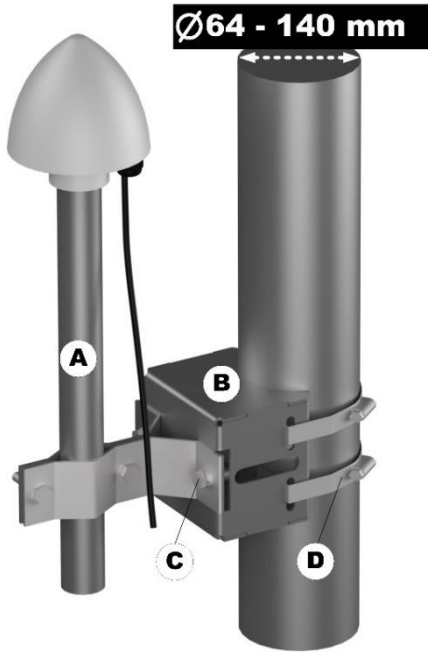
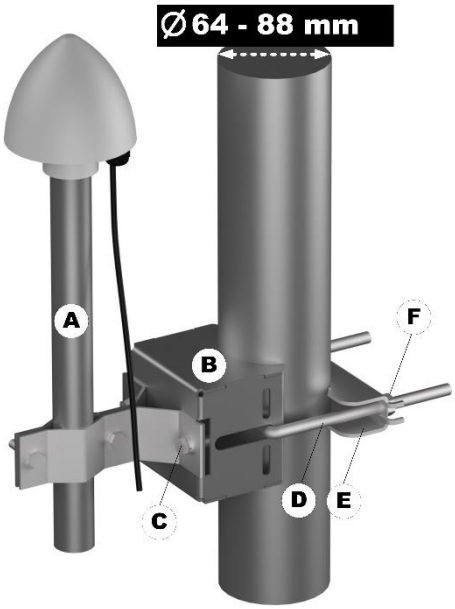
4.2. Installing External GNSS Module

Introduction

This section describes the installation procedure of external GNSS module with WiBAS™ G5 evo-BS.

External GNSS module packing list

WG5-GPS-MOD-KIT	Packing Materials (two options)
	• External GNSS Receiver (A). • Pillar bracket (B). • 2 x screws M6x20 (C). • 2 x lock washers M6 (C). • 2 x washer M6 (C). • 2 x hose clamps stainless (D).
	• External GNSS Receiver (A). • Pillar bracket (B). • 2 x screws M6x20 (C). • 2 x lock washers M6 (C). • 2 x washer M6 (C). • U-bolt M8x100 (D). • Rear pillar bracket (E). • 2 x flange nut M8 (F).

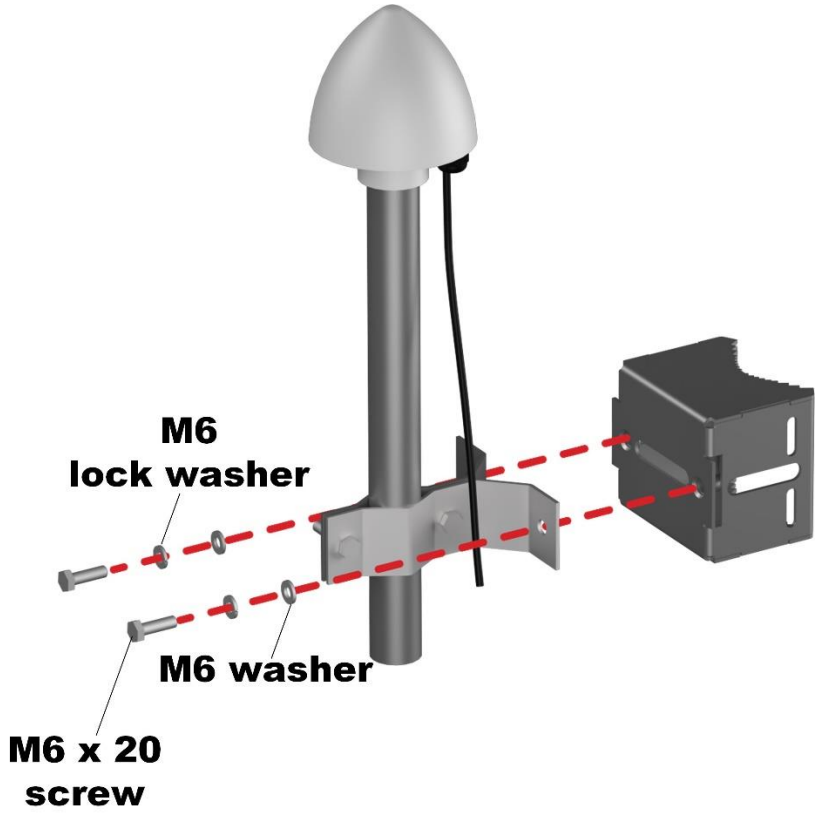
Installation tools

Adjustable torque U-wrench.

WiBAS G5 evo-BS and External GNSS Module

Procedure

How to install external GPS module (**WG5-GPS-MOD-KIT**) to WiBAS™ G5 evo-BS, proceed as follows:

Step	Action
1	**Using hose clamps follow this step.** **Using U-bolt follow the step 9.** Use the U-wrench tool to fully tighten the screws. **Do not over tighten**. Adjust the tool for applying maximum tightening torque **7.4 Nm**. 

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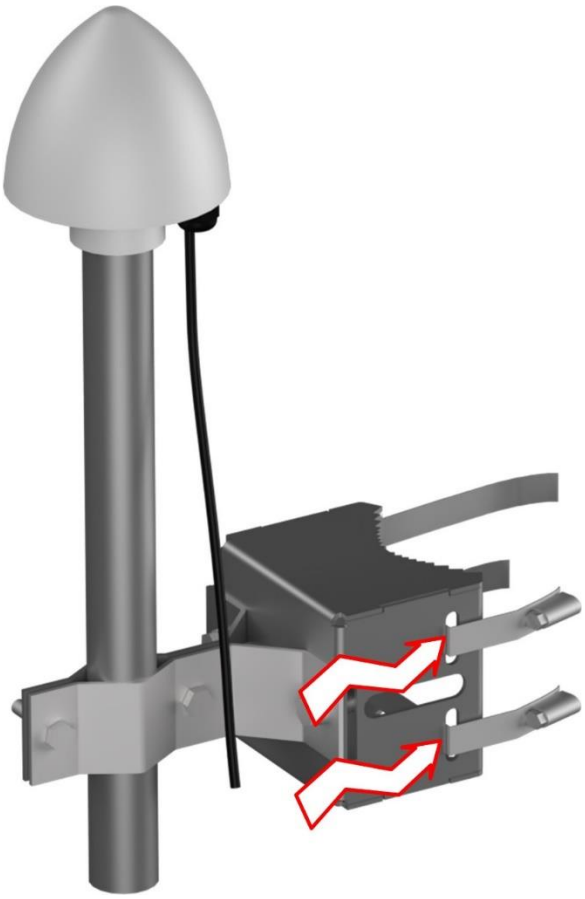
WiBAS G5 evo-BS and External GNSS Module, Continued

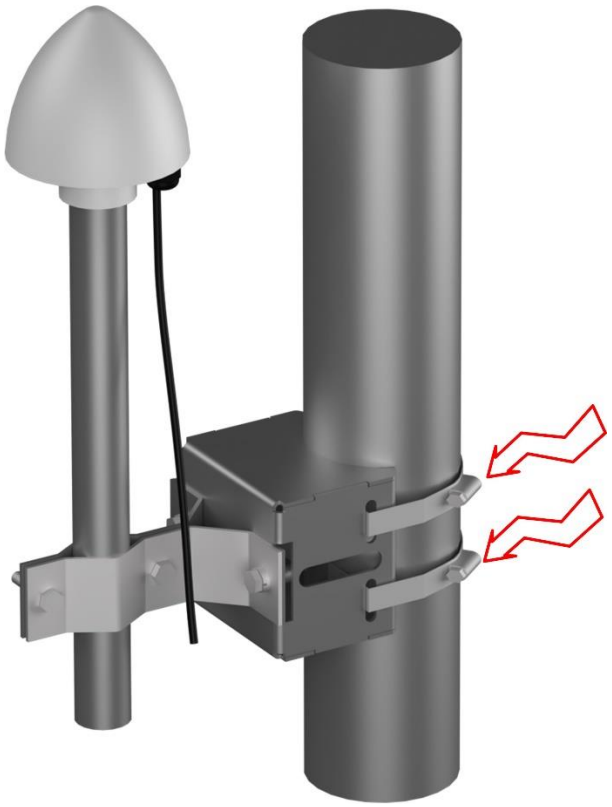
Procedure, continued

Step	Action
2	Pass the stainless hose clamps through the pillar bracket respective openings, as shown below: 

Continued on next page

WiBAS G5 evo-BS and External GNSS Module, Continued

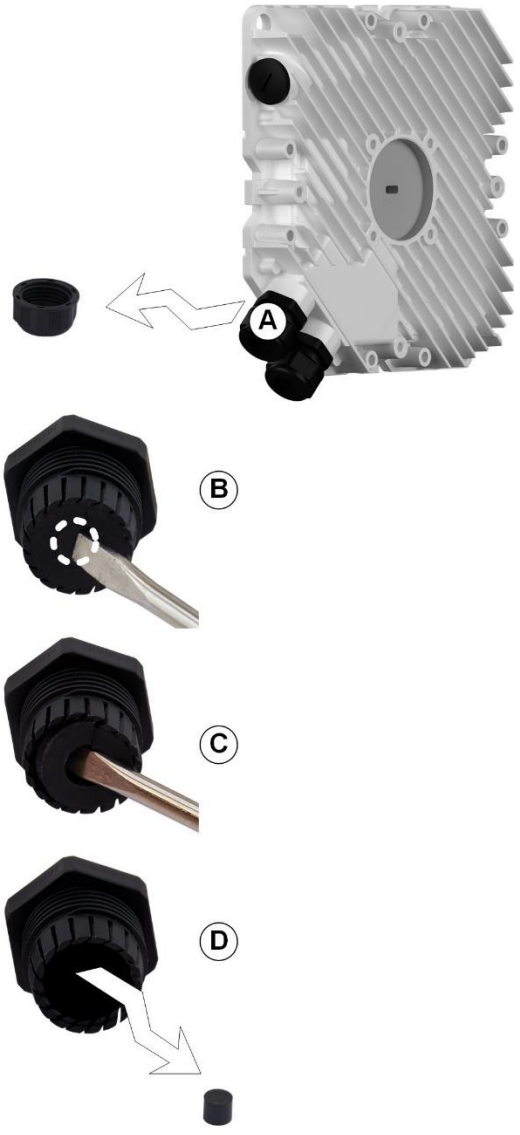
Procedure, continued

Step	Action
3	Use the U-wrench tool to fully tighten the hose clamps worm screws, as shown below:  **Do not over tighten**. Adjust the tool for applying min / max tightening torque **5.5 / 7 Nm**.

Continued on next page

WiBAS G5 evo-BS and External GNSS Module, Continued

Procedure, continued

Step	Action
4	Perform the following actions for installing the cable: • Unscrew the sealing nut **(A)**. • Use the screwdriver for pushing forward the plastic protection in the middle of the seal **(B)**. • Use the screwdriver for pulling outwards the seal **(C)**. • Remove the plastic part **(D)**. 

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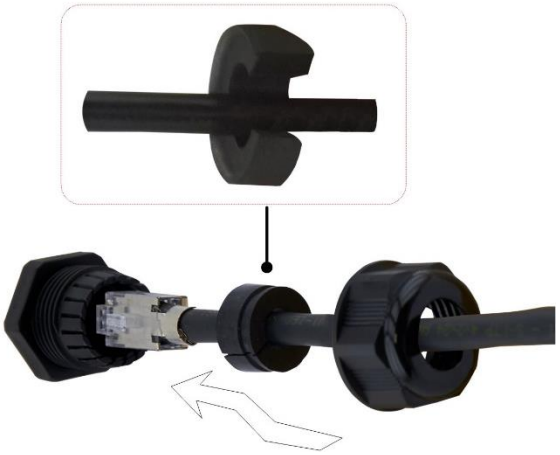
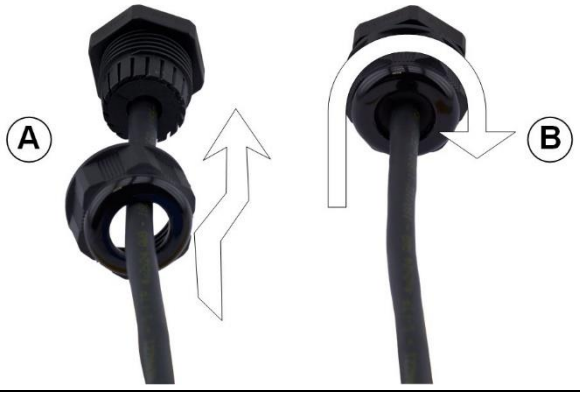
WiBAS G5 evo-BS and External GNSS Module, Continued

Procedure, continued

Step	Action
5	Pass the cable through the parts of gland, as shown below. The seal shown below is split-type for easy installation and removal.  Insert and install the RJ-45 jack of the cable into the mating receptacle radio unit. **Listen for a "click" when inserting.** This verifies that the jack has been inserted properly.
6	Use the U-wrench to tighten. **Do not over tighten.** Adjust the tool for applying maximum tightening torque **5 Nm**. 

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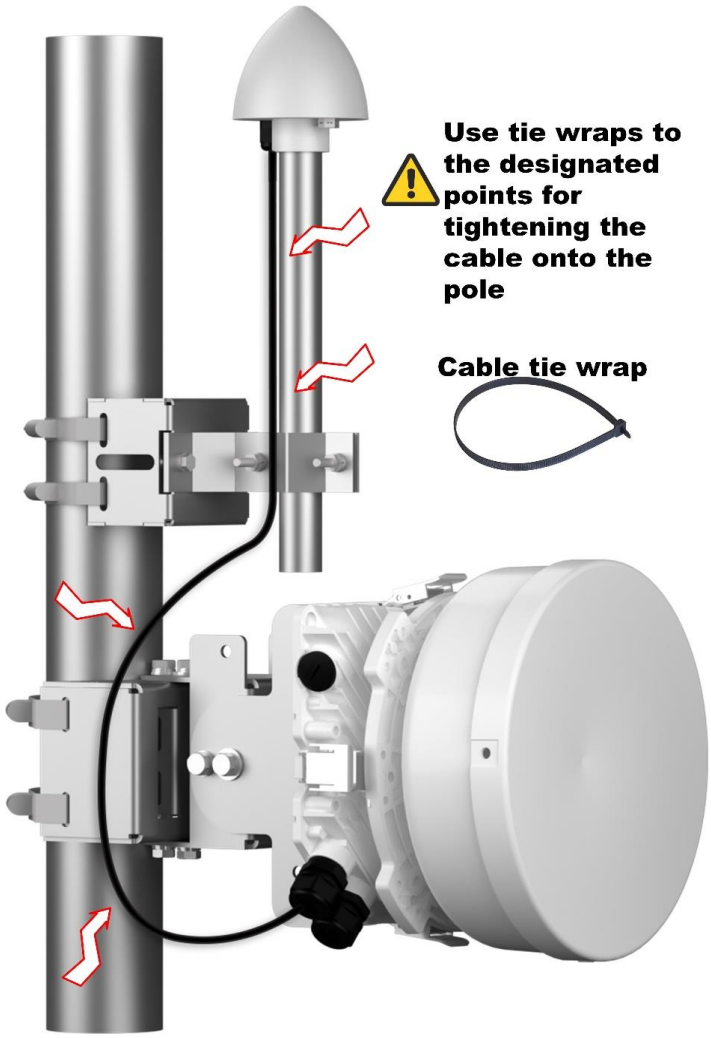
WiBAS G5 evo-BS and External GNSS Module, Continued

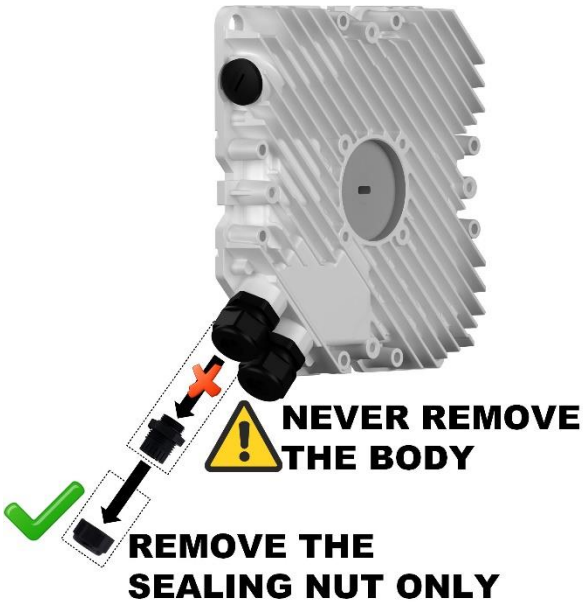
Procedure, continued

Step	Action
7	Use tie-wraps for cable tightening onto the pole. 

