

Brief installation manual

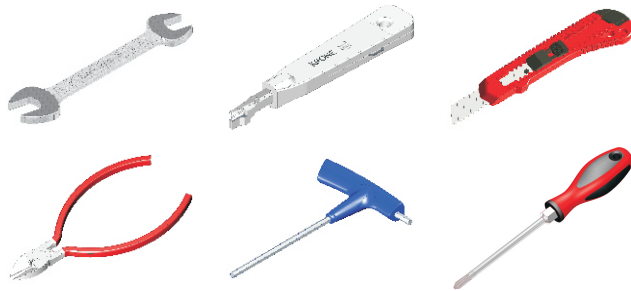


This instruction manual serves as quick overview of installation process of standard All Outdoor radio relay links ALCOMA. Detailed instructions (including special types of installations such as 1+1, 2+0 or fiber optical interfaces) can be found in links' or antennas' manuals.

Installation and maintenance of ALCOMA links can be performed only by trained person with proper electrotechnical education.

Required equipment

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- Open end wrench size, metric, number 7, 13, 17
- KRONE punching tool
- Knife
- Cutting pliers
- Allen wrench 3, 4, 5, 6 (according to antenna and band used), metric
- Philips screwdriver PZ2
- Voltmeter with cable terminated with BNC connector

Package checking (completeness)

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a. Contents of standard packing

- 2x ODU
- 2x antenna with feeder
- 2x protected terminal box

b. Other installation material needed

- 2x power supply including cable
- 2x S-STP cat. 7 cable of proper length

Antenna and ODU installation

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a. Antenna placement

- Always check strength and stability of the installation construction and mount stability.
- Place the antenna for direct visibility, clear line of sight plus Fresnel zone clearance.
- Other instructions can be found in antenna manual (distance from obstacle, drainage position...).

b. Rough aligning

- Align antennas by eyes, binocular, calculation, orientation points in neighbourhood etc.

c. ODU installation

- Check presence of the „O“ ring sealing on ODU/feeder flange.
- Place the ODU grommets down or to side, never up!
- Put grommet including ruber sealing, washers and spring on the cable.
 - Pay attention to the manual instructions or You Tube video when installing cable grommet. Water sealing together with proper connection of ODU and cable are the grommet functionalities – do not underestimate quality of grommet installation.
- Punch wires to the punch block using KRONE punching tool.
 - Leave the wires twisted till the end.
 - Punch cable to LINE3 block using proper colors on the label – pay attention to slight difference between orange and brown colors.
 - **Use only original KRONE punching tool. Do not use knife or screwdriver!**
- Check proper punching of all wires and clean the user space from possible pieces of wire.

Protected terminal box installation

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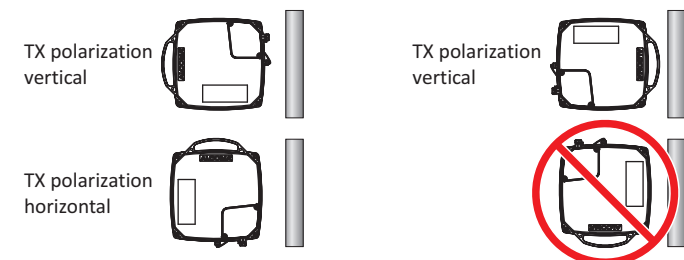
- You can install either to 19" rack using optional rack holder or on DIN rail. Protected terminal box height is 1U, width is 1/3 of 19" rack position.
- Install the protected terminal box chassis in the rack or on DIN rail, than insert the inside module with punched down cable.
- Punching rules are the same as the ODU.
- **Ground the protected terminal box using grounding bolt and copper wire with minimum 2,5 mm diameter - proper grounding is necessary requirement for surge protecting functionality!**

ODU polarization

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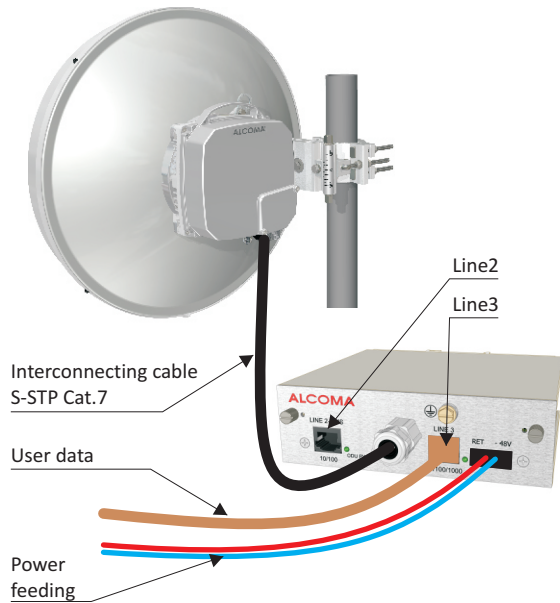
- TX polarization is always on sticker (handle up horizontal, handle to the side vertical)
- **17 and 24 GHz bands – MUST DEPLOY IN CROSS POLARIZATION MODE (one side handle to the side, opposite handle up)**

