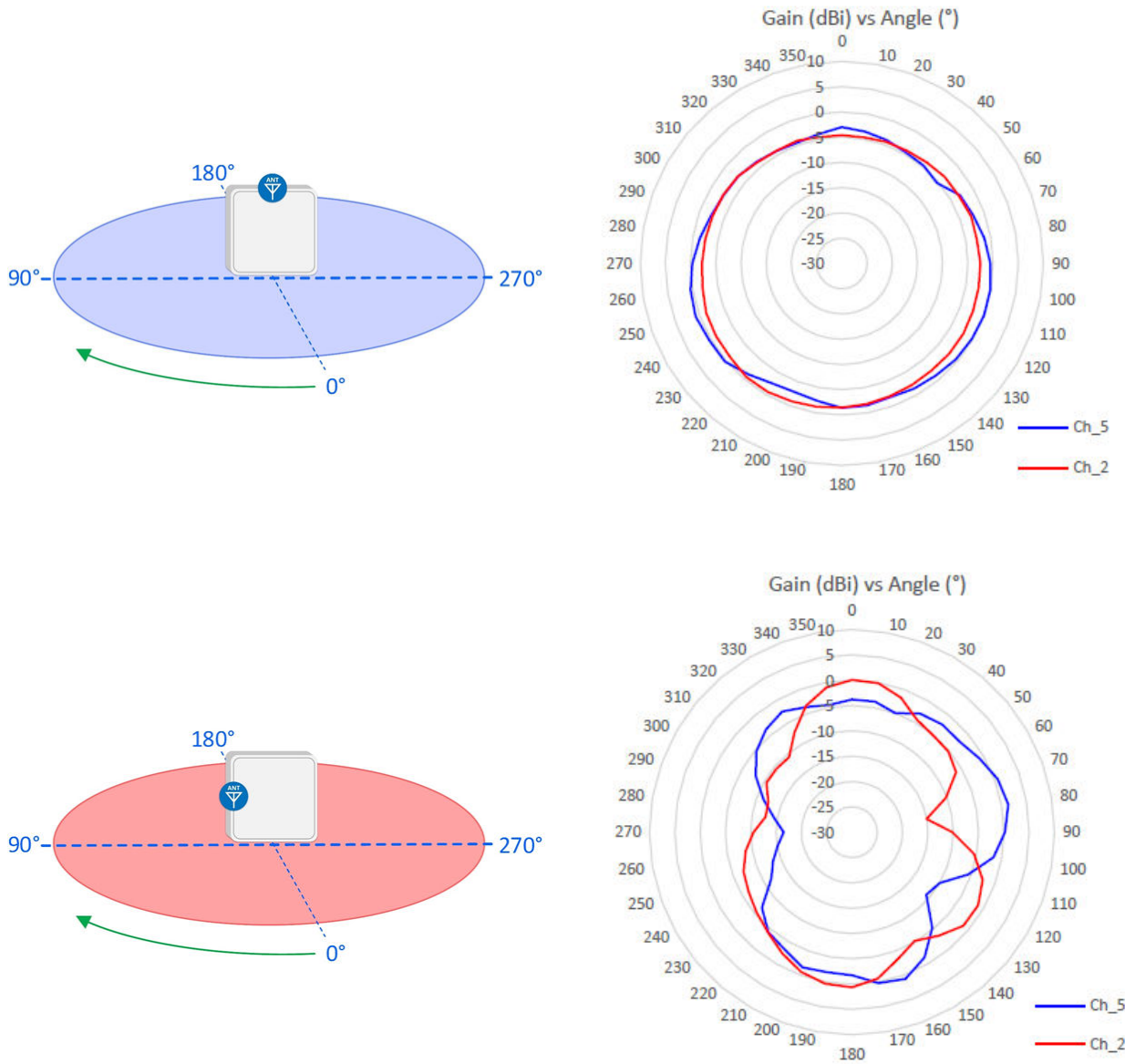
"Data LAN" ports are connected to the network Switch,