Continued on next page

WiBAS G5 evo-BS and External GNSS Module, Continued

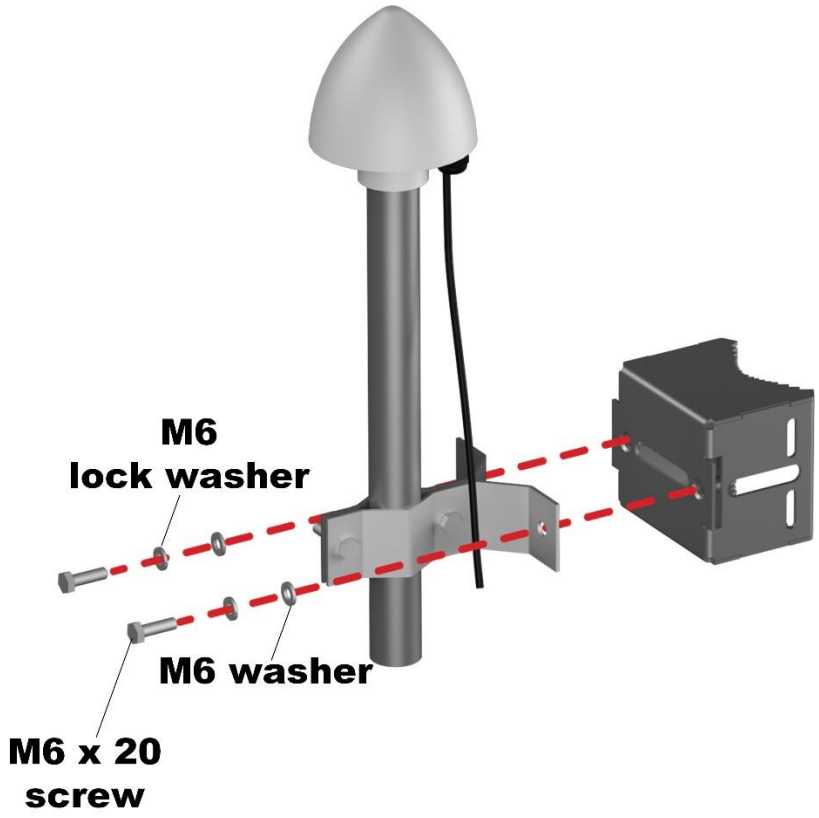
Procedure, continued

Step	Action
8	**Precaution for cable removal (if required) !!!** **Take care when you unplug the RJ-45 jack.** The latter is locked into the mating receptacle. After removing the gland parts of the cable use the flat-headed screwdriver to extract the RJ-45 jack by pressing the clip upwards, as shown below:  

Continued on next page

WiBAS G5 evo-BS and External GNSS Module, Continued

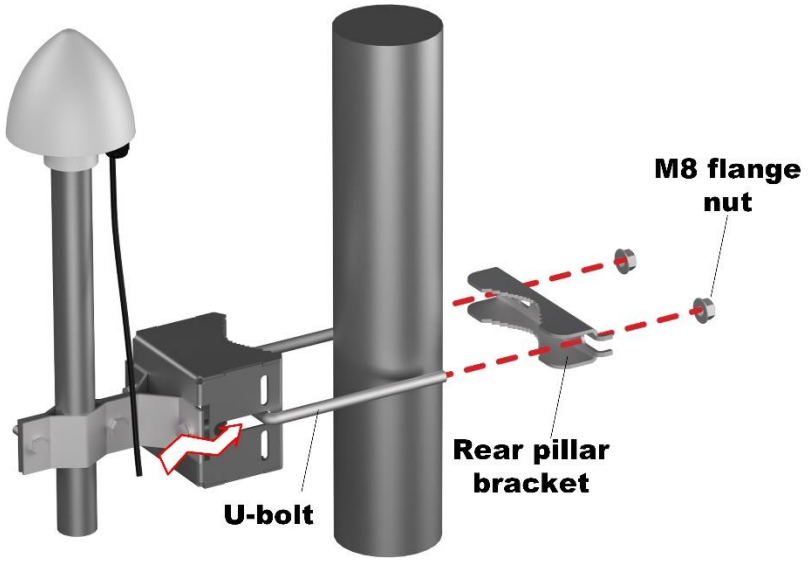
Procedure, continued

Step	Action
9	**Using U-bolt follow this step.** Use the U-wrench tool to fully tighten the screws. **Do not over tighten**. Adjust the tool for applying maximum tightening torque **7.4 Nm**. 

Continued on next page

WiBAS G5 evo-BS and External GNSS Module, Continued

Procedure, continued

Step	Action
10	Perform the following actions: • Pass the u-bolt through the pillar bracket respective openings, as shown below. • Mount the rear pillar bracket. • Screw the nuts. 

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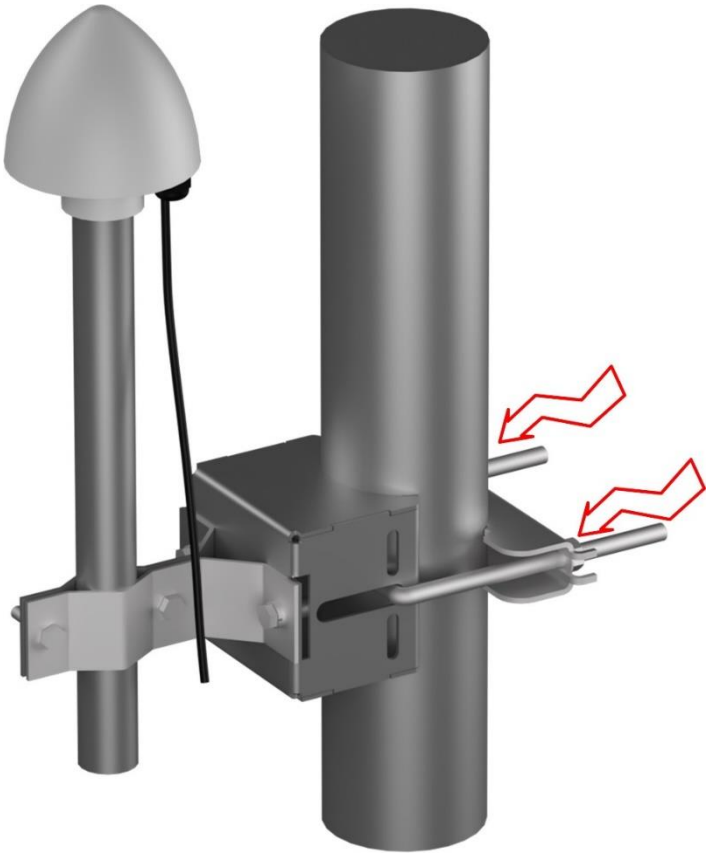
WiBAS G5 evo-BS and External GNSS Module, Continued

Procedure, continued

Step	Action
11	Use the U-wrench tool to fully tighten the screws. **Do not over tighten**. Adjust the tool for applying maximum tightening torque **15 Nm**. 
12	For cable installation into the radio unit port follow the steps 4, 5, 6 and 7. **For cable removal (if required) follow the step 8.**

End of procedure

4.3. Installing Radio Units Cables

Introduction

This section describes the installation procedures for WiBAS™ Base station radio unit cables, as follows:

Description	OSDR-HUB	G5 micro-BS G5 evo-BS	G5 dual-BS
Grounding Cable	✔	✔	✔
ETH Cable	✔	✔	✔
Fiber Optic Cable	✔	✔	✔
Power Supply Cable	✘	✘	✔
Cable Holder	✔	✘	✔

Grounding Cable

Introduction

Apply this procedure for installing the grounding cables (**GND-KIT16-OD**) to WiBAS™ Base Station radio units.

Prerequisites

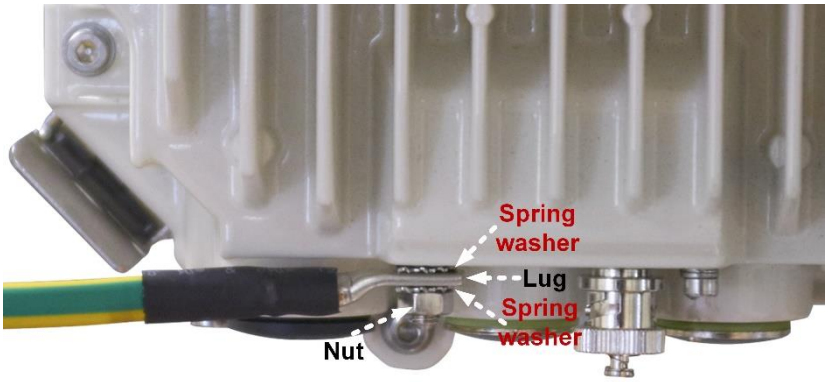
Prepare and terminate the grounding cable as described in Appendix B – Terminating Cables.

Tools and materials

Tools	• Adjustable torque wrench with hexagon female bit (see Equipment installation tools).
Materials	• Grounding cable. • Radio units.

Procedure for WiBAS OSDR-HUB

How to install the grounding cable to WiBAS™ OSDR-HUB, proceed as follows:

Step	Action
1	Use the tool to remove the M5 nut and one spring washer.
2	Perform the following actions: • Install the cable, as shown below:  • Use the tool with M5 hexagon female bit to fully tighten the screw. ⚠ **Do not over tighten the M5 nut.** Adjust the tool for applying maximum tightening torque **4.2 Nm**. ⚠ **DO NOT forget to install the other end of the grounding cable to grounding bar.**

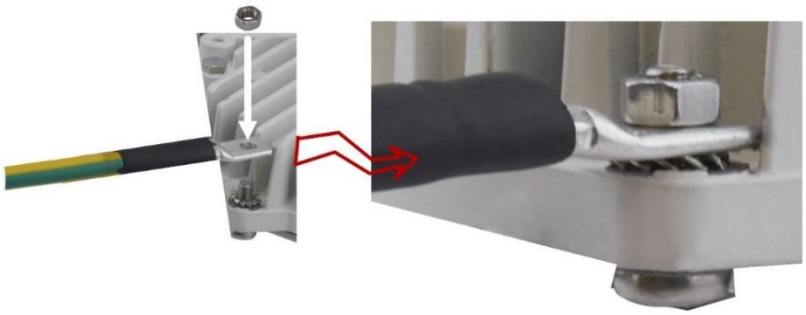
End of procedure.

Continued on next page

Grounding Cable, Continued

Procedure for WiBAS G5 micro-BS / evo-BS

How to install the grounding cable to WiBAS™ G5 micro-BS / evo-BS radio unit, proceed as follows:

Step	Action
1	If the terminal lug is installed then follow this step. If the terminal lug is not installed then follow step 2. Use the tool to remove the pre-installed M5 grounding terminal. 
2	Perform the following actions: • Install the cable, as shown below.  • Use the tool with M5 hexagon female bit to fully tighten the screw. **Do not over tighten the M5 nut.** Adjust the tool for applying maximum tightening torque **4.2 Nm**. **DO NOT forget to install the other end of the grounding cable to grounding bar.**

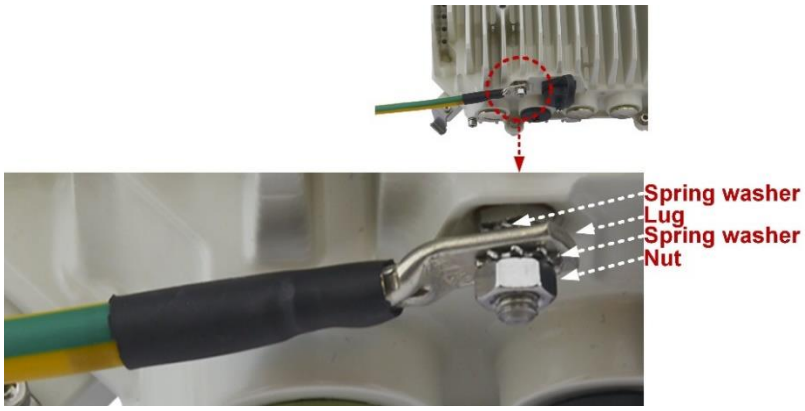
End of procedure.

Continued on next page

Grounding Cable, Continued

Procedure for WiBAS G5 dual-BS

How to install the grounding cable to WiBAS™ G5 dual-BS radio unit, proceed as follows:

Step	Action
1	Use the tool to remove the M5 nut and one spring washer. Then install the cable, as shown below:  Use the tool to tighten the M5 nut. **Do not over tighten.** Adjust the tool for max tightening torque 4.2 Nm.
2	After radio unit installation onto pole do not forget to install the other end of the cable to grounding bar.

End of procedure.

ETH Cable

Introduction

Apply this procedure for installing the ETH cable (**ETH-CAB-SFTP**) to WiBAS™ Base Station radio units.

Prerequisites

Prepare and terminate the ETH SF/UTP cable as described in Appendix B – Terminating Cables.

Tools and materials

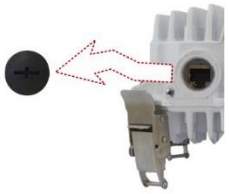
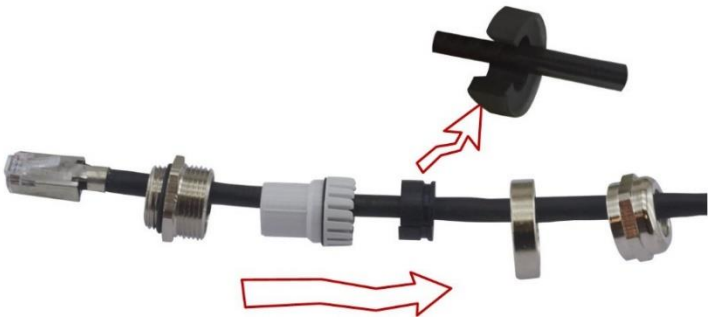
Tools	• Adjustable torque U-wrench and screwdrivers (see Equipment installation tools).
Materials	• **M20-GLAND** for WiBAS™ OSDR-HUB. • **ETH-HOOD-GX** for WiBAS™ G5 dual-BS. • Ethernet cable. • Radio units. Note WiBAS™ G5 micro-BS gland for ETH cable is already installed in the unit.

Continued on next page

ETH Cable, Continued

Procedure for WiBAS OSDR-HUB

How to install the ETH cable to WiBAS™ OSDR-HUB, proceed as follows:

Step	Action
1	Remove the protective cap (plastic for GbE2 or metallic for FE). 
2	Disassemble the **M20-GLAND** parts, as shown below: 
3	Pass the cable through the parts of gland, as shown below. The **seal** shown below is split-type for easy installation and removal. 

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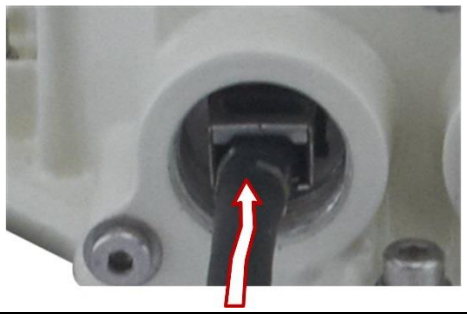
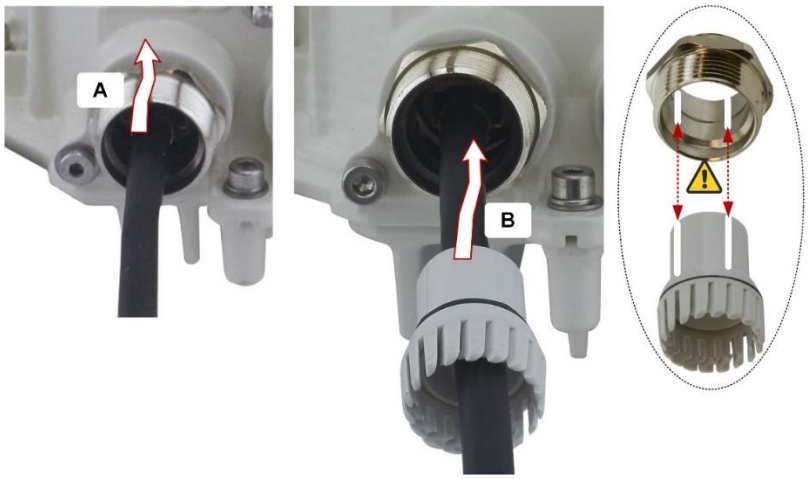
ETH Cable, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
4	Plug the RJ-45 jack into the GbE2 or FE port of the WiBAS™ OSDR. **Listen for a "click" when inserting.** This verifies that the jack has been inserted properly. 
5	Perform the following actions: • Use the U-wrench to screw the body into the radio thread **(A)**. **Do not over tighten.** Adjust the tool for applying maximum tightening torque **7 Nm**. • Insert claw into the body **(B)** taking into account the caution. **Align the designated points.** Misaligning of parts will cause damage. 

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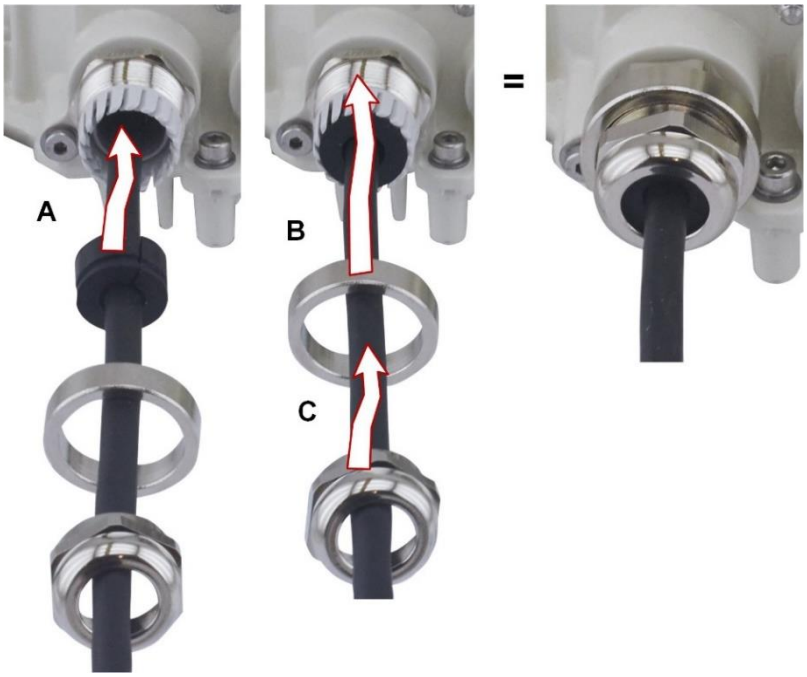
ETH Cable, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
6	Perform the following actions: • Insert the seal into “pressure fingers” of claw **(A)**. • Insert the O-ring **(B)**. • Screw the sealing nut **(C)**. Use the U-wrench to fully tighten. **The metallic O-ring protects from overtightening.** 

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ETH Cable, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
7	Install the cable holder (refer to Procedure for WiBAS OSDR-HUB).

Take care when you unplug the RJ-45 jack. The latter is locked into the mating receptacle.

After removing the gland parts of the cable use the flat-headed screwdriver to extract the RJ-45 jack by pressing the clip upwards, as shown below:

End of procedure.

Continued on next page

ETH Cable, Continued

Procedure for WiBAS G5 micro-BS / evo-BS

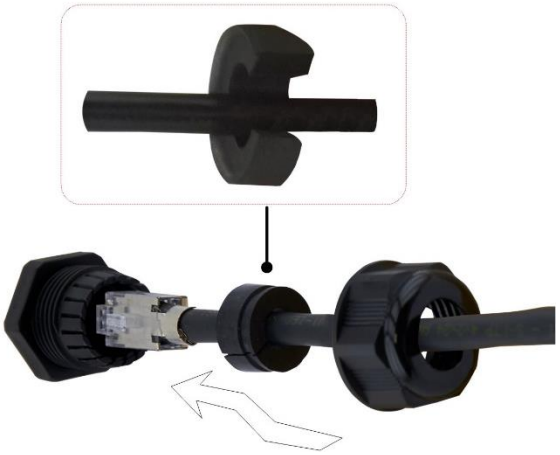
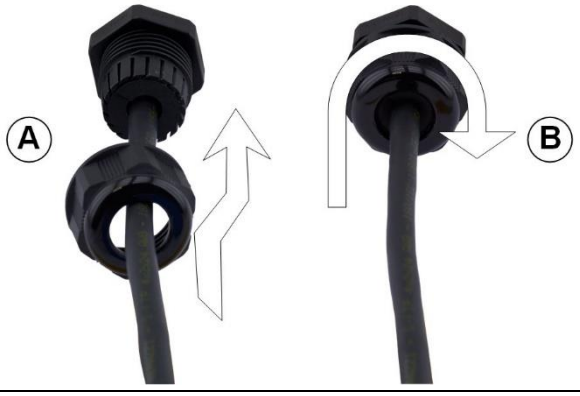
How to install the ETH cable to WiBAS™ G5 micro-BS / evo-BS radio unit, proceed as follows:

Step	Action
1	Perform the following actions: • Unscrew the sealing nut **(A)**. • Use the screwdriver for pushing forward the plastic protection in the middle of the seal **(B)**. • Use the screwdriver for pulling outwards the seal **(C)**. • Remove the plastic part **(D)**. 

