BU and RB Quick Installation Guide

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

Package Content

Check that the package for each unit contains:

- IDU Indoor Unit with a wall mounting kit
- Mains power cord
- Outdoor Unit with an integrated antenna or with a connection to an external antenna
- Pole mounting kit for the Outdoor Unit
- Two sets of stickers (attached to the ODU). Each set includes two stickers, one with the ODU's MAC address and one with the S/N details.
- Indoor-to-outdoor Ethernet cable kit, including 20m Category 5E cable with a shielded RJ-45 connector crimped on one end, a waterproof sealing assembly and two shielded RJ-45 connectors.
- This Quick Installation Guide

Additional Equipment and Tools required for Installation

- Antenna (for ODU without an integrated antenna).
- If the Indoor-to-Outdoor cable supplied with the equipment is not long enough - Category 5 Ethernet cable and two shielded RJ-45 connectors
- Ethernet cable (straight for connecting to a hub/switch etc., crossed for connecting directly to a PC's NIC).
- Crimping tool for RJ-45 connectors.
- Grounding cable with an appropriate termination.
- Mains plug adapter or termination plug (if the power plug on the supplied AC power cord does not fit local power outlets).
- Portable PC with Ethernet card and Telnet or Configuration Utility SW, and a crossed Ethernet cable.
- Installation tools and materials, including appropriate means (e.g. a pole) for installing the outdoor equipment.

WARNING: ONLY experienced installation professionals who are familiar with local building and safety codes and, wherever applicable, are licensed by the appropriate government regulatory authorities should install outdoor units and antennas. Failure to do so may void the equipment warranty and may expose the end user or Service Provider to legal and financial liabilities. The manufacturer and its resellers or distributors are not liable for injury, damage or regulation violations associated with the installation of Outdoor Units or antennas.

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.

Installation Guidelines

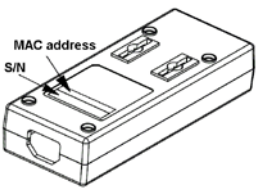
1. Select the optimal locations for the equipment using the following guidelines:
   a. The ODU with its integrated antenna (or the detached antenna) should be installed to provide a direct, or near line of sight with the antenna of the other side. The higher the placement of the antenna (integral or external), the better the achievable link quality.
   b. ODU units with a detached antenna (D model) should be installed as close as possible to the antenna (to ensure that the antenna's characteristics are not affected the distance must be higher than 10 cm).
   c. The location of the ODU should enable easy access to the unit for installation and testing.
   d. The indoor equipment should be installed as close as possible to the location where the indoor-to-outdoor cable enters the building. The location of the indoor equipment should take into account its connection to a power outlet and the CPE.
2. Mount the outdoor unit using either the special brackets and open-ended bolts supplied with the unit, or metal bands (9/16" wide, at least 12" long).

NOTE: Be sure to insert the open ended bolts with the grooves pointing outward, since these grooves enable you to use a screwdriver to fasten the bolts to the unit.

3. Use appropriate sealing material to protect the ODU connections against moisture and humidity. Use removable sealing material, such as a tar seal, to enable future access to the connector. Use

high quality sealing material such as Scotch® 130C Linerless Rubber Splicing Tape from 3M to ensure protection against dust and water. Loop & tie the cables near the unit for strain relief and for routing water away from the unit: use additional cable strips to route the cable such that water can accumulate on the cable bends, away from the unit.

4. Connect a grounding cable between the Ground terminal of the ODU (marked ⏚) and a good ground connection. For an ODU with external antenna, connect the RF connector located on the top panel of the ODU (marked ⍒) to the antenna. The RF connectors should be properly sealed to protect against rain and moisture.
5. Verify that the O-ring of the sealing assembly supplied with the indoor-to-outdoor cable kit is in place. Connect the cable to the Ethernet connector of the outdoor unit, attach the sealing assembly to the unit and tighten the nut. Make sure that the external jack of the cable is well inside the sealing assembly to guarantee a good sealing.
6. Route the cable to the location selected for the indoor unit. Assemble an RJ-45 connector with a protective cover on the indoor end of the cable. Before inserting the cable into the connector, take back the shield drain wire to ensure a good connection with the connector's shield after crimping.
7. 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).



