SU-L CPE Quick Installation Guide

This Quick Installation Guide is intended for experienced installers. For more information, refer to the relevant sections in the SU-L Manual.

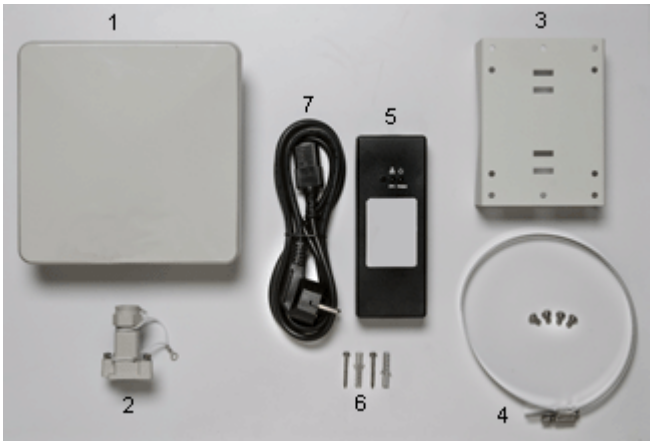
SU-L CPE Package Content

Check that the package contains:

- SU-L CPE Outdoor Unit with integrated antenna (1)
- A Service Box (Sealing Assembly for the ODU's Ethernet connector) (2)
- A pole mounting kit for the SU-L, including a mounting plate (3) and a metal band and four screws (4)
- IDU Indoor Unit (5) with two screws and two anchors (6) for wall-mounting the IDU
- Mains power cord (7)

In addition:

- Two sets of stickers (with the ODU). Each set includes two stickers, one with the ODU's MAC address and one with the S/N details.
- This Quick Installation Guide



Additional Equipment and Tools Required for Installation

- Ethernet cable for connecting to the user's data equipment (straight-through for connecting to a switch/router, or cross-over for connecting to a PC).
- Indoor-to-outdoor Category 5E Ethernet cable. Use only Category 5E cables approved by the supplier. The length of the Indoor-to-Outdoor cable should not exceed 90 meters. The length of the Indoor-to-Outdoor cable, together with the length of the Ethernet cable connecting the IDU to the data equipment, should not exceed 100 meters.
- Two shielded RJ-45 connectors and a suitable crimping tool.
- Grounding cable with appropriate terminations.
- Mains plug adapter or termination plug (if the power plug on the supplied AC power cord does not fit local power outlets).
- Portable PC/Notebook for configuring parameters using either Telnet (CLI) or a web browser.
- Installation tools and materials, including appropriate means (e.g. a pole) for installing the outdoor unit.

WARNING: ONLY experienced installation professionals who are familiar with relevant local building and safety codes and, wherever applicable, are licensed by the appropriate government regulatory authorities should install outdoor units and antennas. Ensure that outdoor units, antennas and supporting structures are properly installed to eliminate any physical hazard to either people or property. Failure to do so may void the product warranty and may expose the end user or Service Provider to legal and financial liabilities. Even where grounding is not mandatory according to applicable regulation and national codes, it is mandatory to ensure that the outdoor unit and the antenna mast are grounded and suitable lightning protection devices are used so as to provide protection against voltage surges and static charges. In any event, the Supplier and its resellers are not liable for any injury, damage or regulation violations associated with or caused by installation, grounding or lightning protection.

ATTENZIONE: SOLO professionisti esperti che hanno familiarità con le norme di costruzione locali e coi codici di sicurezza e, ove applicabile, sono autorizzati dalle autorità governative competenti possono installare unità esterne ed antenne. Assicurarsi che le unità esterne, antenne e strutture di supporto siano installate correttamente per eliminare ogni pericolo fisico a persone o cose. In caso contrario, ciò può invalidare la garanzia del prodotto e può esporre l'utente finale o il fornitore di servizi a responsabilità legali ed economiche. Anche quando la messa a terra non è obbligatoria in base alla normativa regolatoria applicabile e ai codici nazionali, è obbligatorio garantire che l'unità esterna e il palo dell'antenna siano messi a terra e idonei dispositivi di protezione contro i fulmini siano utilizzati in modo da fornire protezione contro le sovratensioni e le scariche statiche. In ogni caso, il Fornitore e i suoi rivenditori non sono responsabili per eventuali danni fisici, danni ad oggetti o violazioni del regolamento associati con o causati dall' installazione, la messa a terra o di protezione contro i fulmini.