Continued on next page

ETH Cable, Continued

Procedure for WiBAS G5 micro-BS / evo-BS, continued

Step	Action
2	Pass the cable through the parts of gland, as shown below. The seal shown below is split-type for easy installation and removal.  Insert and install the RJ-45 jack of the cable into the mating receptacle radio unit. **Listen for a "click" when inserting.** This verifies that the jack has been inserted properly.
3	Use the U-wrench to tighten. **Do not over tighten.** Adjust the tool for applying maximum tightening torque **5 Nm**. 

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ETH Cable, Continued

Procedure for WiBAS G5 micro-BS / evo-BS, continued

Take care when you unplug the RJ-45 jack. The latter is locked into the mating receptacle.

After removing the gland parts of the cable use the flat-headed screwdriver to extract the RJ-45 jack by pressing the clip upwards, as shown below:

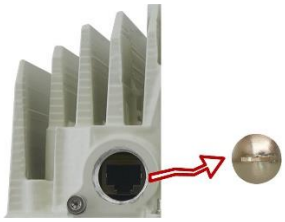
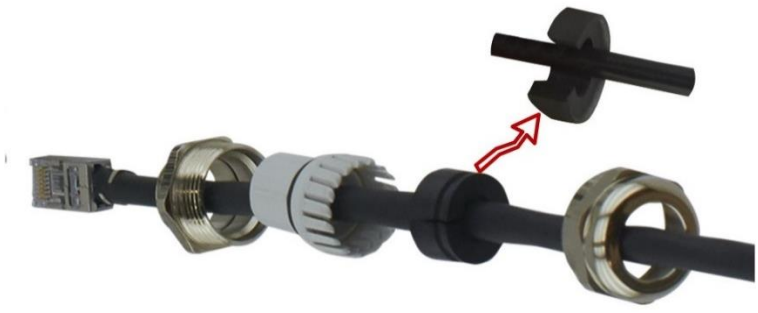
End of procedure.

Continued on next page

ETH Cable, Continued

Procedure for WiBAS G5 dual-BS

How to install the ETH cable to WiBAS™ G5 dual-BS, proceed as follows:

Step	Action
1	Remove the metalic protective cap from GbE#1 receptacle, as shown below: 
2	Disassemble the **ETH-HOOD-GX** parts and remove the plastic in the middle of the seal, as shown below: 
3	Pass the cable through the parts of gland, as shown below. **The seal shown below is split-type for easy installation and removal.** 

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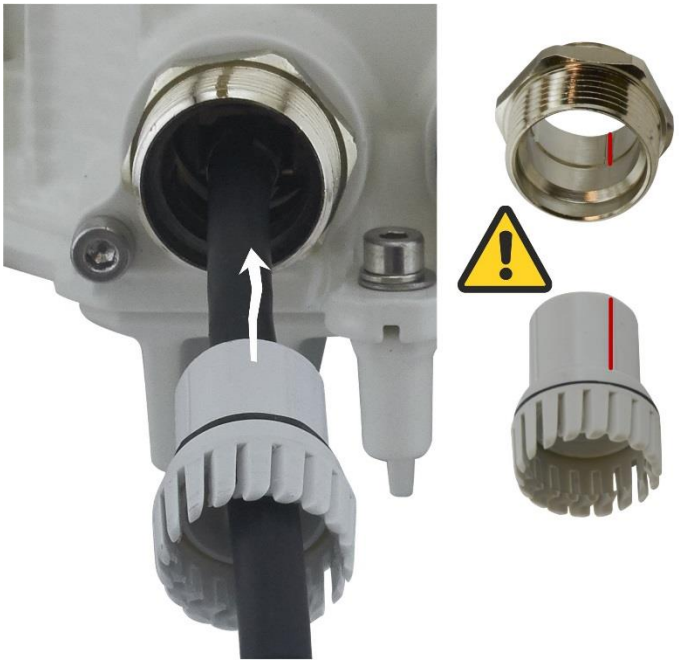
ETH Cable, Continued

Procedure for WiBAS G5 dual-BS, continued

Step	Action
4	Insert and install the RJ-45 jack of the cable into the mating receptacle of the radio unit. **Listen for a "click" when inserting.** This verifies that the jack has been inserted properly. 
5	Install the body (M20 thread). **Do not over tighten.** Adjust the tool for max tightening torque 5 Nm. Insert claw into the body (M20 thread). **Align the designated points. Misaligning of parts will cause damage.** 

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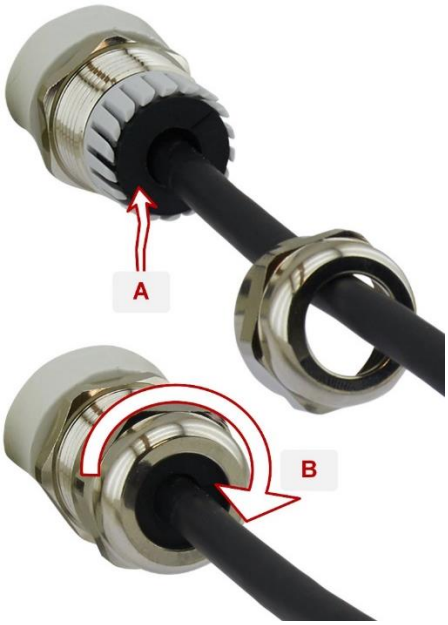
ETH Cable, Continued

Procedure for WiBAS G5 dual-BS, continued

Step	Action
6	Perform the following: • Insert the seal into “pressure fingers” of claw **(A)**. • Screw the sealing nut. Use the adjustable torque U-wrench to tighten **(B)**. **Do not over tighten.** Adjust the tool for max tightening torque 0.6-1 Nm. 

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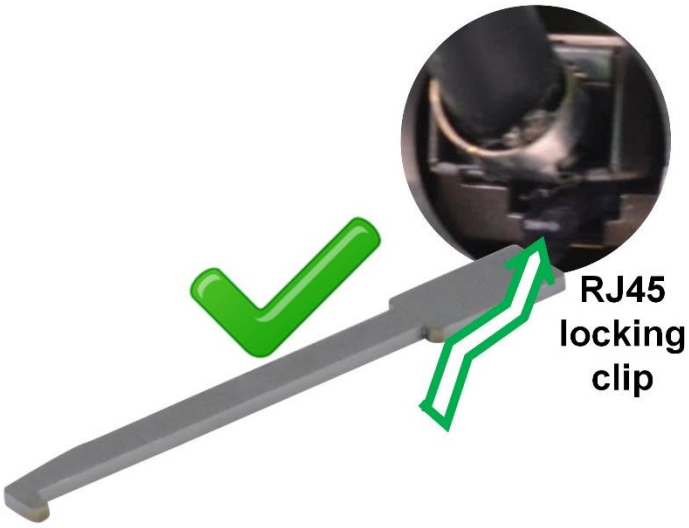
ETH Cable, Continued

Procedure for WiBAS G5 dual-BS, continued

Step	Action
7	Install the cable holder (refer Procedure for WiBAS G5 dual-BS).

Take care when you unplug the RJ-45 jack.
The RJ45 jack is locked into the mating receptacle.
Do not remove the Body part of the gland.

Take care when you unplug the RJ-45 jack. The jack is locked into the mating receptacle. After removing the seal and claw use the flat side of the extruder (or a screwdriver) to extract the RJ-45 jack by pressing the locking clip upwards, as shown below.



End of procedure.

Fiber Optic Cable

Introduction

Apply this procedure for installing the Fiber Optic cable (indicative order code **FBROPTMM-002**) to WiBAS™ Base Station radio units.

Tools and materials

Tools	• Adjustable torque U-wrench and screwdrivers (see Equipment installation tools).
Materials	• **M25-GLAND** for WiBAS™ OSDR-HUB • **SFP-HOOD-OBX**(1) for WiBAS™ G5 micro-BS / evo-BS. • **SFP-HOOD-GX** for WiBAS™ G5 dual-BS. • Fiber Optic cable. • Radio units.

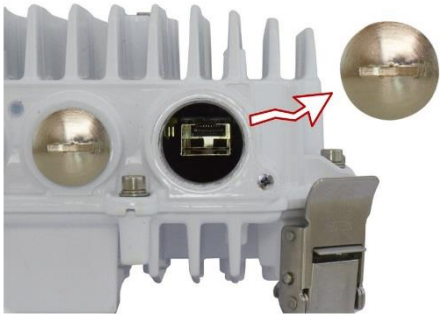
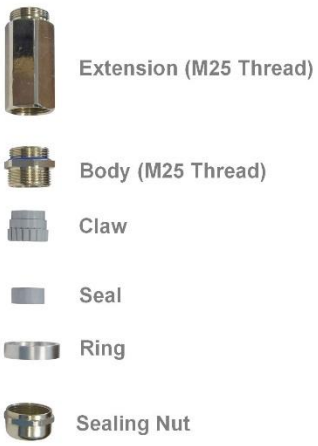
Continued on next page

(1) The order code includes extruder for de-installing the fiber optic cable and the SFP module form WiBAS™ G5 micro-BS receptacle cage (for details see last step of the respective Procedure)

Fiber Optic Cable, Continued

Procedure for WiBAS OSDR-HUB

How to install the fiber optic cable to WiBAS™ OSDR-HUB, proceed as follows:

Step	Action
1	Remove the metallic protective cap. 
2	Disassemble the **M25-GLAND** parts, as shown below: 

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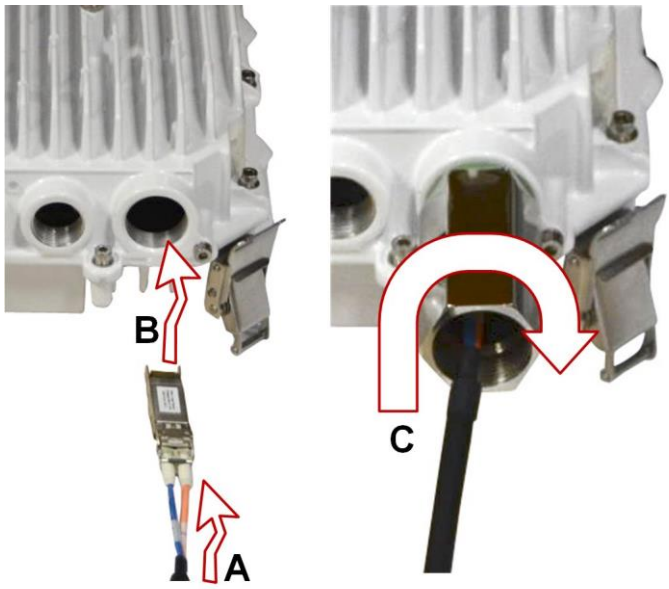
Fiber Optic Cable, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
3	Pass the cable through the parts of gland, as shown below. The **seal** shown below is split-type for easy installation and removal. 
4	Perform the following actions: • Install the fiber optic cable into the SFP module **(A)**. • Plug the SFP module into the OSDR SFP cage **(B)**. • Install the body extension **(C)**.  **Do not over tighten.** Adjust the tool for applying maximum tightening torque **10 Nm**.

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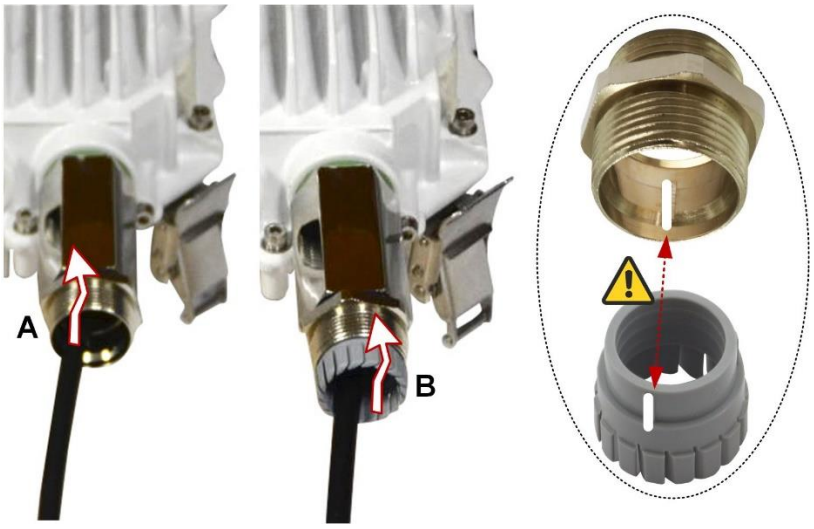
Fiber Optic Cable, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
5	Perform the following actions: • Screw the body into the body extension thread **(A)**. **Do not over tighten.** Adjust the tool for applying maximum tightening torque **10 Nm**. • Insert claw into the body **(B)** taking into account the caution. **Align the designated points.** Misaligning of parts will cause damage. 

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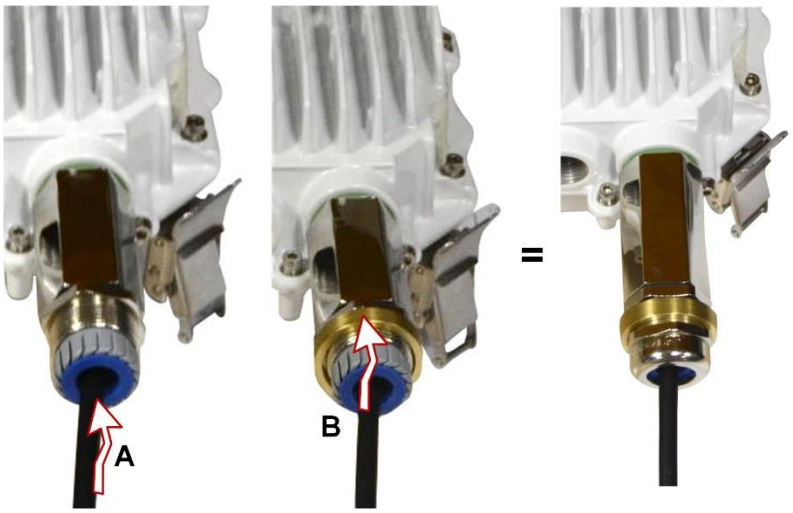
Fiber Optic Cable, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
6	Perform the following actions: • Insert the seal into “pressure fingers” of claw **(A)**. • Insert the O-ring **(B)**. • Screw the sealing nut. Use the adjustable torque U-wrench to fully tighten. **The metallic O-ring protects from overtightening.** 

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
7	Install the cable holder (refer to Procedure for WiBAS OSDR-HUB).

Take care when you unplug the fiber optic connector.

The latter is locked into the SFP and must be extracted first (with the tip of a flat-headed screwdriver) after removing the gland parts from the lower part of WiBAS™ OSDR-HUB.

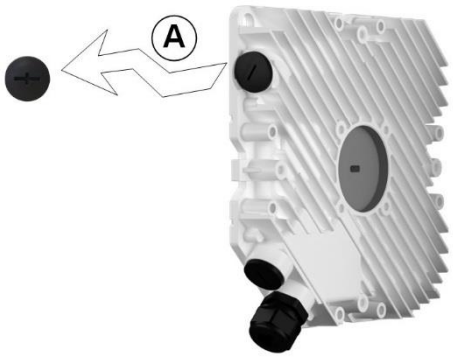
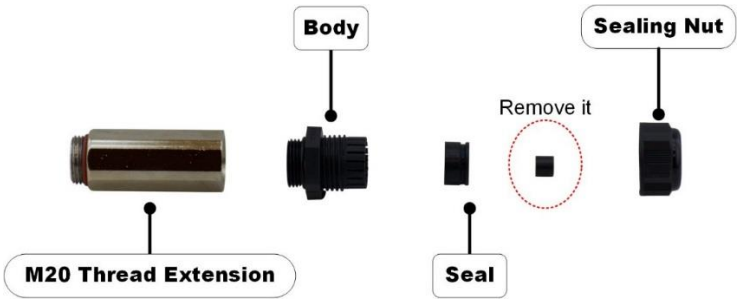
End of procedure.

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS G5 micro-BS / evo-BS

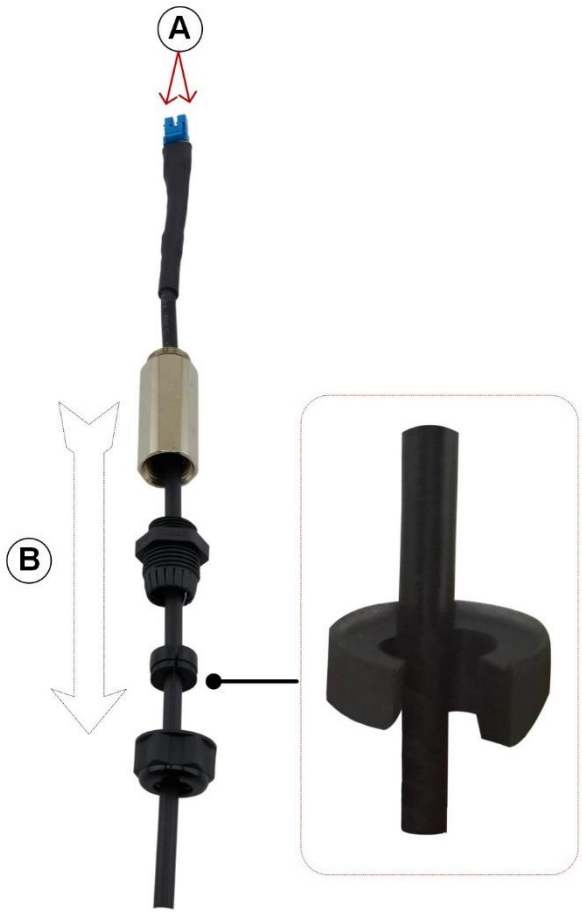
How to install the fiber optic cable to WiBAS™ G5 micro-BS / evo-BS radio unit, proceed as follows:

Step	Action
1	Use the cross screwdriver to remove the protective cap, as shown below: 
2	Insert the SFP module into radio unit receptacle, as shown below: 
3	Disassemble the **SFP-HOOD-OBX** parts and remove the plastic in the middle of the seal, as shown below: 

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS G5 micro-BS / evo-BS, continued

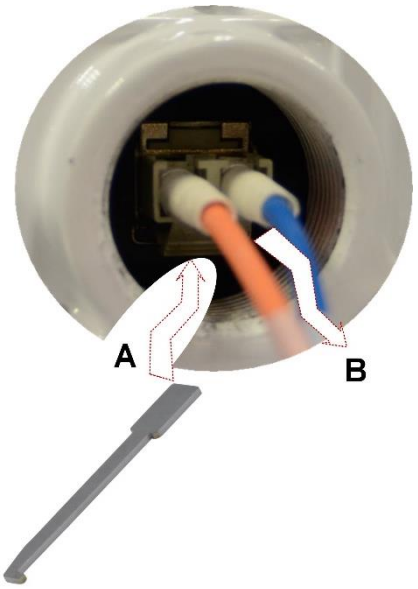
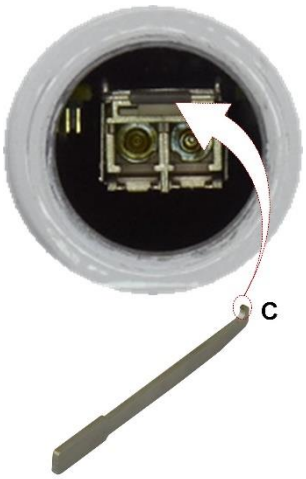
Step	Action
4	Perform the following: • Remove the optical cable protection caps **(A)**. • Pass the cable through the parts of gland, as shown below **(B)**. • Connect the cable to SFP module. • Assemble the connector by tightening all parts together.  • Use the adjustable U-wrench to tighten. **Do not over tighten.** Adjust the tool for applying maximum tightening torque, as follows:

Item	Max. Tightening Torque
M20 Thread Extension	5.5 Nm
Body	4.5 Nm
Sealing Nut	5 Nm

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS G5 micro-BS / evo-BS, continued

Step	Action
5	For unpluging fiber optic cable with diameter 6 mm up to 9 mm, perform the actions as shown below. The cable latter is locked into the SFP module and must be extracted first before unplugging the cable. • Remove the M20 gland (all parts). • Press the cable latter **(A)** with the flat side of extruder to release the cable and then pull it outwards **(B)**.  • SFP module comprising by a bail-delatch mechanism. Mount the hook part of the extruder **(C)** into the bail and pull backwards for removing the module, as shown below: 

End of procedure.