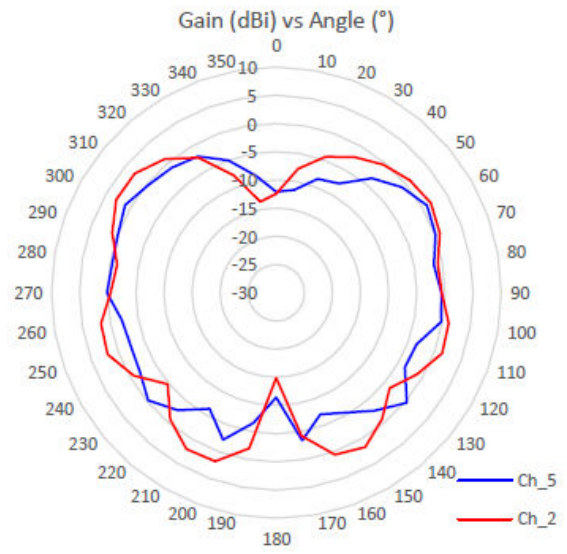
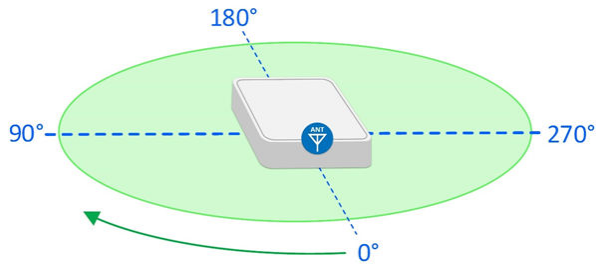
"Power+Data" ports are connected to the Anchors.



3.4 Radiation Pattern, Anchor 1.4

The anchors' antenna radiation patterns in all three axes are described in this section.





i The recommended anchor orientation is horizontal with the ideal antenna radiation facing the center of the location area.

4 Anchor Firmware vs. RTLS Studio Support

Originally, there were two main branches of anchor firmware.

FW 1.0xx which was designed for anchor with ethernet backhaul and FW 2.0xx for anchors with WiFi/Ethernet backhaul.

The latest branch of FW 3.0xx integrates both WiFi/Ethernet back-hauls and also brings new [TCP Synchronization](#).

Since there was consecutive progress within the firmware development, the newer anchor firmware versions also requires newer RTLS Studio.

The compatibility with upcoming RTLS Studio version is always kept from the point of anchor FW release date.

Details are shown in the table below:

Firmware	RTLS Studio Compatibility	Anchor 1.3	Anchor 1.4	Anchor 1.4 WiFi	Anchor 2.0	Anchor Vista
1.024	All versions >= 1.2.2	✓	✓	✗	✗	✗
1.025	All versions >= 1.2.2	✓	✓	✗	✗	✗
2.001-WiFi	All versions >= 1.3.2	✗	✗	✓	✓	✗
3.005	All versions >= 1.6.0	✓	✓	✓	✓	✓
3.005-WiFi	All versions >= 1.6.0	✓	✓	✓	✓	✓

Where can I find firmware version?

RTLS Studio → RTLS Manager → Anchors Summary

SEWIO | RTLS Manager Server online^(?)

168 . 225 . 10 To: 192 . 168 . 225 . 254 RESCAN ANCHORS

Summary

Update <i>clickable</i>	Alias <i>editable</i>	Status	IP	FW	Product Name
UPDATE ALL	N/A	N/A	N/A	N/A	N/A
UPDATE	N/A	✓	N/A	3.005-W	N/A
UPDATE	N/A	✓	N/A	3.005-W	N/A
UPDATE	N/A	✓	N/A	3.005	N/A
UPDATE	N/A	✓	N/A	3.005-W	N/A
UPDATE	N/A	✓	N/A	3.005-W	N/A
UPDATE	N/A	✓	N/A	3.005	N/A
UPDATE	N/A	✓	N/A	3.005	N/A

Where can I download the firmware?

Via Partner portal, link is [here](#).

5 Anchor Firmware Update

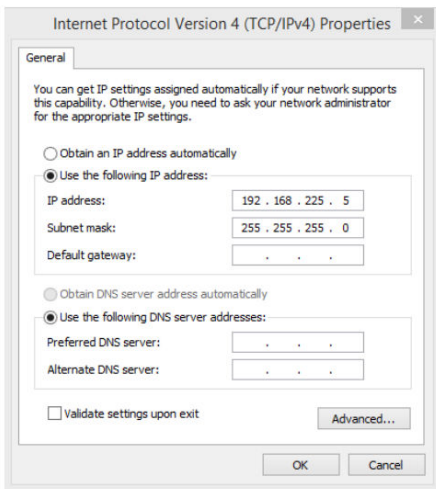
Firmware is uploaded to Anchor via Ethernet interface. Firmware upgrade is done over UDP messaging on L2 layer.