8. Mount the indoor unit and connect the outdoor-to-indoor cable to its RADIO port. Connect the indoor unit to the AC mains using the power cord supplied with the unit.

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*	⏚

9. Use a straight Ethernet cable to connect the ETHERNET port to a Hub/Switch. Use a crossed Ethernet cable to connect directly to a PC's NIC.

Basic Configuration

1. Initial configuration can be performed either via Telnet or using the configuration utility.
2. Connect a PC to the Ethernet port, using a crossed cable. The default IP address is 10.0.0.1.

3. If you use Telnet for initial configuration, run the Telnet program. Select your permitted access level and enter your password (the default Installer password is “user”). Access the *Basic Configuration* menu and configure the basic parameters required to allow connectivity with the base station and to support remote management of the unit. In many installations, most of these parameters should not be changed from their default values. The following list includes the basic parameters and their default values:

Basic Configuration

Parameter	Default	Comment
Change Unit Type to RB (in Unit Control Menu)		If necessary. Reset before continuing with configuration.
Ethernet Port Negotiation Mode	Auto Negotiation	
IP Address	10.0.0.1	
Subnet Mask	255.0.0.0	
Default Gateway Address	0.0.0.0	
DHCP Option	Disable	
Access to DHCP	BU: From Ethernet Only RB: From Wireless Only	
ESSID	ESSID1	
Hidden ESSID Option (BU)	Disable	
Hidden ESSID Support (RB)	Disable	
Operator ESSID Option (BU)	Enable	
Operator ESSID (BU)	ESSID1	
Wi2 IP Address (RB)	0.0.0.0 (none)	Applicable only to WI^2 installations
Country Code Select	Depends on factory configuration	Applicable only for 5.4 and 5.8 GHz units. Country Code must comply with local regulations.
Sub-Band Select (BU)	1	

Parameter	Default	Comment
Frequency (BU)	The lowest frequency in the selected Sub-Band	
User Defined Frequency Subset (RB)	A (All)	
DFS Required By Regulation (BU, if DFS is supported by Country Code)	Depends on Country Code	
Frequency Subset Definition (BU, if DFS is supported)	All frequencies	Applicable only if DFS is enabled
DFS Detection Algorithm (BU using Universal Country Code in 5.4 or 5.8 GHz band)	ETSI	Applicable only if DFS is enabled
Transmit Power	Depends on HW Revision and Sub Band	Transmit Power in RB cannot be higher than the Maximum Tx Power parameter.
Maximum Tx Power	Depends on HW Revision and Sub Band	Maximum Tx Power cannot be higher than the upper limit defined in the Sub Band in use.
ATPC Option	Enable	
Tx Control (BU)	On	
Antenna Gain (units with external antenna)	According to the antenna supplied with the unit and the Sub Band.	If set to “Not Set Yet”, must be configured according to actual value, taking into account cable’s attenuation (otherwise the unit will not transmit).
Best BU Support (RB)	Disable	
Preferred BU MAC Address (RB)	00-00-00-00-00-00 (none)	Applicable only when Best BU Support is enabled
Link Distance Mode (BU)	Automatic	

Parameter	Default	Comment
Maximum Link Distance (BU)	0 (No Compensation)	
Maximum Modulation Level (RB)	8	
VLAN ID-Management	65535	
Authentication Algorithm	Open System	Availability of security parameters depends on support according to the country code.
Data Encryption Option	Disable	
Security Mode	WEP	
Default Key (RB)	Key 1	
Default Multicast Key (BU)	Key 1	
Key 1 to Key 4	00…0 (32 zeros = no key)	