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS G5 dual-BS

How to install the fiber optic cable to WiBAS™ G5 dual-BS radio unit, proceed as follows:

Apply this procedure for installing the Fiber optic cable to WiBAS™ G5 dual-BS SFP receptacle.

Fiber Optic Cable Diameter	Fiber Optic Cable Gland
4.5 mm to 7.5 mm (blue sealing ring in the package)	

Step	Action
1	Remove the plastic protective cap, as shown below: 
2	Disassemble the **SFP-HOOD-GX** parts and remove the plastic in the middle of the seal, as shown below: 

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS G5 dual-BS, continued

Step	Action
3	Pass the cable through the parts of gland, as shown below. **The seal shown below is split-type for easy installation and removal.** 
4	Insert the fiber optic cable into the SFP module, as shown below. 
5	Insert the SFP module into the radio unit receptacle, as shown below. 

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS G5 dual-BS, continued

Step	Action
6	Install the M20 thread extension, as shown below:  Use the adjustable torque U-wrench to tighten. **Do not over tighten.** Adjust the tool for max tightening torque 6 Nm.
7	Install the remaining parts of the gland, as follows: • Install the body (M20 thread). • **Do not over tighten.** Adjust the tool for max tightening torque 5 Nm. • Insert claw into the body (M20 thread). **Align the designated points. Misaligning of parts will cause damage.**  • Insert the blue seal into “pressure fingers” of claw. • Position the spacer (only for metallic gland). • Screw the sealing nut. Use the adjustable torque U-wrench to **fully tighten**.

Continued on next page

Fiber Optic Cable, Continued

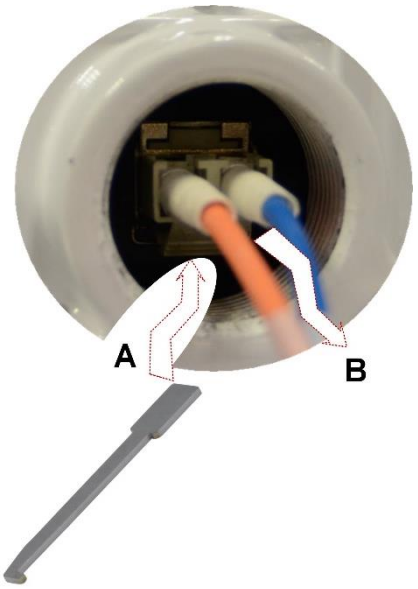
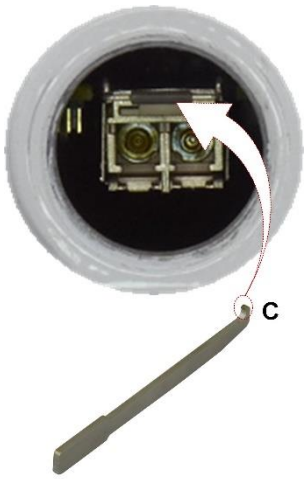
Procedure for WiBAS G5 dual-BS, continued

Step	Action
8	The fiber optic gland should look as follows:  Use the tool to tighten the sealing nut. • **For black plastic sealing nut:** Do not over tighten. Adjust the tool for max tightening torque 0.6-1 Nm.
9	Install the cable holder (refer Procedure for WiBAS G5 dual-BS).

Continued on next page

Fiber Optic Cable, Continued

Procedure for WiBAS G5 dual-BS, continued

Step	Action
10	For unpluging fiber optic cable with diameter 4.5 mm up to 7.5 mm, perform the actions as shown below. The cable latter is locked into the SFP module and must be extracted first before unplugging the cable. • Remove the M20 gland (all parts). • Press the cable latter **(A)** with the flat side of extruder to release the cable and then pull it outwards **(B)**.  • SFP module comprising by a bail-delatch mechanism. Mount the hook part of the extruder **(C)** into the bail and pull backwards for removing the module, as shown below: 

End of procedure.

Power Supply Cable

Introduction

Apply this procedure for installing the power connector (**PWR-CONN-GX**) already terminated to power supply cable (**DC-PWR-CAB-3**) to WiBAS™ G5 dual-BS radio unit.

Prerequisites

Prepare and terminate the power supply cable as described in Appendix B – Terminating Cables.

Tools and materials

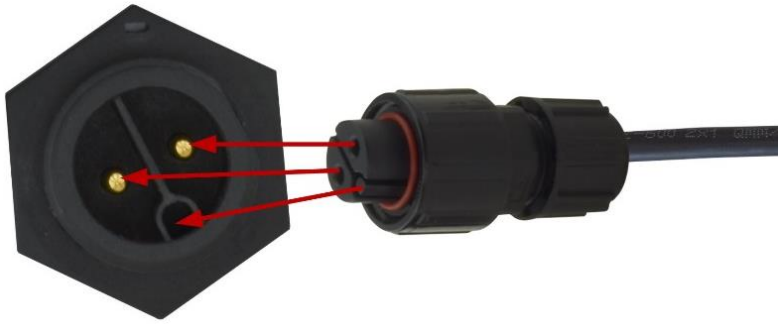
Tools	• Adjustable torque wrench with hexagon female bit (see Equipment installation tools).
Materials	• Power connector (**PWR-CONN-GX**) • Power supply cable (**DC-PWR-CAB-3**). • WiBAS™ G5 dual-BS radio unit.

Continued on next page

Power Supply Cable, Continued

Procedure for WiBAS OSDR-HUB

How to install the power connector (already terminated to power supply cable) to WiBAS™ G5 dual-BS, proceed as follows:

Step	Action
1	Unscrew the protective tap and remove it. Keep it for maintenance reasons. 
2	Insert the connector, as shown below: 
3	Fully tighten the connector, as shown below:  **Do not over tighten.**

End of procedure.

Cable Holder

Introduction

Apply this procedure for installing the cable holder to the following WiBAS™ Base stations:

- WiBAS™ OSDR-HUB (**OSDR-HOLD-2** and **OSDR-HOLD-5**)
- WiBAS™ G5 dual-BS (**CBL-HLDR-GX**).

Tools and materials

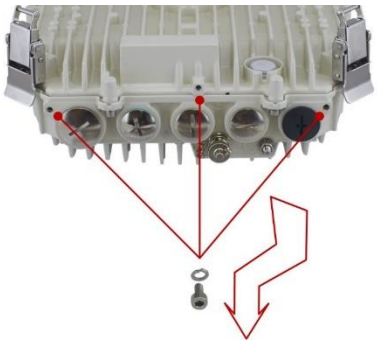
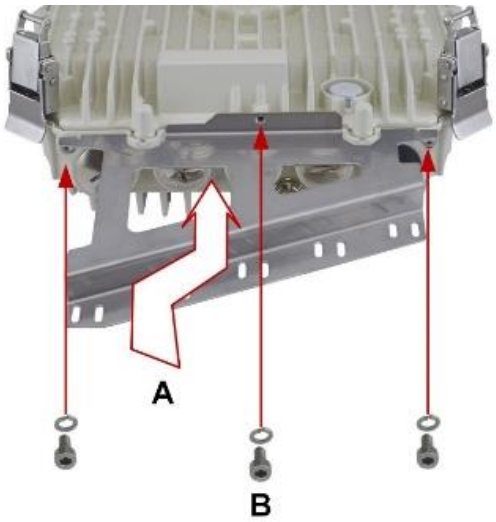
Tools	• Adjustable torque wrench tool with hexagon male bit (refer to Equipment installation tools).
Materials	• **OSDR-HOLD-2** or **OSDR-HOLD-5** • **CBL-HLDR-GX** • Radio units.

Continued on next page

Cable Holder, Continued

Procedure for WiBAS OSDR-HUB

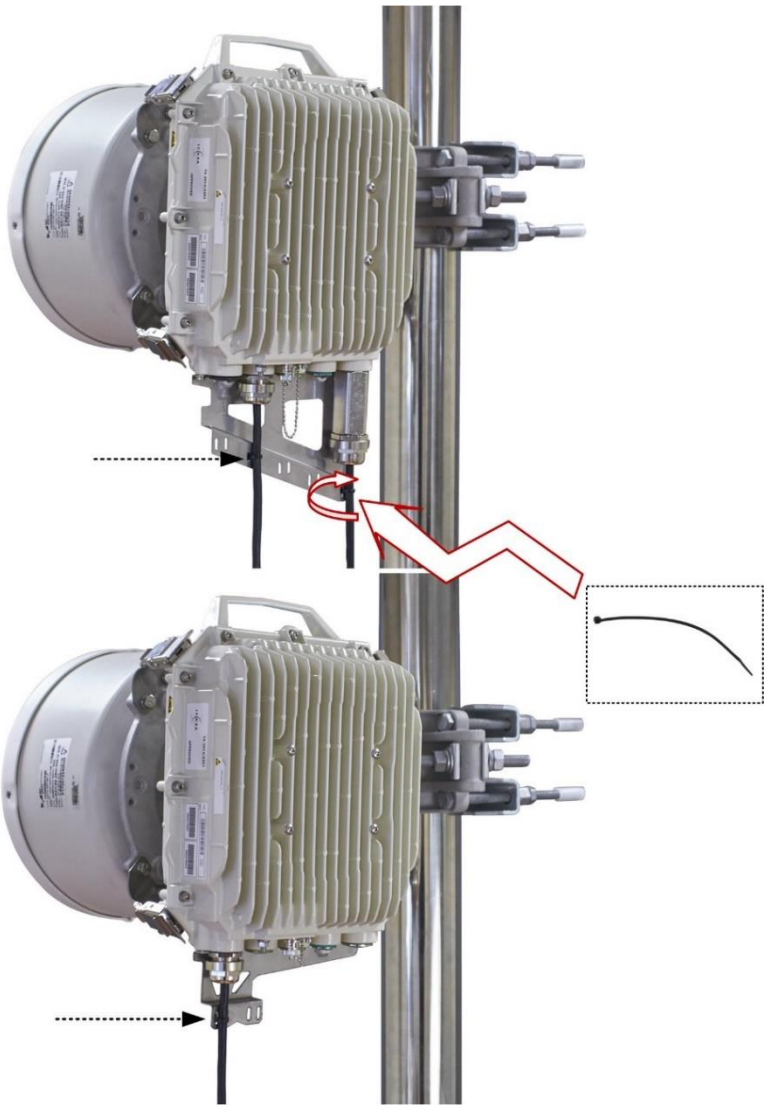
How to install the cable holder to WiBAS™ OSDR-HUB, proceed as follows:

Step	Action
1	Use the allen key to remove the three screws with lock washers, as shown below. 
2	Perform the following actions: • Mount the holder to radio **(A)**. • Install the three lock washers and screws **(B)**, as shown below:  • Use the wrench tool to tighten the screws. **Do not over tighten.** Adjust the tool for applying maximum tightening torque **2 Nm**.

Continued on next page

Cable Holder, Continued

Procedure for WiBAS OSDR-HUB, continued

Step	Action
3	Use the tie wrap to tighten the cable, as shown below: 

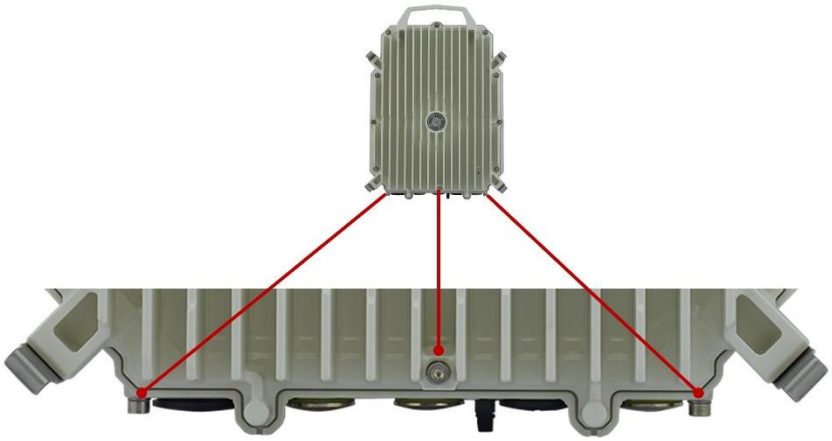
End of procedure.

Continued on next page

Cable Holder, Continued

Procedure for WiBAS G5 dual-BS

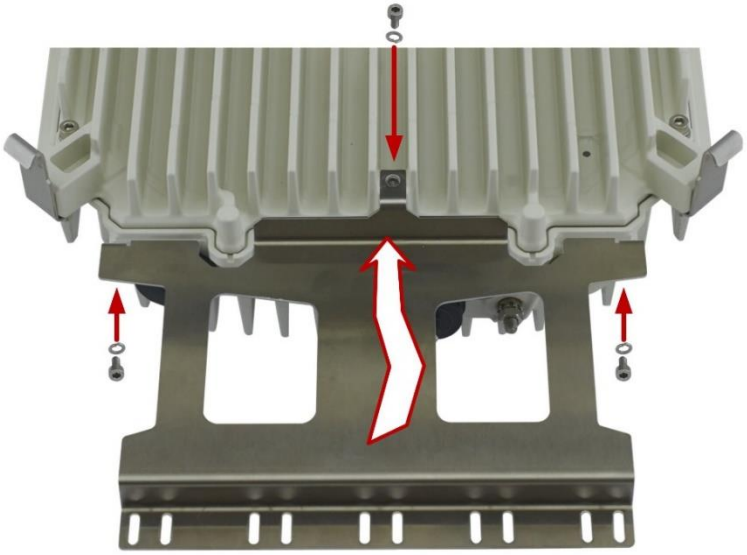
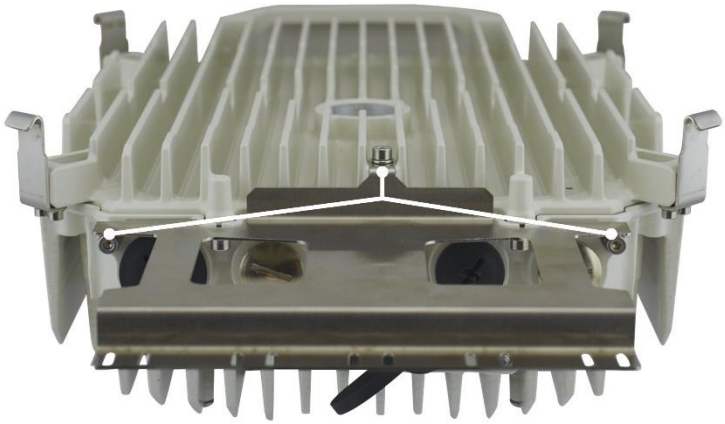
How to install the cable holder to WiBAS™ G5 dual-BS, proceed as follows:

Step	Action
1	Use the allen key to remove the three screws with lock washers, as shown below|: 

Continued on next page

Cable Holder, Continued

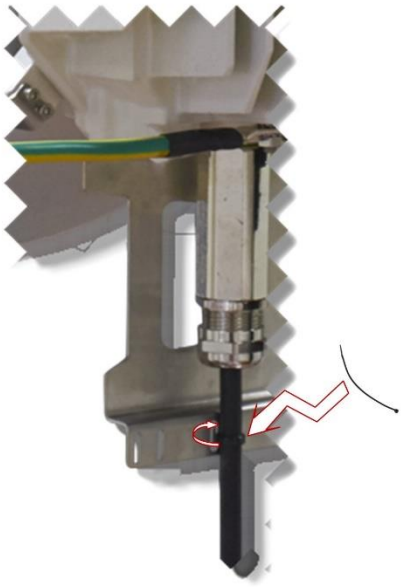
Procedure for WiBAS G5 dual-BS, continued

Step	Action
2	Attach the holder onto the radio and use the allen key to install the three screws/lock washers, as shown below:  **Do not over tighten.**
3	The installation should look, as follows: 

Continued on next page

Cable Holder, Continued

Procedure for WiBAS G5 dual-BS, continued

Step	Action
4	Use the tie wraps to tighten the cable, as shown below: 

End of procedure.

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Appendix A - Installing Power Injectors

Scope

This chapter describes the pole/wall installation and cabling procedures of power injectors, as follows:

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH

PONE-OD67-AC

PONE-OD-DC

POE-HP-OD67-DC

POE-HP-OD-AC

Power injectors list

The following table shows the list of the power injectors for pole/wale and cabling installation:

External powering using Power Injector

Order Code	Type		WiBAS™ Base Station		
	AC	DC	OSDR -HUB	G5 micro-BS G5 evo-BS	G5 dual-BS
POE-AC56-IDH	✓	✗	✓	✓	✗
POE-AC60-ID	✓	✗	✓	✓	✗
PONE-OD67-AC	✓	✗	✓	✓	✗
POE-ID-AC72	✓	✗	✓	✓	✗
POE-AC75-ID	✓	✗	✓	✗	✗
POE-AC112-ID	✓	✗	✗	✗	✓
POE-HP-OD-AC	✓	✗	✗	✗	✓
PONE-OD-DC	✗	✓	✓	✓	✗
POE-HP-OD67-DC	✗	✓	✗	✗	✓

Note For the following DC power injectors refer to item 6 of Reference manuals on page 14:

- **IDU-O4P** (indoor)
- **IDU-O10P** (indoor)
- **OmniBAS™ 4W/8W IDU** (indoor)

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH

Introduction

Apply this procedure for installing the following indoor AC power injectors:

POE-AC112-ID
POE-AC75-ID
POE-ID-AC72
POE-AC60-ID
POE-AC56-IDH

Power injectors details

POE-AC112-ID: AC POE++ injector, indoor, wall-mount or desktop, 112 W, -40°C ~ +50°C, 100 to 240 V AC, 47-63 Hz.