Equipment Location Guidelines

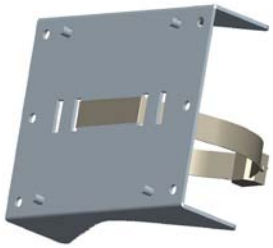
1. The antenna (on the front panel of the ODU) should provide a direct, or near line-of-sight link with the Base Station antenna. The higher the placement of the antenna, the better the achievable link quality. The location of the ODU should enable easy access to the unit for installation and testing.
2. Avoid mounting the ODU too close to other radio transmitters, or too close to large metal surfaces.
3. The IDU should be installed as close as possible to the location where the indoor-to-outdoor cable enters the building. The location of IDU should take into account its connection to a power outlet and the user's equipment.

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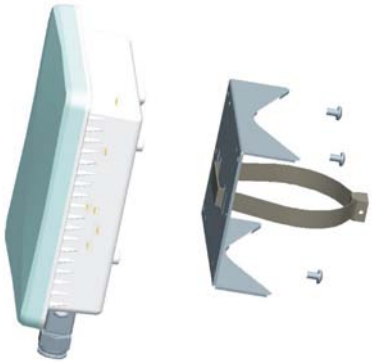
SU-L CPE Quick Installation Guide

ODU Installation

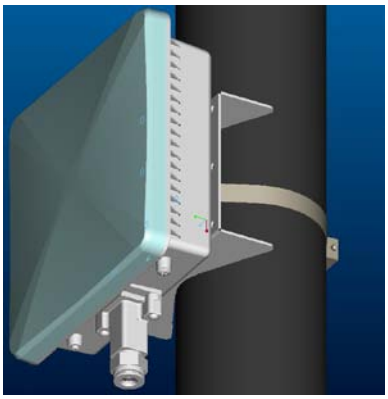
1. Thread the provided metal band through the adaptor bracket (Step 1), and use the screws provided with the mounting kit to attach the adaptor bracket to the unit (Step 2).
2. Attach the unit to the pole using the metal band (Step3). The connector should be facing downward.
3. Connect a grounding cable between the Ground terminal of the ODU (marked ⏚) and a good ground connection.
4. Align the unit towards the general direction of the AU.



Step 1



Step 2



Step 3

Connecting the IDU-ODU Cable

1. Unscrew the top nut from the Service Box.
2. Route a straight-through Category 5E Ethernet cable (8-wire, 24 AWG) through both the top nut and the body of the Service Box.

NOTE: Use only Category 5E 4x2x24# FTP outdoor cables from an approved manufacturer. See list of approved cables in the SU-L Manual.

3. Insert and crimp the RJ-45 connector. Refer to the cable preparations instructions described below.
4. Connect the Ethernet cable to the ODU RJ-45 connector.
5. Attach the Service Box to the ODU and tighten the top nut. Make sure that the external jack of the cable is well inside the Service Box to guarantee good sealing.
6. Route the cable to the location selected for the indoor equipment.
7. It is recommended to attach a lightning arrestor to the cable immediately before it enters the building.
8. Assemble an RJ-45 connector on the indoor end of the ODU cable. Refer to the pin assignment and color codes in standard cables described below.

IMPORTANT: For better performance, make sure you ground the ODU.

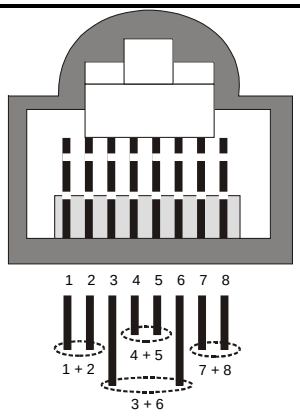
Preparing the IDU-ODU Cable

Use a crimp tool for RJ-45 connectors to prepare the wires. Insert them into the appropriate pins and use the tool to crimp the connector. Make sure to do the following:

- Remove as small a length as possible of the external jacket. Verify that the external jacket is well inside the sealing cover when connected to the unit, to ensure good sealing.
- Pull back the shield drain wire before inserting the cable into the RJ-45 connector, to ensure a good connection with the connector's shield after crimping.

The following diagram shows the required wire pair pin-to-pin connections, including the color codes used in cables supplied by the manufacturer.

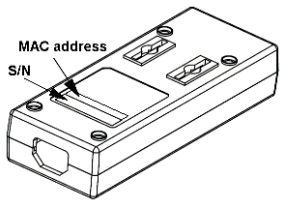
Wire color	Pin
Blue	1
Blue/white	2
Orange	3
Orange/white	6
Brown	4
Brown/white	5
Green	7
Green/white	8



SU-L CPE Quick Installation Guide

IDU Installation

1. The unit can be placed on a desktop or a shelf. Alternatively, it may be wall mounted using the wall-mounting kit supplied with the unit.
2. Attach the ODU's MAC address and S/N stickers to the bottom of the IDU for future reference. (Save the spare set of stickers for future use.)



3. Connect the IDU-ODU cable to the RADIO port.
4. Connect the indoor unit to the AC mains using the power cord supplied with the unit. Verify that the Power LED is on.