4. Reset the unit to apply the changes.

Aligning the Antennas

1. Point the antenna of the BU towards the direction of the RB, and vice versa.
2. Verify that the power indication of the unit is on. Verify that the W-LINK LED of the ODU is on, indicating wireless link connectivity. If the W-LINK LED is off, check that the ESSID and Frequency parameters are correctly configured. If necessary, increase the transmit power level to its maximum value. If the units are still not associated with each other, try to improve the quality of the link by changing the direction of the antenna or by placing the antenna at a higher or alternate location.
3. In the RB, rotate the antenna until the maximum SNR reading is achieved, where at least 1 green LED is on: If you encounter prolonged difficulty in illuminating the minimum required number of green LEDs, try to improve the reception quality by placing the antenna at a higher point or in an alternate location. You may need to repeat the process at the side of the BU, using the Link Quality Indicator (in Telnet).
4. Ensure that the front of the antenna is directed towards the other unit. However, in certain conditions, such as when the line of site to is hampered, better reception may be achieved using a reflected signal. In this case, the antennas are not always directed each other.
5. Secure the unit firmly to the pole.

Verifying Proper Operation

1. Once you have connected the unit to an Ethernet outlet, verify that the green Ethernet connectivity indicator is on, blinking whenever the unit receives or transmits traffic on the Ethernet port.

2. Verify data connectivity by pinging the other unit or by connecting to the Internet.
3. To verify proper operation of the outdoor and indoor units, view the LED indicators:

PS1073 Indoor Unit LEDs

Name	Description	Functionality
POWER	Power Indication	Green – IDU power is OK. Off - No power or power failure.
ETH	Self test and end-to-end Ethernet connectivity indication	Off – No Ethernet connectivity has been detected between the outdoor unit and the device connected to the indoor unit. Green– Self-test passed and Ethernet connection confirmed by the outdoor unit (Ethernet integrity check passed). Blinking whenever there traffic on the Ethernet port.

Outdoor Unit LEDs - RB

Name		Description	Functionality
W-LINK		Wireless Link traffic Indication	Green: Unit is associated with a BU, no wireless link activity Blinking Green: Data received or transmitted on the wireless link. Blinking rate is proportional to traffic rate. Off: Wireless link disabled
Status		Self-test and power indication	Green: Power is available and self-test passed. Blinking Amber: Testing (not ready for operation) Red: Self-test failed. Fatal error

Name		Description	Functionality
ETH		Ethernet activity/ connectivity indication	Green: Ethernet link between the indoor and outdoor units is detected, no activity Blinking Green: Ethernet connectivity is OK, with traffic on the port. Blinking rate proportional to traffic rate. Red: No Ethernet connectivity between the indoor and outdoor units.
SNR bar		Received signal strength Indication	Red LED: Signal is too low (SNR < 4dB). 8 green LEDs: Quality of the received signal. Orange LED: Signal is too high (SNR > 50dB).

Outdoor Unit LEDs - BU

Name		Description	Functionality
W-LINK		Wireless Link traffic Indication	Green – Unit is associated with an RB Blinking red – Unit is not associated Off – Wireless link is disabled
Status		Self-test and power indication	Green: Power is available and self-test passed. Blinking Amber: Testing (not ready for operation) Red: Self-test failed. Fatal error
ETH		Ethernet activity/ connectivity indication	Green: Ethernet link between the indoor and outdoor units is detected Red: No Ethernet connectivity between the indoor and outdoor units.
SNR bar		Received signal strength Indication	Red LED: Signal is too low (SNR < 4dB). 8 green LEDs: Quality of the received signal. Orange LED: Signal is too high (SNR > 50dB).

Electronic Emission Notice

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

a. This device may not cause harmful interference.
b. This device must accept any interference received, including interference that may cause undesired operation.

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 EN300385 rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment notwithstanding use in commercial, business and industrial environments. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

FCC Radiation Hazard Warning

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 meter from al persons.

R&TTE Compliance Statement

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