Therefore, computer must be connected directly to anchor or on the same L2 segment (no router on the path).

i Always make sure that the power supply is stable during the firmware update. You may need to disable all other interfaces in the Network and Sharing Center (Wi-Fi, Bluetooth etc.). Right-click on the interfaces and select "Disable". Please also disable Firewall in case of troubles.

5.1 Procedure

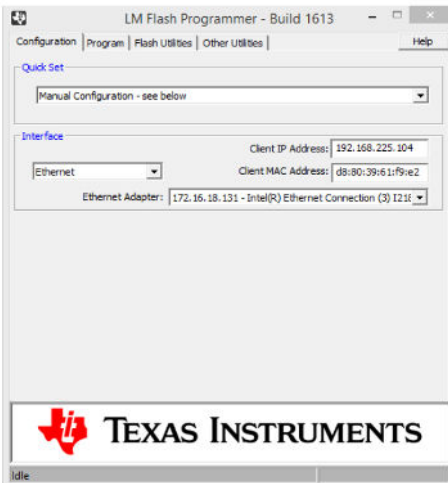
1. Connect the Anchor directly into your computer by an Ethernet cable.
2. Download and install the [LM Flash Programmer](#).
3. Go to Windows Network and Sharing Center and set your Ethernet IP address to following:



4. Run the LM Flash Programmer

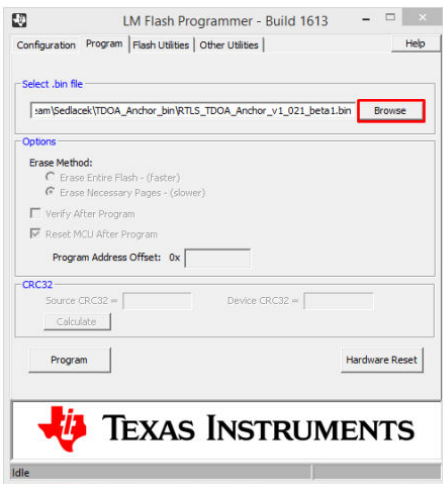
as an Administrator

5. On the first page, select Manual Configuration, select the Ethernet Interface and type in the IP and MAC addresses of the Anchor that you wish to update:

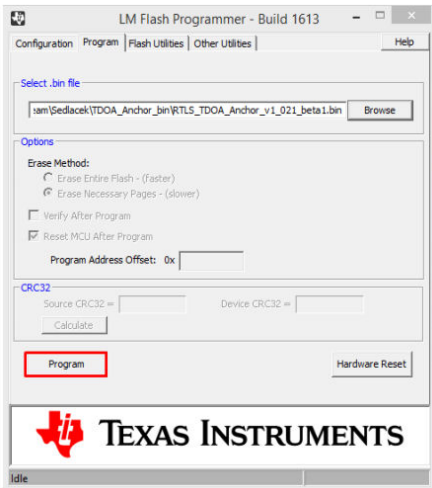


You may find the addresses from RTLS Manager, for example from the Anchors Summary tab.

Go to the “Program” tab and find the configuration file by clicking “Browse” and select path to a new anchor firmware file. Please double check Anchor’s hardware revision to match to the firmware before further step. The latest firmware can be obtained through Sewio Portal.



6. Then click on “Program”:



You should see the progress in the lower bar. If there is no progress at all, make sure that all interfaces besides Ethernet are disabled!

7. After the upload is finished it will be signaled by the "Done!" message.
8. You can check the new configuration in RTLS Manager on the Anchors Summary.

6 Anchor Firmware Changelog

- 6.1
- [3.009](#)
 - [3.008](#)
 - [3.007](#)
 - [3.006](#)
 - [3.005](#)
 - [3.004](#)
 - [3.003](#)
 - [3.002](#)
 - [3.001](#)
 - [3.000](#)
 - [2.003](#)
 - [2.002](#)
 - [2.001](#)

6.2 3.009

[+]improved robustness against ESD

[+]in case of DW1000 PLL Lock event, the anchor is restarted

6.3 3.008

[+] add support HW 1.6r0-OL Vista OmniLight

[+] minor changes

6.4 3.007

[+] minor changes

6.5 3.006

[+] moved from version 3.006beta1

[+] rename HW 2.1r0 to HW 1.6r0_SMA

[+] add product name

6.6 3.005

[b] fixed restart of anchoru during initialization cause by TWR and ESD protection feature

