Title

Auxiliary Units for InfiNet Wireless R5000

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Lightning Protection Unit AUX-ODU-LPU-L

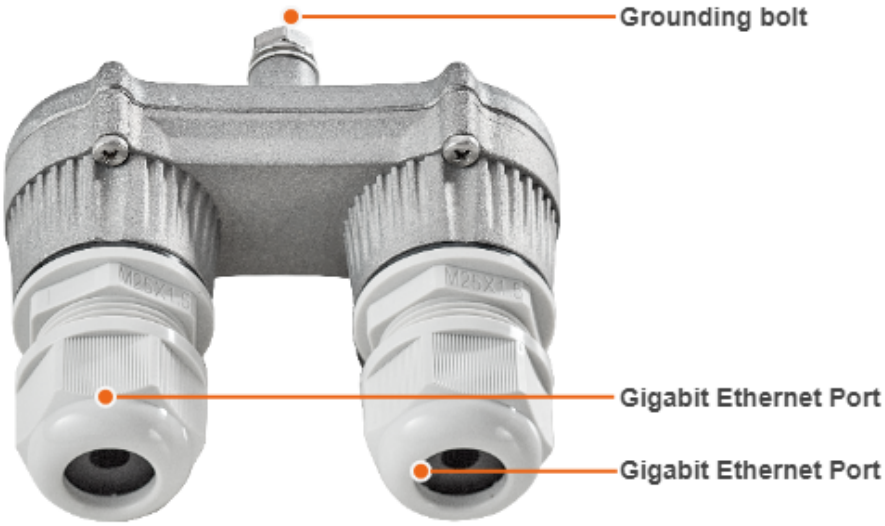


Figure - AUX-ODU-LPU-L

AUX-ODU-LPU-L is a bidirectional external outdoor lightning protection unit for Infinet Wireless systems designed to withstand the toughest conditions and protect the outdoor unit or the 3rd party networking equipment installed indoors from sudden power surges induced by lightning strikes. Despite the fact every Infinet wireless device has a built-in lightning protection. AUX-ODU-LPU-L, thanks to its superior GR-1089-grade protection, greatly reduces the risk of damage for the systems operating in harsh environments or difficult-to-reach locations. AUX-ODU-LPU-L is compatible with all Infinet Wireless devices.

NOTE

The device is not supplied by default and must be ordered separately.

Parameter	Description
Size and Weight	• 45x92x55.5 mm, 0.13 kg
Connectors and Interfaces	• 2 x Ethernet ports • Ground clamp
Supported Ethernet Modes	• 10/100/1000 Mbps (Gigabit Ethernet pass-through)
Water and Dust Protection	• IP66 and IP67

Operating temperature range	• -55 °C ... +60 ºC								
Ethernet pinout	**Pin**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
	Data pair	A+	A-	B+	C-	C+	B-	D+	D-
Lightning Protection	In compliance with: • GR-1089 • IEC 61000-4-2 (ESD) 15kV (air), 8kV (contact) • IEC 61000-4-4 (EFT) 40A (tp = 5/50ns) • IEC 61000-4-5 (Lightning) L5, 95A (tp = 8/20us) • ETSI ETS 300 386								

Table - AUX-ODU-LPU-L Specification

Packing list

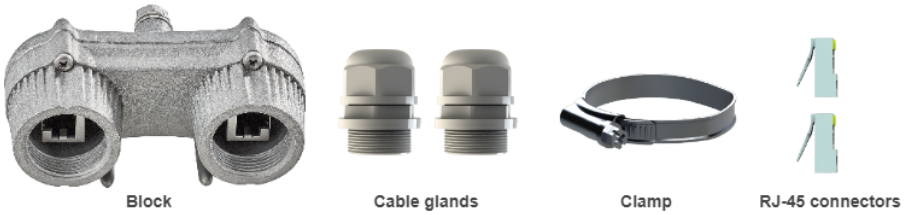


Figure - Packing list AUX-ODU-LPU-L

AUX-ODU-LPU-L is supplied with a worm clamp TORRO 40-60/9 C7 W4 DIN 3017. The clamp is made of stainless steel A4, width 9 mm, allows the installation on a mast with a diameter of 35 to 60 mm. In case of mast diameter more than 60 mm, a similar clamp (up to a 230 mm diameter) with a width of up to 12-13 mm can be used.