- **Other frequency bands – same polarization for both ODUs**



Commissioning

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a. Power supply connection

- Recommended voltage 48 V DC, supported voltage range 36 – 72 V DC, lower voltage only after consulting with supplier.
- Note any potential voltage loss in long cable and/or small cable diameter!

b. LED checking

- The LED placed on protected terminal box shows that voltage is connected to the box.
- The bottom LED in ODU user space has to be green (power feed problem if not). Meaning of all LEDs – see user manual.

c. ASD link setup and parameters settings

- Ask your supplier or AL Wireless for ASD license file.
- Connection with ODU is possible via RS232 cable or via TCP/IP.

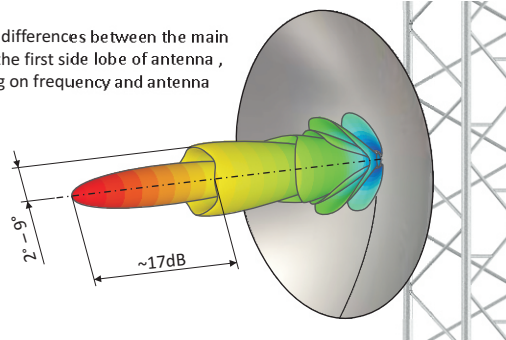
d. Default IP address

- ODU A - 192.168.1.237 | 255.255.255.0 | GW 192.168.1.100
- ODU B - 192.168.1.238 | 255.255.255.0 | GW 192.168.1.100

Aligning

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There are differences between the main lobe and the first side lobe of antenna, depending on frequency and antenna diameter.



- Always calculate expected received level before antenna aligning. You can use online calculator on www.al-wireless.com or cell phone application AL Wireless Link Calculator.
- Never align:
 - both antennas at once
 - with ATPC and ACM on
 - under bad weather conditions
- Connect voltmeter to the BNC connector on ODU and start aligning.
- The higher measured voltage, the higher RX level.
- Find both side lobes in azimuth/elevation using voltmeter. Then return to the main lobe.
- Proper antenna fine alignment is described in antenna manual.
- Check the measured RX level and compare it to the calculated level after finishing. The maximum difference should not exceed 3 dB.

Finalizing

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- Check RX level on voltmeter when tightening nuts, there is a risk of misalignment in case of unequal tightening.
- Push to the antenna in all directions after hardware is tight. You should see the voltage decrease on voltmeter if aligned to the main lobe. Do not misalign during this test.
- **Ground the ODU using grounding bolt and copper cable with sufficient diameter (at least 4 mm).**
- Check for proper closing of user space cover and BNC connector protector, check ODU grommet for proper sealing. Self-amalgamating tape may be used for extra protection.

Typical problems

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a. Low RX level

Polarization

- In case the RX level is about 20 dB less than expected, there may be improper polarization between ODUs – see point 5.

Side lobe

- In case the RX level is about 17 dB less, there may be side lobe alignment (different with other antenna diameters and frequencies).

b. No radio connection to the opposite ODU

- Check for identical end to end frequency, modulation, channel width and interleaving settings.

c. Ethernet does not link

- Bad cable punching, crossed wire pairs – typically brown and orange mismatch.

d. Ethernet links only as Fast Ethernet

- Bad cable punching, bad contact or cut through wire isolation – shorten the cable and punch it down again both on protected interface box and ODU side. Check the cable in grommet – sharp edges may have cut the cable!
- In case that Mikrotik is the connected device set in ASD: Set – Ethernet Properties – Line 2/3/4 – Mst-Slv to „Slave“.

e. Link is OK from radio point of view but no data transmission

- Check equal settings of Ethernet properties (Traffic mode, Bit rate etc.) on both sides of the link.

f. Slow ping response when pinging unit's IP

- Traffic and management is given highest priority so pinging the ODU CPU could be slow. Best to PING end device, switch or router, to verify link connectivity. Please do not be concerned with slow or dropped ODU pings.

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