[b] fixed unwanted TWR sequence start

6.7 3.004

[b] fixed wrong active icon in web page Wifi OTA

[+] add support HW 1.6r0 and 2.1r0 [b] fixed reset button

[b] fixed TWR repeat on UDP Sync

[b] fixed calculation of DW temperature

[+] add ATWINC firmware update via HTTP

- add to TWR request multiple MAC address (max 19), number of repeats
- add TWR support for UDP Sync
- fixed Fault ISR generate by TWR
- removed clear of maxNoise in dwt_readdiagnosticsNoMaxNoise
- fixed TWR timeout to resolution of 1ms
- add rf config to TWR Reports
- add DW temperature to TWR Reports
- add Rx quality parameters to every TWR UWB frame
- fixed TWR Remote report
- extedn TWR sequence number to 16-bit
- removed TWR min_replyDelayUs
- removed UART
- remove UART prints and peripheral
- fixed DW SPI access during second dw initialization
- always call dw hw reset procedure for all platforms
- clear DW sys status register for CLK and RF PLL losing lock

- move init watchdog at top of main function
- check DW CLK PLL losing lock in init DW
- extend delays in DW HW reset procedure

- remove soft-reset when RF or CLK PLL losing lock
- add support HW 1.5r5
- fixed TWR
- add TWR timeout
- add replyDelay to every TWR UWB frame

6.8 3.003

- add temporary static IP address after 15 seconds holding reset button
- In progress TWR auto deployment

6.9 3.002

- add crc and length check of firmware for bootloader
- add reading of bootloader firmware version
- fixed sending reports to remote network

6.10 3.001

- [b] fixed I2C slave freeze
- [b] fixed Tiva Errata I2C for I2C memory with MAC
- [+] Read MAC address 3-times

6.11 3.000

- default sync mode TCP (keepSync)
- add Barometr to Info Report - default UDP Sync
- add barometer sensor DPS310 for HW 1.5r2 above, HW 2.0 - add led indication init error of barometer

- Add Master Bridge settings
- fixed configuration compatible for previous version 1.023 and 1.024
- fixed DW interrupt workarround at data rate 6M8
- fixed bug with Report Send Interval equal 0, Report Timer leave in infinity interrupts, watchdog do soft-reset
- added Report Universal
- fixed bug with no RX UWB Sync, always reconfigure RF profil even if Blink and Sync are same

- create function `rtls_configUDPSyncScheduling` and unify configuring UDP Sync scheduling
- fix disabling UDP Sync timer
- rewrite handling interrupts cleaning for Timers of UDP/TCP Sync
- fixed DW interrupt workarround at data rate 6M8
- fixed reception of TagConf or UDP Sync when synchronization mode TCP is select
- fixed not closed TCP Sync socket on Ethernet when Wifi is enabled

- Added EEPROM write/read interrupt protection
- Fixed configuration compatible for HW 2.0
- HTTP Tag Conf is always ok when UDP Sync is enabled
- Switchable Synchronization TCP or UDP via HTTP
- UDP Sync using LWIP socket
- Added preserve previous configuration after FW upgrade, for 1.021beta1 - 1.024, 2.001

- [+] Added new synchronization based on TCP protocol, named as keepSync
- [-] Removed UDP Sync support
- [+] Tag Conf is controled by HTTP requests
- [+] Added HTML page for Tag conf
- [-/+] CIR is permament, disabled by default
- [+] Added to statistics Wifi used TCP/UDP sockets
- [+] Added ESD protection for DW
- [-/+] Rewrite FET discharge procedure for DW

- [+] Added LED firmware Startup indication
- [+] Added delay time 100 ms to wait for TCXO stabilization (only HW 1.5, 2.0)
- [-/+] Rewrite add Ethernet TCP client socket to universal
- [+] Added new Report type I, needed by keepSync
- [+] Porting to HW 1.5, 1.5r2
- [+] Support DW EXT TXE and RXE for HW 1.5, 1.5r2
- [-/+] One function for set UWB config - `uwb_setRadioConfig`
- [-/+] Compressed HTML pages (shtml, htm, css, js)
- [-/+] Wifi timeout changed to global timeout
- [-/+] Rewrite add Wifi TCP client socket to universal