Lightning Protection Unit AUX-ODU-LPU-G

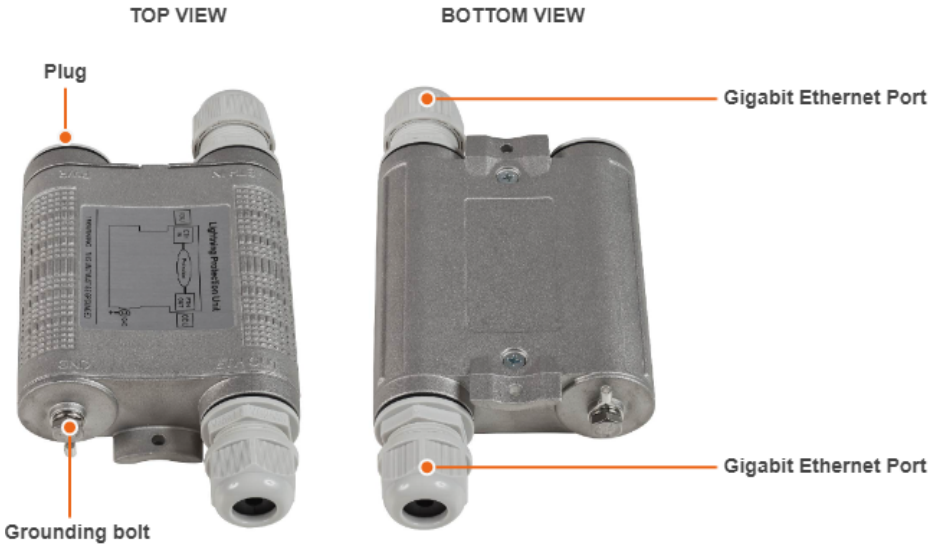


Figure - AUX-ODU-LPU-G

Optional indoor/outdoor Lightning Protection Unit for Infinet Wireless systems designed to withstand the toughest conditions and protect the outdoor or the indoor unit from sudden power surges induced by lightning strikes. It provides the same level of protection as AUX-ODU-INJ-G. AUX-ODU-LPU-G is compatible with all Infinet Wireless devices.

Despite the fact every Infinet Wireless unit has a built-in lightning protection, AUX-ODU-LPU-G, thanks to its superior GR-1089-grade protection, greatly reduces the risk of replacing damaged devices operating in harsh environments or difficult-to-reach locations.

> **NOTE**
>
> The device is not supplied by default and must be ordered separately.

Parameter	Description							
Size and Weight	• 34x94x121 mm, 0.28 kg							
Connectors and Interfaces	• ETH IN - Ethernet input • ETH OUT - Ethernet output (protected leg) • GND - Ground clamp							
Supported Ethernet Modes	• 10/100/1000 Mbps (Gigabit Ethernet pass-through)							
Water and Dust Protection	• IP66 and IP67							
Operating temperature range	• -55 °C ... +60 ºC							
ETH IN and ETH OUT pin-out	**Pin**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
	Data pair	A+	A-	B+	C-	C+	B-	D+	D-
Lightning Protection	In compliance with: • GR-1089 • IEC 61000-4-2 (ESD) 15kV (air), 8kV (contact) • IEC 61000-4-4 (EFT) 40A (tp = 5/50ns) • IEC 61000-4-5 (Lightning) L5, 95A (tp = 8/20us) • ETSI ETS 300 386							