- **POE-AC75-ID**: AC POE injector, indoor, 75 W, -20° C to +40° C, 90 V AC to 264 V AC, 47 Hz to 63 Hz.

- **POE-ID-AC72**: AC POE injector, indoor, 72 W, -5° C to +45° C, 100 V AC to 240 V AC, 50 Hz to 60 Hz.
  - This model offers Network Signal and POE Power Output surge protection (10 / 700 µs): 6 Kv.
  - Grounding cable 6 mm2 is included in the package

- **POE-AC56-IDH**: AC POE injector, indoor, temperature hardened, 56 W.
- **POE-AC60-ID**: AC POE injector, indoor, 60 W.

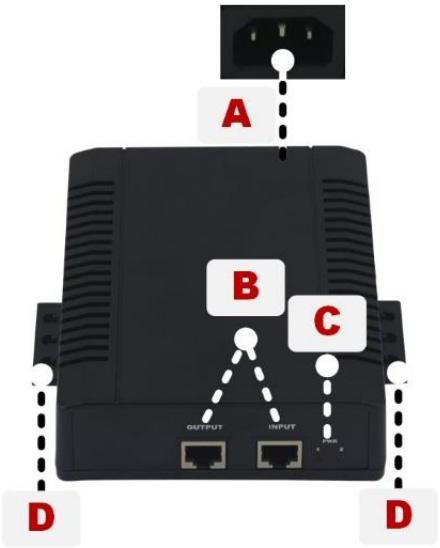
Note Materials for wall mount installation are not included on the packing list.

Continued on next page

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH, Continued

Power injectors overview

POE-AC112-ID



#	Marking	Details	Use
A	-	3-pins AC socket (EU).	To connect the AC power supply cord.
B	OUTPUT INPUT	Gigabit Ethernet 1000 Base-T, Electrical (RJ-45).	**OUTPUT:** To connect the Gigabit Ethernet (S-FTP) cable for carrying: • traffic • inband management • superimposed DC power towards to radio unit. **INPUT**: To connect the Gigabit Ethernet (S-FTP) cable for carrying: • traffic • inband management towards to customer network.
C	PWR	Power LED.	To provide power status.
D	-	-	To install onto the wall.

Continued on next page

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH, Continued

Power injectors overview, continued

POE-AC75-ID

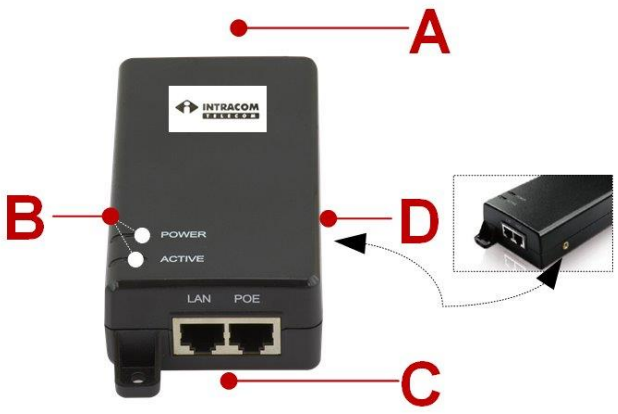
#	Marking	Details	Use
A	**INPUT**	3-pins AC socket (EU).	To connect the AC power supply cord.
B	**LED**	Multi-functioning LED.	To provide equipment status during operation.
C	**IN / OUT**	Gigabit Ethernet 10/100/1000 Base T, Electrical (RJ-45).	• **IN:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network:** – Traffic – Inband management • **OUT:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio:** – Traffic – Inband management – superimposed DC power

Continued on next page

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH, Continued

Power injectors overview, continued

POE-ID-AC72



#	Marking	Details	Use
A	**INPUT**	3-pins AC socket (EU).	To connect the AC power supply cord.
B	**LED**	Multi-functioning LED.	To provide equipment status during operation.
C	**LAN / POE**	Gigabit Ethernet 10/100/1000 Base T, Electrical (RJ-45).	• **LAN:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network:** – Traffic – Inband management • **POE:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio:** – Traffic – Inband management – superimposed DC power
D	**GND**	Grounding.	To connect 6 mm^2 grounding cable.

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POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH, Continued

Power injectors overview, continued

POE-AC60-ID

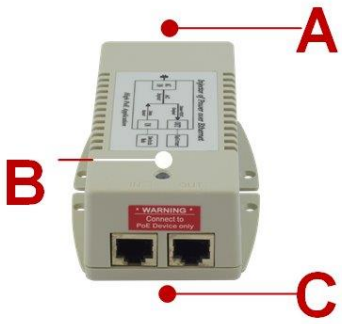
#	Marking	Details	Use
A	**INPUT**	3-pins AC socket (EU).	To connect the AC power supply cord.
B	**LED**	Multi-functioning LED.	To provide equipment status during operation.
C	**IN / OUT**	Gigabit Ethernet 10/100/1000 Base T, Electrical (RJ-45).	• **IN:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network:** – Traffic – Inband management • **OUT:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio:** – Traffic – Inband management – superimposed DC power

Continued on next page

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH, Continued

Power injectors overview, continued

POE-AC56-IDH



#	Marking	Details	Use
A	**INPUT**	3-pins AC socket (EU).	To connect the AC power supply cord.
B	**LED**	Multi-functioning LED.	To provide equipment status during operation.
C	**IN / OUT**	Gigabit Ethernet 10/100/1000 Base T, Electrical (RJ-45).	• **IN:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network:** – Traffic – Inband management • **OUT:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio:** – Traffic – Inband management – superimposed DC power

Continued on next page

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH, Continued

Prerequisites

Prepare and terminate the ETH SF/UTP and grounding (only for **POE-ID-AC72**) cables as described in Appendix B – Terminating Cables.

Tools and materials

Tools	• For wall installation screwdrivers (see Equipment installation tools) and drill machine (refer to Specific works).
Materials	• **POE-AC112-ID** • **POE-AC75-ID (or POE-AC60-ID)** • **POE-ID-AC72.** • **POE-AC56-IDH**.

Continued on next page

POE-AC112-ID / POE-AC75-ID / POE-ID-AC72 / POE-AC60-ID / POE-AC56-IDH, Continued

Procedure

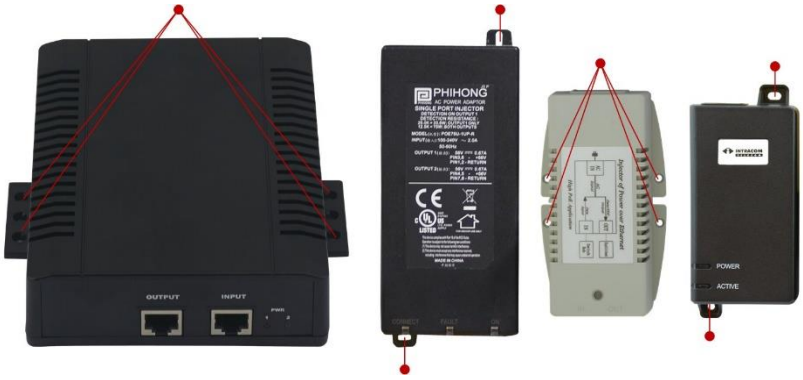
How to install the cables (Ethernet, power and grounding), proceed as follows:

Step	Action
1	For **POE-ID-AC72** install the grounding cable.
2	Connect the Gigabit Ethernet (SF/UTP) cable to **IN** or **LAN** or **INPUT** receptacle of the power injectors. Then connect the other end of the cable to customer network receptacle.
3	Connect the Gigabit Ethernet (SF/UTP) cable to **OUT** or **POE** or **OUTPUT** receptacle of the power injectors. Then connect the other end of the cable to **the respective receptacle of the radio unit.**
4	Connect IEC plug to the respective input of the power injector with the main AC socket.

End of procedure.

Procedure

How to install the devices onto the wall surface, proceed as follows:



Step	Action
1	Position the device on the wall surface and using a pencil mark the drill points. With the drill machine (fitted with 5 mm bit), drill four holes on the wall surface, at a depth of 30 mm.
2	Install the wall plugs and using the cross headed screwdriver tighten the screws.

End pf procedure.

PONE-OD67-AC

Introduction

Apply this procedure for installing the outdoor AC power injector **PONE-OD67-AC**.

Power injector details

Characteristics:

- AC PONE injector
- Outdoor
- 67 watt
- Wall mount
- Temperature hardened
  - Operating temperature -40° C to +55° C
- 110 V AC to 240 V AC, tested for 99 V AC to 255 V AC
- 50 Hz to 60 Hz
- IEC 60529 / IP67 class.

Packing List:

- Ethernet cable glands are pre-installed on the unit.
- Grounding screw is pre-installed on the unit.
- AC Power connector is included in the package.
- Screws, washers and wall plugs are included in the package (for wall installation)

Note
- For pole installation, a mounting bracket (**INSTPONE-PL2**) should be ordered.
- For grounding, a grounding kit (**GND-KIT16-OD**) should be ordered.
- For powering, an AC power cable (**AC-PWR-CAB**) should be ordered.

Note
- Lightning surge protection is embedded in the unit.

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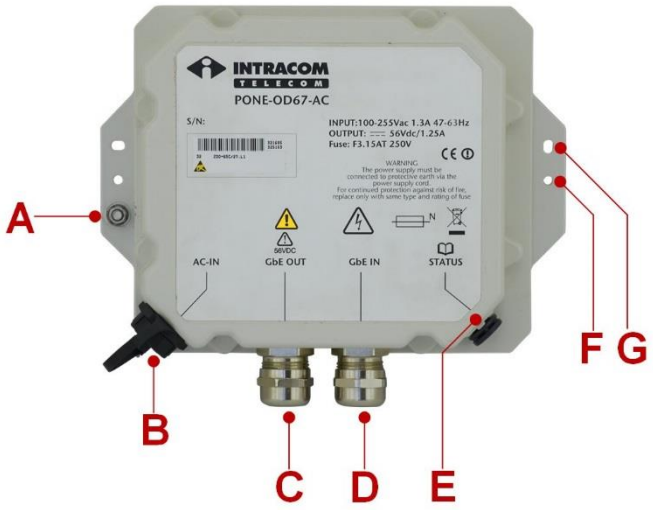
PONE-OD67-AC, Continued

Power injector overview



#	Marking	Details	Use
A	**GND**	Grounding point.	To connect 16 mm^2 grounding cable.
B	**AC-IN**	3-pins AC receptacle.	To connect AC power supply cable with connector.
C	**Gbe OUT**	Gigabit Ethernet 10/100/1000 Base T, Electrical (RJ-45).	To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio**: • Traffic • Inband management • superimposed DC power
D	**GbE IN**		To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network**: • Traffic • Inband management
E	**STATUS**	Multi-functioning LED.	To provide radio unit status during operation.
F	**-**	Pole installation.	To mount **INSTPONE-PL2**.
G	**-**	Wall installation.	To mount wall installation screws.

Continued on next page

PONE-OD67-AC, Continued

Prerequisites

Prepare and terminate the ETH SF/UTP, grounding and power supply cables as described in Appendix B – Terminating Cables.

Tools and materials

Tools	• Adjustable torque wrench tool with bits, Adjustable torque U-wrench tool (see to Equipment installation tools) and drill machine (refer to Specific works). • **TOOL-M20**.
Materials	• **INSTPONE-PL2**. • **PONE-OD67-AC**.

Continued on next page

PONE-OD67-AC, Continued

Procedure

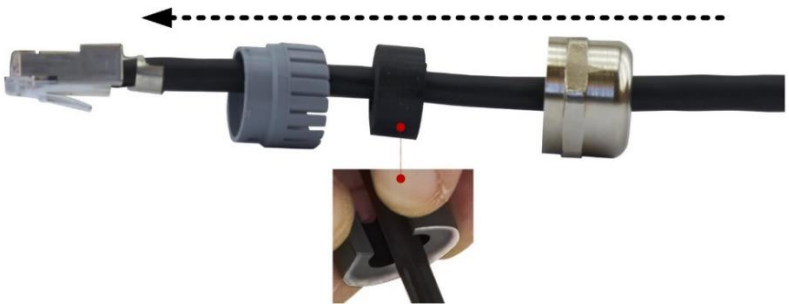
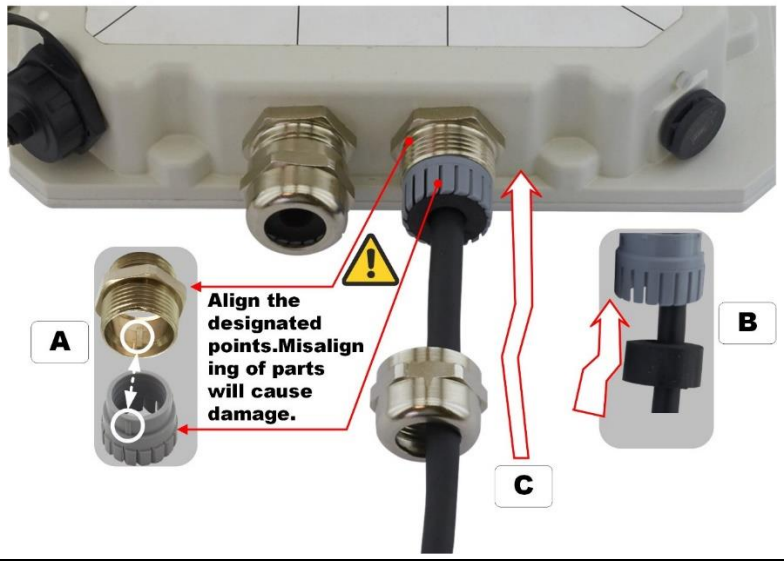
How to install the **PONE-OD67-AC** onto the pole or wall, proceed as follows:

Step	Action
1	For pole installation follow this step. For wall installation go to last step. Perform the following actions: • Attach the plate onto rear side of PONE **(A)**, as shown below. • Install lock washer and screw. Then use the cross headed screwdriver to fully tighten **(B)**. • Pass the hose clamp through the plate holes **(C)**. • Install the PONE onto pole. Use the tool with M5 deep socket to tighten **(D)**. **Do not over tighten.** Adjust the tool for max tightening torque **2 Nm**. • Use the wrench tool to remove the two sealing nuts **(E)**. Then remove the claw and seal. 

Continued on next page

PONE-OD67-AC, Continued

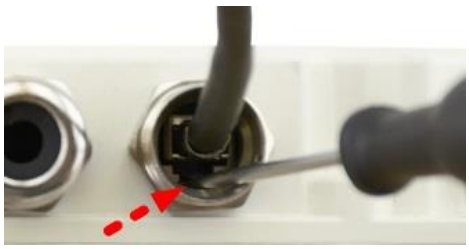
Procedure, continued

Step	Action
2	Pass the cable through the parts of gland, as shown below.  Plug the Ethernet cables to the GbE receptacles (**OUT:** goes to radio and **IN:** goes to customer network). **Listen for a "click" when inserting**. This verifies that the jack has been inserted properly.
3	Perform the following actions: • Insert the claw to body taking in consideration the caution below **(A)**. • Insert the seal to claw **(B)**. • Use the adjustable torque U-wrench to screw the sealing nut to body **(C)**. **Do not over tighten.** Adjust the tool for tightening torque **2 Nm** (the final torque will be applied to the next step). 

Continued on next page

PONE-OD67-AC, Continued

Procedure, continued

Step	Action
4	Perform the following actions: • Insert the claw to body taking in consideration the caution below **(A)**. • Insert the seal to claw **(B)**. • Use the adjustable torque U-wrench to screw the sealing nut to body **(C)**.  **Do not over tighten.** Adjust the tool for maximum tightening torque **6 Nm**. Take care when you unplug the RJ-45 jack. The latter is locked into the mating receptacle and must be extracted first (with the tip of a flat-headed screwdriver) after removing the gland parts from the lower part of PONE. 

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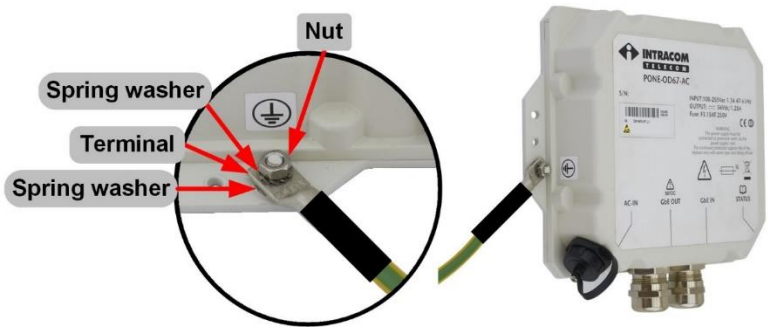
PONE-OD67-AC, Continued

Procedure, continued

Step	Action
5	Install the grounding cable as shown below.  **Do not over tighten.** Adjust the tool with M5 deep socket for maximum tightening torque **3 Nm**.
6	Install the power cable as shown below. 
7	For wall installation perform the following actions: • Position the device on the wall surface and using a pencil mark the drill points. With the drill machine (fitted with 5 mm bit), drill four holes on the wall surface, at a depth of 45 mm. • Install the 2 supplied wall plugs and using the cross headed screwdriver tighten the 2 screws. 

End of procedure.

PONE-OD-DC

Introduction

Apply this procedure for installing the outdoor DC power injector **PONE-OD-DC**.

Power injector details

Characteristics:

- DC PONE injector
- Outdoor
- 60 watt
- Wall mount
- Operating temperature -33° C to +55° C
- DC voltage (V DC)
  - Input nominal: 48
  - Min: 40.5
  - Max: 57
- DC current (A)
- Input: 1.9 max
- Output: 1.85 max

Packing List:

- Grounding lug M4 is pre-installed on the unit.
- Screws, washers and wall plugs are included in the package (for wall installation)

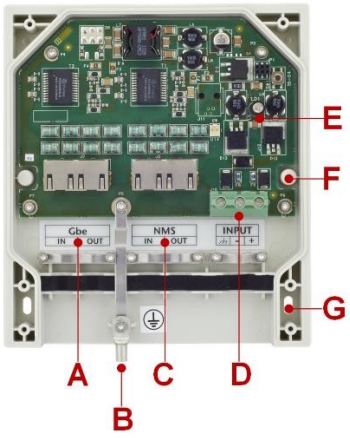
Note
- For pole installation, a mounting bracket (**INST-PONE-PL**) should be ordered.
- For grounding, a grounding cable (**GND-CAB6-ID**) should be ordered.
- For powering, a DC power cable (**DC-PWR-CAB-2**) should be ordered.

Note
- Lightning surge protection is embedded in the unit.