6.12 2.003

- add crc and length check of firmware for bootloader
- add reading of bootloader firmware version
- fixed sending reports to remote network
- fixed backward config compatibility after FW upgrade
- fixed 6M8 workarround

- Added ESD protection
- Added preserve previous configuration after FW upgrade, for 1.021beta1 - 1.024, 2.001, 2.002
- Added always reconfigure RF profil even if Blink and Sync are same
- Added delay time 100ms to wait for TCXO stabilization (only HW 1.5, 2.0)
- fixed DW interrupt workarround at data rate 6M8
- Fixed bug with Report Send Interval equal 0, Report Timer leave in infinity interrupts, watchdog do soft-reset
- Add multi context interrupt protection when save and read data to EEPROM

- Added text to Firmware version if ENABLE_INTERFERENCE_WIFI_UWB is enabled
- Separate antenna type choose for RF profile Sync and Blink (only HW 2.0)
- Added 3 tests via HTTP for DW because ESD freez
- Added workarround for DW in RF 6M8 delayed LDEDONE event
- Moved select UWB antenna before first Init of DW (only HW 2.0)
- Added platform HW 1.5, HW 1.5r2
- Rewrite function for reports formating with CIR
- Optimize SPI code for DW
- Fixed return value for port_readGPIOExtRx
- Rewrite FET discharge procedure
- Set GPIO driver strength to 8mA for DW SPI MISO,MOSI,CLK
- Set GPIO driver strength to 8mA for Wifi SPI MISO,MOSI,CLK

6.13 2.002

- fixed sending correct Report with CIR for UWB Sync
- fixed CIR index of FP in samples
- add to fillUpElements in sc.js protection to empty element

6.14 2.001

- changed default settings of UWB Sync and Blink (RF3) PRF 64, Preamble code 12.
- add feature disable LED indication of status or error. LED identification is remain and can be activate
- comment out part of condition in m2m_wifi.c (generated warning in compilation)

- macro ENABLE_UWB_CHANNEL_IMPULSE_RESPONSE for enable UWB Channel Impulse Response (CIR)
- change default Wifi SSID "RTLS Wi-Fi" and password "rtlswifi"
- add to deca_devic.c function dwt_read8bitoffsetreg
- moved UWB command "Force TRX Off" in dwt_isr after read Rx quality parameters (and CIR)
- add Wifi modul firmware vesion to HTTP index.shtml
- rewrite formatting of Report, simplify, changed calculation of offsets
- changed size of Report field "Report length" from 1 byte to 2 bytes
- add initialization of Wifi modul to wifi_init

- make portation to HW 2.0
- On HW 2.0 can be changed UWB Antenna (RF switch) by HTTP
- optimize and speed up interrupt from DW chip (now can handle 6M8 frames)

- replaced Reports send enable/disable with Localization Mode (Idle,Presence,Active), set Active by default
- changed Sync period error to 30ms
- changed code of DWM SPI if enabled SPI_ENABLE_BYTE_AGREGATION (disabled feature)

- add optional sequence number to UDP Sync and same sequence number se to UWB Sync group sync seq number
- set default Report send interval to 20ms
- HTTP config requests are accept with only one parameter of all

- add to raw_index.shtml all information from raw_netsett and raw_radiosett
- add close socket UDP LwIP stats Ethernet
- fixed reconfigure socket when IP of RTLS server changed
- add feature disable sending Reports (5000) to server, ignore UDP Sync, drop UWB frames, also UDP stats (7000)
- add delay before soft reset MCU when error occure
- closing Ethernet UDP socket when reconfigure