Table - AUX-ODU-LPU-G Specification

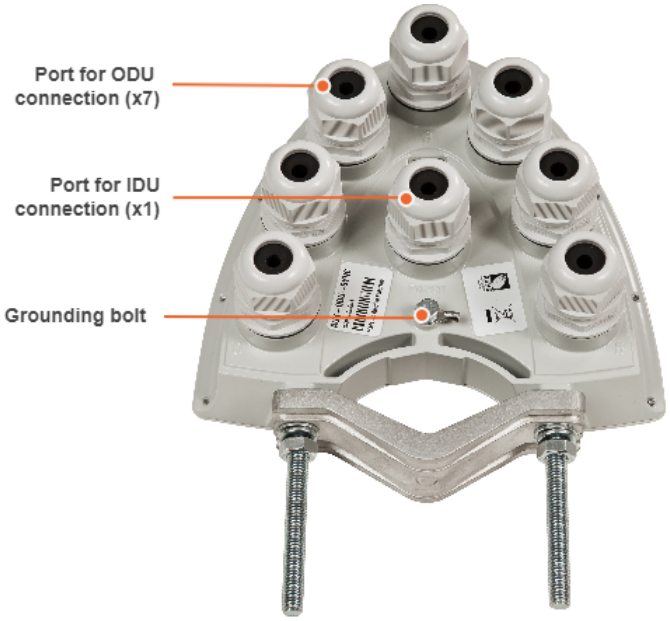
Packing list

Figure - Packing list AUX-ODU-LPU-G

AUX-ODU-LPU-G is supplied with a worm clamp TORRO 40-60/9 C7 W4 DIN 3017 - 2 pcs. The clamp is made of stainless steel A4, width 9 mm, allows the installation on a mast with a diameter of 35 to 60 mm. In case of mast diameter more than 60 mm, a similar clamps (up to a 230 mm diameter) with a width of up to 12-13 mm can be used.

Synchronization Unit AUX-ODU-SYNC

Title



AUX-ODU-SYNC is a TDD synchronization hub, which has been designed to provide a timing reference to Base Stations sectors of InfiMAN 2x2, InfiMAN Evolution families and InfiLINK 2x2 PRO devices. In combination with Infinet's proprietary TDMA-based wireless architecture, AUX-ODU-SYNC completes the solution, providing TDD synchronization to its systems, both legacy and newly deployed.

TDD synchronization eliminates self-interference between multiple co-located units and enables frequency re-use within the same site. Infinet's implementation supports not only intra-, but inter-site synchronization too, thanks to the fact that the timing reference is GNSS-based.

Parameter	Description
Compatible models	• InfiMAN 2x2 BS: Mmxb(s), Omxb(s), Qmxb • InfiLINK 2x2 PRO family: Mmx(s), Omx(s) • InfiMAN Evolution BS: E5-BSI, E5-BSQ, E5-BSE, E6-BSI, E6-BSE
GNSS receiver	• Embedded, GPS/GLONASS
GNSS antenna	• Embedded, active
Water and Dust protection	• IP66 and IP67
Consumption, W	• up to 4
Input voltage, VDC	• ±19..±56
PoE type	• Passive PoE (4,5,7,8 Ethernet pins used)
Interfaces and connectors	• Port 0-6: sync outs (7 RJ-45 connectors to connect to ODU with special cable CAB-SYNC or CAB-SYNC-E depends on model family) • Power: DC input (1 RJ-45 connector)

Compatible InfiNet Wireless power supplies	• IDU-CPE (supplied by default) • IDU-BS-G • IDU-BS-G(60W) • IDU-CPE-G(24W) • AUX-ODU-INJ-G • IDU-LA-G(V.01)
Temperature range	• ODU: -40…+60°C • IDU: 0...+40°C
Size and Weight	• 180x170x75mm, 0.65kg
Indicators	Indicators is located near the power port of AUX-ODU-SYNC: • POWER - power. • SYNC - TDD synchronization.

Table - AUX-ODU-SYNC specification

Alignment tool CAB-RV1

RapidView-1 – is a special diagnostic device that is used for InfiNet Wireless equipment comfort installation, antenna alignment and configuration.

Device allows getting the following information:

- Radio link establishment indication
- Visual monitoring of radio signal levels
- Receiving retries information
- Diagnostic of RF and Ethernet interfaces.