Continued on next page

PONE-OD-DC, Continued

Power injector overview



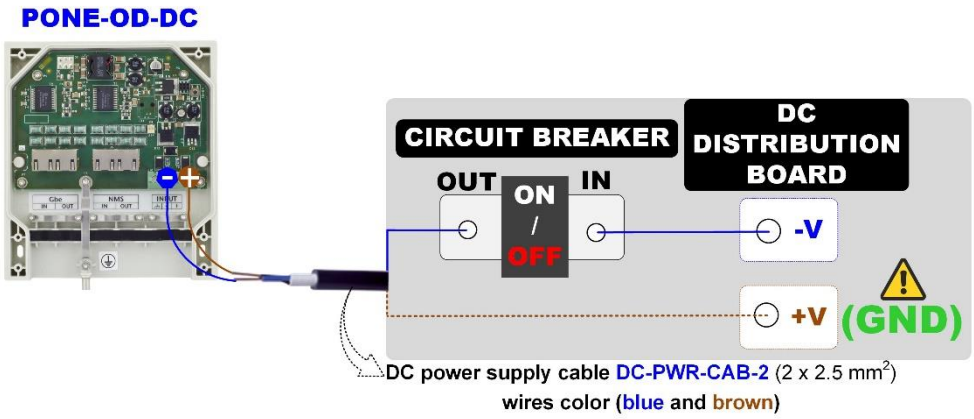
#	Marking	Details	Use
A	**Gbe IN / OUT**	Gigabit Ethernet 100/1000 Base-T, Electrical (RJ-45).	**IN:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network**: • Traffic • Inband management
			OUT: To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio**: • Traffic • Inband management • superimposed DC power
B	**GND**	Grounding point.	To connect 6 mm^2 grounding cable.
C	**NMS IN / OUT**	Ethernet 100 Base-T, Electrical (RJ-45).	**IN:** To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network**: • Outband management
			OUT: To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio**: • Outband management • superimposed DC power
D	**INPUT**	Screw type terminals.	To connect the DC power supply cable (open end).
E	**-**	Multi-functioning LED.	To provide radio unit status during operation.
F	**-**	Pole installation.	To mount **INST-PONE-PL**.
G	**-**	Wall installation.	To mount wall installation screws.

Continued on next page

PONE-OD-DC, Continued

Connection diagram between PONE-OD-DC and local DC power source

The following diagram shows the connection between local dc power source and **PONE-OD-DC** using DC power supply cable **DC-PWR-CAB-2**:



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PONE-OD-DC, Continued

Minimum input voltage versus S-FTP cable length

When the DC voltage at the input of the PONE is below **41 V** for Cat6 cable and **41.7 V** for Cat5E then the **length** of Gigabit Ethernet (S-FTP) cable (Cat5E or Cat6), between **radio unit receptacles** and **PONE receptacle**, cannot reach more than 100 meters.

The following table shows the maximum S-FTP cable length versus the voltage at the input of the PONE for Cat5E and Cat6 cable types:

Input voltage to the PoNE (V DC)	max length of Cat6 S-FTP cable (m)	max length of Cat5E S-FTP cable (m)
40.5	90.00	75.00
40.75	95.00	80.00
41	100.00	85.00
41.25	100.00	90.00
41.5	100.00	95.00
41.75	100.00	100.00
42-57.5	100.00	100.00

Note

The restriction is applied because of the following reasons:

- the **PONE-OD-DC** injector combines power and data passively and
- the voltage drop on the S-FTP cable will result in the voltage at the input of the DC power module of the radio unit to be less than the min allowable value for operation. Higher input voltage need to be applied to ensure proper powering of the radio.

Continued on next page

PONE-OD-DC, Continued

Prerequisites

Prepare and terminate the ETH SF/UTP and grounding cables as described in Appendix B – Terminating Cables.

Prepare and terminate the power supply cable as described in the following procedure.

Tools and materials

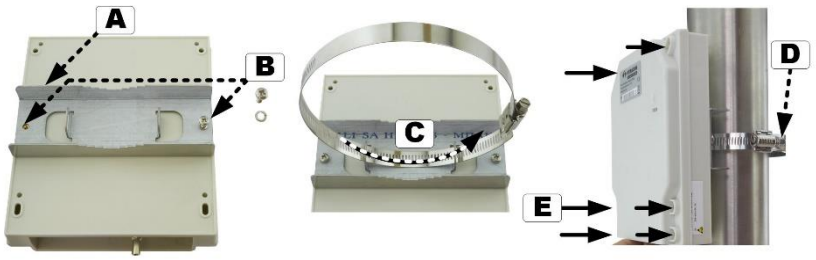
Tools	• Adjustable torque wrench tool with TORX bit and screwdrivers (refer to Equipment installation tools) and drill machine (refer to Specific works). • Cable cutter and blade (see Termination of cables)
Materials	• **INST-PONE-PL**. • **PONE-OD-DC**.

Continued on next page

PONE-OD-DC, Continued

Procedure

How to install the **PONE-OD-DC** onto the pole or wall, proceed as follows:

Step	Action
1	For pole installation follow this step. For wall installation go to last step. Perform the following actions: • Attach the plate onto rear side of PONE, as shown below **(A)**. • Install lock washer and screw. Then use the cross headed screwdriver to fully tighten **(B)**. • Pass the hose clamp through the plate holes **(C)**. • Install the PONE onto pole. Use the tool with M5 deep socket to tighten **(D)**. **Do not over tighten.** Use the tool with TORX T10 bit for max tightening torque **2 Nm**. • Use the tool with TORX T10 bit to remove the six screws **(E)**. Then detach the PONE cover for installing the cables. **Be careful not to drop the screws while removing.** 

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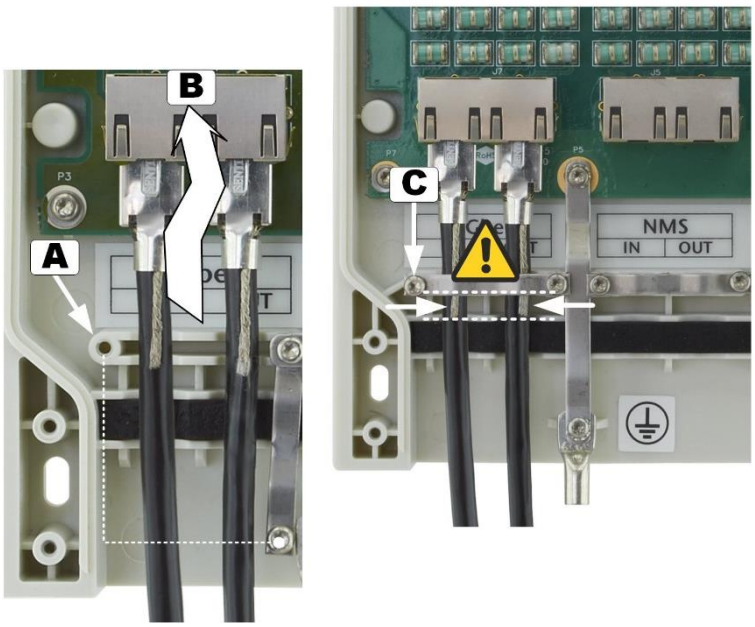
PONE-OD-DC, Continued

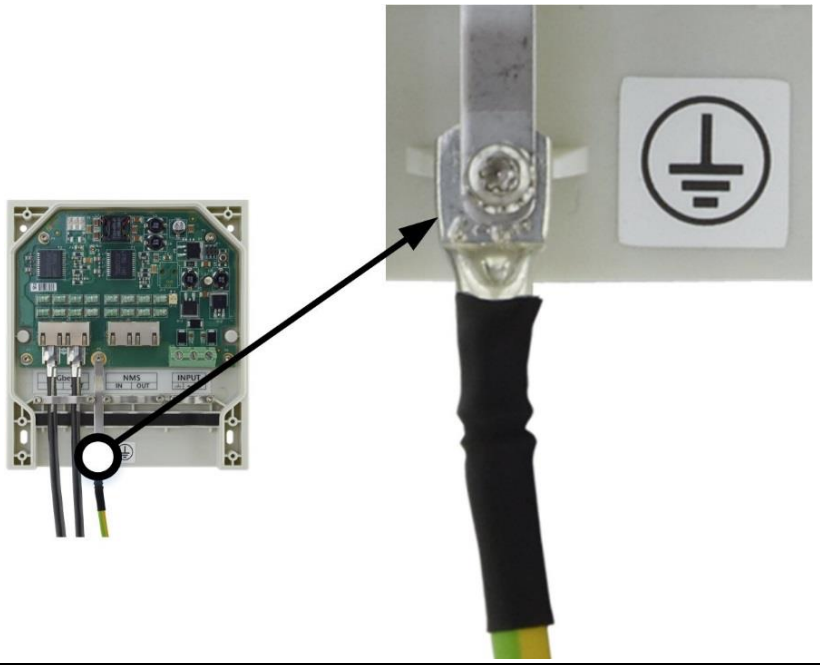
Procedure, continued

Step	Action
2	Perform the following actions for installing the Ethernet (S-FTP) cables: • Use the tool with TORX T10 bit to remove **(A)** the clamp screw. **Be careful not to drop the screw while removing.** • Plug **(B)** the Ethernet cables to the Gbe receptacles (**OUT**: goes to radio unit and **IN**: goes to customer network). **Listen for a "click" when inserting.** This verifies that the jack has been inserted properly. ⚠ The shielded wires should protrude from clamp about 0.5 cm (as shown below). • Use the tool with TORX T10 bit to install the clamp **(C)** for securing the cables in place. ⚠ **Do not over tighten.** Adjust the tool for max tightening torque **0.9 Nm**. 

Continued on next page

PONE-OD-DC, Continued

Procedure, continued

Step	Action
3	Use the tool with TORX T10 bit to install the grounding cable, as shown below. **Do not over tighten.** Adjust the tool for max tightening torque **0.9 Nm**. 

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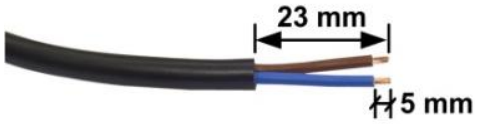
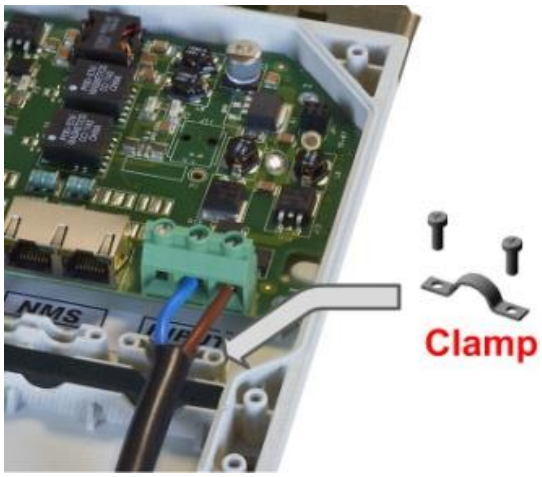
PONE-OD-DC, Continued

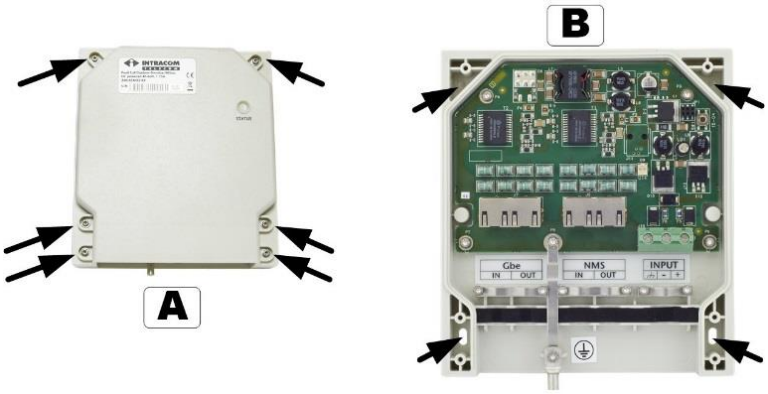
Procedure, continued

Step	Action
4	Perform the following actions for installing the DC power supply cable onto the PONE INPUT receptacle: **Switch-off the:** • local DC power source & • circuit breaker (between PONE and local DC power source). • Connect the power cable to the local DC power source (**brown wire**: **+V**, **blue wire: -V**). • At the other end of the cable, use a blade to strip the wires of the cable, as shown below. Twist strands well to facilitate their insertion into the INPUT receptacle of DC PONE device.  • Use the tool with TORX T10 bit to remove the clamp and insert the bare ends of the cable into the corresponding positions of the INPUT receptacle, as shown below: **Blue wire** to **INPUT (-)**, **Brown wire** to **INPUT (+)**  • Use the flat-headed screwdriver to tighten the INPUT receptacle screws. **Do not over tighten**. The screws, securing the wire strands into the receptacle, are well isolated each other – no danger for accidental short circuit. • Use the tool with TORX T10 bit to install the clamp in order to secure the DC power supply cable. **Do not over tighten.** Adjust the tool for max tightening torque 0.9 Nm.

Continued on next page

PONE-OD-DC, Continued

Procedure, continued

Step	Action
6	For wall installation perform the following actions: • Use the tool with TORX T10 bit to remove the six screws **(A).** • Then: – Position the device on the wall surface and using a pencil mark the drill points **(B)**. With the drill machine (fitted with 5 mm bit), drill four holes on the wall surface, at a depth of 45 mm. – Install the four supplied wall plugs and using the cross headed screwdriver and tighten the four screws. 

End of procedure.

POE-HP-OD67-DC

Introduction

Apply this procedure for installing the outdoor DC power injector **PONE-HP-OD67-DC**.

Power injector details

Characteristics:

- DC POE injector
- outdoor-IP67 class
- 114 watt
- Wall mount
- temperature hardened
  - operating temperatures -40° C to +55° C
- DC voltage (V DC)
  - Input nominal: 48
  - Min: 40.5
  - Max: 57
- DC current (A):
  - Input: 3
  - Output: 2

Packing List:

- Ethernet cable glands are pre-installed on the unit (current sharing on all four pairs of Ethernet cable).
- Grounding screw is pre-installed on the unit.
- DC Power connector is included in the package.
- Screws, washers and wall plugs are included in the package (for wall installation).

Note
- For pole installation, a mounting bracket (**INSTPONE-PL2**) should be ordered.
- For grounding, a grounding kit (**GND-KIT16-OD**) should be ordered.
- For powering, a DC power cable (**DC-PWR-CAB-1** or **DC-PWR-CAB-3**) should be ordered.

Note
- Applicable Ethernet cable: S-FTP (Cat5E or Cat6) with shielded RJ-45 plugs.

Note
- Lightning surge protection is embedded in the unit.

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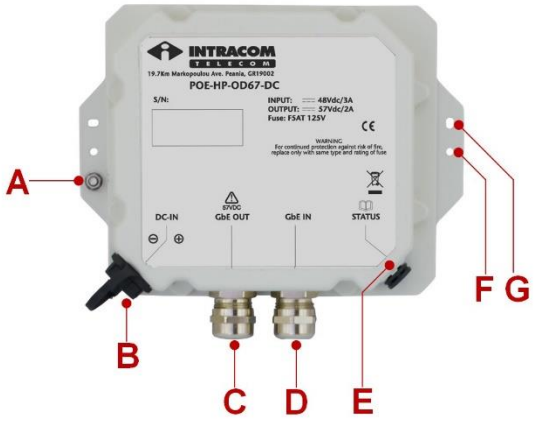
POE-HP-OD67-DC, Continued

Power injector overview



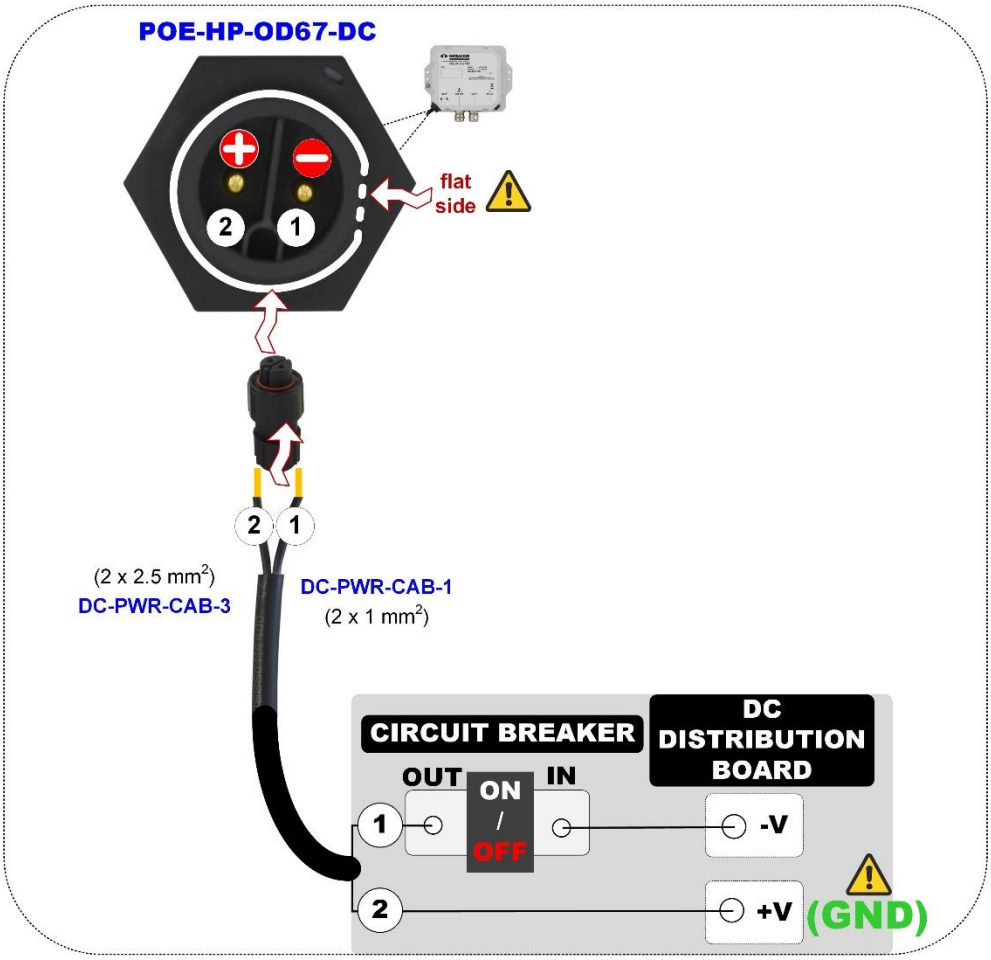
#	Marking	Details	Use
A	**GND**	Grounding point.	To connect 16 mm^2 grounding cable.
B	**DC-IN**	2-pins DC receptacle.	To connect DC power supply cable with connector.
C	**Gbe OUT**	Gigabit Ethernet 10/100/1000 Base T, Electrical (RJ-45).	To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to radio**: • Traffic • Inband management • superimposed DC power
D	**GbE IN**		To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network**: • Traffic • Inband management
E	**STATUS**	Multi-functioning LED.	To provide radio unit status during operation.
F	**-**	Pole installation.	To mount **INSTPONE-PL2**.
G	**-**	Wall installation.	To mount wall installation screws.