- add red LED indication when DWM losing lock occur
- add to rtls.c TDMA Sync state
- now is UDP Sync accept when previous TDMA Sync timeslot is complete
- add to rtls state STATE_CONFIGURE when changing Blink or Sync UWB configure
- moved uwb_init in rtls_init - replaced dwt_rxenable with uwb_rxon in all files
- add text to Firmware version with/without Bootloader
- removed statistic S_ETH_TCP_SEGM_SENT_NO_ACK
- delete Report TCP error callback and move functionality to TCP sent callback
- removed from Report data_waitack and segments_waitack
- Report send interval is now simple multiply when full buffer occur
- change LED indication, RED led is for errors, Blue led is for status
- add MCU soft reset when DWM return Clock losing lock
- removed logo.png from web page
- disable log prints from WINC to UART
- close all remote TCP peers when HTTP socket closed
- add WIFI_HTTP_PEER_IDLE_TIMEOUT timeout and set to 2 seconds
- disable timeout WIFI_HTTP_PEER_SEND_FULL_BUFFER_TIMEOUT
- replaced Wifi HTTPd malloc by dedicated static array buffer, this should fix LwIP memory leakage
- removed from timeout function wifiTimeout_set immediate trigger
- fixed compile warnings in winc1500 driver
- Linker now using extern APP_BASE based on enabled Bootloader or not (macro FIRMWARE_WITH_BOOTLOADER)
- removed Report Late
- statistic changed fifo maximal used to actual fifo used
- statistic changed report agregation max to actual report agregation
- add statistic S_WIFI_TCP_FAIL, S_WIFI_TCP_SEGM_SEND_PER, S_WIFI_RESTART
- change mode of timer for generating Report interval to one-shot mode
- add to (raw_)index page Etherent/Wifi link and socket statuses
- new Report interval send is multiply when buffer error occur, minimal error interval is 50ms and can be multiply by 4 (to 200ms)

- new Report interval send with first succes after buffer full is set to configured interval immediatly (Fast)
 - Report handler is called only in intervals or received UDP Sync
 - add statistic Wifi TCP Report segment PER
 - wifi UDP Report socket is closed in case of TCP enabled
 - add fifo function packetFifolsFull
 - UWB fifo buffer dropping oldest record if buffer is full
 - firmware version has field in summary (page index.shtml)
 - add software reset WINC for HTTP socket and TCP Report socket when extended SOCK_ERR_FULL_BUFFER occure or other errors (e.g. SOCK_ERR_INVALID)
 - add poll timeout functional for HTTP socket and TCP Report socket
 - rewrite HTTP write, output and send procedure (faster TCP send)
 - rewrite handling TCP Report socket and add states
 - rewrite handling HTTP socket and HTTP deamon and add states
 - disable WINC DHCP workarround
 - rewrite UDP Report client workarround
 - add generale .c/.h files for Timeouts
-
- add macro for enable Wifi DHCP workarround, WIFI_WORKARROUND_DHCP_ADRESS_EXPIRED_ENABLE - add TCP Report socket close when any error is in callback SOCKET_MSG_SEND - changed fields order in eActStatus - add macros for button reset code procedure - changed led indication when reset to default is applied - add check of null pointer in packetFifoAddFailed => speed up dwt_isr function when FIFO buffer is full. - add enable/disable feature WINC Firmware Debug logs - wifi get info is in interval 5 seconds - add documentation
 - fixed access freez to FIFO buffer when it is full - changed default SSID to my_swt2 - default report send interval is 5ms - add statistics wifi connect and disconnect - changed statistic Wifi last RSSI - minimal report late send is 3ms, otherwise is half of report send interval - DWM SPI clock rate is set to 15 MHz - FIFO buffer dropping is set to 99% - add verify condition to httpd_wifi_rcv in SOCKET_MSG_RECV callback - httpServerWifi_tcp_output now clear send_data_len - add httpd_wifi_close_conn to httpd_wifi_send_data and httpd_wifi_rcv - add httpServerWifi_tcp_output to httpd_wifi_send_data -

- change position of UART printf in M2M_WIFI_RESP_CON_STATE_CHANGED -
- add web button for reset Anchor setting to default with reboot
- fixed dropping TCP reports when wifi buffer is full - fixed anchor reboot in high UWB traffic caused by fault ISR in Ethernet handler - change format of web uptime to [d,h:m:s] - set wifi http server to 5 sockets - WINC SPI bus set to 1024 bytes of burst bytes
- fixed WINC1500 bug with DHCP client requesting prolong of IP address lease
- add read WINC1500 status with get info every 3 seconds - add to wifi_isLinkUpNonBlock checking non zero IP address - in new Wifi settings create new HTTP config template

- fixed response for web config devsett.cgi from Wifi
- add verification of setting broadcast server ip adress with TCP report protocol