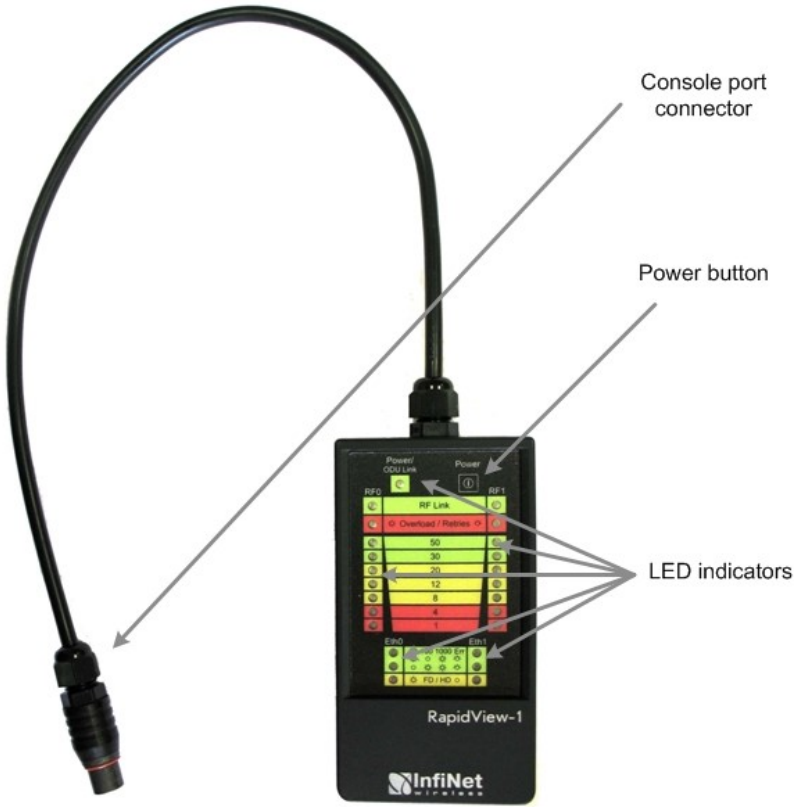


Figure - RapidView-1 top view

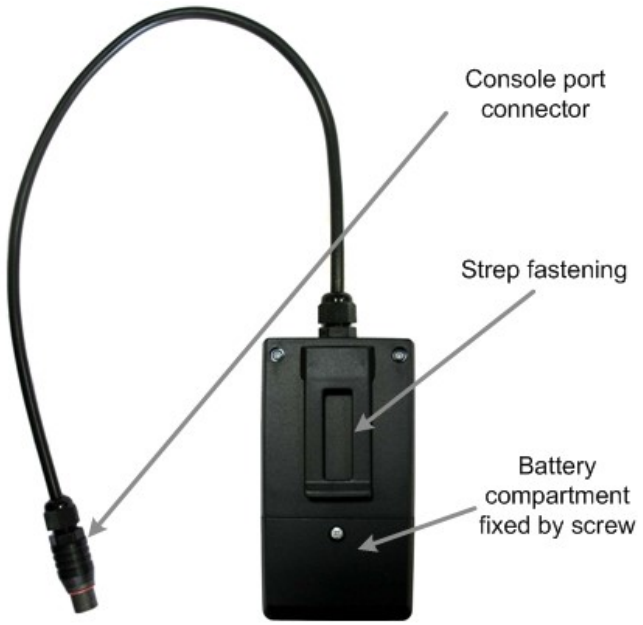


Figure - RapidView-1 back view

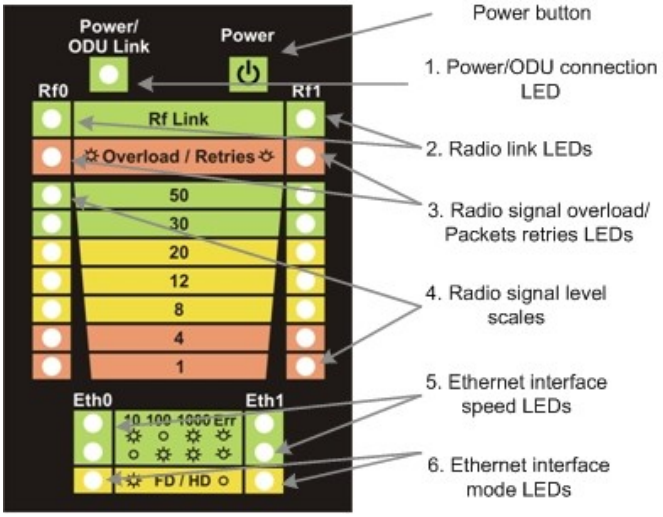


Figure - RapidView-1 Indicator panel

How to use

1. For turning **RapidView-1** on simply push «Power button»
2. Device LEDs will light up for 2 seconds
3. Device will perform constant tries to connect to ODU. If device's power is normal Power/ODU connection LED (1) will blink 1 time per second. If device's power is low LED 1 will blink 4 times per second in turn with not lighting intervals.
4. Once ODU link is established LED 1 stops blinking (if power is normal) and device's interfaces status are shown by LEDs 2-6.
5. 1 time per second device updates its status output.
6. If ODU link will be broken LEDs 2-6 will go out after 2 seconds and LED 1 will start blinking 1 time per second.