Continued on next page

POE-HP-OD67-DC, Continued

Connection diagram between POE-HP-OD67-DC and local DC power source

The following diagram shows the connection between **POE-HP-OD67-DC** and local DC power source, using **DC-PWR-CAB-1** or **DC-PWR-CAB-3** cables:



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POE-HP-OD67-DC, Continued

Prerequisites

Prepare and terminate the ETH SF/UTP, grounding and power supply cables as described in Appendix B – Terminating Cables.

Tools and materials

Tools	• Adjustable torque wrench tool with bits, Adjustable torque U-wrench tool (see to Equipment installation tools) and drill machine (refer to Specific works). • **TOOL-M20**.
Materials	• **INSTPONE-PL2**. • **PONE-OD67-AC**. • **DC-PWR-CAB-1** or **DC-PWR-CAB-3**

Procedure

For pole / wall and cabling installation of **POE-HP-OD67-DC** refer to PONE-OD67-AC Procedure on page 227.

POE-HP-OD-AC

Introduction

Apply this procedure for installing the outdoor AC power injector **POE-HP-OD-AC.**

Power injector details

Characteristics:

- AC POE injector
- outdoor
- 120 watt
- Pole / wall mount
- 100-240 V AC, 2.0 A, 50 / 60 Hz.
- temperature hardened
  - operating temperatures -40° C to +60° C

Packing List:

- Ethernet cable glands are pre-installed on the unit (current sharing on all four pairs of Ethernet cable).
- Grounding screw is pre-installed on the unit.
- AC Power connector is included in the package.
- Pole mounting kit included in the package (for wall installation).

Note
- For pole installation, a mounting bracket (**INSTPONE-PL3**) should be ordered.
- For grounding, a grounding kit (**GND-KIT16-OD**) should be ordered.
- For powering, a DC power cable (**AC-PWR-CAB-1**) should be ordered.

Note
- Applicable Ethernet cable: SF/UTP (Cat5E or Cat6) with shielded RJ-45 plugs.

Note
- Lightning surge protection is embedded in the unit.

Continued on next page

POE-HP-OD-AC, Continued

Power injector overview

#	Marking	Details	Use
A	**GND**	Grounding point.	To connect 16 mm^2 grounding cable.
B	**AC-IN**	3-pins AC receptacle.	To connect AC power supply cable with connector.
C	**-**	Gigabit Ethernet 10/100/1000 Base T, Electrical (RJ-45).	To connect the Gigabit Ethernet (S-FTP) cable for carrying **towards to customer network**: • Traffic • Inband management
D	**-**		To connect the Gigabit Ethernet (SF/UTP) cable for carrying **towards to radio**: • Traffic • Inband management • superimposed DC power
E	**-**	Wall installation.	To mount wall installation screws.

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POE-HP-OD-AC, Continued

Prerequisites

Prepare and terminate the ETH SF/UTP and grounding cables as described in Appendix B – Terminating Cables.

Prepare and terminate the power supply cable as described in packing box installation instruction leaflet.

Tools and materials

Tools	• Adjustable torque wrench tool with bits, Adjustable torque U-wrench tool (see to Equipment installation tools) and drill machine (refer to Specific works).
Materials	• **INSTPONE-PL3 for wall installation**. • **POE-HP-OD-AC** • **DC-PWR-CAB-1** or **DC-PWR-CAB-3**

Procedure

For pole / wall and cabling installation of **POE-HP-OD-AC** refer to packing box installation instruction leaflet.

Appendix B – Terminating Cables

Scope

This chapter describes the termination of the following cables of **WiBAS™ OSDR-HUB** and **WiBAS™ G5 micro-BS / evo-BS,** as follows:

Ethernet (SF/UTP)

Introduction

Apply this procedure for terminating the **ETH-CAB-SFTP** cable to **ST-RJ45** connector.

Termination overview

The equipment to which you connect the cable requires a different way of cable termination.

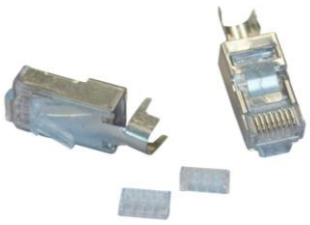
Mainly there are two types of cable termination, as shown below:

Termination Type	Details / Photo	Equipment to Connect
A	**No shield wires exposed** 	All, except **PONE-OD-DC**
B	**Shield wires (twisted) exposed** 	**PONE-OD-DC**

ST-RJ45 connector overview

The connector **ST-RJ45** is composed of two parts, as described below:

- the main body and
- the wire guide (with numbering)



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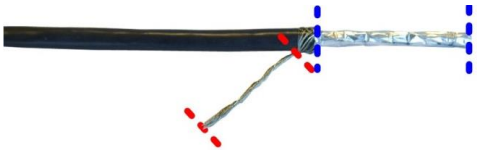
Ethernet (SF/UTP), Continued

Tools and materials

Tools	Blade, cable cutter, plier (long nose) and CRIMP-TOOL-S (refer to Termination of cables).
Materials	**ETH-CAB-SFTP** and **ST-RJ45**.

Procedure

How to terminate the **Ethernet (S-FTP)** cable to **ST-RJ45** connector, proceed as follows:

Step	Action
1	Perform the following actions: • Strip the outer jacket – 40 mm **for termination type A** – 80 mm **for termination type B** • Fold shield back (over the jacket). • Do the following: – Twist shield wires together and allow 10 mm of shield to surround jacket's end (**for termination type A**) – Twist shield wires together and allow 20 mm of shield to surround jacket's end (**for termination type B**) • Completely remove the exposed foil. **Termination type A:**  **Termination type B:** 

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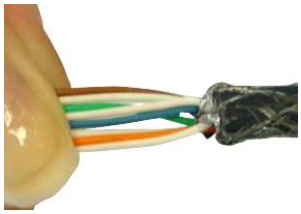
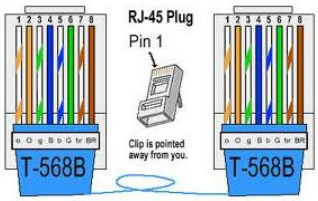
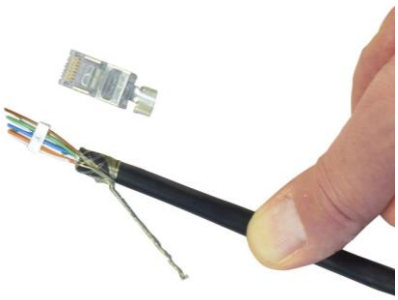
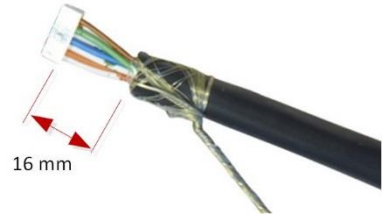
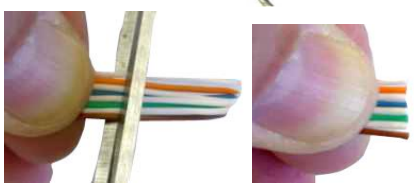
Ethernet (SF/UTP), Continued

Procedure, continued

Step	Action
2	Untwist wire pairs and arrange according to the T-568 standard straight-through cable, as shown below:  Note 
3	Carefully insert the eight wires into the cavity of the wire guide so that its numbering is visible from the top. 
4	Measure 16 mm from the jacket's end and cut all wires protruding from the guide.  

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Ethernet (SF/UTP), Continued

Procedure, continued

Step	Action
5	Perform the following: • Fold back the crimping terminal of the connector. • Fully insert wire guide and cable into the connector's body until the shield (overlapping the jacket's end) reaches the crimping position. **For termination type A:**  **For termination type B:** 
6	Terminate the wires onto the RJ-45 jack using the tool **CRIMP-TOOL-S.** 

Continued on next page

Ethernet (SF/UTP), Continued

Procedure, continued

Step	Action
7	With the pliers, bring the terminal of the connector back, over the exposed shield, and press gently around the terminal to form. This will achieve good contact with the shield. **For termination type A:**  **For termination type B:** 
8	Use the Ethernet cable tester to verify the proper cable termination.

End of procedure.

Grounding

Introduction

Apply this procedure for terminating the following grounding cables:

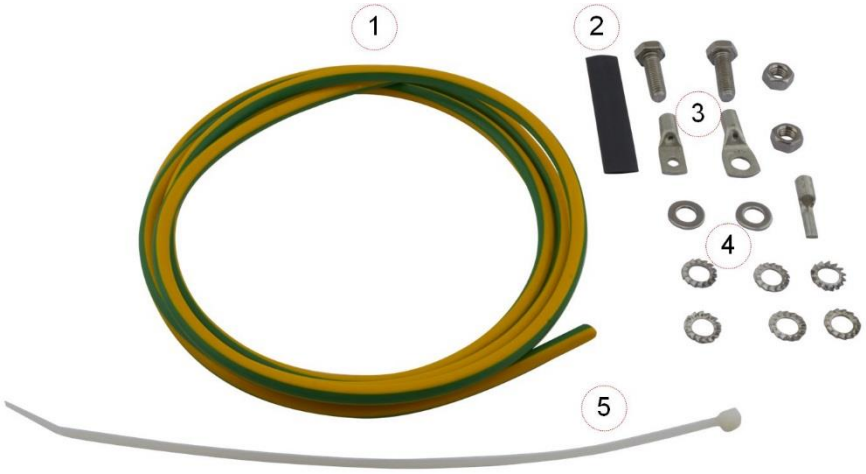
- **Yellow / green 6 mm² cable** (**GND-CAB6-ID**) for:
  - **PONE-OD-DC**
  - **POE-ID-AC72**

- **Yellow / green 16 mm² cable** (**GND-KIT16-OD)** for:
  - **WiBAS™ Base Stations**
  - **POE-HP-OD67-DC**
  - **PONE-OD67-AC**
  - **POE-HP-OD-AC**

Termination overview

The picture below shows a termination overview of 16 mm2 grounding cable to M5 and M8 grounding lugs (**GND-KIT16-OD**):

GND-KIT16-OD kit overview



Item	Packing List
1	16 mm² cable, stranded, green / yellow, 450 V (2 m).
2	Heat shrinkable tube, black, d= 9.5 mm / 4.8 mm.
3	1 x M8 and 1 x M5 terminal rings (lugs).
4	M8 screws (x 2), nuts (x 2), washers (x 2), lock spring washers (x 6)
5	1 x tie wrap.

Continued on next page

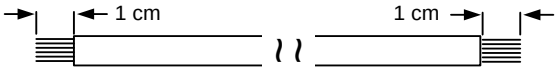
Grounding, Continued

Tools and materials

Tools	• Blade, cable cutter, crimping tool for 6 mm^2 and 16 mm^2 grounding cable and hot air gun (refer to Termination of cables).
Materials	• **GND-KIT16-OD** (16 mm^2 cable) • **GND-CAB6-ID** (6 mm^2 cable)

Procedure

How to terminate the **16 mm^2** grounding cable to **GND-KIT16-OD** lugs, proceed as follows:

Step	Action
1	Cut the grounding cable according to the distance between equipment and grounding bar.
2	Use the blade to strip 1 cm from each end of the cable, as below: 
3	Perform the following actions: • Slide the **M5** grounding lug over the wires at one end of the cable and crimp it with the special crimping tool. • Cut the heat shrinkable tube in the middle in two equal pieces in order to use one piece per cable side. • Slide the one piece of the heat shrinkable tube over the cable. **Heat it over rear grounding ring body and down on to cable jacket using the hot air blower.**
4	Repeat step 3 for the other end of the cable in order to terminate the **M8** grounding lug.

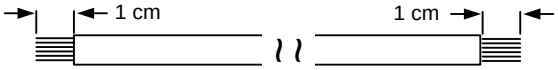
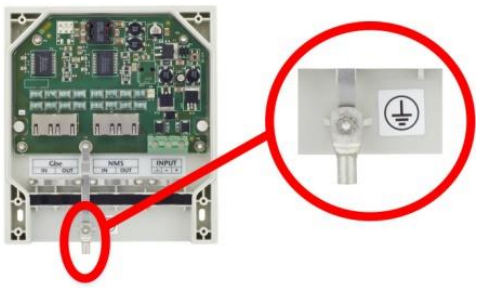
End of procedure.

Continued on next page

Grounding, Continued

Procedure

How to terminate the **6 mm²** grounding cable to the attached lug of **PONE-OD-DC**, proceed as follows:

Step	Action
1	Cut the grounding cable according to the distance between equipment and grounding bar.
2	Use the blade to strip 1 cm from each end of the cable, as below: 
3	Perform the following actions: • Use the tool with TORX T10 bit to unscrew the terminal lug from **PONE-OD-DC**, as shown below:  • Slide the **M4** grounding lug over the wires at one end of the cable and crimp it with the special crimping tool.
4	Use the tool with TORX T10 bit to screw the terminal lug onto the **PONE-OD-DC.**
5	Terminate the other end of the grounding cable accordingly.

End of procedure.

Power Supply

Introduction

Apply this procedure for terminating the following power supply cables:

- **AC cable AC-PWR-CAB** (3 x 0.75 mm²) for **PONE-OD67-AC** and **POE-HP-OD-AC.**
- DC cables **DC-PWR-CAB-1** (2 x 1 mm²) for **POE-HP-OD67-DC** and **DC-PWR-CAB-3** (2 x 2.5 mm²) for **WiBAS™ G5 dual-BS**.

Note For DC cable termination ((**DC-PWR-CAB-2** (2 x 2.5 mm²)) of PONE-OD-DC refer to Procedure on page 236.

Note For DC cables termination of the following power injectors refer to item 6 of Reference manuals on page 14:

- **IDU-O4P** (indoor)
- **IDU-O10P** (indoor)
- **OmniBAS™ 4W/8W IDU** (indoor)

Termination overview

The pictures below shows a termination overview of power supply cable to the respective connector:

Tools and materials

Tools	• Blade, cable cutter, soldering iron, solder (refer to Termination of cables).
Materials	• **AC-PWR-CAB** • **DC-PWR-CAB-1** or **DC-PWR-CAB-3** • **PONE-OD67-AC** • **POE-HP-OD67-DC**

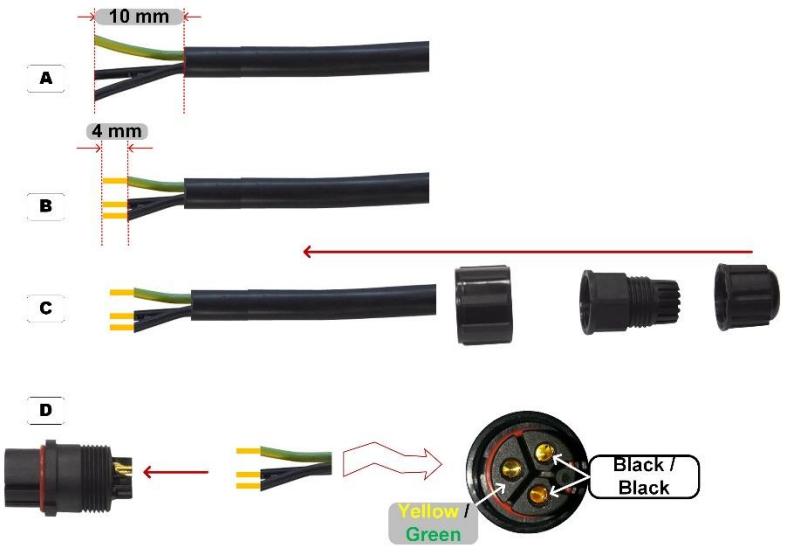
Continued on next page

Power Supply, Continued

Procedure for AC power supply cable

How to terminate the **3 x 0.75 mm²** AC power supply cable to **PONE-OD67-AC** connector, proceed as follows:

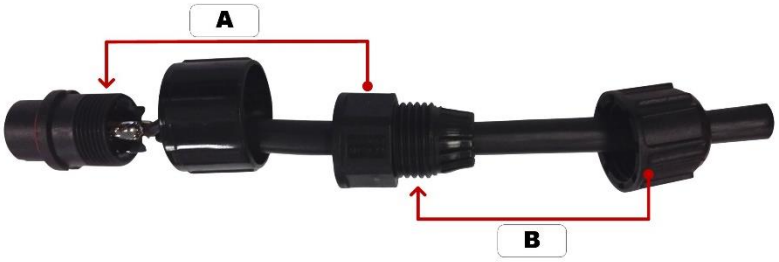
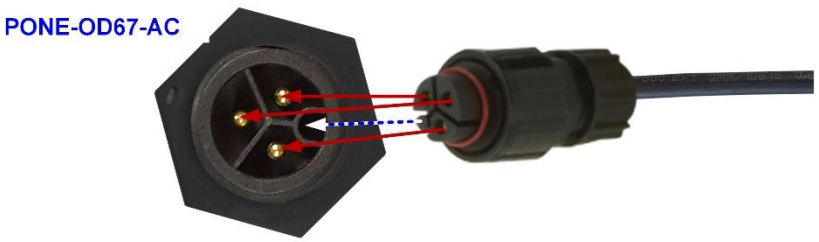
Note How to terminate the AC power supply cable to **POE-HP-OD-AC** power injector connector please refer to packing box installation instructions leaflet.