NOTE: The indoor unit should be connected to the power source only after it has been connected to the outdoor unit.

The color codes of the power cord are:

Brown	*Phase*	*~*
Blue	*Neutral*	*0*
Yellow/green	*Grounding*	⏚

5. Use a standard Ethernet cable (either straight-through for connecting to a switch/router, or cross-over for connecting to a PC) to connect the ETHERNET port to the user's data equipment.

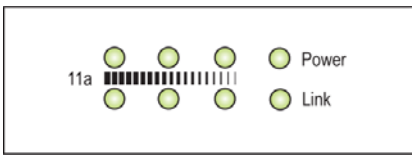
NOTE: The recessed Reset button on the IDU is not operational and does not affect the IDU or the ODU in any way.

Configuration

1. Configuration of parameters can be performed using either Telnet (CLI) or a web browser for accessing the built-in Web Interface.
2. Connect a PC/Notebook to the Ethernet port of the IDU, using either a cross-over Ethernet cable.
3. Configure the PC's IP parameters to enable connectivity with the unit. The default IP address of the SU-L is 10.0.0.1. The Subnet Mask is 255.0.0.0. The recommended IP address for the PC is 10.0.0.2 with Subnet Mask is 255.0.0.0.
4. The default regulatory domain is *Universal*. If the installation should comply with FCC, ETSI or UK radio regulations, you must first configure the proper regulatory domain (regdomain) using CLI in installer mode (default password is *installer*).
5. Run the Telnet program or open a web browser, and connect to 10.0.0.1. The username is *admin*. The default password is *private*.
6. Configure all parameters as required for the specific site. Note that the RF Distance parameter must be configured according to the distance of the unit from the Access Unit (up-rounded if necessary) if this unit is the first one installed in the cell. If other units are already active in the cell, the RF Distance must be configured according to the farthest unit from the Access Unit.
7. The new settings are applied in real time as follows: from web interface the changes are applied immediately after pressing the "Update" button. From Telnet, you need to use the command "set ClientSta status-update yes" to apply them and "save-running" command to save all changes.

Aligning the Antenna

1. Point the antenna toward the general direction of the Access Unit.
2. Verify that the Power LED on the ODU is on.
3. Rotate the ODU until the maximum link quality (11a LEDs) reading is achieved (see Wireless Link 11a Status LEDs Table in the next page). If you encounter prolonged difficulty in achieving the expected link quality, try to improve the reception quality by placing the antenna at a higher point or in an alternate location.



4. Ensure that the front of the antenna is always facing the Access Unit. However, in certain conditions, such as when the line of sight to the Access Unit is hampered, better reception may be achieved using a reflected signal. In this case, the antenna is not always directed toward the Access Unit.
5. Secure the unit firmly to the pole.

Verifying Proper Operation

1. Verify data connectivity by pinging the AU or by connecting to the Internet.
2. To verify proper operation of the SU-L, examine the LED indicators on the ODU:

Unit Status LEDs

Name	Status	Functionality
Power	On Green	The unit is working normally.
	On Amber	Unit reset.
Link	On Green	Indicates a valid 10/100 Mbps Ethernet cable link (Ethernet Integrity).
	Flashing Green	The unit is transmitting or receiving data on a 10/100 Mbps Ethernet link (Ethernet Activity). Flashing rate is proportionate to network activity.

Wireless Link 11a Status LEDs

Left Pair	Center Pair	Right Pair	Functionality
Off	Off	Off	The radio is disabled or unit is still booting up
Off	Off	Blinking slowly	No signal detected or RSSI is below -88 dBm
Off	Off	Blinking fast	RSSI is between -88 dBm and -87 dBm
Off	Off	Blinking very fast	RSSI is between -86 dBm and -85 dBm
Off	Off	On	RSSI is between -84 dBm and -82 dBm
Off	Blinking slowly	On	RSSI is between -81 dBm and -80 dBm
Off	Blinking fast	On	RSSI is between -79 dBm and -78 dBm
Off	Blinking very fast	On	RSSI is between -77 dBm and -76dBm
Off	On	On	RSSI is between -75 dBm and -74 dBm
Blinking slowly	On	On	RSSI is between -73 dBm and -72 dBm
Blinking fast	On	On	RSSI is between -71 dBm and -70 dBm
Blinking very fast	On	On	RSSI is between -69 dBm and -68 dBm
On	On	On	RSSI is over -67dBm

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC and EN300385 Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

Electronic Emission Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:

To comply with FCC RF exposure requirement, the antenna used for this transmitter must be fixed-mounted on outdoor permanent structures with a separation distance of at least 2 meters from all persons.

R&TTE Compliance Statement

This equipment complies with the appropriate essential requirements of Article 3 of the R&TTE Directive 1999/5/EC.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.