- fixed uwb sync sequence number order in redundant syncs
- always calculate UDP Sync period, UDP Sync correct, UDP Sync error, UDP Sync reliable - auto-UDP Sync by default disabled - UDP Sync period in milliseconds
- rewrite handling Timer Events of TDMA Sync timeslot - add feature auto UWB Sync generating + compensation of UDP Sync received time offset - add web configuration of auto UWB Sync generation - add statistics for auto UDP Sync
- add TEST code for generating received UDP Sync and received UWB Blinks (purpose of UWB Tx and Wifi Tx)
- add testing code for UWB interference by WiFi (ENABLE_INTERFERENCE_WIFI_UWB) - add to statistics Wifi AP RSSI measure - remove from HW version test "Wifi"
- fixed handling wifi interrupt - increase SPI frequency with WINC1500 to 30 MHz - uptime in web page home is without decimal - HTTPd TCP timeout increased from 100ms to 2 seconds - bug workarround for WINC1500 Tx socket

- rename macro PLATFORM_ROUTER_CUBE_V1_0 to PLATFORM_ROUTER_CUBE_V1_3 - add support of HW Anchor v1.4
- set Wifi IP address, netmask, gw to zero when configure DHCP mode - removed wifi_TimerHandler - Ethernet and Wifi TCP connect to server is in minimal interval 1s - disable nagle algorithm in Ethernet TCP Report socket - rewrite delay of apply Ethernet network configure - rewrite Report sending, no wait for TCP ACK, send multiple packet via TCP/UDP - TCP Reports are dropped when links is down, server is unreachable, TCP is not connected to server - dropping old received UWB frames in FIFO buffer when buffer is at 95% full - change format of HW version - rewrite wifi poll timeout delay

- verify RAM config after bootup - led_on - Wifi MAC is not send in CGI query
- merge cgi query wifisett to devsett - merge cgi query repsett to netsett - changed return page with Ethernet and Wifi info in devsett.cgi query - when wifi not available, send in SSI tag empty fields separate by | - set LED output strength to 8mA - removed redir.shtml
- add web query to turn on LEDs - "same RTLS and Sync settings" is now readonly, compare is done internally
- Platform version is last parameter in SSI tag

- add statistics for Wifi/Ethernet TCP connection established and error - add Wifi UART prints Firmware version, ID, Driver version
- new wifi settings is applied after 1 second from send response page - UART prints contain HW version - LED indication handler is call every 10ms - Ethernet static ip is print after init - fixed Ethernet LED indication with zero IP address - Ethernet LED link down is indicated only when Wifi si disabled - formatting of Report blink always send tag data length - removed commented code

- set correct size of FLASH memory to linker - macros for wifi peripheral port is in port.h - wifi module can be disabled and exclude build files - fix bug with same value for first sync and switch to RTLS - add check for ethernet network address equal to 0 - fixed report socket reconfiguration when ethernet ip is changed - add reset period send of report timer when UDP Sync is received - when UDP Sync is received immediate send reports - renamed function for control dwm - changed behave of LED indication, rewrite completely - changed variable type to uint16 for report.sendInterval - change Report send interval to mili-seconds - VERBOSITY set to USER - maked order in statistics, same for Wifi and Ethernet - same UART print for Wifi with network configuration - UART prints are unified - Up time is counted in second steps - add to Report error callback, same for Ethernet and Wifi - add error state and web status for EEPROM MAC address read error - reset network addresses when Ethernet is in DHCP mode and link is disconnected - Ethernet add Poll function when TCP report sent - rewrite behave when Ethernet is set to DHCP mode as non-blocking - add limit for Report interval to 35000ms max - to report TCP add detection remote window full - drop Reports when internal buffer is full - enable watchdog - enable software reset - add platform to index web page - Up time convert with days - add to web statistics color highlight for non zero values - fixed fault isr with Ethernet stack receive handler

- merge FIFO ToE and ToA to one FIFO - Wifi UDP Sync, Reports, HTTP are in same context - changed when UDP socket not ready to IF_ERR_CLSD (closed) - add WIFI_DEBUGF - change behave of wifi_hif_isr_UDP_Sync - interrupt clear, enable interrupt

- fixed correct apply of Report settings - add statistic for Report agregation max used - dwt_rxdiaq_t is now packed - LwIP enable for TCP keepalive -

disabled Wifi UDP Sync prioritize handling in interrupt - add Ethernet support of TCP Reports - fixed Report internal buffer size - fixed length of REPORT_TOA_BLINK_SIZE - fixed return FIFO used size when buffer is full - add measuring DWM temperature only for UWB Sync RX and TX - fixed value UWB_SYNC_MSG_WITHOUT_FCS - add Wifi support of TCP Reports