Step	Action
1	Perform the following: • Strip approx. 10 mm from the cable's outer sheath **(A)**. • Strip approx. 4 mm from each wire insulation **(B)**. • Pass the cable through the parts of gland **(C)**. • Solder the 3 pins to the connector **(D)** taking in consideration the following: – The **Yellow/Green** wire must be soldered to the pin shown below. – The remaining two black wires are for live **(L)** and neutral **(N).** Both wires must be soldered to the other two pins. **There is no polarity concern regarding these two specific wires.** 

Continued on next page

Power Supply, Continued

Procedure for AC power supply cable, continued

Step	Action
2	Assemble the connector by tightening all parts together, according the order **(A)** and **(B)**, as shown below: 
3	Install the connector, as shown below: 
4	Screw the connector and then fully tighten, as shown below: 

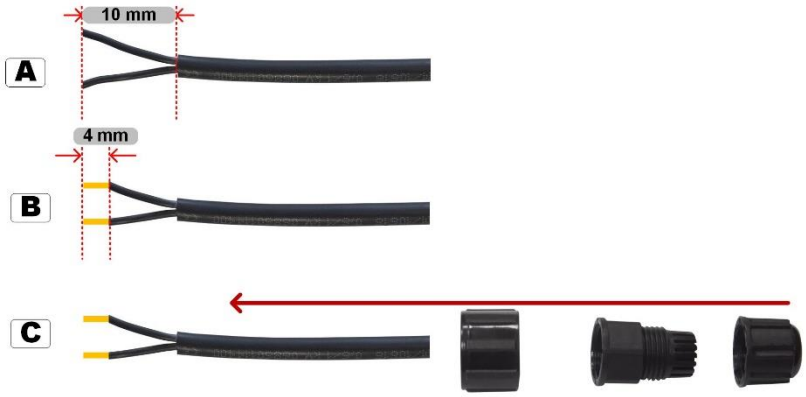
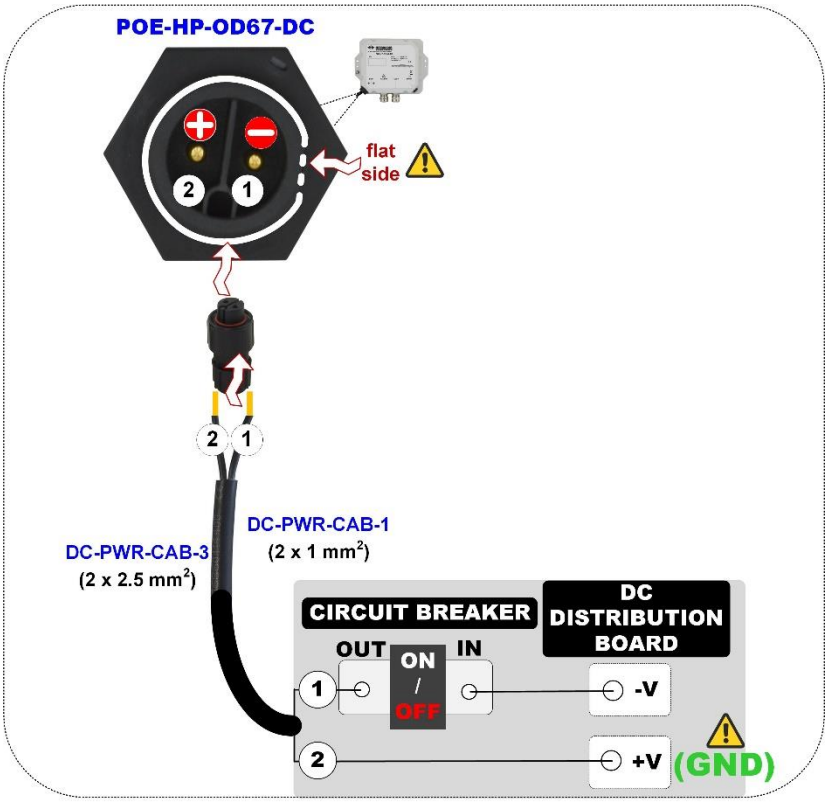
End of procedure.

Continued on next page

Power Supply, Continued

Procedure for DC power supply cable for power injector

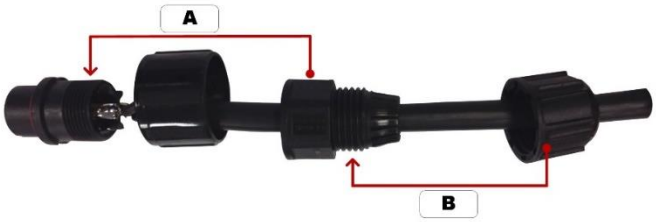
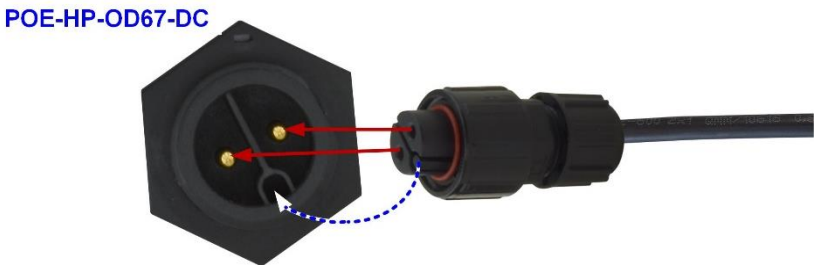
How to terminate the **2 x 1 mm²** or **2 x 2.5 mm²** DC power supply cable to **POE-HP-OD67-DC** connector, proceed as follows:

Step	Action
1	Perform the following: • Strip approx. 10 mm from the cable's outer sheath **(A)**. • Strip approx. 4 mm from each wire insulation **(B)**. • Pass the cable through the parts of gland **(C)**. 
2	Solder the 2 pins to the connector taking in consideration the following polarity concern: 

Continued on next page

Power Supply, Continued

Procedure for DC power supply cable for power injector, continued

Step	Action
3	Assemble the connector by tightening all parts together, according the order **(A)** and **(B)**, as shown below: 
4	Install the connector, as shown below: 
5	Screw the connector and then fully tighten, as shown below: 

End of procedure.

Continued on next page

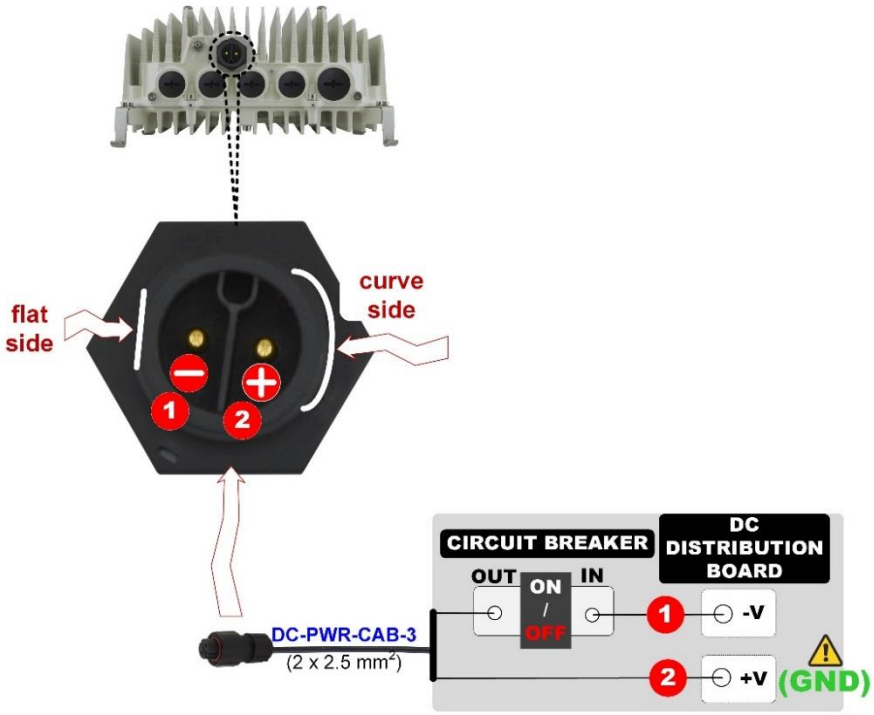
Power Supply, Continued

DC-PWR-CAB-3 cable termination overview for WiBAS G5 dual-BS

DC-PWR-CAB-3 cable wires labeling

Due to polarity concern of the radio unit power receptacle the following connection diagram should be taken into account for proper unit powering up.

- The wire labeled **1** of the DC power supply cable connects the negative pole of the DC power supply with the negative pole of the radio unit receptacle **(flat side)**.
- The wire labeled **2** of the DC power supply cable connects the positive pole of the DC power supply with the positive pole of the radio unit receptacle **(curve side)**.



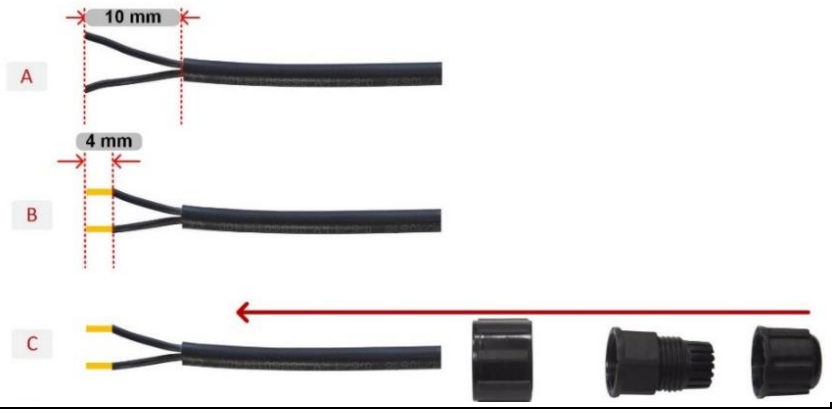
If the above polarity concern is not taken into account then the radio unit will not power on.

Continued on next page

Power Supply, Continued

Procedure for DC power supply cable for WiBAS G5 dual-BS

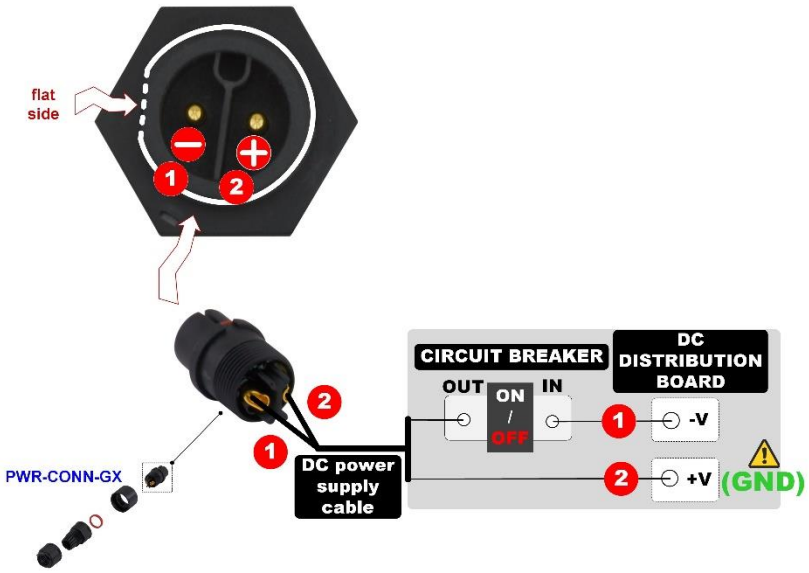
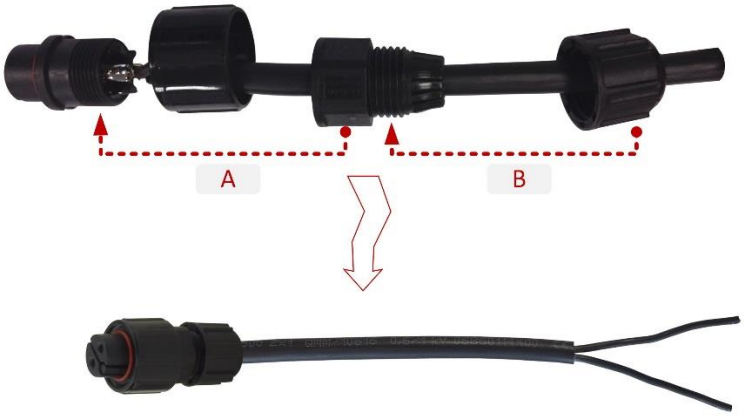
How to terminate **2 x 2.5 mm²** DC power supply cable (**DC-PWR-CAB-3**) to WiBAS™ G5 dual-BS power connector (**PWR-CONN-GX**), proceed as follows:

Step	Action
1	Perform the following actions: • Strip approx. 10 mm from the cable's outer sheath **(A)**. • Strip approx. 4 mm from each wire insulation **(B)**. • Pass the cable through the parts of gland **(C)**. 

Continued on next page

Power Supply, Continued

Procedure for DC power supply cable for WiBAS G5 dual-BS, continued

Step	Action
2	Solder the 2 pins to the connector, taking in consideration the receptacle's polarity as shown below: 
3	Assemble the connector by tightening the parts together, as shown below: 

End of procedure.

Appendix C – Antenna Pole Space Requirements

Scope

This chapter describes the pole space requirement for antenna pole installation.

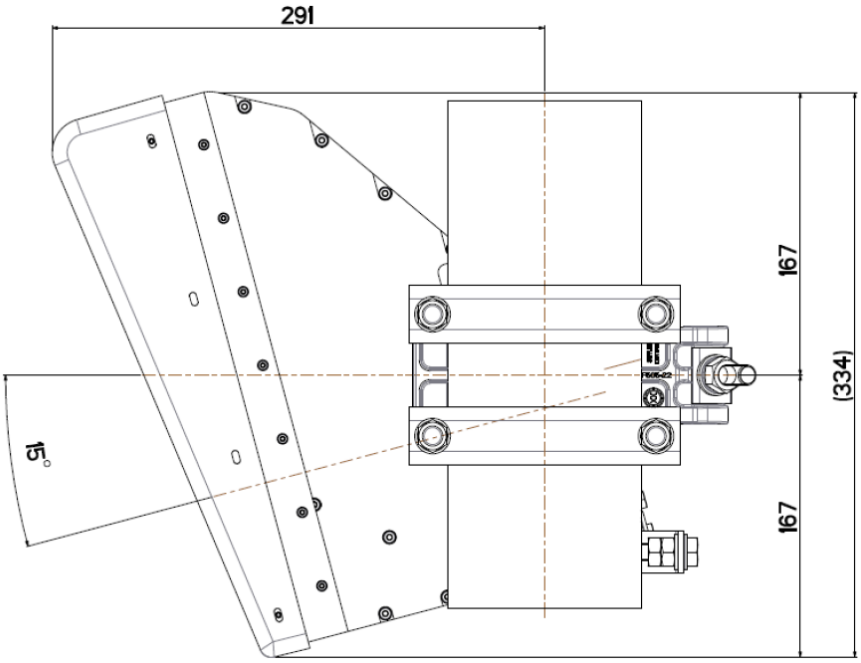
The order codes for antennas are indicatives.

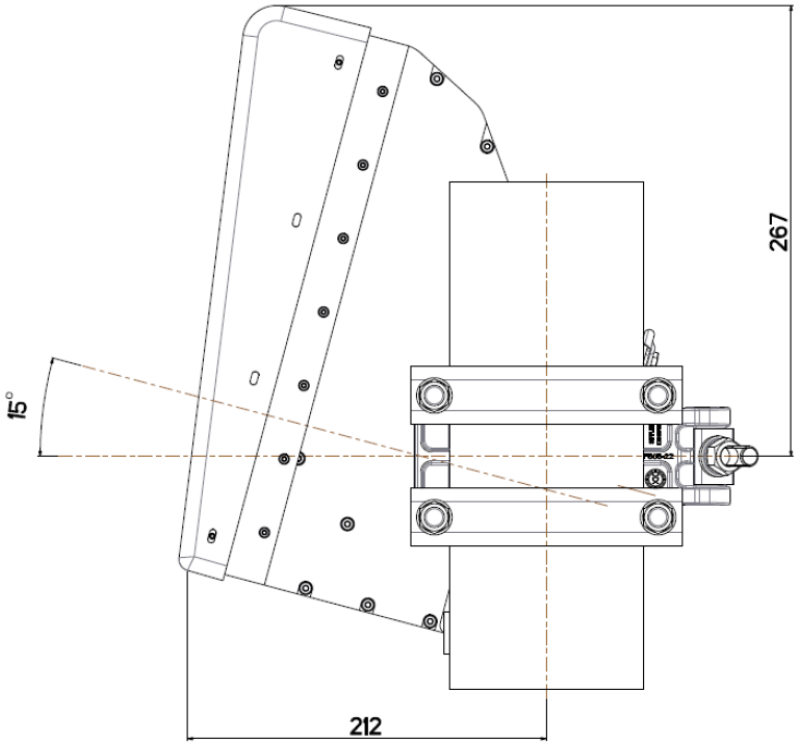
For the complete list of order codes refer to the respective product catalog (see Reference manuals).

Sectoral Antenna

Elevation axis (in mm)

BRA-1090V-I or **BRA-1090H-I**





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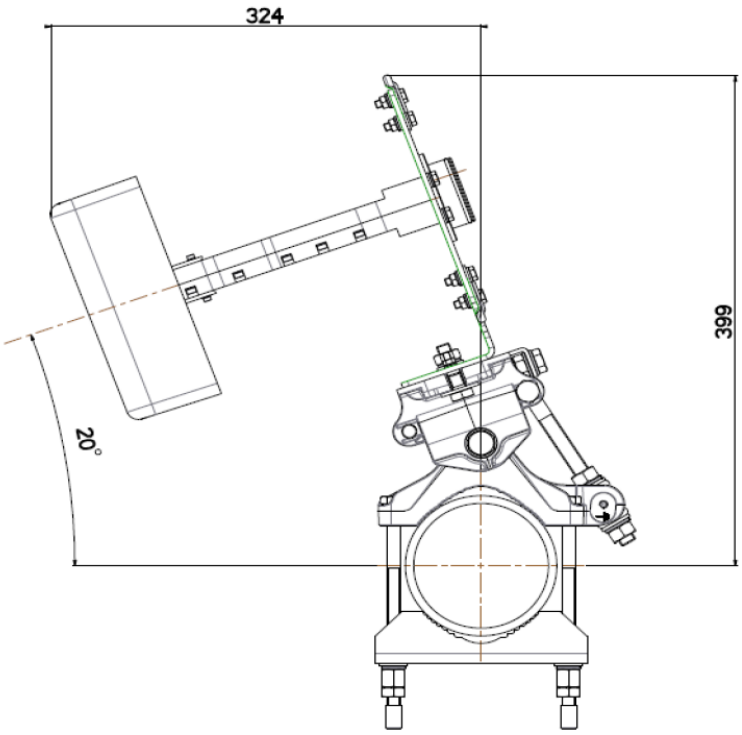
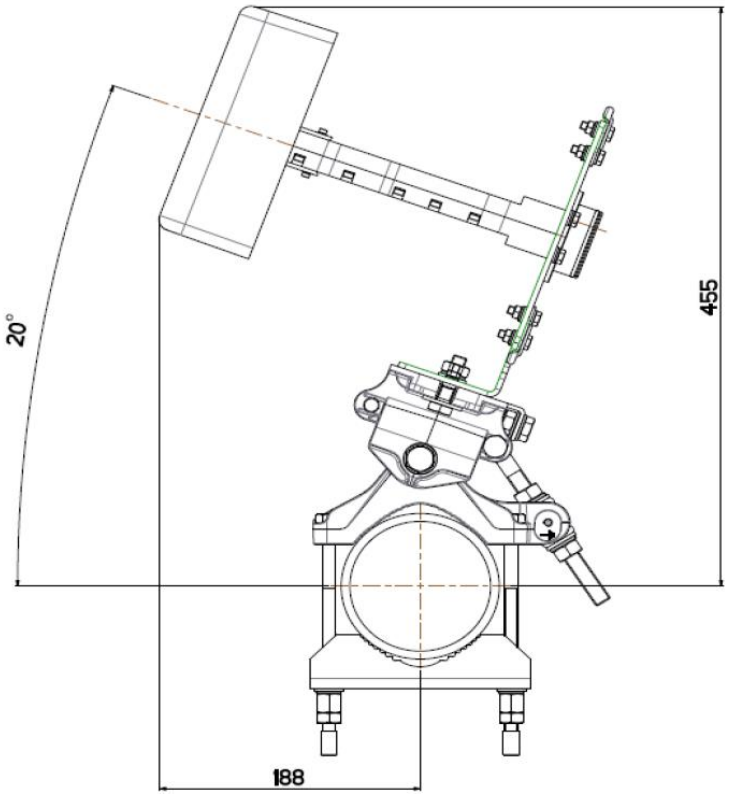
Sectoral Antenna, Continued

Azimuth axis (in mm)

BRA-1090V-I or **BRA-1090H-I**





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