Diagnostic device connection to ODU should be done via console port of the ODU. Once link is up between ODU and diagnostic device the following record is put in ODU system log:

- Connected test unit. Begin service communication over console
- Test unit detected: rf0 – rf5.0

Exact radio interface names depend on wireless equipment configuration.

When diagnostic device is unplugged from the following record is put in ODU system log:

Test unit disconnected. Return to normal console mode.

LEDs modes description

ODU status monitoring via diagnostic device is performed by its LEDs indication. LEDs modes and ODU status correspondence is shown in the following table

<table>
<tr><th>LED</th><th>Function</th></tr>
<tr><td>Power/ODU connection LED</td><td>Shows diagnostic device power status and diagnostic device-ODU connection status:
Constant lighting — diagnostic device-ODU connection established, diagnostic device power is normal
Blinking 1 time per second — diagnostic device power is normal, diagnostic device-ODU connection is not established
Blinking 4 times per second — diagnostic device-ODU connection established, diagnostic device power is low (change batteries)
Frequent blinking with intervals — diagnostic device power is low, diagnostic device-ODU connection is not established</td></tr>
<tr><td>Radio link LEDs</td><td>Shows whether radio link is established on certain ODU’s radio interface:
Constant lighting — radio link is established.
What ODU’s radio interface to show by what column RF0 or RF1 is chosen by the following way:
for RF0 column is taken radio interface with the least number
for RF1 the other interface.
For example, there are the following radio interfaces on ODU: Rf5.0, rf5.1. Then for RF0 column rf5.0 will be taken, for RF1 — rf5.1.
When no radio link then LEDs 2-4 are not lighting</td></tr>
<tr><td>Radio signal overload/Packets retries LEDs</td><td>Shows receiving radio signal level overload and number of packet retries information:
Constant lighting —receiving radio signal level on the interface is too high.
Blinking 4 times per second - number of retries >= 50%
Blinking 2 times per second - number of retries >= 28 %
Blinking 1 time per second - number of retries >= 7 %
If certain radio interface (radio module) is not present on the device then all corresponding LEDs of this radio interface is off.
If ODU has certain radio interface but it is not activated (for example, not entered «mint rf5.0 start» command) then LED 3 is blinking 1 time per second whereas LEDs 2 and 4 are not lighting.
If ODU has certain radio interface but it is not activated (for example, not entered «mint rf5.0 start» command) then LED 3 is blinking 1 time per second whereas LEDs 2 and 4 are not lighting.
If ODU has certain radio interface activated («mint rf5.0 start» command entered) then LED 3 is blinking 4 times per second whereas LEDs 2 and 4 are not lighting</td></tr>
<tr><td>Radio signal level scales</td><td>Shows receiving signal level of the established radio link.
Each LED can be in 3 modes:
Not lighting — radio signal level is lower than scale value
Blinking — the more frequently is blinking the nearer signal level is to given scale value
Constant lighting — signal level is higher or equal to scale value</td></tr>
<tr><td>Ethernet interface data rate LEDs</td><td>Shows data rate of the corresponding Ethernet interface.
There are 2 LEDs for each Ethernet interface (Eth0 and Eth1)<table><tr><th></th><th>10 Mbps</th><th>100 Mbps</th><th>1000 Mbps</th><th>Error</th></tr><tr><td>Upper LED</td><td>Lighting</td><td>Not lighting</td><td>Lighting</td><td>Blinking</td></tr><tr><td>Lower LED</td><td>Not lighting</td><td>Lighting</td><td>Lighting</td><td>Blinking</td></tr></table></td></tr>
<tr><td>Ethernet interface mode LEDs</td><td>Constant lighting — Full Duplex
Not lighting — Half Duplex.
IF Ethernet connection is established but corresponding ODU’s interface is not enabled then LEDs 5, 6 indicate connection configuration by blinking 1 time per second</td></tr>
</table>

Table - LEDs modes description